TAC RS 78-00

REMOTE SENSING OF NATURAL RESOURCES

A Quarterly Literature Review

OCTOBER-DECEMBER 1978

TECHNOLOGY APPLICATION CENTER
THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87131

NASA

QUARTERLY LITERATURE REVIEW

of the

REMOTE SENSING OF NATURAL RESOURCES

FOURTH QUARTER 1978
(OCTOBER-DECEMBER 1978)

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Institute for Applied Research Services
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Albuquerque, New Mexico 87131

January 1979

QUARTERLY LITERATURE REVIEW

of the

REMOTE SENSING OF NATURAL RESOURCES

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INTRODUCTION

Remote sensing is so strongly an interdisciplinary science that one cannot easily keep abreast of the activity without taking a large portion of the available time for reviewing the literature. The Technology Application Center (TAC) has made a major effort in order to provide a review of this rapidly advancing field with its Quarterly Literature Review of the Remote Sensing of Natural Resources. This service has been initiated to provide the investigator with up-to-date information in a readable and indexed form.

In an attempt to review the literature of remote sensing from among the many hundreds of sources and thousands of documents available, a definition of boundaries was necessary. TAC, reviewing abstracted literature sources (see Information Sources), selects documented data and data gathering techniques which are performed or obtained remotely from space, aircraft or groundbased stations. All of the documentation is related to remote sensing sensors or the remote sensing of the natural resources. Meteorology and extraterrestrial sensing are normally not selected. Sensors are primarily those operating with the 10^{-8} to 1 meter wavelength band (ultraviolet through radar). There are exceptions to this when overlapping data is reported, and these have been selected.

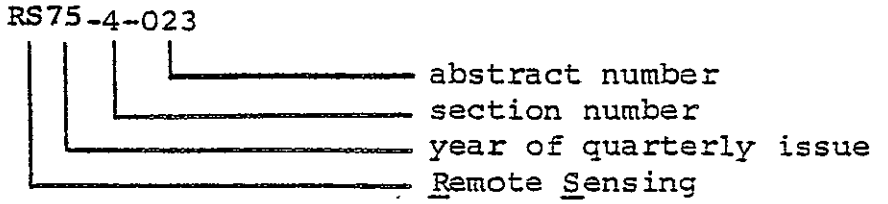
Following the Information Sources descriptions are recent releases concerning remote sensing. Included are NASA Tech Briefs, ARAC Industrial Applications Reports, U.S. Navy Technical Reports, U.S. Patent Reports, and other technical articles and reports that come to the attention of the TAC staff. This section has not been key worded or numbered.

Editors

Denise M. Glore
Michael H. Inglis

USER GUIDE

This Quarterly Literature Review has been divided into eight sections as shown in the table of contents. Within each section, the abstracts have been provided an RS number. This number indicates the section, as RS74-4 indicates Marine Science or Section 4 in the table of contents. The numbers following the section identification place the abstract in numerical order within that section.



In the absence of page numbers, the section and number provide ready access to the abstract.

All abstracts within this Quarterly Literature Review have been "key-worded" by the TAC staff. Key words include generalized terms used or indicated by the title or abstract. The first author's last name, shown on the abstract, is also used as a key word and is indicated by an asterisk (*). This provides an author index within the key word index found in Section 7, Alphabetical Index of Authors and Key Words. Sample key-wording (key words used are underlined):

> RS75-4-015 Evaluate the Application of ERTS-A Data for Detecting and Mapping Sea Ice; James C. Barnes, Principal Investigator

Section 8 contains an order form for the document service provided by the Technology Application Center. In order to facilitate this service, complete Quarterly numbers, RS numbers and abstract titles are necessary.

INFORMATION SOURCES

The following list describes the information resources currently used by the Technology Application Center for the Remote Sensing Quarterly Review.

I. National Aeronautics and Space Administration (NASA)

The NASA file, dating from 1962, contains more than 600,000 documents and grows at the rate of 70,000 new entries each year. It is approximately 16% NASA-generated, the bulk of the citations being reports collected by NASA from worldwide sources for use in the aerospace program. These articles are abstracted in two semi-monthly journals:

A. International Aerospace Abstracts (IAA)

IAA is an abstractive and indexing service covering the world's published literature in the field of aeronautics and space science and technology. Periodicals, books, meeting papers, conference proceedings, translations of foreign journal articles, and aerospace reports are typically abstracted by IAA.

B. Scientific and Technical Aerospace Reports (STAR)

STAR is a comprehensive abstracting and indexing journal covering current worldwide report literature on the science and technology of space and aeronautics. Publications abstracted in STAR include scientific and technical reports issued by NASA and its contractors, other U.S. Government agencies, corporations, universities, and research organizations throughout the world. Pertinent theses, translations, NASA-owned patents and patent applications, and other separate documents are also abstracted.

II. Engineering Index Monthly (EIM)

The Engineering Index Monthly is a compilation of abstracts and items covering the world's significant technological literature

and conferences encompassing all engineering disciplines. The EIM covers the technological side of Remote Sensing with such subjects as new equipment and techniques, and specific field applications of engineering methods and devices.

III. Selected Water Resources Abstracts

Selected Water Resources Abstracts is published by the Water Resources Scientific Information Center, Office of Water Resources Research, U.S. Department of the Interior. It includes abstracts of current and earlier pertinent monographs, journal articles, reports, and other publication formats.

IV. Government Reports Announcements (GRA)

GRA is published by the National Technical Information Service (NTIS), Springfield, Virginia. The NTIS collection now exceeds 730,000 titles, to which some 60,000 new reports are added annually. Abstracts cover environmental surveys, energy source prospecting (minerals, geothermal sources, etc.), oceanography, hydrology, climate, agriculture, geology, tracing of tagged wildlife, and more esoteric aspects of this field.

V. Bibliography and Index of Geology

Bibliography and Index of Geology is published by the Geological Society of America in Boulder, Colorado, and covers the earth science literature of the entire world and theses in North America.

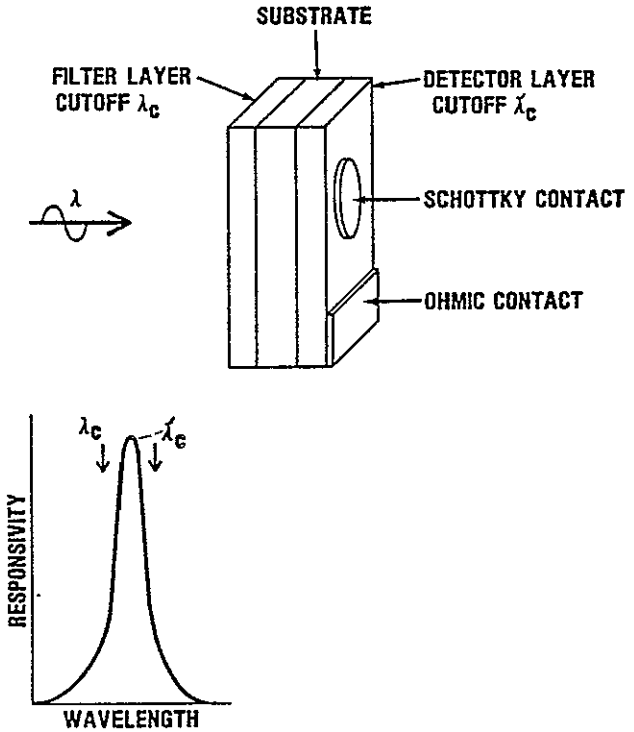
VI. ERDA Energy Research Abstracts (ERA)

ERA covers scientific and technical reports originated by the U.S. Energy Research and Development Administration and its contractors, other U.S. Government agencies, other governments, universitites, and industrial and research organizations. In addition, books, conference proceedings, individual conference papers, patents, and journal literature on a worldwide basis are abstracted and indexed. Subjects covered by ERA include energy systems, conservation, safety, environmental protection, physical research and biology and medicine.

RECENT RELEASES

Narrowband Infrared Detector

An improved infrared photodetector which has peak sensitivity at any selected wavelength within a certain range has been invented by a researcher at the Naval Surface Weapons Center. The device consists of two lead-salt alloy semiconductor films, vapor-deposited onto opposite sides of a transparent substrate. One film is used as a short wavelength cut-off filter, and a photovoltaic detector is produced on the second film by applying a Schottky barrier contact. The peak sensitivity of this device lies between the cut-off wavelength of the filter λ_c, and the cut-on wavelength of the detector λ_c'. These wavelengths can be composition tuned to any desired values between two and twelve microns with the lead-salt alloys. The half-bandwidth of the device can be reduced to a few percents of λ_c by utilizing optical interference effects in the films. This new device should prove useful in such varied areas as infrared surveillance and tracking systems, medical radiometry, and air pollution monitoring systems.



II-IV-VI Alloy Schottky Barrier Detector Configuration.

Infrared-Enhanced TV for Fire Detection

Silicon target and visible-light filter adapt a vidicon for fire detection in large areas.

Marshall Space Flight Center, Alabama

Closed-circuit television is potentially superior to conventional smoke or heat sensors for detecting fires in large open spaces (for example, in warehouses). A single TV camera would be able to scan the entire area, whereas many conventional sensors and a maze of interconnecting wiring might be required to get the same coverage.

By adding lens filters and substituting an infrared-sensitive silicon target for the usual antimony trisulfide target found in most vidicons, the ability of a standard TV camera to detect hard-to-see chemical fires (such as those involving hydrogen, or liquid oxygen and hydrogen) can be significantly enhanced. Such a camera could be monitored by a person who would trip an alarm if a fire were detected; or, electronic circuitry could process the camera signal for a fully-automatic alarm system.

In tests of an IR-enhanced camera, a commercially-available silicon target extended the infrared sensitivity to 12 nanometers. The same target also gave 30X sensitivity in the visible region. To restore the baseline sensitivity of the camera in the visible region, it was also fitted with a lens filter that had roughly 3 percent transmission of visible light. (The enhanced sensitivity would have caused overloading problems in bright light.) Initial tests to detect the flame of a butane torch showed a nearly 10-percent increase in flame area, as compared to the image projected by an unmodified visicon. The modified camera was also less susceptible to blooming and highlight smearing.

This work was done by James R. Hall of Rockwell International Corp. for **Marshall Space Flight Center.** *For further information, Circle 21 on the TSP Request Card.*

Inquiries concerning rights for the commercial use of this invention should be addressed to the Patent Counsel, Marshall Space Flight Center [*see page A8*]. *Refer to MFS-19380.*

Energy Conservation, Using Remote Thermal Scanning

Readily available equipment is used to spot heat losses in several facilities.

Airborne thermal infrared scans and thermal maps utilized in NASA's energy conservation program have proved to be an efficient cost-effective method for identifying heat losses from building roofs and heating-system distribution lines. The use of thermal scanning to locate excessive energy losses at all NASA facilities has resulted in first-year cost savings of $480,000. Accounting for the cost of the program produces a net savings of $386,000 for the first year.

For example, at the National Space Technology Laboratory in Bay St. Louis, Mississippi, a primary concern was the location of heat losses from leaks and insulation deterioration in a 13-mile-long (21 km) system of underground high-temperature hot-water lines buried at an average depth of 1.8 meters. An airborne thermal scan, verified by spot excavation, effectively located all of the heat losses with a cost saving of $93,000.

The method employs commercially available equipment in a highly developed way. A thermal infrared optical detector and scanning system coupled to a magnetic-tape data recorder have been installed in a NASA C-47 aircraft. As the aircraft flies over the ground facilities, the system scans the area. Flights are usually made at night to minimize the effects of solar heating, and typically at altitudes of 1,000 or 1,500 ft (305 or 455 meters). The signals from the thermal-energy detector are digitized and recorded on high-density magnetic tape. The data are subsequently processed in a ground-based minicomputer system to reconstruct a thermal map.

The minicomputer is programed to divide the recorded data into 24 signal levels for display and analysis. The data are then processed and displayed in one, or more, of four different ways:

1. 24-level color maps of the area scanned.
2. 12-level black-and-white maps,
3. color photographs of maps displayed on the minicomputer cathode-ray tube, and
4. minicomputer printout of the digitized data.

Selection of the type of display depends upon the degree of detail desired to identify places of excessive heat loss.

This work was done by Robert L. Bowman and John R. Jack of **Lewis Research Center.** *Further information may be found in NASA TM-X-73570 [N77-21518], "Application of Remote Thermal Scanning to the NASA Energy Conservation Program," a copy of which may be obtained at cost from the New England Research Application Center* [*see page A7*]. *Lew-12812*

COSMIC PROGRAM ABSTRACT

ERL-10007

MAXL4X - Program for Preclassification of Frequently Encountered Vectors in LANDSAT Data
(NASA Earth Resources Laboratory) 30 OCT 78

This program was developed to preclassify frequently encountered vectors in LANDSAT data. The program uses a table look-up procedure in processing the data. Each pixel is checked to see if it has been preclassified. If it has been preclassified then the value is simply looked up in the table rather than calculated again. If the pixel has not been classified then it is classified as usual. Thus the program provides a technique for rapidly classifying LANDSAT data.

MAXL4X takes a set of statistics from either cards or a previously generated statistics file. It preclassifies a table based on the input statistics. The table to be preclassified is a disk file generated by the DESTRIPE/REFORMAT program (ERL-10006). The program takes the four channel data from tape and checks to see if the vector matches a vector that has previously been classified. MAXL4X uses a table look-up procedure in classifying the data. It checks to see if the vector has already been classified or is in the preclassification table before attempting to classify it. If the vector is identical to a previously classified vector then the classification is looked up and written to magnetic tape. If the vector is not an exact duplicate of a previously classified vector then it is checked to see if it has been preclassified. If the vector has been preclassified then the classification is looked up and written to magnetic tape. If the vector has not been preclassified then it is classified. Input consists of a data tape, cards, and the table to be preclassified. The input cards may contain the class name, mean vector, covariance matrix, quadratic threshold, and a priori data, or the input cards may direct the reading of this information from the statistics file. Output consists of a classified tape and a listing of frequency of occurrences and percentages of pixels for each class. The limitations of the program consist of processing four channel data, one classified output tape per run, an input tape in ERL format, and a maximum of 63 classes.

This program is written in Assembler and FORTRAN IV for batch execution and has been implemented on a Varian V-70 with a central memory requirement of approximately 70K octal 16 bit words.

LANGUAGE: ASSEMBLER (78%), FORTRAN IV (22%)

MACHINE REQUIREMENTS: Varian V-70 Series

PROGRAM SIZE: Approximately 2959 Source Statements

DISTRIBUTION MEDIA: Card Image Magnetic Tape

PROGRAM NUMBER: ERL-10007

DOCUMENTATION PRICE: $6.00 PROGRAM PRICE: $310.00

COSMIC PROGRAM ABSTRACT

MSC-18238

GETMEX/CLEAN - The Postprocessing Computer Program
(Lockheed Electronics Company) 25 SEPT 78

The GETMEX/CLEAN computer program was designed for postprocessing classification images such as those derived from processing remotely sensed Landsat data. The program remaps classification images, cleans up the salt-and-pepper appearance by forcing each object mapped in the image to have a minimum size specified by the user, and maps a special kind of mixed feature on the image. It can be used with existing image processing software, such as LARSYS, CAMSP, and VICAR. The resulting remapped images closely resemble the resource information maps that are familiar to users and can replace or supplement the classification images before postprocessing by GETMEX/CLEAN.

The program operates on binary classification maps, that is, maps having picture element (pixel) values of 0 or 1. Connected sets in the map are searched and identified. The sizes of these connected sets are determined and checked against a prespecified threshold, which is controlled by the user. Connected sets smaller than threshold pixels are eliminated by changing their labels to the other type; that is, small sets of 1's will be modified to 0 labels and 0's to 1's. By performing such relabeling, a final image is produced in which every mapped object meets a minimum threshold pixel size requirement. The postprocessed image resembles a resource information map with which users are familiar and the salt-and-pepper appearance, which is common in digital classification maps, is subdued. The program accepts as input multiclass, single-channeled images formatted on computer-compatible tapes (CCT) in the Universal format for multi-spectral scanner (MSS) data storage. Output is in the form of images on magnetic tape in the same format.

GETMEX/CLEAN is written in FORTRAN V for execution in batch mode and is implemented on a UNIVAC 1100 series computer operating under EXEC 8. The program requires two tape drives and a core requirement of approximately 34K of 36 bit words for execution.

LANGUAGE: FORTRAN V

MACHINE REQUIREMENTS: UNIVAC 1100 Series

PROGRAM SIZE: Approximately 603 Source Statements

PROGRAM NUMBER: MSC-18238

DOCUMENTATION PRICE: $7.50

PROGRAM PRICE: $320.00

COSMIC PROGRAM ABSTRACT

MFS-23753

MINIS - Multipurpose Interactive NASA Information System
(Computer Sciences Corporation) 07 AUG 1978

The Multipurpose Interactive NASA Information System (MINIS) was developed in response to the need for a data management system capable of performing the functions of a LANDSAT photo descriptive data retrieval system, while remaining general in terms of other user definable data bases. Currently MINIS represents a general purpose interactive data management and information retrieval system especially developed for use on small and medium size computers. MINIS uses a free form data base structure which provides the user with the ability to create entirely new and different data bases and to have more control of the data base and the format of requested output products. Each major function of the MINIS interactive modular system is invoked by user requests in the system language-DABAL. The Data Base Access Language (DABAL) provides the capabilities to form sets, perform mathematical calculations, define new variables from combinations of data base fields and other variables, sum a field or variable within a set, and invoke any of the other modules in MINIS. The modular structure of MINIS provides an efficient base to which additional features may be readily attached. MINIS has been used to accommodate data bases in the area of LANDSAT photo-descriptive data, land use data, and census/socio-economic data. MINIS should prove useful in many areas of data base development and management.

MINIS is designed to accommodate fixed length record data bases with up to 200 fields and as many records as available mass storage will permit. For each data base established on MINIS there are several files which must be defined and several optional files which can facilitate data base searches. The file definition file is an information list of the other files of the data base and is automatically updated as files are changed. The main data file is the actual data that makes up the data base. The field definition file represents a map for a data base record. The user message file contains all field titles, saved text, headers, formats, and name list. Index files speed up the process of set formation by providing a cross-reference between the value of a certain field and the corresponding record numbers. The first step in working with a data base is to invoke the data base select module which loads the data definitions of the named data base along with indexed variable information and any special vocabulary. Control is then passed to the main system module which accepts user commands and calls up the compiler routines to generate an internal interpretive code. This code causes the appropriate execution submodule to be invoked. An argument list is automatically composed for subroutines with a variable list. The module is then loaded and control transferred to it with a pointer to the argument list. As each module completes its operation, program control is returned to the main system module.

MINIS is coded in FORTRAN and ASSEMBLER for interactive execution and has been implemented on an NOVA 1200 minicomputer under the ROS operating system.

LANGUAGE: FORTRAN (91%), ASSEMBLER (9%)

MACHINE REQUIREMENTS: NOVA 1200 Series

PROGRAM SIZE: Approximately 19,585 Source Statements

DISTRIBUTION MEDIA: Magnetic Tape Available Only

PROGRAM NUMBER: MFS-23753

DOCUMENTATION PRICE: $26.00

PROGRAM PRICE: $1120.00

Section 1

GENERAL

Theory, General Surveys, Miscellanious Studies

RS78-1-311

78C0075722 EDB-78-14 51.010
CONF-7510172--P1/
SOME REMOTE SENSING ACTIVITIES IN SPAIN:A COMPUTER APPROACH/
AGUILAR,M.(UNIV.AUTONOMA,MADRID)/NUNEZ DE LAS CUEVAS,R./PICON,J.L./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ES/
US/
ERA-03:018016/EDB-78:075722/
A DESCRIPTION OF THE COMPUTER APPROACHES TO SOME SENSING ACTIVITIES CURRENTLY PURSUED IN SPAIN IS PRESENTED HERE. THE ACTIVITIES ARE PART OF A COOPERATIVE EFFORT RECENTLY INITIATED TO INVESTIGATE LANDSAT DATA APPLICATIONS TO DIFFERENT RESEARCH PROBLEMS. SEVERAL DISCIPLINES ARE INVOLVED IN THIS EFFORT: GEOLOGY, PODOLOGY, BOTANY, GEOGRAPHY AND HYDROLOGY. SPAIN'S CENTRAL REGION HAS BEEN CHOSEN AS A TEST SITE. THE GEOLOGY PROGRAMME AIMS AT CONFIRMING AND COMPETING CURRENT KNOWLEDGE OF GEOLOGICAL STRUCTURES IN THE TEST SITE STUDYING LESS EXPLORED ZONES. DIFFERENT SPATIAL FILTERS ARE BEING USED FOR THIS PURPOSE. A SOIL SURVEY STUDY IS BEING PERFORMED AS PART OF THE PODOLOGY PROGRAMME BY MEANS OF AUTOMATIC CLASSIFICATION ALGORITHMS ALREADY AVAILABLE. PREVIOUS WORK ON THIS PROVIDES THE NECESSARY AMOUNT OF GROUND TRUTH. URBAN GROWTH IN THE CITY OF MADRID AND ITS PERIPHERY IS ALSO BEING INVESTIGATED. URBAN CHANGES ARE DETECTED BY A COMBINATION OF SUPERVISED AND UNSUPERVISED CLASSIFIERS AND REGISTRATION TECHNIQUES. THE COVERAGE OF DECIDUOUS AND NONDECIDUOUS FORESTS IS BEING STUDIED WITHIN THE BOTANY PROGRAMME. A NUMBER OF TECHNIQUES IS BEING EXPERIMENTED ON TO SOLVE THE SERIOUS DIFFICULTIES ENCOUNTERED DUE TO THE TERRAIN'S GEOGRAPHY. FINALLY, DIFFERENT ALGORITHMS ARE BEING EVALUATED TO INCREASE THE ACCURACY OF WATER AREA MENSURATION WITHIN AN EFFORT TO ESTABLISH A MEANS TO ASSESS WATER RESOURCES OF SPAIN'S CENTRAL REGION./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/52.0100/
ALGORITHMS/COMPUTERS/DATA ANALYSIS:Q1/FORESTS:T2/GEOGRAPHY/GEOLOGY/GROWTH/HYDROLOGY/MONITORING/REMOTE SENSING:T1,Q2,Q3/SATELLITES/SOILS:T3/SPAIN:T/URBAN AREAS/WATER RESOURCES/

RS78-1-312

78C0075721 EDB-78-14 51.010
CONF-7510172--P1/
REMOTE SENSING IN THE NETHERLANDS/
ECKHART,D./GEERDENS,P./
NIWARS,DELFT,NETHERLANDS/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
NL/
US/
ERA-03:018015/EDB-78:075721/
REMOTE SENSING ACTIVITIES ARE CONCERNED WITH PROBLEMS SUCH AS THE RADIATION BALANCE OF THE EARTH, MONITORING ON A GLOBAL SCALE OF OCEANS AND ATMOSPHERE, MAPPING RESOURCES SUCH AS BIOMASS AND SOILS, AND REGIONAL PROBLEMS DETERMINED BY CLIMATE, GEOLOGY, AND VEGETATION. RESEARCH PROGRAMS ARE DISCUSSED WITH REGARD TO THE FOLLOWING: INTERNATIONAL COOPERATION/ REMOTE SENSING HARDWARE SUPPORT / REMOTE SENSING EDUCATION /WATER QUALITY/AGRICULTURE/GEOLOGY/AND ACTIVITIES OF THE NETHERLANDS INTERDEPARTMENTAL WORKING COMMUNITY FOR THE APPLICATION OF RS TECHNIQUES.(HLW)/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/52.0100/
AIR /EARTH PLANET/GEOLOGY/INTERNATIONAL COOPERATION/MONITORING/NATIONAL ORGANIZATIONS/NETHERLANDS:T/REMOTE SENSING:T1/RESEARCH PROGRAMS:Q1/RESOURCES/SEAS/TOPOLOGICAL MAPPING/WATER QUALITY/

RS78-1-313

78C0070574 EDB-78-13 $1.010
CONF-7510172--P2/
CANADIAN MAPPING USE OF LANDSAT IMAGERY/
FLEMING,E.A./
TOPOGRAPHICAL SURVEY,OTTAWA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
CA/
US/
ERA-03:035582/EDB-78:070574/
LANDSAT IMAGERY HAS BEEN FOUND TO BE A USEFUL SOURCE OF MAP REVISION INFORMATION IN THE WILDERNESS AREAS.MAPS IN THESE AREAS REQUIRE REVISION WHEN NEW ROADS,RESERVOIRS OR HYDROELECTRIC TRANSMISSION LINES ARE BUILT.THE LOCATION AND EXTENT OF THESE FEATURES CAN BE DETERMINED WITH SUFFICIENT ACCURACY FOR INTERIM REVISION OF 1 :250,000 AND 1 :50,000 MAPS FROM THE LANDSAT IMAGERY. IN ADDITION THE IMAGERY HAS PROVED USEFUL FOR DETECTING SMALL ARCTIC ISLANDS.RELIEF SHADING AND PHOTOMAPPING AT A SMALL SCALE./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
$1.0100/
CANADA:T1/IMAGES/ROADS/SATELLITES/TOPOLOGICAL MAPPING:Q1/

RS78-1-314

78J0075656 EDB-78-14 $0.020
LEGAL ASPECTS OF REMOTE SENSING AND AIR ENFORCEMENT/
GRIGGS,M./LUDWIG,C.B./
SCIENCE APPLICATIONS,INC.,LA JOLLA,CA/
J.AIR POLLUT.CONTROL ASSOC./28/2/FEB 1978/
119-122/
US/
US/
JPCAA/
ERA-03:037975/EDB-78:075656/
THE LEGAL AND TECHNICAL ASPECTS INVOLVED IN THE APPLICATION OF REMOTE MONITORS IN AIR ENFORCEMENT PROGRAMS ARE DISCUSSED.IT IS FOUND THAT SOME OF THE INSTRUMENTS PRESENTLY UNDER DEVELOPMENT OR BEING FIELD TESTED ARE GOOD CANDIDATES AS ENFORCEMENT MONITORS WHILE OTHERS ARE NOT SUITED.THE ADVANTAGES AND DISADVANTAGES OF THE REMOTE SENSORS AS COMPARED TO THE IN-STACK MONITORS ARE DISCUSSED./
$0.0200/
AIR POLLUTION:T2/GASEOUS WASTES/LEGAL ASPECTS:Q1/MONITORING:Q2/PLUMES/POLLUTION REGULATIONS/REMOTE SENSING:T1/US EPA/

RS78-1-315

78C0075642 EDB-78-14 $0.020
CONF-7510172--P1/
SPACE REMOTE SENSING OF SMOKES/
GRIGOREV,A.A./LIPATOV,V.B./
UNIV.OF LENINGRAD/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
SU/
US/
ERA-03:037957/EDB-78:075642/
THE ANALYSIS OF SPACE IMAGERY SHOWS THAT DUE TO THE OBSERVATIONS FROM SPACE A DIVERSE INFORMATION ON NATURAL FIRES CAN BE OBTAINED. SPACE PHOTOGRAPHS CAN BE USED FOR THE DETECTION OF SMOKE CLOUDS AND A SMOKE HAZE,FOR OBTAINING THE DATA ON THEIR SIZES AND DISTRIBUTION/FOR THE ESTIMATION OF THE THICKNESS OF SMOKE POLLUTION/FOR OBTAINING THE INFORMATION ON THE MACRO AND MESO SCALE CIRCULATION OF AIR STREAMS/FOR THE DETECTION OF THE DYNAMICS OF SMOKE POLLUTION/FOR STUDYING THE INFLUENCE OF THE UNDERLYING SURFACE ON THE DEVELOPMENT OF FIRES/FOR THE DETECTION OF THE SITES OF THE ORIGIN OF FIRES/FOR THE LOCALIZATION OF THE REGIONS (ZONES)OF THE OCCURRENCE OF FIRES/FOR THE ESTIMATION OF THE REGIONAL AND GLOBAL POLLUTION OF THE ATMOSPHERE BY SMOKES. THE MAIN DIRECTION OF THE INVESTIGATION IS THE ESTIMATION OF THE INFORMATION CONTENT OF SPACE IMAGERY (THE DETERMINATION OF THE NECESSARY SPECTRAL AND SPATIAL RESOLUTION,OF THE FREQUENCY OF THE SURVEY, ETC. WITH THE PURPOSE OF ITS OPTIMAL USAGE FOR A STUDY OF FIRES AS THE SOURCES OF ATMOSPHERIC POLLUTION AND THE CHANGE IN THE FACE AND STRUCTURE OF THE LANDSCAPE./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
$0.0200/
AIR POLLUTION:T3/CLOUDS/DATA COMPILATION:Q3/ENVIRONMENTAL EFFECTS/FIRES:T1/PHOTOGRAPHY/REMOTE SENSING:Q1,Q2/SMOKES:T2/SPACE/

RS78-1-316

78R0013844 EDB-78-02 50.020
(NTIS / PS--77 / 0074) REMOTE SENSING APPLIED TO ENVIRONMENTAL POLLUTION DETECTION AND MANAGEMENT (A BIBLIOGRAPHY WITH ABSTRACTS).REPORT FOR 1964--JULY 1977/
HUNDEMANN,A.S./
NATIONAL TECHNICAL INFORMATION SERVICE,SPRINGFIELD,VA.(USA)/
AUG 1977/NTIS PC N01/MF N01./
APPLICATION OF REMOTE SENSING METHODS TO AIR, WATER, AND NOISE POLLUTION PROBLEMS IS DISCUSSED.TOPIC AREAS COVER CHARACTERISTICS OF DISPERSION AND DIFFUSION BY WHICH POLLUTANTS ARE TRANSPORTED,EUTROPHICATION OF LAKES,THERMAL DISCHARGES FROM ELECTRIC POWER PLANTS,OUTFALLS FROM INDUSTRIAL PLANTS,ATMOSPHERIC AEROSOLS UNDER VARIOUS METEOROLOGICAL CONDITIONS, MONITORING OF OIL SPILLS,AND APPLICATION OF REMOTE SENSING TO ESTUARIAN PROBLEMS.(THIS UPDATED BIBLIOGRAPHY CONTAINS 133 ABSTRACTS,ALL OF WHICH ARE NEW ENTRIES TO THE PREVIOUS EDITION.)/

RS78-1-317

78C0075718 EDB-78-14 51.010
CONF-7510172--P1/
FINLAND'S APPROACH TO REMOTE SENSING ORIENTED EARTH RESOURCES SURVEYS/
JAAKKOLA,S./KILPELA,E./
TECHNICAL RESEARCH CENTER OF FINLAND,ESPOO/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
FI/
US/
ERA-03:038012/EDB-78:075718/
IN THE BEGINNING OF 1974,A THREE-YEAR EARTH RESOURCES REMOTE SENSING PROJECT WAS INITIATED AT THE LABORATORY OF LAND USE, TECHNICAL RESEARCH CENTER OF FINLAND. THE ULTIMATE OBJECTIVE OF THE PROJECT IS TO DEVELOP AUTOMATED ENVIRONMENT MONITORING AND RESOURCE INVENTORY METHODS CAPABLE TO MEET FINNISH NEEDS AND CONDITIONS.ON THE BASIS OF VARIOUS PROMISING PRELIMINARY RESULTS OBTAINED BY MODERN REMOTE SENSING TECHNIQUES,ESPECIALLY IN THE USA,IT SEEMS JUSTIFIED AND NECESSARY TO PERFORM CLOSER ANALYSES ON THE PRACTICAL USES OF THOSE TECHNIQUES.THIS REQUIREMENT RISES, IN FINLAND,PARTICULARLY FROM THE FIELDS OF FORESTRY,GEOLOGY AND HYDROLOGY.THESE ARE THE THREE BRANCHES INVOLVED IN LABORATORY'S MULTIDISCIPLINARY R AND D-EFFORT.THE PROJECT IS FINANCIALLY SUPPORTED BY VARIOUS STATE AND PRIVATE ORGANIZATIONS ENGAGED IN ABOVE FIELDS.IN ADDITION TO DIGITAL SATELLITE DATA,THE PROJECT ALSO OPERATES WITH DIGITAL AIRCRAFT SCANNER DATA.THE APPROACH TO DATA PROCESSING IS LARGELY SOFTWARE-ORIENTED./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/
AIRCRAFT / AUTOMATION / DATA PROCESSING / EARTH PLANET/FINLAND:T/FORESTRY/GEOLOGY/GLOBAL ASPECTS/HYDROLOGY/LAND USE/ MONITORING/REMOTE SENSING:Q2/RESOURCES:T2/SATELLITES/

RS78-1-318

78C0068472 EDB-78-13 29.040
(CONF-7510172--P2)POSSIBLE AREAS OF APPLICATION OF REMOTE SENSING TECHNOLOGY IN SIERRA LEONE:SOME PRELIMINARY WORK AND IMMEDIATE APPLICATION/
KAMARA,C.S.(NJALA UNIVERSITY COLL.,SIERRA LEONE)/GABISI,A.H./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
SL/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
29.0400/
IMAGES/REMOTE SENSING:T1/SATELLITES/SIERRA LEONE:T/TECHNOLOGY ASSESSMENT:Q1/TOPOLOGICAL MAPPING/USES/

RS78-1-319

78C00761/1 EDB-78-14 58.020
CONF-7510172--P1/
RESEARCH ACTIVITIES IN REMOTE SENSING STUDY GROUP/
MATSUBU,K.(GEOLOGICAL SURVEY OF JAPAN,KAWASAKI)/NAKAMURA,Y./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
JP/
US/
ERA-03:028312/EDB-78:076171/
MAN LIVES NOT ONLY IN HIS NATURAL ENVIRONMENT BUT ALSO IN ONE OF HIS OWN MAKING.IT IS MOST IMPORTANT FOR HIM TO FIND THE CONDITIONS UNDER WHICH HIS TWO ENVIRONMENTS HARMONIZE.THESE CONDITIONS MUST BE CONSIDERED ON THE LOCAL,REGIONAL AND GLOBAL SCALE. OUR APPROACH TO THE APPLICATION OF ERTS DATA HAS THEREFORE BEEN IN THE FOLLOWING FASHION:RECOGNITION OF OBJECTS AND THEIR PHYSICAL CONDITIONS / RECOGNITION OF THE SPATIAL DISTRIBUTION OF THE RECOGNIZED OBJECTS AND THEIR PHYSICAL CONDITIONS / RECOGNITION OF TIME CHANGES IN THE OBJECTS,THEIR PHYSICAL CONDITIONS AND THEIR DISTRIBUTION/ FORECASTING / AND COUNTERMEASURES. THE ENVIRONMENTAL DESTRUCTION WITH WHICH THE WORLD IS NOW CONCERNED IS THE RESULT OF HUMAN ACTIVITIES WHICH EXCEED NATURE'S CARRYING CAPACITY./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
58.0200/
DATA ANALYSIS/DISTRIBUTION/ENVIRONMENT/FORECASTING/JAPAN/MONITORING/POLLUTION/REMOTE SENSING:T2/RESEARCH PROGRAMS:Q2/

RS78-1-320

78C00715/1 EDB-78-13 51.010
CONF-7510172--P2/
APPLICATIONS OF REMOTE SENSING FOR CORPS OF ENGINEERS PROGRAMS IN NEW ENGLAND/
ACKIN,H.L.(ARMY COLD REGIONS RESEARCH AND ENGINEERING LAB.,HANOVER,NH)/MERRY,C.J./COOPER,S./ANDERSON,D.M./GATTO,L.W./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:035581/EDB-78:070573/
THE UTILITY OF SATELLITE,HIGH ALTITUDE AND LOW ALTITUDE AERIAL IMAGERY IS PRESENTLY BEING CRITICALLY EVALUTED BY THE CORPS OF ENGINEERS. WHEN THE APPLICATION HAS BEEN DEMONSTRATED AND IS COST EFFECTIVE,IT IS USED TO UPDATE OR AUGMENT CONVENTIONAL METHODS AND PROCEDURES.OUR MOST SIGNIFICANT CONTRIBUTION TO DATE HAS BEEN TO INCREASE CONFIDENCE LIMITS BY MORE ACCURATELY ESTIMATING PARAMETERS USED IN MODELS.WITHIN THE LAST THREE YEARS SEVERAL NEW COOPERATIVE REMOTE SENSING PROGRAMS ADDRESSING ENVIRONMENTAL AND HYDROLOGIC PROBLEMS HAVE BEEN IMPLEMENTED BY THE COLD REGIONS RESEARCH AND ENGINEERING LABORATORY (CRREL) AND THE NEW ENGLAND DIVISION (NED)OF THE CORPS OF ENGINEERS.THESE EFFORTS HAVE ENABLED STATE-OF-THE-ART REMOTE SENSING TECHNIQUES AND NEWLY DEVELOPED SATELLITE TECHNOLOGY TO BE EVALUATED BY FIELD PERSONNEL. THE INITIAL OBJECTIVE OF THESE PROGRAMS WAS TO DETERMINE THE AVAILABILITY,TYPE,SCALE,AND RESOLUTION REQUIRED.THE SECOND OBJECTIVE WAS TO SHOW HOW REMOTE SENSING METHODS CAN BE UTILIZED TO AUGMENT OR UPDATE CONVENTIONAL PROCEDURES.IMAGERY FROM THE LANDSAT MISSION PROVIDED VALUABLE INFORMATION FOR SITE EVALUATION,DEFINITION OF GEOLOGIC LINEATIONS,AND MONITORING SNOW AND ICE ACCUMULATION AND ABLATION. THIS INFORMATION CAN HAVE IMPACT ON THE ESTABLISHMENT OF DESIGN CRITERIA FOR NEW CORPS FACILITIES OR ON FLOOD FORECASTING PROCEDURES./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/29.0300/
GEOLOGY / HYDROLOGY / ICE: T3 / IMAGES /LAND USE:T2/MONITORING:Q3,Q4/PHOTOGRAPHY/REMOTE SENSING:Q2/SATELLITES/SNOW:T4/ TOPOLOGICAL MAPPING/USES/

RS78-1-321

78C00705/1 EDB-78-13 51.010
(CONF-7510172--P2)LOOK AT ALASKAN RESOURCES WITH LANDSAT DATA/
MILLER,J.M./BEON,A.E./GEDNEY,L.D./SHAPIRO,L.H./
UNIV.OF ALASKA,FAIRBANKS/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/52.0100/29.0300/
ALASKA: T3 / COASTAL REGIONS: T2 /DATA COMPILATION/ECOSYSTEMS/MANAGEMENT/PLUMES/REMOTE SENSING:Q1,Q3/RESOURCES:T1,Q3/ SATELLITES/SEDIMENTS/TOPOLOGICAL MAPPING:Q2/

RS78-1-322

78J0075099 EDB-78-14 50.020
MONITORING OF ENVIRONMENT/
MITSUDERA,M./
KANKYO SOZO/4/9/SEP 1974/
68-74/
JAPANESE/
JP/
JP/
ZZZZZ/
EDB-78:075099/
THE AMOUNT OF POLLUTANTS DISCHARGED HAS NOW EXCEEDED THE ENVIRONMENT'S NATURAL ABILITY TO PURIFY ITSELF. THE EFFECT OF URBANIZATION IS TRACED ESPECIALLY THE DEGENERATION OF PLANTS AND ANIMALS IN TOKYO. ONE OF THE METHODS OF MONITORING PLANTS IS REMOTE SENSING WITH MULTI-BAND PHOTOGRAPHY AND MULTI-SPECTROSCANNING. THERE IS A CORRELATION BETWEEN THE SULFUR CONTENT OF TREE LEAVES AND MULTI-BAND PHOTOGRAMS ON RED PINE TREES WITH A CORRELATION COEFFICIENT OF -0.862./
50.0200/
AIR POLLUTION / ANIMALS /ENVIRONMENT/JAPAN:T1/LAND POLLUTION/MONITORING/PHOTOGRAPHY/PLANTS/POLLUTION:Q1/SULFUR/TREES/URBAN AREAS/WATER POLLUTION/

RS78-1-323

78J0065349 EDB-78-12 50.020
ENERGY RESOURCE DEVELOPMENT: THE MONITORING COMPONENTS/
MORGAN,G.B./
EPA ENVIRONMENTAL MONITORING AND SUPPORT LAB.,LAS VEGAS,NV/
ENVIRON.SCI.TECHNOL./12/1/JAN 1978/24-43/
US/
US/
(ESTHA)
50.0200/52.0200/01.0900/50.0300/20.0200/
AERIAL MONITORING / AEROSOL MONITORING / AIR POLLUTION: T1 /AIR QUALITY/AIRCRAFT/COAL/COAL GASIFICATION/COMBUSTION/ENVIRONMENTAL EFFECTS /ENVIRONMENTAL TRANSPORT/FORECASTING/FOSSIL-FUEL POWER PLANTS/HYDROCARBONS/MEASURING INSTRUMENTS/MONITORING: Q1, Q2 / NITROGEN OXIDES /NUCLEAR POWER PLANTS/OIL SHALES/PERSONNEL MONITORING/PLANTS/REMOTE SENSING/SULFUR OXIDES/TENNESSEE VALLEY AUTHORITY/US DOE/US EPA/WATER POLLUTION:T2/WATER QUALITY/

RS78-1-324

78C0105277 EDB-78-19 58.020
CONF-770478--P2/
SATELLITE-TO-GROUND TRANSMISSIONS FOR AMATEURS AND PROFESSIONALS/
POPHAM,R.W./
NATIONAL ENVIRONMENTAL SATELLITE SERVICE,WASHINGTON,DC/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-04:051322/EDB-78:105277/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0202/
DATA ANALYSIS / GEOPHYSICAL SURVEYS /IMAGE PROCESSING/IMAGES/REMOTE SENSING:T1/SATELLITES/TECHNOLOGY UTILIZATION:Q1/TERMINAL FACILITIES/

RS78-1-325

78C0070481 EDB-78-13 50.020
(CONF-7510172--P2)DETERMINATION OF HAZE LEVELS FROM LANDSAT DATA/
POTTER,J.F./ENDLOWITZ,M.A./
LOCKHEED ELECTRONICS CO.,INC.,HOUSTON,TX/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
50.0200/50.0100/
AIR POLLUTION:T1/DATA ACQUISITION/EQUATIONS/MEASURING METHODS:C1/REMOTE SENSING/SATELLITES/

RS78-1-326

78C0075641 EDB-78-14 50.020
CONF-7510172--P1/
SATELLITE GLOBAL MONITORING OF ENVIRONMENTAL QUALITY/
SCHIFFER,R.A./
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,WASHINGTON,DC/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:037956/EDB-78:075641/
BY ITS VERY NATURE, THE EARTH-ORBITING SATELLITE PROVIDES A UNIQUE CAPABILITY FOR RAPID REPETITIVE QUASI-SYNOPTIC MEASUREMENTS OF THE GLOBAL ENVIRONMENT AND WILL, ACCORDINGLY, PLAY THE MAJOR ROLE IN ANY FUTURE OPERATIONAL GLOBAL ENVIRONMENTAL MONITORING SYSTEM.NIMBUS G,THE AIR POLLUTION AND OCEANOGRAPHIC OBSERVING SATELLITE,SCHEDULED FOR LAUNCH IN 1978, IS NASA'S FIRST R AND D SATELLITE DEDICATED TO ENVIRONMENTAL QUALITY MEASUREMENTS;ATMOSPHERIC EXPERIMENTS ON NIMBUS-G WILL DETERMINE THE FEASIBILITY OF SPACE-BORNE DETECTION AND MAPPING OF IMPORTANT MINOR STRATOSPHERIC CONSTITUENTS, AND WILL PROVIDE A MEASUREMENT OF THE EARTH'S RADIATION BUDGET.OCEANOGRAPHIC EXPERIMENTS ON NIMBUS-G WILL FOCUS ON MONITORING OCEAN COLOR IN COASTAL ZONES AND WILL PROVIDE THE FIRST ALL-WEATHER CAPABILITY FOR MEASUREMENT OF SEA SURFACE TEMPERATURE. A PARAMETER OF GREAT IMPORTANCE IN STUDIES OF THE EARTH'S CLIMATE.A SECOND SATELLITE MISSION PLANNED FOR THE SAME GENERAL TIME FRAME IS SAGE,THE STRATOSPHERIC AEROSOL AND GAS EXPERIMENT.THIS SATELLITE WILL PROVIDE DATA ON STRATOSPHERIC AEROSOL DISTRIBUTIONS AND CONCENTRATIONS AT LATITUDES BEYOND THOSE ACCESSIBLE TO THE SOLAR OCCULTATION AEROSOL SENSOR ON NIMBUS-G.NASA PLANS FOR FUTURE ENVIRONMENTAL SATELLITES WILL EXPLOIT THE SPACE SHUTTLE WHICH WILL BE AVAILABLE IN THE EARLY 1980'S,BOTH AS A LAUNCH VEHICLE FOR FREE-FLYER SATELLITES (E.G.,EMS)AND IN THE SORTIE MODE (E.G.,SPACELAB).ADVANCED REMOTE SENSORS ARE NOW UNDER DEVELOPMENT BY NASA FOR APPLICATION TO BOTH OF THESE MISSION CLASSES./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
50.0200/58.0203/
AEROSOLS / AIR POLLUTION / DATA COMPILATION /EARTH PLANET/ECOLOGICAL CONCENTRATION/ENVIRONMENT:T1/MEASURING METHODS/MONITORING/NASA/OCEANOGRAPHY/REMOTE SENSING:Q1/SATELLITES/SEAS/STRATOSPHERE/TOPOLOGICAL MAPPING/

RS78-1-327

78X0075704 EDB-78-14 50.030
KFK--2435/
INVESTIGATIONS ON /SUP 129/I RADIOECOLOGY/
SCHUETTELKOPF,H.(KERNFORSCHUNGSZENTRUM KARLSRUHE (GERMANY,F.R.).ABT.STRAHLENSCHUTZ UND SICHERHEIT)/
APR 1977/
GERMAN/
SECOND SEMIANNUAL REPORT 1976/
DE/
DE/
AIX-09:357546/NIS-78:061451/EDB-78:075704/
IN THE SECOND HALF OF 1976 /SUP 129/I WAS DETERMINED IN PROCESS SOLUTIONS,VARIOUS WASTE WATERS,COW'S MILK,THYROID AND SOIL SAMPLES.AN ANALYTICAL METHOD WAS DEVELOPED FOR THE ASSAY OF /SUP 127/I IN AIR.FIRST,ANALYSES WERE PERFORMED OF THE AIR IN THE ENVIRONMENT OF THE KARLSRUHE NUCLEAR RESEARCH CENTER.THE /SUP 129/I CONCENTRATION IN WASTE WATERS AND MILK HAVE FURTHER DECREASED AND FOR COW'S MILK THEY ATTAINED THE DETECTION LIMIT OF SEVERAL 10/SUP -3/PCI OF /SUP 129/I/L OF MILK. THE /SUP 129/I CONCENTRATIONS IN SOIL SAMPLES SO FAR EVALUATED HAVE SCATTERED WITHIN ONE ORDER OF MAGNITUDE OF FCI / SUP 129 / I / G OF SOIL.THE RESULTS OF MEASUREMENTS ON STABLE IODINE OF THE ENVIRONMENTAL AIR SHOW THAT THE ELEMENTAL IODINE AND AEROSOL IODINE AMOUNT TO 1-10 NG /SUP 127/I/M/SUP 3/OF AIR./
50.0300/51.0300/56.0172/
AERIAL MONITORING:Q1,Q5/EARTH ATMOSPHERE:T2/FOOD CHAINS:T3/IODINE 127:T1/IODINE 129:T5/MILK:T4/RADIOACTIVE AEROSOLS/RADIOECOLOGICAL CONCENTRATION:Q1/RADIOECOLOGY:Q2,Q3,Q4,Q6/RADIONUCLIDE MIGRATION/SOILS:T6/

RS78-1-328

78J0104503 FDB-78-19 50.020
STATISTICAL INTERPRETATION OF POLLUTION DATA FROM SATELLITES/
SMITH,G.L./GREEN,R.N./YOUNG,G.R./
NASA LANGLEY RES CENT,HAMPTON,VA/
J.SPACECR.ROCKETS/12/6/JUN 1975/
374-380/
US/
US/
JSCRA/
FDB-78:104503/
THE NIMBUS-G ENVIRONMENTAL MONITORING SATELLITE HAS AN INSTRUMENT (A GAS CORRELATION SPECTROMETER)ON-BOARD FOR MEASURING THE MASS OF A GIVEN POLLUTANT WITHIN A GAS VOLUME.THE PAPER TREATS THE PROBLEM OF HOW THIS TYPE OF MEASUREMENT CAN BE USED TO ESTIMATE THE DISTRIBUTION OF POLLUTANT LEVELS IN A METROPOLITAN AREA.ESTIMATION METHODS ARE USED TO DEVELOP THIS DISTRIBUTION. THE POLLUTION CONCENTRATION CAUSED BY A POINT SOURCE IS MODELED AS A GAUSSIAN PLUME.THE UNCERTAINTY IN THE MEASUREMENTS IS USED TO DETERMINE THE ACCURACY OF ESTIMATING THE SOURCE STRENGTH,THE WIND VELOCITY, DIFFUSION COEFFICIENTS,AND SOURCE LOCATION./
50.0200/
AERIAL MONITORING: Q1 / AIR POLLUTION: T1/AIR POLLUTION MONITORS:Q2/DATA ACQUISITION:T5,Q4/DIFFUSION/POINT POLLUTANT SOURCES:T4,Q3/REMOTE SENSING:Q5/SATELLITES:T2/URBAN AREAS:T3/WIND/

RS78-1-329

78C0033752 EDB-78-06 50.010
REMOTE SENSING AS A TOOL IN ASSESSING THE IMPACT OF TOPOGRAPHICAL ALTERATIONS ON THE MICROCLIMATE/
SUTHERLAND,R.A./BARTHOLIC,J.F./
UNIV.OF FLORIDA,GAINESVILLE/
WESTERN PERIODICAL CO./NORTH HOLLYWOOD,CA/1977/
PROCEEDINGS OF THE THIRD ANNUAL UMR-MEC CONFERENCE ON ENERGY:ENERGY CRISIS,AN EVALUATION OF OUR RESOURCE POTENTIAL/
MORGAN,J.C.(ED.)/
US/
US/
3.ANNUAL CONFERENCE ON ENERGY/
ROLLA,MO,USA/
13 OCT 1976/
50.0100/
AERIAL MONITORING: Q3 / AGRICULTURE/CLIMATES:T5/CROPS:T4/DAILY VARIATIONS:Q5/EARTH CRUST:T2/ENVIRONMENTAL EFFECTS:Q3/INFRARED SPECTRA/INJURIES/LAKES/METEOROLOGY/REGIONAL ANALYSIS:Q3/REMOTE SENSING/SURFACE WATERS:T1/TEMPERATURE EFFECTS:Q4/TEMPERATURE GRADIENTS:T3,Q1,Q2/TOPOGRAPHY/VARIATIONS/

RS78-1-330

78C0105275 EDB-78-19 50.020
CONF-770478--P2/
SOYUZ-22 MISSION:PART OF A COMPLEX INVESTIGATION OF EARTH RESOURCES IN USSR AND GDR/
SIMAN,J.L./BISCHOFF,K./
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
SU/
US/
ERA-03:051320/EDB-78:105275/
NONF/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/
AERIAL SURVEYING/EARTH CRUST/GEOLOGICAL SURVEYS/GERMAN FEDERAL REPUBLIC:T1/REMOTE SENSING:T/RESOURCE ASSESSMENT:Q1,Q2/USSR:T2/

RS78-1-331

78C0081014 EDB-78-15 50.020
LA-UR--78-689/
COMPUTER SIMULATION OF THE VISUAL EFFECTS OF SMOKE PLUMES/
WILLIAMS,M.D./WOCKSUNG,M.J./LEONARD,F.M./
LOS ALAMOS SCIENTIFIC LAB.,N.MEX.(USA)/
CONTRACT W-7405-ENG-36/
1978/
CONF-780324--2/
DEP.NTIS,PC A02/MF A01./
3 820 000/
US/
US/
FRA-03:041438/NTS-78:062158/EDB-78:081014/
WITH RECENT CHANGES PROVIDED BY THE CLEAN AIR ACT AMENDMENT OF 1977,THE EFFECT OF INDUSTRIAL SMOKE PLUMES ON SCENIC LANDSCAPES ASSUMES HEIGHTENED IMPORTANCE.THE IMPACT OF LARGE COAL-FIRED POWER PLANTS IS MOST EASILY UNDERSTOOD THROUGH THE USE OF BEFORE-AND-AFTER PHOTOGRAPHS.A TECHNIQUE HAS BEEN DEVELOPED TO MODIFY A CLEAN BEFORE SCENE AS DICTATED BY SOLUTIONS TO THE RADIATION TRANSFER PROBLEM IN A POLLUTED ATMOSPHERE.THIS ALLOWS ONE TO PRODUCE SIMULATED AFTER SCENES, WHICH CAN ILLUSTRATE THE VISUAL EFFECTS OF POLLUTANTS EMITTED UNDER A VARIETY OF CIRCUMSTANCES.APPLICATION OF THIS TECHNIQUE TO VERY LARGE COAL-FIRED POWER PLANTS SUGGESTS THAT SUCH FACILITIES MAY IMPAIR SCENIC VISTAS UNDER SOME CIRCUMSTANCES,UNLESS STRICTER POLLUTION CONTROLS AND STANDARDS ARE ENFORCED./
PORTIONS OF DOCUMENT ARE ILLEGIBLE/
SPIE '78 SEMINARS/
WASHINGTON,DC,USA/
28 MAR 1978/
FOSSIL ENERGY/
P/
50.0200/01,0900/
AIR POLLUTION / COMPUTER GRAPHICS / ENVIRONMENTAL EFFECTS:Q3/ENVIRONMENTAL TRANSPORT:Q2/FOSSIL-FUEL POWER PLANTS:T1/PHOTOGRAPHY/PLUMES:T3/SIMULATION/SMOKES:T2.01/VISION/

RS78-1-332

A78-40156 Some applications of remote sensing technology for international funding agencies. P-M Adrien (Inter-American Development Bank, Washington, D C). In Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78 40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc , 1977, p. 3-8 24 refs.

The paper discusses remote sensing technology with reference to international funding agencies. It is noted that funds from the Inter-American Development Bank have been used for a variety of projects in Latin America including agriculture, industry, transportation, and housing studies. The project cycle in each case consists of preparation, analysis, implementation, and appraisal phases. Remote sensing techniques have been used for the identification of resources, vegetative cover, crops, and land-use projects. Studies in the digital analysis of remotely sensed data have also been reported Future work will concentrate on the further application of the Landsat program. S.C.S

RS78-1-333

A78-43640 The remote sensing experiments of the first Spacelab mission (Die Fernerkundungs-Experimente der ersten Spacelab-Mission). J. Albertz (Darmstadt, Technische Hochschule, Darmstadt, West Germany). *Bildmessung und Luftbildwesen,* vol. 46, July 1, 1978, p. 147-151. In German.

It is intended to employ two remote sensing systems built in West Germany during the first Spacelab mission The systems include a photogrammetric camera and a microwave remote sensing instrument. The microwave instrument can be used as a two-frequency scatterometer for sea-state measurements, as a radiometer providing brightness temperatures, or as an imaging synthetic aperture radar system. The basis for the Spacelab program is an agreement between NASA and the European Space Agency. The remote sensing experiments of the first Spacelab mission can be considered as preliminary stages concerning the development of a European satellite for remote-sensing applications. The sensors employed during the first Spacelab mission are subsequently to be modified for additional experiments which are to be conducted during a later Spacelab mission. G.R.

RS78-1-334

A78-47265 Aggregation of a public service satellite market. L. A. Bransford (Public Service Satellite Consortium, Denver, Colo). *Satellite Communications,* vol. 2, Aug. 1978, p. 39-42 -

The Public Service Satellite Consortium (PSSC) comprises 90 non-profit public agencies in fields ranging from education and health, to libraries and public broadcasting. The main role of PSSC, as described in this paper, is to integrate services provided by satellite into a cohesive framework within the parameters dictated by both the demand for the services and government regulation. The ATS-6 program, which provided health and educational services to Alaska and the Rocky Mountain states is discussed by way of illustration. Attention is given to the aggregation of services which is intended to provide a maximum use of satellite facilities and earth software, at a cost spread over the widest possible base. D.M W.

RS78-1-335

A78-43303 Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. Symposium sponsored by the Canadian Remote Sensing Society, Department of Fisheries and the Environment Canada, Canada Centre for Remote Sensing, l'Association Quebécoise de Télédétection, and Canadian Institute of Surveying. Ottawa, Canadian Aeronautics and Space Institute, 1977. 626 p. In English and French. $40. (For individual items see A78-43304 to A78-43356)

Primary applications of remote sensing technology are discussed, including agronomy, agriculture, and cartography. Attention is given to the machine-assisted classification of remote sensing data with reference to biophysical mapping and forest-land classification Applications of satellite imagery to hydrology are outlined along with techniques for thermal infrared imagery (noting ground surfaces covered with vegetation, sea and ice mapping, and building heat-loss). Various world-wide Landsat applications are discussed and processes for the interpretation of microwave data are outlined. Multispectral studies utilizing remote sensing data are described including the geological reconnaissance of dam sites, the measurement of the vertical distribution of phytoplankton in sea-water, and the remote sensing of chlorophyll. Procedures for making geometric and radiometric adjustments are presented. S C.S.

RS78-1-336

A78-41468 Nighttime images of the earth from space. T. A. Croft (SRI International, Menlo Park, Calif.). *Scientific American,* vol. 239, July 1978, p. 86-96, 98.

Nighttime images of the earth from space can be supplied by the Air Force meteorological satellite and the three Landsat spacecraft launched by NASA in 1972, 1975, and 1978. The Air Force satellite is well suited for conducting a wide-ranging survey of the entire earth, whereas the Landsat system can provide high-resolution color pictures of specific areas selected from the survey. The nighttime satellite images show bright gas flares in many parts of the world, but by far the greatest concentration of them is in the vicinity of the Persian Gulf. The burning of waste gas in oil fields is responsible for the observed flares. Pictures made at local midnight on February 6, 1974 are presented. They show a moonlit panorama of an expanse of earth stretching from northwestern Africa to southeastern Asia. Attention is given to city lights of the countries bordering the English Channel and the North Sea, bright lights in the Sea of Japan which coincide with the known position of the Japanese squid-fishing fleet at this time, and agricultural and natural fires. G.R.

RS78-1-337

A78-43327 # The activities of the Groupement pour le Développement de la Télédétection Aérospatiale /GDTA/ (Activités du Groupement pour le Développement de la Télédétection Aérospatiale /G.D.T.A /). H Guichard, M. Guy, L. Laidet, and Y Vuillaume (Groupement pour le Développement de la Telédétection Aérospatiale, Toulouse, France) In Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 245-253 In French.

The article surveys French remote sensing projects. Devices including visible and infrared cameras and multispectral scanners, thermal infrared scanners, and microwave multifrequency radar are described. Methods for data processing and interpretation are presented noting multipath numbering techniques, interactive digital viewing systems, and digital-data printing systems. Target projects are discussed with reference to resource and water monitoring, vegetation and forestland mapping, and pollution studies Projects incorporating side-looking airborne radar, thermal detectors, and Landsat data are reviewed. S.C.S.

RS78-1-338

A78-43619 # Application of space-borne photography to mapping and investigation of earth resources (Ob ispol'zovanii materialov kosmicheskikh s'emok pri kartografirovanii i izuchenii prirodnykh resursov). Iu. P. Kienko, L. I. Zlobin, V. I. Bumblis, Iu. G. Kel'ner, V. V. Kiselev, V. V. Kozlov, and M. E. Solomatin. *Geodeziia i Kartografiia*, Apr. 1978, p. 20-29. In Russian.

In the present paper, potential uses of remote sensing are examined, with particular reference to the study of earth resources and the preparation of respective maps. The principles and possibilities of satellite photography are discussed, along with photogrammetric processing and digitizing. V.P.

RS78-1-339

A78-44747 = Remote systems for the measurement and control of ionizing radiation (Telesistemy dlia izmereniia i kontrolia ioniziruiushchikh izluchenii). A. N. Klimov and V. A. Orekhov. Moscow, Izdatel'stvo Atomizdat, 1978. 192 p. 134 refs. In Russian.

This book deals with the design and development of remote systems for the detection of ionizing radiation. Principles of ionizing-radiation detection are reviewed together with basic concepts in information theory. Methods for optimizing measurements in remote systems for ionizing-radiation detection are outlined, structural elements of ionizing-radiation detectors are described, and specific schemes for the measurement circuits of multichannel remote detectors are provided. Attention is also given to control of detector efficiency by means of a central control panel, input circuits for a central control panel, and transmission of digital data between multichannel monitors. F.G.M.

RS78-1-340

A78-47108 Legal problems of remote sensing. T. Kosuge (University of Electro-Communications, Chofu, Tokyo, Japan). In: International Symposium on Space Technology and Science, 12th, Tokyo, Japan, May 16-20, 1977, Proceedings. (A78-47001 21-12) Chofu, Tokyo, National Aerospace Laboratory, 1977, p. 781-784.

The paper reviews the work of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space in the field of remote sensing. Attention is given to such problems as freedom of exploration and national sovereignty, and the manner in which remote sensing programs should be conducted and how their benefits

RS78-1-341

A78-43307 ≠ Biophysical mapping in northwestern Ontario from aircraft and satellite remote sensing data. N. J. Kozlovic and P. J. Howarth (McMaster University, Hamilton, Ontario, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 27-36. 16 refs. Research supported by the National Research Council of Canada and McMaster University.

Aircraft and satellite remote sensing data have been used for biophysical mapping in northwestern Ontario. Data were collected from field studies, aerial photography, and the Landsat multispectral scanner. The Landsat data were analyzed visually, by digital means, and using a signature-file extension. S.C.S.

RS78-1-342

A78-43337 = Utilization of Landsat data for ecological studies of the arid zones of Tunisia /the Arzotu experiment/ (Expérimentation sur l'utilisation des données Landsat pour l'étude ecologique des zones arides de Tunisie /expérience Arzotu/). G. Long, B. Lacaze, G. Deblissche, E. Le Floc'h (CNRS, Centre d'Etudes Phytosociologiques et Ecologiques, Montpellier, France), M. Sta-M'Rad (Institut National de la Recherche Agronomique de Tunisie, Ariana, Tunisia), R. Pontanier, and A. Le Cocq (Office de la Recherche Scientifique et Technique d'Outre-Mer, Paris, France). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 365-375. In French.

Landsat data collected during 1975-1976 have been used in ecological studies conducted in southern Tunisia. Information has been gathered on major surface features, vegetation, and surface soil characteristics. Color-treated imagery has been used to create a zoning system based on homogeneous ecological parameters. S.C.S.

RS78-1-343

A78-45887 ≠ The Earthnet Programme. L. Marelli (ESA, Directorate of Planning and Future Programmes, Paris, France). *ESA Bulletin*, no. 13, May 1978, p. 41-46.

The objectives, structure, interfaces, planning, and prospects of the Earthnet Program for the acquisition, preprocessing, archiving, and distribution of remote-sensing satellite data are described. The Earthnet Program, organized February 1977, is a first step towards the establishing of a European remote-sensing program. The achievements of the Earthnet Program are considered, dates for the start of operations of participating Landsat stations are listed, and the number of Landsat orbits performed and images obtained are reported. M.L.

RS78-1-344

A78-44235 The use of Landsat imagery in a land system classification of Jordan. C. W. Mitchell (Reading, University, Reading, Berks., England). *British Interplanetary Society, Journal (Remote Sensing)*, vol. 31, Aug. 1978, p. 283-292. 39 refs.

The natural environment of the Hashemite Kingdom of Jordan is discussed in terms of remote sensing observations. Landsat data was used for most of the imaging, whereby information was compiled on a scale of 1:250,000, and published on a scale of 1:1,000,000. Landsat pictures, i.e., color composites, were classified into a system of discrete boundaries with the aid of a Zeiss Jena Interpretoscope. The data (encompassing geology, hydrology, soils, vegetation, and conservation) were checked by on-site ground observations. Attention is given to the morphology and location of the various geological regions, e.g., desert sandstone, upland limestone, lava flows, etc. D.M.W.

RS78-1-345

A78-46339 * Legal issues inherent in Space Shuttle operations. G. J. Mossinghoff and G. P. Slouo (NASA, Washington, D.C.) *Journal of Space Law*, vol. 6, Spring 1978, p. 47-76. 85 refs.

The National Aeronautics and Space Act of 1958 (NASAct) is discussed with reference to its relevance to the operation of the Space Shuttle. The law is interpreted as giving NASA authority to regulate specific Shuttle missions, as well as authority to decide how much space aboard the Shuttle gets rented to whom. The Shuttle will not, however, be considered a 'common carrier' either in terms of NASAct or FAA regulations, because it will not be held available to the public-at-large, as are the flag carriers of various national airlines, e.g., Lufthansa, Air France, Aeroflot, etc. It is noted that the Launch Policy of 1972, which ensures satellite launch assistance to other countries or international organizations, shall not be interpreted as conferring common carrier status on the Space Shuttle. D.M.W.

RS78-1-346

A78-44238 * Heat capacity mapping mission. J. C Price (NASA, Goddard Space Flight Center, Greenbelt, Md.). *British Interplanetary Society, Journal (Remote Sensing)*, vol. 31, Aug. 1978, p. 313-316.

A Heat Capacity Mapping Mission (HCMM), part of a series of Applications Explorers Missions, is designed to provide data on surface heating as a response to solar energy input. The data is obtained by a two channel scanning radiometer, with one channel covering the visible and near-IR band between 0.5 and 1.1 micrometers, and the other covering the thermal-IR between 10 5 and 12.5 micrometers. The temperature range covered lies between 260 and 340 K, in 0.3 deg steps, with an accuracy at 280 K of plus or minus 0 5 K. Nominal altitude is 620 km, with a ground swath 700 km wide. D.M.W.

RS78-1-347

A78-43070 Remote sensing: Principles and interpretation F. F. Sabins, Jr (Chevron Oil Field Research Co., La Habra; Southern California, University, California, University, Los Angeles, Calif.). San Francisco, W. H. Freeman and Co., 1978. 437 p. 236 refs. $25.

Various types of remote sensing, and the applications to which each type is best suited, are discussed together with a review of the physical principles involved in specific remote sensing techniques. Among the techniques considered are: aerial photography, manned satellite imagery (especially from Skylab), Landsat imagery (with attention to multispectral scanning), thermal IR imagery, radar imagery, and digital image processing. The overall effectiveness of remote sensing is evaluated in terms of resource exploration, and the detection of natural and environmental hazards, e.g., earthquake danger zones and patterns of air and water pollution. D.M.W.

RS78-1-348

N78-29530 Texas Univ., Austin
REMOTE SENSING OF THE EARTH'S ATMOSPHERE BY THE USE OF RADIATION FROM OZONE, OXYGEN AND WATER VAPOR Ph.D. Thesis
Alireza Afrashteh 1977 183 p
Avail Univ. Microfilms Order No 7807251

Using computer technique computation of absorption coefficient, opacity and emission due to the atmospheric ozone, oxygen and water vapor is performed. Some features like effect of antenna beam width and refraction on emission measurement are discussed A technique for remote sensing of atmospheric ozone via satellite is proposed The estimation of ozone density is performed by determining the parameters of an assumed model for ozone density. The parameters are determined by minimizing the difference between calculated and measured ozone emission profile (in 100 GHZ region) The observation base is assumed to be the space shuttle Based on our results, recommendations for the best possible way to do the ozone emission measurement, for estimation of its density are given
Dissert Abstr.

RS78-1-349

N78-27484*# Kansas Univ. Center for Research Inc., Lawrence.
THE APPLICATION OF REMOTE SENSING TO RESOURCE MANAGEMENT AND ENVIRONMENTAL QUALITY PROGRAMS IN KANSAS Annual Report, 1 Apr. 1978 - 31 Mar. 1978
B. G Barr and E. A Martinko, Principal Investigators Jul 1978 90 p refs Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S D. 571-98 ERTS
(Grant NGL-17-004-024)
(E78-10154; NASA-CR-157247) Avail: NTIS HC A05/MF A01 CSCL 13B

There are no author-identified significant results in this report

RS78-1-350

N78-28584# Smithsonian Institution, Washington, D C
ASTRONAUT OBSERVATIONS FROM THE APOLLO-SOYUZ MISSION
Farouk El-Baz 1977 410 p refs
Avail NTIS MF A01; SOD HC

The Earth Observations and Photography experiment was carried out as part of the Apollo-Soyuz Test Project in July 1975. The main goal of the experiment was to utilize the special capabilities of trained observers (namely, the American astronauts of the joint mission) in visually studying and photographing specific Earth features and dynamic phenomena. These special capabilities include the sensitivity of the human eye to subtle color variations (e g., to desert sands or sea water), and the speed with which the eye-brain interaction results in interpretation of the scene and recognition of important features This latter capability allows instantaneous selection of important sites for photographic documentation at any moment, which in turn enhances the quality of photographic data from space platforms Another goal of the experiment was to establish the role of human observers in future space programs, particularly the space shuttle. A detailed account is presented of the experiment objectives, training of astronauts, preparation of aids for their use, and the results of experiment performance. These details serve as a historical-archival record,and as a guide for conducting similar projects in the future. F O.S.

RS78-1-351

N78-28587*# Missouri Univ. -Rolla. Dept. of Mining, Petroleum and Geological Engineering
A MANUAL FOR INEXPENSIVE METHODS OF ANALYZING AND UTILIZING REMOTE SENSOR DATA
C Dale Elifrits and David J. Barr Jul 1978 32 p refs
(Contract NAS8-31767)
(NASA-CR-150731) Avail: NTIS HC A03/MF A01 CSCL 05B

Instructions are provided for inexpensive methods of using remote sensor data to assist in the completion of the need to observe the earth s surface When possible, relative costs were included Equipment need for analysis of remote sensor data is described, and methods of use of these equipment items are included, as well as advantages and disadvantages of the use of individual items. Interpretation and analysis of stereo photos and the interpretation of typical patterns such as tone and texture, landcover, drainage, and erosional form are described Similar treatment is given to monoscopic image interpretation, including LANDSAT MSS data. Enhancement techniques are detailed with respect to their application and simple techniques of creating an enhanced data item. Techniques described include additive and subtractive (Diazo processes) color techniques and enlargement of photos or images Applications of these processes, including mappings of land resources, engineering soils geology water resources, environmental conditions, and crops and/or vegetation, are outlined G G

RS78-1-352

N78-26516# Giddings (L. E., Jr.), Houston, Tex
BOLIVIA FROM SPACE: IMAGES AND OTHER INFORMATION FROM SATELLITES, WITH CATALOGS
L E Giddings, Jr Jan 1977 275 p
(Giddings-77-01) Avail NTIS HC A12/MF A01

Information about Bolivia is presented that was obtained from manned and unmanned satellites A comprehensive catalog of photographs taken from the Gemini Apollo, and Skylab manned missions is included. Information available from umanned satellites includes the LANDSAT earth resources technology satellites, the ITOS/NOAA polar orbiting meteorological satellites, and the SMS/GOES geosynchronous orbiting meteorological satellites Some information on future satellites is also reported Sample images of all types of data are included G G

RS78-1-353

N78-26512*# Humboldt State Coll., Arcata, Calif. Center for Community Development
DEVELOPING AND DEMONSTRATING AN INSTITUTIONAL MECHANISM FOR TRANSFERRING REMOTE SENSING TECHNOLOGY TO 14 WESTERN STATES USING NORTHERN CALIFORNIA AS THE TEST SITE Progress Report, 1 Jun. - 31 May 1978
Donna Hankins, Principal Investigator 31 May 1978 25 p refs Sponsored by NASA ERTS
(E78-10142; NASA-CR-157176; Rept-2) Avail: NTIS HC A02/MF A01 CSCL 05B

There are no author-identified significant results in this report

RS78-1-354

N78-26509*# Agricultural Research Service, Phoenix, Ariz. Water Conservation Lab
HEAT CAPACITY MAPPING MISSION Quarterly Progress Report, 1 Feb. - 30 Apr. 1978
Ray D. Jackson, Principal Investigator 30 Apr. 1978 3 p ERTS
(NASA Order S-40255B)
(E78-10139, NASA-CR-157173) Avail. NTIS HC A02/MF A01 CSCL 08H

There are no author-identified significant results in this report.

RS78-1-355

N78-27486*# Delaware Univ., Newark. College of Marine Studies
SKYLAB/EREP APPLICATION TO ECOLOGICAL, GEOLOGICAL, AND OCEANOGRAPHIC INVESTIGATIONS OF DELAWARE BAY Final Report, Jun. 1973 - Mar. 1976
Vytautas Klemas, D. Bartlett, W. Philpot, R. Rogers (Bendix Aerospace Systems Div., Ann Arbor, Mich.), and L. Reed (Bendix Aerospace Systems Div., Ann Arbor, Mich.) Jun 1978 68 p refs
(Contract NAS1-12304)
(NASA-CR-144910; CMS-NASA-1-76) Avail NTIS HC A04/MF A01 CSCL 08C

Skylab/EREP S190A and S190B film products were optically enhanced and visually interpreted to extract data suitable for: (1) mapping coastal land use, (2) inventorying wetlands vegetation, (3) monitoring tidal conditions, (4) observing suspended sediment patterns; (5) charting surface currents (6) locating coastal fronts and water mass boundaries; (7) monitoring industrial and municipal waste dumps in the ocean (8) determining the size and flow direction of river, bay and man-made discharge plumes; and (9) observing ship traffic. Film products were visually analyzed to identify and map ten land-use and vegetation categories at a scale of 1:125,000. Digital tapes from the multispectral scanner were used to prepare thematic maps of land use. Classification accuracies obtained by comparison of derived thematic maps of land-use with USGS-CARETS land-use maps in southern Delaware ranged from 44 percent to 100 percent. G.G.

RS78-1-356

N78-28577*# Purdue Univ., Lafayette, Ind. Lab for Applications of Remote Sensing
ECHO USER'S GUIDE
D. A. Landgrebe, Principal Investigator, James L. Kast, Philip H. Swain, Barbara J. Davis, and Paul W. Spencer Aug 1977 79 p refs EREP
(Contract NAS9-14970)
(E78-10172, NASA-CR-157289; LARS-Publ-083077) Avail NTIS HC A05/MF A01 CSCL 05B

There are no author-identified significant results in this report

RS78-1-357

N78-28588# Army Engineer Waterways Experiment Station, Vicksburg, Miss.
GUIDANCE FOR APPLICATION OF REMOTE SENSING TO ENVIRONMENTAL MANAGEMENT APPENDIX A: SOURCES OF AVAILABLE REMOTE SENSOR IMAGERY
John R. May Mar 1978 69 p
(DA Proj 4A7-62720-A-896)
(AD-A053673; WES-INSTR-M-78-2-App-A) Avail NTIS HC A04/MF A01 CSCL 14/5

Results are presented of a survey conducted to determine the sources, characteristics, and availability of remotely sensed imagery held by various Federal and state governmental organizations. Data presented were collected primarily by direct contact with Federal and state agencies and through extensive examination of published documents. The remote sensor data identified as a result of the survey comprises two principal categories of data: aircraft and satellite imagery. Data collected during the survey is presented and tabulated under eight general headings: agency or organization (sources), type of imagery, range of scales, coverage areas, coverage period and frequency, availability and characteristics of imagery, products available and cost and procedures for obtaining imagery. Information concerning sources and availability of remote imagery held by commercial, private, and academic organizations is not presented.
Author (GRA)

RS78-1-358

N78-29538*# National Aeronautics and Space Administration Goddard Space Flight Center, Greenbelt, Md.
LANDSAT 2 WORLD STANDARD CATALOG, 1 JAN. - 30 APR. 1978
1978 172 p
(NASA-TM-79740, NTISUB/D/276-004) Avail: NTIS HC A08/MF A01 CSCL 05B

The World Standard Catalog lists imagery acquired by LANDSAT 2 which has been processed and input to the data files during the referenced months. Data, such as cloud cover and image quality, are given for each scene. The microfilm roll and frame on which the scene may be found is also given.
Author

RS78-1-359

N78-28560*# National Aeronautics and Space Administration, Washington, D. C.
EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES, ISSUE 17
Apr 1978 187 p
(NASA-SP-7041(17)) Avail. NTIS HC E05 CSCL 05B

This bibliography lists 775 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1 and March 31, 1978. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis.
Author

RS78-1-360

N78-27472*# South Carolina Univ., Columbia Dept of Geology
AERIAL FIELD GUIDE c46
Dag Nummedal *In* Texas Univ. at Austin The Channeled Scabland 1978 p 169-177 refs (For primary document see N78-27464 18-42)
Avail NTIS HC A09/MF A01 CSCL 08G

There are two overflights planned for the field conference one for the Cheney-Palouse tract of the eastern channeled scabland the other covering the coulees and basins of the western region The approximate flight lines are indicated on the accompanying LANDSAT images The first flight will follow the eastern margin of this large scabland tract passing a series of loess remnants gravel bars and excavated rock basins. The western scablands overflight will provide a review of the structurally controlled complex pattern of large-scale erosion and deposition characteristic of the region between the upper Grand Coulee (Banks Lake) and the Pasco Basin. G G.

RS78-1-361

N78-27151*# National Aeronautics and Space Administration, Washington, D C.
APOLLO-SOYUZ PAMPHLET NO. 5: THE EARTH FROM ORBIT
Lou Williams Page and Thornton Page From Oct. 1977 67 p refs Original contains color illustrations 9 Vol.
(NASA-EP-137) Avail. NTIS MF A01; SOD HC set of 9 volumes CSCL 22A

Astronaut training in the recognition of various geological features from space is described as well as the cameras, lenses and film used in experiment MA-136 to measure their effectiveness in photographing earth structural features from orbit Aerosols that affect climate and weather are discussed in relation to experiment Ma-007 which relied on infrared observations of the setting or rising sun, as seen from Apollo, to measure the amount of dust and droplets in the lower 150 km of earth's atmosphere The line spectra of atomic oxygen and nitrogen and their densities at 22 km above the earth's surface are examined along with experiment MA-059 which measured ultraviolet absorption at that altitude A R H

RS78-1-362

N78-29038# Joint Publications Research Service, Arlington, Va
SPACE PHOTOGRAPHY FEATS, OBJECTIVES DESCRIBED
Yuriy Zaytsev *In its* Transl on USSR Sci and Technol. (JPRS-71512) 20 Jul 1978 p 70-73 Transl into ENGLISH from Kierunki (Warsaw), no 27 2 Jul 1978 p 3 (For primary document see N78-29032 19-99)
Copyright Avail. NTIS HC A06/MF A01

RS78-1-363

AN INTEGRATED STUDY OF EARTH RESOURCES IN THE STATE OF CALIFORNIA USING REMOTE SENSING TECHNIQUES,
California Univ., Berkeley.
R. N Colwell.
Available from the National Technical Information Service, Springfield, VA 22161 as N77-31569, Price codes: A14 in paper copy, A01 in microfiche.
Progress Report, Space Sciences Laboratory Series 18, Issue 44, May 31, 1977 234 p, 92 fig, 40 tab, 61 ref, 7 append NCL 05-003-404.

Descriptors: *Water supply, *Water demand, *California, *Remote sensing, Water resources, *Water resources development, Mapping, Social aspects, Political aspects, Procedures, Evaporation, Transportation, Precipitation(Atmospheric), Snowmelt, Agriculture, *Management, Procedural manuals, Cropland

A multi-campus study investigated two aspects of California's water resources. (1) problems pertaining to water supply in northern California, and (2) problems pertaining to water demand in central and southern regions The socioeconomic, cultural, and political considerations that relate to the management of California's water resources were studied Modern remote sensing techniques and the preparation of procedural manuals for optimal utilization of remote sensing in the inventory and management of resources are described in detail The application of remote sensing is described for several hydrologic parameters evapo-transpiration, precipitation, snowmelt runoff, areal extent of snow, agricultural water demand, cropland information, and irrigation requirements. Software and hardware requirements and utilization are documented Two special studies are presented: (1) Reaction to Reflections on the First Conference on the Economics of Remote Sensing Information Systems, and (2) The Increasing Need for Water Resource Information in California. (Seip-IPA)
W78-08244

RS78-1-364

ID NO.- EI780855078 855078
REMOTE SENSING OF AIR POLLUTANTS.
Eckert, J. A.; Evans, R. B.
US EPA, Las Vegas, Nev
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 353-359 CODEN: PISEDM
DESCRIPTORS: (*AIR POLLUTION, *Remote Sensing). (LASERS, Applications). (REMOTE SENSING, Environmental Applications). PHOTOGRAMMETRY.
IDENTIFIERS: LIDAR
CARD ALERT: 451, 744, 742
This paper deals with monitoring of those pollutants within the troposphere which the U. S. Environmental Protection Agency is required to control by the Clean Air Act of 1970. It discusses selected specific techniques and attempts to show how the use of these techniques fits into the overall national strategy for air pollution abatement.

RS78-1-365

ID NO.- EI780860790 860790
PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT. 11TH. VOLUMES 1 AND 2, 1977.
Anon
Environ Res Inst of Mich, Cent for Remote Sensing Inf and Anal, Ann
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 2 v, 1671 p CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications). RADAR, PHOTOGRAMMETRY, INFRARED IMAGING, LASERS, IMAGE PROCESSING.
IDENTIFIERS: SYNTHETIC APERTURE RADAR, INTERPRETATION, LANDSAT DATA, MULTISPECTRAL DIGITAL DATA, THEMATIC MAPPERS
CARD ALERT: 716, 741, 742, 744, 723
The Proceedings, in two volumes, contains 174 papers presented at the Symposium. The papers are generally concerned with the utilization of this technology in various national and international programs as well as in numerous applications for monitoring and managing the earth's resources and man's global environment. Ground-based, airborne and spaceborne sensor systems and both manual and machine-assisted data analysis and interpretation are included. Subjects include sensor development, hydrologic applications, geographic applications, meteorological applications, geology and mineral resources, agriculture, forestry, rangeland resources, ocean and coastal applications, environmental quality, engineering applications, data analysis and interpretation, and others. Selected papers are indexed separately.

RS78-1-366

ID NO.- EI780860795 860795
OPERATIONAL UTILIZATION OF REMOTELY SENSED DATA.
Jones, James B.
NOAA, Natl Weather Serv, Silver Spring, Md
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 221-228 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (SATELLITES, Weather), HYDROLOGY,
CARD ALERT: 716, 7 2, 443, 444
This paper describes ways that data from environmental satellites and other remote sensing platforms are used in some of National Oceanic and Atmospheric Administration's operational service prgrams. Applications which have become routine, and those which are in advanced field test are included. Some applications yield a clear cut economic benefit. In other cases, benefits $EM DASH$ if any $EM DASH$ are obscure. In yet other cases, benefits in one sector may be offset by detriments in another. A few illustrative examples are given.

RS78-1-367

ID NO.- EI780860803 860803
LACIE: A LOOK TO THE FUTURE.
MacDonald, R. B.; Hall, F. G.
NASA, Lyndon B. Johnson Space Cent, Houston, Tex
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 429-465 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), AGRICULTURAL ENGINEERING,
IDENTIFIERS: LACIE, CROP INVENTORIES
CARD ALERT: 821, 716, 741
The Large Area Crop Inventory Experiment (LACIE) is a joint venture of the U. S. Department of Agriculture, the National Oceanic and Atmospheric Administration of the Department of Commerce, and the National Aeronautics and Space Administration. It is a $left double quote$ proof of concept $right double quote$ project designed to demonstrate the applicability of remote sensing technology to monitor wheat globally. This paper discusses the need for more timely and reliable monitoring of food and fiber supplies, reviews the monitoring systems currently utilized by the USDA and United Nations Food and Agriculture Organization in the United States and in foreign countries, and elucidates the fundamentals involved in assessing the impact of variable weather and economic conditions of wheat acreage, yield, and production. The experiment's approach and its status is reviewed as of the conclusion of 2 years of successful operation. Examples of acreage and yield monitoring in the Soviet Union are used to illustrate the experiment's approach. A look to the future describes the LACIE transition program through 1981. 14 refs.

RS78-1-368

ID NO.- EI780860814 860814
POTENTIAL APPLICATIONS OF DIGITAL, VISIBLE, AND INFRARED DATA FROM GEOSTATIONARY ENVIRONMENTAL SATELLITES.
Miller, D. B.; Waters, M. P. III; Tarpley, J. D.; Green, R. N.; Dismachek, D. C.
NOAA, Natl Environ Satell Serv, Washington, DC
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 849-858 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), RADIOMETERS, DATA BASE SYSTEMS,
CARD ALERT: 716, 7 1, 723
The National Environmental Satellite Service is experimenting with an hourly, digital data base from the Visible/Infrared Spin-Scan Radiometer (VISSR) instrument on the GOES-1 and SMS-2 geostationary satellites. The general characteristics of this experimental VISSR data base are described. Several examples of developmental applications of these quantitative digital data are presented. These include a review of recent attempts to develop products that are of use to meteorologists who provide services to aviation, agriculture, forestry, hydrology, oceanography, and climatology. The sample products include high resolution thermal gradients of land and ocean surfaces, thermal change analyses, fruit frost/freeze application, cloud-top altitude analysis, analysis of hurricane characteristics, and analyses of solar insolation.

RS78-1-369

ID NO.- EI780860804 860804
ENERGY AND REMOTE SENSING.
Summers, R. A.; Smith, W. L.; Short, N. M.
ERDA, Washington, DC
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 467-481 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), ENERGY RESOURCES, ENVIRONMENTAL PROTECTION, (POWER PLANTS, Site Selection),
CARD ALERT: 901
Possible remote sensing contributions to energy policy and planning have yet to be clearly identified and exploited. These contributions, ranging from the near-obvious to the more subtle, appear to fall into the following five categories: exploration exploitation, power plant siting, environmental assessment and monitoring, and transportation infrastructure by providing improved mapping and monitoring capability to ensure design and operation of most efficient (minimum energy) transportation networks principally for developing countries. The collective impact of the five categories establishes a significant relationship between the growing needs for expanded but environmentally acceptable energy production and remote sensing. A critical example is the need for a more precise estimate of the U. S. and world uranium and thorium resources as a key input into a number of crucial energy RD&D decisions. 27 refs.

RS78-1-370

A Selected Bibliography of Corps of Engineers Remote Sensing Reports

Army Engineer Topographic Labs Fort Belvoir Va (403192)

Technical rept.
AUTHOR: Vogel, Theodore C.; Books, E. James
E0674K3 Fld: 5B, 48 GRAI7808
Aug 77 227p
Rept No: ETL-0126
Project: 4A762707A855
Monitor: 18

Abstract: The purpose of this bibliography is to present a selected list of remote sensing technology reports and papers published by the U.S. Army Corps of Engineer Divisions, Districts, and Research Laboratories. This bibliography documents the importance of remote sensing technology to the Corps of Engineers and the many and varied tasks to which it has been applied. (Author)

Descriptors: *Aerial photography, *Bibliographies, Remote detectors, Civil engineering, Army Corps of Engineers, Photointerpretation, Coasts, Cold regions, Terrain, Trafficability, Mapping, Photogrammetry, Holography, Image processing, Inland waterways, Hydrology, Vegetation, Terrain analysis radar, Military engineering

Identifiers: *Remote sensing, NTISDODXA

AD-A049 351/0ST NTIS Prices: PC A11/MF A01

RS78-1-371

Investigation of Natural Environment by Space Means. Geobotany, Geomorphology, Soil Sciences, Agricultural Lands, Landscape Study

National Aeronautics and Space Administration, Washington, D. C.
AUTHOR: Zonn, S. V.; Vedeshin, L. A.; Grinberg, L. A.
E0523F2 Fld: 08F, 48C STAR1602
Sep 77 288p
Rept No: NASA-TM-75041
Contract: NASW-2791
Monitor: 18
Tran-Transl. Into English from ''Issled. Prirodnoy Sredy Kosmicheskimi. Sredstuvami. Geobotan., Geomorfol., Pochvoyedeniye. Selskokhozyayst-Vennyye Ugodya, Landshaftovedeniye''. Moscow. Acad. Of Soc. Of USSR. 1976 p 1-223. Misc-Translation Was Announced as N76-11511. Subm-Transl. By Sci. Transl. Serv. Santa Babara Calif.

Abstract: Reports given by Soviet specialists at a meeting of Socialist countries on remote sensing of the earth using aerospace methods are presented.

Descriptors: *Earth resources, *Spaceborne photography, Imagery, Remote sensors, USSR, Agriculture, Geomorphology, Soils, Topography, Vegetation

Identifiers: Translations, Remote sensing, *Meetings, NTISNASAT

N78-11448/5ST NTIS Prices: PC A13/MF A01

RS78-1-372

U.S. Geological Survey Sources of Photographs and Images of Biosphere Reserves Taken from Spacecraft and Aircraft: 19-Organ Pipe Cactus National Monumet

Geological Survey, Reston, Va. (152 450)
AUTHOR: Bonner, Janet M.
E0801K4 Fld: 8B, 48C GRAI7809
1977 76p
Monitor: 18
Report on Project 8: Conservation of Natural Areas and of the Genetic Material They Contain. Man and the Biosphere Program.

Abstract: Each data report in this series lists remotely sensed data gathered from spacecraft and aircraft available for a single biosphere reserve. Computer listings of data are provided by the EROS Data Center of the U.S. Geological Survey, which contains in its archives all of the listed material in photographic form and, in the case of Landsat images, can make available computer-compatible magnetic tapes of any Landsat scene.

Descriptors: *Aerial photographs, *Indexes(Documentation), Natural resources, Remote sensing, Aerial photography, Mapping, Data processing, Orders(Commitments), Information retrieval, Manned spacecraft, Unmanned spacecraft, Scientific satellites

Identifiers: *Organ Pipe Cactus National Monument, LANDSAT satellites, SKYLAB spacecraft, SKYLAB program, NTISDIGSLI

PB-276 550/1ST NTIS Prices: PC A05/MF A01

RS78-1-373

Indexing, Screening, Coding and Cataloging of Earth Resources Aircraft Mission Data

Caspan Corp., Houston, Tex.

Final Report.
E0615L2 Fld: 8B, 8 STAR1603
1977 21p
Rept No: NASA-CR-151 49, SB-6238(A)77C-219
Contract: NAS9-15145
Monitor: 18

Abstract: Tasks completed are as follows: (1) preparation of large Area Crop Inventory experiment for data base entry;(2) preparation of Earth Observations Aircraft Flight summary reports for publication; (3) updating of the aircraft mission index coverage map and Ames aircraft flight map; (4) Prepared of Earth Observation Helicopter Flight reports for publication; and ( ) indexing of LANDSAT imagery. (6) formulation of phase 3 biowindows 1, 2, 3, and 4 listings by country, footprint, and acquisition dates; (7) preparation of flight summary reports; and (8) preparation of an Alaska state index coverage map.

Descriptors: *Earth resources program, *LANDSAT satellites, *Large area crop inventory experiment, Alaska, Contractors, Documentation, Earth resources, Mapping

Identifiers: NTISNASA

N78-12508/5ST NTIS Prices: PC A02/MF A01

RS78-1-374

Localization of an Experimental Ecological Unit in the Maradi Region of Nigeria

National Aeronautics and Space Administration. Washington. D. C.
AUTHOR: Mainguet. M.: Canon. L.: Chapelle. A. M.
E062183 Fld: 8F. 6F. 57H STAR1603
Nov 77 325p.
Rept No: NASA-TM-75085
Contract: NASW-2790
Monitor: 18
Tran-Transl. Into English of ''Localization d'Une Unite Ecologique Experiments dans la Region de Maradi (Niger)'', Reims Univ.. France. Jun. 1977 p 1-300. Subm-Transl. By Kanner (Leo) Associates. Redwood City. Calif.

Abstract: A detailed topographical and geomorphological description of a specific ecological unit in the Maradi region of the Sahel in the Niger Republic is presented. Sandy structures are classified into active dunes and covered dunes and an extensives vocabulary is developed to describe sub-categories. The descriptions are based on meteorological data (anemometric and rainfall) from local weather stations. ground observations. aerial photographs and LANDSAT picturers. The problem of dune reactivation and desertification is discussed both from the standpoint of causes and possible counter measures.

Descriptors: *Deserts. *Geological surveys. *Ground stations. *Nigeria. Aerial photography. Africa. Dunes. Geomorphology. LANDSAT satellites. Meteorological parameters. Topography

Identifiers: Translations. Ecology. NTISNASAT

N78-12553/1ST NTIS Prices: PC A14/MF A01

RS78-1-375

A Cost-Benefit Evaluation of the LANDSAT Flow-on Operational System

National Aeronautics and Space Administration. Goddard Space Flight Center. Greenbelt. Md.
E0714E2 Fld: 05C. 48. 98. 96 STAR1604
Mar 77 124p
Rept No: NASA-TM-780 2. X-903-77-49
Monitor: 18

Abstract: Disciplines to benefit from the LANDSAT Follow-on System include agriculture. petroleum and mineral exploration. hydrologic land use. water resources management. forestry. land use planning and monitoring. and soil management. The annual quantified benefits are in the range of 420 to 970 million (FY 1976 dollars). The operational system sized to achieve the quantified benefits involves a single orbiting satellite with a backup satellite in launch readiness. The ground system includes a basic processing system which feeds information to three user systems - one for agriculture. one for hydrologic land use. and a third for all other users. The resulting present worth benefit cost ratio is at least equal to four with a reasonable likelihood of exceeding nine. This benefit cost ratio is evaluated for an infinite time horizon at the discount rate of 10 percent.

Descriptors: *Eros (Satellites). *LANDSAT satellites. Cost analysis. Agriculture. Costs. Earth resources program. Hydrology

Identifiers: *Benefit cost analysis. Remote sensing. NTISNASA

N78-13510/0ST NTIS Prices: PC A05/MF A01

RS78-1-376

Remote Measurement of Air Pollutants

Stanford Research Inst., Menlo Park, Calif.*National Science Foundation, Washington, D.C. Research Applied to National Needs. (332 500)

Rept. no. 1 (Annual). 15 May-31 Dec 73

AUTHOR: Proctor, E. K.
E0802D2 Fld: 148, 20F, 68A, 99A, 46C GRAI7809
31 Jan 74 26
Rept No: NSF/RANN/IT/GI-38986/PR/73-4
Grant: NSF-GI-38986
Project: SRI-2687
Monitor: NSF/RA/E-74/382
See also report dated Feb 76, PB-259 975.

Abstract: This is the first annual progress report on a program for the development of advanced electro-optical techniques for the remote measurement of gaseous air pollutants. The research effort is divided between two groups. One group is developing the tunable sources required for remote pollutant measurements and it is making the necessary spectroscopic measurements. The other group is developing lidar techniques and equipment and is performing the requisite demonstration experiments. The following are project accomplishments during the last quarter of 1973: (1) Remote measurement of NO2 using the differential-absorption lidar technique is demonstrated, thereby fulfilling one of the essential goals of the first-year program; (2) Tuning through the range of wavelengths from 7 micrometers to 13.5 micrometers by mixing in a AgGaSe2 non-linear crystal is experimentally demonstrated; (3) A LiNbO3 parametric oscillator pumped by Nd:YAG laser at 1.06 micrometers demonstrates a conversion efficiency of 35%; and (4) A second-harmonic generation efficiency of 55% and generation of infrared signals are demonstrated by mixing in CdSe and AgGaSe2.

Descriptors: *Remote sensing, *Optical radar, Air pollution, Spectroscopic analysis, Performance evaluation, Ultraviolet spectroscopy, Nitrogen dioxide, Sulfur dioxide, Infrared spectroscopy, Infrared lasers, Gas sampling, Cadmium selenides, Ozone, Monitoring, Experiments, Backscattering, Concentration(Composition), Electrooptics

Identifiers: *Air pollution detection, Tunable dye lasers, Second harmonic generation, Parametric oscillators, Crystal oscillators, Air pollution sampling, Lithium niobates, Neodymium, YAG lasers, Differential absorption lidar, Gallium silver selenides, Nonlinear optics, NTISNSFRA, NTISSRI

PB-276 592/3ST NTIS Prices: PC A03/MF A01

RS78-1-377

Quick-Look Capability in a European Earth Resources Satellite Data Network. Volume 1

Swedish Space Corp., Solna.

Final Report.
E0714E4 Fld: 8F, 9B, 48C, 62, 88B STAR1604
15 Apr 77 150p
Rept No: FU15-4-V-1, ESA-CR(P)-977-V-1
Contract: ESA-SC/128-HQ
Monitor: 18
Seri-2. Subm-Prepared Jointly with Stansaab Elektronik Ab.

Abstract: Plans of the European Space Agency for creation of an earth resources satellite ERS data network (Earthnet) comprising both national and European facilities are described. The network will receive, process, and distribute ERS data to a widespread group of earth scientists. Initially, the network will accept data from the American satellites in the LANDSAT series, Nimbus-G, HCMM, and SEASAT. User requirements for quick-look data in the area covered by the network were identified, and elements required for an optimum quick-look system to meet user requirements were assessed.

Descriptors: *Earth resources, Europe, Optical data processing, Satellite-borne photography, Cloud cover, Data transmission, European space agency, Heat capacity mapping mission, Landsat satellites, Networks, Nimbus 6 satellite, Seasat ocean dynamics satellite, User requirements

Identifiers: NTISNASAE

N78-13519/1ST NTIS Prices: PC A07/MF A01

RS78-1-378

Quick-Look Capability in a European Earth Resources Satellite Data Network. Volume 2: Appendices 5 to 7

Swedish Space Corp., Solna.

Final Report.
E0713J2 Fld: 8F, 9B, 48C, 62, 88B STAR1604
15 Apr 77 148p
Rept No: FU15-4-V-2-APP-5-7, ESA-CR(P)-977-V-2-APP-5-7
Contract: ESA-SC/128-HQ
Monitor: 18
Seri-2.

Abstract: Additional information is provided related to the assessment of an optimum quick-look system to meet user requirements in an earth resources satellite data network (Earthnet) to be developed by the European Space Agency.

Descriptors: *Earth resources, Europe, Optical data processing, Satellite-borne photography, Cloud cover, Data transmission, European space agency, Heat capacity mapping mission, Landsat satellites, Networks, Nimbus 6 satellite, Seasat ocean dynamics satellite, User requirements

Identifiers: NTISNASAE

N78-13397/2ST NTIS Prices: PC A07/MF A01

0129093 *78-003987
INTEGRATED INVENTORIES OF RENEWABLE NATURAL RESOURCES.
USFS GENERAL TECHNICAL REPORT RM-55. JAN 8-12, 78 (482)
SPECIAL REPORT: AS POPULATION AND DEMAND FOR NATURAL RESOURCES INCREASES, EFFICIENT, OBJECTIVE METHODS OF ACCURATELY DETERMINING THE AMOUNT, CONDITION, AND EXTENT OF THE RESOURCES AVAILABLE ARE ESSENTIAL. INTEGRATED INVENTORIES OF RENEWABLE NATURAL RESOURCES ENCOURAGES THE INTERCHANGE AND DISSEMINATION OF INFORMATION FOR INTELLIGENT RESOURCE MANAGEMENT. INTEGRATED INVENTORY INFORMATION REQUIREMENTS, CURRENT TECHNIQUES, NEED FOR INTEGRATING INVENTORIES. LAND CLASSIFICATION SCHEMES, REMOTE SENSING, PRINCIPLES FOR INTEGRATING INVENTORIES, DATA PROCESSING, INFORMATION SYSTEMS, AND STATE OF THE ART ARE DISCUSSED. (NUMEROUS DIAGRAMS, DRAWINGS, GRAPHS, MAPS, PHOTOS, REFERENCES, TABLES)
DESCRIPTORS: *CONF PROCEEDINGS ; *RESOURCE MANAGEMENT ; *WILDLIFE MANAGE ; *LAND RECLAMATION ; *LAND USE CLASSIFICATION ; *REMOTE SENSING ; *FOREST MANAGEMENT ; *DATA, ENV-LAND ; *INFORMATION SYSTEMS, ENV ; MATHEMATIC MODELS-LAND ; WETLANDS ; RANGELANDS ; SOIL CONSERVATION ; RECREATION, OUTDOOR-LAND
REVIEW CLASSIFICATION: 15

Section 2

GEOLOGY AND HYDROLOGY

Mineral and Petroleum Resources, Geomorphology,
Geological Exploration, Polar Studies,
River-basin Hydrology, Mapping

RS78-2-497

78J006719B EDB-78-13 05.020
CENTRAL ORE DRESSING PLANT POSSIBLE AS KARCO URANIUM PROSPECTING BUILDS UP/
S.AFR.MIN.ENG.J./88/4133/OCT 1977/45,47,49/
ZA/
ZA/
(SMIJA)
05.0200/58.0203/
AERIAL PROSPECTING:Q1/DATA PROCESSING/EXPLORATION:Q1/GEOCHEMICAL SURVEYS:Q1/GEOLOGICAL SURVEYS:Q1/GEOPHYSICAL SURVEYS:Q1/MINERALIZATION/ORE PROCESSING/SOUTH AFRICA:T2/URANIUM DEPOSITS:T1,Q2/

RS78-2-498

78J0043129 EDB-78-08 15.030
STUDIES OF DEEP,WIDESPREAD GEOTHERMAL RESOURCES/
BABA,K.(GEOL.SURVEY OF JAPAN)/
CHINETSU GIJUTSU/7/1977/68-74/(IN JAPANESE)
JP/
JP/
(CGIJD)
15.0301/
GEOCHEMICAL SURVEYS:Q2/GEOPHYSICAL SURVEYS:Q2/GEOTHERMAL EXPLORATION:Q1,T2/GEOTHERMAL FIELDS/INFRARED SURVEYS/JAPAN:T1/MAGNETOTELLURIC SURVEYS/ONUMA GEOTHERMAL FIELD/REMOTE SENSING:Q2/SATELLITES/

RS78-2-499

78C0070552 EDB-78-13 51.010
(CONF-7510172--P2)CORRELATION OF LANDSAT-1 MULTISPECTRAL DATA WITH SURFACE GEOCHEMISTRY/
BALLEW,G.I./
STANFORD UNIV.,CA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/58.0100/53.0400/
BISMUTH: T5 / COMPUTERS / COPPER: T4 /DATA/DATA ANALYSIS/ECOLOGICAL CONCENTRATION:Q2,Q3,Q4,Q5/GEOCHEMISTRY:Q1/LEAD:T3/MERCURY:T2/MINES/MINING/NEVADA:T1/PHOSPHORUS/PINES/SATELLITES/SOILS/SPECTRA/

RS78-2-500

78C0071062 EDB-78-13 58.010
CONF-7510172--P2/
GEOLOGICAL INTERPRETATION OF THE ERTS-1 SATELLITE IMAGERY OF LESOTHO,AND POSSIBLE RELATIONS BETWEEN LINEAMENTS AND KIMBERLITE PIPE EMPLACEMENT/
BARTHELEMY,R./DEMPSTER,A./
DEPT.OF MINES AND GEOLOGY,MASERU,LESOTHO/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
EDB-78:071062/
COMPOSITE IMAGERY AT THE 1:1,000,000 SCALE IS DISCUSSED,CROSSING OF MAIN DIRECTIONS OF LINEAMENTS GIVE SOME WORKING HYPOTHESIS ON KIMBERLITE PIPE EMPLACEMENT./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
58.0100/51.0100/
GEOLOGY:Q1/IMAGES/KIMBERLITES/LESOTHO/REMOTE SENSING/SATELLITES/SOUTH AFRICA:T1/

RS78-2-493

78J0041093 EDB-78-08 15.000
GEOTHERMAL ENERGY TECHNOLOGY/
AGENCY OF NATURAL RESOURCES AND ENERGY,TOKYO/
KOGYO GIJUTSU/18/9/1977/30-38/(IN JAPANESE)
JP/
JP/
(KOGJA)
15.0300/
CEMENTS / DRILLING FLUIDS / ENVIRONMENTAL IMPACTS / GEOPHYSICAL SURVEYS / GEOTHERMAL EXPLORATION/GEOTHERMAL FIELDS/ HOT-DRY-ROCK SYSTEMS / HOT-WATER SYSTEMS /JAPAN/MAGMA SYSTEMS/ONIKOBE GEOTHERMAL FIELD/ONUMA GEOTHERMAL FIELD/PHYSICAL PROPERTIES/REMOTE SENSING/RESERVOIR ENGINEERING/ROCKS/SUNSHINE PROJECT/WELL DRILLING/

RS78-2-494

78X00033024 EDB-78-06 52.010
(RLO / 2229 / T10--2) SUSPENDED SEDIMENTS AND RELATED LIMNOLOGY OF AN ALPINE LAKE SYSTEM,2ND YEAR END REPORT,1 JUNE 1976--31 JANUARY 1977/
ALEXANDER,V./MELLOR,J./BARSDATE,R.J./
ALASKA UNIV.,FAIRBANKS (USA)/
1977/OFP,NTIS,PC A02/MF A01./
CC=9 505 277/
US/
US/
52.0100/
AQUATIC ECOSYSTEMS / ARCTIC REGIONS/CONSTRUCTION/DENSITOMETERS/ENVIRONMENTAL EFFECTS:02/LAKES:T3/LIMNOLOGY:03/REMOTE SENSING/ROADS:T2/SEDIMENTS:03/TOPOLOGICAL MAPPING/

RS78-2-495

78J0011446 EDB-78-02 58.020
SEMI-QUANTITATIVE GEOLOGICAL INTERPRETATION OF PHOTOLINEAMENTS/
ANDERSON,D.T./
(UNIV OF MANIT,WINNIPEG)
CAN.MIN.J./91/6/JUN 1977/
58.52/
PHOTOLINEAMENTS OR PHOTOLINEARS CONSIST OF WELL-DEFINED LINEAR ELEMENTS RELATED TO THE OVERALL CONCEPT OF PHOTO PATTERNS. THESE PROCEDURES PRODUCE A SIMPLE AND PRACTICAL REPRESENTATION OF THE ESSENTIAL FEATURES OF THE FREQUENCY AND DIRECTIONS OF LINEAL ELEMENTS ON AERIAL PHOTOGRAPHS OR IMAGERY.THESE THEMATIC MAPS MAY BE COMBINED DIRECTLY WITH THE AVAILABLE GEOLOGICAL INFORMATION (I.E.GROUND TRUTH) AND ADDITIONAL INFERENCES REGARDING STRUCTURE AND LITHOLOGY MAY BE READILY DRAWN FROM THEM.THESE PROCEDURES ARE AMENABLE TO AUTOMATION BY COMPUTER TECHNIQUES,4 REFS./

RS78-2-496

78J0041242 EDB-78-08 15.200
PROCESSES OF HEAT ACCUMULATION AND GEOTHERMAL RESOURCE FORMATION/
AUSTIN,W.H.JR./
CAN.MIN.J./91/10/OCT 1977/36-40/
CA/
CA/
(CAMJA)
15.2000/15.0300/15.0302/15.0301/15.0400/
CONVECTION / COST: 32 / EARTH CRUST/EARTH MANTLE/GEOCHEMICAL SURVEYS/GEOLOGICAL SURVEYS/GEOPHYSICAL SURVEYS/GEOTHERMAL EXPLORATION:T2/GEOTHERMAL SYSTEMS:T1/ORIGIN:01/REMOTE SENSING/REVIEWS:02/RIFT ZONES/

RS78-2-501

78C0070572 EDB-78-13 51.010
(CONF-7510173--P2)HYDROLOGICAL APPLICATIONS OF MICROWAVE RADIOMETRY DATA/
BASHARINOV,A.E./BORODIN,L.F./SHUTKO,A.M./
INST.OF RADIOENGINEERING AND ELECTRONICS,MOSCOW/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
SU/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/52.0160/
AIRCRAFT/DATA COMPILATION/GROUND WATER:T2/HYDROLOGY:T/MEASURING METHODS/MICROWAVE RADIATION/MINERALIZATION/MOISTURE:Q1
/RADIOMETERS/REMOTE SENSING:Q1,Q2/SOILS:T1/

RS78-2-502

78X0058995 EDB-78-11 05.020
(LA--7168-PR)GEOSTATISTICS PROJECT OF THE NATIONAL URANIUM RESOURCE EVALUATION PROGRAM/
BEMENT,T.R./MCKAY,M.D./WECKSUNG,G.W./
LOS ALAMOS SCIENTIFIC LAB.,N.MEX.(USA)/
FEB 1978/
GJBX--44(78)/DEP.NTIS,PC A02/MF A01./
CC=3 820 000/
US/
US/
05.0200/
AERIAL PROSPECTING:T1,Q2/BISMUTH/DATA ANALYSIS:Q1/MAPS/POTASSIUM/RESEARCH PROGRAMS/THALLIUM/URANIUM DEPOSITS:T2/

RS78-2-503

78C0088523 EDB-78-17 05.010
GJBX--12(78)/
1977 NURE URANIUM GEOLOGY SYMPOSIUM/
BENDIX FIELD ENGINEERING CORP.,GRAND JUNCTION,COLO.(USA)/
CONTRACT EY-76-C-13-1664/
FEB 1978/
CONF-771244--/
DEP.NTIS,PC A19/MF A01./
9 502 148/
US/
US/
NTIS-78:063123/FRA-03:042287/EDB-78:088523/
THIS U.S.DEPARTMENT OF ENERGY (DOE)OPEN-FILE REPORT IS A COMPILATION OF THE MATERIALS GIVEN TO ATTENDEES AT THE 1977 NATIONAL URANIUM RESOURCE EVALUATION (NURE)GEOLOGY SYMPOSIUM.THE OBJECTIVE OF THE SYMPOSIUM WAS TO PRESENT RESULTS OF BOTH COMPLETED AND IN PROGRESS TOPICAL GEOLOGY PROJECTS CONDUCTED AS A PART OF THE DOE NATIONAL URANIUM RESOURCE EVALUATION PROGRAM. TOPICAL GEOLOGY PROJECTS ARE PRIMARILY CONCERNED WITH THE STUDY OF SIGNIFICANT FOREIGN URANIUM DEPOSITS. TO IDENTIFY THE CRITERIA THAT BEST EXPLAIN THEIR EXISTENCE.THESE CRITERIA OR **MODELS** ARE THEN USED TO EVALUATE ANALOGOUS U.S.GEOLOGIC CONDITIONS FOR URANIUM FAVORABILITY.SEVERAL ASSOCIATED U.S.GEOLOGICAL SURVEY PROJECTS WERE ALSO PRESENTED. COMPLETE WRITTEN TEXT OF THE PRESENTATIONS WAS NOT PROVIDED AT THE MEETING AND IS NOT INCLUDED IN THIS REPORT.ALL INFORMATION PRESENTED ON NURE STUDIES WILL APPEAR IN THE DOE OPEN-FILE REPORTS FOR EACH OF THE PROJECTS UPON THEIR COMPLETION.U.S.GEOLOGICAL SURVEY SPEAKERS MAY BE CONTACTED FOR ADDITIONAL INFORMATION ON THEIR PRESENTATIONS. PAPERS WERE PRESENTED ON THE TOPICS OF REMOTE SENSING AND SEDIMENTARY,IGNEOUS,AND METAMORPHIC HOST ROCKS.THE INDIVIDUAL PAPERS WERE INDEXED FOR INCLUSION IN THE EDB DATA BASE./
SYMPOSIUM ON NURE URANIUM GEOLOGY/
GRAND JUNCTION,CO,USA/
7 DEC 1977/
OTHER/
P/
05.0100/05.0200/
EXPLORATION/GEOLOGY/MEETINGS:Q1/URANIUM DEPOSITS:T1/URANIUM RESERVES/

RS78-2-504

78R008852? EDB-78-17 05.020
GJBX--11(78)/
NURE 1977 ANNUAL ACTIVITY REPORT/
BENDIX FIELD ENGINEERING CORP.,GRAND JUNCTION,COLO.(USA)/
CONTRACT-EY-76-C-13-1064/
MAY 1978/
DEP.NTIS.PC A05/MF A01./
9 502 148/
US/
US/
INS-78:011484/NTS-78:063124/ERA-03:042289/EDB-78:088527/
THE MOST SIGNIFICANT DEVELOPMENT IN 1977 FOR NURE WAS PLANNING,ORGANIZING,AND INITIATING THE QUADRANGLE EVALUATION STUDIES PROGRAM FOR EVALUATING THE URANIUM RESOURCES OF U.S.THE AERIAL RADIOMETRIC RECONNAISSANCE PROGRAM AND THE HYDROGEOCHEMICAL AND STREAM-SEDIMENT RECONNAISSANCE (HSSR)PROGRAM SCHEDULES HAVE BEEN MODIFIED TO COINCIDE AS NEARLY AS POSSIBLE WITH THE QUADRANGLE EVALUATION SCHEDULE.SIX AIRBORNE CONTRACTORS HAVE PROVIDED 12 SYSTEMS WHICH HAVE FLOWN SOME 400, 000 LINE MILES OF SURVEY.IN THE HSSR PROGRAM,SAMPLING WAS COMPLETED IN 60 QUADRANGLES,WITH SAMPLING UNDERWAY IN 25 ADDITIONAL QUADRANGLES AT THE END OF 1977.IN THE TOPICAL GEOLOGICAL STUDIES PROGRAM,ATTENTION WAS GIVEN TO THOSE TYPES OF NONSANDSTONE ENVIRONMENTS FOUND THROUGHOUT THE WORLD THAT MIGHT LEAD TO THE DISCOVERY OF NEW URANIUM DISTRICTS IN U. S. IN THE TECHNOLOGY DEVELOPMENT PROGRAM,NEW CALIBRATION AND TEST FACILITIES WERE PLACED IN OPERATION FOR BOTH BOREHOLE LOGGING AND AIRBORNE RADIOMETRIC SURVEYING SYSTEMS.FAST AND DELAYED FISSION SYSTEMS FOR BOREHOLE LOGGING ARE BEING FIELD TESTED.EXPLORATION SYSTEM STUDIES WERE INITIATED.INFORMATION DISSEMINATION IS REPORTED.(DLC)/
FUEL CYCLE/
P/
05.0200/
AERIAL MONITORING / BOREHOLES / CALIBRATION /EXPLORATION:Q1/GEOCHEMICAL SURVEYS/GEOLOGY/GEOPHYSICAL SURVEYS/RADIATION DETECTORS / RESEARCH PROGRAMS/SAMPLING/SEDIMENTS/STREAMS/URANIUM DEPOSITS:T1,Q2/URANIUM ORES/URANIUM RESERVES:T/USA:T2/ WELL LOGGING/

RS78-2-505

78J008e313 EDB-78-16 51.030
GLOBAL CONTAMINATION BY /SUP 137/CS,/SUP 90/SR AND DOSES OF EXTERNAL IRRADIATION ON THE TERRITORY OF THE USSR/
DOLTNEVA,L.I./IZRAEHL',YU.A,/NAZAROV,I.M/IONOV,V.A./
AT.ENERG.(USSR)/42/5/MAY 1977/
355-360/
RUSSIAN/
SU/
SU/
AENGA/
AIX-09:17614b/EDB-78:086313/
DATA ARE PRESENTED ON BOTH GLOBAL GROUND CONTAMINATION BY CESIUM-137 AND NATURAL RADIOACTIVITY OF SOIL OF THE COUNTRY OBTAINED BY AIRCRAFT GAMMA-SPECTRAL SURVEYS. AIRCRAFT MEASUREMENT ERRORS DO NOT EXCEED 15 TO 20 PERCENT .BASIC REGULARITIES IN SPACE DISTRIBUTION OF CESIUM-137 STORAGE, GAMMA-RADIATION DOSE RATES OF CESIUM-137 AND NATURAL RADIOACTIVE ELEMENTS ON THE TERRITORY OF THE USSR ARE CONSIDERED.THE CONTRIBUTION TO RADIOACTIVE BACKGROUND OF VARIOUS SOURCES OF EXTERNAL IRRADIATION, INCLUDING COSMIC RADIATION, IS ESTIMATED.THE REDUCTION OF SOIL GAMMA-RADIATION DUE TO SNOW COVER IS TAKEN INTO ACCOUNT./
51.0301/
AERIAL MONITORING: Q1, Q2, Q3 / CESIUM 137:T1/CONTAMINATION/COSMIC RADIATION:Q5/DOSE RATES/EXTERNAL IRRADIATION/GAMMA RADIATION:T3/GLOBAL FALLOUT:Q5/NATURAL RADIOACTIVITY:Q4/RADIATION DOSES/SOILS:T4/STRONTIUM 90:T2/USSR:T5/

RS78-2-506

78J0101182 EDB-78-19 15.020
RECENT FRACTURES ALONG THE NORTHEAST MARGIN OF THE SALTON TROUGH,IMPERIAL COUNTY,CALIFORNIA/
BUCKLEY,C.P./MAGEE,M.E./HAYDEN,N.A./
CALIFORNIA STATE UNIV.,FULLERTON/
CALIF.GEOL./30/3/MAR 1977/
58-60/
US/
US/
CGEOA/
ERA-03:045649/EDB-78:101182/
GROUND FRACTURES ALONG THE NORTHEAST MARGIN OF THE SALTON TROUGH NEAR DOS PALMAS SPRING,IMPERIAL VALLEY WERE INVESTIGATED. THE WEST-NORTHWEST-TRENDING FRACTURE ZONE MEASURED 4 KM IN LENGTH WITH A MAXIMUM WIDTH OF 135 METERS.BOTH AERIAL AND SURFACE MAPPING METHODS WERE USED IN THE INVESTIGATION.PRELIMINARY DATA INDICATE THAT THE FRACTURES ARE ASEISMIC,TECTONIC IN ORIGIN,AND THE PRODUCT OF TENSIONAL STRESS.(JGB)/
15.0201/
AERIAL MONITORING/EARTH CRUST/FRACTURES:Q1/GEOLOGIC FAULTS:G1/IMPERIAL VALLEY:T1/MAPS/ORIGIN/SIZE/

RS78-2-507

78R00658?0 EDB-78-12 58.020
(NUREG--0379)NEW MADRID SEISMOTECTONIC STUDY.ACTIVITIES DURING FISCAL YEAR 1977/
BUSCHBACH,T.C./
ILLINOIS STATE GEOLOGICAL SURVEY,URBANA (USA)/
REGIONAL STUDY/
OCT 1977/NTIS $5.25./
CC=9 502 476/
US/
US/
58.0201/22.0501/
AERIAL SURVEYING/ALABAMA:T5/ARKANSAS:T6/BOREHOLES/GEOLOGICAL SURVEYS/GEOPHYSICAL SURVEYS/GRAVITY SURVEYS/ILLINOIS:T1/
INDIANA: T2 / INFRARED SURVEYS/KENTUCKY:T3/MAGNETIC SURVEYS/MISSOURI:T7/NUCLEAR FACILITIES:T8/REGIONAL ANALYSIS/SEISMIC SURVEYS:01,02,03,04,05,06,07/SITE SELECTION:08/TECTONICS/TENNESSEE:T4/WELL LOGGING/

RS78-2-508

78J0042508 EDB-78-J8 05.020
RECONNAISSANCE-LEVEL GEOCHEMICAL AND RADIOMETRIC EXPLORATION DATA FROM THE VICINITY OF THE RABBIT LAKE URANIUM DEPOSIT/
CAMERON,E.M./EALLANTYNE,S.B.(GEOLOGICAL SURVEY OF CANADA,OTTAWA,ONTARIO)/
CIM BULL./70/791/MAY 1977/76-85/
CA/
CA/
(C1B0B)
05.0200/
AERIAL PROSPECTING /EXPLORATION:01/GEOCHEMICAL SURVEYS:01/GEOLOGY/POTASSIUM/SASKATCHEWAN:T2/SEDIMENTS/SURFACE WATERS/THORIUM/URANIUM/URANIUM DEPOSITS:T1,02/URANIUM ORES/

RS78-2-509

78C0068473 EDB-78-13 29.040
(CONF-7510172--P2)MINERAL RESOURCE INVESTIGATIONS IN SOUTH AMERICA USING LANDSAT DATA/
CARTER,W.D./
GEOLOGICAL SURVEY,RESTON,VA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
29.0400/51.0100/52.0100/53.0200/
DATA COMPILATION: 02, 03, 04 / ENERGY SOURCES / EXPLORATION / FORESTS/GRASS/HYDROELECTRIC POWER/IMAGES/INTERNATIONAL COOPERATION/MINERALS:T2/PETROLEUM/REMOTE SENSING/RESOURCES:T3,04/SATELLITES/SOUTH AMERICA:T4/WATER/

RS78-2-510

78C0105278 EDB-78-19 58.020
CONF-770478--P2/
PRELIMINARY LINEAMENT MAP OF THE CONTERMINOUS UNITED STATES/
CARTER,W.D.(GEOLOGICAL SURVEY,RESTON,VA)/LUCCHITTA,B.K./SCHABER,G.G./
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
FRA-03:051225/EDB-78:105278/
NONF/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/
GEOLOGICAL SURVEYS:01/GEOMETRY/GEOPHYSICAL SURVEYS/INFRARED SPECTRA/MAPS/REMOTE SENSING:T/RESOURCE CONSERVATION/SOILS/TWO-DIMENSIONAL CALCULATIONS/USA:T1/

RS78-2-511

78R00786 EDB-78-15 15.030
NP--28879/
FIELD MEASUREMENTS OF IRRADIATION:FIRST USE IN ITALIAN GEOLOGY/
CASSINIS,R./LECHI,G.M./TONELLI,A.M./
ISTITUTO UNIVERSITARIO NAVALE,NAPLES (ITALY).ISTITUTO DI METEOROLOGIA E OCEANOGRAFIA/
1972/
ITALIAN/
DEP.NTIS (US SALES ONLY),PC A02/MF A01./
P 698 140/
IT/
IT/
ERA-03:039867/EDB-78:078606/
GENERAL CONSIDERATIONS IN THE FIELD OF REMOTE SENSING ARE DISCUSSED,PARTICULARLY GEOLOGICAL APPLICATIONS OF INFRARED MEASUREMENTS. THE THEORY OF ELECTROMAGNETIC RADIATION AS DESCRIBED BY PLANCK'S LAW IS BRIEFLY REVIEWED.IR SCANNING AND RADIOMETRY ARE THE MOST COMMONLY USED TECHNIQUES.SCANNING PROVIDES PHOTOGRAPHIC IMAGES OF THE SPATIAL DISTRIBUTION OF SURFACE RADIATION. THIS TECHNIQUE WAS FIRST USED IN ITALY TO OBTAIN RADIATION DATA AT SOLFATARA DI POZZNOLI. THE PRIMARY CAUSES OF ERROR IN THE TECHNIQUE ARE VARIABLE ATMOSPHERIC TRANSMISSIVITY,ANGULAR INCLINATION,AND VARIABLE EMISSION. PROBLEMS INVOLVED IN CALIBRATION ARE DISCUSSED.THE DATA DERIVED FROM SURVEYS OF VOLCANIC REGIONS ARE PRESENTED IN TABLES AND THE THERMAL IMAGES AND MAPS ARE PROVIDED.THIS TECHNIQUE IS USEFUL IN SURVEYING VOLCANOES AND FOR THE DETECTION OF HIGH TEMPERATURE GEOTHERMAL RESOURCES./
NP/
15.0301/
DATA ANALYSIS / GEOTHERMAL EXPLORATION / INFRARED SURVEYS:Q1,Q2,Q3/ITALY:T1/MAPS/RADIOMETRIC SURVEYS/REMOTE SENSING/ SOLFATARAS:Q1,T2/VOLCANIC REGIONS:T3/

RS78-2-512

78C0075755 EDB-78-14 52.010
CONF-7510172--P1/
USE OF REMOTE SENSING FOR WATER RESOURCE MANAGEMENT IN MICHIGAN/
CHRISTENSEN,R.J.(MICHIGAN DEPT.OF NATURAL RESOURCES,LANSING)/WEZERNAK,C.T./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036046/EDB-78:075755/
THE OPERATIONAL USE OF REMOTE SENSING BY THE MICHIGAN WATER RESOURCES COMMISSION IS DISCUSSED.THE APPLICATIONS CONSIDERED INCLUDED POWER PLANT DISCHARGES AND INDUSTRIAL DISCHARGES. APPLICATIONS ARE EXAMINED IN TERMS OF USING SPECTRAL BANDS IN THE THERMAL IR, VISIBLE, AND ULTRAVIOLET.THE RESULTS INDICATE THAT REMOTE SENSING CAN SERVE AS AN IMPORTANT ADDITION TO TECHNIQUES AVAILABLE TO A REGULATORY AGENCY FOR ENVIRONMENTAL MONITORING./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/52.0500/
INDUSTRIAL WASTES:T3/MANAGEMENT:Q1/MICHIGAN/MONITORING:Q3/POWER PLANTS/REMOTE SENSING:Q1/USES/WATER RESOURCES:T1/

RS78-2-513

78C0070601 EDB-78-13 52.010
CONF-7510172--P2/
USE OF LANDSAT DCS IN RESERVOIR MANAGEMENT AND OPERATIONS/
COOPER,S./HOROWITZ,J.L./
CORPS OF ENGINEERS,WALTHAM,MA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036003/EDB-78:070603/
THE NEW ENGLAND DIVISION,CORPS OF ENGINEERS (NED)HAS BEEN PARTICIPATING IN THE NASA LANDSAT EXPERIMENTS TO ASSESS THE POSSIBLE FUTURE USEFULNESS OF ORBITING SATELLITES SUCH AS LANDSAT IN THE OPERATION OF ITS WATER RESOURCES SYSTEMS USED TO CONTROL FLOODS.BASED ON THREE YEAR'S EXPERIENCE WITH A 26 STATION NETWORK IN NEW ENGLAND,NED HAS FOUND REAL TIME DATA COLLECTION BY ORBITING SATELLITE RELAY TO BE BOTH RELIABLE AND FEASIBLE.ORBITING SATELLITE SYSTEMS CAN BE DESIGNED THAT ARE MORE FLEXIBLE,EASILY MAINTAINED AND LESS EXPENSIVE THAN CONVENTIONAL GROUND-BASED MEANS.NED ENDORSES THE INSTITUTION OF A SATELLITE DATA COLLECTION SYSTEM ON A CORPS-WIDE BASIS OR A NATIONWIDE SYSTEM WITH OTHER FEDERAL AND STATE AGENCIES, WHETHER IT BE OF THE ORBITING TYPE WITH WHICH WE HAVE EXPERIMENTED,OR THE GEOSTATIONARY KIND FOR WHICH EVALUATION IS NOT YET AVAILABLE.ANY OPERATIONAL SATELLITE CONFIGURATION SHOULD INCLUDE GROUND RECEIVING STATIONS AT ALL MAJOR USER LOCALES FOR DIRECT RECEIPT OF SATELLITE INFORMATION,RATHER THAN THE RELAY OF DATA FROM NASA OR SOME OTHER AGENCY. THEREFORE NED, WITH NASA SUPPORT, HAS CONSTRUCTED AND IS NOW TESTING AN INEXPENSIVE,SEMIAUTOMATIC AND EASILY MAINTAINED GROUND RECEIVING STATION AS A FOLLOW-UP TO ITS ORIGINAL STUDY./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/29.0400/
DATA COMPILATION/FLOOD CONTROL/MANAGEMENT:01,02/NASA/SATELLITES/WATER RESERVOIRS:T1/WATER RESOURCES:T2/

RS78-2-514

78I0077865 EDB-78-13 05.020
PALAEOMAGNETISM AND URANIUM EXPLORATION/
CORNER,B.(ATOMIC ENERGY BOARD,PELINDABA,PRETORIA (SOUTH AFRICA).GEOLOGY DIV.)/
NUCL.ACT./18/JAN 1978/
14-17/
7A/
ZA/
NUR AB/
AIX-09:067258/ERA-03:039253/EDB-78:077865/
STUDIES CONDUCTED AT PELINDABA HAVE SHOWN THAT THE MAGNETIC METHOD CAN BE SUCCESSFULLY APPLIED IN THE DAMARA MOBILE BELT FOR DELINEATING PRIMARY URANIUM TARGET AREAS.THIS APPLICATION HOLDS EXCITING POSSIBILITIES FOR LOCATING FURTHER URANIUM DEPOSITS BOTH LOCALLY AND IN OTHER MOBILE BELTS THROUGHOUT THE WORLD./
05.0200/
AERIAL MONITORING/AERIAL PROSPECTING/ANTARCTICA/EXPLORATION/GAMMA SPECTROSCOPY/GEOMAGNETIC FIELD/GEOPHYSICAL SURVEYS/GRANITES / MAGNETIC FIELDS/MAGNETIC SURVEYS:02/MAGNETIZATION/METAMORPHIC ROCKS/METAMORPHISM/MINERALIZATION/PROSPECTING/RADIOACTIVITY/SOUTH WEST AFRICA:T1/URANIUM DEPOSITS:T2,01/

RS78-2-515

78C0070553 EDB-78-13 51.010
(CONF-7510172--P2)REGIONAL MAPPING PROGRAM AND MINERAL RESOURCES SURVEY BASED ON REMOTE SENSING DATA/
CORREA,A.G./
INSTITUTO DE PESQUISAS ESPACIAIS SAO JOSE DOS CAMPOS,SAO PAULO,BRAZIL/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
HR/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/58.0100/
BRAZIL:T1/DATA COMPILATION:02,03,04,05,06,07,08/DIAMONDS:T7/GEOLOGY/GOLD:T4/IMAGES/LEAD ORES:T5/MINERALS:T2/MONITORING/RADAR/REMOTE SENSING:T,02,03/RESOURCES:T3/RUTILE:T8/SATELLITES/TOPOLOGICAL MAPPING:01/ZINC ORES:T6/

RS78-2-516

78J0048850 EOB-78-09 02.200
DETAILED STUDIES,STRICT CRITERIA PRODUCE PIPELINE EARTHQUAKE DESIGN/
DANIELS,R.F./
PETRIMAR ENG INC,HOUSTON,TEX/
OIL GAS J./75/48/21 NOV 1977/120,125-126/
US/
US/
(OIGJA)
02.2000/58.0201/58.0203/
ALASKA OIL PIPELINE: T1 / CONSTRUCTION: G1/EARTHQUAKES/ENGINEERING GEOLOGY/GEOLOGIC FAULTS/GROUND MOTION/LANDSLIDES/PLANNING:Q1/REMOTE SENSING/SAFETY ENGINEERING/SEISMIC EFFECTS:Q1/SEISMIC SURVEYS/SOILS:T2/STABILITY:Q2/

RS78-2-517

78J0023523 EOB-78-04 58.010
DISCERNABLE LINEAMENTS ON LANDSAT IMAGES OF LEBANON/
DAVIE,M.F./
(INST DE SCI DE LA TERRE,CONSTANTINE,ALGERIE)
REV.INST.FR.PET.ANN.COMBUST.LIQUIDES/32/3/MAY-JUN 1977/
463-475/(IN FRENCH)
MORPHOLOGIC ASPECTS OF THE LITHOLOGIC STRUCTURE NOT SHOWN BY CONVENTIONAL AERIAL PHOTOGRAPHY ARE INTERPRETED.STREAMS, WELLS, AND UNDERSEA CANYONS ARE IDENTIFIED./

RS78-2-518

78C0000321 EOB-78-01 31.090
(CONF-760925--)STRIP MINING:AN IMPORTANT ELEMENT OF RIVER BASIN MANAGEMENT/
DAY,H.J./
(UNIV.OF WISCONSIN,GREEN BAY)
1976/
PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON FOSSIL FUEL PRODUCTION AND WATER RESOURCES/
THE IMPACT OF SURFACE MINING ON THE LOCAL AND REGIONAL WATERSHEDS IN TWO DISTINCTIVELY SEPARATE REGIONS OF THE UNITED STATES, THE WATER-ABUNDANT EAST AND THE ARID OR SEMI-ARID WEST,IS REVIEWED.CHANGES IN WATER RESOURCES ARE REPORTED IN BOTH REGIONS AS A RESULT OF STRIP MINING,BUT LAND REHABILITATION IS MORE RAPID IN THE EAST THAN IN THE WEST WHERE NEW MINES ARE EXPECTED TO OPEN IN THE YEARS AHEAD.REHABILITATION POTENTIAL IS REPORTED TO BE INCREASINGLY IMPORTANT AS A FACTOR TO BE CONSIDERED IN MINE SITE SELECTION IN THE WEST.THE USE OF REMOTE SENSING,SATELLITE-BASED SYSTEMS FOR WATERSHED MANAGEMENT IS REPORTED.APPLICATION OF THIS TECHNOLOGY TO RIVER BASIN MANAGEMENT ASSOCIATED WITH SURFACE MINES IS PROPOSED.APPROXIMATE COSTS ASSOCIATED WITH ITS USE ARE PROVIDED./

RS78-2-519

78P0030488 EOB-78-06 15.030
METHOD FOR IDENTIFYING ANOMALOUS TERRESTRIAL HEAT FLOWS/
DEL GRANDE,N.K./
TO ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION/
PATENT/
US PATENT 4,005,289/
FILED DATE 5 JAN 1976/
25 JAN 1977/
US/
US/
15.0101/
AERIAL PROSPECTING/GEOTHERMAL EXPLORATION:T1/HEAT FLOW:T3/HYDROLOGY/INFRARED SURVEYS:T2,Q1/MAPS/MEASURING INSTRUMENTS:Q2/MEASURING METHODS:Q2,Q3/REMOTE SENSING/TOPOGRAPHY/

RS78-2-520

78R0049147 EDB-78-09 15.060
(NP--22801)FINAL ENVIRONMENTAL STATEMENT FOR THE GEOTHERMAL LEASING PROGRAM/
DEPARTMENT OF THE INTERIOR,WASHINGTON,D.C.(USA)/
1973/GPO $5.85./
CC=2 133 500/
US/
US/
15.0600/53.0300/
ANIMALS / CALIFORNIA / ENVIRONMENTAL IMPACT STATEMENTS:T,01,02,03/ENVIRONMENTAL IMPACTS/GEOTHERMAL RESOURCES/GEYSERS GEOTHERMAL FIELD:T1/IMAGES/IMPERIAL VALLEY:T2/KGRA/LAND LEASING/LONG VALLEY:T3/MAPS/PLANTS/SOILS/TABLES/WATER QUALITY/

RS78-2-521

78C0011769 EDB-78-04 05.020
URANIUM EXPLORATION TECHNOLOGY/
DOCD,P.H.(USAEC GRAND JUNCTION OFFICE,COLO.)/
INSTITUTION OF MINING AND METALLURGY/LONDON/1977/
GEOLOGY,MINING,AND EXTRACTIVE PROCESSING OF URANIUM/
JONES,M.J.(ED.)/
URANIUM EXPLORATION METHODS AND TECHNOLOGY HAVE EVOLVED FROM THREE DECADES OF EXPERIENCE,STIMULATED INTERMITTENTLY BY A HISTORICALLY FLUCTUATING DEMAND FOR URANIUM.THE METHODS GENERALLY APPLIED ARE REVIEWED.THE RECENT TRENDS TO UTILIZE SOME OF THE LESS COMMONLY EMPLOYED METHODS TO IMPROVE EXPLORATION FOR CONCEALED DEPOSITS AND TO EVALUATE LOWER-GRADE RESOURCES IN UNFAMILIAR GEOLOGIC ENVIRONMENTS ARE NOTED. RECENT DEVELOPMENTS OF TECHNOLOGY TO SUPPORT EXPLORATION EMPHASIZE NUCLEAR GEOPHYSICS,SUCH AS SENSITIVE GAMMA-RAY SPECTROMETRY,DIRECT URANIUM LOGGING BY USE OF FISSION NEUTRON TECHNIQUES, MORE SOPHISTICATED RADON AND HELIUM EMANOMETRY, AND AN INCREASING INTEREST IN DIRECT GEOPHYSICAL AND GEOCHEMICAL MEASUREMENTS BY USE OF NEUTRON-NEUTRON AND MAGNETIC SUSCEPTIBILITY.ALTHOUGH EACH IMPROVED TECHNIQUE IMPROVES THE TECHNOLOGY, IT IS THE POSSIBLE COMBINATION OF TECHNIQUES THAT WILL OPTIMIZE EXPLORATION.TO BE MOST EFFECTIVE THE TECHNIQUES SHOULD BE INTEGRATED AND EXPLORATION METHODS PREDICATED ON SOUND GEOLOGICAL-GEOCHEMICAL PRINCIPLES OF URANIUM ORE GENESIS./

RS78-2-522

78C0070545 EDB-78-13 51.010
(CONF-7510172--P2)GEOLOGIC INTERPRETATION OF LANDSAT-1 IMAGERY OF THE GREATER PART OF THE MICHIGAN BASIN/
DRAKE,B.(ENVIRONMENTAL RESEARCH INST.OF MICHIGAN,ANN ARBOR)/VINCENT,R.K./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/53.0100/
GEOLOGIC DEPOSITS: T3, Q1 / GEOLOGY / IMAGES / LAND USE:T2,Q1/MICHIGAN:T1/MONITORING/REMOTE SENSING:Q2,Q3/SATELLITES/ TOPOLOGICAL MAPPING/

RS78-2-523

78R0029433 EDB-78-06 01.200
(AM-IC--8379)MICROFILMING MAPS OF ABANDONED ANTHRACITE MINES,MINES IN THE WYOMING BASIN,NORTHERN ANTHRACITE FIELD/
EATON,W.L./GAIT,G.S./
BUREAU OF MINES,WASHINGTON,D.C.(USA)/
JUN 1968/UNIV.OF TENNESSEE LIBRARY,KNOXVILLE (INTER-LIBRARY LOAN)./
CC=1 027 000/
US/
US/
01.2000/
ABANDONED SHAFTS:T1/ANTHRACITE/COAL MINES/INFORMATION/MAPS:G1/PHOTOGRAPHY/WYOMING/

RS78-2-524

78R0081249 EDB-78-17 15.060
SAN--1326-1/2/
DIRECT HEAT APPLICATIONS OF GEOTHERMAL ENERGY IN THE GEYSERS/CLEAR LAKE REGION.FINAL REPORT.VOLUME II.ENVIRONMENTAL ASSESSMENT/
ECOVIEW.NAPA.CALIF.(USA)/
CONTRACT EG-77-C-03-1326/
AUG 1977/
DEP.NTIS.PC A12/MF A01./
9 505 663/
US/
US/
ERA-03:039904/NTS-78:062508/EPA-04:004087/EDB-78:089249/
THE ENVIRONMENTAL REPORT ON EACH OF THE SIX STUDY AREAS IS PRESENTED UNDER THE FOLLOWING SECTION HEADINGS:GENERAL ASPECTS / AIR RESOURCE STATUS AND QUALITY/WATER RESOURCE--STATUS AND QUALITY/VEGETATION RESOURCE/AND,FAUNAL RESOURCE. THE SIX STUDY AREAS ARE:(1)BORAX LAKE - BURNS VALLEY,SULPHUR BANK MINE VALLEY,AND HIGH VALLEY/(2)MT.KONOCTI - THURSTON LAKE/

(3) COLLOYAMI VALLEY - FORD FLAT AREA,(4)HIGH VALLEY CREEK - GLENBROOK AREA/(5)CALISTOGA GEOTHERMAL AREA/AND (6)GEYSERS GEOTHERMAL FIELD.(JGB)/
GEOTHERMAL ENERGY/
P/
15.0600/15.1000/51.0200/29.0800/
AIR/AIR POLLUTION/AIR QUALITY/ANIMALS/CALIFORNIA:T1/CLIMATES/DIAGRAMS/ENVIRONMENTAL IMPACTS:Q2/GEOTHERMAL ENERGY:T2,Q1/GEYSERS GEOTHERMAL FIELD/HABITAT/HYDROLOGY/IMAGES/LAND POLLUTION/MOUNTAINS/PLANTS/TABLES/VALLEYS/WATER POLLUTION/

RS78-2-525

78C0077d56 EDB-78-15 05.020
GJO--108(77)/
STATUS AND PROGRESS OF THE NURE PROGRAM/
EVERHART,D.L./
DEPARTMENT OF ENERGY,GRAND JUNCTION,COLO.(USA),GRAND JUNCTION OFFICE/
1977/
CONF-771012--/
URANIUM INDUSTRY SEMINAR/
9 505 659/
US/
US/
ERA-04:034557/INS-78:009513/EPA-04:003600/EDB-78:077856/
BACKGROUND INFORMATION ON THE NATIONAL URANIUM RESOURCE EVALUATION (NURE)PROGRAM IS GIVEN ALONG WITH OPERATIONAL METHODOLOGY. INFORMATION IS INCLUDED ON AERIAL PROSPECTING HYDROCHEMICAL RECONNAISSANCE,GEOLOGIC STUDIES,GEOCHEMICAL STUDIES,REMOTE SENSING,TECHNOLOGY DEVELOPMENT,EXPLORATION TECHNIQUES,AND DATA MANAGEMENT.(JRD)/
URANIUM INDUSTRY SEMINAR/
GRAND JUNCTION,CO,USA/
26 OCT 1977/
05.0200/29.0600/
DATA PROCESSING/EVALUATION/EXPLORATION:Q2/GEOCHEMICAL SURVEYS/GEOLOGICAL SURVEYS/REMOTE SENSING/RESOURCE ASSESSMENT:Q1/SEDIMENTS/STREAMS/URANIUM DEPOSITS:T2,Q1/USA:T1/

RS78-2-526

78C0071092 EDB-78-13 58.020
CONF-7510172--P1/
EROS PROGRAM OF THE DEPARTMENT OF THE INTERIOR/
FISCHER,W.A./FEMPHILL,W.R./
GEOLOGICAL SURVEY,RESTON,VA/
1975/
PROCEEDINGS OF THE TENTH INTERNATICNAL SYMPCSIUM CN REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036135/EDB-78:071092/
THE OBJECTIVES OF THE EROS PROGRAM ARE:TO UNDERTAKE RESEARCH RELATING TO THE DEVELOPMENT AND USE OF REMOTE-SENSOR SYSTEMS FOR RESOURCESS AND ENVIRCNMENTAL PURPOSES- TO PRCVIDE TRAINING ASSISTANCE IN THE USE OF THE DATA FROM THESE SENSORS TO THE NATIONAL AND INTERNATIONAL COMMUNITY OF EARTH SCIENTISTS AND RESOURCES MANAGERS/TO MAKE THE DATA COLLECTED BY SENSOR SYSTEMS AVAILABLE AT A REASCNABLE CCST, CN A TIMELY BASIS, AND TO PROVIDE GUIDANCE ON THE CHARACTERISTICS AND POTENTIAL BENEFITS OF FUTURE SYSTEMS.RESEARCH HAS INCLUDED THREE AREAS:THE DEVELOPMENT OF RATIOING TECHNIQUES AND OTHER MATHEMATICAL TREATMENTS OF DIGITAL DATA CERIVED FROM THE LANDSAT EARTH RESOURCES SATELLITES/THE DEFINITION OF APPLICATIONS OF LANDSAT-TYPE DATA WITH EMPHASIS IN SUCH AREAS AS THE RECOGNITION AND EVALUATION OF LARGE-SCALE GEOLOGIC FEATURES, MAPPING OF FLCODS,ASSESSMENT CF RANCELAND CONDITION,MEASUREMENT OF SNOW DISTRIBUTION, DETECTION OF OIL ON WATER,AND DETERMINING THE USEFULNESS OF THE DATA FOR MAPPING LAND SYSTEMS AND LAND COVER BY BOTH MANUAL AND SEMI-AUTOMATIC TECHNIQUES / AND THE DEVELCPMENT AND TESTING OF THE FRAUNHOFER LINE DISCRIMINATOR (FLD),AN AIRBORNE DEVICE THAT MEASURES THE LUMINESCENCE CF NATURAL OBJECTS./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING CF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
58.0203/51.0100/52.0200/52.0100/
DATA COMPILATION / EARTH PLANET / ENVIRCNMENT: T2 /FLOODS/GEOLOGIC DEPOSITS/GEOLOGY/REMOTE SENSING:T5.01,02/RESEARCH PROGRAMS:05/RESOURCES:T1/SATELLITES/TOPOLOGICAL MAPPING/US ORGANIZATIONS/USES/WATER POLLUTION/

RS78-2-527

78D0070595 EDB-78-13 52.010
CONF-7510172--P1/
SATELLITE-INTERROGATED DATA PLATFORMS IN RIVER AND FLOOD FORECASTING/
FLANDERS,A.F./SCHIESL,J.W./
NATIONAL WEATHER SERVICE,SILVER SPRING,MD/
1975/
PROCEEDINGS OF THE TENTH INTERNATICNAL SYMPCSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036000/EDB-78:070595/
FLOOD PREPAREDNESS AND DAY-TO-DAY WATER MANAGEMENT ACTIVITIES ARE DEPENDENT UPON ACCURATE KNOWLEDGE OF THE STATE OF THE NATION'S RIVERS.THE RIVER AND FLOOD FORECAST AND WARNING SERVICE OF THE NATIONAL WEATHER SERVICE (NWS)IS DEPENDENT UPON REPORTS FROM A NETWORK OF NEARLY 7,000 RIVER AND RAINFALL STATIONS.TO SPEED UP THE COLLECTION OF THESE REPORTS THE NWS HAS DEVELOPED AN AUTOMATED HYDROLOGIC OBSERVING SYSTEM (AHOS)THAT PROVIDES GREAT FLEXIBILITY IN THE SELECTION OF THE TYPES OF INSTRUMENTS THAT CAN USE THE SYSTEM OVER THE VARICUS FCRMS OF COMMUNICATIONS MEDIA SUCH AS TELEPHONE,RADIO,AND SATELLITE. SATELLITE COMMUNICATIONS ARE USED WHERE NO RELIABLE PHONE SERVICE EXISTS.THE DATA ARE TRANSMITTED FROM A REMOTE HYDROLOGIC SITE THROUGH THE GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE (GOES)TO A COMMAND AND DATA ACQUISITION (CDA) STATION AT WALLOPS ISLAND,VIRGINIA,OPERATED BY THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS)OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATICN (NOAA).THESE DATA ARE THEN DISSEMINATED VIA NOAA COMMUNICATIONS TO THE RIVER FORECAST CENTERS (RFC'S) AND OTHER USERS.THIS SYSTEM HOLDS PRCMISE FOR PROVIDING LIFE-SAVING AND ECONOMIC BENEFITS TO THE NATION THROUGH SPACE AGE TECHNCLOGY./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING CF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
DATA ACQUISITION/FLOODS:T2/FORECASTING:Q2/INFORMATION SYSTEMS/MANAGEMENT:Q1/RIVERS:T1/SATELLITES/WEATHER/

RS78-2-528

78C00630/ EDB-78-12 05.020
REMOTE SENSING IN URANIUM EXPLORATION/
GABELMAN,J.W.(UTAH INTERNATIONAL INC.,USA)/
IAEA/VIENNA/1977/
RECOGNITION AND EVALUATION OF URANIFEROUS AREAS/
US/
XA/
TECHNICAL COMMITTEE MEETING ON RECOGNITION AND EVALUATION OF URANIFEROUS AREAS/
VIENNA,AUSTRIA/
17 NOV 1975/
05.0200/
EXPLORATION: Q1 / GEOLOGY /GEOPHYSICS/IMAGE SCANNERS/IMAGES/PHOTOGRAPHY/REMOTE SENSING/SATELLITES/SPECTROSCOPY/URANIUM DEPOSITS:T1/URANIUM ORES/

RS78-2-529

78C00067I EDB-78-19 05.020
STREAM SEDIMENT ORIENTATION PROGRAM FOR URANIUM IN THE ALLIGATOR RIVER PROVINCE,NORTHERN TERRITORY,AUSTRALIA/
GINGRICH,J.E.(TERRADEX CORPORATION,WALNUT CREEK,CALIFORNIA (USA))/FOY,M.F./
ELSEVIER/AMSTERDAM/1977/
CONF-760120--/
GEOCHEMICAL EXPLORATION 1976/
BUTT,C.R.M./WILDING,I.G.P.(EDS.)/
US/
NL/
AIX-09:373399/ERA-03:049616/EDB-78:100671/
SEDIMENTS SAMPLES WERE COLLECTED FROM STREAMS DRAINING THE KOONGARRA URANIUM DEPOSIT AND THE SMALL URANIUM MINES IN THE SOUTH ALLIGATOR VALLEY. DETERMINATIONS FOR U,CU AND PB ON VARIOUS SIZE FRACTIONS TAKEN FROM EACH OF THESE SAMPLES INDICATED THAT THE BEST RESULTS WERE OBTAINED FOR U FROM THE MINUS 200-MESH FRACTION. BUT THE TRAIN FROM THE KOONGARRA ORE DEPOSIT WAS VERY SHORT. CU AND PB WERE NOT FOUND TO BE VERY USEFUL AS INDICATOR ELEMENTS FOR U. ALPHA-TRACK FILMS WERE USED TO DETERMINE THE RN CONTENT OF EACH SAMPLE AND THE RATIO OF ALPHA-TRACK FILM READING TO U CONTENT WAS FOUND TO DEFINE ANOMALOUS DRAINAGE AREAS AROUND THE MINERALIZATION IN THE KOONGARRA AREA. THE AREAS SO DEFINED WERE OF SUFFICIENT MAGNITUDE TO BE DEFINED IN A RECONNAISSANCE STREAM SEDIMENT PROGRAM./
6.INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM/
SYDNEY,AUSTRALIA/
AUG 1976/
05.0200/
ALPHA DETECTION / ALPHA PARTICLES /COPPER/EXPLORATION/FILTRATION/GEOCHEMICAL SURVEYS:Q1/LEAD/MINERALIZATION/NORTHERN TERRITORY:T1/PHOTOGRAPHIC FILM DETECTORS/PROSPECTING:Q2/QUANTITY RATIO/RADON/RIVERS/SEDIMENTS/URANIUM DEPOSITS:T2/

RS78-2-530

78C00730O5 EDB-78-13 52.010
CONF-751072--P2/
SOME OPERATIONAL USES OF SATELLITE RETRANSMISSION IN CANADA/
HALIDAY,R.A./REID,I.A./
ENVIRONMENT CANADA,OTTAWA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
CA/
US/
FRA-03:036010/EDB-78:070605/
IT IS NOW POSSIBLE THROUGH USE OF THE DATA COLLECTION SYSTEMS CARRIED BY SATELLITES SUCH AS LANDSAT AND GOES TO OBTAIN NEAR REAL TIME WATER RESOURCES DATA FROM ANY LOCATION IN CANADA. THESE DATA HAVE BEEN USED FOR FLOW AND FLOOD FORECASTING AND TO ASSIST IN THE CONDUCT OF HYDROMETRIC SURVEYS. PRESENT PROGRAMS WILL BE CONTINUED AND, LIKELY, EXPANDED, DEPENDING ON THE AVAILABILITY OF SUITABLE SATELLITE SYSTEMS./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
CANADA:T2/DATA COMPILATION:Q1/FLOOD CONTROL/SATELLITES/USES/WATER RESOURCES:T1,Q2/

RS78-2-531

78C0067645 EDB-78-13 15.030
(CONF-751072--P2)GEOTHERMAL SURVEY USING THERMAL INFRARED REMOTE SENSING IN JAPAN/
HASE,H./MATSUNO,K./NISHIMURA,K./
GEOLOGICAL SURVEY OF JAPAN,TAKATSUKI/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
JP/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
15.0301/
FUMAROLES / GEOTHERMAL EXPLORATION: Q3 / GEOTHERMAL GRADIENTS/INFRARED SURVEYS:Q3/JAPAN:T3/MONITORING/REMOTE SENSING/
TOPOLOGICAL MAPPING/

RS78-2-532

7810099090 EDB-78-18 58.020
MINERAL EXPLORATION TRENDS AND DEVELOPMENTS IN 1977/
HOOD,P./
GEOL SURV OF CAN/
CAN.MIN.J./99/1/JAN 1978/
8-53/
CA/
CA/
CAMJA/
EDB-78:099090/
THE ARTICLE IS A DETAILED REVIEW OF BOTH AIRBORNE AND GROUND GEOPHYSICAL SURVEYS,TECHNIQUES AND INSTRUMENTS./
58.0203/
AERIAL PROSPECTING / CANADA / COST / DATA ACQUISITION SYSTEMS/DRILLING/ELECTROMAGNETIC SURVEYS/EXPLORATION:Q1/GAMMA
SPECTROMETERS / GEOCHEMICAL SURVEYS /GEOPHYSICAL SURVEYS:T2/MAGNETIC SUSCEPTIBILITY/MAGNETOMETERS/MINERAL RESOURCES:T1/
RADIOACTIVITY/REVIEWS:Q2/SEISMIC DETECTORS/TABLES/

RS78-2-533

78C0070550 EDB-78-13 51.010
(CONF-751072--P2)STUDY OF LAND FORMATION IN BANGLADESH WITH LANDSAT-1 IMAGERIES/
HOSSAIN,A./CHAUDHURY,M.U./
BANGLADESH NATIONAL LANDSAT PROGRAMME,DACCA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
BD/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/
BANGLADESH:T1/DATA COMPILATION/GEOLOGY:Q1/IMAGES/LAND USE/PHOTOGRAPHY/REMOTE SENSING/SATELLITES/

RS78-2-534

78J0094072 EDB-78-18 01.100
COMPUTER-ASSISTED NATIONAL COAL INVENTORY/
IRVINE,J.A./WILLIAMS,G.D./
UNIV.OF ALBERTA,CALGARY/
2200 BOREHOLES/
CIM BULL./71/794/JUN 1978/
63-70/
CA/
CA/
CIBUB/
FRA-03:046383/EDB-78:094072/
IN 1972,A COOPERATIVE PROGRAM TO MAP AND ESTIMATE THE QUANTITY OF TERTIARY COAL RESOURCES IN SOUTHERN SASKATCHEWAN WAS INITIATED BY THE FEDERAL AND SASKATCHEWAN GOVERNMENTS.MORE THAN 700 EXPLORATORY BOREHOLES WERE DRILLED OVER A TWO-YEAR PERIOD, AND DATA WERE OBTAINED FROM OTHER ORGANIZATIONS ON AN ADDITIONAL 1500 BOREHOLES IN THE AREA.STRATIGRAPHIC DATA AND DATA ON EACH COAL SEAM PENETRATED IN THE BOREHOLES,ALONG WITH TECHNICAL AND LOCATION DATA FOR EACH BOREHOLE,WERE STORED IN A COMPUTER DATA BASE FOR CONVENIENCE OF RETRIEVAL,MODIFICATION AND MANIPULATION.PROGRAMS AND PROGRAM PACKAGES WERE DEVELOPED OR ADAPTED TO:(1)SELECT BOREHOLE INFORMATION DEFINED BY VARIABLE RETRIEVAL PARAMETERS FROM THE DATA BASE/ (2) CALCULATE DERIVED INFORMATION, SUCH AS OVERBURDEN RATIOS,CUMULATIVE NET COAL THICKNESSES,MEAN WEIGHTED CENTER OF GRAVITY OF COAL SEAMS IN EACH BOREHOLE,ETC.,FROM THE SELECTED DATA/(3)PRODUCE POSTING MAPS OF EITHER SELECTED DATA OR CALCULATED INFORMATION IN VARIOUS COMBINATIONS AT VARIABLE SCALES ON A PLOTTER OR CRT DISPLAY/(4)PRODUCE CONTOURED STRUCTURE, ISOPACH OR RATIO MAPS,AND PERSPECTIVE DIAGRAMS AS APPROPRIATE,UTILIZING PLOTTER OR CRT DISPLAY/(5)CALCULATE AND CATEGORIZE QUANTITIES OF COAL IN PLACE WITHIN USER-DEFINED ''MINEABILITY-ECONOMIC-RELIABILITY'' LIMITS.THE EMPHASIS IN COMPUTER UTILIZATION WAS PLACED ON GEOLOGICAL CREDIBILITY OF THE RESULTS AND EASE OF OPERATION BY RELATIVELY UNTRAINED GEOLOGICAL PERSONNEL, RESULTING IN EXTENSIVE USE OF INTERACTIVE METHODS.THE SINGLE MOST IMPORTANT BENEFIT DERIVED FROM USING COMPUTER-ASSISTED PROCEDURES IS THE ABILITY TO PRODUCE NEW MAPS AND QUANTITY ESTIMATES RAPIDLY AND INEXPENSIVELY AS A RESULT OF AVAILABILITY OF NEW DATA OR/AND CHANGES IN EXTERNAL CRITERIA WHICH IMPOSE ECONOMIC OR MINEABILITY CONSTRAINTS./
01.1000/
BOREHOLES/CANADA/COAL DEPOSITS:N2/COAL RESERVES:Q1/COMPUTER CALCULATIONS/EXPLORATION:Q2/GEOLOGY/INFORMATION RETRIEVAL/ INFORMATION SYSTEMS/MAPS/SASKATCHEWAN:N1/STRATIGRAPHY:Q2/

RS78-2-535

78R0095070 EDB-78-18 15.030
NP--22378/
GEOTHERMAL SURVEY HANDBOOK/
JAPAN GEOTHERMAL ENERGY ASSOCIATION,TOKYO/
1974/
JAPANESE/
TIC./
9 698 159/
JP/
JP/
EDB-78:095070/
THE OBJECTIVE OF THIS HANDBOOK IS TO PUBLICIZE WIDELY THE NATURE OF GEOTHERMAL SURVEYS.IT COVERS GEOTHERMAL SURVEY PLANNING AND MEASUREMENT AS WELL AS MEASUREMENT OF THERMAL CONDUCTIVITY.METHODS FOR THE DETECTION OF ERUPTIVE AREAS.THE MEASUREMENT OF RADIATIVE HEAT USING SNOWFALL.THE MEASUREMENT OF SURFACE TEMPERATURE USING INFRARED RADIATION AND THE MEASUREMENT OF THERMAL FLOW ARE DESCRIBED. THE BOOK ALSO CONTAINS INFORMATION ON PHYSICAL DETECTION OF GEOTHERMAL RESERVOIRS. THE MEASUREMENT OF SPRING WELLS. THERMOGRAPHIC MEASUREMENT OF SURFACE HEAT. IRREGULAR LAYER SURVEYING.AIR THERMOGRAPHICS AND AERIAL PHOTOGRAPHY.ISOTOPE MEASUREMENT TECHNIQUES ARE INCLUDED./
PORTIONS OF DOCUMENT ARE ILLEGIBLE/
NP/
15.0301/15.0302/
AERIAL PROSPECTING / GEOCHEMICAL SURVEYS / GEOPHYSICAL SURVEYS/GEOTHERMAL EXPLORATION:T1/GEOTHERMAL WELLS/HEAT FLOW/ INFRARED SURVEYS / INFRARED THERMOGRAPHY / ISOTOPES / MEASURING METHODS:Q1/PLANNING/REMOTE SENSING/REVIEWS:Q1/THERMAL CONDUCTIVITY/

RS78-2-536

78J0081195 EDB-78-15 51.050
MICROWAVE RADIOMETRIC SURVEY OF THE SAN JOAQUIN NUCLEAR PROJECT SITE,KERN COUNTY,CALIFORNIA/
JOHNSON,G.R./ENGLAND,A.W./
GEOLOGICAL SURVEY,DENVER/
J.RES.U.S.GEOL.SURV./5/4/1977/
431-435/
US/
US/
JRGSA/
ERA-03:041510/EDB-78:081195/
AN AIRBORNE MICROWAVE SURVEY WAS MADE IN THE REGION OF THE SAN JOAQUIN NUCLEAR PROJECT SITE NEAR BAKERSFIELD,CALIF. THE PURPOSE OF THE STUDY WAS TO DETERMINE IF THE VARIABILITY OF SOIL EMISSIVITY DUE TO MOISTURE CONTENT IS A VALID NEAR-SURFACE EXPRESSION OF BURIED FAULT SYSTEMS. THE RESULTS SHOWED THE EXISTENCE OF LINEAR-EMISSIVITY ANOMALIES PARALLELING, AND TO SOME EXTENT, OVERLYING THE GREELEY AND POND-POSO CREEK FAULTS. THE ANOMALIES SEEM TO BE DIRECT EXPRESSIONS OF SILT-FILLED, NORTHWESTERLY TRENDING CHANNELS OF THE POND-POSO CREEK-TULARE LAKE DISTRIBUTARY SYSTEM. THE LOCATION, ORIENTATION, AND LINEARITY OF THE DISTRIBUTARY CHANNELS SUGGEST AN ASSOCIATION WITH BURIED FAULTS, BUT NO RELATIONSHIP HAS YET BEEN DETERMINED./
51.0500/22.0501/
AERIAL MONITORING / CALIFORNIA: T1 / ELECTROMAGNETIC SURVEYS: Q1,Q3/EMISSION/GEOLOGIC FAULTS:T3/GEOPHYSICAL SURVEYS/ MICROWAVE RADIATION/MOISTURE/NUCLEAR POWER PLANTS/REACTOR SITES:T2/SITE SELECTION:Q2/SOILS/WATER VAPOR/

RS78-2-537

78C0070549 EDB-78-13 51.010
(CONF-7510172--P2)THERMAL INERTIA MAPPING/
KAHLE,A.B./GILLESPIE,A.R./GOETZ,A.F.H./ADDINGTON,J.D./
JET PROPULSION LAB.,PASADENA,CA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/
CALIFORNIA /DESERTS:T2/EARTH PLANET:T1/MATHEMATICAL MODELS/METEOROLOGY/MOMENT OF INERTIA/REMOTE SENSING:Q2/TEMPERATURE MEASUREMENT/TOPOLOGICAL MAPPING:Q1/

RS78-2-538

78J0102583 EDB-78-19 29.040
WORLD ENERGY RESOURCES:LIMITS FROM TODAY'S GEOLOGICAL STANDPOINT/
KERRER,P./
NAT.RESOUR.FORUM/2/2/1978/
157-169/
NL/
NL/
NRFOD/
FPA-04:004831/EDB-78:102583/
WORLD FOSSIL-ENERGY RESOURCES ARE ESTIMATED AT ABOUT 12,500 TERATONS OF COAL EQUIVALENT (TTCE)OF WHICH 900 TERATONS ARE CLASSED AS PRESENTLY RECOVERABLE RESERVES. FUTURE EXPLORATION WILL TRANSFORM A SUBSTANTIAL PART OF THE RESOURCES INTO RESERVES. COAL IS BY FAR THE DOMINANT FOSSIL ENERGY. OIL SHALES AND TAR SANDS REPRESENT A LARGE ENERGY POTENTIAL, WHOSE UTILIZATION DEPENDS ON HIGH ENERGY PRICE LEVEL AND PROGRESS IN PRODUCTION TECHNOLOGIES. LIMITS IN THE AVAILABILITY OF OIL AND GAS ARE VISIBLE NOW FOR THE FIRST TIME. LOW-COST, HIGH-GRADE URANIUM RESERVES ARE ALSO LIMITED. HOWEVER, THERE ARE LARGE AMOUNTS OF LOW-GRADE URANIUM RESOURCES, WHICH MIGHT BECOME RECOVERABLE IN THE FUTURE. THE USE OF GEOTHERMAL ENERGY IS CURRENTLY TROUBLED BY PROBLEMS OF TECHNOLOGY, COSTS AND ENVIRONMENT./
29.0400/01.1000/05.0100/04.0100/29.4000/
AVAILABILITY /COAL RESERVES/ENERGY SOURCES:T2/EXPLORATION/FOSSIL FUELS:T1/GEOLOGY/GEOTHERMAL ENERGY/GLOBAL ASPECTS:Q2/ NATURAL GAS/OIL SANDS/OIL SHALES/PETROLEUM/RESERVES:Q1/RESOURCES:Q1/URANIUM RESERVES/

RS78-2-539

78C0072765 EDB-78-14 01.090
CONF-7710109--/
UTILIZATION OF COLOR AND COLOR INFRARED AERIAL PHOTOGRAPHY IN THE SURFACE COAL MINING PROCESS/
KNUTH,W.M./FRITZ,E.L./
HRB-SINGER,INC.,STATE COLLEGE,PA/
1977/
FIFTH SYMPOSIUM ON SURFACE MINING AND RECLAMATION/
US/
US/
ERA-03:031675/EDB-78:072765/
REMOTE SENSING SYSTEMS ARE SCIENTIFIC INSTRUMENTS FOR QUANTITATIVE MEASUREMENTS AND QUALITATIVE OBSERVATION DIRECTED AT SECURING AND UTILIZING INFORMATION.HOWEVER,THEY MUST NOT BE CONSTRUED AS ENDS IN THEMSELVES.REMOTE SENSING SHOULD RATHER BE CONSIDERED AS A MEANS TO AN END.CONSIDERABLE BASIC RESEARCH IN REMOTE SENSING HAS BEEN UNDERWAY FOR SEVERAL YEARS. IT IS HOPED THAT THIS DISCUSSION WILL SERVE TO BRIDGE THE GAP BETWEEN BASIC RESEARCH AND OPERATIONAL NEEDS. THE AUTHORS FIRMLY BELIEVE THAT REMOTE SENSING RELATED TO PLANNING AND MONITORING OF SURFACE COAL MINING ACTIVITIES HAS A DEFINITE FUTURE IN THE COAL COMMUNITY PROVIDED (1)LIMITATIONS OF THE SENSORS ARE CLEARLY UNDERSTOOD,(2)THE LEVEL AND RELIABILITY OF THE INFORMATION CONTENT PROVIDED BY THE REMOTE SENSING DATA HAS BEEN CLEARLY ESTABLISHED,(3)THE REAL INFORMATION REQUIREMENTS OF THE USERS ARE CLEARLY ESTABLISHED AND (4)THE ECONOMIC BENEFIT OF SUCH SENSORS CAN BE SHOWN. IT IS IN THIS CONTEXT THAT DISCUSSIONS OF THE USE OF COLOR AND COLOR AERIAL PHOTOGRAPHY IN THE SURFACE COAL MINING PROCESS ARE INCLUDED./
5.SYMPOSIUM ON SURFACE MINING AND RECLAMATION/
LOUISVILLE,KY,USA/
18 OCT 1977/
01.0300/01.2000/
AERIAL MONITORING: Q1 / COAL MINING /GEOLOGY/INFRARED SURVEYS/LAND USE/MAPS/PLANNING:Q1/PLANTS/REMOTE SENSING/SOILS/SURFACE MINING:T1/

RS78-2-540

78B0063072 EDB-78-12 05.020
FUNDAMENTALS OF GAMMA SPECTROSCOPY OF NATURAL MEDIA/
KOGAN,R.M./NAZAROV,I.M./FRIDMAN,SH.D./
BOOK/
ATOMIZDAT/MOSCOW/1976/
SU/
SU/
05.0200/40.0103/
AERIAL PROSPECTING / AERIAL SURVEYING:Q1,Q2/ERRORS/GAMMA RADIATION/GAMMA SPECTROSCOPY:M/GEOLOGICAL SURVEYS/HYDROLOGY/NATURAL RADIOACTIVITY / POTASSIUM / RADIOECOLOGICAL CONCENTRATION / RADIONUCLIDE MIGRATION/SOILS/SPATIAL DISTRIBUTION/STATISTICS/THORIUM/THORIUM ORES:M2/URANIUM/URANIUM DEPOSITS:M1/

RS78-2-541

78C0070942 EDB-78-13 51.010
(CONF-7510172--P2)PLACE AND SIGNIFICANCE OF RADAR SURVEY IN THE COMPLEX OF REMOTE SENSING METHODS USED IN THE USSR FOR STUDY OF ENVIRONMENT/
KOMAROV,V.B./SHAROSTIN,V.A./
LAB.OF AEROMETHODS,LENINGRAD/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
SU/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/52.0200/
CROPS: T1 / GEOLOGY/HYDROLOGY/ICE/IMAGES/MONITORING/PHOTOGRAPHY/RADAR/REMOTE SENSING:Q1,Q2,Q3/SOILS:T3/USES/USSR/WATER POLLUTION:T2/

RS78-2-542

78C0070544 EDB-78-13 51.010
(CONF-7510172--P2)SOME RESULTS OBTAINED BY APPLYING REMOTE SENSING IN EXPLORATION OF MINERALIZED ZONES IN YUGOSLAVIA/
KOSCEC,J./KOSCEC,D./DENIH,M./KNAPP,M./
INDUSTROPROJEKT,ZAGREB/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
YU/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/58.0100/
COPPER / DATA ANALYSIS/EXPLORATION:Q2/GEOCHEMISTRY/GEOLOGY/IMAGES/MINERALIZATION/MINERALS:T2/REMOTE SENSING:Q1/ROCKS/
TEMPERATURE EFFECTS/YUGOSLAVIA:T1/

RS78-2-543

78C0070569 EDB-78-13 51.010
(CONF-7510172--P2)MEASUREMENTS OF SNOW COVER OVER LAND WITH THE NIMBUS-5 MICROWAVE SPECTROMETER/
KUENZI,K.F.(UNIV.OF BERN)/STAELIN,D.H./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
CH/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/
DATA/IMAGES/MAPS/MEASURING METHODS:Q1/MICROWAVE RADIATION/SATELLITES/SNOW:T1/SPECTROMETERS/

RS78-2-544

78V0043133 EDB-78-08 15.030
(N--77-27474)LANDSAT (ERTS)USED AS A BASIS FOR GEOLOGICAL VOLCANOLOGICAL MAPPING IN THE CENTRAL ANDES/
KUSSMAUL,S./BECKMAN,C.E./
GEOL.JAHRB./A33/1978/133-144/
NASA-TM--75024/NTIS PC A02/MF A01./
DE/
US/
(GEJAA)
15.0301/58.0203/
AGE ESTIMATION/ANDES:T1/BOLIVIA/CHILE/GEOLOGICAL SURVEYS:Q1,Q2/GEOTHERMAL EXPLORATION:Q1/GEOTHERMAL RESOURCES/MAPS:Q1/
MINERAL RESOURCES/PROSPECTING/REMOTE SENSING:G2/SATELLITES/VOLCANIC REGIONS:Q1,T2/

RS78-2-545

78R0092112 EDB-78-17 58.020
KBS-18--19/
STUDIES ON NEOTECTONIC ACTIVITY IN CENTRAL AND NORTHERN SWEDEN. INVESTIGATION OF AIR-PHOTOS AND INTERPRETATION OF RECENT FAULTS/
LAGERBACK,R./HENKEL,H./
KARNBRAENSLESAEKERHET, STOCKHOLM (SWEDEN)/
SEP 1977/
SWEDISH/
DEP.NTIS (US SALES ONLY),PC A03/MF A01./
9 860 007/
SE/
SE/
AIX-09:363671/NTS-78:062915/ERA-03:043757/EDB-78:092112/
SEVERAL FAULT-LINES OF PRESUMED LATE-GLACIAL AGE IN NORTHERN SWEDEN ARE DESCRIBED. THE FAULTS HAVE BEEN IDENTIFIED AND INVESTIGATED MAINLY BY MEANS OF AIR-PHOTO INTERPRETATION. MORPHOLOGICALLY THE FAULT SCARPS ARE VERY CONSPICIOUS AND CAN BE TRACED OVER LONG DISTANCES. THE FAULTS ARE ALL DEVELOPED IN THE PRECAMBRIAN. THE AMOUNT OF DISPLACEMENT ON THE DISLOCATIONS IS OF THE ORDER OF UP TO ABOUT 30 METERS AND THE MOST EXTENSIVE FAULT-LINE IS ABOUT 150 KM LONG. THE SYNCRONISM BETWEEN THE DEGLACIATION OF THE REGION AND THE FRACTURING OFFERS A NATURAL EXPLANATION OF THE PHENOMENA. THE DIRECT REASON FOR THE CLOSE CONNECTION BETWEEN DEGLACIATION AND TECTONIC MOVEMENTS MAY HAVE BEEN THAT THE DEGLACIATION PROCEEDED RAPIDLY. THE REGIONAL CONNECTION BETWEEN THE NEOTECTONIC STRUCTURES AND THE RECENT SEISMIC PATTERN WITHIN THE AREA IS OBVIOUS. THIS INDICATES THAT THE FORCES WHICH PRODUCED THE FAULTING ARE STILL ACTIVE. NEVERTHELESS IT IS EVIDENT THAT THE FAULTING WAS MORE ACTIVE IN LATE-GLACIAL TIMES THAN TODAY./
NP/
58.0201/05.2002/
AERIAL SURVEYING/GEOLOGIC FAULTS:Q1/GEOLOGY/GEOPHYSICAL SURVEYS/IMAGES/RADIOACTIVE WASTE DISPOSAL/SWEDEN:T1/TECTONICS/UNDERGROUND DISPOSAL/

RS78-2-546

78C0073548 EDB-78-13 51.010
(CONF-7510172--P2)CORRELATION OF ERTS SPECTRA WITH ROCK/SOIL TYPES IN CALIFORNIAN GRASSLAND AREAS/
LEVINE,S./
STANFORD UNIV.,CA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/52.0100/
CALIFORNIA:T4/COASTAL REGIONS/DATA ANALYSIS/GRASS/REMOTE SENSING:Q1,Q2,Q3/ROCKS:T2,Q4/SAN FRANCISCO BAY:T1/SATELLITES/SEASONAL VARIATIONS/SOILS:T3,Q4/SPECTRA/TOPOLOGICAL MAPPING/

RS78-2-547

78C0073602 EDB-78-13 52.010
CONF-7510172--P2/
APPLIED REMOTE SENSING OF THE LOWER ATCHAFALAYA BASIN FLOODWAY/
LEWIS,A.J./KIM,S.T./WILSON,R.T./MONTE,J.A./MCDONALD,R.C./
LOUISIANA STATE UNIV.,BATON ROUGE/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036007/EDB-78:070602/
THE ATCHAFALAYA BASIN, A FEDERAL FLOODWAY, HAS AND CONTINUES TO UNDERGO RAPID CHANGE. THE FUTURE OF THE BASIN IS UNCERTAIN / HOWEVER, BEFORE ANY LAND USE POLICY WAS ESTABLISHED A RESOURCE INVENTORY WAS NEEDED. THE PURPOSE OF THIS STUDY WAS TO PROVIDE SOME OF THE DATA NECESSARY FOR RATIONAL DECISION MAKING. REMOTE SENSING DATA (COLOR, COLOR INFRARED, AND BLACK AND WHITE INFRARED AERIAL FILM) WERE THE PRIMARY DATA SOURCES. OF THE THREE TYPES OF AERIAL PHOTOGRAPHS, COLOR INFRARED WAS JUDGED THE BEST FOR INTERPRETING THE VARIOUS FACETS OF THE RESOURCE INVENTORY. THE RESULTS ARE PRESENTED IN THE FORM OF FIVE 1 /62,500 SCALE MAPS COVERING VEGETATION, SOILS, WATER QUALITY, CANALS AND AQUATICS, AND LAND USE AND A SEQUENCE OF ACCRETION MAPS FROM 1917 TO 1972./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/29.0300/
DATA COMPILATION/DECISION MAKING:Q3/FLOOD CONTROL:T3/FLOODS:T2/INVENTORIES/PHOTOGRAPHY/REMOTE SENSING:Q1,Q2/RESOURCES/RIVERS:T1/TOPOLOGICAL MAPPING/USES/

RS78-2-548

78R0067192 EDB-78-13 05.020
(GJBX--16(78)NURE AERIAL GAMMA RAY AND MAGNETIC RECONNAISSANCE SURVEY,THORPE AREA,NEWARK NK18-11 QUADRANGLE,VOLUME I,NARRATIVE REPORT/
EKB RESOURCES,INC.,HUNTINGDON VALLEY,PA.(USA)/
NOV 1977/DEP.NTIS,PC E04/MF A01./
CC-9 506 602/
US/
US/
05.0200/
AERIAL PROSPECTING:Q1/AERIAL SURVEYING:Q2,Q3/DATA ACQUISITION/DATA ANALYSIS/DATA PROCESSING/GEOLOGY/MAGNETIC SURVEYS:Q2,Q3/NATURAL RADIOACTIVITY/NEW JERSEY:T2/PENNSYLVANIA:T3/URANIUM DEPOSITS:T1/USA/

RS78-2-549

78R0073147 EDB-78-14 05.020
GJBX--16(78)(VOL.2)/
NURE AERIAL GAMMA RAY AND MAGNETIC RECONNAISSANCE SURVEY,THORPE AREA,NEWARK NK18-11 QUADRANGLE/
EKB RESOURCES,INC.,HUNTINGDON VALLEY,PA.(USA)/
MAPS ONLY,NO TEXT/
CONTRACT EY-76-C-13-1664/
NOV 1977/
DEP.NTIS,MF A01./
9 506 602/
US/
US/
ERA-03:034653/NTS-78:060677/INS-78:CC9509/EDB-78:073147/
VOL II CONTAINS THE DATA GENERATED BY THE AERIAL GAMMA-RAY AND MAGNETIC SURVEY OF THE NEWARK NK 18-11 QUADRANGLE OF THE THORPE AREA.(LK)/
PORTIONS OF DOCUMENT ARE ILLEGIBLE/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING: Q1 / AERIAL SURVEYING:Q2,Q3,Q4/DATA ACQUISITION/DATA ANALYSIS/GEOLOGY/MAGNETIC SURVEYS:Q2,Q3,Q4/NATURAL RADIOACTIVITY/NEW JERSEY:M3/NEW YORK:M2/PENNSYLVANIA:M4/URANIUM DEPOSITS:M1/USA/

RS78-2-550

78R0077854 EDB-78-15 05.020
GJBX--33(78)/
NURE AERIAL GAMMA RAY AND MAGNETIC RECONNAISSANCE SURVEY,THORPE AREA HARRISBURG NK18-10 QUADRANGLE,VOLUME I,NARRATIVE REPORT/
EKB RESOURCES,INC.,HUNTINGDON VALLEY,PA.(USA)/
CONTRACT EY-76-C-13-1664/
FEB 1978/
DEP.NTIS,PC E05/MF E05./
9 506 602/
US/
US/
INS-78:010655/ERA-03:039242/NTS-78:062040/EDB-78:077854/
INDIVIDUAL SECTIONS ARE DEVOTED TO THE AIRBORNE SYSTEM,FIELD OPERATIONS,DATA REDUCTION,GAMMA-RAY AND MAGNETIC DATA PRESENTATION,GEOLOGY AND URANIUM DEPOSITS OF THE THORPE AREA,PHOTOGEOLOGIC ENHANCEMENT STUDY OF THE THORPE AREA,AND DATA INTERPRETATION.(LK)/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING: Q2 / DATA ACQUISITION/DATA ANALYSIS/DATA PROCESSING/GEOLOGY/MAGNETIC SURVEYS:Q1/PENNSYLVANIA:T1/RADIOMETRIC SURVEYS:Q1/URANIUM DEPOSITS:T2/

RS78-2-551

78C0035311 EDB-78-07 02.020
TOTAL ENERGY RESOURCE EVALUATION AS PART OF FUTURE OIL AND GAS EXPLORATION/
LOHSE,A./
GULF UNIVERSITIES RESEARCH CONSORTIUM,BELLAIRE,TX/
PERGAMON PRESS INC./ELMSFORD,NY/1977/
FUTURE SUPPLY OF NATURE-MADE PETROLEUM AND GAS/
MEYER,R.F.(ED.)/
US/
US/
1.UNITAR CONFERENCE ON ENERGY AND THE FUTURE/
LAXENBURG,AUSTRIA/
5 JUL 1976/
02.0200/03.0200/29.4002/29.4003/
COMPUTERS/DATA PROCESSING/EVALUATION/EXPLORATION:Q1,Q2/FINANCIAL INCENTIVES/GEOLOGY/GEOPHYSICAL SURVEYS/GLOBAL ASPECTS
/GOVERNMENT POLICIES/MAPS/NATURAL GAS DEPOSITS:T1/PETROLEUM DEPOSITS:T2/RADAR/REGULATIONS/RESERVES/SATELLITES/

RS78-2-552

78C0105273 EDB-78-19 58.020
CONF-770478--P2/
LATE WISCONSINAN DEGLACIATION OF THE NORTHERN MIDWEST INTERPRETED FROM A SPRINGTIME LANDSAT COLOR MOSAIC/
LUCAS,J.R.(TECHNICOLOR GRAPHIC SERVICES,INC.,SIOUX FALLS,SD)/TARANIK,J.V./
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-03:051319/EDB-78:105273/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/
DATA ANALYSIS / GEOLOGICAL SURVEYS / GEOPHYSICAL SURVEYS: G1,02,03,04,05,06,07/GLACIERS/ILLINOIS:T7/IMAGES/IOWA:T5/
MINNESOTA:T4/NEBRASKA:T3/NORTH DAKOTA:T1/REMOTE SENSING:T8/SEASONAL VARIATIONS/SOUTH DAKOTA:T2/TECHNOLOGY UTILIZATION:Q8
/WISCONSIN:T6/

RS78-2-553

78C0070551 EDB-78-13 51.010
(CONF-7510172--P2) CORRELATION BETWEEN GROUND METAL ANALYSIS, VEGETATION REFLECTANCE, AND ERTS BRIGHTNESS OVER A
MOLYBDENUM SKARN DEPOSIT,PINE NUT MOUNTAINS,WESTERN NEVADA/
LYON,R.J.P./
STANFORD REMOTE SENSING LAB.,CA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/58.0100/29.0400/
DATA ANALYSIS / DATA COMPILATION / EXPLORATION:Q1/FORESTS/GEOLOGIC DEPOSITS/IMAGES/INTERNATIONAL COOPERATION/METALS/
MOLYBDENUM ORES:T1,02/NEVADA:T2/PLANTS/SATELLITES/

RS78-2-554

78C0094792 EDB-78-18 05.020
GJO--103(76)/
STATUS OF THE NURE PROGRAM/
MALAN,R.C./
NATIONAL URANIUM RESOURCE EVALUATION/
1976/
URANIUM INDUSTRY SEMINAR/
US/
US/
ERA-03:046808/EDB-78:094792/
OBJECTIVES OF THE NATIONAL URANIUM RESOURCE EVALUATION (NURE) PROGRAM ARE THE RAPID COMPLETION OF A COMPREHENSIVE ASSESSMENT OF THE TOTAL URANIUM RESOURCES OF THE U.S., THE IDENTIFICATION OF AREAS FAVORABLE FOR URANIUM RESOURCES, AND THE DEVELOPMENT OF NEW AND IMPROVED GEOPHYSICAL AND OTHER TECHNOLOGY. THE ELEMENTS OF NURE INCLUDE AERIAL RADIOMETRIC SURVEYS, WATER AND STREAM SEDIMENT SAMPLING, SURFACE GEOLOGIC STUDIES, REMOTE SENSING INVESTIGATIONS, AND SUBSURFACE GEOLOGIC INVESTIGATIONS. THE NURE PROGRAM PROCEDURE, DATA INTEGRATION, AND DATA AVAILABILITY ARE DISCUSSED. 13 FIGS. (DLC)/
05.0200/
AERIAL MONITORING/EXPLORATION:Q1/GEOLOGY/RESEARCH PROGRAMS:G2/SAMPLING/SEDIMENTS/URANIUM DEPOSITS:M1/URANIUM RESERVES:M2/WATER/

RS78-2-555

78C0105267 EDB-78-19 58.020
CONF-770478--P1/
COMPARATIVE PLANETOLOGY:IDEAS AND METHODOLOGY/THEIR APPLICATION TO TERRESTRIAL GEOLOGIC PROCESSES/
MASURSKY,H./
GEOLOGICAL SURVEY,FLAGSTAFF,AZ/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.I/
US/
US/
ERA-03:051311/EDB-78:105267/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/
EARTH PLANET/GEOLOGICAL SURVEYS/GEOPHYSICAL SURVEYS:T1/OCEANOGRAPHY/PHYSICAL PROPERTIES/REMOTE SENSING:Q1/

RS78-2-556

78C0070554 EDB-78-13 51.010
(CONF-751017--P2) ENHANCEMENT OF GEOLOGIC FEATURES NEAR MOJAVE,CALIFORNIA BY SPECTRAL BAND RATIOING OF LANDSAT MSS DATA/
MERIFIELD,P.M.(CALIFORNIA EARTH SCIENCE CORP.,SANTA MONICA)/LAMAR,D.L./LAMAR,J.V./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/58.0100/
ALLUVIAL DEPOSITS/CALIFORNIA:T1/DATA COMPILATION/GEOLOGIC STRATA:T2/GEOLOGY:Q1/IMAGES/IRON OXIDES/MINING/PLANTS/REMOTE SENSING:Q2/SATELLITES/SOILS/SPECTRA/

RS78-2-557

78C0105274 EDB-78-10 58.020
CONF-770478--P2/
IMPACT OF ENVIRONMENTAL INFORMATION FROM LANDSAT TO PETROLEUM EXPLORATION IN THE GULF OF ALASKA/
MILLER,J.M./
UNIV.OF ALASKA,FAIRBANKS/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-03:051319/EDB-78:105274/
NONF/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/02.0200/02.0900/
ENVIRONMENTAL IMPACTS / EXPLORATION: 03 / GEOCHEMICAL SURVEYS:01/GEOLOGICAL SURVEYS/GULF OF ALASKA:T1/OFFSHORE SITES/
PETROLEUM:T3/REMOTE SENSING:T2/SITE SELECTION/TECHNOLOGY UTILIZATION:02/

RS78-2-558

78R0071063 EDB-78-13 58.010
LBL--6361/
MEASUREMENT OF SOIL PROPERTIES IN-SITU,PRESENT METHODS:THEIR APPLICABILITY AND POTENTIAL/
MITCHELL,J.K./GUZIKOWSKI,F./VILLET,W.C.B./
CALIFORNIA UNIV.,BERKELEY (USA).LAWRENCE BERKELEY LAB./
CONTRACT W-7405-ENG-48/
MAR 1978/
DEP.NTIS,PC A04/MF A01./
LBL-112 800/
US/
US/
ERA-03:036127/NTIS-78:060955/EDB-78:071063/
THE MEASUREMENT OF SOIL PROPERTIES IN-SITU OFFERS THE ADVANTAGES OF MINIMAL DISTURBANCE,RETENTION OF THE IN-SITU STATE OF STRESS, TEMPERATURE,CHEMICAL,AND BIOLOGICAL ENVIRONMENTS,AND COST EFFECTIVENESS RELATIVE TO MANY TYPES OF LABORATORY TESTS FOR EVALUATION OF UNDISTURBED SOIL PROPERTIES.THIS REPORT IS CONCERNED WITH TECHNIQUES FOR IN-SITU MEASUREMENT OF PERMEABILITY, STRENGTH,STRESS-DEFORMATION PROPERTIES,AND VOLUME CHANGE PROPERTIES/PROPERTY CLASSES WHICH ARE OF INTEREST IN MOST GEOTECHNICAL ENGINEERING PROBLEMS.EMPHASIS IS ON TEST CONCEPTS,DATA ANALYSIS AND INTERPRETATION,AND ADVANTAGES AND LIMITATIONS OF METHODS,AS OPPOSED TO DETAILS OF APPARATUS AND PROCEDURE./
OTHER/
P/
58.0100/
CHEMICAL COMPOSITION/GEOPHYSICAL SURVEYS/HYDROLOGY/MEASURING METHODS/MECHANICAL PROPERTIES:01/NONDESTRUCTIVE TESTING/
REMOTE SENSING/SOILS:T1/STRESS ANALYSIS/TEMPERATURE GRADIENTS/

RS78-2-559

78Y0094300 EDB-78-18 02.020
GAMMA-SPECTROMETRIC STUDY IN VOLGOGRADSKOE ZAVOLZH'E/
MITROFANOV,V.Z./SINYAVSKII,A.G./KOLPAKOV,O.V./GORBAN',YU.B./GRISHIN,G.V./BULYCHEV,G.I./
NIZHNE-VOLZHSKOE KNIZHNOE IZDATEL'STVO/VOLGOGRAD/1976/
RUSSIAN/
GEOLOGIYA I NEFTEGAZONOSNOST' ZAPADNOJ CHASTI PRIKASPIJSKOJ VPADINY./
SU/
SU/
AIX-09:366282/ERA-03:046505/EDB-78:094300/
PROCEDURES ARE CONSIDERED FOR USING AERIAL AND GROUND GAMMA-SPECTROMETRIC AND SOIL-GEOCHEMICAL ANALYSES WITH A VIEW TO DETECTING AREAS, ANOMALOUS IN THE DISTRIBUTION OF RADIOACTIVE ELEMENTS,WHICH ARE PROMISING FOR DETAILED GEOCHEMICAL AND GEOPHYSICAL INVESTIGATIONS. A CONNECTION IS ESTABLISHED BETWEEN THE NEGATIVE ANOMALIES OF THE GAMMA FIELDS OF SURFACE DEPOSITS AND OIL-AND-GAS-BEARING DEPOSITS.WITH A VIEW TO A DETAILED ANALYSIS OF THE NATURE OF THE ANOMALIES,GAMMA-FIELD AND STRUCTURAL MAPS OF VARIOUS STRATA OF COAL AND DEVONIAN DEPOSITS HAVE BEEN CONSTRUCTED BASED ON PROCESSING THE DIAGRAMS OF GAMMA-RAY AND ELECTRIC LOGGING.IT HAS BEEN FOUND THAT THE ARCHED PORTIONS OF THE BEDS ARE NOT CONTROLLED BY THE LOWERING OF THE GAMMA-FIELD IN THEM./
02.0200/03.0200/
AERIAL PROSPECTING:01,02/ELECTRICAL SURVEYS/GAMMA LOGGING/GAMMA RADIATION/GAMMA SPECTROSCOPY/GEOCHEMICAL SURVEYS:01,02 / GEOLOGIC DEPOSITS / GEOLOGICAL SURVEYS/GEOPHYSICAL SURVEYS:01,02/MAPS/NATURAL GAS/NATURAL GAS DEPOSITS:T1/PETROLEUM/ PETROLEUM DEPOSITS:T2/SOILS/USSR/

RS78-2-560

78C00/0561 EDB-78-14 51.010
(CONF-7510172--P2)INFLUENCE OF SOIL MOISTURE ON THE MICROWAVE RESPONSE FROM TERRAIN AS SEEN FROM ORBIT/
MOORE,R.K./ULABY,F.T./SOBTI,A./
UNIV.OF KANSAS CENTER FOR RESEARCH,INC.,LAWRENCE/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/
DATA COMPILATION / ENVIRONMENTAL EFFECTS/MICROWAVE RADIATION/MOISTURE:Q1/RADAR/RADIOMETERS/REMOTE SENSING:Q1/SKYLAB/
SOILS:T1/

RS78-2-561

78J0041127 EDB-78-CE 15.030
GEOLOGICAL REMOTE SENSING-EVALUATION OF IMAGE DATA/
NAGATANI,H./
KOGYO GIJUTSU/18/7/1977/76-80/(IN JAPANESE)
JP/
JP/
(KOGJA)
15.0301/
AERIAL PROSPECTING / GEOLOGIC FAULTS/GEOLOGICAL SURVEYS:Q3/GEOTHERMAL EXPLORATION:T2/GEOTHERMAL FIELDS:Q1,T3/INFRARED
THERMOGRAPHY/MAPS/ONUMA GEOTHERMAL FIELD:T1/REMOTE SENSING:Q2/SATELLITES/

RS78-2-562

78C007276J EDB-78-14 01.090
CONF-7710103--/
FIFTH SYMPOSIUM ON SURFACE MINING AND RECLAMATION,NCA/BCR COAL CONFERENCE AND EXPO IV/
NATIONAL COAL ASSOCIATION,WASHINGTON,D.C.(USA)/BITUMINOUS COAL RESEARCH,INC.,MONROEVILLE,PA.(USA)/
1977/
DEP,NTIS,PC A15/MF A01./
0 500 412/5 SCO 469/
US/
US/
NTS-78:061710/ERA-03:036673/EDB-78:072763/
THE FIFTH SYMPOSIUM ON SURFACE MINING AND RECLAMATION,SPONSORED BY THE NATIONAL COAL ASSOCIATION AND BITUMINOUS COAL RESEARCH, INC., WAS HELD AT THE KENTUCKY FAIR AND EXPOSITION CENTER,LOUISVILLE,KENTUCKY,OCTOBER 18-20,1977.TWENTY-SIX PAPERS FROM THE PROCEEDINGS HAVE BEEN ENTERED INDIVIDUALLY INTO EDB AND ERA.TOPICS COVERED INCLUDE SPOIL BANK REVEGETATION, USE OF AERIAL PHOTOGRAPHY,RECLAMATION FOR ROW CROP PRODUCTION,HYDROLOGY,COMPUTER PROGRAMS RELATED TO THIS WORK, SUBIRRIGATED ALLUVIAL VALLEY FLOORS, RECLAMATION ON STEEP SLOPES,MOUNTAIN TOP REMOVAL,SURFACE MINE ROAD DESIGN, SUCCESSIONAL PROCESSES INVOLVED IN RECLAMATION,LAND USE PLANNING,ETC.(LTN)/
5.SYMPOSIUM ON SURFACE MINING AND RECLAMATION/
LOUISVILLE,KY,USA/
18 OCT 1977/
FOSSIL ENERGY/
P/
01.0900/01.2000/51.0500/
AERIAL MONITORING / CLASSIFICATION: 04 / COAL MINING /HYDROLOGY/LAND RECLAMATION:T2/LEADING ABSTRACT/MEETINGS:Q1,Q2/
REVEGETATION:Q3/ROADS/SOILS:T4/SPOIL BANKS:T3/SURFACE MINING:T1/

RS78-2-563

78R0100650 EDB-78-19 05.020
K/UR--13/
PROCEDURES MANUAL FOR STREAM SEDIMENT RECONNAISSANCE SAMPLING:URANIUM RESOURCE EVALUATION PROJECT/
OAK RIDGE GASEOUS DIFFUSION PLANT,TENN.(USA)/
CONTRACT W-7405-ENG-26/
8 MAY 1978/
DEP.NTIS,PC A03/MF A01./
4 830 000/
US/
US/
FRA-03:046812/INS-78:014020/NTS-78:065333/EDB-78:100650/
A DESCRIPTION OF THE NATIONAL URANIUM RESOURCE EVALUATION (NURE)IS GIVEN.OTHER SECTIONS OF THE MANUAL ARE CONCERNED WITH FIELD OPERATIONS INCLUDING LOGISTICS, SITE SELECTION,SAMPLING,AND SHIPPING.INFORMATION IS ALSO INCLUDED ON DATA RECORDING,ASSIGNMENT OF SURFACE GEOLOGIC UNIT CODES,CONTAMINATION EVALUATION,AND DATA CONTROL GUIDELINES.(JRD)/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING / DRILLING /EXPLORATION:02/GEOCHEMICAL SURVEYS:03/GEOPHYSICAL SURVEYS/SEDIMENTS/STREAMS:T3/URANIUM DEPOSITS:T2,01/USA:T1/

RS78-2-564

78C0071071 EDB-78-13 58.020
CONF-7510172--P2/
LINEAMENTS AND TECTONISM IN THE NORTHERN PART OF THE MISSISSIPPI EMBAYMENT/
O'LEARY,D./SIMPSON,S./
GEOLOGICAL SURVEY,DENVER/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
EDB-78:071071/
A STUDY OF LANDSAT IMAGES, SLAR IMAGE STRIPS,AND SKYLAB PHOTOGRAPHS REVEALS A TECTONICALLY SIGNIFICANT LANDSCAPE PATTERN AT THE NORTHERN END OF THE MISSISSIPPI EMBAYMENT. OF CHIEF GEOLOGIC SIGNIFICANCE IN THE AREA ARE VARIOUS STRUCTURALLY CONTROLLED, STRAIGHT LINEAR FEATURES.THESE FEATURES HAVE A BEARING ON THE ALLUVIAL PART OF THE EMBAYMENT, WHERE STRUCTURE IS NOT OBSERVABLE AT THE SURFACE.THE LINEAMENT PATTERN INDICATES THAT THIS PART OF THE EMBAYMENT IS DOMINATED BY BLOCK-FAULTED STRUCTURES WHICH HAVE BEEN SURROUNDED AND PARTLY BURIED BY PLEISTOCENE SEDIMENTS.MAJOR LINEAMENTS INTERSECT AT THE NORTH END OF THE EMBAYMENT,WHERE A COMPLEX PATTERN OF FAULTING IS PRESENT/THIS PATTERN APPEARS TO CONTROL THE LANDSCAPE FARTHER SOUTH AND SUGGESTS THAT THE EMBAYMENT IS AN EPISODICALLY OPENING,WEDGELIKE FEATURE./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
58.0201/
ARKANSAS:T3/GEOLOGY/ILLINOIS:T2/IMAGES/KENTUCKY:T4/MISSISSIPPI:T6/MISSISSIPPI RIVER/MISSOURI:T1/PHOTOGRAPHY/SATELLITES/SEDIMENTS/SKYLAB/TECTONICS:01,02,03,04,05,06/TENNESSEE:T5/

RS78-2-565

78C0073599 EDB-78-13 52.010
CONF-7510172--P2/
INLAND LAKES WATER QUALITY AND WATERSHED PLANNING:AN APPLICATION OF REMOTE SENSING TECHNOLOGY/
RANEY,R.K.(ENVIRONMENTAL RESEARCH INST.OF MICHIGAN,ANN ARBOR)/WEZERNAK,C.T./BORTON,T./HAGA,T./SMEETS,J./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036004/EDB-78:073599/
THE PAPER PRESENTS RESULTS OF A RESEARCH PROJECT DESIGNED TO EXPLORE THE IMPACT OF REMOTE SENSING AND OTHER INFORMATION SYSTEMS ON PUBLIC PLANNING AND POLICY DECISIONS RELATED TO LAND DEVELOPMENT WITHIN THE DRAINAGE BASIN OF A SMALL INLAND LAKE.THE ISSUE IS ONE OF MAINTAINING WATER QUALITY IN THE FACE OF PRESSURE TO INCREASE THE CULTURAL USE OF THE WATERSHED. THE APPROACH OF THE RESEARCH WAS THREE-FOLD:TO GATHER,INTERPRET,AND PROVIDE INFORMATION REGARDING THE ISSUE TO LOCAL DECISION MAKERS / TO ASSIST IN MOTIVATING A COMMON PROBLEM RECOGNITION AMONG THE LOCAL PEOPLE/AND TO WITHDRAW FROM THE LOCAL AREA,LEAVING BEHIND SUFFICIENT TECHNICAL RESOURCES TO MEET THE NEEDS OF LOCAL INITIATIVES TO ACTION. AND TO OBSERVE EARLY PHASES OF CHANGED ENVIRONMENTAL DECISION-MAKING.THE PROBLEM HAS TWO ASPECTS:THE POLICY, PLANNING, AND DECISION-MAKING STRUCTURE / AND THE TECHNICAL INFORMATION NEEDS RELEVANT TO THE ISSUE.THE STRUCTURE IS DISAGGREGATE,INVOLVING SOME TWENTY-ODD AGENCIES,BUREAUS,AND GOVERNMENTS IN THE TEST AREA.THE INFORMATION NEEDS ARE BROAD AND TECHNICALLY DEMANDING. IN THE CONTEXT OF THIS ISSUE THE REMOTE SENSING PRODUCTS PROVED THEIR WORTH IN TWO WAYS:AS EFFECTIVE DEVICES FOR CAPTURING AND HOLDING THE ATTENTION OF NON-TECHNICAL PEOPLE ON TECHNICAL ASPECTS OF LOCAL ENVIRONMENT SYSTEM / AND AS CAPABLE OF PROVIDING INFORMATION IDENTIFYING CRITICAL FEATURES OF THE LAKE/WATERSHED SYSTEM THAT HAD BEEN UNKNOWN BEFORE.INFORMATION DERIVED FROM REMOTE SENSING WAS BLENDED WITH MANY OTHER PERTINENT SOURCES./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/29.0300/51.0500/52.0500/
DECISION MAKING: 01,02,03/INFORMATION SYSTEMS/LAKES:T3/LAND USE:T4/PLANNING:04/REMOTE SENSING:02,03/WATER QUALITY:T1/WATERSHEDS:T2/

RS78-2-566

78C0070606 EDB-78-13 52.010
CONF-7510172--P2/
OPERATIONAL APPLICATIONS OF SATELLITE SNOWCOVER OBSERVATIONS PROJECT/
RANGO,A./
GODDARD SPACE FLIGHT CENTER,GREENBELT,MD/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036011/EDB-78:070606/
THE CAPABILITY OF THE LANDSAT AND NOAA SATELLITES TO ACCURATELY MEASURE A SNOWCOVERED AREA ON VARIOUS SIZE WATERSHEDS HAS BEEN DEMONSTRATED BY A NUMBER OF INVESTIGATORS. ADDITIONALLY, RECENT RESEARCH HAS SHOWN A HIGHLY SIGNIFICANT STATISTICAL RELATIONSHIP BETWEEN SATELLITE-DERIVED SNOWCOVERED AREA AT THE BEGINNING OF THE SNOWMELT PERIOD AND SEASONAL RUNOFF. THE DECISION WAS MADE, THEREFORE, TO TEST THE RESULTS OF SEVERAL SATELLITE SNOWCOVERED AREA STUDIES IN AN APPLICATIONS SYSTEMS VERIFICATION TEST (ASVT)PROGRAM WHERE QUASIOPERATIONAL EVALUATIONS OF TOTAL TECHNICAL CAPABILITY ARE PERFORMED. THE OBJECTIVE OF THESE ASVT'S IS TO PROVIDE ALL THE INFORMATION NECESSARY FOR A POTENTIAL USER TO MAKE EFFECTIVE DECISIONS CONCERNING THE IMPLEMENTATION OF THE NEW REMOTE SENSING TECHNOLOGY IN AN OPERATIONAL APPLICATIONS SYSTEM. THE ONGOING OPERATIONAL APPLICATIONS OF SATELLITE SNOWCOVER OBSERVATIONS (OASSO)PROJECT BECAME PART OF THE ASVT PROGRAM IN JULY 1975,AND IS DESCRIBED IN THIS PAPER.IN COOPERATION WITH VARIOUS OPERATIONAL WATER MANAGEMENT AGENCIES IN ARIZONA,CALIFORNIA,COLORADO,AND OREGON.THE OASSO PROJECT IS SCHEDULED FOR COMPLETION IN SEPTEMBER 1978./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/29.0300/
DECISION MAKING / MANAGEMENT / MEASURING METHODS: 02 / REMOTE SENSING:01/SATELLITES/SNOW:T2/USES/WATER RESOURCES:T1/WATERSHEDS/

RS78-2-567

78C0105272 EDB-78-19 58.020
CONF-770478--P2/
APPLICATION OF REMOTE SENSING TO THE SITING OF THE WARM SPRINGS DAM,SONOMA COUNTY,CALIFORNIA/
REED,R./
DAMES AND MOORE,CRANFORD,NJ/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-03:051317/EDB-78:105272/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/13.0200/
CALIFORNIA / DAMS: T2 / GEOLOGIC FAULTS/GEOLOGICAL SURVEYS/REMOTE SENSING:T1,Q3/SEISMIC SURVEYS:T3/SITE SELECTION:Q2/
TECHNOLOGY UTILIZATION:Q1/

RS78-2-568

78C0094794 EDB-78-18 05.020
GJO--108(76)/
URANIUM GEOPHYSICAL TECHNOLOGY DEVELOPMENT/
ROACH,C.H./
1976/
URANIUM INDUSTRY SEMINAR/
US/
US/
ERA-03:046810/EDB-78:094794/
SIMULTANEOUSLY WITH CURRENT RECONNAISSANCE SURVEYS UTILIZING EXISTING TECHNOLOGY,NEW TECHNOLOGY IS BEING DEVELOPED FOR IMPROVED AERIAL GEOPHYSICAL SURVEYS.DURING FY 1976,INHOUSE AND SUBCONTRACTED R AND D WERE DIRECTED TOWARD THREE GOALS: (1) DEVELOP TECHNOLOGY TO RAPIDLY SURVEY LARGE AREAS FOR URANIUM FAVORABILITY AND OCCURRENCES/(2)DEVELOP TECHNOLOGY TO LOCATE AND EVALUATE LOW-GRADE AND DEEPLY BURIED URANIUM ORE DEPOSITS/AND (3)PROVIDE ANALYTICAL SUPPORT TO OTHER NURE R AND D ACTIVITIES.THE FOLLOWING TECHNOLOGIES ARE DISCUSSED:EMANOMETRY,DIRECT URANIUM LOGGING,SPECTRAL GAMMA-RAY LOGGING, INDIRECT BOREHOLE LOGGING, NEUTRON-NEUTRON LITHOLOGY AND MOISTURE LOGGING,MAGNETIC SUSCEPTIBILITY LOGGING,AND AERIAL RADIOMETRIC SURVEYS.PROBLEMS INVOLVED IN THE TECHNOLOGY TRANSFER PROCESS ARE DISCUSSED/NURE TECHNOLOGIES WHICH ARE READY FOR THIS TRANSFER ARE GIVEN.13 FIGURES.(DLC)/
05.0200/
AERIAL MONITORING /GAMMA LOGGING/GEOPHYSICAL SURVEYS:T,Q2/MAGNETIC SURVEYS/MEASURING METHODS/NEUTRON-NEUTRON LOGGING/
RESEARCH PROGRAMS/TECHNOLOGY TRANSFER/URANIUM DEPOSITS:T2/WELL LOGGING/

RS78-2-569

78C0105295 EDB-78-19 58.040
INTEGRATED GEOCHEMICAL EXPLORATION FOR DEEP-SEATED SOLID AND GASEOUS MINERAL RESOURCES/
BOESLER, H. J. / BEUGE, P. / PILOT, J. / TISCHENDORF, G. (BERGAKADEMIE FREIBERG (GERMAN DEMOCRATIC REPUBLIC). SEKTION GEOWISSENSCHAFTEN)/
ELSEVIER/AMSTERDAM/1977/
CONF-760812--/
GEOCHEMICAL EXPLORATION 1976/
BUTT,C.R.M./WILDING,I.G.P.(EDS.)/
DO/
NL/
AIX-09:373420/EDB-78:105295/
THE LOCATION AND QUALITATIVE EVALUATION OF DEEP-SEATED DEPOSITS REQUIRES THE APPLICATION OF VARIOUS GEOCHEMICAL METHODS AT DIFFERENT STAGES, TOGETHER WITH GEOLOGICAL-TECTONIC ANALYSIS.THE FIRST STEP SHOULD BE THE LITHOGEOCHEMICAL CHARACTERIZATION OF THE GEOLOGICAL ENVIRONMENT (AND OF GEOLOGICALLY COMPARABLE UNITS)TO OBTAIN A GOOD UNDERSTANDING OF THE GENESIS OF THE ROCKS AND MINERAL DEPOSITS.IN THIS WAY,ONE IS ABLE TO ESTIMATE THE ORE-BEARING POTENTIAL OF THE REGION. DURING PROSPECTING, A GREAT VARIETY OF GEOCHEMICAL METHODS SHOULD BE USED.THE ANALYSIS OF MOBILE ELEMENTS AND ISOTOPES (MERCURY, NOBLE GASES, HYDROCARBONS, RADON) IN CONJUNCTION WITH GEOPHYSICAL,ESPECIALLY GEOTHERMAL,METHODS IS NEEDED. THE APPLICATION OF A CAREFULLY CHOSEN SYSTEM OF GEOCHEMICAL AND GEOPHYSICAL METHODS IS AN ESSENTIAL FACTOR FOR SUCCESSFUL EXPLORATION,ESPECIALLY FOR HIDDEN DEPOSITS./
6.INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM/
SYDNEY,AUSTRALIA/
AUG 1976/
58.0400/
ARGON 36 / ARGON 38 / ARGON 40/EXPLORATION/GEOCHEMICAL SURVEYS:Q1/GEOCHEMISTRY/GEOLOGIC DEPOSITS:T1/GEOLOGIC FAULTS/
GEOLOGY / HELIUM 4 /ISOTOPE RATIO/ISOTOPES/NEON 21/NEON 22/PETROLOGY/PROSPECTING/QUALITATIVE CHEMICAL ANALYSIS/QUANTITY
RATIO/RADIONUCLIDE MIGRATION/RADON/

RS78-2-570

78C0104657 EDB-78-19 52.050
CONF-770478--P2/
APPLICATION OF LANDSAT TO MAPPING INLAND LAKE WATER QUALITY AND WATERSHED LAND USE/
ROGERS,R.H./MCKEON,J.B./
BENDIX AEROSPACE SYSTEMS DIV.,ANN ARBOR,MI/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-03:051085/EDB-78:104657/

NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
52.0500/51.0500/
ECONOMICS/FRESH WATER/INVENTORIES:Q2/LAKES:T1/LAND USE:T2/MICHIGAN/PLANTS/REMOTE SENSING/SURFACE WATERS/WATER QUALITY:Q1/WATERSHEDS/

RS78-2-571

78C0075750 EDB-78-14 52.010
CONF-7510172--P1/
APPLICATION OF LANDSAT TO THE SURVEILLANCE AND CONTROL OF EUTROPHICATION IN SAGINAW BAY/
ROGERS,R.H.(BENDIX AEROSPACE SYSTEMS DIV.,ANN ARBOR,MI)/SHAH,N.J./MCKEON,J.B./WILSON,C./REED,L./SMITH,V.E./THOMAS,N.A./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-01:038041/EDB-75:075750/
COMPUTER TECHNIQUES DEVELOPED FOR MAPPING WATER QUALITY PARAMETERS FROM LANDSAT DATA ARE DEMONSTRATED,USING GROUND TRUTH COLLECTED IN AN ONGOING SURVEY OF WATER QUALITY IN SAGINAW BAY (LAKE HURON),MICHIGAN SPONSORED BY THE US ENVIRONMENTAL PROTECTION AGENCY. CHEMICAL AND BIOLOGICAL PARAMETERS WERE COLLECTED AT 27 BAY STATIONS IN CONCERT WITH LANDSAT OVERFLIGHTS. APPLICATION OF STEPWISE LINEAR REGRESSION TO 12 OF THESE PARAMETERS AND CORRESPONDING LANDSAT MEASUREMENTS RESULTED IN RELATIONSHIPS THAT CAN BE APPLIED TO MAP ANY ONE OF THE 12 WATER QUALITY PARAMETERS OVER THE ENTIRE BAY. THE REGRESSION CORRELATION COEFFICIENTS VARIED FROM 0.99 FOR TOTAL PHOSPHORUS TO 0.72 FOR CHLOROPHYLL A CORRECTED. FIVE OF THE WATER QUALITY PARAMETERS ARE BEST CORRELATED WITH LANDSAT BAND 6 ALONE,ONE PARAMETER,TEMPERATURE,RELATES TO BAND 5 ALONE AND ONLY TWO BANDS ARE JUSTIFIED FOR MAPPING THE REMAINING SIX PARAMETERS./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
BAYS: T2 / COMPUTERS /CONTROL/EUTROPHICATION:T4/MONITORING:Q1/REMOTE SENSING:Q4/SATELLITES/TOPOLOGICAL MAPPING/US EPA/WATER QUALITY:T1,Q2/

RS78-2-572

78C0075775 EDB-78-14 52.020
CONF-7510172--P1/
REMOTE SENSING INVESTIGATION ON LAKE BIWA/
SAKATA,T.(TOKAI UNIV.,HIRATSUKA CITY,JAPAN)/SHIMODA,H./TANAKA,K./SUZUKI,T./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
JP/
US/
ERA-03:038066/EDB-78:075775/
REMOTE SENSING TECHNIQUE WAS APPLIED TO A LIMNOLOGICAL SURVEY.MULTI-BAND PHOTOGRAPHS OF LAKE BIWA IN JAPAN WERE TAKEN FROM A HELICOPTER WITH 4 HASSELBLAD CAMERAS WHILE FIELD OBSERVATION AND SAMPLING OF LAKE WATER WERE MADE FROM A BOAT. THE MULTI-BAND IMAGES WERE ANALYZED WITH AN ANALOG PROCESSER TIAS-1.PLUMES OF RIVER DISCHARGES AND SEVERAL KINDS OF COASTAL PLANTS WERE ENHANCED WITH THIS ANALYSIS./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0200/
AIRCRAFT/DATA ANALYSIS/IMAGES/JAPAN/LAKES:T1/LIMNOLOGY/MONITORING/PLUMES/REMOTE SENSING:Q1,Q2/WATER POLLUTION:T2/

RS78-2-573

78C0075751 E08-78-13 51.010
(CONF-7510172--P2)REMOTE SENSING REQUIREMENTS AS SUGGESTED BY WATERSHED MODEL SENSITIVITY ANALYSES/
SALOMONSON,V.V.(GODDARD SPACE FLIGHT CENTER,GREENBELT,MD)/AMBARUCH,R./RANGO,A./ORMSBY,J.P./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/52.0100/29.0300/
ATMOSPHERIC PRECIPITATIONS / FUNCTIONAL MODELS: 01/LAND USE/MEASURING METHODS/MOISTURE/MONITORING/REMOTE SENSING:01/
RIVERS/SATELLITES/SOILS/TOPOLOGICAL MAPPING/USES/WATERSHEDS:T1/

RS78-2-574

78C0075751 E08-78-14 52.010
CONF-7510172--P1/
WATER QUALITY INDICATORS OBTAINABLE FROM AIRCRAFT AND LANDSAT IMAGES AND THEIR USE IN CLASSIFYING LAKES/
SCHERZ,J.P.(UNIV.OF WISCONSIN,MADISON)/VAN DEMELEN,J.F./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-04:038042/E08-78:075751/
FOR REMOTE SENSING OF WATER QUALITY WHEN DISTILLED WATER AND A VERY CLEAR,DEEP LAKE APPROACHING DISTILLED WATER ARE USED AS LABORATORY AND FIELD REFLECTANCE STANDARDS. IT IS POSSIBLE TO ELIMINATE SURFACE REFLECTION AND ATMOSPHERIC EFFECTS. FOR OTHER TARGET LAKES,THE RESULTING RESIDUAL RADIANCE IS DUE ONLY TO THE MATERIAL ADDED TO THE PURE WATER OF THESE LAKES. THIS MATERIAL IS WHAT IMPAIRS WATER QUALITY.THE RELATIVE STRENGTH OF THE RESIDUAL RADIANCE AT DIFFERENT WAVELENGTHS CAN BE USED TO DETERMINE THE TYPE OF MATERIAL.THE ABSOLUTE STRENGTH OF THE RADIANCE CAN BE USED TO DETERMINE ITS CONCENTRATION.IF PHYSICAL INTERACTIONS ARE UNDERSTOOD,THESE TECHNIQUES CAN BE USED WITH LABORATORY,BOAT OR SATELLITE DATA./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
AIRCRAFT/IMAGES/LAKES:T1/REMOTE SENSING:02/SATELLITES/WATER QUALITY:T2,01/WAVELENGTHS/

RS78-2-575

78C0075754 E08-78-11 52.010
CONF-7510172--P1/
COMPLETELY AIRBORNE CALIBRATION OF AERIAL INFRARED WATER-TEMPERATURE MEASUREMENTS/
SCHOTT,J.R.(CALSPAN CORP.,BUFFALO)/TOURIN,R.H./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-04:038045/E08-78:075754/
A COMPLETELY AIRBORNE METHOD TO CALIBRATE AERIAL INFRARED MAPPING OF WATER TEMPERATURE WAS DEVELOPED.THIS TECHNIQUE UTILIZES INFRARED RADIOMETER DATA COLLECTED ON A SERIES OF PASSES AT DIFFERENT ALTITUDES OVER A TARGET AREA TO CALIBRATE THE RADIOMETER FOR ABSOLUTE TEMPERATURE AT ZERO ALTITUDE,WITHOUT THE NEED FOR GROUND-BASED MEASUREMENTS.THE RADIOMETER DATA ARE,IN TURN,USED TO CALIBRATE AN AERIAL INFRARED THERMAL MAPPER,WHICH SCANS THE WATER SURFACE VIEWED IN A SERIES OF LINE SCANS OVER A 120/SUP 0/VIEW ANGLE PERPENDICULAR TO THE DIRECTION OF AIRPLANE TRAVEL.THE AIRBORNE CALIBRATION METHOD WAS APPLIED TO 75 INFRARED IMAGES OF 31 POWER PLANT DISCHARGES IN NEW YORK STATE.SURFACE TEMPERATURE MEASUREMENTS MADE SIMULTANEOUSLY WITH THE OVERFLIGHTS WERE SUBSEQUENTLY COMPARED TO THE RESULTS OF THE AERIAL INFRARED MAPPING. THE SURFACE AND AERIAL MEASUREMENTS AGREED WELL,USUALLY WITHIN 1/SUP 0/F./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
CALIBRATION / DATA COMPILATION / INFRARED RADIATION/RADIOMETERS/REMOTE SENSING/TEMPERATURE MEASUREMENT:01/TOPOLOGICAL MAPPING/WATER:T1/

RS78-2-576

78C0070598 EDB-78-13 $2.010
CONF-7510172--P2/
HYDROLOGIC STUDIES IN ALASKA USING NOAA VHRR IMAGERY/
SEIFERT,R.D./KANE,D.L./CARLSON,R.F./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036003/EDB-78:070598/
ALTHOUGH SEVERAL OF THE TECHIQUES DISCUSSED IN THIS PAPER ARE NOT YET FULLY DEVELOPED,SOME OPERATIONAL APPLICATIONS HAVE BEEN VALUABLE IN RIVER FLOOD FORECASTING.THE SYNOPTIC NATURE AND NEAR REAL-TIME AVAILABILITY OF THE ENHANCED IR IMAGERY,ESPECIALLY DEVELOPED FOR HYDROLOGICAL APPLICATION,IS USEFUL FOR MONITORING SNOWMELT.THE THERMAL ACCURACY OF THIS ENHANCED IMAGERY HAS BEEN SHOWN TO BE +-1/SUP 0/C BY GROUND TRUTH COMPARISONS.IN ALASKA,THE TOTAL COVERAGE BY VHRR IMAGERY OF LARGE REMOTE AREAS WITH LITTLE OR NO GROUND-BASED DATA ACQUISITION MAKES THE MONITORING OF ENVIRONMENTAL FEATURES A ROUTINE MATTER.VHRR VISIBLE IMAGERY HAS BEEN USED UNSUCCESSFULLY FOR TWO SEASONS TO MAP SNOWFREE AREAS AS A FUNCTION OF TIME IN SEVERAL ALASKAN RIVER BASINS.A COMBINATION OF THE VISIBLE AND ENHANCED IR IMAGERY,MADE BY OVERLAYING THE NEGATIVES OF EACH AND MAKING A PHOTOGRAPHIC PRINT,ALSO SHOWS PROMISE AS A SNOWMAPPING TOOL.A PRELIMINARY STUDY OF THE POSSIBILITY OF USING REFLECTED BRIGHTNESS FOR OPERATIONAL SNOWMAPPING WITH THE VISIBLE CHANNEL IMAGERY WAS ALSO UNDERTAKEN.RESULTS ARE NOT CONCLUSIVE,AND MORE DEVELOPMENT OF THE TECHNIQUES IS NECESSARY./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
ACCURACY / ALASKA: T1 / DATA COMPILATION /FLOODS:T3/FORECASTING:Q3/HYDROLOGY:Q1/IMAGES/MONITORING/PHOTOGRAPHY/RIVERS/SATELLITES/SNOW/TOPOLOGICAL MAPPING/USES/

RS78-2-577

78R0083244 EDB-78-17 01.200
E--78-10032/
THE APPLICATION OF LANDSAT-1 IMAGERY FOR MONITORING STRIP MINES IN THE NEW RIVER WATERSHED IN NORTHEAST TENNESSEE.PART 2.FINAL REPORT/
SHAHROKHI,F./SHARBER,L.A./
TENNESSEE UNIV.,TULLAHOMA (USA).SPACE INST./
CONTRACT NAS8-31380/
1977/
NTIS PC A05/MF A01./
6 170 000/
US/
US/
ERA-03:042183/EDB-78:088244/
THE AUTHOR HAS IDENTIFIED THE FOLLOWING SIGNIFICANT RESULTS.LANDSAT IMAGERY AND SUPPLEMENTARY AIRCRAFT PHOTOGRAPHY OF THE NEW RIVER DRAINAGE BASIN WERE SUBJECTED TO A MULTILEVEL ANALYSIS USING CONVENTIONAL PHOTO-INTERPRETATION METHODS, DENSITOMETRIC TECHNIQUES,MULTISPECTRAL ANALYSIS,AND STATISTICAL TESTS TO DETERMINE THE ACCURACY OF LANDSAT-1 IMAGERY FOR MEASURING STRIP MINES OF COMMON SIZE.THE LANDSAT AREAS WERE COMPARED WITH LOW ALTITUDE MEASUREMENTS.THE AVERAGE ACCURACY OVER ALL THE MINED LAND SAMPLE AREAS MAPPED FROM LANDSAT-1 WAS 90 PERCENT .THE DISCRIMINATION OF STRIP MINE SUBCATEGORIES IS SOMEWHAT LIMITED ON LANDSAT IMAGERY.A MINE SITE,WHETHER ACTIVE OR INACTIVE,CAN BE INFERRED BY LACK OF VEGETATION, BY SHAPE, OR IMAGE TEXTURE.MINE PONDS ARE DIFFICULT OR IMPOSSIBLE TO DETECT BECAUSE OF THEIR SMALL SIZE AND TURBIDITY. UNLESS BORDERED AND CONTRASTED WITH VEGETATION,HAULAGE ROADS ARE IMPOSSIBLE TO DELINEATE.PREPARATION PLANTS AND REFUGE AREAS ARE NOT DETECTABLE.DENSITY SLICING OF LANDSAT BAND 7 PROVED MOST USEFUL IN THE DETECTION OF RECLAMATION PROGRESS WITHIN THE MINED AREAS.FOR MOST STATE REQUIREMENTS FOR YEAR-ROUND MONITORING OF SURFACE MINED LAND,LANDSAT IS OF LIMITED VALUE. HOWEVER,FOR PERIODIC UPDATING OF REGIONAL SURFACE MAPS,LANDSAT MAY PROVIDE SUFFICIENT ACCURACIES FOR SOME USERS./
NP/
01.2000/
AERIAL MONITORING:Q2/COAL MINES/MAPS/PHOTOGRAPHY/SATELLITES/SURFACE MINING:T2,Q1/TENNESSEE:T1/

RS78-2-578

78Y0103554 EDB-78-19 40.010
X-RAY ANALYSIS IN MINERAL EXPLORATION,CH.3/
SLAUGHTER,M.(COLORADO SCHOOL OF MINES,GOLDEN (USA))/
ELSEVIER/AMSTERDAM,NETHERLANDS/1977/
NUCLEAR METHODS IN MINERAL EXPLORATION AND PRODUCTION/
MORSE,J.G.(ED.)(COLORADO SCHOOL OF MINES,GOLDEN (USA))/
US/
NL/
AIX-09:374361/EDB-78:103554/
X-RAY FLUORESCENCE ANALYSIS AND X-RAY DIFFRACTION ANALYSIS ARE COMPARED AS METHODS OF MINERAL EXPLORATIONA AS WELL AS THE DEVELOPMENT OF THE THEORIES BEHIND THESE TWO METHODS, THEIR INSTRUMENTATION AND THEIR APPLICATION.SELECTED APPLICATIONS OF X-RAY ANALYSIS TO RAW MATERIALS EXPLORATION ARE INTRODUCED HERE ALONG WITH THE PRESENTATION OF STRENGTHS,WEAKNESSES AND PITFALS ENCOUNTERED WHEN ANALYZING ROCK AND ORE MATERIALS./
40.3102/
ABSORPTION / ACCURACY / COMPARATIVE EVALUATIONS: Q3,Q4/EXPLORATION/FLUORESCENCE/MINERALS/ORES:T2/QUALITATIVE CHEMICAL ANALYSIS / QUANTITATIVE CHEMICAL ANALYSIS / ROCKS:T1/SENSITIVITY/USES/X-RAY DETECTION/X-RAY DIFFRACTION:T4,Q1,Q2/X-RAY FLUORESCENCE ANALYSIS:Q1,Q2,T3/X-RAY SPECTRA/X-RAY SPECTROMETERS/

RS78-2-579

78C0042429 EDB-78-08 04.010
EVALUATION OF DIGITALLY ENHANCED LANDSAT DATA AS APPLIED TO MINERAL AND HYDROCARBON EXPLORATION/
SMITH,A.F./BAKER,R.N./
GENERAL ELECTRIC CO.,BELTSVILLE,MD/
IEEE,INC./PISCATAWAY,NJ/1975/
PROCEEDINGS OF THE 1975 IEEE CONFERENCE ON DECISION AND CONTROL/
US/
JS/
14.IEEE DECISION AND CONTROL CONFERENCE ON ADAPTIVE PROCESSES/
HOUSTON,TX,USA/
10 DEC 1975/
04.0100/
ALBERTA/COLORADO/DIGITAL FILTERS/MINERALS/OIL SAND DEPOSITS:T1/REMOTE SENSING:Q1/SATELLITES/

RS78-2-580

78I0014338 EDB-78-06 58.020
EVALUATION OF GEOPHYSICAL SYSTEMS FOR REMOTE SENSING OF SUBSURFACE CAVITIES IN KANSAS/
SPENCER,J.W./
TRANSP.RES.REC./581/1976/31-41/
US/
US/
(TRRED)
58.0203/
CAVITIES:T1/ELECTRIC CONDUCTIVITY/EVALUATION:Q2/GEOPHYSICAL SURVEYS:T2/REMOTE SENSING:Q1/UNDERGROUND/

RS78-2-581

78I0042506 EDB-78-08 05.020
STATE MAY ASSIST IN MAKING SMALL KARLO URANIUM DEPOSITS VIABLE/
TREASURE,T.(DEPARTMENT OF MINES,PRETORIA (SOUTH AFRICA),GEOLOGICAL SURVEY)/
COAL,GOLD BASE MINER,SOUTH.AFR./25/9/SEP 1977/97,101,143/
ZA/
ZA/
(CCBMA)
05.0200/
AERIAL PROSPECTING/ECONOMICS/EXPLORATION:Q1/GAMMA LOGGING/GEOLOGIC DEPOSITS/GEOLOGICAL SURVEYS/MINERALIZATION/MINING/RESERVES/SEDIMENTS/SOUTH AFRICA/URANIUM/URANIUM DEPOSITS:T1/URANIUM ORES/

RS78-2-582

78J0042505 EDB-78-08 05.020
CENTRAL ORE DRESSING PLANT POSSIBLE AS KAROO URANIUM PROSPECTING BUILDS UP/
TREASJRL,T.(DEPARTMENT OF MINES,PRETORIA (SOUTH AFRICA).GEOLOGICAL SURVEY)/
S.AFR.MIN.ENG.J./88/4133/OCT 1977/45,47,49/
ZA/
ZA/
(SMIJA)
05.0200/
AERIAL PROSPECTING/ECONOMICS/EXPLORATION:01/GAMMA LOGGING/GEOLOGIC DEPOSITS/GEOLOGICAL SURVEYS/MINERALIZATION/MINING/
RESERVES/SEDIMENTS/SOUTH AFRICA/URANIUM/URANIUM DEPOSITS:T1/URANIUM ORES/

RS78-2-583

78C0007150 EDB-78-02 01.020
OFFSHORE RECONNAISSANCE GEOPHYSICAL TECHNIQUES USED BY THE AUSTRALIAN BUREAU OF MINERAL RESOURCES,GEOLOGY AND GEOPHYSICS/
VALE,K.R./TURPIE,A./WHITWORTH,R./
UNITED NATIONS/NEW YORK/1973/
PROCEEDINGS OF THE FOURTH SYMPOSIUM ON THE DEVELOPMENT OF PETROLEUM RESOURCES OF ASIA AND THE FAR EAST/
ADVANCING TECHNOLOGY HAS SEEN THE EMPHASIS IN OIL EXPLORATION IN AUSTRALIA SHIFT FROM LAND TO THE LARGE AND HIGHLY PROSPECTIVE CONTINENTAL SHELF.A PROGRAM OF RECONNAISSANCE GEOPHYSICAL SURVEYS STARTED BY THE BUREAU OF MINERAL RESOURCES IN 1965 HAS MADE USE OF NEW TECHNIQUES IN NAVIGATION AND IN GRAVITY,MAGNETIC,AND SEISMIC MEASUREMENTS.ECONOMIC OPERATION HAS BEEN ACHIEVED BY DEVELOPING A SATISFACTORY 24 HOUR-A-DAY NAVIGATION SYSTEM AND GEOPHYSICAL EQUIPMENT CAPABLE OF OPERATION AT 10 KNOTS. IN 1968, A SATELLITE DOPPLER NAVIGATION SYSTEM GAVE RELIABLE POSITION FIXES AT ROUGHLY 2-HOUR INTERVALS. INTERMEDIATE POSITIONS AND VELOCITIES WERE DERIVED MAINLY FROM AN ELECTROMAGNETIC SHIP'S LOG.A SONAR DOPPLER VELOCITY-MEASURING SYSTEM PROVED GENERALLY UNSUCCESSFUL,AS DID THE V.L.F.RADIO LOCATION SYSTEM.POSITIONS ARE BELIEVED TO BE ACCURATE TO THE ORDER OF 0.2 TO 0.5 MI.A LACOSTE AND ROMBERG GRAVITY METER WAS USED FOR GRAVITY MEASUREMENTS.METER DRIFT WAS NEGLIGIBLE, AND THE ACCURACY OF OBSERVATIONS AS DETERMINED BY DIFFERENCES OBSERVED AT TRAVERSE LINE INTERSECTIONS WAS JUST UNDER 2 MGAL. THIS FIGURE GIVES THE BEST INDICATION OF THE ACCURACY OF VELOCITY MEASUREMENT (EQUIVALENT TO THE ORDER OF 0.2 KNOT).CONTINUOUS SEISMIC REFLECTION PROFILING WAS CARRIED OUT USING A 21,000-JOULE SPARKER AND SINGLE-CHANNEL CABLE.REFLECTIONS DOWN TO ABOUT 5,000 FT BELOW THE SEA BOTTOM WERE OBTAINED EXCEPT IN SHALLOW WATER, WHERE RINGING ANDMULTIPLES INTERFERED GREATLY WITH THE REFLECTIONS.A SEISMIC REFRACTION SYSTEM WAS USED FOR THE FIRST TIME IN 1968 AND GAVE WORTHWHILE DATA TO ABOUT 8 MI.THE ENERGY SOURCE CONSISTED OF TWO AIR GUNS WITH A TOTAL CAPACITY OF 600 IN / SUP 3/AT 2,500 PSI.WHILE A SONOBUOY TRANSMITTED THE REFRACTED SIGNALS BACK TO THE SHIP.MAGNETIC PROFILING WAS CARRIED OUT USING A PROTON PRECESSION MAGNETOMETER WITH THE SENSOR TOWED 600 FT BEHIND THE SHIP./

RS78-2-584

78C0049014 EDB-78-09 07.020
LOCALIZATION OF UNDERGROUND PIPELINES WITH A /SUP 137/CS SOURCE/
VIEIRA,S.R./FERRAZ,E.S.B.(CENTRO DE ENERGIA NUCLEAR NA AGRICULTURA,PIRACICABA (BRAZIL))/
CIENC.CULT.(SAO PAULO)/27/7/JUL 1975/87/(IN PORTUGUESE)
BR/
BR/
(CCUPA)
27.ANNUAL MEETING OF THE BRAZILIAN SOCIETY FOR THE ADVANCEMENT OF SCIENCE/
BELO HORIZONTE,MINAS GERAIS,BRAZIL/
9 - 16 JUL 1975/
07.0204/
CALIBRATION / CESIUM 137 / PIPELINES: T1 / REMOTE SENSING: C1/SENSITIVITY/SOILS/SOLID SCINTILLATION DETECTORS/TRACER TECHNIQUES/

RS78-2-585

78J0012764 EDB-78-03 05.020
URANIUM EXPLORATION WITH COMPUTER-PROCESSED LANDSAT DATA/
VINCENT,R.K./
(GEOSPECTRA CORP,ANN ARBOR,MICH)
GEOPHYSICS/42/3/APR 1977/
536-541/
A SPECTRAL SIGNATURE IS CONSTRUCTED FOR AN OXIDIZED TOPSOIL FOUND IN THE VICINITY OF NEAR-SURFACE URANIUM DEPOSITS IN POROUS, ARKOSIC SANDSTONES OF THE WIND RIVER BASIN,WYOMING.A NEW TYPE OF CONTOUR MAP,CREATED FROM LANDSAT COMPUTER COMPATIBLE TAPES, DESIGNED TO CONNECT REGIONS OF EQUAL PERCENTAGE OF GROUND AREA COVERED BY A SPECIFIED TARGET OF INTEREST, IS APPLIED TO A LANDSAT FRAME COVERING THE ENTIRE BASIN.THE RESULTING MAPS SHOW RELATIVELY HIGH PERCENTAGES OF GROUND COVER BY THIS PARTICULAR TOPSOIL IN REGIONS ADJACENT TO OPEN PIT URANIUM MINES IN THE GAS HILLS REGION,AS WELL AS ON OR NEAR KNOWN URANIUM PROSPECTS (AS YET UNDISTURBED) IN THE BASIN INTERIOR.A 10,000-PIXEL TEST AREA WEST OF LANDER, WYOMING IS FOUND TO CONTAIN ONLY ONE PIXEL (A 0.01 PERCENT RECOGNITION RATE) IDENTIFIED AS THE TOPSOIL OF INTEREST.A WHOLE-FRAME RECOGNITION MAP PRODUCES A MUCH HIGHER (0.58 PERCENT) RECOGNITION RATE, INDICATING THAT THE FALSE ALARM RATE FOR THIS SIGNATURE IS STILL SIGNIFICANTLY HIGH,ALTHOUGH BETTER THAN WHAT CAN BE EXPECTED FROM PHOTOINTERPRETATION OF SINGLE RATIO IMAGES OR COLOR COMPOSITE RATIO IMAGES.THIS ''SIGNATURE'' HAS BEEN APPLIED TO LANDSAT FRAMES IN OTHER GEOGRAPHICAL AREAS WITH KNOWN URANIUM MINES IN POROUS SANDSTONE,AND OXIDIZED TOPSOIL HAS BEEN RECOGNIZED NEAR THESE MINES.8 REFS./

RS78-2-586

78J0025533 EDB-78-05 15.030
GEOLOGIC APPLICATIONS OF THERMAL INFRARED IMAGES/
WATSON,K./
DEPT.OF THE INTERIOR,DENVER/
PROC.IEEE /63/1/JAN 1975/128-137/
US/
US/
(EPA)
15.0301/
FRACTURES / GEOLOGICAL SURVEYS: T / GEOLOGY/GEOTHERMAL EXPLORATION:T1/HEAT TRANSFER/HOT SPRINGS/HYDROTHERMAL SYSTEMS/ INFRARED SURVEYS:T.01/MAPS/REMOTE SENSING/VOLCANISM/

RS78-2-587

78R0077344 EDB-78-15 01.200
ANL/LRP--1(VOL.1)/
SELECTIVE BIBLIOGRAPHY OF SURFACE COAL MINING AND RECLAMATION LITERATURE.VOLUME 1.EASTERN COAL PROVINCE/
WEISS,N.E./SUDOCK,A.A./STREID,D.L./
ARGONNE NATIONAL LAB.,ILL.(USA)/
MORE THAN 1300 REFERENCES/
CONTRACT W-31-109-ENG-38/
NOV 1977/
DEP.NTIS,PC A08/MF A01./
0 448 000/
US/
US/
EPA-04:003564/ERA-03:036845/NTS-78:062030/EDB-78:077344/
THIS BIBLIOGRAPHY HAS BEEN COMPILED FOR USE BY RESEARCHERS,STUDENTS, AND OTHER GROUPS WHO NEED A REFERENCE SOURCE OF PUBLISHED LITERATURE RELATED TO SURFACE COAL MINING AND RECLAMATION IN THE EASTERN COAL PROVINCE.THIS BIBLIOGRAPHY CONTAINS MORE THAN 1300 REFERENCES INCLUDING GOVERNMENT REPORTS,JOURNAL ARTICLES,SYMPOSIUM PROCEEDINGS,INDUSTRIAL REPORTS,WORKSHOP PROCEEDINGS,THESES, AND BIBLIOGRAPHICES.A SIMPLE FORMAT WAS USED TO CATEGORIZE CITATIONS./
FOSSIL ENERGY/
D/
01.2000/01.0300/29.0300/51.0500/29.4001/
BIBLIOGRAPHIES: 01, 02 / CHEMICAL PROPERTIES / COAL MINING/ECOLOGY/ECONOMICS/FERTILIZERS/FLY ASH/GRASS/HYDROLOGY/LAND RECLAMATION: M2 / LAND USE / LEGISLATION/LEGUMINOSAE/MINING EQUIPMENT/OVERBURDEN/PHYSICAL PROPERTIES/REGULATIONS/REMOTE SENSING/REVEGETATION/SOILS/SPOIL BANKS/SURFACE MINING:M1/TREES/USES/WEATHERING/

RS78-2-588

78R0029431 EDB-78-06 01.200
(BM-IC--8274)MICROFILMING MAPS OF ABANDONED ANTHRACITE MINES.MINES OF THE EASTERN MIDDLE FIELD/
WHITE,P.R./
BUREAU OF MINES,WASHINGTON,D.C.(USA)/
1065/UNIV.OF TENNESSEE LIBRARY,KNOXVILLE (INTER-LIBRARY LOAN)./
CC=1 027 000/
US/
US/
01.2000/
ABANDONED SHAFTS:TI/ANTHRACITE/COAL MINES/INFORMATION/MAPS:01/PENNSYLVANIA/PHOTOGRAPHY/

RS78-2-589

78R0100641 EDB-78-19 05.010
ORNL/EIS--121/V1/
GEOLOGICAL AND GEOCHEMICAL ASPECTS OF URANIUM DEPOSITS.A SELECTED,ANNOTATED BIBLIOGRAPHY.VOL.1/
WHITE,M.G./CARLAND,P.A.(COMPS.)/
OAK RIDGE NATIONAL LAB.,TENN.(USA)/
CONTRACT W-7405-ENG-26/
OCT 1977/
DEP.NTIS,PC A14/MF A01./
4 832 000/
US/
US/
ERA-03:046801/NTS-78:064625/INS-78:014016/EDB-78:100641/
THIS BIBLIOGRAPHY WAS COMPILED BY SELECTING 580 REFERENCES FROM THE BIBLIOGRAPHIC INFORMATION DATA BASE OF THE DEPARTMENT OF ENERGY'S (DOE)NATIONAL URANIUM RESOURCE EVALUATION (NURE)PROGRAM.THIS DATA BASE AND FIVE OTHERS HAVE BEEN CREATED BY THE ECOLOGICAL SCIENCES INFORMATION CENTER TO PROVIDE TECHNICAL COMPUTER-RETRIEVABLE DATA ON VARIOUS ASPECTS OF THE NATION'S URANIUM RESOURCES. ALL FIELDS OF URANIUM GEOLOGY ARE WITHIN THE DEFINED SCOPE OF THE PROJECT,AS ARE AERIAL SURVEYING PROCEDURES,URANIUM RESERVES AND RESOURCES,AND UNIVERSALLY APPLIED URANIUM RESEARCH.REFERENCES USED BY DOE-NURE CONTRACTORS IN COMPLETING THEIR AERIAL RECONNAISSANCE SURVEY REPORTS HAVE BEEN INCLUDED AT THE REQUEST OF THE GRAND JUNCTION OFFICE,DOE.THE FOLLOWING INDEXES ARE PROVIDED TO AID THE USER IN LOCATING REFERENCE OF INTEREST:AUTHOR, KEYWORD,GEOGRAPHIC LOCATION,QUADRANGLE NAME,GEOFORMATIONAL INDEX,AND TAXONOMIC NAME./
FUEL CYCLE/
D/
05.0100/
AERIAL PROSPECTING/BIBLIOGRAPHIES:01/GEOCHEMISTRY/GEOLOGY:01/REVIEWS/URANIUM DEPOSITS:TI/URANIUM RESERVES/

RS78-2-590

78C0105266 EDB-78-19 58.020
CONF-770478--P1/
GEOLOGIC LINEAMENTS:REMOTELY SENSED BONANZAS AND EXTRAVAGANZAS/
WISE,D.U./
UNIV.OF MASSACHUSETTS,AMHERST/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.1/
US/
US/
ERA-03:051310/EDB-78:105266/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/
GEOLOGICAL SURVEYS/INFORMATION SYSTEMS/REMOTE SENSING:TI/TECHNOLOGY ASSESSMENT:01/TOPOGRAPHY/

RS78-2-591

A78-40125 # Manual for interpreting aerial photographs for soil investigations (Praktikum po deshifrirovaniiu aerofotosnimkov pri pochvennykh issledovaniiakh). T. V. Afanas'eva, Iu. M. Petrusevich, and T. A. Trifonova. Moscow, Izdatel'stvo Moskovskogo Universiteta, 1977. 158 p. 69 refs. In Russian.

Aerial photography is described, and several procedures - including topographic, stereoscopic, and parallax - for interpreting aerial photographs are examined. Morphometric analysis of soil cover is characterized. The interpretation of photographs of forest, marsh, and eroded lands is discussed, and problem examples are presented. Instrument and reception limitations of earth-based interpretation are considered. M.L.

RS78-2-592

A78-43335 # Study of the central delta of the Niger River - Project 'Saphyr' /Satellite Project Hydrology Research/ (Etude du delta central du Fleuve Niger - Project 'Saphyr' /Satellite Project Hydrology Research/). M. Bied-Charreton, J. Cruette, G. Dandoy, G. Dubee, J. P. Lamagat, and J. Noel (Office de la Recherche Scientifique et Technique d'Outre-Mer, Paris, France). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 341-354. In French.

The central delta of the Niger River, located in the Republic of Mali, is studied with the aid of Landsat imagery. Particular attention is given to the groundwater flow systems of the flood zone and the vegetation. Data from channels 4, 5, and 7 are used to assess the changes occuring in vegetation and flooded zones over extended time periods. Estimates are made of the free water surface area and the biomass in small-surface zones. S.C.S.

RS78-2-593

A78-47196 * Ice sheet topography by satellite altimetry. R. L. Brooks (EG & G Washington Analytical Services Center, Inc., Pocomoke City, Md.), W. J. Campbell (U.S. Geological Survey, Tacoma, Wash.), R. O. Ramseier (Department of the Environment, Ottawa, Canada), H. R. Stanley (NASA, Wallops Flight Center, Wallops Island, Va.), and H. J. Zwally (NASA, Goddard Space Flight Center, Greenbelt, Md.). *Nature*, vol. 274, Aug. 10, 1978, p. 539-543. 20 refs.

The measured time between the transmission and return of 13.9 GHz radar pulses from the GEOS 3 satellite (at a mean altitude of 844.5 km and an inclination of 114 deg 52 min) is used to determine the thickness of the Greenland ice cap, with an accuracy in surface elevation on the order of 2 m. Attention is given to changes in ice thickness as an indicator of climatic change in general, and change in mean sea level in particular. Each elevation data point obtained by the satellite represents an average along 0.67 km of ground track, and three dimensional maps are presented to illustrate the data. D.M.W.

RS78-2-594

A78-43348 # The use of remote sensing /infrared thermal profiles and photofacsimiles/ for the geological reconnaissance of dam sites - Four specific cases (Emploi de la télédétection - thermographies et photographies en couleurs infrarouges - dans les reconnaissances géologiques de site de barrages: Exemple de quatre cas précis). L. Carlon, J. C. Gros, Ch. Bellard, and P. Ch. Levêque (Bordeaux I, Université, Talence, Gironde, France). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 516-531. 8 refs. In French.

RS78-2-595

A78-48006 A technique for evaluating inland wetland photointerpretation - The cell analytical method /CAM/. D. L. Civco, W. C. Kennard, and M. W. Lefor (Connecticut, University, Storrs, Conn.). *Photogrammetric Engineering and Remote Sensing*, vol. 44, Aug. 1978, p. 1045-1052. 20 refs.

A procedure was developed to analyze quantitatively the wetland photointerpretations performed by investigators associated with a project designed to evaluate freshwater wetlands definition. The Cell Analytical Method (CAM) used for comparing wetland delineations derived from different photointerpreters and map sources permitted both graphical and statistical analyses of cell-encoded, aerial photograph- and map-derived wetland information. P.T.H.

RS78-2-596

A78-40182 The use of analysis of variance procedures for defining ground conditions of categories generated in an automatic analysis of Landsat MSS digital data. S. J. Daus and M. J. Cosentino (California, University, Berkeley, Calif.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 298-306. 5 refs.

RS78-2-597

A78-43316 # Satellite imagery analysis of snow cover in the Saint John and Souris River basins. H. L. Ferguson and S. Lapczak (Department of the Environment, Atmospheric Environment Service, Toronto, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 126-142. 7 refs.

Satellite imagery from the NOAA-4 and Landsat 1 and 2 satellites has been used to study the snow cover in the Saint John and Souris River basins. Images of visible and infrared data were analyzed by the optical-electrical method and an interpretation systems incorporated image analyzer which evaluated shades of gray and display images on a television screen. Density-sliced satellite images were also superimposed on ground truth data and snow-depth isopleths were drawn. Consideration was also given to maps of vegetative cover, relief, cloud cover, and weather reports in order to interpret the data. S.C.S.

RS78-2-598

A78-43343 # Radar techniques in the measurement of floating ice thickness. R. H. Goodman, E. Outcalt, and B. B. Narod (Innovative Ventures, Ltd., Calgary, Alberta, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 459-468. 8 refs. Research supported by the National Research Council of Canada.

Two models of airborne downward looking radars have been used to measure sea ice thicknesses. An experimental 36 cm high power directional radar developed at the University of British Columbia, and a GSSI 'ESP' radar were mounted on a Puma helicopter to measure ice thicknesses off of the Labrador coast. The capabilities of each system were investigated to measure sea ice thickness. The 36 cm radar's capabilities were studied with particular application to thick multiyear ice and iceberg measurements, while the GSSI radar's capabilities were investigated with emphasis on the measurement of thinner ice, below the minimum range of the 36 cm radar. Typical data will be presented and analyzed. (Author)

RS78-2-599

A78-43341 # Scatterometer and SLAR results obtained over Arctic sea-ice and their relevance to the problems of Arctic ice reconnaissance. A. L. Gray (Canada Centre for Remote Sensing, Ottawa, Canada), R. O. Ramseier (Department of Fisheries and the Environment, Ottawa, Canada), and W. J. Campbell (U.S. Geological Survey; Puget Sound, University, Tacoma, Wash.). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 424-443. 21 refs.

RS78-2-600

A78-43317 # A study of snowmelt progression from Winnipeg to the Arctic Islands using ERTS photographs. R. Horer and G. Fuller (Regina, University, Regina, Saskatchewan, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 143-148. Research supported by the National Research Council of Canada.

Photographs from the Earth Resources Technology Satellite (ERTS) have been applied to monitoring snowmelt progression in various regions of Canada. The regions represent a potential route for natural gas pipelines. On the basis of 155 ERTS photographs, four stages of snowmelt development are identified: the disappearance of the snow cover along ridges and southward facing valley walls, the dark appearance of small lakes, the appearance of dark open river reaches, and the final disappearance of the snow cover. It is noted that the presence of cloud cover significantly influences the number of useful photographs available. S.C.S.

RS78-2-601

A78-43332 # Water dynamics at Lac Saint-Jean, Quebec based on Landsat-1 and Landsat-2 data (Etude de la dynamique des eaux du Lac Saint-Jean au Québec, à l'aide des satellites Landsat-1 et Landsat-2). G. Jones, W. Sochanska, J. P. Fortin (Québec, Université, Quebec, Canada), and E. J. Langham (Ministère des Pêches et de l'Environnement, Quebec, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 305-312. In French.

Water distribution has been studied in Lac Saint-Jean, Quebec on the basis of multispectral digital data from Landsat-1 and Landsat-2. Using the methods of Langham and Taylor (1975), the images are enhanced in order to determine turbid zones. Grey levels are found for each multispectral band so as to increase the signal-to-noise ratio and the precision with which water reflectance is measured. S.C.S.

RS78-2-602

A78-40175 * Use of Landsat multispectral imagery in estimating snow areal extent and snow water content cost-effectively. S. Khorram (California, University, Berkeley, Calif.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 218-227. 13 refs. Grant No. NGL-05-003-404.

Landsat color composites are used in conjunction with a limited amount of aerial survey data and ground-truth measurements in order to estimate snow areal extent and snow water content. The snow water content estimations are based on the inexpensive Landsat data and the much more expensively obtained information on ground snow courses. A cost-effectiveness analysis of the procedures showed the expenses involved in obtaining confidence intervals of 80, 90, 95 and 99% for the estimates. J.M.B.

RS78-2-603

A78-40161 Comparing soil boundaries delineated by digital analysis of multispectral scanner data from high and low spatial resolution systems. S. J. Kristof, M. F. Baumgardner, A. L. Zachary, and E. R. Stoner (Purdue University, West Lafayette, Ind.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 52-63. 5 refs.

RS78-2-604

A78-45924 * Detection of crustal motion using spaceborne laser ranging systems. M. Kumar and I. I. Mueller (Ohio State University, Columbus, Ohio). *(International Association of Geodesy, International Symposium on Recent Crustal Movements, Palo Alto, Calif., July 25-30, 1977.) Bulletin Géodésique*, vol. 52, no. 2, 1978, p. 115-130. 13 refs. Grant No. NGR-36-008-204.

Laser ranging systems operated from space are capable of detecting motions on earth in the 2-5 cm range. Attention is given to the detection of crustal motion, specifically along the San Andreas fault, and a mathematical model is presented for a geometric mode system consisting of at least five grid and three distant (fundamental) stations to be operated with airborne and spaceborne lasers. The ground stations are designed to operate unattended, and to work in conjunction with Shuttle-based hardware to become operational in 1982. The Shuttle laser ranging system is expected to provide survey data within a period from one to two weeks, with a resurvey capability to be used as required. D.M.W.

RS78-2-605

A78-43639 The geological interpretation of the Tibesti from Landsat-1 imagery /Republic of Chad/ - Explanations regarding the map Tibesti 1:1,000,000 (Geologische Interpretation des Tibesti nach Aufnahmen von Landsat-1 /Republik Tschad/ - Erlauterungen zur Karte Tibesti 1:1,000,000). F. K. List, D. Helmcke, B. Meissner (Berlin, Freie Universitat, Berlin, West Germany), G. Pöhlmann (Berlin, Technische Fachhochschule, Berlin, West Germany), and N. W. Roland (Bundesanstalt fur Geowissenschaften und Rohstoffe, Hanover, West Germany). *Bildmessung und Luftbildwesen*, vol. 46, July 1, 1978, p. 139-145. 40 refs. In German.

The launching of the Landsat-1 satellite in July 1972 made it for the first time possible to obtain on a routine basis repeatable small-scale multispectral pictures of the entire surface of the earth. The great number of geomorphological and photogeological studies conducted in the central part of the Tibesti mountains since 1964 provided an opportunity to use this arid region as a test area for a study concerning the applicability of satellite picture mapping. The objectives of the reported investigation are related to a study of the [illegible] by a geological satellite picture interpretation [illegible] a scale of 1:1,000,000, taking into account for a comparison aerial-photograph evaluations involving a scale of 1:50,000 and ground-based terrain studies. G.R.

RS78-2-606

A78-43331 * Mapping mine wastes with Landsat images. H D. Moore, J. H. Adams, and A. F. Gregory (Gregory Geoscience. Ltd., Ottawa, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 294-304. 23 refs.

Landsat imagery has been used for mapping mine wastes in Canada including tailings, spoil or transported overburden, slag, and waste rock. The Landsat imagery provides information on the location and area of mine dumps, the percent of vegetative cover, the location and size of mine-related water bodies, the location of deciduous and coniferous cover, and environmental changes with time. The study indicates a total area of mine wastes of 47,233 acres which represents 0.004% of the surface area of Canada. Of this area 46.8% is overburden, 37.3% is tailings, 15.3% is waste rock, and 0.6% is slag. Approximately 14.8% of the wastes have vegetative cover. S.C.S.

RS78-2-607

A78-43318 # A key study on the interpretation of regional soil moisture on satellite imagery. S. Palabekiroglu (Ontario Centre for Remote Sensing, Toronto, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 149-157.

Landsat imagery has provided a regional representation of surface-soil moisture conditions in Canadian agricultural areas. The factors which influence the accuracy of the results are identified as: crop cover, surface dryness, and surface thaw. Comparisons have been made between images from different seasons. The study indicates a relationship between areas having soil samples with high clay content and the moisture bands of the Landsat imagery. Many fields within the moisture bands are noted to contain drainage tiles. It is concluded that if the imagery is monitored for suitable ground and weather conditions, the mapping of poorly-drained soils in agricultural regions may be effected using Landsat data. S.C.S.

RS78-2-608

A78-44801 Application of multispectral aerial photographs to soil surveys in New Zealand. W. C. Rijkse (Department of Scientific and Industrial Research, Soil Bureau, Rotorua, New Zealand). *New Zealand Journal of Science;* vol. 20, Dec. 1977, p. 363-370.

Multispectral aerial photographs of two river valleys near Tolaga Bay and Ruatoria, East Coast, North Island showed much better definition of soil boundaries of alluvial soils than conventional panchromatic photographs. The photographs were in four wavelength bands that approximate Landsat satellite passbands. They showed differences between parent materials and erosion patterns of hill country. Black and white prints of the infrared range produced more information on soil type separation than panchromatic photos, but they were inferior in erosion pattern detection. (Author)

RS78-2-609

A78-43333 # An automatic system for analyzing lake characteristics by satellite (Un système automatisé d'analyse des caractéristiques des lacs par satellite). G. Rochon (Universite Laval, Quebec, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 313-324. 13 refs. In French. Research supported by the Ministère des Richesses Naturelles, National Research Council of Canada, Ministère de l'Education, Ministère de l'Environnement, and Université Laval.

It is shown that Landsat imagery may be used to evaluate lake characteristics including lake contents, water distribution, morphometric parameters, drainage, and local ground cover. Landsat imagery is also applicable to studying near-lake ecosystems and modifications occurring over extended periods of time. S.C.S.

RS78-2-610

A78-41191 * Landsat applied to landslide mapping. D. J. Sauchyn and N. R. Trench (Colorado, University, Boulder, Colo.) *Photogrammetric Engineering and Remote Sensing,* vol. 44, June 1978, p. 735-741. 7 refs. Contract No. NAS5-20914.

A variety of features characteristic of rotational landslides may be identified on Landsat imagery. These include tonal mottling, tonal banding, major and secondary scarps, and ponds. Pseudostereoscopic viewing of 9 by 9 in. transparencies was useful for the detailed identification of landslides, whereas 1:250,000 prints enlarged from 70 mm negatives were most suitable for regional analysis. Band 7 is the most useful band for landslide recognition, due to accentuation of ponds and shadows. Examination of both bands 7 and 5, including vegetation information, was found to be most suitable. Although, given optimum terrain conditions, some landslides in Colorado may be recognized, many smaller landslides are not identifiable. Consequently, Landsat is not recommended for detailed regional mapping, or for use in areas similar to Colorado, where alternative (aircraft) imagery is available. However, Landsat may prove useful for preliminary landslide mapping in relatively unknown areas. (Author)

RS78-2-611

A78-43314 # Quantitative predictions of chemical soil conditions from multispectral airborne ground and laboratory measurements. H. Schreier (British Columbia, University, Vancouver, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 106-112. 20 refs.

Multispectral reflectance measurements are used to make quantitative predictions of chemical soil conditions. Data are collected from five parent materials from the air, on the ground, and in the laboratory. Spectral reflection curves are determined over the 400-1000 nm range and mean and range values are found. It is noted that percent carbon, iron, and exchangeable magnesium are most correlated with the spectral measurements. A curvilinear regression fitting an exponential function satisfactorily predicts carbon and exchangeable magnesium values whereas a straight linear function satisfactorily predicts iron values. The airborne, ground, and laboratory analyses are found to yield similar results. S.C.S.

RS78-2-612

A78-41189 In situ measurement of water transparency. J. W. Sheldon (Florida International University, Miami, Fla.) *Photogrammetric Engineering and Remote Sensing,* vol. 44, June 1978, p. 717-720. 5 refs. Research supported by the Florida Atlantic University and Florida International University.

This paper describes how the well-known modulation transfer function theory and experimental technique can be employed to monitor suspended particulates in the aqueous environment by using instrumentation that rivals the Secchi disk in simplicity, but which has many advantages over this older method. The design of a simple low-cost underwater camera-light source-target system is reported and its use is demonstrated by observing the temporal variation in the transparency of Biscayne Bay water during the passage of a barge-tug vehicle. (Author)

RS78-2-613

A78-43310 # Surficial geology in the Pas-area of Manitoba - An application of digital Landsat data. V. Singhroy (Department of Mines, Resources and Environmental Management, Mineral Resources Div., Winnipeg, Manitoba, Canada) and B. Bruce (Canada Centre for Remote Sensing, Ottawa, Canada). In Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 57-66. 6 refs.

The CCRS-100 system was used to distinguish six large-scale biophysical land categories in the Pas region of Manitoba, Canada: ablation till, black spruce bogs, alluvial deposits, fens, water bodies having a high suspended-sediment content, and shallow marsh and bog lakes. Both supervised and unsupervised techniques were employed. An extensive field program evaluated the Landsat data in order to perform superficial geological mapping. S.C.S.

RS78-2-614

A78-43340 # A joint topside-bottomside remote sensing experiment on Arctic sea ice. P. Wadhams (Scott Polar Research Institute, Cambridge, England) and R. T. Lowry (Canada Centre for Remote Sensing, Ottawa, Canada). In Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 407-423. 16 refs. Contract No. N00014-76-C-0660.

The ice cover on the Arctic Ocean has been studied simultaneously from above by laser and from below by sonar in order to determine the relationship between the distributions of ridge height and keel-draft. Results are presented for rms keel drafts as a function of the mean number of keels per km of track, the probability density function of ice drafts from the first 270 km of track, the probability density function of ice drafts from 90-km sections of track, and the distribution of surface ridge heights. S.C.S.

RS78-2-615

A78-48001 Landsat as an aid in the preparation of hydrographic charts. D. K. Warne (Australian National University, Canberra, Australia). *Photogrammetric Engineering and Remote Sensing*, vol. 44, Aug. 1978, p. 1011-1016. 6 refs.

Water depth in the Torres strait was determined from Landsat MSS imagery and the results were compared with ground truth sounding data. The method consists of attempting to fit the simple optical model for the radiance passing through the water and reaching the Landsat detector to the raw Landsat data. Parameters of the model had to be recalculated for each test area. Evaluation was made difficult by the presence of broad scale and localized disturbances of the depth-radiance relationship. Other sources of errors were small features and steep gradients beyond the resolving power of the MSS system and subsequent data correction process. An accuracy of 10% of nominal depth was attainable for depth penetration to 20 m. P.T.H.

RS78-2-616

A78-48067 * Differences in radar return from ice-covered North Slope Lakes. W. F. Weeks, A. G. Fountain (U.S. Army, Cold Regions Research and Engineering Laboratory, Hanover, N.H.), M. L. Bryan, and C. Elachi (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). *Journal of Geophysical Research*, vol. 83, Aug. 20, 1978, p. 4069-4073. 7 refs. Navy-supported research; Contract No. NAS7-100

Comparisons are made between L and X band synthetic aperture radar images of frozen lakes on the North Slope of Alaska and ground truth observations of the nature of their ice covers. It is shown that the differences in radar backscatter observed on different areas of a lake can be correlated with whether or not the lake is frozen completely to the bottom at the site in question. This explanation is reasonable inasmuch as the reflection coefficient associated with the high-dielectric contrast ice/water interface is significantly higher than that associated with a low-contrast ice/soil interface. However, the presence of the ice/water interface cannot be the only condition required for the higher backscatter because the ice/water interface per se would be specular at X and L band frequencies, causing the energy returned from the interface to be reflected away from the radar receiver. The other principal factor contributing to the return of energy from the ice/water interface to the receiver is believed to be the presence in the ice of numerous vertically elongated air bubbles which would act as scatters.

(Author)

RS78-2-617

N78-28569*# Academy of Scientific Research and Technology, Cairo (Egypt).

GEOLOGICAL AND ENVIRONMENTAL RESOURCES INVESTIGATIONS IN EGYPT USING LANDSAT IMAGES

Quarterly Progress Report

M. A. Abdel-Hady, Principal Investigator [1978] 17 p. refs. Sponsored by NASA ERTS

(E78-10164; NASA-CR-157282 QPR-2) Avail. NTIS HC A02/MF A01 CSCL 08G

There are no author-identified significant results in this report.

RS78-2-618

N78-28568*# Academy of Scientific Research and Technology, Cairo (Egypt).

GEOLOGICAL AND ENVIRONMENTAL RESOURCES INVESTIGATIONS IN EGYPT USING LANDSAT IMAGES

Quarterly Progress Report

M. A. Abdel-Hady, Principal Investigator [1978] 14 p. Sponsored by NASA ERTS

(E78-10163; NASA-CR-157281; QPR-1) Avail. NTIS HC A02/MF A01 CSCL 08G

There are no author-identified significant results in this report.

RS78-2-619

N78-28567*# Academy of Scientific Research and Technology, Cairo (Egypt).

GEOLOGICAL AND ENVIRONMENTAL RESOURCES INVESTIGATIONS IN EGYPT USING LANDSAT IMAGES

Final Progress Report

M. A. Abdel-Hady, Principal Investigator [1978] 6 p. Sponsored by NASA ERTS

(E78-10162; NASA-CR-157280) Avail. NTIS HC A02/MF A01 CSCL 08G

There are no author-identified significant results in this report.

RS78-2-620

N78-27477*# Environmental Research and Technology, Inc., Concord, Mass.
INVESTIGATION OF THE APPLICATION OF HCMM THERMAL DATA TO SNOW HYDROLOGY Quarterly Progress Report, 1 Apr. - 30 Jun. 1978
James C Barnes, Principal Investigator 30 Jun. 1978 4 p ERTS
(Contract NAS5-24316)
(E78-10147; NASA-CR-157234; QPR-3) Avail. NTIS HC A02/MF A01 CSCL 08L

There are no author-identified significant results in this report.

RS78-2-621

N78-27482*# Georgia Southwestern Coll., Americus.
INTRODUCTORY WORKSHOPS ON REMOTE SENSING AS RELATED TO GEOLOGICAL PROBLEMS IN GEORGIA Final Report
Barry F. Beck and Jack C Carter, Principal Investigators Mar. 1978 23 p refs Workshop held at Americus, Ga., 24-25 May 1977 ERTS
(Contract NAS8-30884)
(E78-10152, NASA-CR-150710) Avail: NTIS HC A02/MF A01 CSCL 08G

There are no author-identified significant results in this report.

RS78-2-622

N78-29532*# Texas A&M Univ., College Station Remote Sensing Center.
MEASUREMENT OF SOIL MOISTURE TRENDS WITH AIRBORNE SCATTEROMETERS Progress Report, 1 Apr. 1977 - 1 Jun. 1978
Bruce J Blanchard, Principal Investigator 1 Jun. 1978 110 p ERTS
(Grant NsG-5134)
(E78-10176 NASA-CR-157271 RSC 3458-2) Avail: NTIS HC A... MF A01 CSCL 08M

The author has identified the following significant results Repeated looks at surfaces that maintain constant roughness can provide an estimate of soil moisture in the surface when appropriate radar look angles are used Significant influence due to differences in soil moisture can be detected in the 13.3 GHz and 1.6 GHz scatterometer returns Effects of normal crop densities have little influence on the surface soil moisture estimate, when appropriate look angles are used It appears that different look angles are optimum for different frequencies to avoid effects from vegetation Considering the frequency and look angles used on the Seasat-A imaging radar, differences in soil moisture should produce as much as 9 db difference in return on that system

RS78-2-623

N78-27478*# Department of Industry, London (England)
THE USE OF LANDSAT IMAGERY IN RELATION TO AIR SURVEY IMAGERY FOR TERRAIN ANALYSIS IN NORTH-WEST QUEENSLAND, AUSTRALIA, VOLUME 1 Final Report
Monica M Cole and E. Stuart Owen-Jones, Principal Investigators 15 Dec. 1977 161 p refs Sponsored by NASA ERTS 3 Vol.
(E78-10148; NASA-CR-157242) Avail: NTIS HC A08/MF A01 CSCL 08B

The author has identified the following significant results. Distinctive spectral signatures discriminated areas underlain by distinctive lithological/stratigraphical units where bedrock either outcrops or is relatively near to surface in the Lady Annie-Mt Gordon fault zone, the Mary Kathleen, and Dugald River-Naraku areas Spectral signatures associated with discrete plant communities distinguished different types of superficial deposits over the Cloncurry Plains. Distinctive spectral signatures also revealed the presence and nature of concealed bedrock beneath cover of residuum and superficial deposits where this is relatively thin in the Cloncurry Plains Major faults were clearly displayed in areas of outcropping and near surface bedrock Sets of lineaments with preferred orientations were identified in the Lady Annie and Dugald River areas Known base metal deposits occur along these features.

RS78-2-624

N78-27479*# Department of Industry, London (England)
THE USE OF LANDSAT IMAGERY IN RELATION TO AIR SURVEY IMAGERY FOR TERRAIN ANALYSIS IN NORTH-WEST QUEENSLAND, AUSTRALIA, VOLUME 2 Final Report
Monica M Cole and E. Stuart Owen-Jones, Principal Investigators 15 Dec 1977 135 p Sponsored by NASA Original contains color imagery Original photography may be purchased from the EROS Data Center, Sioux Falls, S D. 57198 ERTS 3 Vol
(E78-10149; NASA-CR-157243) Avail. NTIS HC A07/MF A01 CSCL 08B

There are no author-identified significant results in this report

RS78-2-625

N78-27480*# Department of Industry, London (England).
THE USE OF LANDSAT IMAGERY IN RELATION TO AIR SURVEY IMAGERY FOR TERRAIN ANALYSIS IN NORTH-WEST QUEENSLAND, AUSTRALIA, VOLUME 3 Final Report
Monica M Cole and E Stuart Owen-Jones, Principal Investigators 15 Dec. 1977 73 p Sponsored by NASA Original contains imagery Original photography may be purchased from the EROS Data Center, Sioux Falls, S. D 57198 ERTS 3 Vol
(E78-10150, NASA-CR-157244) Avail. NTIS HC A04/MF A01 CSCL 08B

There are no author-identified significant results in this report

RS78-2-626

N78-29540# Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil)
PROJECT GEOLOGICAL MAP TO THE MILLIONTH SCALE
A. dos R. DosSantos, C. E. C. DosAnjos, P. P. Barbosa, P. ... et al.
U P DosSantos, C E DosAnjos, E Crepani, F S DoNascimento M P Barbosa, P. R. Martini et al Jul 1977 13 p In PORTUGUESE; ENGLISH summary
(INPE-1074-NTE/100) Avail NTIS HC A02/MF A01

Methodologies for the systematic use of remote sensing techniques for regional geological mapping are reported A large amount of new geological information was obtained permitting a better understanding of structural, tectonic and stratigraphical problems The results obtained are important for delineating areas of mineral deposits F.O.S

RS78-2-627

N78-28570*# Academy of Scientific Research and Technology, Cairo (Egypt).
GROUNDWATER STUDIES IN ARID AREAS IN EGYPT USING LANDSAT SATELLITE IMAGES
E M ElShazly, M A Abdel-Hady, and M. M. ElShazly. Principal Investigators 1977 10 p refs Presented at 11th Intern Symp. on Remote Sensing of Environment, Michigan, 25-29 Apr 1977 Sponsored by NASA ERTS
(E78-10165; NASA-CR-157283) Avail: NTIS HC A02/MF A01 CSCL 08H

There are no author-identified significant results in this report

RS78-2-628

N78-28565*# Academy of Scientific Research and Technology, Cairo (Egypt)
SATELLITE MAPPING: REGIONAL GEOLOGY, GEOMORPHOLOGY, STRUCTURE, DRAINAGE AND HYDROLOGY OF BAHR EL JEBEL AREA, JONGLEI CANAL PROJECT AREA, SOUTHERN SUDAN
E M ElShazly, M A Abdel-Hady, M. A ElGhawaby, A B Salman, I. A. ElKassas, S M. Khawasik, M. M Elrakaiby, H ElAmin M M. ElShazly, and W Iskandar, Principal Investigators Apr 1978 229 p refs Sponsored by NASA Original contains color illustrations ERTS
(E78-10160, NASA-CR-157278) Avail: NTIS HC A11/MF A01 CSCL 08G

There are no author-identified significant results in this report

RS78-2-629

N78-28564*# Academy of Scientific Research and Technology, Cairo (Egypt)
GEOLOGIC INTERPRETATION OF LANDSAT SATELLITE IMAGES FOR THE QATTARA DEPRESSION AREA, EGYPT
E. M ElShazly, M. A. Abdel-Hady, M A. ElGhawaby, S M. Khawasik, and M M ElShazly, Principal Investigators Nov. 1976 100 p refs Sponsored by NASA Original contains color illustrations ERTS
(E78-10159; NASA-CR-157277) Avail. NTIS HC A05/MF A01 CSCL 08G

The author has identified the following significant results. For the first time the regional geological units are given. Faults, fractures, and folds are included, as well as drainage lines which help to visualize the environmental impact of the Qattara project for electric power generation and to assess the regional questions involved in its implementation.

RS78-2-630

N78-28575*# Academy of Scientific Research and Technology, Cairo (Egypt).
GEOLOGICAL AND GROUNDWATER POTENTIAL STUDIES OF EL ISMAILIYA MASTER PLAN STUDY AREA
E M ElShazly, M. A Abdel-Hady, M. M. ElShazly, M. A. ElGhawaby, I A. ElKassas, A B. Salman, and M. A. Morsi, Principal Investigators Apr. 1975 58 p refs Sponsored by NASA Original contains imagery Original photography may be purchased from the EROS Data Center, Sioux Falls, S. D 57198 ERTS
(E78-10170, NASA-CR-157288) Avail. NTIS HC A04/MF A01 CSCL 08G

There are no author-identified significant results in this report

RS78-2-631

N78-28574*# Academy of Scientific Research and Technology, Cairo (Egypt).
REGIONAL PROSPECTING FOR IRON ORES IN BAHARIYA OASIS-EL FAIYUM AREA, EGYPT, USING LANDSAT-1 SATELLITE IMAGES
E M ElShazly, M A. Abdel-Hady, M. A ElGhawaby, and S M Khawasik, Principal Investigators Feb 1976 63 p refs Sponsored by NASA Original contains color illustrations ERTS
(E78-10169; NASA-CR-157287) Avail NTIS HC A04/MF A01 CSCL 08G

The author has identified the following significant results New discoveries of iron deposits were registered as a result of the LANDSAT imagery, and the conditions of the already known iron deposits and occurrences were regionally connected and verified

RS78-2-632

N78-28573*# Academy of Scientific Research and Technology, Cairo (Egypt).
LANDSAT SATELLITE MAPPING IN EGYPT AND ITS POSSIBLE APPLICATIONS IN PETROLEUM AND NATURAL GAS EXPLORATION
E M. ElShazly and M. A Abdel-Hady, Principal Investigators 1977 19 p refs Presented at 10th Arab Petroleum Congr., Tripoli, 19-25 Dec. 1977 Sponsored by NASA ERTS
(E78-10168; NASA-CR-157286) Avail. NTIS HC A02/MF A01 CSCL 08G

There are no author-identified significant results in this report.

RS78-2-633

N78-28572*# Academy of Scientific Research and Technology, Cairo (Egypt).
APPLICATION OF LANDSAT SATELLITE IMAGERY FOR IRON ORE PROSPECTING IN THE WESTERN DESERT OF EGYPT
E. M ElShazly, M A Abdel-Hady, M A. ElGhawaby, and S M. Khawasik, Principal Investigators 1977 12 p refs Presented at 11th Intern Symp on Remote Sensing of Environment Michigan, 25-29 Apr 1977 Sponsored by NASA ERTS
(E78-10167, NASA-CR-157285) Avail. NTIS HC A02/MF A01 CSCL 08G

The author has identified the following significant results the delineation of the geological units and geological structures through image interpretation corroborated by field observations and structural analysis, led to the discovery of new iron ore deposits A new locality for iron ore deposition, namely Gebel Galamun, was discovered, as well as new occurrences within the already known iron ore region of Bahariya Oasis

RS78-2-634

N78-28571*# Academy of Scientific Research and Technology, Cairo (Egypt).
APPLICATION OF LANDSAT IMAGERY IN THE GEOLOGICAL AND SOIL INVESTIGATIONS IN THE CONTROL WESTERN DESERT, EGYPT
E. M ElShazly, M. A Abdel-Hady, M M. ElShazly, M A. ElGhawaby, S M Khawasik, A A. Haraga, S Sanad, and S. H Attia, Principal Investigators 1978 10 p refs Presented at 12th Intern Symp on Remote Sensing of the Environment, Manila, Philippines, 20-26 Apr, 1978 Sponsored by NASA ERTS
(E78-10166, NASA-CR-157284) Avail NTIS HC A02/MF A01 CSCL 08G

There are no author-identified significant results in this report.

RS78-2-635

N78-28563*# Academy of Scientific Research and Technology, Cairo (Egypt).
GEOLOGY OF KHARGA-DAKHLA OASES AREA, WESTERN DESERT, EGYPT, FROM LANDSAT-1 SATELLITE IMAGES
E. M. ElShazly, M. A Abdel-Hady, I. A ElKassas, A B. Salman, H. ElAmin, M M. ElShazly, and A. A. AbdelMegid, Principal Investigators Apr 1976 63 p refs Sponsored by NASA Original contains color illustrations ERTS
(E78-10158, NASA-CR-157276) Avail: NTIS HC A04/MF A01 CSCL 08G

There are no author-identified significant results in this report.

RS78-2-636

N78-26514*# Mitre Corp., McLean, Va. Metrek Div.
SIMPLIFIED MULTIPLE SCATTERING MODEL FOR RADIATIVE TRANSFER IN TURBID WATER
A. H. Ghovanlou and G. N. Gupta May 1978 72 p refs Sponsored by NASA
(Contract F19628-77-C-0001)
(NASA-CR-145365) Avail. NTIS HC A04/MF A01 CSCL 20N

Quantitative analytical procedures for relating selected water quality parameters to the characteristics of the backscattered signals, measured by remote sensors, require the solution of the radiative transport equation in turbid media. Presented is an approximate closed form solution of this equation and based on this solution, the remote sensing of sediments is discussed The results are compared with other standard closed form solutions such as quasi-single scattering approximations. G G

RS78-2-637

N78-27384* National Aeronautics and Space Administration Langley Research Center, Langley Station, Va
REMOTE WATER MONITORING SYSTEM Patent
David C Grana and David P Haynes, inventors (to NASA) Issued 16 May 1978 11 p Filed 4 Aug 1977 Supersedes N77-28563 (15 - 19 p 2548)
(NASA-Case-LAR-11973-1; US-Patent-4 089,209; US-Patent-Appl-SN-821681, US-Patent-Class-73-61R, US-Patent-Class-73-170A; US-Patent-Class-73-425 4R) Avail US Patent Office CSCL 14B

A remote water monitoring system is described that integrates the functions of sampling, sample preservation, sample analysis data transmission and remote operation. The system employs a floating buoy carrying an antenna connected by lines to one or more sampling units containing several sample chambers Receipt of a command signal actuates a solenoid to open an intake valve outward from the sampling unit and communicates the water sample to an identifiable sample chamber Such response to each signal receipt is repeated until all sample chambers are filled in a sample unit Each sample taken is analyzed by an electrochemical sensor for a specific property and the data obtained is transmitted to a remote sending and receiving station Thereafter, the samples remain isolated in the sample chambers until the sampling unit is recovered and the samples removed for further laboratory analysis

Official Gazette of the U S. Patent Office

RS78-2-638

N78-29531*# Department of the Environment, Ottawa (Ontario).
RETRANSMISSION OF HYDROMETRIC DATA IN CANADA Quarterly Report, Apr. - Jun. 1978
R A Halliday, Principal Investigator and I A Reid Jul 1978 8 p Sponsored by NASA ERTS
(E78-10174; NASA-CR-157269) Avail. NTIS HC A02/MF A01 CSCL 08H

The author has identified the following significant results The project continued to demonstrate the feasibility of transmitting hydrometric data in the LANDSAT and GOES mode and using these data operationally. All elements except for the GOES downlink at PASS were functioning well

RS78-2-639

N78-27475*# South Dakota State Univ., Brookings Remote Sensing Inst
HCMM ENERGY BUDGET DATA AS A MODEL INPUT FOR ASSESSING REGIONS OF HIGH POTENTIAL GROUNDWATER POLLUTION Interim Report, Apr. - Jun. 1978
Donald G Moore Principal Investigator J Heilman, J Tunheim, and V Baumberger Jun 1978 14 p ERTS
(Contract NAS5-2406)
(E78-10145; NASA-CR-157232) Avail .NTIS HC A02/MF A01 CSCL 13B

The author has identified the following significant results. To investigate the general relationship between surface temperature and soil moisture profiles, a series of model calculations were carried out Soil temperature profiles were calculated during a complete diurnal cycle for a variety of moisture profiles Preliminary results indicate the surface temperature difference between two sites measured at about 1400 hours is related to the difference in soil moisture within the diurnal damping depth (about 50 cm) The model shows this temperature difference to vary considerably throughout the diurnal cycle

RS78-2-640

N78-28566*# Academy of Scientific Research and Technology, Cairo (Egypt)
SOIL RESOURCES AND POTENTIAL FOR AGRICULTURAL DEVELOPMENT IN BAHR EL JEBEL IN SOUTHERN SUDAN, JONGLEI CANAL PROJECT AREA
Victor I Myers, Donald G. Moore, M. A. Abdel-Hady, A G. Abdel-Samie, E M ElShazly, Principal Investigators, Hussein Youvis, B K Worcester, A A Klingebiel, M. M ElShazly, M. A Hamad et al Apr 1978 189 p refs Sponsored by NASA Original contains imagery Original photography may be purchased from the EROS Data Center, Sioux Falls, S. D 57198 ERTS
(E78-10161, NASA-CR-157279) Avail: NTIS HC A09/MF A01 CSCL 02C

The author has identified the following significant results Fourteen LANDSAT scenes were used to produce mosaics of the 167, 474 sq km study area These were black and white MSS 7 images and false color composite images Five major soil-landscape units were delineated on the mosaics, and these were subdivided into a total of 40 soil mapping units Aerial reconnaissance was useful in defining boundaries between mapping units and in estimating the proportion of the various soils which composed each mapping unit Ground surveying permitted first-hand observation of major soils and sampling for quantitative laboratory analysis Soil interpretations were made including properties potentials, and limitations

RS78-2-641

N78-29543# Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil).
DETERMINATION OF VARIOUS TOPOGRAPHIES USING PHOTOGRAPHIC TEXTURE ANALYSIS OF LANDSAT IMAGES [DETERMINAÇAO DE VARIACOES TOPOGRAFICAS ATRAVES DA ANALISE DE TEXTURA FOTOGRAFICA DE IMAGENS LANDSAT]
Evlyn Marcia Leao DeMoraesNovo and Armando Pacheco DosSantos Jul. 1977 31 p refs In PORTUGUESE, ENGLISH summary
(INPE-1077-NTE/103) Avail NTIS HC A03/MF A01

The relationship between the texture of LANDSAT images and topographic variation was studied Topographic data were collected from LANDSAT images and topographic maps. A roughness index was used to represent image texture This index represents the tonal variation within a 0.5 cm x 0.5 cm grid Declivity data were collected from topographic maps at different scales to correlate with the roughness index The obtained results showed the possibility of characterizing topographic conditions by analyzing the texture of LANDSAT images J M.S

RS78-2-642

N78-27476*# Geological Survey, Denver Colo
GEOLOGIC APPLICATION OF THERMAL-INERTIA MAPPING FROM SATELLITE Progress Report, 1 Mar. - 31 May 1978
Terry W. Offield, Principal Investigator, Susanne H. Miller and Kenneth Watson Jun 1978 5 p Sponsored by NASA ERTS
(E78-10146 NASA-CR-157233) Avail NTIS HC A01/MF A01 CSCL 08B
The author has identified the following significant results

Theoretical evaluation of the proportional and linear relationship between absolute and relative thermal inertia was performed, and a potentially more accurate expression for absolute thermal inertia mapping was proposed.

RS78-2-643

N78-26511*# College for Civil Engineering, Bucharest (Romania). Lab. for Remote Sensing
USE OF LANDSAT DATA FOR NATURAL RESOURCES INVESTIGATION IN THE LOWER BASIN OF DANUBE AND DANUBE DELTA Final Report, May 1975 - Nov. 1976
Nicolaie OPrescu, Principal Investigator Sep 1977 87 p refs Sponsored by NASA Original contains color imagery Original photography may be purchased from the EROS Data Center, Sioux Falls, S. D. 57198 ERTS
(E78-10141, NASA-CR-157175, DaDelta-1/6) Avail. NTIS HC A05/MF A01 CSCL 08F

The author has identified the following significant results. Monitoring of excess humidity was possible at the Baragan test site. Qualitative improvements of 20-50% were obtained in regards to soil inventory in the eastern Danube Delta, comparing data with conventional maps The pedological situation was observed after drainage in impounded enclosures. The appearance of stagnate water was surveyed due to difference in color shades on LANDSAT imagery Areas with gluey soils, such as lake bottoms rich in CaCO3 and shell grist, were clearly represented. Sediment discharges into the sea at the Danube mouth and plumes over 100 km at sea could be easily distinguished on LANDSAT MSS 4 and 5

RS78-2-644

N78-29547# Los Alamos Scientific Lab., N. Mex.
GEOTHERMAL RESERVOIR CATEGORIZATION AND STIMULATION STUDY
Harold L. Overton (CER, Inc.) and Robert J. Hanold Jul. 1977 62 p refs
(Contract W-7405-eng-36)
(LA-6889-MS) Avail NTIS HC A04/MF A01

Analyses of the fraction of geothermal wells that are dry indicate that geothermal reservoirs can be fitted into four basic categories. (1) Quaternary to late Tertiary sediments, (2) Quaternary to late Tertiary extrusives; (3) Mesozoic or older metamorphic rocks and (4) Precambrian or younger rocks Failure of geothermal wells to flow economically is due mainly to low permeability formations in unfractured regions. It is the high stress/low permeability category that is most amenable to artificial stimulation by hydraulic fracturing, propellant fracturing, or chemical explosive fracturing. Category (1) geothermal fields are not recommended for artificial stimulation because these younger sediments almost always produce warm or hot water Most geothermal fields fit into category (2) and in certain cases, possess some potential for stimulation The Geysers is a category (3) field and its highly stressed brittle rocks should make this site amenable to stimulation by explosive fracturing techniques. Roosevelt Springs, UT, well 9-1 is in category (4) and is a flow failure It represents a prime candidate for stimulation by hydraulic fracturing ERA

RS78-2-645

N78-29533*# Stanford Univ., Calif School of Earth Sciences.
HCMM: SOIL MOISTURE IN RELATION TO GEOLOGIC STRUCTURE AND LITHOLOGY, NORTHERN CALIFORNIA
Ernest L. Rich Principal Investigator Jul. 1978 2 p ERTS
(Contract NAS5-24479)
(E78-10177, NASA-CR-157272) Avail NTIS HC A02/MF A01 CSCL 08M

There are no author-identified significant results in this report

RS78-2-646

N78-26513*# Minnesota Univ., Minneapolis. Space Science Center
A STUDY OF MINNESOTA LAND AND WATER RESOURCES USING REMOTE SENSING Progress Report, 1 Jan. 1977 - 1 Jan. 1978
William G. Shepherd, Principal Investigator 31 Dec 1977 269 p refs Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S. D. 57198 ERTS
(Grant NGL-24-005-263)
(E78-10143; NASA-CR-157177) Avail: NTIS HC A12/MF A01 CSCL 05B

The author has identified the following significant results Both LANDSAT imagery and digital data were studied for usefulness in surveying water conditions of Minnesota lakes. Initial consideration was given to analysis of LANDSAT image densities because of the low technologic and cost requirements The techniques employed, however, yield inconsistent and unreliable results. A set of criteria is given for using LANDSAT data in identification of three categories of particulate contaminants in Lake Superior. A linear transformation giving the relationship between the residual LANDSAT intensities and concentrations of three contaminants was obtained from correlation of remote sensing data with insitu measurements LANDSAT imagery was found useful in placing peat bogs and fens in their respective geologic settings Artificial disturbances and drainageways in peatlands could be recognized and classified.

RS78-2-647

N78-27473 Maryland Univ. College Park
LINEAR FEATURE DETECTION AND MAPPING Ph.D Thesis
Gordon James VanderBrug 1977 263 p
Avail: Univ. Microfilms Order No. 78-08196

The methods developed are applicable to many types of pictures, but the examples used in the dissertation are all taken from remote sensory imagery. In such imagery roads, rivers and geologically significant structures known as lineaments all appear as linear features The approach taken involves several steps (1) detection of the features on a local basis using a local matching process; (2) iterative enhancement of the local feature detection output using contextual information; (3) representation of the resulting curve segments in a data structure; and (4) merging the segments, as guided by the data structure to yield global linear features Dissert Abstr

RS78-2-648

N78-27489*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt Md

REFLECTION SPECTRA AND MAGNETOCHEMISTRY OF IRON OXIDES AND NATURAL SURFACES

Peter Wasilewski May 1978 44 p refs Submitted for publication

(NASA-TM-79556) Avail NTIS HC A03/MF A01 CSCL 20F

The magnetic properties and spectral characteristics of iron oxides are distinctive Diagnostic features in reflectance spectra (0 5 to 2 4 micron) for alpha Fe2O3, gamma Fe2O3 and FeOOH include location of Fe3(+) absorption features, intensity ratios at various wavelengths, and the curve shape between 1 2 micron and 2 4 micron The reflection spectrum of natural surfaces are seldom those of the bulk rock because of weathering effects Coatings are found to be dominated by iron oxides and clay A simple macroscopic model of rock spectra (based on concept of stains and coatings) is considered adequate for interpretation of LANDSAT data The magnetic properties of materials associated with specific spectral types and systematic changes in both spectra and magnetic properties are considered. G.G

RS78-2-649

N78-26510*# National Oceanic and Atmospheric Administration, Washington, D. C.

APPLICATIONS OF HCMM DATA TO SOIL MOISTURE SNOW AND ESTUARINE CURRENT STUDIES Quarterly Report

Donald R. Wiesnet, Principal Investigator, David F McGinnis, and Michael Matson 8 Jun. 1978 5 p Sponsored by NASA ERTS

(E78-10140; NASA-CR-157174, HCM-045, QR-3) Avail. NTIS HC A02/MF A01 CSCL 08C

There are no author-identified significant results in this report.

RS78-2-650

MONITORING WATER QUALITY BY REMOTE SENSING,

California State Dept. of Water Resources, Sacramento.

R. L. Brown.

Available from the National Technical Information Service, Springfield, VA 22161 as E77-10194, Price codes: A04 in paper copy, A01 in microfiche. Final Report, NASA CR 154 259, July, 1977. 52 p, 15 fig, 2 tab, 12 ref. NAS 5-20945.

Descriptors: *Remote sensing, Satellites(Artificial), *California, *Water quality, *Monitoring, Aircraft, Mapping, Costs, *Pollutant identification, *LANDSAT, *San Francisco Bay(CA), *San Francisco Delta(CA), *Lake Tahoe(CA), Ground truth

Results of a study to determine the applicability of remote sensing for evaluating water quality conditions in San Francisco Bay-Delta area and Lake Tahoe, California, are presented. Coincident ground truth was obtained during LANDSAT and U-2 flights and correlated with the remote sensing images to establish a data comparison base line. Images were analyzed for apparent surface anomalies which might indicate water quality problems It is concluded that: (1) for most water quality monitoring applications, LANDSAT imagery is too infrequent and of too small a scale to be useful in routine monitoring programs; (2) imagery from U-2 and conventional aircraft can be effectively used to monitor gross water quality changes; (3) with the present state-of-the-art in image analysis and the large amount of ground truth needed, remote sensing has only limited application in monitoring water quality; (4) California water quality conditions are improving as a result of the Porter-Cologne Water Quality Act and provisions of P L. 92-500, an (5) in complex and dynamic systems such as the San Francisco Bay and Delta, large amounts of ground truth data must be collected to support remote imagery; spatial and temporal variations of the parameters are so great that approaches other than synoptic (synchronized multi-point sampling) do not provide enough information to evaluate patterns observed in specific images. (Seip-IPA)

W78-08257

RS78-2-651

RIVER FLOODS IN NORTHERN ALASKA,

Geological Survey, Anchorage, AL. Water Resources Div.

J M Childers.

In: ASCE Proceedings of 1978 Cold Regions Specialty Conference, Anchorage, Alaska, May 17-19, 1978. 12 p, 6 fig, 2 tab, 2 ref.

Descriptors: *Alaska, *Floods, *Peak discharge, *Streamflow, *Bank storage, Channel morphology, Flood forecasting, Flood profiles, Flood plains, Drainage area, Surveys, Data collections, *Northern Alaska, *Brooks Range drainage.

Development of natural resources in Alaska will require innovative engineering because of the cold climate conditions and the lack of experience or data. The U S. Geological Survey has completed a reconnaissance survey of river flood evidence in northern Alaska which provides flood hazard information that may help engineers until flood records are available The hydrologists surveyed flood-evidence at 55 sites primarily on principal streams draining the Brooks Range. The surveys were used to compute bankfull channel properties and maximum evident flood discharges. At most of the sites, the maximum evident flood was about bankfull Bankfull and maximum evident flood discharges were divided by drainage area to compute unit flood runoff rates This facilitates comparisons of floods and provides a basis for estimating regional flood characteristics. Maximum evident flood discharge rates were generally less than 100 cubic ft/s/sq mi for drainage basins smaller than 2,000 sq mi and less than 50 cubic ft/s/sq mi for drainage basins larger than 2,000 sq mi Flood discharges exceeding these limits probably would be rare in northern Alaska (Woodard-USGS)

W78-08046

RS78-2-652

AERIAL PHOTO INTERPRETATION OF A SMALL ICE JAM,
Cold Regions Research and Engineering Lab., Hanover, NH.
S L DenHartog.
Available from the National Technical Information Service, Springfield, VA 22161 as AD-A045 870. Price codes: A02 in paper copy, A01 in microfiche Special Report 77-32, October 1977 20 p, 3 fig CWIS 31355.

Descriptors: *Ice jams, *Remote sensing, *Photography, *New Hampshire, Ice, Ice cover, Aerial photography, On-site investigations, Surveys, Analytical techniques, Rivers, *Plymouth(NH), *Pemigewasett River(NH).

Aerial photos of a small ice jam on the Pemigewasett River near Plymouth, New Hampshire, were taken three days after the jam and compared with photos taken after the ice went out The winter photos show a marked and sudden decrease in floe size, apparently indicative of faster and longer movement of the ice. The spring photos show a number of shallows and obstructions that apparently had no effect on the ice movement. It was concluded that this jam was caused by a change in slope and subsequent reduction in velocity (Humphreys-ISWS)
W78-09215

RS78-2-653

CHANNELIZATION ASSESSMENT, WHITE RIVER, VERMONT: REMOTE SENSING, BENTHOS, AND WILDLIFE,
Massachusetts Cooperative Wildlife Research Unit, Amherst.
W E. Dodge, E. E. Possardt, R. J. Reed, and W. P MacConnell.
Available from the National Technical Information Service, Springfield, VA 22161 as PB-268 247, Price codes: A05 in paper copy, A01 in microfiche
Prepared for Fish and Wildlife Service, Washington, D.C., Office of Biological Services, Report FWS/OBS-76-7, June 1976. 73 p, 28 fig, 27 tab, 41 ref, 4 append. 14-16-0008-1149

Descriptors *Benthos, Song birds, Mammals, *Vermont, *Remote sensing, *Aerial photography, Watershed management, Furbearers, Amphibians, *Wildlife, Aquatic insects, Habitats, Ecosystems, *Channeling, Frogs, Streams, Flood protection, Populations, Land use, Classification, *Vegetation, *White River(Vt), *Stream channelization, Species diversity, Swallows, Spotted sandpipers, Actitis macularia, Thrushes, Vireos, Warblers, White River, Riparian habitat, Shrews, Jumping mice, White-footed mice, Bufo americanus, Peromyscus leucopus, Repopulation, Recovery.

Following torrential flooding in the White River, Vermont watershed in June, 1973, much stream and riparian habitat was altered to alleviate future flood threats to roads, bridges, and private properties. Remote sensing, using aerial photogrammetic techniques, was used to develop a data base for the stream, bank, vegetation and land-use characteristics of the watershed. Aerial photographs indicated that seven percent of the streams were channelized. Benthic organism sampling revealed no significant differences (P>0.05) between channelized and non-channelized areas after eight months, probably because of the rapid recolonization by the benthos Thirty-three, 27, 38, and 46 percent of all songbirds collected by mist-netting during fall 1974, spring 1975, and early and late summer 1975 respectively, were from channelized areas. Species diversity was greater in non-channelized areas for all four sampling periods. Swallows and spotted sandpipers (Actitis macularia) were more abundant in channelized areas while thrushes, vireos, and particularly the warblers, were more abundant in non-channelized areas Twenty-eight, 39 and 39 percent of all small mammals collected by live trapping during fall 1974, early summer and later summer 1975 sampling periods, respectively, were from channelized areas Shrew and jumping mice were the most adversely affected small mammals, the white-footed mouse (Peromyscus leucopus), the most abundant small mammals, recovered rapidly in the channelized areas. No gross differences were observed between channelized and control (non-channelized) sites for the furbearer and amphibians. The most drastic impact on wildlife occurred at channelized sites where streamside vegetation was the most extensively destroyed. (FWS)
W78-08155

RS78-2-654

CHANNEL EROSION IN SOUTHWESTERN LOUISIANA CANAL,
California Univ., Los Angeles Dept. of Geography.
L. N. Doiron, and C. A. Whitehurst.
Journal of the Waterway, Port, Coastal and Ocean Division, American Society of Civil Engineers, Vol 104, No WW2, Proceedings Paper 13772, p 201-213, May 1978. 10 fig, 2 tab, 20 ref.

Descriptors: *Bank erosion, *Aerial photography, Banks, Canals, Channel morphology, Channels, Erosion, Scour, Inland waterways, Stream erosion, Sediments, Suspended sediments, Vegetation effects, Navigable waters, *Trainasses, *Geologic processes, Tidal currents.

Geomorphic processes active in the man-made Southwestern Louisiana Canal were studied with the aid of color infrared and multiband imagery aerial photography and various field analysis techniques. The enlargement and shoaling of the canal were investigated to determine their causes and to quantify the rates of erosion and deposition in a man-made structure of historically known dimensions in the bi-directional tidal flow regions of an estuarine environment. (Roberts-ISWS)
W78-08298

RS78-2-655

FLOODPLAIN DELINEATION USING AIRCRAFT DATA,
Pennsylvania State Univ University Park Space Science and Engineering Lab
D. L. Henninger, M. L. Stauffer, H. A. Weeden, and G. W. Petersen.
Available from the National Technical Information Service, Springfield, VA 22161 as AD-A035 279, Price codes A06 in paper copy, A01 in microfiche. ORSER-SSEL Technical Report 1-75, May 1975. 108 p, 33 fig, 4 tab, 47 ref, 4 append.

Descriptors: *Flood plains, *Pennsylvania, *Geomorphology, *Aerial photography, *Mapping, *Computer models, Soil types, Vegetation, Topography, Remote sensing, Electromagnetic waves, Temperature, Statistical analysis, Model studies, *Susquehanna River, *Multispectral scanner.

This investigation was designed to determine if floodplain boundaries could be delineated by applying automatic computer processing techniques to aircraft-collected multispectral scanner (MSS) data. The criteria used to distinguish floodplain from non-floodplain areas were natural indicators, such as differences in vegetation, moisture, and soils. Then two test areas were along the West Branch of the Susquehanna River, one a forsted area, the other a bare soil agricultural area. A flood plain Information Report and Soil Survey Reports were available from these areas. A continuous floodplain line could not be delineated on the basis of computer analysis of the aircraft-collected MSS data. However, the computer analysis did indicate a break between floodplain and non-floodplain within small areas. Due to the complex topography and land cover, the results were less than desired. In general, the study indicated that delineation of floodplains in complex areas using MSS data is not promising, given the state-of-art aircraft MSS data collection and analysis techniques. (Lardner-ISWS)
W78-07811

RS78-2-656

MAPPING WETLANDS ON BEAVER FLOWAGES WITH 35 MM PHOTOGRAPHY,
Southern Illinois Univ , Carbondale Cooperative Wildlife Research Lab.
R. E. Kirby
Canadian Field-Naturalist, Vol 90, No 4, p 423-431, October-December, 1976. 3 fig, 3 tab, 24 ref.

Descriptors: *Mapping, *Photography, *Remote sensing, *Wetlands, *Beavers, Maps, Vegetation, Methodology, Cover types, *Minnesota, National forests, Chippewa National Forest(Minn).

Beaver flowages and associated wetlands on the Chippewa National Forest, north-central Minnesota, were photographed from the ground and from the open side window of a small high-wing monoplane. The 35-mm High Speed Ektachrome transparencies obtained were used to map cover-type association visible on the aerial photographs. Nearly vertical photographs were rectified by projecting the slides onto a base map consisting of control points located by plane-table survey. Maps were prepared by tracing recognizable stands of vegetation in the rectified projection at the desired map scale. Twenty-six cover-type associations were identified and mapped on 10 study flowages in 1971. Comparative data from 10 flowages were collected serially throughout the entire openwater season. This cover-mapping technique was economical and substituted for detailed ground surveys. (Stihler-Mass)
W78-09087

RS78-2-657

USE OF EARTH SATELLITES FOR AUTOMATION OF HYDROLOGIC DATA COLLECTION,
Geological Survey, Reston, VA. Water Resources Div.
R. W. Paulson
In: Collection, Storage, Retrieval, and Publication of Water-Resources Data: Geological Survey Circular 756, p 8-14, 1978. 2 fig, 1 tab.

Descriptors: *Hydrologic data, *Data collections, *Remote sensing, *Telemetry, *Remote control, Analytical techniques, Planning, Network design, Measurement, Automation, *Battery-operated radios.

The U.S Geological Survey is evaluating a recently developed earth-satellite technology that is expected to provide a cost-effective technique for the automatic collection of data from hydrologic stations The technology, which is referred to as satellite Data Collection Systems (DCS), provides an opportunity to collect data from inexpensive battery-operated radios located at literally tens of thousands of hydrologic stations distributed over national or continental areas The U S Geological Survey is evaluating the DCS on three series of earth satellites to forecast the costs and benefits of using earth satellite technology for a national operational system for the automatic collection of hydrologic data. (See also W78-09323) (Woodard-USGS)
W78-09325

RS78-2-658

SNOWMAPPING IN SOUTHERN NORWAY BY USE OF LANDSAT IMAGERY,
Norsk Inst. for Vannforskning, Blindern.
J Skorve

Available from the National Technical Information Service, Springfield, VA 22161 as N77-33572, Price codes A03 in paper copy, A01 in microfiche Report NASA CR 155031, May 25, 1977. 25 p, 21 fig, 2 tab.

Descriptors: *Snow survey, *Norway, *Snow cover, *Remote sensing, Satellites(Artificial), Snowmelt, Mapping, Precipitation(Atmospheric), *Snowmapping, *LANDSAT, *Areal hydrology.

LANDSAT remote sensing techniques were used to study the snowcover in four mountainous basins in southern Norway which represent four different climatological conditions. Data from 1975 and 1976 enabled the observation of one complete melting season; observations cover the period of mid-May to the end of August 1975. Subsequent runoff information is compared with the rate of decrease in areal extent of the snow cover in each basin. LANDSAT imagery is well-suited for snowmapping in mountainous Norway. There is an obvious correlation between the areal extent of snow cover and the amount of water stored in the basins as snow. LANDSAT images and data are presented. (Seip-IPA)
W78-08238

RS78-2-659

SATELLITE REMOTE SENSING STUDY OF THE TRANS-BOUNDARY MOVEMENT OF POLLUTANTS,
Environmental Research Inst. of Michigan, Ann Arbor.
C. T. Wezernak, and D. R. Lyzenga.
Available from the National Technical Information Service, Springfield, VA 22161 as PB-274 069, Price codes: A03 in paper copy, A01 in microfiche. Report No EPA-600/3-77-056, May, 1977. 17 p, 7 fig, 4 ref. R803671.

Descriptors: *Remote sensing, Satellites(Artificial), *Suspended solids, *Phytoplankton, Water circulation, *Water quality, Sampling, *Monitoring, *Pollutant identification, Chlorophyll, Secchi disks, Turbidity, Sediments, Surface waters, *Path of pollutants, Earth Resources Technology Satellite, LANDSAT, *Lake Erie, *Lake Huron, Surface circulation, Transparency, Phytoplankton blooms, Surface chlorophyll.

Limited analysis of ERTS (LANDSAT) data of the western basin of Lake Erie and the southern portion of Lake Huron was performed to depict the large-scale movement of water masses (as manifested in terms of suspended solids) and to demonstrate the use of ERTS data in large lakes monitoring. Such data, recorded on computer compatible tapes, were processed to display surface circulation features, surface suspended solids distribution, surface chlorophyll distribution, and secchi disc transparency. Four broad ERTS (LANDSAT) bands (spanning the spectral range 0.5 - 1.1 micrometer) offer a water-quality measurements potential which is essentially restricted to suspended solids, turbidity, transparency, and the detection of phytoplankton blooms. Large variance in suspended sediment concentration constitutes an interference in the processing of data to display chlorophyll levels, since ambiguities cannot be resolved solely on the basis of LANDSAT data analysis, reference to ground truth measurements for calibration purposes is necessary. Data acquired from space and ship data are complimentary and neither can substitute for the other. Large area coverage provided from space can serve to provide unity to data collected by conventional point sampling and facilitate the interpretation of data collected by conventional methods. A continuing program of analysis of LANDSAT data for the two study areas is recommended. Repeat data under a variety of wind and lake-state conditions would contribute significantly to the information data base, facilitate interpretation of point sampled data, and aid in trend analysis. (Seip-IPA)
W78-08239

RS78-2-660

ACCESSION NUMBER	A78024388; B78017095
TITLE	ICEBERG SOUNDING BY IMPULSE RADAR
AUTHORS	ROSSITER, J.R.; GUSTAJTIS, K.A.
ORGANIZATIONAL SOURCE	CENTRE FOR COLD OCEAN RESOURCES ENGNG., MEMORIAL UNIV. OF NEWFOUNDLAND, ST. JOHN'S, NEWFOUNDLAND, CANADA
SOURCE	NATURE (GB) (NATUAS), VOL.271, NO.5640, PP.48-50, 5 JAN. 1978, 8 REF.
DOCUMENT TYPE	J (JOURNAL); EX (EXPERIMENTAL)
LANGUAGE	ENGLISH
CATEGORY CODES	*3A9385; 3A9210R; 3A9240V; *3B7710D; 3B6320
INDEX TERMS	OCEANOGRAPHIC TECHNIQUES; ICE; RADAR APPLICATIONS; RADAR MEASUREMENT
SUPPLEMENTARY TERMS	IMPULSE RADAR; TOTAL BULK; IRREGULAR SHAPE; TWILLINGATE HARBOUR, NEWFOUNDLAND; HELICOPTER; ICEBERG SOUNDING; ECHO; DRIFT PREDICTION; 80-MHZ; VHF; ICEBERG DRAFT; AIRCRAFT BORNE INSTRUMENTATION
ABSTRACT	KNOWLEDGE OF AN ICEBERG'S DRAFT IS ESSENTIAL FOR ASSESSING ITS RISK TO UNDERWATER INSTALLATIONS, IN PREDICTING ITS DRIFT, AND FOR ESTIMATING ITS TOTAL BULK. BECAUSE OF THE HIGHLY IRREGULAR SHAPE OF ICEBERGS, IT IS IMPOSSIBLE TO ESTIMATE AN ICEBERG'S DRAFT DIRECTLY FROM ITS ABOVE-WATER DIMENSIONS. LARGE TABULAR ICEBERGS HAVE BEEN SOUNDED USING RADIO TECHNIQUES. IT IS REPORTED THAT ESTIMATES OF THE DRAFT OF IRREGULARLY-SHAPED ICEBERGS CAN ALSO BE OBTAINED FROM THE AIR QUICKLY AND ACCURATELY USING SHORT-PULSE RADAR. A SMALL ICEBERG IN TWILLINGATE HARBOUR, NEWFOUNDLAND WAS SOUNDED FROM A HELICOPTER USING IMPULSE RADAR, ON 11 JUNE 1977. THE RESULT WAS VERIFIED BY SIMULTANEOUS MEASUREMENT OF THE ICEBERG'S DRAFT USING SIDE-SCAN SONAR.

RS78-2-661

ID NO.- EI780752170 852170
ESTIMATION OF FRACTURES AND SLOPE STABILITY OF ROCK FACES USING ANALYTICAL PHOTOGRAMMETRY.
Allam, M. Mosaad
Topogr Surv, surv & Mapp Branch, Ottawa, Ont
Photogrammetria v 34 n 3 May 1978 p 89-99 CODEN: PTGMAQ
DESCRIPTORS: *PHOTOGRAMMETRY, MINES AND MINING, GEOLOGICAL SURVEYS.
CARD ALERT: 405, 481, 502, 742
The use of analytical methods of data mensuration and processing of a stereophotogrammetric model of rock faces in open-pit mines provides a great variety of important information to field geologists and mining engineers. The measurement of the width of fractures and actual distances between them are used to work out the geostructural model of rocks as a basis for constructing the geological engineering model. The provision of the necessary data for the analysis of open-pit slopes using photogrammetric methods is described. 7 refs.

RS78-2-662

ID NO.- EI780862363 862363
STUDY OF SUSPENDED SOLIDS IN THE REQUENA DAM BY REMOTE SENSING.
Azuara, P. Ruiz; Hidalgo, L. Lemus
Univ Nac Auton de Mex, Mexico City
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 495-50 CODEN: PISEDM
DESCRIPTORS: (*WATER ANALYSIS, *Remote Sensing), INFRARED IMAGING, (PHOTOGRAMMETRY, Interpretation), (WATER POLLUTION, Water Quality), AERIAL PHOTOGRAPHY,
IDENTIFIERS: SUSPENDED SOLIDS
CARD ALERT: 445, 801, 742, 741
Remote sensing was applied to a preliminary study of suspended solids in the Requena Dam waters in Tepeji del Rio, Mexico. Aerial and terrestrial photographs were analyzed by photointerpretation and microdensitometry. Field measurements and sampling were also made. A relationship between ground data for the concentration of suspended solids and the transmissibility of the aerial infrared film are suggested. 20 refs.

RS78-2-663

ID NO.- EI780859373 859373
REMOTE SENSING EXPLORATION FOR METALLIC MINERAL RESOURCES IN CENTRAL BAJA CALIFORNIA.
Baker, Ralph N.
GE, Beltsville, Md
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 683-691 CODEN: PISEDM
DESCRIPTORS: (*MINERAL EXPLORATION, *Remote Sensing), IMAGE PROCESSING, GEOLOGICAL SURVEYS,
IDENTIFIERS: LANDSAT DATA
CARD ALERT: 501, 723, 481, 741
Remote sensor data (primarily Landsat) was analyzed by photogeologic and computer-assisted enhancement techniques to evaluate the metallic mineral potential of Baja California. Overlays were prepared at 1:1,000,000 and 1:500,000 and included known geologic relationships and mineral occurrences; lineament, drainage and structural patterns; tonal anomalies and IMAGE 100 enhancement results. Computer-assisted enhancement and classification of the test sites was performed using General Electric's IMAGE 100 system to identify subtle tonal anomalies thought related to mineralization using known sites as analysis guides. Mineral potential maps of Baja California were generated from these analyses and the ten highest priority targets visited. Refs.

RS78-2-664

ID NO.- EI780861402 861402
ESTIMATION OF SOIL MOISTURE WITH RADAR REMOTE SENSING.
Batlivala, Percy P.; Ulaby, Fawwaz T.
Univ of Kans Cent for Res, Inc. Lawrence
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1557-1566 CODEN: PISEDM
DESCRIPTORS: (*SOILS, *Moisture Determination), (REMOTE SENSING, Environmental Applications), RADAR,
CARD ALERT: 483, 716, 821
The radar response to soil moisture content was investigated using a truck-mounted 1-18 GHz Active Microwave Spectrometer system. The sensitivity to soil moisture content and the accuracy with which it could be estimated were evaluated for both bare and vegetation-covered fields. Bare field experiments were conducted to determine the optimum radar parameters (frequency, angle of incidence range and polarization configuration) for minimizing the response to surface roughness while retaining strong sensitivity to moisture content. In the vegetation-covered case, the effects of crop type, crop height and row direction relative to the radar look direct were evaluated.

RS78-2-665

ID NO.- EI780970799 870799
REMOTE SENSING IMPROVES CONVENTIONAL SAMPLING PROCEDURES.
Bhutani, J. S.; Burton, J. S.; Cheremisinoff, P. N.
Mitre Corp
Water Sewage Works Ref No 1978 5 p between p 108 and 113 CODEN: WSIWAY
DESCRIPTORS: (*WATER POLLUTION, *Control), (WATER SUPPLY, Water Quality), WASTEWATER, REMOTE SENSING,
CARD ALERT: 446, 453, 732
Assessing the effectiveness of pollution controls on municipal and industrial waste as well as determining the extent of water quality deterioration, the authors discuss the advantages and disadvantages of remote sensing. 10 refs.

RS78-2-666

ID NO.- EI780862432 862432
USE OF THERMAL-INFRARED IMAGERY IN GROUND-WATER INVESTIGATIONS IN MONTANA.
Boettcher, A. J.; Haralick, R. M.
US Geol Surv, Helena, Mont
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1161-1170 CODEN: PISEDM
DESCRIPTORS: (*WATER RESOURCES, *Remote Sensing), INFRARED IMAGING, IMAGE PROCESSING,
CARD ALERT: 444, 7 1, 723
The technique was used to locate groundwater inflow along three streams and one lake. The thermal scanner used in May 1972, March 1973, and November 1975 was mounted in a twin-engined aircraft. On the 1973 and 1975 flights, the data were recorded in an analog format on magnetic tape in flight, later were converted to digital format, and were computer-processed using an assignment of patterns to indicate differences in water temperature. Output from the image-processing program was converted to a temperature map having an isotherm spacing of 0. 5 $degree$ C. Computerization was found to be the most efficient method to manipulate data from lakes, large rivers, and narrow sinuous streams.

RS78-2-667

ID NO.- EI780857836 857836
APPLICATIONS OF CONVENTIONAL AND ADVANCED TECHNIQUES FOR THE INTERPRETATION OF LANDSAT 2 IMAGES FOR THE STUDY OF LINEARS IN THE FRIULI EARTHQUAKE AREA.
Cardamone, P.; Lechi, G. M.; Cavallin, A.; Marino, C. M.; Zanferrari, A.
CNR, Ist per la Geofis della Litosfera, Milano, Italy
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1337-1353 CODEN: PISEDM
DESCRIPTORS: (*GEOLOGICAL SURVEYS, *Remote Sensing), EARTHQUAKES.
IDENTIFIERS: LANDSAT IMAGES
CARD ALERT: 481, 716, 742, 744
This work describes the results obtained in the study of linears derived from the analysis of Landsat 2 images recorded over Friuli during 1975. Particular attention is devoted to the comparison of several passes in different bands, scales and photographic supports. Reference is made to aerial photographic interpretation in selected sites and to the information obtained by laser techniques.

RS78-2-668

ID NO.- EI780862414 862414
GROUNDWATER STUDIES IN ARID AREAS IN EGYPT USING LANDSAT SATELLITE IMAGES.
El Shazly, E. M.; Abdel Hady, M. A.; El Shazly, M. M.
At Energy Establ & Desert Inst, Cairo, Egypt
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1365-1374 CODEN: PISEDM
DESCRIPTORS: (*WATER RESOURCES, *Groundwater), (REMOTE SENSING, Environmental Applications), (GEOLOGICAL SURVEYS, Remote Sensing).
IDENTIFIERS: LANDSAT IMAGERY
CARD ALERT: 444, 716, 742, 481
Various features are interpreted which have strong bearing on groundwater in the arid environment. These include the nature of geological and lithologic units, structural lineaments, present and old drainage systems, distribution and form of water pools, geomorphologic units, weathering surfaces and other weathering phenomena, desert soils, and others. Examples are discussed to illustrate the significance of satellite image interpretation on the regional conditions of groundwater which could be traced and interconnected over several tens or even several hundreds of kilometers.

RS78-2-669

ID NO.- EI780860834 860834
THREE APPROACHES TO THE CLASSIFICATION AND MAPPING OF INLAND WETLANDS.
Gammon, Patricia T.; Malone, Donald; Brooks, Paul D.; Carter, Virginia
US Geol Surv, Suffolk, Va
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1545-1 55 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), MAPS AND MAPPING, WATER RESOURCES, ENVIRONMENTAL PROTECTION,
CARD ALERT: 742, 716, 444
Three projects representing three approaches to the classification and mapping of inland wetlands are discussed. In the Dismal Swamp project, seasonal, color-infrared aerial photographs and Landsat digital data were interpreted for a detailed analysis of the vegetative communities in a large, highly altered wetland. In western Tennessee, seasonal high-altitude color-infrared aerial photographs provided the hydrologic and vegetative information needed to map inland wetlands using a classification system developed for the Tennessee Valley Region. In Florida, color-infrared aerial photographs were analyzed to produce wetland maps using three existing classification systems to evaluate the information content and mappability of each system. Refs.

RS78-2-670

ID NO.- EI780862407 862407
LANDSAT DIGITAL DATA FOR WATER POLLUTION AND WATER QUALITY STUDIES IN SOUTHERN SCANDINAVIA.
Heliden, Ulf; Akersten, Ingvar
Univ of Lund, Swed
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 875-884 CODEN: PISEDM
DESCRIPTORS: (*WATER POLLUTION, *Water Quality), (REMOTE SENSING, Environmental Applications), IMAGE PROCESSING, (ELECTROMAGNETIC WAVES, Reflection),
IDENTIFIERS: LANDSAT-1 DATA, MULTISPECTRAL DIGITAL DATA
CARD ALERT: 453, 716, 723
Spectral diagrams, illustrating the spectral characteristics of different water types, were constructed by means of simple statistical analysis of the various reflectance properties of water areas in southern Scandinavia as registered by LANDSAT-1. There were indications that water whose spectral reproduction is dominated by chlorophyllous matter (phytoplankton) can be distinguished from water dominated by non-chlorophyllous matter. Differences between lakes, as well as the patchiness of individual lakes, concerning secchi disc transparency could be visualized after classification and reproduction in black and white and in color.

RS78-2-671

ID NO.- EI780857838 857838
PROCEEDINGS OF THE ANNUAL ENGINEERING GEOLOGY AND SOILS ENGINEERING SYMPOSIUM, 15TH, 1977.
Humphrey, C. B. (Ed.)
Idaho Transp Dep, Div of Highw, Boise
Proc Annu Eng Geol Soils Eng Symp 15th, Idaho State Univ, Pocatello, Apr 6-8 1977. Publ by Idaho Transp Dep, Div of Highw, Boise, 1977 357 p CODEN: EGSSBT
DESCRIPTORS: (*GEOLOGY, *Engineering), SOILS, FOUNDATIONS, SOIL MECHANICS, ROCK MECHANICS, LANDSLIDES,
IDENTIFIERS: GLACIAL CLAYS, SLOPE FAILURES, SLOPE STABILITY, ROCK MASSES, GEOTECHNICAL STUDIES
CARD ALERT: 481, 483, 484, 406, 502
The Proceedings contains 22 paper presented at the Symposium. Subjects covered include instability of glacial clays, various landslide analyses, rock slope stability evaluation, rock bolt system design, generalized thaw settlement of soil, application of remote sensing to slope stability evaluation, test procedure and analysis of resilient modulus for highway soils, hydrocompacting soils, and others. Selected papers are indexed separately.

RS78-2-672

ID NO.- EI780857834 857834
INTEGRATION OF REMOTE SENSING AND SURFACE GEOPHYSICS IN THE DETECTION OF FAULTS.
Jackson, P. L.; Shuchman, R. A.; Wagner, H.; Ruskey, F.
Environ Res Inst of Mich, Ann Arbor
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1137-1146 CODEN: PISEDM
DESCRIPTORS: (*GEOLOGICAL SURVEYS, *Remote Sensing), GEOPHYSICS, (GEOLOGY, Tectonics),
IDENTIFIERS: GEOLOGICAL FAULTS
CARD ALERT: 481, 716, 742
Possible faults indicated by remote sensing can be quickly confirmed by resistivity surveys. Anomalous resistivity values occur within the fault crush zone. In a sedimentary region in Rio Blanca County, northwest Colorado, a fault zone was inferred from LANDSAT imagery. Subsequent resistivity surveys indicated substantial resistivity highs associated with the faults. Seismic data and the drilling of an observation well confirmed the main fault.

RS78-2-673

ID NO.- EI780857833 857833
IMAGE ANALYSIS TECHNIQUES WITH SPECIAL REFERENCE TO ANALYSIS AND INTERPRETATION OF GEOLOGICAL FEATURES FROM LANDSAT IMAGERY.
Kamat, D. S.; Majumder, K. L.; Naik, S. D.; Swaminathan, V. L.
Indian Space Res Organ, Ahmedabad
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 969-978 CODEN: PISEDM
DESCRIPTORS: (*GEOLOGICAL SURVEYS, *Remote Sensing), IMAGE PROCESSING,
IDENTIFIERS: LANDSAT IMAGERY, INTERPRETATION
CARD ALERT: 481, 716, 741
The principal component analysis enhances the contrast existing between the different cover types present in an imagery. A procedure is presented in this paper with regard to the determination of the principal components. The method is tested for a portion of the LANDSAT imagery pertaining to Anantapur region of India. Another technique, using the concept of nonlinear contrast stretching, is defined and developed, and carried out on the same imagery. The results are presented as photographs. An interpretation of the geology of the region is derived from these photographs.

RS78-2-674

ID NO.- EI780858231 858231
REMOTE SENSING-AIDED SYSTEMS FOR SNOW QUANTIFICATION, EVAPOTRANSPIRATION ESTIMATION, AND THEIR APPLICATION IN HYDROLOGIC MODELS.
Khorram, Siamak
Univ of Calif, Space Sci Lab, Berkeley
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 795-80 CODEN: PISEDM
DESCRIPTORS: (*HYDROLOGY, *Remote Sensing), SNOW AND SNOWFALL, (WATER RESOURCES, Evapotranspiration),
IDENTIFIERS: WATER YIELD MODELS
CARD ALERT: 444, 471, 443
The paper discusses the design of general remote sensing-aided methodologies to provide the estimates of several important inputs to water yield forecast models. These input parameters are snow areal extent, snow water content, and evapotranspiration. The general approach involves a stepwise sequence of identification of the required information, sample design, measurement/estimation, and evaluation of results. All the relevant and available information types needed in the estimation process are being defined. These include Landsat, meteorological satellite, and aircraft imagery, topographic and geologic data, ground truth data, and climatic data from ground stations. A cost-effective multistage sampling approach is being employed in quantification of all the required parameters. The physical and statistical models for both snow quantification and evapotranspiration estimation are developed. These models utilize the information obtained by aerial and ground data through appropriate statistical sampling design. Refs.

RS78-2-675

ID NO.- EI780861416 861416
QUANTIFICATION OF SOIL MAPPING BY DIGITAL ANALYSIS OF LANDSAT DATA.
Kirschner, F. R.; Sinclair, H. R.; Weismiller, R. A.; Kaminsky, S. A.; Hinzel, E. J.
Purdue Univ, West Lafayette, Indiana
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1567-1 73 CODEN: PISEDM
DESCRIPTORS: (*SOILS, *Surveys), MAPS AND MAPPING, (REMOTE SENSING, Environmental Applications), (IMAGE PROCESSING, Analysis),
IDENTIFIERS: LANDSAT DATA
CARD ALERT: 483, 723, 741, 821
Landsat multispectral scanner data collected on June 9 1973 was used to prepare a spectral soil map for a 430-hectare area in Clinton County, Indiana. Fifteen spectral classes were defined, representing 12 soil and 3 vegetation classes. the 12 soil classes were grouped into 4 moisture regimes based upon their spectral responses; the 3 vegetation classes were grouped into one all-inclusive class. Using these groupings, the spectral map was compared to a conventionally prepared soil map. Three mapping units were investigated in detail. Results indicate that the percentage of soil mapping unit inclusions can be readily ascertained according to their soil moisture regimes and that soil complexes can be easily quantified.

RS78-2-676

ID NO.- EI780861403 861403
PASSIVE MICROWAVE REMOTE SENSING OF SOIL MOISTURE.
Kondratyev, K. Ya.; Melentyev, V. V.; Rabinovich, Yu. I.; Shulgina, E. M.
Leningrad Univ, Inst of Phys, USSR
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1641-1661 CODEN: PISEDM
DESCRIPTORS: (*SOILS, *Moisture Determination), (REMOTE SENSING, Environmental Applications), MICROWAVE MEASUREMENTS,
CARD ALERT: 483, 716, 821
The paper summarizes the work accomplished in the Voyeykov Main Geophysical Observatory, U. S. S. R. , on passive microwave remote sensing of soil moisture. The theory and calculations of microwave emission from the medium with depth-dependent physical properties are discussed; the possibility of determining vertical profiles of temperature and humidity is considered; laboratory and aircraft measurements of soil moisture are described; the technique for determining the productive-moisture content in soil, and the results of aircraft measurements are given. 18 refs.

RS78-2-677

ID NO.- EI780750326 850326
DISTRIBUTION AND CHARACTERISTICS OF ROCK GLACIERS IN THE SOUTHERN PART OF JASPER NATIONAL PARK, ALBERTA.
Luckman, B. H.; Crockett, K. J.
Univ of West Ont, London
Can J Earth Sci v 15 n 4 Apr 1978 p 540-550 CODEN: CJESAP
DESCRIPTORS: (*GLACIERS, *Alberta), (GEOLOGICAL SURVEYS, Alberta), (AERIAL PHOTOGRAPHY, Alberta),
IDENTIFIERS: ROCK GLACIERS
CARD ALERT: 443, 444, 481, 742
One hundred and nineteen rock glaciers were indentified in an aerial photograph inventory of 4632 km**2 in Jasper National Park, Alberta. Morphological subdivision indicated 33 lobate, 76 tongue-shaped and 10 spatulate rock glaciers, whereas a $left double quote$ genetic $right double quote$ classification identified 65 $left double quote$ glacial $right double quote$ (ice-cored) and 54 $right double quote$ non-glacial $right double quote$ (ice-cemented) rock glaciers. Head elevations of the glacial group (mean 2318 m) are significantly higher than the non-glacial group (mean 2256 m). The total elevation range of rock glaciers is 1710-2670 m. Preliminary data suggest most rock glacier activity pre-dates the Little Ice Age and the oldest phases probably occurred between 6600 and 9000 BP. 37 refs.

RS78-2-678

ID NO.- EI780858701 858701
APPLICATION OF COLOR DENSITY ENHANCEMENT OF AERIAL PHOTOGRAPHY TO THE STUDY OF SLOPE STABILITY.
McKean, J. A.; Johnson, R. B.; Maxwell, E. L.
Colo State Univ, Fort Collins
Proc Annu Eng Geol Soils Eng Symp 15th, Idaho State Univ, Pocatello, Apr 6-8 1977. Publ by Idaho Transp Dep, Div of Highw, Boise, 1977 p 199-216 CODEN: EGSSBT
DESCRIPTORS: (*LANDSLIDES, *Remote Sensing), (AERIAL PHOTOGRAPHY, Infrared Radiation), (SOILS, Stability),
IDENTIFIERS: SLOPE STABILITY, COLOR DENSITY SLICING
CARD ALERT: 483, 484, 742
The basis for the work discussed in the paper is the premise that incipient failure in a slope manifests itself at the surface very early in the failure process by a change in soil moisture. This moisture anomaly in turn will cause a vegetation growth change. Both the soil moisture and vegetation vigor changes will result in spectral reflectances that are different than surrounding areas, and these differences may be seen as density and color anomalies on color-infrared aerial photography. The density anomalies are best detected by a color density slicer with its color-encoded presentation. An area in north-central Colorado was chosen to assess this procedure. Results of its application to existing landslides and to potentially unstable slopes are reported.

RS78-2-679

ID NO.- EI780862412 862412
WATER RESOURCES BY SATELLITE.
McKim, Harlan L.
Mil Eng v 70 n 455 May-Jun 1978 p 164-169 CODEN: MILEAJ
DESCRIPTORS: (*WATER RESOURCES, *Exploration), (SATELLITES, Geodetic), HYDROLOGY, TELEMETERING,
CARD ALERT: 444, 471, 655
The author shows that the Landsat MSS imagery in many instances can provide timely and cost-effective information on water resources, especially in remote areas. The collection relay system has been field tested and the accuracy and precision of the telemetered ground sensor data compare favorably with those obtained using conventional field procedures.

RS78-2-680

ID NO.- EI780750235 850235
ASPECTS OF PHOTOGEOLOGICAL INTERPRETATION OF SOKLI CARBONATITE MASSIF.
Paarma, H.; Vartiainen, H.; Penninkilampi, J.
Rautaruukki Oy, Oulu, Finl
Prospect in areas of glaciated terrain, 3rd, Symp, Pap presented at Symp held at Tech Univ, Helsinki, Finl, Aug 15-17 1977 Publ by Inst of Min and Metall, London, Engl, 1977 p 25-29
DESCRIPTORS: (*GEOLOGICAL SURVEYS, *Finland), (ORE DEPOSITS, Exploration), (MINERAL EXPLORATION, Finland), (AERIAL PHOTOGRAPHY, Infrared Radiation),
CARD ALERT: 481, 504, 501, 742
The Sokli carbonatite massif lies in Finnish Lapland north of latitude 67 near the Soviet border. As the area is part of an ice divide region, there has been little glacial erosion transport. The Sokli massif and its immediate surroundings form an exceptionally good test area for photogeological interpretation. In this study, the photographic data of the infrared color pictures of the Sokli area were simplified by photomechanical means in two stages. First, the near-infrared part of the film was filtered out from the photographs. In the second stage, pictorial data that corresponded to a certain narrow angle were screened out by laser directional filtering. These data were used in the interpretation. 5 refs.

RS78-2-681

ID NO.- EI780858340 858340
RECENT ADVANCES IN THE APPLICATION OF THERMAL INFRARED SCANNING TO GEOLOGICAL AND HYDROLOGICAL STUDIES.
Pratt, David A.; Ellyett, Clif C.; McLauchlan, Errol C.; McNabb, Peter
Univ of Newcastle, Aust
Remote Sensing Environ v 7 n 2 Apr 1978 p 177-184 CODEN: RSEEA7
DESCRIPTORS: *INFRARED IMAGING, (GEOLOGY, Remote Sensing).
CARD ALERT: 405, 4 4, 471, 481, 741, 742
Description of recent advances in the development of thermal scanner technology, data processing techniques and theoretical simulation of field applications at the University of Newcastle. These developments have improved the potential of this method for practical field studies in geology and hydrology in the Australian environment. Improvements in technology have enabled the signal output of the scanner to be stabilized and calibrated by the use of internal, black-body temperature reference sources, prior to recording on magnetic tape. These improvements have opened a new dimension for the analysis and processing of thermal scanner data. Both analog and digital processing methods are used for analysis and presentation. The application of thermal scanning to Australian Geological, Hydrogeological and Hydrological problems is discussed. 3 refs.

RS78-2-682

ID NO.- EI780969613 869613
REMOTE SENSING: SNOW MONITORING TOOL FOR TODAY AND TOMORROW.
Rango, Albert
NASA/Goddard Space Flight Cent, Greenbelt, Md
Proc West Snow Conf 45th Annu Meet, Albuquerque, NM, Apr 18-21 1977. Publ by West Snow Conf, Spokane, Wash, 1977 p 75-81 CODEN: PWSCA9
DESCRIPTORS: (*SNOW AND SNOWFALL, *Monitoring), REMOTE SENSING.
CARD ALERT: 443, 732
Remote sensing has been described as the measurement or acquisition of information on some property of an object (in this case snow), by a recording device not in physical contact with the object under study. This can include the use of spacecraft as well as instruments mounted on $left double quote$ cherry-pickers $right double quote$ above the snow surface. Various types of remote sensing are now available or will be in the future for snowpack monitoring. Aircraft reconnaissance is now used in a conventional manner by various water resources agencies to obtain information on snowlines, depth, and melting of the snowpack for forecasting purposes. The use of earth resources satellites for mapping snowcovered area, snowlines, and changes in snowcover during the Spring has increased during the last five years. Gamma ray aircraft flights, although confined to an extremely low altitude, provide a means for obtaining valuable information on snow water equivalent. The most recently developing remote sensing technology for snow, namely, microwave monitoring, has provided initial results that may eventually allow us to infer snow water equivalent or depth, snow wetness, and the hydrologic condition of the underlying soil. 7 refs.

RS78-2-683

ID NO.- EI780860792 860792
UTILITY OF SHORT WAVELENGTH ($less than$ 1 MM) REMOTE SENSING TECHNIQUES FOR THE MONITORING AND ASSESSMENT OF HYDROLOGIC PARAMETERS.
Rango, A.; Salomonson, V.
NASA, Goddard Space Flight Cent, Greenbelt, Md
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 55-66 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), HYDROLOGY, (WATER RESOURCES, Management), INFRARED IMAGING, PHOTOGRAMMETRY.
CARD ALERT: 741, 444, 471, 742
Considerable effort accompanied by significant progress has occurred in the last several years in applying visible and infrared remote sensing measurement to water resources management needs. Programs have empoyed a study and development approach involving information content and modelling research utilizing a property phased mix of remote sensing platforms and approaches involving ground-based research and observations from aircraft and spacecraft. The major areas where the needs of water resources management are being met, involve the mapping and monitoring of snowcovered areas, hydrologic landuse, and surface water area. In the case of snowcovered area mapping the transfer of technology process is now being accomplished in the Western United States in a cooperative effort involving 6 federal agencies and 3 state agencies along with the National Aeronautics and Space Administration (NASA). A new collaborative effort of the U. S. Army Corps of Engineers and NASA involves the mapping of landuse by Landsat and its use in hydrologic engineering watershed models employed in flood control/waterworks planning, design, and management. Refs.

RS78-2-684

ID NO.- EI780857876 857876
GLACIER SURVEYS IN BRITISH COLUMBIA $EM DASH$ 1972.
Reid, I. A.; Charbonneau, J. O. G.
Environ Can, Water Resourc Branch, Ottawa, Ont
Can Inland Waters Branch Rep Ser n 54 1978 20 p · CODEN: CIWRA3
DESCRIPTORS: (*GLACIERS, *Mapping), (WATER RESOURCES, Replenishment), (PHOTOGRAMMETRY, Hydraulics Applications), STREAM FLOW.
CARD ALERT: 443, 444, 481, 631, 742
The authors show that following adoption of photogrammetric survey techniques, the glacier surveys have evolved to the extent that it is now feasible to produce a series of maps from which the linear, areal, directional and volumetric changes can be determined. The surveys have revealed that the glaciers, in general, are becoming smaller in size; hence the regulating effect on streamflow is diminishing. 8 refs.

RS78-2-685

ID NO.- EI780858230 858230
AUTOMATED IMAGE PROCESSING OF LANDSAT II DIGITAL DATA FOR WATERSHED RUNOFF PREDICTION.
Sasso, Robert R.; Jensen, John R.; Estes, John E.
Univ of Calif, Santa Barbara
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 591-599 CODEN: PISEDM
DESCRIPTORS: (*HYDROLOGY, *Remote Sensing), IMAGE PROCESSING, RUNOFF, (WATERSHEDS, Mathematical Models).
CARD ALERT: 444, 471, 723
The U. S. Soil Conservation Service (SCS) model for watershed runoff prediction uses soil and land cover information as its major drivers. Kern County Water Agency is implementing the SCS model to predict runoff for 10,400 km**2 of mountainous watershed in Kern County, California. The Remote Sensing Unit, University of California, Santa Barbara was commissioned by KCWA to conduct a 230 km**2 feasibility study in the Lake Isabella, California region to evaluate remote sensing methodologies which could be ultimately extrapolated to the entire 10,400 km**2 Kern County watershed. Digital results indicate that digital image processing of Landsat II data will provide usable land cover required by KCWA for input to the SCS runoff model.

RS78-2-686

ID NO.- EI780861346 861346
MICROWAVE MULTISPECTRAL INVESTIGATIONS OF SNOW.
Schanda, E.; Hofer, R.
Univ of Berne, Switz
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 601-607 CODEN: PISEDM
DESCRIPTORS: (*SNOW AND SNOWFALL, *Remote Sensing), RADIOMETERS,
IDENTIFIERS: MULTISPECTRAL SCANNERS
CARD ALERT: 443, 716
A long-term observational program on the microwave emission and scatter behavior under controlled conditions has been started at a high-altitude alpine test site. All stages of development of the snow-cover during the whole season are under investigation. The purpose of this study is to achieve the required knowledge on the microwave radiative properties of snow for the optimization of the microwave payloads of air- and space-borne snow sensors and for the interpretation of large-scale snow maps obtained by these sensors. Preliminary results of the first month of investigation obtained with the radiometers are presented.

RS78-2-687

ID NO.- EI780968897 868897
INTERACTIVE LAKE SURVEY PROGRAM.
Smith, Andree Yvonne; Addington, John D.
JPL, Calif Inst of Technol, Pasadena
SPIE Semin Proc v 119; Appl of Digital Image Process, at the Int Opt Comput Conf, San Diego, Calif, Aug 25-26 1977. Publ by SPIE (IEEE Cat n 77CH1265-8C (vol 2)), Bellingham, Wash, 1977 p 21-27 CODEN: SPIECJ
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), LAKES, IMAGE PROCESSING, WATER RESOURCES.
CARD ALERT: 405, 4 4, 741, 742
The need exists to find a means of rapidly assessing the trophic state of water bodies which would make it economically feasible to operate extensive systematic surveillance programs of the water resources in the United States. Airborne multispectral sensors show promise as a means of monitoring these resources on a continuous basis. The Image Processing Laboratory at the Jet Propulsion Laboratory (JPL) in conjunction with the Environmental Protection Agency has been involved in water quality studies for the past five years. During this time the primary aim has been to demonstrate the feasibility of applying remotely sensed data to water quality assessment. The experience and technology developed at JPL has been coalesced into an interactive lake survey program. 5 refs.

RS78-2-688

ID NO.- EI780859365 859365
USE OF LANDSAT-1 IMAGERY IN EXPLORATION FOR KEWEENAWAN-TYPE COPPER DEPOSITS.
Smith, Raymond E.; Green, A. A.; Robinson, G.; Honey, F. R.
CSIRO, Wembley, Aust
Remote Sensing Environ v 7 n 2 Apr 1978 p 129-144 CODEN: RSEEA7
DESCRIPTORS: (*MINERAL EXPLORATION, *Australia), (COPPER DEPOSITS, Australia), REMOTE SENSING.
CARD ALERT: 405, 501, 504, 742
LANDSAT-1 imagery is used to detect and map hydrothermally altered flow tops in a sequence of basic lavas in the Hamersley Basin, Western Australia. The altered flow tops form targets one or more two km wide due to shallow dips in the region and may be up to 50 km or more in length. The true thickness of the dipping altered layers vary from less than 5 meters up to about 30 meters. Associations of quartz, albite, chlorite, pumpellyite and, in some places, epidote characterize the alteration. Topographic problems apparent in this imagery were partly overcome by rationing MSS band 5 over band 7, interpreting the product as a black and white print at 1:250,000 scale. Computer classification trials block out part of the control area and in places show an improvement in discrimination over the other displays. 14 refs.

RS78-2-689

ID NO.- EI780970845 870845
SELECTING RECONNAISSANCE STRATEGIES FOR FLOODPLAIN SURVEYS.
Sollers, Scott C.; Rango, Albert; Henninger, Donald L.
US Army Corps of Eng, San Francisco, Calif
Water Resour Bull v 14 n 2 Apr 1978 p 359-373 CODEN: WARBAQ
DESCRIPTORS: (*WATER RESOURCES, *Research), REMOTE SENSING, WATER SUPPLY.
IDENTIFIERS: FLOODPLAIN SURVEYS
CARD ALERT: 444, 446, 732
Multispectral aircraft and satellite data over the West Branch of the Susquehanna River were analyzed to evaluate potential contributions fo remote sensing to floodplain surveys. Multispectral digital classifications of land cover features indicative of floodplain areas were used by interpreters to locate various floodprone area boundaries. The boundaries thus obtained were found to be more striking and continuous in the Landsat data than in the low altitude aircraft data. The digital approach permitted satellite results to be displayed at 1:24,000 scale and aircraft results at even larger scales. Results indicate that remote sensing techniques can delineate floodprone areas more easily in agricultural and limited development areas than in areas covered by a heavy forest canopy. 34 refs.

RS78-2-690

ID NO.- EI780753554 853554
SNOWFIELD ASSESSMENT FROM LANDSAT.
Thomas, I. L.; Ching, N. P.; Lewis, A. J.
Dep of Sci & Ind Res, Lower Hutt, NZ
Photogramm Eng Remote Sensing v 44 n 4 Apr 1978 p 493-502 CODEN: PERSDV
DESCRIPTORS: (*SNOW AND SNOWFALL, *Measurements), REMOTE SENSING.
CARD ALERT: 405, 443, 644, 742
The potential use of Landsat MSS data for routine monitoring of the area and condition of a snowfield is explored. Area measurements are readily possible from both the photographic product and the CCT data. The CCT data also may reveal variations in snow density and/or moisture content, and have a spatial resolution equal to, or better than, the photographic product. A nonsubjective analysis technique based on the CCT data product is advanced and is used, together with isodensitometric techniques applied to the photographic product, in this snowfield assessment. This study demonstrates the Landsat MSS data have the potential for contributing to rapid assessment and management of snowfield resources, especially if repetitive satellite coverage is obtained. 5 refs.

RS78-2-691

ID NO.- EI780859371 859371
AIRBORNE EXPLORATION: KEEPING IT COST-EFFECTIVE.
Tipper, Derek B.; Macdonald, Duncan D.
Hunting Geol & Geophys Ltd, Boreham Wood, Engl
Min Equip Int v 2 n 4 May 1978 p 15-19 CODEN: MEQIDV
DESCRIPTORS: (*MINERAL EXPLORATION, *Instruments), (SATELLITES, Photography), SPECTROMETERS, GAMMA RAY, (GEOPHYSICS, Electromagnetic),
CARD ALERT: 501, 655, 944, 942
Airborne geophysical exploration is fulfilling a major role in searching the more remote areas and increasing depths below the earth's surface SEM DASH$ the estimated 2 million line km flown annually for mineral-search programs worldwide. To help choose airborne exploration instrumentation and methods for greatest cost effectiveness, the best uses of aeromagnetics, gamma ray spectrometry, and electromagnetrometry are highlighted. Ancillary equipment that can markedly improve survey efficiency is also discussed.

RS78-2-692

ID NO.- EI780860836 860836
MICROWAVE REMOTE SENSING OF HYDROLOGIC PARAMETERS.
Ulaby, Fawwaz T.
Univ of Kans Cent for Res, Inc, Lawrence
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 67-86 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Microwaves), HYDROLOGY, (RADIOMETERS, Applications), (RADAR, Measurement Application),
CARD ALERT: 716, 444, 471, 711
A perspective on the implementation of microwave sensors in future airborne and spaceborne observations of hydrologic parameters is presented. The rationale is based on a review of the status and future trends of active (radar) and passive (radiometer) microwave research as applied to the remote sensing of soil moisture content, snowpack water equivalent, freeze/thaw boundaries, lake ice thickness, surface water area, and the specification of watershed runoff coefficients. Included are analyses and observations based on data acquired from ground based, airborne and spaceborne platforms and an evaluation of advantages and limitations of microwave sensors. 46 refs.

RS78-2-693

ID NO.- EI780862404 862404
DETECTION, IDENTIFICATION, AND QUANTIFICATION TECHNIQUES FOR SPILLS OF HAZARDOUS CHEMICALS.
Washburn, J. F.; Sandness, G. A.
Battelle Pac Northwest Lab, Richland, Wash
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1629-1 35 CODEN: PISEDM
DESCRIPTORS: (*WATER POLLUTION, *Remote Sensing), (HAZARDOUS MATERIALS, Spills),
CARD ALERT: 453, 716, 741, 742
The paper reports on a study that evaluated the first 400 chemicals listed in the Coast Guard's Chemical Hazards Response Information System handbook with respect to their detectability, identifiability, and quantifiability by 12 generalized remote and in situ sensing techniques and some of the pollution sensing instruments that are currently available or which could reasonably be expected to be available within the next few years. In addition, it identifies some of the key areas in the technology of water pollution sensing in which additional research and development efforts are needed.

RS78-2-694

ID NO.- EI780969609 869609
PROCEEDINGS OF THE WESTERN SNOW CONFERENCE, 45TH, 1977.
Washichek, Jack N. (Ed.)
Proc West Snow Conf 45th Annu Meet, Albuquerque, NM, Apr 18-21 1977. Publ by West Snow Conf, Spokane, Wash, 1977 114 p
CODEN: PWSCA9
DESCRIPTORS: (*SNOW AND SNOWFALL, *Avalanches and Slides), (METEOROLOGY, Weather Modification),
CARD ALERT: 443
15 papers by various authors were presented at this snow conference. The papers covered the following areas: snow avalanches and slides SEM DASH$ warning programs, zoning, acoustic emissions investigation; weather modification; stream flow predictions, value of water supply for casts to irrigated agriculture; microwave and remote sensing used for snow monitoring; and application of aerial and satellite snow mapping techniques. Selected papers were abstracted separately.

RS78-2-695

ID NO.- EI780860817 860817
MULTIDATE MAPPING OF MOSQUITO HABITAT.
Woodzick, Thomas L.; Maxwell, Eugene L.
Colo State Univ, Fort Collins
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 979-989 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (MAPS AND MAPPING, Imaging Techniques),
IDENTIFIERS: LANDSAT DATA, GROUND COVER CLASSIFICATION
CARD ALERT: 716, 405, 741
LANDSAT data from three overpasses in 1975 formed the data base for a multidate classification of 15 ground cover categories in the margins of Lewis and Clark Lake, a fresh water impoundment between South Dakota and Nebraska. When scaled to match topographic maps of the area, the ground cover classification maps were used as a general indicator of potential mosquito-breeding habitat by distinguishing productive wetlands areas from non-productive non-wetlands areas. A breeding potential depending on wetland classification was assigned to each class vis-a-vis the preferred breeding habitat of Cluex tarsalis, a permanent pool species and Aedes vexans, a floodwater species. The 12 channel multidate classification was found to have an accuracy 23% higher than the average of the three single date 4 channel classifications. Refs.

RS78-2-696

Attempt at Correlating Italian Long Lineaments from Landsat-1 Satellite Images with Some Geological Phenomena. Possible Use in Geothermal Energy Research

Consiglio Nazionale delle Ricerche, Pisa (Italy). Inst. Internazionale per le Ricerche Geotermiche. (1978560)
AUTHOR: Barbier, E.; Fanelli, M.
E0722D1 Fld: 8I, 48A, 97P GRAI7808
1975 8p
Monitor: 18
NASA earth resources survey symposium, Houston, Texas, USA, Jun 1975.
U.S. Sales Only.

Abstract: By utilizing the images from the American satellite LANDSAT-1, in the spectral band 0.8 to 1.1 micrometers (near infrared), a photomosaic was obtained of Italian territory. From this mosaic the field of long lineaments was drawn, corresponding to fractures of the earth's crust more than 100 km long. The authors have therefore verified the relationship between lineaments, hot springs, volcanic areas and earthquake epicenters. There is a clear connection between long lineaments and hot springs: 78% of the springs are located on one or more lineaments, and the existence of ''hot lineaments'' was observed. A slightly weaker, but still significant, connection exists between the Pliocene-Quaternary volcanic areas and long lineaments. The relationship between earthquakes and long lineaments can only be verified in some cases. The lineaments which can be related to earthquakes have little or no connection with the other phenomena. Results obtained by the authors could widen the possibility of using satellite images in the field of applied research. (ERA citation 03:008240)

Descriptors: *Geologic structures, *Hot springs, *Italy, Aerial prospecting, Correlations, Earthquakes, Satellites, Volcanic regions

Identifiers: ERDA/150301, Italy, Remote sensing, LANDSAT 1 satellite, Geological faults, Geothermal prospecting, Near infrared radiation, Infrared detection, NTISDEE

CONF-7506170-1 NTIS Prices: PC A02/MF A01

RS78-2-697

Permafrost. Part 1. General Studies (Citations from the NTIS Data Base)

National Technical Information Service, Springfield, Va. (391 812)

Rept. for 1964-Jan 78
AUTHOR: Brown, Robena J.
E0685G4 Fld: 8L, 6F, 8H, 48H*, 50D* , 86W GRAI7808
Feb 78 173p*
Monitor: 18
Supersedes NTIS/PS-77/0071, NTIS/PS-76/0069, and NTIS/PS-75/1-97. See also NTIS/PS-78/0088.

Abstract: The bibliography of Federally-funded research covers permafrost studies not related to structural engineering or construction. Vegetation, hydrology, frost heave, remote sensing, geological surveys, and erosion control measures are cited. (This updated bibliography contains 168 abstracts, 37 of which are new entries to the previous edition.)

Descriptors: *Permafrost, *Bibliographies, Vegetation, Reviews , Hydrology, Frost heave, Remote sensing, Geological surveys, Soils, Ecology, Frozen soils, Pipelines, Tundra, Muskeg, Pollution, Drainage, Arctic regions, Abstracts

Identifiers: NTISNTISEN

NTIS/PS-78/0086/5ST NTIS Prices: PC N01/MF N01

RS78-2-698

On Multidisciplinary Research on the Application of Remote Sensing to Water Resources Problems

Wisconsin Univ., Madison. Inst. for Environmental Studies.*National Aeronautics and Space Administration, Washington, D.C.

Progress rept. 1976-77
AUTHOR: Clapp, James L.
E0583G3 Fld: 93B d7807
1977 381p
Grant: NGL-50-002-127
Monitor: NASA-CR-155253
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: No abstract available.

Water resources, Lakes, Sediments, Eutrophication, Drainage, Land use, Soils, Crop identification, Wisconsin, Water quality , Watersheds, Earth Resources program, Transport properties, Environmental monitoring

Identifiers: NTISNASA

E78-10028 NTIS Prices: PC A17/MF A01

RS78-2-699

Application of Remote Sensing to Geological and Mineral Deposits Surveys of the Northern Minas Gerais State, Utilizing Images from Landsat Aplicacao de Sensores Remotos Para Levantamentos Geologicos E de Recursos Minerais COM Base NAS Imagens Landsat No Norte de Minas Gerais

Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil).
AUTHOR: Dacunha, R. P.; Demattos, J. T.
E0821G2 Fld: 8G, 8I, 48A, 48F STAR1605
Aug 77 70p
Rept No: INPE-1096-PE/073
Monitor: 18
Conf-Presented at the 7TH Simp. Brasil. De Mineracao, Porto Alegre, Brazil, 31 Jul. - 5 Aug. 1977.
In Portuguese: English Summary.

Abstract: Results are presented from a study of application of remote sensing to the survey of regional geology of the northern Minas Gerais state and part of the state of Goias. Images from LANDSAT, RADAR, aerophotographs, magnetometric maps and interpretation of computer compatible tapes (CCT's) of the LANDSAT were used. Regional geology, mineral resources of a 143,000 sq km, area, and results obtained with the help of different sensors are presented for the area under the study.

Descriptors: *Geology, *Mapping, LANDSAT satellites, Remote sensors, Earth resources, Geological surveys, Mineral deposits

Identifiers: Minas Gerais(Brazil), Goias(Brazil), *Remote sensing, Exploration, Radar images, Magnetometers, Aerial reconnaissance, Aerial prospecting, Geological maps, Brazil, NTISNASAE

N78-14611/5ST NTIS Prices: PC A04/MF A01

RS78-2-700

Application of Remote Sensing to Geothermal Anomaly Mapping in the Caldas Novas County, Goias Aplicacao de Sensoriamento Remoto No Estudo de Anomalia Geotermal No Municipio de Caldas Novas, Goias

Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil).

M.S. Thesis.
AUTHOR: Dosanjos, C. E.
E0821G1 Fld: 8G, 8I, 48F, 48A, 97P STAR1605
Oct 77 173p
Rept No: INPE-1129-TPT/070
Monitor: 18
In Portuguese; English Summary.

Abstract: The geothermal anomaly of Caldas Novas county in the state of Goias was mapped. Systematic research was carried out combining geological mapping with surface and subsurface temperature measurements. LANDSAT-1 images of the region were studied allowing the placement of the area in regional geological context. The origins and evolution of the geothermal anomaly were also considered. Geological mapping was done to the scale of 1:60 using USAF aerial photography. Regional temperature mapping was done using trend surface analysis. Through the correlation of these data, four different areas were localized which have a high potential for hot water prospecting.

Descriptors: *Geology, *Geothermal prospecting, *Mapping, Remote sensors, Surface temperature, Aerial photography, Brazil, LANDSAT 1

Identifiers: *Remote sensing, Calds Novas County(Brazil), *Remote sensing, Aerial prospecting, Geological maps, NTISNASAE

N78-14610/7ST NTIS Prices: PC A08/MF A01

RS78-2-701

Ice and Fog: Detection and Warning Systems (A Bibliography with Abstracts)

National Technical Information Service, Springfield, Va. (391 812)

Rept. for 1964-Feb 78
AUTHOR: Habercom, Guy E. Jr
E0893I1 Fld: 4B, 8L, 13L, 8J, 85D*, 55D, 47C, 48H*, 86W
GRAI7810
Mar 78 155p*
Monitor: 18
Supersedes NTIS/PS-77/0188, NTIS/PS-76/0096 and NTIS/PS-75/23-1.

Abstract: Sea ice, aircraft ice, bridge ice, and fog formation detecting methods are reviewed in these Government-sponsored research reports. Remote aerial sensing and ground based detection systems are among the methods investigated. (This updated bibliography contains 150 abstracts, 32 of which are new entries to the previous edition.)

Descriptors: *Bibliographies, *Ice, *Fog, *Detection, Optical detection, Remote sensing, Infrared detection, Aerial reconnaissance, Warning systems, Abstracts

Identifiers: NTISNTIS

NTIS/PS-78/0181/4ST NTIS Prices: PC N01/MF N01

RS78-2-702

Application of Thermal Imagery and Aerial Photography to Hydrologic Studies of Karst Terrane in Missouri

Geological Survey, Rolla, Mo. Water Resources Div.**Missouri Dept. of Natural Resources, Rolla. Div. of Geology and Land Survey.

Water-resources investigations (Final)
AUTHOR: Harvey, E. J.; Williams, J. H.; Dinkel, T. R.
E0604E2 Fld: 8H, 13B, 48G, 6B GRAI7807
Sep 77 66p
Rept No: USGS/WRD/WRI-78/005, USGS/WRI-77-16
Monitor: 18
Prepared in cooperation with Missouri Dept. of Natural Resources, Rolla. Div. of Geology and Land Survey.

Abstract: Planning waste-disposal facilities and impoundments is complicated by karst carbonate terrane in the Ozarks. Thermal imagery (8-13 micrometer wavelength) and color infrared photography aid in identifying losing streams, sinkholes and hydrologic conditions encouraging collapse. Imagery and photography were acquired in Greene and Reynolds Counties, Mo., in March 1972 and June 1973. Differences in thermal levels correlating with losing and gaining reaches of Logan Creek valley, Reynolds County, were not visually apparent in predawn March imagery but statistical analysis of predawn magnetic tape data indicated greater variance in emitted energy from the losing reach than from the gaining reach. In June, the gaining reach of Logan Creek was darker (cooler) on thermal imagery than the lighter (warmer) losing reach at postsunset and predawn. Overflights between May and June 1973, using a radiometer strengthened the visual interpretation of the imagery. Spring and autumn are poor times to collect thermal data for this purpose while midday in late summer may be a very good time.

Descriptors: *Karst, *Remote sensing, *Infrared detection, *Aerial photography, Radiometry, Carbonate rocks, Streams, Watersheds, Drainage, Hydrology, Evapotranspiration, Water pollution, Solid waste disposal, Springfield Plateau, Salem Plateau, Missouri

Identifiers: Water pollution detection, Greene County(Missouri), Reynolds County(Missouri), NTISDIGSWR

PB-275 816/7ST NTIS Prices: PC A04/MF A01

RS78-2-703

Quantitative Analysis of Aircraft Multispectral-Scanner Data and Mapping of Water-Quality Parameters in the James River in Virginia

National Aeronautics and Space Administration. Langley Research Center. Langley Station, Va.
AUTHOR: Johnson, R. W.; Bahn, G. S.
E0714H1 Fld: 13B, 7D, 8H, 68D, 48G STAR1604
Dec 77 33p
Rept No: NASA-TP-1021, L-10968
Monitor: 18

Abstract: Statistical analysis techniques were applied to develop quantitative relationships between in situ river measurements and the remotely sensed data that were obtained over the James River in Virginia on 28 May 1974. The remotely sensed data were collected with a multispectral scanner and with photographs taken from an aircraft platform. Concentration differences among water quality parameters such as suspended sediment, chlorophyll a, and nutrients indicated significant spectral variations. Calibrated equations from the multiple regression analysis were used to develop maps that indicated the quantitative distributions of water quality parameters and the dispersion characteristics of a pollutant plume entering the turbid river system. Results from further analyses that use only three preselected multispectral scanner bands of data indicatead that regression coefficients and standard errors of estimate were not appreciably degraded compared with results from the 10-band analysis.

Descriptors: *Multispectral band scanners, *Quantitative analysis, *Water quality, Rivers, Virginia, Chlorophylls, Mapping, Remote sensors, Sediments, Statistical analysis

Identifiers: *James River, Aerial surveys, *Water pollution detection, Water analysis, Chemical analysis, Remote sensing, NTISNASA

N78-13628/0ST NTIS Prices: PC A03/MF A01

RS78-2-704

Comparing Soil Boundaries Delineated by Digital Analysis of Multispectral Scanner Data from High and Low Spatial Resolution Systems

Purdue Univ., Layfayette, Ind. Lab. for Applications of Remote Sensing.*National Aeronautics and Space Administration. Washington, D.C.
AUTHOR: Kristof, S. J.; Baumgardner, M. F.; Zachary, A. L.; Stoner, E. R.
E0485J3 Fld: 8M, 93A GRAI7806
1977 12p
Rept No: LARS-PUB-082477
Contract: NAS9-14016
Monitor: NASA-CR-151 30

Abstract: The author has identified the following significant results. Computer-aided analysis techniques used with aircraft MSS data showed that the spatial resolution was sufficient to recognize each soil mapping unit of the test site. Some difficulties occurred where different soil series were intricately mixed, and this mixture showed as a separate spectral mapping unit, or where the difference between two soils depended on the depth of silty surface material. Analysis of LANDSAT data with computer-aided techniques showed that it was not possible to find spectrally homogeneous soil features of the seven soil series on the 40 ha test site on the digital display or on a picture print map. Cluster techniques could be used on an extended test area to group spectrally similar data points into cluster classes.

Descriptors: *Soils, Multispectral band scanners, Indiana, Skylab program, EREP, Maps, Data collection platforms, Spatial distribution

Identifiers: Soil surveys, Mapping, NTISNASA

E78-10017 NTIS Prices: PC A02/MF A01

RS78-2-705

Application of HCMM Satellite Data to Mineral Exploration

Stanford Univ., Calif. Dept. of Applied Earth Sciences.*NASA Earth Resources Survey Program, Washington, D.C.

Progress rept. 1 Jul-31 Oct 77
AUTHOR: Lyon, R. J. P.
E0485L3 Fld: 938 d7806
1 Nov 77 6p
Contract: NAS5-24106
Monitor: NASA-CR-155258

Abstract: No abstract available.

Minerals, Rocks, Cloud cover, Mines(Excavations), Nevada, Earth Resources program, Multispectral photography, Thermocouples, Meteorological parameters

Identifiers: NTISNASA

E78-10036 NTIS Prices: PC A02/MF A01

RS78-2-706

LANDSAT Linear Trend Analysis: A Tool for Groundwater Exploration in Northern Arkansas

Arkansas Univ., Fayetteville. Water Resources Research Center.*Office of Water Research and Technology, Washington, D.C.

Project completion rept. May '75-30 Jun 77
AUTHOR: MacDonald, Harold C.; Steele, Kenneth F.; Gaines, Elizabeth
E0904H2 Fld: 8H, 8G, 48G GRAI7810
Jun 77 118p
Rept No: PUB-49
Contract: DI-14-34-0001-6004
Project: OWRT-A-034-ARK
Monitor: OWRT-A-034-ARK(1)

Abstract: In northern Arkansas, knowledge of deep aquifers is fairly limited. The development of these deeper aquifers to their fullest potential as reliable water sources depends upon the delineation of high yield areas, a process that may be facilitated by linear trend analysis. Satellite and photolineament maps of the 13 counties were prepared by use of LANDSAT images and Agricultural Stabilization and Conservation Service photo indexes. The lineaments and fracture traces on aerial photographs and LANDSAT images are natural linear features such as aligned stream segments, soil tonal and vegetal alignments, and topographic sags. These features are the surface manifestations of subsurface fracture zones of undermined origin, which are areas where increased solutioning of carbonate rocks has taken place. The results of statistical testing of well yields in the study area show that the fracture trace-lineament method of well location can result in improved well yields. Linear trends interpreted from LANDSAT can be useful in the search for more reliable groundwater sources.

Descriptors: *Ground water, *Water supply, *Remote sensing, *Water prospecting, Aquifers, Hydrogeology, Aerial photography, Photointerpretation, Water wells, Carbonate rocks, Porosity, Water quality, pH, Calcium, Permeability, Fracture zones, Stratigraphy, Scientific satellites, Magnesium, Iron, Inorganic nitrates, Chlorine, Arkansas

Identifiers: *Groundwater movement, *Aquifer characteristics, LANDSAT satellites, Water quality data, NTISDIOWRT

PB-277 121/0ST NTIS Prices: PC A06/MF A01

RS78-2-707

HCMM Energy Budget Data as a Model Input for Assessing Regions of High Potential Groundwater Pollution

South Dakota State Univ., Brookings. Remote Sensing Inst.*NASA Earth Resources Survey Program, Washington, D.C.

Quarterly progress rept. no. 2, Oct-Dec 77
AUTHOR: Moore, Donald G.; Heilman, J.
E0884F4 Fld: 93B d7810
Dec 77 4p
Contract: NAS5-24206
Monitor: NASA-CR-155 48

Abstract: No abstract available.

Ground water, Water pollution, South Dakota, Alfalfa, Soil moisture, Vegetation, Earth Resources program, Water resources

Identifiers: NTISNASA

E78-10054 NTIS Prices: PC A02/MF A01

RS78-2-708

Limitations of Rock Mechanics in Energy-Resource Recovery and Development

National Committee for Rock Mechanics, Washington, D.C. Panel on Rock Mechanics Problems That Limit Energy Resource Recovery and Development.**Energy Research and Development Administration, Washington, D.C.*Department of the Interior, Washington, D.C.*Department of Transportation, Washington, D.C.

Final rept.
E0803G4 Fld: 8I, 10A, 18G, 48A*, 97G*, 50D, 77G GRAI7809
Jan 78 80p*
Rept No: NRC/AMPS/RM-78/1
Monitor: 18
Sponsored in part by Energy Research and Development, Washington, D.C., Department of the Interior, Washington, D.C., and Department of Transportation, Washington, D.C.

Abstract: The Ad Hoc Panel on Rock Mechanics Problems That Limit Energy Resource Recovery and Development was created within the U.S. National Committee for Rock Mechanics of the National Research Council. Its purpose was to define limitations imposed by rock-mechanics problems on energy-resource recovery and development and to recommend promising research that will help to remove those limitations. The Committee, in formulating the Panel's role, arranged for communication with supporting government agencies and developed a plan for selected Subpanels. A briefing was given in June 1976, primarily to government agencies, to present the planned activities of the Panel. Six Subpanels were established to deal with specific energy resource and development areas: (1) Geothermal Energy Exploration and Production; (2) Mining and In Situ Recovery; (3) Nuclear-Waste Disposal; (4) Oil and Gas Recovery; (5) Underground Storage-Fuel Oil, Gas, Water, or Compressed Air; (6) Under-Ocean Tunneling for Petroleum Recovery. This report presents their findings.

Descriptors: *Energy source development, *Rock mechanics, *Research management, Geothermal exploration, Fracturing, Mining research, Geothermal systems, Exploration, Geophysical prospecting, Remote sensing, Radar detection, Seismic prospecting, Oil shale, Bituminous sands, Underground mining, Radioactive waste disposal, Fluid flow, Petroleum geology, Natural gas, Underground storage, Permafrost, Offshore drilling, Underwater excavation, Tunneling(Excavation)

Identifiers: In situ stresses, NTISNASNRC, NTISDE, NTISDIBM, NTISDIBR, NTISDOTUMT

PB-276 693/9ST NTIS Prices: PC A05/MF A01

RS78-2-709

Application of LANDSAT Imagery for Snow Mapping in Norway

Norges Vassdrags-og Elektrisitetsvesen, Oslo.*National Aeronautics and Space Administration, Greenbelt, Md. Goddard Space Flight Center.*Royal Norwegian Council for Scientific and Industrial Research, Oslo.
AUTHOR: Odegaard, Helge A.; Ostrem, Gunnar
E0675J3 Fld: 8L, 93A, 48H GRAI7808
1 Feb 77 65p
Monitor: NASA-CR-155254
Sponsored in part by Royal Norwegian Council for Scientific and Industrial Research, Oslo.
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. It was shown that if the snow cover extent was determined from all four LANDSAT bands, there were significant differences in results. The MSS 4 gave the largest snow cover, but only slightly more than MSS 5, whereas MSS 6 and 7 gave the smallest snow area. A study was made to show that there was a relationship between the last date of snow fall and the area covered with snow, as determined from different bands. Imagery obtained shortly after a snow fall showed no significant difference in the snow-covered area when the four bands were compared, whereas pronounced differences in snow-covered area were found in images taken after a long period without precipitation.

Descriptors: *Norway, *Snow, Mapping, Water resources, Water management, Watersheds, Mountains, Drainage, Glaciers, Earth Resources program, Curve fitting, Graphs(Charts), Melting, Multispectral band scanners

Identifiers: Snow cover, Surveys, LANDSAT satellites, NTISNASA

E78-10029 NTIS Prices: PC A04/MF A01

RS78-2-710

Application of LANDSAT Imagery for Snow Mapping in Norway

Norges Vassdrags- og Elektrisitetsvesen, Oslo.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept. 16 May 75-27 Aug 76
AUTHOR: Odengaard, Helge; Skorve, Johnny E.
E0583H2 Fld: 8L, 93A, 48H GRAI7807
25 May 77 30p
Monitor: NASA-CR-155341
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. During the summer seasons of 1975 and 1976, the snow cover was successfully monitored and measured in the four basins. By using elevation distributions for these basins combined with the measured snow cover percentages, the equivalent snow line altitude was calculated. Equivalent snow line altitude was used in accordance with Mark Meier's definition. Cumulative runoff data were collected for the basins. Tables showing percentage snow cover versus cumulative runoff were worked out for 1975.

Descriptors: *Snow, *Norway, Mapping, Structural basins, Drainage, Ground truth, Mountains, Earth Resources program, Melting, Climatology, Multispectral band scanners

Identifiers: *Snow cover, NTISNASA

E78-10041 NTIS Prices: PC A03/MF A01

RS78-2-711

Application of LANDSAT to the Surveillance of Lake Eutrophication in the Great Lakes Basin

Bendix Corp., Ann Arbor, Mich. Aerospace Systems Div.;*NASA Earth Resources Survey Program, Washington, D.C.

Final rept. Mar 75-Sep 77
AUTHOR: Rogers, Robert H.
E0485K2 Fld: 8H, 93A, 48G GRAI7806
Sep 77 193p
Rept No: BSR-4291
Contract: NAS5-20942
Monitor: NASA-CR-154951
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. A step-by-step procedure for establishing and monitoring the trophic status of inland lakes with the use of LANDSAT data, surface sampling, laboratory analysis, and aerial observations was demonstrated. The biomass was related to chlorophyll-a concentrations, water clarity, and trophic state. A procedure was developed for using surface sampling, LANDSAT data, and linear regression equations to produce a color-coded image of large lakes showing the distribution and concentration of water quality parameters, causing eutrophication as well as parameters which indicate its effects. Cover categories readily derived from LANDSAT were those for which loading rates were available and were known to have major effects on the quality and quantity of runoff and lake eutrophication. Urban, barren land, cropland, grassland, forest, wetlands, and water were included. (Color illustrations reproduced in black and white)

Descriptors: *Great Lakes(North America), *Water quality, *Eutrophication, Land use, Saginaw Bay(MI), Watersheds, Earth Resources program, Air-water interactions, Pattern recognition

Identifiers: Water pollution, NTISNASA

E78-10023 NTIS Prices: PC A09/MF A01

RS78-2-712

Coal Mine Waste (A Bibliography with Abstracts)

National Technical Information Service, Springfield, Va. (391 812)

Rept. for 1964-Jan 78
AUTHOR: Smith, Mona F.
E0593E2 Fld: 8I, 13B, 48A*, 68C*, 68D, 86W GRAI7807
Jan 78 143p*
Monitor: 18
Supersedes NTIS/PS-77/0040, NTIS/PS-76/0053 and NTIS/PS-75/11-2.

Abstract: Research topics cover coal mining refuse, refuse dumps and spoil. Studies on disposal, utilization, environmental impacts and testing of these wastes are included, as are reports on land reclamation and spoil bank safety. (This updated bibliography contains 138 abstracts, 39 of which are new entries to the previous edition.)

Descriptors: *Bibliographies, *Coal mines, *Spoil, *Tailings, *Land reclamation, Solid waste disposal, Surface mining, Strip mining, Refuse, Embankments, Dams, Hazards, Site surveys, Soil properties, Aerial photography, Floods, Water pollution, Environmental impacts, Abstracts

Identifiers: Mine wastes, Coal mine spoil, NTISNTIS

NTIS/PS-78/0052/7ST NTIS Prices: PC N01/MF N01

RS78-2-713

Survey of Chemical Factors in Saginaw Bay (Lake Huron)

Cranbrook Inst. of Science, Bloomfield Hills, Mich.*Environmental Research Lab.-Duluth, Minn.

Final rept. 1974-75
AUTHOR: Smith, V. E.: Lee, K. W.: Filkins, J. C.: Hartwell, K. W.: Rygwelski, K. R.
E0513L2 Fld: 13B, 8H, 68D, 48G GRAI7806
Oct 77 161p
Grant: EPA-R-802685
Monitor: EPA/600/3-77/125

Abstract: Water quality in Saginaw Bay, Michigan (western Lake Huron) was surveyed during 32 cruises in 1974 and 1975, as part of the International Joint Commission's Upper Lakes Reference Study co-sponsored by the United States and Canada. Goals of the study were to establish a base of water quality information and to provide data required to model biological and hydrological processes in the bay. Sampling and in situ monitoring were conducted at 18-day intervals during April - October (coinciding with Landsat satellite passes) and approximately at monthly intervals during November - March. Samples were collected from several depth levels at 59 stations in 1974 and at 37-station subset of these 59 stations in 1975. Measurements included: temperature, dissolved oxygen, conductivity, chloride, pH alkalinity, Secchi depth, chlorophylls, nitrate and phosphate, organic nitrogen, total phosphorus, organic carbon, total solids and major metals. Additional diurnal or daily sampling was conducted at selected stations.

Descriptors: *Surveys, *Saginaw Bay, Sampling, Temperature, Dissolved gases, Oxygen, Conductivity, Spaceborne photography, Concentration(Composition), Chloride, pH, Alkalinity, Inorganic phosphates, Inorganic nitrates, Water pollution, Tables(Data), Standards, Trends, Nutrients, Phosphorus, Nitrogen organic compounds, Carbon organic compounds, Solids, Metals, Lake Huron, Michigan

Identifiers: *Water quality, LANDSAT-2 satellite, NTISEPAORD

PB-275 680/7ST NTIS Prices: PC A08/MF A01

RS78-2-714

Lake Erie Ice: Winter 1975-76

National Environmental Satellite Service, Washington, D.C.

Technical memo.
AUTHOR: Wartha, Jenifer H.
E0614C2 Fld: 4B, 8L, 8H, 55C, 48H, 48G, 86P GRAI7807
Aug 77 76p
Rept No: NOAA-TM-NESS-90
Monitor: NOAA-77120101

Abstract: Ice conditions on Lake Erie depicted mainly from satellite imagery were observed during the winter of 1975-76. The formation, movement, and decay of lake ice were traced at intervals of about 3 days from December 28, 1975, to April 19, 1976. Wind speeds and directions were correlated with ice movement, and air temperatures were related to ice formation and dissipation. Ice conditions were generally normal; however, ice persisted in the eastern end of the lake until mid-April. This unusually late date for clearing was caused more by winds concentrating the ice than be very cold weather.

Descriptors: *Ice formation, *Lake Erie, Ice reporting, Wind velocity, Wind direction, Spaceborne photography, Atmospheric temperature, Ice disintegration, Winter, Dissipation

Identifiers: *Lake ice, NOAA-4 satellite, GOES satellites, NTISCOMNOA

PB-276 386/0ST NTIS Prices: PC A05/MF A01

RS78-2-715

Laboratory Measurements of Upwelled Radiance and Reflectance Spectra of Calvert, Ball, Jordan, and Feldspar Soil Sediments

National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
AUTHOR: Whitlock, C. H.; Usry, J. W.; Witte, W. G.; Gurganus, E. A.
E0621E2 Fld: 8H, 7D, 68D, 48G, 99A _STAR1603
Dec 77 36p
Rept No: NASA-TP-1039, L-11854
Monitor: 18

Abstract: An effort to investigate the potential of remote sensing for monitoring nonpoint source pollution was conducted. Spectral reflectance characteristics for four types of soil sediments were measured for mixture concentrations between 4 and 173 ppm. For measurements at a spectral resolution of 32 mm, the spectral reflectances of Calvert, Ball, Jordan, and Feldspar soil sediments were distinctly different over the wavelength range from 400 to 980 nm at each concentration tested. At high concentrations, spectral differences between the various sediments could be detected by measurements with a spectral resolution of 160 nm. At a low concentration, only small differences were observed between the various sediments when measurements were made with 160 nm spectral resolution. Radiance levels generally varied in a nonlinear manner with sediment concentration; linearity occurred in special cases, depending on sediment type, concentration range, and wavelength.

Descriptors: *Radiance, *Reflectance, *Sediments, *Spectral signatures, *Upwelling water, *Remote sensors, Soils, Clays, Feldspars, Pollution monitoring, Water pollution

Identifiers: *Soil analysis, Monitoring, *Water pollution detection, Chemical analysis, Sediment water interactions, Limnology, Concentration(Composition), *Nonpoint source, NTISNASA

N78-12645/5ST NTIS Prices: PC A03/MF A01

0129126 78-004020

HYDROLOGICAL APPLICATIONS OF LANDSAT IMAGERY USED IN THE STUDY OF THE 1973 INDUS RIVER FLOOD, PAKISTAN.

DEUTSCH, MORRIS ; RUGGLES, F. H.
USGS, VA.

WATER RESOURCES B, APR 78, V14, N2, P261 (14)

RESEARCH REPORT: DURING AUGUST AND SEPTEMBER 1973, THE INDUS RIVER VALLEY OF PAKISTAN EXPERIENCED ONE OF THE LARGEST FLOODS ON RECORD, RESULTING IN DAMAGES TO HOMES, BUSINESSES, PUBLIC WORKS, AND CROPS AMOUNTING TO MILLIONS OF RUPEES. LANDSAT DATA MADE IT POSSIBLE TO MEASURE EASILY THE EXTENT OF FLOODING, TOTALING ABOUT 20,000 SQ KM WITHIN AN AREA OF ABOUT 400,000 SQ KM SOUTH FROM THE PUNJAB TO THE ARABIAN SEA. THE INDUS RIVER DATA WERE USED TO CONTINUE EXPERIMENTATION IN THE DEVELOPMENT OF RAPID, ACCURATE, AND INEXPENSIVE OPTICAL TECHNIQUES OF FLOOD MAPPING BEGUN IN 1973 FOR THE MISSISSIPPI RIVER FLOODS. THE RESEARCH WORK ON THE INDUS RIVER RESULTED IN THE DEVELOPMENT OF MORE EFFECTIVE PROCEDURES FOR OPTICAL PROCESSING OF FLOOD DATA AND SYNOPTIC DEPICTION OF FLOODING, AND ALSO PROVIDED POTENTIALLY VALUABLE ANCILLARY INFORMATION CONCERNING THE HYDROLOGY OF MUCH OF THE INDUS RIVER BASIN. (1 MAP, 11 PHOTOS, 6 REFERENCES, 1 TABLE)

DESCRIPTORS: *LANDSAT ; *INDUS RIVER ; *FLOODS ; *EMERGENCY PLANNING ; PAKISTAN ; DAMS ; HYDROLOGY ; CANALS
REVIEW CLASSIFICATION: 16

Section 3

AGRICULTURE AND FORESTRY

Soils Studies, Crop-disease Detection, Range Resources,
Forest-fire Monitoring, Wildlife Studies

RS78-3-278

78C0104856 EDB-78-19 55.300
CONF-770478--P2/
COMPUTER-AIDED ANALYSIS OF LANDSAT DATA ON SHIFTING CULTIVATION IN EAST AFRICA:PRELIMINARY RESULTS AND FURTHER CONSIDERATIONS/
CONANT,F.P.(HUNTER COLL.,NEW YORK)/CARY,T.K./
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-04:051149/EDB-78:104856/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
55.3000/
AERIAL SURVEYING/AGRICULTURE:T2,01/COMPUTER CALCULATIONS/CULTIVATION TECHNIQUES/DATA ACQUISITION SYSTEMS/DATA ANALYSIS/DATA PROCESSING/FOOD/INVENTORIES:Q2/KENYA:T1/MONITORING/PRODUCTIVITY/REMOTE SENSING:T/TECHNOLOGY UTILIZATION/

RS78-3-279

78C0070557 EDB-78-13 51.010
(CONF-7510172--P2) REFLECTANCE PROPERTIES OF GRAZING PASTURES AS DETERMINED IN THE LANDSAT SATELLITE BANDPASSES AND FROM OBLIQUE COLOUR-INFRARED AERIAL PHOTOGRAPHY/
DUGGIN,M.J.(CSIRO DIV.OF MINERAL PHYSICS,SYDNEY)/ROBERTS,R.J./CECROE,J.M./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
AU/
IS/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/
AGRICULTURE/DATA COMPILATION/GRASS:T1/IMAGES/OPTICAL PROPERTIES/PHOTOGRAPHY:Q1/RADIOMETERS/REFLECTIVITY/REMOTE SENSING/SATELLITES/SHEEP/STATISTICS/

RS78-3-280

78C0072776 EDB-78-14 01.000
CONF-/710109--/
SUBIRRIGATED ALLUVIAL VALLEY FLOORS/
HARDAWAY,J.E./KIMBALL,D.B./LINDSAY,S.F./SCHMIDT,J./ERICKSON,L./
ENVIRONMENTAL PROTECTION AGENCY,DENVER/
1977/
FIFTH SYMPOSIUM ON SURFACE MINING AND RECLAMATION/
US/
US/
ERA-03:036686/EDB-78:072776/
CONCERN HAS BEEN EXPRESSED REGARDING THE LONG-TERM IMPACTS OF SURFACE COAL MINING ON LANDS IN THE WESTERN UNITED STATES CURRENTLY OR POTENTIALLY USEFUL FOR AGRICULTURE.PART OF THIS CONCERN BEARS ON DISRUPTION OF THESE LANDS USED BY WILDLIFE.IN PARTICULAR,THERE ARE QUESTIONS REGARDING THE POTENTIAL IMPACT OF COAL EXTRACTION IN CERTAIN LOWLAND AREAS OF THE SEMI-ARID WEST WHERE SHALLOW GROUND WATER AND/OR SOIL MOISTURE IS ADEQUATE TO SUPPORT GROWTH OF GRASSES AND FORBS THROUGH THE DRY MONTHS.THESE LAND AREAS,LOCATED ALONG DRAINAGE CHANNELS AND REFERRED TO RECENTLY AS **ALLUVIAL VALLEY FLOORS** (NATIONAL ACADEMY OF SCIENCES, 1974) , ARE MOST IMPORTANT IN SEMI-ARID AND ARID CLIMATES BECAUSE WATER IS **STORED** IN THE ALLUVIUM, ENABLING VEGETATION TO CONTINUE GROWTH DURING THE MONTHS OF LOW RAINFALL.APPARENTLY,SOIL MOISTURE, AND PERHAPS SOME NEAR-SURFACE GROUND WATER,SUBIRRIGATES THE VEGETATION.THE ALLUVIAL VALLEY FLOOR AREAS INCLUDE THE PRINCIPAL SURFACE WATER ACCUMULATION POINTS,AS WELL AS POINTS OF GROUND WATER RECHARGE AND DISCHARGE.THE COMPOSITION OF VEGETATION IN SUBIRRIGATED ALLUVIAL VALLEY FLOORS IS IMPORTANT SINCE SOME GRASS AND LEGUME SPECIES ARE MORE DESIRABLE AS HAY. ALLUVIAL VALLEY FLOORS WHICH HAVE SUFFICIENT SUBIRRIGATION TO SUPPORT AGRICULTURAL USE (HARVESTING OF HAY,FOR EXAMPLE) ARE, CONCEPTUALLY, IMPORTANT TO THE ECONOMY OF THE WESTERN UNITED STATES.THEY MUST BE PROTECTED.IN VIEW OF THE UNCERTAINTIES CAUSED BY THE FEW MINING PLANS SUBMITTED TO MINE ALLUVIAL VALLEY FLOORS,IT MAY BE APPROPRIATE TO TEMPORARILY DEFER SURFACE MINING OF COAL IN SUBIRRIGATED ALLUVIAL VALLEY FLOORS UNTIL A WELL-DEFINED AND COMPREHENSIVE RESEARCH PROGRAM HAS PROVIDED ADDITIONAL INFORMATION CONCERNING THE EFFECTS OF MINING UNDER COMPLEX HYDROLOGIC CONDITIONS./
5.SYMPOSIUM ON SURFACE MINING AND RECLAMATION/
LOUISVILLE,KY,USA/
18 OCT 1977/
01.0900/01.2000/51.0100/51.0500/
AERIAL MONITORING:Q1/AGRICULTURE/ALLUVIAL DEPOSITS:T1/COAL MINING/ENVIRONMENTAL EFFECTS:Q2/GROUND WATER/HYDROLOGY:Q1/LAND RECLAMATION:T2/PLANTS/RECOMMENDATIONS/SURFACE MINING:T2/WATER POLLUTION/

RS78-3-281

78C00705b3 EDB-78-13 51.010
(CONF-751017--P2)ACCURACY OF FOREST MAPPING FROM LANDSAT COMPUTER COMPATIBLE TAPES/
KALENSKY,Z./SCHERK,L.R./

FOREST MANAGEMENT INST.,OTTAWA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
CA/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/
ACCURACY/COMPUTERS/DATA PROCESSING/FORESTS:T1/IMAGES/REMOTE SENSING/SATELLITES/TOPOLOGICAL MAPPING:Q1/

RS78-3-282

78C00705b8 EDB-78-13 51.010
(CONF-751017--P2)NEW IMAGE ENHANCEMENT ALGORITHM WITH APPLICATIONS TO FORESTRY STAND MAPPING/
KAN,E.P.(LOCKHEED ELECTRONICS CO.,INC.,HOUSTON,TX)/LO,J.K./SMELSER,R.L./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/

51.0100/58.0203/
ALGORITHMS/DATA PROCESSING:Q2/FORESTRY:T1/IMAGES:T2/TOPOLOGICAL MAPPING:Q1/USES/

RS78-3-283

78C0368482 EDB-78-13 29.040
MODELING THE BENEFITS TO WORLD AGRICULTURE FROM REMOTE SENSING/
KOCHANOWSKI,P./
INDIANA UNIV.,SOUTH BEND/
INSTRUMENT SOCIETY OF AMERICA/PITTSBURGH/1977/
MODELING AND SIMULATION,VOLUME 8,PART 2/
VOGT,W.G./MICKLE,M.H.(EDS.)/
US/
US/
8.ANNUAL CONFERENCE ON MODELING AND SIMULATION/
PITTSBURGH,PA,USA/
21 APR 1977/
29.0400/29.0100/58.3000/
AGRICULTURE: T2 / CROPS:T1/DATA ACQUISITION/DECISION MAKING/ENERGY CONSUMPTION/FORECASTING:Q1,Q2/GLOBAL ASPECTS:Q1,Q2/
LAND USE/PRODUCTION/REMOTE SENSING:Q1,Q2/SATELLITES/SIMULATION/USA/

RS78-3-284

78C00708O6 EDB-78-12 55.200
CONF-7510172--P1/
LARGE AREA CROP INVENTORY EXPERIMENT (LACIE):AN ASSESSMENT AFTER ONE YEAR OF OPERATION/
MACDONALD,R.B./HALL,F.G./ERB,R.B./
LYNDON B.JOHNSON SPACE CENTER,HOUSTON,TX/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036080/EDB-78:070806/
A LARGE AREA CROP INVENTORY EXPERIMENT (LACIE)HAS BEEN UNDERTAKEN JOINTLY BY THE U.S.DEPARTMENT OF AGRICULTURE (USDA), THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)OF THE DEPARTMENT OF COMMERCE AND THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA) TO PROVE OUT AN ECONOMICALLY IMPORTANT APPLICATION OF REMOTE SENSING FROM SPACE. THE FIRST PHASE OF THE EXPERIMENT, WHICH FOCUSED UPON DETERMINATIONS OF WHEAT AREA IN THE U.S.GREAT PLAINS AND UPON THE DEVELOPMENT AND TESTING OF YIELD MODELS, IS NOW NEARING COMPLETION.THE SYSTEM IMPLEMENTED TO HANDLE AND ANALYZE THE LANDSAT AND METEOROLOGICAL DATA HAS GENERALLY WORKED WELL AND MET OPERATIONAL GOALS.A VERY PRELIMINARY ASSESSMENT OF RESULTS TO DATE INDICATES THAT THE ACCURACY GOALS OF THE EXPERIMENT CAN BE MET./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
55.3000/
AGRICULTURE / CROPS: T2 / DATA/DATA ANALYSIS/DATA COMPILATION/ECONOMICS/INVENTORIES:Q2/METEOROLOGY/PRODUCTIVITY/REMOTE SENSING:Q2/SPACE/TESTING/US ORGANIZATIONS/WHEAT/

RS78-3-285

78C00757?3 EDB-78-14 52.020
CONF-7510172--P1/
MEASUREMENTS OF VEGETATION STRESS BY A MULTISPECTRAL SCANNER AS A BASIS FOR AIR QUALITY MAPS/
MARSCHALEK,F./
SPACETEC GESMBH,VIENNA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
AT/
US/
ERA-03:036064/EDB-78:075773/
FOR THE ELABORATION OF AIR QUALITY MAPS,METHODS WHICH GIVE AN EXTENSIVE OVERVIEW WERE LOOKED FOR.AS THE FIRST TESTS DEMONSTRATED,MULTISPECTRAL SCANNER IMAGES ARE ESPECIALLY APPROPRIATE FOR THIS PURPOSE.IN THIS METHOD THE TREE IS USED AS AN INDICATOR. THE MEASURED DEGREE OF THE DAMAGE (DUE TO AIR POLLUTION)FOR DIFFERENT TREE SORTS (IN DIFFERENT PLANT CONDITIONS) WAS STANDARDIZED IN SUCH A WAY THAT IT WAS POSSIBLE TO MAKE CONCLUSIONS ABOUT THE AIR QUALITY.A PRACTICAL EXAMPLE AS WELL AS A GENERAL CONCEPT ARE DESCRIBED HERE./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0200/44.0300/
AGRICULTURE: T2 / AIR POLLUTION/AIR QUALITY:T4/BIOLOGICAL INDICATORS:Q3/BIOLOGICAL STRESS:Q1/IMAGE SCANNERS/MEASURING METHODS:Q4/PLANTS:T1/REMOTE SENSING:Q2/TOPOLOGICAL MAPPING/TREES:T3/

RS78-3-286

78C00634B1 EDB-78-13 29.040
APPLICATION OF OPTIMAL STOCHASTIC CONTROL THEORY TO LONG-RANGE PLANNING IN RESOURCE MANAGEMENT:THE VALUE OF WHEAT-SUPPLY INFORMATION/
SAND,F./
ECON,INC.,PRINCETON,NJ/
INSTRUMENT SOCIETY OF AMERICA/PITTSBURGH/1977/
MODELING AND SIMULATION,VOLUME 8,PART 2/
VOGT,W.G./MICKLE,M.H.(EDS.)/
US/
US/
8.ANNUAL CONFERENCE ON MODELING AND SIMULATION/
PITTSBURGH,PA,USA/
21 APR 1977/
29.0400/29.0100/55.3000/
AGRICULTURE / CONTROL / CROPS / DECISION MAKING/ENERGY DEMAND/ENERGY MODELS/ENERGY SUPPLIES/EVALUATION/FORECASTING:Q2/MANAGEMENT:Q2/MATHEMATICAL MODELS/OPTIMIZATION/PRODUCTION:C1/REMOTE SENSING/RESOURCES:T2/SIMULATION/WHEAT:T1/

RS78-3-287

78C007156/ FOR-78-13 51.010
(CONF-7510172--P2)LANDSAT APPLICATIONS IN CANADIAN FORESTRY/
SAYN-WITTGENSTEIN,L./WRIGHTMAN,J.M./
ENVIRONMENT CANADA,OTTAWA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
CA/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/55.3000/
CANADA:T1/DATA ANALYSIS/FIRES/FORESTS:T2,Q1/MONITORING/PLANTS/SATELLITES/TOPOLOGICAL MAPPING:Q2/USES/

RS78-3-288

78C007056D FOR-78-13 51.010
(CONF-7510172--P2)REMOTE SENSING APPLICATIONS FOR AGRICULTURAL FIELDS IN JAPAN/
SHIMODA,H./SAKATA,T./NAKAMURA,K./
TOKAI UNIV.,HIRATSUKA CITY,JAPAN/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
JP/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/55.3000/
AGRICULTURE:Q3/COST/CROPS:T2/EVALUATION:Q2/JAPAN:T3/REMOTE SENSING/USES/

RS78-3-289

78J0060014 EC3-78-11 29.040
HOW MUCH ENERGY IN THE WORLD'S FORESTS/
SMIL,V./
UNIV.OF MANITOBA,WINNIPEG/
ENERGY INT./15/3/MAR 1978/25-26/
CA/
US/
(ENEIB)
29.0400/29.9000/51.0100/51.0500/
AERIAL MONITORING /AVAILABILITY/BIOMASS/DATA COMPILATION/ENERGY SOURCE DEVELOPMENT:T2/FOREST LITTER/FORESTRY/FORESTS:
T1,Q2/GLOBAL ASPECTS/INFORMATION/RENEWABLE ENERGY SOURCES/RESOURCE ASSESSMENT:Q1/RESOURCES/WOOD/

RS78-3-290

78C0070966 EDB-78-13 51.010
(CONF-7510172--P2)ESTIMATION OF MOISTURE CONTENT OF FOREST FUELS OVER THE SOUTHEASTERN U.S.USING SATELLITE DATA/
WATERS,M.III/
NATIONAL ENVIRONMENTAL SATELLITE SERVICE,SUITLAND,MD/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
JS/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/50.0100/
ABUNDANCE / AIR: T4 / DATA ANALYSIS/FORESTS:T3/FUELS/HUMIDITY:Q4/MEASURING METHODS/METEOROLOGY/MOISTURE:Q3/SATELLITES/
TEMPERATURE MEASUREMENT:Q4/

RS78-3-291

78J0061595 EDB-78-11 56.030
AIR POLLUTION DAMAGE TO THE FORESTS OF THE SIERRA NEVADA MOUNTAINS OF CALIFORNIA/
WILLIAMS,W.T./BRADY,M./WILLISON,S.C./
J.AIR POLLUT.CONTROL ASSOC./27/3/MAR 1977/230-234/
US/
JS/
(JPCAA)
56.0103/50.0100/50.0200/
AERIAL MONITORING / AIR POLLUTION/BIOLOGICAL EFFECTS:Q1/CALIFORNIA/FORESTS/MOUNTAINS/OZONE:T1/PHOTOCHEMICAL OXIDANTS/
PINES/PLANT DISEASES/TREES/

RS78-3-292

A78-40160 * A Landsat Agricultural Monitoring Program. A. C. Aaronson, P. E. Buchman, T. Wescott, and R. E. Fries (GE Earth Resources Analysis and Management Center, Beltsville, Md.). In Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 44-51. 7 refs. Contract No. NAS5-23411.

The paper discusses the Landsat Agricultural Monitoring Program which was developed to identify, observe, and evaluate alarm conditions influencing Iowa corn production in 1976. Used in conjunction with climatic and field reports, studies were made of crop development, crop alarms (such as heavy rainfall, hail, tornadoes, and drought) and estimated crop yield. S.C.S.

RS78-3-293

A78-45023 # A case study comparison of microwave radiometer measurements over bare and vegetated surfaces. I. J. Barton (Commonwealth Scientific and Industrial Research Organization, Div. of Atmospheric Physics, Mordialloc, Victoria, Australia). *Journal of Geophysical Research*, vol. 83, July 10, 1978, p. 3513-3517. 14 refs.

Airborne microwave measurements with a nadir-viewing X band radiometer operating at a wavelength of 2.65 cm are described. The measurements over adjacent bare and vegetated surfaces are compared with ground truth samples of soil moisture content (SMC). For the bare surface the emissivity is highly correlated ($r = -0.97$) with the SMC of the top 0.5 cm, with an antenna temperature dependence of -2.1 K/(percent SMC). In contrast, the correlation over vegetated surfaces is very poor (-0.25). Thus it cannot be expected that the technique at this wavelength would be generally useful as a measure of SMC, and this is borne out by comparison with the Nimbus 5 electrically scanned microwave radiometer data. If aircraft or satellite radiometers are to measure SMC under vegetated conditions, it will be necessary to increase their wavelengths well beyond the X band. (Author)

RS78-3-294

A78-48005 * Area estimation of crops by digital analysis of Landsat data. M. E. Bauer, M. M. Hixson, and B. J. Davis (Purdue University, West Lafayette, Ind.). *Photogrammetric Engineering and Remote Sensing*, vol. 44, Aug. 1978, p. 1033-1043. 18 refs. Contract No. NAS5-20793.

The study for which the results are presented had these objectives: (1) to use Landsat data and computer-implemented pattern recognition to classify the major crops from regions encompassing different climates, soils, and crops; (2) to estimate crop areas for counties and states by using crop identification data obtained from the Landsat identifications; and (3) to evaluate the accuracy, precision, and timeliness of crop area estimates obtained from Landsat data. The paper describes the method of developing the training statistics and evaluating the classification accuracy. Landsat MSS data were adequate to accurately identify wheat in Kansas; corn and soybean estimates for Indiana were less accurate. Systematic sampling of entire counties made possible by computer classification methods resulted in very precise area estimates at county, district, and state levels. P.T.H.

RS78-3-295

A78-40165 * Crop identification and area estimation by computer-aided analysis of Landsat data. M. E. Bauer, M. M. Hixson, B. J. Davis, and J. B. Etheridge (Purdue University, West Lafayette, Ind.). In Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 102-112. 17 refs. Contract No. NAS5-20793

This report describes the results of a study involving the use of computer-aided analysis techniques applied to Landsat MSS data for identification and area estimation of winter wheat in Kansas and corn and soybeans in Indiana. Key elements of the approach included use of aerial photography for classifier training, stratification of Landsat data and extension of training statistics to areas without training data, and classification of a systematic sample of pixels from each county. Major results and conclusions are: (1) Landsat data was adequate for accurate identification and area estimation of winter wheat in Kansas, but corn and soybean estimates for Indiana were less accurate; (2) computer-aided analysis techniques can be effectively used to extract crop identification information from Landsat MSS data, and (3) systematic sampling of entire counties made possible by computer classification methods resulted in very precise area estimates at county as well as district and state levels. (Author)

RS78-3-296

A78-43321 # Remote sensing of the thermal characteristics of ground surfaces covered with vegetation - Trial interpretation key (Télédétection des caracteristiques thermiques des surfaces terrestres végétalisées - Essai de clef d'interprétation). F. Bonn, R. Brochu, and M. Lajeunesse (Sherbrooke, Université, Sherbrooke, Quebec, Canada). In Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 180-188. 18 refs. In French.

Remote sensing techniques used to evaluate ground-level energy exchanges and the thermal characteristics of the ground cover are reviewed. Studies conducted at ground level, using an airborne PRT5 radiometer, and using a Daedalus scanner are described. The soil parameters which may be monitored are presented along with a thermal classification of the primary types of ground cover. Seasonal variations are described [illegible] synoptic tool is proposed [illegible] data interpretation. S.C.S.

RS78-3-297

A78-47320 * Plant canopy light absorption model with application to wheat. J. E. Chance and E. W. LeMaster (Pan American University, Edinburg, Tex.). *Applied Optics*, vol. 17, Aug. 15, 1978, p. 2629-2636. 14 refs. Grant No. NsG-9033.

A light absorption model (LAM) for vegetative plant canopies has been derived from the Suits reflectance model. From the LAM the absorption of light in the photosynthetically active region of the spectrum (400-700 nm) has been calculated for a Penjamo wheat crop for several situations including (a) the percent absorption of the incident radiation by a canopy of LAI 3.1 having a four-layer structure, (b) the percent absorption of light by the individual layers within a four-layer canopy and by the underlying soil, (c) the percent absorption of light by each vegetative canopy layer for variable sun angle, and (d) the cumulative solar energy absorbed by the developing wheat canopy as it progresses from a single layer through its growth stages to a three-layer canopy. This calculation is also presented as a function of the leaf area index and is shown to be in agreement with experimental data reported by Kanemasu on Plainsman V wheat. (Author)

RS78-3-298

A78-40159 * A first interpretation of East African swidden-ing via computer-assisted analysis of 3 Landsat tapes. F. P Conant (Hunter College, New York, N.Y.) and T. K. Cary (Columbia University, New York, N Y.). In: Annual Symposium on Machine Processing of Remotely Sensed Data. 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 36-43. 10 refs. Grant No. NsG-5080.

A preliminary application of the machine processing of Landsat data for the identification of swidden farming in East Africa is discussed. Three sets of Landsat data were analyzed: the 1972 mid-dry season, the 1973 late dry season, and the 1975 early wet season. The analysis procedure consisted of: (1) a preprocessing step to de-skew, rotate, and rescale the data, (2) a geometric correction process, (3) photographic enlargement, and (4) a procedure to obtain spectral response values for training the classification algorithm.

S.C.S.

RS78-3-299

A78-40179 Computer training procedures for the Western Washington forest productivity study utilizing Landsat data. J R. Edwards (U S. Department of Natural Resources, Div. of Technical Services, Olympia, Wash) In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind , June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc , 1977, p 264-269.

Landsat data and multistage sampling techniques were employed to develop a forest cover inventory for 19 million acres of Western Washington; cover types of the inventory included old growth conifer, second growth conifer, hardwoods, reproduction-stage growth, and nonstocked forest (0 to five years of growth). Mixed stands containing greater than or less than 50% hardwood were found to be spectrally separable. Some classification difficulties resulted from shadows on steep slopes, snow cover and bare ground.

J M.B.

RS78-3-300

A78-43304 # Remote sensing in agronomy and pedology - In search of a methodology (La télédétection en agronomie et pédologie - A la recherche d'une méthodologie). M. C. Girard and C. M. Girard (Institut National Agronomique Paris-Grignon, Thiverval-Grignon, Yvelines, France). In. Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p 1-7 5 refs. In French.

The application of remote sensing technology in agronomy and pedology is discussed in terms of data collection and data interpretation. With reference to data collection, attention is given to wavelength-band selection as determined by the subject under study, and altitude selection as determined by the dimensions of the plot under study. Methods for data interpretation are outlined including analytical, statistical, and cartographic techniques. S.C.S.

RS78-3-301

A78-41190 High-altitude versus Landsat imagery for digital crop identification. J. R. Jensen (Georgia, University, Athens, Ga.), J. E. Estes, and L R. Tinney (California, University, Santa Barbara, Calif.). *Photogrammetric Engineering and Remote Sensing*, vol 44, June 1978, p. 723-733 12 refs.

Multidate crop identification using microdensitometer scanned color infrared high-altitude photography (original scale 1:120,000) and Landsat digital data was conducted for a 140 sq km study area in Kern County, California. The purpose of this analysis was not to achieve maximum crop identification accuracy per se, but to comparatively evaluate the utility of the two image formats for digital crop identification Preliminary results indicate that the Landsat digital approach is superior to analysis of digitized high-altitude photography. Vignetting in the high-altitude photography dataset caused serious signature extension problems (Author)

RS78-3-302

A78-48007 * Use of manual densitometry in land cover classification. D. C. Jordan, D. H. Graves, and M. C. Hammetter (Kentucky, University, Lexington, Ky.). *Photogrammetric Engineering and Remote Sensing*, vol. 44, Aug. 1978, p. 1053-1059. 13 refs. Research sponsored by the University of Kentucky Research Foundation; Contract No. NAS8-31006.

Through use of manual spot densitometry values derived from multitemporal 1:24,000 color infrared aircraft photography, areas as small as one hectare in the Cumberland Plateau in Kentucky were accurately classified into one of eight ground cover groups. If distinguishing between undisturbed and disturbed forest areas is the sole criterion of interest, classification results are highly accurate if based on imagery taken during foliated ground cover conditions. Multiseasonal imagery analysis was superior to single data analysis, and transparencies from prefoliated conditions gave better separation of conifers and hardwoods than did those from foliated conditions.

P.T.H.

RS78-3-303

A78-40167 Machine processing of aerial data for Agricultural Resources Inventory and Survey Experiment. D. S. Kamat, K. L. Majumder, T. J. Majumdar, I. C. Mateda, C V. S. Prakash, and V. L. Swaminathan (Indian Space Research Organization, Space Applications Center, Ahmedabad, India). In Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 124-134. 7 refs.

The multiband aerial data for one flight line, stretching over 38 Kms which covers an area of 6528 hectares, of the Agricultural Resources Inventory and Survey Experiment, Patiala has been analyzed by an unsupervised automatic processing technique. The results are presented in the form of tables and thematic maps. They are verified with the results obtained independently by visual photointerpretation techniques. (Author)

RS78-3-304

A78-43312 # A basis for multistage forest inventory in the Boreal forest region C L. Kirby and P. L. van Eck (Environment Canada, Northern Forest Research Centre, Edmonton, Alberta, Canada). In Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 71-94. 29 refs.

Consideration is given to the interpretation of Landsat imagery and ultra-small and large-scale aerial photography with reference to a multistage sampling design for forest regions. It is found that: (1) a multistage design incorporating sampling units based on variable probability is applicable to large-area inventories, (2) ultra-small, infrared, color aerial photographs may be used to estimate stand volumes for preparing forest cover and soil maps, and (3) large-scale photo sampling may partially replace extensive ground sampling when estimating timber volume, cut-over land, and habitat types.

S.C.S.

RS78-3-305

A78-43067 Modeling the benefits to world agriculture from remote sensing. P Kochanowski (Indiana University, South Bend, Ind.). In: Modeling and simulation Volume 8 - Proceedings of the Eighth Annual Pittsburgh Conference, Pittsburgh, Pa., April 21, 22, 1977. Part 2. (A78-43026 18-66) Pittsburgh, Pa., Instrument Society of America, 1977, p. 691-695. 11 refs

Remote sensing of agricultural land permits crop classification and mensuration which can lead to improved forecasts of production. This technique is particularly important for nations which do not already have an accurate agricultural reporting system Better forecasts have important economic effects. International grain traders can make better decisions about when to store, buy, and sell Farmers can make better planting decisions by taking advantage of production estimates for areas out of phase with their own agricultural calendar. World economic benefits will accrue to both buyers and sellers because of increased food supply and price stabilization. This paper reviews two world modeling efforts used to empirically establish the above scenario Dollar estimates, their implications for the United States and the rest of the world, and inherent modeling difficulties are described. (Author)

RS78-3-306

A78-43308 = Computer-assisted forest land classification by means of several classification methods on the CCRS Image-100. Y. J. Lee (Pacific Forest Research Centre, Victoria, British Columbia, Canada), F. Towler, H. Bradatsch, and S. Finding (British Columbia Forest Service, Victoria, British Columbia, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 37-46. 9 refs.

Results are reported for computer-assisted forest-land classification using the CCRS Image-100 supervised classification technique. The study was conducted at three Canadian test sites. The results from principal-components color enhancement revealed that logged-over, urban, power-line, and cultivated areas were easily distinguishable and that vegetation could be mapped. Poor results were obtained from unsupervised classification on the five identifiable forest-land classes with the exception of water. Computer-assisted classification using supervised classification algorithms was found to identify broad forest-land classes which may be subsequently used for further sampling by small-scale aerial photographs and ground surveys. S.C.S.

RS78-3-307

A78-43336 # Specific study of rice cultivation by remote sensing - Cartography and production evaluation (Etude spécifique d'une culture /riz/ par télédetection - Cartographie et évaluation de production). T. Le Toan (Centre d'Etudes Spatiales des Rayonnements, Toulouse, France). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 355-364. In French.

Landsat data have been used in conjunction with aerial photography and field data to evaluate the rice growing areas in the Camargue region of southern France. The data were collected from eight Landsat passages made in 1973, and aerial photographs taken at 1500 and 7000 m. It is found that optimal results are obtained using supervised classification techniques, multidate observations, and methods employing linear discriminant functions. S.C.S.

RS78-3-308

A78-43305 # Global agricultural productivity estimation from Landsat data. A. R. Mack (Agriculture Canada, Soil Research Institute, Ottawa, Canada), J. Schubert, C. Goodfellow, P. Chagarlamudi, and H. Moore (Gregory Geoscience, Ltd., Ottawa, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 8-18. 5 refs.

Landsat data have been computer processed in order to determine indices of growing conditions for general vegetation, cultivated areas, and specific crops such as spring wheat. Individual pixels are classified as to vegetation density and the biomass is calculated. Regression equations (obtained from biomass indices from various sites) are used to calculate predicted crop yields in terms of bushels per acre. A comparison is made between the actual distribution of classified pixels in spring wheat yields and the predicted distribution. It is found that the predicted values for final yield are within plus or minus 10 percent of the actual yields for ten out of eleven estimates made for various regions of Canada. S.C.S.

RS78-3-309

A78-40180 * Landsat digital data application to forest vegetation and land use classification in Minnesota. R. A. Mead and M. P. Meyer (Minnesota, University, St. Paul, Minn.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 270-280. Research supported by the University of Minnesota; Contract No. NAS5-20985.

Landsat digital data were used to map eleven categories of land cover in north central Minnesota. The classification accuracy of these maps was found to be very low and they were not adequate for use by field level resource managers A discussion of the advantages and disadvantages of various processing systems, different algorithms, and the problems in selecting training sets, is included. (Author)

RS78-3-310

A78-40166 An interactive system for agricultural acreage estimates using Landsat data. M. Ozga, W. E. Donovan (Illinois, University, Urbana, Ill.), and C. P. Gleason (U.S. Department of Agriculture, Statistical Reporting Service, Washington, D.C.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 113-123 18 refs.

This paper describes interactive software systems for making agricultural crop acreage estimates using Landsat MSS data developed jointly by the Center for Advanced Computation of the University of Illinois and the Statistical Reporting Service of the United States Department of Agriculture. These acreage estimation procedures have been incorporated into, and use features previously developed in, EDITOR EDITOR is an interactive file management and image processing system developed by the Center for Advanced Computation in collaboration with USGS/DI, NASA/AMES, and USDA/SRS. The crop acreage estimation software is implemented as part of the EDITOR system on TENEX, a modified DEC SYSTEM-10. The only hardware necessary to access this acreage estimation subsystem or the whole EDITOR system consists of a KSR (keyboard send-receive) terminal with acoustic coupler and a telephone link to a TENEX system on the ARPA network. A x-y coordinate digitizer and, optionally a terminal graphics plotter, are also needed for digitizing ground-truth samples and interactive registration capabilities. (Author)

RS78-3-311

A78-43347 * Study of alfalfa survival in Quebec by color and infrared photography at scales of 1:6000 to 1:40,000 (Etude sur la survie de la luzerne au Québec au moyen de photos couleurs et infra-rouges à des echelles de 1:6000 à 1:40000). R. Paquin (Agriculture Canada, Station de Recherche, Sainte-Foy, Quebec, Canada), G. Ladouceur, R. Desrosiers (Universite Laval, Sainte-Foy, Quebec, Canada), and A. Mack (Agriculture Canada, Institut de Recherches sur les Sols, Ottawa, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 506-515. In French.

RS78-3-312

A78-40181 A table look-up procedure for rapidly mapping vegetation cover and crop development. A. J. Richardson and C. L. Wiegand (U.S. Department of Agriculture, Agricultural Research Service, Weslaco, Tex.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 284-297. 15 refs.

A table of 10 Landsat data categories has been shown to yield meaningful classifications of vegetation density levels, soil brightness levels, and water without any prior information on local crop and soil conditions. The 10 data categories correspond to water, cloud shadow, low, medium and high reflectivity soil, cloud tops, low, medium and dense plant cover, and a region into which no Landsat data may be expected to fall. The 10 categories, developed through analysis of Landsat data from six overpass dates, should lead to more rapid machine processing of remote sensing data to furnish crop development surveys and crop yield predictions. J.M.B

RS78-3-313

A78-43342 # Vegetation classification with digital X-band and L-band dual polarized SAR imagery. R. Shuchman (Michigan, Environmental Research Institute, Ann Arbor, Mich.) and R. T. Lowry (Canada Centre for Remote Sensing, Ottawa, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 444-458. 10 refs.

Digital multispectral and multipolarization synthetic aperture radar have been used for vegetation classification in coastal wetlands regions. The basic components of the X-L radar system are the two-channel X-band (3.2 cm) and L-band (25.0 cm) radars. The two radar parameters are varied in the multiplexed system. The data are digitized by the ERIM hybrid optical-digital processor and seven classes are identified: inland H2O, coniferous trees, palmettoes and palm/secondary story, marsh grass, coastal marsh grass, sand and shell fragments, and dry grass and palmettoes. S.C.S.

RS78-3-314

A78-40163 Stratified acreage estimates in the Illinois crop-acreage experiment. R. Sigman, C. P. Gleason, G. A. Hanuschak, and R. R. Starbuck (U.S. Department of Agriculture, Statistical Reporting Service, Washington, D.C.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 80-90. 6 refs.

The article discusses the application of the Statistical Reporting Service to Landsat remote sensor data in order to estimate crop acreages. The method employs a pixel classifier consisting of a series of discriminant functions corresponding to a set of classification categories. The methodology has been evaluated for three Landsat frames taken in 1975 over western Illinois. It was found that several geographic and methodological factors influence the pixel classifier. S.C.S.

RS78-3-315

A78-40164 * Two-phase sampling for wheat acreage estimation. R. W. Thomas and C. M. Hay (California, University, Berkeley, Calif.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 91-101. 6 refs. Contract No. NAS9-14565.

A two phase Landsat-based sample allocation and wheat proportion estimation method was developed. This technique employs manual, Landsat full frame-based wheat or cultivated land proportion estimates from a large number of segments comprising a first sample phase to optimally allocate a smaller phase two sample of computer or manually processed segments. Application to the Kansas Southwest CRD for 1974 produced a wheat acreage estimate for that CRD within 2.42 percent of the USDA SRS-based estimate using a lower CRD inventory budget than for a simulated reference LACIE system. Factor of 2 or greater cost or precision improvements relative to the reference system were obtained. (Author)

RS78-3-316

N78-27490*# National Aeronautics and Space Administration Washington D C

EFFECT OF SOME DETERGENTS, HUMATE, AND COMPOSITION OF SEEDBED ON CROP OF TOMATO PLANTS IN A HYDROPONIC CULTURE

Z. Gumninka, M Gracz-Nalepka, B. Lukasiewicz, E Sobolewicz and I. T Turkiewicz Jun 1978 15 p refs Transl. into ENGLISH from Acta Agrobotan. (Poland), vol 28, no 2, 1975 p 205-215 Transl by Kanner (Leo) Associates, Redwood City, Calif. Original doc prep by Wroclaw Univ., Poland

(Contract NASw-2790)

(NASA-TM-75319) Avail NTIS HC A02/MF A01 CSCL 02C

It is established that single detergent doses distinctly stimulate vegetative development of plants in the initial stage when humates are available When detergents are applied every four weeks in a hydroponic culture, in which the seedbed does not contain active humates, the crop is reduced by 50% This adverse effect does not occur when the seedbed is a mixture of brown coal and peat. Author

RS78-3-317

N78-29537*# Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil).

EFFECTS OF SYSTEMIC AND NON-SYSTEMIC STRESSES ON THE THERMAL CHARACTERISTICS OF CORN

Ravindra Kumar, L. F Silva and M E. Baer (Purdue Univ.) Jun 1978 33 p refs Submitted for publication

(Grant NGL-15-005-112)

(NASA-CR-157391, INPE-1282-PE/138) Avail NTIS HC A03/MF A01 CSCL 02C

Experiments were conducted on corn plants using a calibrated spectroradiometer under field conditions in the indium antimonide channel (InSb, 2.8 to 5 6 mm) and the mercury cadmium telluride channel (HgCdTe, 7 to 14 mm) A ground cover experiment, an experiment on nonsystemic corn plants, and an experiment on systemic-stressed corn plants were included. The average spectral radiance temperature of corn plant populations was found (1) to be statistically significantly different for four healthy, corn plant populations, (2) to increase with increased blight severity, and (3) to be statistically significantly different for varying rates of nitrogen applications. J M S

RS78-3-318

N78-29536*# Instituto de Pesquisas Espaciais, Sao Jose dos Camoos (Brazil)
EVALUATION OF WAVELENGTH GROUPS FOR DISCRIMINATION OF AGRICULTURAL COVER TYPES
Ravindra Kumar Apr. 1978 13 p refs Submitted for publication
(Grant NGL-15-005-112)
(NASA-CR-157393; INPE-1210-PE/120) Avail: NTIS HC A03/MF A01 CSCL 02C

Multispectral scanner data in twelve spectral channels in the wavelength range 0 46 to 1 1 7 mm, acquired in July 1971 for three flightlines, were analyzed by applying automat c pattern recognition techniques These twelve spectral channels were divided into four wavelength groups (W1, W2, W3 and W4), each consisting of three wavelength channels -- with respect to their estimated probability of correct classification (P sub c) in discriminating agricultural cover types The same analysis was also done for the data acquired in August, to investigate the effect of time on these results The effect of deletion of each of the wavelength groups on P sub C in the subsets of one to nine channels, is given Values of P sub C for all possible combinations of wavelength groups, in the subsets of one to eleven channels are also given Author

RS78-3-319

N78-28559 Minnesota Univ., Minneapolis.
LANDSAT DIGITAL DATA APPLICATION TO FOREST VEGETATION AND LAND-USE CLASSIFICATION IN MINNESOTA Ph.D. Thesis
Roy Alan Mead 1977 112 p
Avail: Univ. Microfilms Order No 78-09702

Three methods of accuracy verification were applied to eleven land cover categories mapped from LANDSAT data As a result, it was quite apparent that the accuracy of mapping land cover on large blocks of land, including transition zones and vegetation type mixtures, gave lower estimates of accuracy than was realized on either training sets or test sets. Evaluation of the various map solutions by experienced field resource management cooperators resulted in the judgment that the classification accuracies were so low as to preclude practical use for their purposes at this time. Dissert Abstr.

RS78-3-320

N78-29534*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
ANALYSIS OF THE DYNAMICS OF SHIFTING CULTIVATION IN THE TROPICAL FORESTS OF NORTHERN THAILAND USING LANDSAT MODELING AND CLASSIFICATION OF LANDSAT IMAGERY
Lee D Miller, Kaew Nualchawee (Colorado State Univ), and Craig Tom, Principal Investigators (HRB-Singer, Inc , Ft. Collins, Colo) May 1978 20 p refs Presented at the 12th Intern. Symp on Remote Sensing of Environment, Manila, Phillipines, 20-28 Apr 1978 Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S D 57198 ERTS
(E78-10178; NASA-TM-79545) Avail: NTIS HC A02/MF A01 CSCL 08F

There are no author-identified significant results in this report

RS78-3-321

N78-28578*# Purdue Univ , Lafayette, Ind Lab for Applications of Remote Sensing.
FOREST RESOURCE INFORMATION SYSTEM Quarterly Report, 1 Jan. - 31 Mar. 1978
R P. Mroczynski, Principal Investigator 20 Mar. 1978 40 p refs Original contains color imagery Original photography may be purchased from the EROS Data Center, Sioux Falls, S. D. 57198 EREP
(Contract NAS9-15325)
(E78-10173; NASA-CR-151737) Avail. NTIS HC A03/MF A01 CSCL 02F

There are no author-identified significant results in this report.

RS78-3-322

N78-29529# British Library Lending Div., Boston Spa (England)
USING A 70-mm STEREO CAMERA SYSTEM WITH LARGE-SCALE PHOTOGRAMMETRIC INTERPRETATION FOR FOREST INVENTORY
B Rhody 1 Nov 1977 15 p refs Transl. into ENGLISH from Forstarchiv (West Germany), 48, 4, 1977 p 65-70 In ENGLISH and GERMAN
(FCT-492) Avail British Library Lending Div , Boston Spa, Engl

Large scale 70 mm picture format photogrammetry of forests in northern Germany were obtained by using two stereocameras in an aluminum housing installed 4 to 5 m apart on the wing struts of a light aircraft and a motor-driven small image camera for taking series photographs with stereo overlap The two cameras were synchronously operated by means of a cable with a simultaneous triggering instrument actuated by the photographer in the aircraft Measurement data based on the photogrammetric evaluation of the aerial photos are compared with ground data measured on the same sample plots using 35 mm wide angle overview photos Standard errors in tree height measurement, stem diameters, crown diameters and volume estimates are discussed as well as methods for photointerpretation and data processing. A R H

RS78-3-323

N78-29544*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md
A SPECTRAL METHOD FOR DETERMINING THE PERCENTAGE OF LIVE HERBAGE MATERIAL IN CLIPPED SAMPLES
Compton J. Tucker Nov. 1977 24 p refs Submitted for publication
(NASA-TM-78019) Avail: NTIS HC A02/MF A01 CSCL 20F

A laboratory spectroradiometric method for the rapid [illegible] of live/dead vegetation percentages from clipped [illegible] samples has been developed and preliminarily tested The method utilizes the red and photographic infrared reflectance or radiance differences between green vegetation and that of dead vegetation. Mixtures of green and dead-material were found to have reflectances or radiances proportional to the percentage of green material present This method offers the possibility that rapid live/dead spectroradiometric determinations may replace the tedious hand-sorting now generally in use for many situations Author

RS78-3-324

N78-26527# National Aerospace Lab., Amsterdam (Netherlands). Scientific Services.

IMAGE DATA SECURITY IN THE CONCEPT OF THE AGRICULTURAL REAL TIME IMAGING SATELLITE SYSTEM (ARTISS)

H. A. VanIngenSchenau, L. J. M. Joosten, and J. L. Simons 28 Apr. 1976 117 p refs

(Contract NIVR-1798)

(NLR-TR-76010-U) Avail: NTIS HC A06/MF A01

Under consideration was the requirement for exclusive access to satellite imagery in the concept of ARTISS. Security assessment indicates that user survey requests are handled confidentially and shows the access vulnerability of the transmission of image data to the user groundstation. To ensure the security of this transmission two promising methods are available. Directional transmission using a directive spacecraft antenna, supported by an onboard jamming transmitter which causes deterioration of the picture quality outside a trusted territory; and crypto technique, achieved through onboard enciphering of the image data and deciphering at the user groundstation. Implementation costs for directional transmission and crypto technique are 6% and 3% of the ARTISS costs, respectively. In the case of crypto technique, a 20% cost increase for operations is expected.

Author (ESA)

RS78-3-325

N78-27481*# Columbia Univ., New York. Dept. of Geography.

APPLICATION OF DIGITAL ANALYSIS OF MSS DATA TO AGRO-ENVIRONMENTAL STUDIES. Semiannual Progress Report, 1 Sep. 1977 - 31 Mar. 1978

Kempton E. Webb, Colin J. High, Jerry C. Coiner, and Leonard Zobler, Principal Investigators 1 Apr. 1978 132 p refs ERTS

(Grant NsG-5080)

(E78-10151, NASA-CR-157245) Avail: NTIS HC A07/MF A01 CSCL 02C

There are no author-identified significant results in this report

RS78-3-326

DETERMINING THE USEFULNESS OF REMOTE SENSING FOR ESTIMATING AGRICULTURAL WATER DEMAND IN CALIFORNIA.

California Univ.-Berkeley. Remote Sensing Research Program.

R. N. Colwell.

Available from the National Technical Information Service, Springfield, VA 22161 as N77-30551. Price codes: A04 in paper copy, A01 in microfiche. Semi-Annual Report, Space Sciences Laboratory Series 18, Issue 59, 1977. 65 p, 22 fig, 15 tab. NASA NSG 2207.

Descriptors: *Remote sensing, *Satellites(Artificial), *California, *Irrigation, *Agriculture, *Water demand, *Water supply, *Crop production, *Data collections, Analytical techniques, Statistics, Mapping, *Crop classification, *LANDSAT, Crop types, Spatial signature extension, Cropland.

Implementation of an operational methodology by which the California Department of Water Resources (DWR) can extract information from a LANDSAT-based remote sensing system to obtain irrigated acreage statistics is described. Techniques for specific crop type determination were tested in Kern County. Project accomplishments include: (1) review of DWR's land use survey requirements, specifically as to the need for crop-specific data, map formats, and statistica studies; (2) demonstration of the need to broadly regionalize the variety of environments in California for determination of an optimum mix of remote sensing techniques for each environment; (3) demonstration of the significant impact of spatial signature extension on the cost-effectiveness and transferability of remote sensing techniques; (4) a 1976 update map of Kern County cropland; and (5) LANDSAT crop keys for all major County crops. Multicropping was difficult to classify using the available imagery and manual techniques. Average manual classification accuracy and water demand group accuracy were 71% and 84%, respectively. Two digital data sets are being processed: conventional LANDSAT image keys, were made to select optimum periods to discriminate fallow, small grans, and cotton from all other corps. Techniques developed in the study have been extended to a Sacramento test site for the 1976 crop season using DWR ground truth data. Multiyear extension in 1975 and 1976 are described; a comprehensive evaluation was performed during the 1977 crop season using data previously collected (Sep-IPA)

W78-08256

RS78-3-327

REMOTE SENSING OF AGRICULTURAL WATER DEMAND INFORMATION: A CALIFORNIA STUDY,
California Univ., Santa Barbara Dept. of Geography.
J. E. Estes, J. R. Jensen, and L. R. Tinney.
Water Resources Research, Vol 14, No. 2, p 170-176, April 1978. 3 fig, 3 tab, 8 ref.

Descriptors: *Remote sensing, *Water demand, *Computer models, *Groundwater basins, *California, Agriculture, Crops, Statistics, Irrigation, Prediction, Systems analysis, Simulation analysis.

This study focuses on the use of LANDSAT image-processing techniques to produce cropland and crop type statistics for input into agricultural water demand prediction procedures currently being employed by the Kern County Water Agency in Kern County, California. The potential of remote sensing to provide input to the Kern County Water Agency's groundwater basin model in a more accurate and timely fashion is the objective of the research discussed herein. Current accuracies associated with LANDSAT cropland/noncropland identifications are of the order of 98% absolute accuracy. These data are being operationally incorporated into model calculations on a quarterly basis. Crop specific accuracies, although somewhat lower, are steadily being improved, and prospects for eventual incorporation appear good. The model, which divides the San Joaquin Valley floor portion of the Kern County groundwater basin into 251 nodal regions, is designed to produce a total simulation of water transmission and storage throughout the model area; it incorporates detailed, relatively stable geologic information in conjunction with the capabilities provided by remote sensing, the potential exists to sample current information continually for both short-term and long-term agricultural water demand forecasting. (Graf-Cornell)
W78-08031

RS78-3-328

THE TEN-ECOSYSTEM STUDY INVESTIGATION PLAN,
Lockheed Electronics Co., Inc., Houston, TX.
E. P. Kan.
Available from the National Technical Information Service, Springfield, VA 22161 as N77-11505, Price codes: A04 in paper copy, A01 in microfiche. Prepared for Earth Observations Division, Science and Applications Directorate, NASA, Report JSC-11533, September 1976, 53 p, 27 ref, 10 tab, 5 fig. NAS 9-12200.

Descriptors: *Remote sensing, *Ecosystems, *Terrain analysis, *Data processing, Forests, Grasslands, Water resources, Monitoring, Management, *Surveys, Mapping, Analysis, *Land satellites, Inland waters, Ground truth data.

NASA and the Forest Service, U.S. Department of Agriculture, have agreed to divide the continental United States into ten forest and grassland ecosystems in order to prepare for forest and grasslands renewable resources inventories using automatic data processing. The study is designed to identify problems and recommend solutions which are specific to individual sites or ecosystems. By studying the similarities and anomalies of the ten ecosystems, the study proposes to identify technical analysis problems and recommend solutions. These data are then to be used by the Forest Service in designing remote sensing methods for monitoring activities and opportunities for use of timber, range and water resources. The TES is designed to to play roles: to perform a type separability study to determine the range of possibilities and accuracies in mapping forest; grassland and inland-water details; and to conduct a simulated inventory study to determine how well remote sensing technology can extend limited ground truth for large area inventories. The former study will end with the determination of 'training signatures' of known features, the latter will be evaluated by comparing overall map and acreage accuracies to a prespecified amount of ground truth for the entire site. (Zayac-NC)
W78-07803

RS78-3-329

VEGETATION CHANGE IN THE SONORAN DESERT REGION, ARIZONA AND SONORA,
Forest Service, Fort Collins, CO; and Rocky Mountain Forest and Range Experiment Station, Flagstaff, AZ.
S. C. Martin, and R. M. Turner.
Journal of the Arizona Academy of Science, Vol 12, No 2, p 59-69, June, 1977. 7 fig, 19 ref.

Descriptors: Arizona, Mexico, Vegetation effects, Vegetation regrowth, *Desert plants, Plant populations, Environmental effects, Cacti, *Arid climates, Deserts, *Photography, Succession, Wildlife, Watershed management, Climatology, Rainfall

Six series of photographs recorded changing vegetation conditions in the Sonoran Desert of Arizona and Sonora, 1906-1975. Some of the vegetational changes noted were due to rainfall variability, including periods of droughts, or periods with above average rainfall. Suggested changes caused by man included: introduction of grazing, fires, poor watershed management, and removal of woody plants. Long-term studies of the relationship between rainfall and vegetation need to be undertaken, but such studies need protected study sites, free from human influence (Jewkes-Arizona)
W78-08370

RS78-3-330

SCHEDULING AND MONITORING IRRIGATION WITH INFRA-RED PHOTOGRAPHY,
Crop Protection, Inc., Umatilla, OR.
M. Pitney.
In Proceedings of the 1977 Annual Technical Conference, Irrigation for All Reasons, p 176-177, February 13-15, 1977.

Descriptors: *Scheduling, *Irrigation, Irrigation practices, Soil moisture, Soil water, *Infrared radiation, Crop production, Crop response, *Aerial infrared photography, Remote sensing, *Monitoring.

Aerial infra-red photography is being used in agriculture to identify plants which are under stress from disease, moisture and nutrients. By interpretation of the infra-red reflectance, as recorded on film, it is possible to distinguish between healthy and unhealthy foliage. The value of photography is in the early detection of the stressed plants. The photography also makes the application of corrective measures quick and efficient. (Skogerboe-Colorado State)
W78-09680

RS78-3-331

LARGE AREA CROP INVENTORY EXPERIMENT (LACIE): RESULTS OF LACIE DROUGHT ANALYSIS (SOUTH DAKOTA DROUGHT 1976),
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center.
D R Thompson.
Available from the National Technical Information Service, Springfield, VA 22161 as N77-27480, Price codes: A03 in paper copy, A01 in microfiche. September, 1976. 33 p, 22 fig, 1 tab.

Descriptors: *Remote sensing, *Droughts, *South Dakota, *Aereal hydrogeology, *Aerial sensing, *Satellites(Artificial), Mapping, Monitoring, Analytical techniques, *Large Area Crop Inventory Experiment, *LANDSAT, Crop Moisture Index, Green Index Number.

The second of three reports on the 1976 droughts in the US Great Plains summarizes the results of the Large Area Crop Inventory Experiment (LACIE) for drought in South Dakota; the LACIE analysis and monitoring techniques developed for the Southern Great Plains were used successfully during the South Dakota drought. LANDSAT full-frame images were used to outline and monitor the areal extent of the drought; this areal extent agreed with other sources indicating drought. A scheme using LANDSAT digital data was developed for identifying 5-x 6 nm segments as drought-affected or not affected; this scheme agreed with the available Crop Moisture Index data. The green index number (GIN) (using the Kauth transformation) was computed for all South Dakota segments and selected North Dakota segments; GIN also provides an aid to analyst interpreters in indicating changes that are occurring before these changes are detected on color infrared images. Detailed figures present data on drought affected areas and crop moisture indexes. (Seip-IPA)
W78-08021

RS78-3-332

ID NO.- EI780860826 860826
WHEAT YIELD FORECASTS USING LANDSAT DATA.
Colwell, John E.; Rice, Daniel P.; Nalepka, Richard F.
Environ Res Inst of Mich, Ann Arbor
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1245-1254 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), AGRICULTURAL ENGINEERING,
IDENTIFIERS: WHEAT YIELD FORECASTS, LANDSAT DATA
CARD ALERT: 716, 821
Many of the considerations of winter wheat yield prediction using Landsat data are discussed. In addition, a simple technique which permits direct early season forecasts of wheat production is described.

RS78-3-333

ID NO.- EI780860828 860828
COMPUTER-AIDED CLASSIFICATION FOR REMOTE SENSING IN AGRICULTURE AND FORESTRY IN NORTHERN ITALY.
Dejace, J.; Megier, J.; Mehl, W.
Jt Res Cent $EM DASH$ Ispra Establ, Italy
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1269-1278 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), IMAGE PROCESSING, AGRICULTURAL ENGINEERING, FORESTRY,
IDENTIFIERS: LANDSAT DATA, CROP INVENTORIES
CARD ALERT: 716, 723, 821
A set of results concerning the processing and analysis of data from LANDSAT satellite and airborne scanner is presented. The possibility of performing inventories of irrigated crops $EM DASH$ rice, planted groves, poplars, and natural forests in the mountains $EM DASH$ beeches and chestnuts, is investigated in the Po valley and in an alpine site. Accuracies around 95% or better, 70% and 60% respectively are achieved by using LANDSAT data and supervised classification. Discrimination of rice varieties isproved with 8 channels data from airborne scanner, processed after correction of the atmospheric effect due to the scanning angle, with and without linear feature selection of the data. The accuracies achieved range from 65% to more than 80%. The best results are obtained with the maximum likelihood classifier for normal parameters but rather close results are derived by using a modified version of the weighted euclidian distance between points, with consequent decrease in computing time around a factor 3.

RS78-3-334

ID NO.- EI780857678 857678
EFFECT OF SOIL WATER DEFICIT ON THE REFLECTANCE OF CONIFER SEEDLING CANOPIES.
Fox, L. III
Humboldt State Univ, Arcata, Calif
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 719-728 CODEN: PISEDM
DESCRIPTORS: (*FORESTRY, *Remote Sensing), (SOILS, Moisture), INFRARED IMAGING,
IDENTIFIERS: CANOPY REFLECTANCE
CARD ALERT: 821, 483, 741
The effects of soil water deficit on spruce and pine seedling canopy reflectance, needle reflectance and transmittance, and canopy density were measured in a greenhouse with a diffuse source of radiant flux. A potential for early or pre-visual detection of plant water stress was not supported by these measurements made at visible, and reflected infrared wavelengths to 1950 nm. Needles were found to transmit approximately thirty percent of the radiant flux incident on them at 780 nm, ten percent at 700 nm, and were found to be opaque at 450, 550, 600 and 650 nm.

RS78-3-335

ID NO.- EI780857673 857673
APPLICATION OF LANDSAT DIGITAL TECHNOLOGY TO FOREST FIRE FUEL TYPE MAPPING.
Kourtz, P. H.
Can For Serv, For Fire Res Inst, Ottawa, Ont
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1111-1115 CODEN: PISEDM
DESCRIPTORS: (*FORESTRY, *Fire Protection), (REMOTE SENSING, Environmental Applications), MAPS AND MAPPING, IMAGE PROCESSING.
CARD ALERT: 821, 716, 723
During the past several years, the Forest Fire Research Institute with assistance from the Canadian Centre for Remote Sensing, has examined the role of digital classification and enhancement methods for producing general forest cover classifications suitable as fuel maps. An enhancement technique was produced for an 8 million hectare fire control region showing water, muskeg, coniferous, deciduous and mixed stands, new clearcut logging, burned areas, regeneration areas, nonforested areas and large forest roads. Use of this map by fire control personnel has already demonstrated its usefulness for initial attack decision making. Recent work has dealt with temporal overlays and has shown the merits of this approach.

RS78-3-336

ID NO.- EI780860820 860820
EVALUATION OF SPECTRAL CHANNELS AND WAVELENGTH REGIONS FOR SEPARABILITY OF AGRICULTURAL COVER TYPES.
Kumar, R.
Inst de Pesqui Espec (INPE), Sao Jose dos Campos, Braz
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1081-1090 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), AGRICULTURAL ENGINEERING, PATTERN RECOGNITION SYSTEMS,
IDENTIFIERS: AGRICULTURAL COVER
CARD ALERT: 716, 741, 821
The paper reports on a study to evaluate the spectral channels as well as wavelength regions $EM DASH$ visible, near infrared, middle infrared and thermal infrared $EM DASH$ with respect to their estimated probability of correct classification (P//c) in discriminating agricultural cover types. Multispectral scanner data in twelve spectral channels in the wavelength range of 0.4 to 011.7 mu m acquired in the middle of July for three flightlines were analyzed by applying automatic pattern recognition techniques. The same analysis was performed for the data acquired in the middle of August, over the same three flightlines, to investigate the effect of time on the results. The effect of deletion of each spectral channel as well as each wavelength region on P//c is given. Values of P//c for all possible combinations of wavelength regions in the subsets of one to twelve spectral channels are also given. 13 refs.

RS78-3-337

ID NO.- EI780860833 860833
INVENTORY OF RICEFIELDS IN FRANCE USING LANDSAT AND AIRCRAFT DATA.
LeToan, T.; Cassirame, P.; Quach, J.; Marie, R.
Cent d'Etud Spat des Rayonnem, Toulouse, Fr
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1483-1495 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), AGRICULTURAL ENGINEERING, IMAGE PROCESSING,
IDENTIFIERS: CROP INVENTORY, LANDSAT DATA
CARD ALERT: 741, 742, 821, 716
The methodology for mapping ricefields in Southern France is developed, using 1975 LANDSAT 2 and aircraft data and taking into account the features of the fields.

RS78-3-338

ID NO.- EI780860832 860832
AIRBORNE MONITORING OF CROP CANOPY TEMPERATURES FOR IRRIGATION SCHEDULING AND YIELD PREDICTION.
Millard, John P.; Jackson, Ray D.; Goettelman, Robert C.; Reginato, Robert J.; Idso, Sherwood B.; LaPado, Richard L.
NASA/Ames Res Cent, Moffett Field, Calif
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1453-1461 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (IRRIGATION, Scheduling), (PHOTOGRAPHY, Infrared Radiation), TEMPERATURE MEASUREMENT,
IDENTIFIERS: CROP YIELD, CROP CANOPY TEMPERATURE
CARD ALERT: 741, 742, 821
Airborne and ground measurements were made on April 1 and 29, 1976, over a U. S. Department of Agriculture test site consisting mostly of wheat in various stages of water stress, but also including alfalfa and bare soil. These measurements were made to evaluate the feasibility of measuring crop temperatures from aircraft so that a parameter termed Sleft double quote$ stress degree day $right double quote$, SDD, could be computed. The aircraft measurement program required predawn and afternoon flights coincident with minimum and maximum crop temperatures. Airborne measurements were made with an infrared line scanner and with color IR photography. The scanner data were registered, subtracted, and color-coded to yield pseudo-colored temperature-difference images. Pseudo-colored images reading directly in daily SDD increments were also produced. 11 refs.

RS78-3-339

ID NO.- EI780858259 858259
LANDSAT DATA FROM AGRICULTURAL SITES: CROP SIGNATURE ANALYSIS.
Misra, P. N.; Wheeler, S. G.
IBM, Houston, Tex
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1473-1 82 CODEN: PISEDM
DESCRIPTORS: (*IMAGE PROCESSING, *Analysis), (REMOTE SENSING, Multispectral Scanners), AGRICULTURAL ENGINEERING,
IDENTIFIERS: CROP SIGNATURES, LANDSAT DATA
CARD ALERT: 741, 716, 821
The LANDSAT multispectral scanner (MSS) data have been analyzed with a view toward classification to identify wheat. The notion of spectral signature of a crop, a commonly used basis for classification, has been found to be inadequate. Data analysis has revealed that the MSS data from agricultural sites are essentially two dimensional, and that the data from different sites and different acquisitions lie on parallel planes in the four-dimensional feature space. These results have been exploited to gain new insight into the data and to develop alternate models for classification. In particular, it has been found that the temporal pattern of change in the spectral response of a crop constitutes its signature and provides a basis for crop classification.

RS78-3-340

ID NO.- EI780859960 859960
CROP CLASSIFICATION WITH LANDSAT MULTISPECTRAL SCANNER DATA.
Misra, Pratap N.; Wheeler, Stanley G.
IBM, Houston, Tex
Pattern Recogn v 10 n 1 1978 p 1-13 CODEN: PTNRA8
DESCRIPTORS: *PATTERN RECOGNITION SYSTEMS, (REMOTE SENSING, Multispectral Scanners), AGRICULTURAL ENGINEERING,
CARD ALERT: 723, 732, 802, 901
The LANDSAT multispectral scanner (MSS) data have been analyzed with a view toward classification to identify wheat. The notion of spectral signature of a crop, a commonly used basis for classification, has been found to be inadequate. Data analysis has revealed that the MSS data from agricultural sites are essentially two-dimensional, and that the data from different sites and different acquisitions lie on parallel planes in the four-dimensional feature space. These results have been exploited to gain new insight into the data and to develop alternate models for classification. In particular, it has been found that the temporal pattern of change in the spectral response of a crop constitutes its signature and provides a basis for crop classification. 11 refs.

RS78-3-341

ID NO.- EI780860798 860798
PROGRESS AND NEEDS IN AGRICULTURAL RESEARCH, DEVELOPMENT, AND APPLICATIONS PROGRAMS.
Moore, D. G.; Myers, V. I.
SD State Univ, Brookings
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 257-266 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (PHOTOGRAMMETRY, Agricultural Applications), AGRICULTURAL ENGINEERING.
CARD ALERT: 901, 821
The dynamic nature of agriculture requires repetitive resource assessments such as those from remote sensing. Until recently, the use of remote sensing in agriculture has been limited primarily to site specific investigations without large-scale evaluations. Examples of successful applications at various user levels are provided. This paper assesses the stage of development for applying remote sensing to many agricultural problems and suggests goals for planning future data characteristics for increased use in agriculture. Refs.

RS78-3-342

ID NO.- EI780857679 857679
PRE-VISUAL DETECTION OF STRESS IN PINE FORESTS.
Olson, Charles E. Jr.
Univ of Mich, Ann Arbor
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 933-944 CODEN: PISEDM
DESCRIPTORS: (*FORESTRY, *Remote Sensing), (REMOTE SENSING, Multispectral Scanners).
IDENTIFIERS: PINE BARK BEETLES
CARD ALERT: 821, 716, 742
This report summarizes a review of available information relating to pre-visual, or early, detection of forest stress with particular reference to detection of attacks by pine bark beetles. Available data indicate that early, or pre-visual detection is more likely with multispectral scanners (MSS) than with camera systems. Preliminary efforts to obtain early detection of attacks by pine bark beetles, using MSS data from the ERIM M-7 scanner, have not been sufficiently successful to demonstrate an operational capability, but indicate that joint processing of the 0. 71 to 0. 73, 2. 00 to 2. 60, and 9. 3 to 11. 7 mu m bands holds some promise. Ratio processing of transformed data from the 0. 45 to 0. 52, 1. 55 to 2. 60, and 4. 5 to 5. 5 or 9. 3 to 11. 7 mu m regions appears even more promising. Refs.

RS78-3-343

ID NO.- EI780857665 857665
FORESTLAND TYPE IDENTIFICATION AND ANALYSIS IN WESTERN MASSACHUSETTS: A LINKAGE OF A LANDSAT FOREST INVENTORY TO AN OPTIMIZATION STUDY.
Rafsnider, Giles T.; Rogers, Robert H.; Morse, Anthony
USDA For Serv, Upper Darby, Pa
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1497-1 05 CODEN: PISEDM
DESCRIPTORS: *FORESTRY, (REMOTE SENSING, Environmental Applications), IMAGE PROCESSING, MAPS AND MAPPING,
IDENTIFIERS: FOREST INVENTORIES, NATURAL RESOURCES MANAGEMENT, LANDSAT DATA
CARD ALERT: 821, 723
Digital land cover files derived from computer processing of LANDSAT and soil productivity data are linked and used by linear programming model to determine production of forested areas under different management strategies. Results of model include maps and data graphics for four-county region in western Massachusetts.

RS78-3-344

ID NO.- EI780857680 857680
INFLUENCE OF MULTISPECTRAL SCANNER SPATIAL RESOLUTION ON FOREST FEATURE CLASSIFICATION.
Sadowski, F. G.; Malila, W. A.; Sarno, J. E.; Nalepka, R. F.
Environ Res Inst of Mich, Ann Arbor
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1279-1288 CODEN: PISEDM
DESCRIPTORS: (*FORESTRY, *Remote Sensing), (REMOTE SENSING, Multispectral Scanners), IMAGE PROCESSING,
CARD ALERT: 821, 716, 723
Inappropriate spatial resolution and corresponding data processing techniques may be major causes for non-optimal forest classification results frequently achieved from multispectral scanner (MSS) data. This paper presents the procedures and results of empirical investigations to determine the influence of MSS spatial resolution on the classification of forest features into levels of detail or hierarchies of information that might be appropriate for nationwide forest surveys and detailed in-place inventories. Two somewhat different, but related studies are presented. The first consisted of establishing classification accuracies for several hierarchies of features as spatial resolution was progressively coarsened from (2 meters)**2 to (64 meters)**2. The second investigated the capabilities for specialized processing techniques to improve upon the results of conventional processing procedures for both coarse and fine resolution data.

RS78-3-345

ID NO.- EI780857676 857676
REMOTE SENSING AND TODAY'S FORESTRY ISSUES.
Sayn-Wittgenstein, L.
For Manage Inst, Dep of Fish & the Environ, Ottawa, Ont
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 267-276 CODEN: PISEDM
DESCRIPTORS: (*FORESTRY, *Remote Sensing), (REMOTE SENSING, Environmental Applications), (PHOTOGRAMMETRY, Forestry Applications).
CARD ALERT: 901, 821
The paper examines the actual and the desirable roles of remote sensing in dealing with current forestry issues, such as national forest policy, supply and demand for forest products and competing demands for forest land. A most critical problem in forestry is the developing shortage of wood. The developing supply crisis will put pressure on reforestation programs, and on the rehabilitation of naturally degraded or mismanaged lands. At the moment, the most promising approaches to the assessment of planting sites and reforestation success are through adaptations of traditional photogrammetry and photo interpretation; advances will have to be made. Forest protection continues as a critical area deserving more attention. Wood is also being considered as an additional source of energy and interest is increasing in producing fuels from wood. Other forestry issues involve concerns for the quality of life, conservation and envionmental protection. Refs.

RS78-3-346

ID NO.- EI780754367 854367
DOPPLER RADAR VELOCITY METER FOR AGRICULTURAL TRACTORS.
Stuchly, Stanislaw S.; Thansandote, Artnarong; Mladek, Josef ; Townsend, James S.
Univ of Ottawa, Ont
IEEE Trans Veh Technol v VT-27 n 1 Feb 1978 p 24-30 CODEN: ITVTAB
DESCRIPTORS: (*TRACTORS, *Agricultural), (SPEED INDICATORS, Analysis), (RADAR, Applications), MATHEMATICAL MODELS, DOPPLER EFFECT.
IDENTIFIERS: DOPPLER VELOCITY METER
CARD ALERT: 716, 663, 821, 943, 921
There exists a need for an accurate, noncontact, continuous, and instantaneous method of measuring the true ground speed and the total distance traveled of agricultural tractors operating in the field. A method based on the application of modern solid state microwave Doppler radar for monitoring the velocity of agricultural tractors is described. Analytical considerations and experimental results obtained during field tests on different field surfaces are presented. 17 refs.

RS78-3-347

ID NO.- EI780860815 860815
TWO PHASE SAMPLING FOR WHEAT ACREAGE ESTIMATION.
Thomas, Randall W.; Hay, Claire M.
Univ of Calif, Berkeley
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 909-918 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (IMAGE PROCESSING, Sampling), AGRICULTURAL ENGINEERING,
IDENTIFIERS: CROP SURVEYS, LANDSAT DATA, INTERPRETATION
CARD ALERT: 716, 741, 821
A two phase Landsat-based sample allocation and wheat proportion estimation method was developed. This technique employs manual, Landsat full frame-based wheat or cultivated land proportion estimates from a large number of segments comprising a first sample phase to optimally allocate a smaller phase two sample of computer or manually processed segments. Application to the Kansas Southwest Crop Reporting District (CRD) for 1974 produced a wheat acreage estimate for that CRD within 2. 42 percent of the USDA SRS-based estimate using a lower CRD inventory budget than for a simulated reference Large Area Crop Inventory Experiment system. Factor of 2 or greater cost or precision improvements relative to the reference system were obtained.

RS78-3-348

ID NO.- EI780860816 860816
USE OF LANDSAT DIGITAL DATA TO DETECT AND MONITOR VEGETATION WATER DEFICIENCIES.
Thompson, D. R.; Wehmanen, O. A.
NASA, Lyndon B. Johnson Space Cent, Houston, Tex
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 925-931 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), AGRICULTURAL ENGINEERING, MOISTURE DETERMINATION,
IDENTIFIERS: LANDSAT DIGITAL DATA, VEGETATION MOISTURE STRESS
CARD ALERT: 716, 821
In the Large Area Crop Inventory Experiment a technique was devised using a vector transformation of Landsat digital data to indicate when vegetation is undergoing moisture stress. A relation was established between the remote-sensing-based criterion (the Green Index Number) and a ground-based criterion (Crop Moisture Index).

RS78-3-349

ID NO.- EI780857677 857677
USE OF MULTISPECTRAL DATA IN DESIGN OF FOREST SAMPLE SURVEYS.
Titus, Stephen J.; Wensel, Lee C.
Univ of Calif, Berkeley
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 505-513 CODEN: PISEDM
DESCRIPTORS: (*FORESTRY, *Remote Sensing), (COMPUTERS, Applications), (REMOTE SENSING, Multispectral Scanners),
CARD ALERT: 821, 716, 723
The use of multispectral data in design of forest sample surveys using a computer software package, WILLIAM, is described. The system allows evaluation of a number of alternative sampling systems and, with appropriate cost data, estimates the implementation cost for each. Refs.

RS78-3-350

Application of Remote Sensing Technology in South Dakota to Assess Wildlife Habitat Change, Describe Meandering Lakes, Improve Agricultural Censusing, Map Aspen, and Quantify Cell Selection Criteria for Spatial Data

South Dakota State Univ., Brookings. Remote Sensing Inst.*National Aeronautics and Space Administration, Washington, D.C. Office of Univ. Affairs.

Semiannual progress rept. 1 Jul-31 Dec 77
AUTHOR: Best, R. G.; Dalsted, K. J.; Eidenshink, J. C.; Schmer, F. A.; Wehde, M. E.
E0583I3 Fld: 93B d7807
1977 81p
Rept No: SDSU-RSI-77-17
Grant: NGL-42-003-007
Monitor: NASA-CR-155514
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: No abstract available. (Color illustrations reproduced in black and white).

South Dakota, Lakes, Wildlife, Habitats, Agriculture, Trees(Plants), Water management, Black Hills(SD-WY), Earth Resources program, Mapping, Spatial distribution

Identifiers: NTISNASA

E78-10053 NTIS Prices: PC A05/MF A01

RS78-3-351

Nationwide Forestry Applications Program. Ten-Ecosystem Study (TES) Site I, Grand County, Colorado

Lockheed Electronics Co., Inc., Houston, Tex. Systems and Services Div.*National Aeronautics and Space Administration, Houston, Tex. Lyndon B. Johnson Space Center.

Final rept.
AUTHOR: Dillman, R. D.
E0884H1 Fld: 93B d7810
Aug 77 54p
Rept No: LEC-10691
Contract: NAS9-15200
Monitor: NASA-CR-151 988
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: No abstract available.

Colorado, Ecosystems, Grasslands, Forests, Skylab program, EREP, Mapping, Seasons

Identifiers: NTISNASA, NTISAGFS

E78-10061 NTIS Prices: PC A04/MF A01

RS78-3-352

Agricultural Scene Understanding

Purdue Univ., Lafayette, Ind. Lab. for Applications of Remote Sensing.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept.
AUTHOR: Landgrebe, D. A.; Bauer, Marvin E.; Silva, Leroy; Hoffer, Roger M.; Baumgardner, Marion F.
E0583H3 Fld: 2C, 93A, 98 GRAI7807
Nov 77 186p
Rept No: LARS-112677
Contract: NAS9-14970
Monitor: NASA-CR-155343
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. The LACIE field measurement data were radiometrically calibrated. Calibration enabled valid comparisons of measurements from different dates, sensors, and/or locations. Thermal band canopy results included: (1) Wind velocity had a significant influence on the overhead radiance temperature and the effect was quantized. Biomass and soil temperatures, temperature gradient, and canopy geometry were altered. (2) Temperature gradient was a function of wind velocity. (3) Temperature gradient of the wheat canopy was relatively constant during the day. (4) The laser technique provided good quality geometric characterization.

Descriptors: *Agriculture, Large area crop inventory experiment, Soils, Forests, Wheat, Timber inventory, Skylab program, EREP, Data storage, Information retrieval, Reflectance, Cost effectiveness

Identifiers: NTISNASA

E78-10043 NTIS Prices: PC A09/MF A01

RS78-3-353

Investigations of Spectral Separability of Small Grains, Early Season Wheat Detection, and Multicrop Inventory Planning

Environmental Research Inst. of Michigan, Ann Arbor.*National Aeronautics and Space Administration, Houston, Tex. Lyndon B. Johnson Space Center. (408 259)

Final technical rept. 15 May 76-14 Nov 77
AUTHOR: Malila, William A.; Gleason, James M.; Nalepka, Richard F.
E0485J2 Fld: 2C, 93A, 98G GRAI7806
Nov 77 86p
Rept No: ERIM-122700-34-F
Contract: NAS9-14988
Monitor: NASA-CR-151553

Abstract: The author has identified the following significant results. LANDSAT data from seven 5 by 6 segments having crop type information were analyzed to determine the potential for spectral separation of spring wheat from other small grains as an alternative to the primary LACIE procedure for estimating spring wheat acerage. Within segment field-center, classification accuracies for spring wheat vs. barley tended to be best in mid-July when crop color changes were in progress. When correlations were made for differences in atmospheric haze, data from several segments could be aggregated, and results that approached within segment accuracies were obtained for selected dates. LACIE field measurement spectral reflectance data provided information on both wheat development patterns and the importance of various agronomic factors on wheat reflectance, the most important being availability of soil moisture. To investigate early season detection for winter wheat, reflectance of developing wheat patterns were simulated through reflectance modeling and were analyzed along with field measured reflectance from a Kansas site. The green component development of the wheat field was analyzed as a function of date throughout the season. A selected threshold was not crossed by all fields until mid-April. These reflectance data were shown to be consistent with actual LANDSAT data.

Descriptors: *Wheat, *Crop growth, *Crop identification, Large area crop inventory experiment, Planting, Soil moisture, Soil erosion, Barley, Nitrogen, Kansas, North Dakota, Earth resources program, Multispectral band scanners, Thematic mapping

Identifiers: *Farm crops, NTISNASA

E78-10015 NTIS Prices: PC A05/MF A01

RS78-3-354

Investigation of Techniques for Inventorying Forested Regions. Volume 2. Forestry Information System Requirements and Joint Use of Remotely Sensed and Ancillary Data

Environmental Research Inst. of Michigan, Ann Arbor. Infrared and Optics Div.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept. 14 May 76-14 Nov 77
AUTHOR: Nalepka, Richard F.; Cicone, Richard C.; Malila, William A.; Crist, Eric P.
E0491A2 Fld: 2F, 93A, 48D, 98G GRAI7806
Nov 77 145p
Rept No: ERIM-122700-35-F2-Vol-2
Contract: NAS9-14988
Monitor: NASA-CR-151575
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. Effects of terrain topography in mountainous forested regions on LANDSAT signals and classifier training were found to be significant. The aspect of sloping terrain relative to the sun's azimuth was the major cause of variability. A relative insolation factor could be defined which, in a single variable, represents the joint effects of slope and aspect and solar geometry on irradiance. Forest canopy reflectances were bound, both through simulation, and empirically, to have nondiffuse reflectance characteristics. Training procedures could be improved by stratifying in the space of ancillary variables and training in each stratum. Application of the Tasselled-Cap transformation for LANDSAT data acquired over forested terrain could provide a viable technique for data compression and convenient physical interpretations.

Descriptors: *Timber inventory, *Forests, Information systems, Topography, Rangelands, Skylab program, EREP, Classifications, Data bases

Identifiers: Forest land, Forest trees, NTISNASA

E78-10047 NTIS Prices: PC A07/MF A01

RS78-3-355

Procedure B: A Multisegment Training Selection and Proportion Estimation Procedure for Processing LANDSAT Agricultural Data

Environmental Research Inst. of Michigan, Ann Arbor. Infrared and Optics Div.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept. 15 May 7 -14 Nov 77
AUTHOR: Nalepka, Richard F.; Kauth, R. J.; Richardson, W.
E0485L4 Fld: 93B d7806
Nov 77 145p
Rept No: ERIM-122700-31-F
Contract: NAS9-14988
Monitor: NASA-CR-151 76
Original contains imagery. Original photography may be purchased from the EROS Data Center Sioux Falls, S.D.

Abstract: No abstract available.

Agriculture, Pattern recognition, Crop identification, Haze, Skylab program, EREP, Spectral signatures, Atmospherics, Multispectral band scanners

Identifiers: NTISNASA

E78-10039 NTIS Prices: PC A07/MF A01

RS78-3-356

Investigation of Techniques for Inventory Forested Regions. Volume 1. Reflectance Modeling and Empirical Multispectral Analysis of Forest Canopy Components

Environmental Research Inst. of Michigan, Ann Arbor.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept. 15 May 7 -14 Nov 77
AUTHOR: Nalepka, Richard F.; Sadowski, F. G.; Malila, W. A.
E0583I2 Fld: 2F, 93A, 48D GRAI7807
Nov 77 83p
Rept No: ERIM-122700-35-F1-Vol-1
Contract: NAS9-14988
Monitor: NASA-CR-151 61
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. Effects of vegetation density on overall canopy reflectance differed dramatically, depending on spectral band, base material, and vegetation type. For example, reflectance changes caused by variations in vegetation density were hardly apparent for a simulated burned surface in LANDSAT band 5, while large changes occurred in band 7. When increasing densities of tree overstory were placed over understories, intermediate to dense overstories effectively masked the understories and dominated the spectral signatures. Dramatic changes in reflectance occurred for canopies placed on a number of varying topographic positions. Such changes were seen to result in the spectral overlap of some nonforested with densely forested situations.

Descriptors: *Timber inventory, Reflectance, Multispectral band scanners, Forests, Vegetation, Rangelands, EREP, Skylab program, Spectral signatures

Identifiers: *Forestry, NTISNASA

E78-10046 NTIS Prices: PC A05/MF A01

RS78-3-357

Nationwide Forestry Applications Program. Ten-Ecosystem Study (TES) Site II, Warren County, Pennsylvania, Site Evaluation

Lockheed Electronics Co., Inc., Houston, Tex. Systems and Services Div.*National Aeronautics and Space Administration, Houston, Tex. Lyndon B. Johnson Space Center.

Final rept.
AUTHOR: Reeves, C. A.
E0884G4 Fld: 8F, 93A GRAI7810
Nov 77 63p
Rept No: LEC-10565
Contract: NAS9-15200
Monitor: NASA-CR-151597
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. It was determined that hardwood in Warren County, Pennsylvania could best be inventoried in May. The acreage estimate was less than 3% different from Forest Service estimates.

Descriptors: *Pennsylvania, *Ecosystems, Timber inventory, Grasslands, Skylab program, EREP, Statistical analysis

Identifiers: Remote sensing, Forestry, Grassland, Inland waterways, Warren County(Pennsylvania), NTISNASA, NTISAGFS

E78-10060 NTIS Prices: PC A04/MF A01

RS78-3-358

Forest Damage Assessment System (FORDAS) Study

Calspan Corp., Buffalo, N.Y.*Northeastern Forest Experiment Station, Upper Darby, Pa.

Final rept.
AUTHOR: Walker, J. E.; Gallagher, T. W.; Schatt, J.
E0613D1 Fld: 2F, 14E, 48D, 82B GRAI7807
Mar 77 57p
Rept No: NEFES/78-1
Contract: USDA/FS-23-796
Monitor: NEFES-78-1

Abstract: This report concludes the second year of research to identify a means of improving present operational techniques for large-area forest damage assessment. Present operational assessment techniques are based on visual observation. Photometric interpretation was applied to CIR high altitude film (1:80,000) and Landsat imagery to map gypsy moth defoliation in northeastern and central Pennsylvania in 1975 and 1976. The resulting maps of defoliation patterns and intensity compare favorably with aerial sketch maps. Sunspot location on the film was found to influence the reflectance measurements. Correction procedures were developed to correct for this format dependent problem. Temporal comparisons of infestation change and movement are demonstrated using Landsat scenes. Landsat CCT's were used to generate a digital defoliation map of the 1975 study area. Estimated cost for this type of mapping is $0.50/1,000 acres. Cost reductions are believed possible. Comparisons are made with other methods.

Descriptors: *Defoliation, *Forest trees, Remote sensing, Infrared mapping, Damage assessment, Maps, Photointerpretation, Lepidoptera, Cost estimates, Spaceborne photography, Sites, Estimates, Color film, Infrared film, Aerial photography, Pennsylvania

Identifiers: *Gypsy moths, LANDSAT satellites, FORDAS study, NTISAGFSNE

PB-276 114/6ST NTIS Prices: PC A04/MF A01

RS78-3-359

Forest Land Management by Satellite: LANDSAT-Derived Information as Input to a Forest Inventory System

Weyerhauser Co., Tacoma. Wash.*NASA Earth Resources Survey Program. Washington. D.C.
AUTHOR: Williams. Darrel L.; Haver, Gerald F.
E0583H1 Fld: 2F. 93A. 48D GRAI7807
Dec 76 44p
Monitor: NASA-CR-155259
Original contains color imagery. Original photography may be purchased from the EROS Data Center. Sioux Falls. S.D.

Abstract: The author has identified the following significant results. Analysis of LANDSAT temporal data. specifically the digitally merged winter and summer scenes. provided the best overall classification results. Comparison of temporal classification results with available ground truth revealed a 94% agreement in the delineation of hardwood categories. a 96% agreement for the combined pine category. and a greater than 50% agreement for each individual pine subcategory. For nearly 1000 acres. compared clearcut acreage estimated with LANDSAT digital data differed from company inventory records by only 3%. Through analysis of summer data. pine stands were successfully classified into subcategories based upon the extent of crown closure. Maximum spectral separability of hardwood and pine stands was obtained from the analysis of winter data. (Color illustrations reproduced in black and white)

Descriptors: *North Carolina. *Land management. Coasts. Forests. Timber inventory. Ground truth. Earth Resources program. Photointerpretation. Multispectral band scanners

Identifiers: Forestry. *Forest land. Land use. Forest trees. NTISNASA

E78-10038 NTIS Prices: PC A03/MF A01

RS78-3-360

0129088 78-003982
FORESTRY APPLICATIONS OF NASA REMOTE SENSING PROGRAMS.
DESTEIGUER J. E.
TEXAS A&M UNIV.
J FORESTRY. APR 78. V76. N4. P208 (4)
TECHNICAL FEATURE: THREE EXPERIMENTAL REMOTE SENSING EFFORTS STARTED BY NASA IN THE MID-1960'S ARE DISCUSSED: LANDSAT. SKYLAB. AND THE EARTH RESOURCES SURVEY PROGRAM. THE GREATEST UTILITY OF LANDSAT DATA IS FOR THE SEPARATION OF FOREST FROM NONFOREST LAND ON A REGIONAL BASIS. SKYLAB CAN BE USED TO CLASSIFY GENERAL FOREST VEGETATION TYPES. AIRCRAFT PHOTOGRAPHY FROM THE EARTH RESOURCES SURVEY PROGRAM OFTEN PROVIDES AS MUCH DETAIL AS LARGER-SCALE PHOTOGRAPHY. SPACE SHUTTLE IS A NEW PROGRAM TO PROVIDE REMOTELY SENSED DATA THAT MAY HELP IN FOREST MANAGEMENT. (7 PHOTOS. 14 REFERENCES)
DESCRIPTORS: *FOREST MANAGEMENT ; *REMOTE SENSING ; *U S NATL AERO SPACE ADMIN ; *LANDSAT
REVIEW CLASSIFICATION: 15

RS78-3-361

0128995 78-003889
ESTIMATING AGRICULTURAL PRODUCTION BY THE USE OF SATELLITE INFORMATION: AN EXPERIMENT WITH LAOTIAN DATA.
HOOLEY, RICHARD ·; HOFFER ROGER; MORAIN STANLEY
UNIV OF PITTSBURGH.
AMERICAN J AGRICULTURAL ECONOMICS, NOV 77, V59, N4, P722 (6)
RESEARCH REPORT: ACCURATE ESTIMATES OF CULTIVATED AREA ARE IMPORTANT IN MEASURING LONG-TERM CHANGES IN CROP PRODUCTION. AN EXPERIMENT WAS INITIATED TO INVESTIGATE THE FEASIBILITY OF USING SATELLITE DATA FOR THE MEASUREMENT OF CROP AREA. THE STUDY MADE USE OF AVAILABLE DATA FOR LAOS. THE APPLICATION OF SATELLITE SENSING TECHNIQUES TO LAOS IS DISCUSSED. EXPERIMENTAL METHODOLOGY IS DESCRIBED. RESULTS INDICATE THAT ESTIMATES OF THE FLOOD PLAIN PROVINCES WERE SIMILAR TO GROUND ESTIMATES. ESTIMATES CONSISTENTLY FELL SHORT OF GROUND ESTIMATES IN MAINLAND REGIONS. RESULTS DEMONSTRATE THE USEFULNESS OF LANDSAT IMAGERY AS A SOURCE OF DATA FOR ESTIMATING CULTIVATED AREA. FURTHER RESEARCH SHOULD BE DONE IN THIS FIELD. (11 REFERENCES, 1 TABLE)
DESCRIPTORS: *LAOS ; *AGRICULTURAL LAND ; *LANDSAT ; FOOD CROPS ; FLOOD PLAINS
REVIEW CLASSIFICATION: 09

Section 4

MARINE SCIENCES

Sea-surface, Estuarine and Nearshore Studies

RS78-4-312

7810094427 EDB-78-13 02.030
CRUISE 48 OF THE GLOMAR CHALLENGER FROM BREST TO ABERDEEN/
REV.INST.FR.PET.ANN.COMBUST.LIQUIDES/32/4/JUL-AUG 1977/
549-560/
FRENCH WITH ENGLISH ABSTRACT/
FR/
FR/
RIFPA/
ERA-03:046617/EDB-78:094427/
CRUISE 48 BY THE GLOMAR CHALLENGER TOOK PLACE IN 1976,BETWEN BREST AND ABERDEEN,ON THE NORTHERN MARGIN OF THE BAY OF BISCAY AND THE ROCKALL BANK.THE SEVEN DRILLING SITES MADE,IT IS POSSIBLE TO COMPARE THE STRUCTURE AND THE GEOLOGICAL HISTORY OF TWO DIFFERENT TYPES OF MARGINS,BOTH FORMED BY RIFTING,ONE IN AN EPICONTINENTAL SEA AND THE OTHER IN A CRATON. THE HISTORY OF SUBSIDENCE WAS DETERMINED.BLACK SHALES RICH IN ORGANIC MATTER OF DETRITAL ORIGIN WERE FOUND IN THE BAY OF BISCAY. THEY MAY HAVE BEEN DEPOSITED EITHER IN DEEP WATER OR ON THE CONTINENTAL SHELF.SUCCESSFUL PALEOMAGNETISM AND HEAT FLOW MEASUREMENTS WERE MADE,ALONG WITH WELL LOGGING./
02.0300/58.0100/
CONTINENTAL SHELF / DIAGRAMS / EXPLORATION: 01/GEOLOGY/MAGNETIC FIELDS/OFFSHORE PLATFORMS:T3/OFFSHORE SITES/PETROLEUM DEPOSITS:T1/PROSPECTING/SHALES/SHIPS:T2/WELL DRILLING:02.03/WELL LOGGING/

RS78-4-313

78C0070608 EDB-78-13 52.010
CONF-7510172--P2/
CURRENT STATUS AND QUALITY OF GLOBAL OPERATIONAL SEA SURFACE TEMPERATURES FROM SATELLITE INFRARED DATA/
BROWER,R.L./PICHEL,W.G./WALTON,C.C./SIGNORE,T.L./
NATIONAL ENVIRONMENTAL SATELLITE SERVICE,SUITLAND,MD/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:016013/EDB-78:070608/
THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS) HAS DEVELOPED A SEA SURFACE TEMPERATURE OBSERVATORY SYSTEM TO SUPPORT THE OPERATIONAL, RESEARCH AND DEVELOPMENT NEEDS OF OCEANOGRAPHERS AND ENVIRONMENTAL SCIENTISTS. THE PROGRAM PROVIDES DAILY GLOBAL SURVEILLANCE OF THE OCEAN'S SURFACE TEMPERATURE STRUCTURE.SEA SURFACE TEMPERATURE VALUES ARE DERIVED FROM SCANNING RADIOMETER INFRARED DATA FROM THE NOAA SERIES OF POLAR ORBITING SATELLITES.THE TECHNIQUE USED TO OBTAIN THESE TEMPERATURES IS THE FULLY AUTOMATED COMPUTER PROCEDURE GOSSTCOMP (GLOBAL OPERATIONAL SEA SURFACE TEMPERATURE COMPUTATION). SURFACE TEMPERATURE RETRIEVALS ARE DERIVED BY STATISTICAL ANALYSIS AND QUALITY CONTROL TECHNIQUES APPLIED TO INSTRUMENT MEASUREMENTS WITHIN ROUGHLY 100 KM SQUARE AREAS.RETRIEVAL TEMPERATURES ARE CORRECTED FOR THE EFFECTS OF ATMOSPHERIC ATTENUATION BY USING TIME COINCIDENT MEASUREMENTS DERIVED FROM A VERTICAL TEMPERATURE PROFILE RADIOMETER (VTPR).THE BASIC PRODUCT OBTAINED FROM THE MODEL IS A DAILY SET OF 5,000 TO 7,000 OBSERVATIONS OF SEA SURFACE TEMPERATURE OVER THE OCEANS OF BOTH HEMISPHERES. THE GOSSTCOMP PROCEDURE HAS PRODUCED A HIGH LEVEL OF DEPENDABILITY FOR PRODUCT DELIVERY.DURING THE PERIOD JULY 1974--JUNE 1975 AN OPERATIONAL SUCCESS RATE OF 97 PERCENT WAS MAINTAINED.DURING THAT PERIOD 1,861,183 OBSERVATIONS WERE PRODUCED WITH A GLOBAL DAILY MEAN DIFFERENCE FROM SHIP REPORTS RANGING FROM --. 92 / SUP 0/C TO +.39/SLP 0/C.PROCEDURES USED TO OBTAIN SEA SURFACE TEMPERATURES ARE CONSTANTLY BEING IMPROVED AS ADVANCES ARE MADE IN RETRIEVAL,ATMOSPHERIC ATTENUATION,AND QUALITY CONTROL TECHNIQUES.A MAJOR IMPROVEMENT IN THE ACCURACY OF GOSSTCOMP PRODUCED SEA SURFACE TEMPERATURES IS EXPECTED IN 1978 WITH THE NEXT GENERATION OF POLAR ORBITING SATELLITES,THE TIROS-N SERIES./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
COMPUTERS /DATA COMPILATION/MONITORING/OCEANOGRAPHY/RADIOMETERS/REMOTE SENSING/SATELLITES/SEAS:T1/STATISTICS/SURFACES/TEMPERATURE MEASUREMENT:01/

RS78-4-314

78C00700600 EDB-78-13 52.010
CONF-7510172--P2/
REMOTE SENSING TECHNIQUES APPLIED TO THE STUDY OF FRESH WATER SPRINGS IN COASTAL AREAS OF SOUTHERN ITALY/
GUGLIELMINETTI,M./IOLTRI,R./MARINO,C.M./
PROTECNECO S.P.A.,S.LORENZO IN CAMPO,ITALY/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
IT/
US/
ERA-03:036005/EDB-78:070600/
IN SEPTEMBER 1974, A LARGE PROJECT OF REMOTE SENSING APPLICATIONS WAS STARTED IN ITALY WITH THE PARTICIPATION OF PRIVATE AND PUBLIC AGENCIES. THE AIM OF THE PROJECT WAS THE MAPPING OF FRESH WATER SPRINGS ALONG THE COAST OF PUGLIA (SOUTHERN ITALY). ALTHOUGH AFFECTED BY PROBLEMS OF WATER SUPPLY, THIS REGION DISCHARGES A LARGE AMOUNT OF FRESH WATER INTO ADRIATIC SEA, MAINLY BY MEANS OF KARSTIC CIRCULATION. A CERTAIN NUMBER OF SUBMARINE SPRINGS WAS HISTORICALLY KNOWN BUT NO ATTEMPT HAS EVER BEEN MADE BEFORE IN ORDER TO HAVE A COMPLETE UNDERSTANDING OF THIS PHENOMENON. THE WORK INVOLVED MORE THAN 600 MILES OF R.S. FLIGHTS UTILIZING BOTH THERMAL I.R. AND MULTISPECTRAL TECHNIQUES. A DUAL CHANNEL I.R. THERMAL SCANNER AND A CLUSTER OF FOUR EL/70 HASSELBLAD (40 MM OBJECTIVE) WERE EMPLOYED TO DETECT BOTH THERMAL CONTRAST AT SEA SURFACE AND DIFFERENCE IN LIGHT PENETRATION IN SEA WATER DUE TO FRESH WATER UPWELLING. THE THERMAL CHANNELS UTILIZED WERE 4.5--5.5 AND 9-11 MUM (DAEDA_US 1230)/THE FILM FILTERS COMBINATION WERE TRIX-W 47,TRIX-W 58,KODAK 2445-HF4,FALSE COLOUR I.R. WAS ALSO USED COUPLED WITH W 15 IN ORDER TO HAVE A MORE DETAILED AND COMPLETE KNOWLEDGE OF THE LAND USE ALONG THE COASTAL AREA./

10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI.USA/
6 OCT 1975/
52.0100/
AIRCRAFT/COASTAL REGIONS/DATA COMPILATION/FRESH WATER:T1/GEOLOGY/ITALY:T2/REMOTE SENSING:Q1/TEMPERATURE MEASUREMENT:Q1/TOPOLOGICAL MAPPING:Q2/USES/

RS78-4-315

78C00705765 EDB-78-14 52.010
CONF-7510172--P1/
BIOLOGICAL AND PHYSICAL OCEANOGRAPHIC REMOTE SENSING STUDY ABOARD THE CALYPSO/
HARLAN,J.C.(TEXAS A AND M UNIV.,COLLEGE STATION)/HILL,J.N./EL-BEHEIM,H.A./BOHN,C./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:036056/EDB-78:075765/
A MULTI-AGENCY OCEANOGRAPHIC REMOTE SENSING PROGRAM WAS CONDUCTED IN THE GULF OF MEXICO AND THE CARIBBEAN SEA BETWEEN NOVEMBER 1974 AND FEBRUARY 1975 ABOARD THE R/V CALYPSO. REMOTE SENSORS ON SATELLITES AND ON AIRCRAFT WERE USED AS OPERATIONS AND EXPERIMENT PLANNING TOOLS AS WELL AS FOR SCIENTIFIC DATA ACQUISITION. THE EXPERIMENTS WERE DESIGNED TO PROVIDE BASIC INFORMATION FOR CORRELATING OCEAN MEASUREMENTS WITH REMOTELY SENSED OBSERVATIONS. THE CRUISE WAS CONDUCTED IN THREE LEGS. THREE STATIONS OF LEG I (FROM KEY WEST,FLORIDA TO PENSACOLA,FLORIDA) WERE OVERFLOWN BY NASA'S U-2 AIRCRAFT WHICH CARRIED THE 10 CHANNEL PROTOTYPE MODEL (OCS). PRELIMINARY ANALYSIS OF DIGITAL DATA FROM ONE U-2 OVERFLIGHT HAS BEEN COMPLETED. REASONABLE CORRELATION WAS FOUND BETWEEN IN SITU CHLOROPHYLL MEASUREMENTS OVER THE SAMPLING GRID AND THE RATIO OF THE RED AND GREEN OCS BAND DATA EVEN THOUGH LOW GRADIENTS OF CHLOROPHYLL WERE MEASURED. LEG II CONSISTED OF AN INVESTIGATION OF THE EFFECT OF THE MISSISSIPPI RIVER ON THE HYDROLOGY, CHEMISTRY, AND BIOLOGY OF THE GULF OF MEXICO. ERTS DATA, PROCESSED AND INTERPRETED BY GSFC WAS SENT TO THE CALYPSO VIA ATS LINK WITHIN A 24 TO 72 HOUR PERIOD AFTER ACQUISITION AND USED IN PLANNING THE LEG II MEASUREMENTS. THE PROGRAM WAS EXTREMELY USEFUL IN THE LOCATION OF DIFFERENT WATER MASSES FOR THE TESTING OF VARIOUS ONBOARD AND SATELLITE-BORNE SENSORS. THE WEATHER IMAGES WERE ALSO STUDIED TO HELP IN THE PREDICTION OF AN ANNUAL LOBSTER MIGRATION THAT CAPTAIN COUSTEAU HOPED TO FILM. SCIENTIFIC DATA AND PROPOSED CRUISE TRACKS AS WELL AS COORDINATING INFORMATION WERE TRANSMITTED BETWEEN NASA AND THE CALYPSO THROUGH THE ATS SATELLITE SYSTEM. THE MULTI-AGENCY RESEARCH PROGRAM ONBOARD THE R/V CALYPSO EFFECTIVELY DEMONSTRATED HOW SATELLITE AND AIRCRAFT IMAGERY AS WELL AS SATELLITE COMMUNICATIONS CAN SUPPORT AND ENHANCE THE STUDY OF THE OCEANS./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI.USA/
6 OCT 1975/
52.0100/58.0500/
AIRCRAFT /CARIBBEAN SEA:T3/DATA ACQUISITION:Q2/GULF OF MEXICO:T4/MEASURING INSTRUMENTS/OCEANOGRAPHY:T2/REMOTE SENSING:Q3,Q4/SATELLITES/SHIPS/

RS78-4-316

78J0005083 EDB-78-01 01.010
SHALLOW CARBONATE-BANK-MARGIN GROWTH AND STRUCTURE,LITTLE BAHAMA BANK,BAHAMAS/
HINE,A.C./NEUMANN,A.C./

(UNIV OF NC,CHAPEL HILL)
AM.ASSOC.PET.GEOL.BULL./10/3/MAR 1977/
376-400/
EXTENSIVE HIGH-RESOLUTION SEISMIC PROFILING AND BOTTOM SAMPLING OF THE SHALLOW NORTHERN MARGIN OF LITTLE BAHAMA BANK HAVE REVEALED A COMPLEXITY AND DIVERSITY IN STRUCTURE,FACIES,AND GROWTH HISTORY THAT CANNOT BE ENCOMPASSED WITHIN ANY SINGLE MODEL. CORES, AERIAL PHOTOGRAPHS, LANDSAT IMAGERY,AND SCUBA DIVING OBSERVATIONS PROVIDED SUPPLEMENTAL DATA.FIVE BANK-MARGIN TYPES HAVE BEEN IDENTIFIED.THE DOMINANT PROCESSES RESPONSIBLE FOR THE VARIABILITY OF THESE BANK-MARGIN TYPES ARE DISCUSSED.67 REFS./

RS78-4-317

78C0093371 EDB-78-16 02.090
AERIAL PHOTOGRAPHIC APPLICATIONS IN SUPPORT OF OIL SPILL CLEANUP,CONTROL,AND PREVENTION/
JONES,D.(ENVIRONMENTAL PROTECTION AGENCY,WASHINGTON,DC)/LANDERS,R./PRESSMAN,A./
AMERICAN PETROLEUM INSTITUTE/WASHINGTON,DC/1977/
PROCEEDINGS OF THE 1977 OIL SPILL CONFERENCE (PREVENTION,BEHAVIOR,CONTROL,CLEANUP)/
LUDWIGSON,J.O.(ED.)/
US/
US/
ERA-03:026819/EDB-78:093371/
FOR SEVERAL YEARS THE ENVIRONMENTAL PROTECTION AGENCY AND EPA CONTRACTOR AIRCRAFT HAVE CARRIED OUT AERIAL PHOTOGRAPHIC MISSIONS,MAPPING THE AREAL EXTENT OF AND SHORELINE CONTAMINATION FROM MAJOR OIL SPILLS IN SUPPORT OF CLEANUP AND CONTROL OPERATIONS AND ENVIRONMENTAL DAMAGE ASSESSMENT. IN 1975, EPA BEGAN A PROGRAM OF AERIAL PHOTOGRAPHIC OVERFLIGHTS OF SELECTED ONSHORE OIL PRODUCTION, STORAGE AND PROCESSING FACILITIES TO SUPPORT THE COMPLIANCE MONITORING OF EPA'S OIL POLLUTION PREVENTION REGULATION.THIS PAPER DESCRIBES THE AERIAL MAPPING PROGRAM AND ALSO DISCUSSES SPECIFIC APPLICATIONS OF AERIAL PHOTOGRAPHY TO OIL POLLUTION PREVENTION,COMPLIANCE MONITORING./
SEE CONF-770325--/
OIL SPILL CONFERENCE/
NEW ORLEANS,LA,USA/
8 MAR 1977/
02.0900/52.0200/29.0300/
AERIAL MONITORING:01/AIRCRAFT/CLEANING/CONTROL/MANAGEMENT/MAPS/OIL SPILLS:T1/PHOTOGRAPHY:T/POLLUTION/SHORES/US EPA/

RS78-4-318

78C0048782 EDB-78-09 02.090
FLIGHT EVALUATION OF U.S.COAST GUARD AIRBORNE OIL SURVEILLANCE SYSTEM/
MAURER,A.(COAST GUARD,WASHINGTON,DC)/EDGERTON,A.T./
AMERICAN PETROLEUM INST./WASHINGTON,DC/1975/
1975 CONFERENCE ON PREVENTION AND CONTROL OF OIL POLLUTION/
US/
US/
CONFERENCE ON PREVENTION AND CONTROL OF OIL POLLUTION/
SAN FRANCISCO,CA,USA/
25 MAR 1975/
02.0900/50.0200/
AERIAL MONITORING: 01 / MAPS / OIL SPILLS: T1, 02/POLLUTION CONTROL/REAL TIME SYSTEMS/SEAS:T2/US COAST GUARD:T/WATER POLLUTION/

RS78-4-319

78C00806342 EDB-78-10 52.020
DETECTION AND MAPPING OF OIL ON A MARSHY AREA BY A REMOTE LUMINESCENT SENSOR/
MCFARLANE,C.(ENVIRONMENTAL MONITORING AND SUPPORT LAB.,LAS VEGAS,NV)/WATSON,R.D./
AMERICAN PETROLEUM INSTITUTE/WASHINGTON,DC/1977/
PROCEEDINGS OF THE 1977 OIL SPILL CONFERENCE (PREVENTION,BEHAVIOR,CONTROL,CLEANUP)/
LUDWIGSON,J.O.(ED.)/
US/
US/
ERA-03:038111/EDB-78:086342/
AIRBORNE REMOTE SENSING CAN BE A COST-EFFECTIVE METHOD FOR MONITORING POLLUTANTS IN LARGE AREAS SUCH AS OCCUR IN OIL SPILLS. AN OPPORTUNITY TO TEST A PARTICULAR METHOD AROSE WHEN A WELL RUPTURED AND FOR 23 DAYS SPEWED A 90-METER FOUNTAIN OF OIL INTO THE AIR,DISPERSING THE OIL OVER A WIDE AREA.THE METHOD TESTED WAS AN AIRBORNE LUMINESCENCE DETECTOR WITH A FRAUNHOFER LINE DISCRIMINATOR (FLD) WHICH WAS FLOWN OVER THE AFFECTED AREA 41 DAYS AFTER THE WELL WAS CAPPED TO OBTAIN A MAP OF THE DEPOSITION PATTERN.TO CALIBRATE THE SYSTEM,SAMPLES OF SPARTINA (WIRE GRASS)AND PHRAGMITES (COMMON REED) WERE COLLECTED FROM THE CONTAMINATED AREA AND THE OIL RESIDUES WERE ELUTED IN CYCLOHEXANE AND QUANTITATIVELY ANALYZED IN A FLUORESCENCE PHOTOMETER. GOOD CORRELATION WAS OBSERVED BETWEEN THE REMOTE SENSOR (FLD)AND THE LABORATORY ANALYSIS. ISOPLETHS DEFINING THE DEPOSITION PATTERN OF OIL WERE DRAWN FROM THE REMOTE SENSING INFORMATION.A DISCUSSION WILL BE PRESENTED ON THE FEASIBILITY OF USING THIS INSTRUMENT FOR SIMILAR CONTAMINATION INCIDENTS FOR CLEANUP AND DAMAGE ASSESSMENT./
SEE CONF-770328--/
OIL SPILL CONFERENCE/
NEW ORLEANS,LA,USA/
8 MAR 1977/
52.0200/02.0900/
CLEANING/LUMINESCENCE/MAPS/MARSHES:T1/MONITORING/OIL SPILLS:T2/POLLUTION/REMOTE SENSING:Q2/WATER POLLUTION:Q1/

RS78-4-320

78C00757a0 EDB-78-14 52.010
CONF-7510172--P1/
EVALUATION OF NOAA-2 VHRR IMAGERY FOR ARCTIC SEA ICE STUDIES/
OSTHEIDER,M./
UNIV.,MUNICH/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
DE/
US/
ERA-03:018051/EDB-78:075760/
IMAGERY TAKEN IN 1973 FROM NOAA-2 VHR-RADIOMETERS HAS BEEN EVALUATED FOR MONITORING ARCTIC SEA ICE.CONSIDERATIONS WERE DEVOTED TO ANALYZING THE VHRR IMAGES ACCORDING TO THREE ASPECTS:GEOMETRY,GREY TONE,AND TIME./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
ARCTIC REGIONS: T1/DATA ANALYSIS/EVALUATION/ICE:T2,Q1/IMAGES/MONITORING/REMOTE SENSING:Q2/SATELLITES/SEAS/TOPOLOGICAL MAPPING/

RS78-4-321

78C00757a6 EDB-78-14 52.010
CONF-7510172--P1/
REMOTE SENSING OF WETLANDS IN VIRGINIA/
PENNEY,M.E./GORDON,H.H./
VIRGINIA INST.OF MARINE SCIENCE,GLOUCESTER POINT/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-04:038047/EDB-78:075766/
THE STUDY IS ORIENTED TOWARD THE ENVIRONMENTAL MANAGEMENT DETAILS OF WETLANDS AND REPORTS TECHNICAL DETAILS INVOLVING THE USE OF ERTS DATA WITH LARS ANALYSIS FOR INVENTORYING WETLANDS AND LOW ALTITUDE FILM IMAGERY ANALYSIS FOR DETERMINING PLANT COMMUNITY PARAMETERS. STANDARD IBM SUBROUTINES WERE USED TO PERFORM MULTIPLE REGRESSIONS ON PLANT SAMPLE DRY WEIGHT, AVERAGE HEIGHT,AND SAMPLE STEM DENSITY WITH FILM DENSITY,POLAR VIEW ANGLE,AND AZIMUTHAL VIEW ANGLE.CORRELATIONS WERE VERY LOW AND NOT USABLE FOR PREDICTING NEW VALUES FOR DRY WEIGHT.(HLW)/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
COASTAL REGIONS: T1 / DATA ANALYSIS / INVENTORIES /MANAGEMENT:Q2/PLANTS/REMOTE SENSING:Q1/SAMPLING/VIRGINIA:T3/WATER RESOURCES:T2,Q3/

RS78-4-322

78C0105271 EDB-78-19 58.020
CONF-770478--P2/
NASA/COUSTEAU OCEAN BATHYMETRY EXPERIMENT/
POLCYN,F.C./
ENVIRONMENTAL RESEARCH INST.OF MICHIGAN,ANN ARBOR/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-03:061310/EDB-78:105271/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0202/58.0500/
ATLANTIC OCEAN:T1/GEOPHYSICAL SURVEYS/OCEANOGRAPHY/REMOTE SENSING:Q1/TOPOGRAPHY/

RS78-4-323

78100991 12 EDB-78-18 58.050
SEA TRUTH AND ENVIRONMENTAL CHARACTERIZATION STUDIES OF MOBILE BAY,ALABAMA,UTILIZING ERTS-1,DATA COLLECTION PLATFORMS/
SCHROEDER,W.W./
UNIV OF ALABAMA/
REMOTE SENSING ENVIRON./6/1/1977/
27-43/
US/
US/
RSEEA/
EDB-78:099112/
THE SCIENTIFIC PERFORMANCE OF TWO INSTRUMENTED BUOYS FUNCTIONING AS ERTS-1 DATA COLLECTION PLATFORMS IS EVALUATED. SURFACE HYDROGRAPHIC DATA WERE UTILIZED AS SEA TRUTH DATA TO SUPPORT ERTS-1 IMAGERY AND AS TIME SERIES DATA FOR ENVIRONMENTAL CHARACTERIZATION STUDIES. WHEN CONSIDERING THE SEA TRUTH APPLICATIONS, IT IS APPARENT THAT THE FEW HOURS OF DATA UTILIZED TO PROVIDE SEA TRUTH SUPPORT FOR AN IMAGE TAKEN EVERY 18 DAYS WOULD NOT NECESSARILY JUSTIFY THE EFFORT OR FUNDS REQUIRED TO BUILD AND MAINTAIN THE DATA COLLECTION PLATFORMS. HOWEVER, THE TIME SERIES APPLICATION, WHICH IS INDEPENDENT OF REMOTE SENSING, UTILIZES THE ENTIRE DATA BASE GENERATED BY THE DATA COLLECTION PLATFORMS. THEREFORE, THE APPLICATION HAS A GREATER POTENTIAL FOR JUSTIFYING THEIR USE. (6 GRAPHS, 1 MAP, 3 PHOTOS, 27 REFERENCES, 3 TABLES)/
58.0500/
ALABAMA / ALTOMATION / BUOYS: T2/DATA ACQUISITION:Q1/EQUIPMENT/ESTUARIES/FINANCING/OCEANOGRAPHY:T1/OFFSHORE PLATFORMS/ PERFORMANCE:Q2/REMOTE SENSING/

RS78-4-324

78C0075757 EDB-78-14 52.010
CONF-7510172--P1/
THEMATIC MAPPING OF CORAL REEFS USING LANDSAT DATA/
SMITH,V.E.(CRANBROOK INST.OF SCIENCE,BLOOMFIELD HILLS,MI)/ROGERS,R.H./REED,L.E./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:038043/EDB-78:075757/
RECENT PROGRESS IS REPORTED IN A CONTINUING STUDY OF CORAL REEF MONITORING BY SATELLITE. PHYSIOGRAPHIC ZONES OF THE AUSTRALIAN GREAT BARRIER REEF (CAPE MELVILLE AREA) WERE CATEGORIZED AND MAPPED BY AUTOMATED PROCESSING OF LANDSAT (ERTS) TAPES. DATA PRODUCTS INCLUDED COLOR-CODED, GEOMETRICALLY-CORRECT IMAGES (1:250,000 SCALE) AND QUANTITATIVE INVENTORIES OF ZONAL AREA ON SELECTED REEFS. CATEGORIZED IMAGES WERE EVALUATED WITH REFERENCE TO AERIAL PHOTOGRAPHY. THESE RESULTS FURTHER DEMONSTRATE THE POTENTIAL OF LANDSAT DATA FOR USE IN CORAL REEF SURVEILLANCE, MAPPING AND INVENTORIES./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
AUSTRALIA/CORALS:T1/INVENTORIES/MONITORING/REMOTE SENSING:Q1,Q2/SATELLITES/SEAS:T2/TOPOLOGICAL MAPPING/

RS78-4-325

78C0075752 EDB-78-14 52.010
CONF-7510172--P1/
SKYLAB ANALYSIS OF SAN FRANCISCO BAY/
STELLER,D.D.;TESLA-TECH CORP.,LONG BEACH,CA)/PIRIE,D.M./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:038043/EDB-78:075752/
SEDIMENT TRANSPORT AND DEPOSITION CHARACTERISTICS IN SAN FRANCISCO BAY ARE OF UTMOST IMPORTANCE TO SHIPPING,CHANNEL CLEARING OPERATIONS, AND SHORELINE CONSTRUCTION.ANALYSIS OF SATELLITE IMAGERY FROM SKYLAB OVERFLIGHTS REVEALS DETAILED INFORMATION THAT IS BEING APPLIED TO BASIC PLANNING AND OPERATIONAL DECISIONS CONCERNING THE BAY AREA.VARIATIONS IN SEDIMENT TRANSPORT IS OBSERVABLE WHERE THE FRESH WATER SACRAMENTO-SAN JOAQUIN RIVER INFLOW IS MODIFIED BY THE DYNAMIC TIDAL AND CURRENT ACTIVITY IN SAN FRANCISCO BAY.THE S-190A MULTISPECTRAL PHOTOGRAPHIC IMAGERY AND S-190B EARTH TERRAIN CAMERA IMAGERY WAS UTILIZED IN MAPPING DISTRIBUTION PATTERNS,CHANGES IN TEMPERATURE,DISSOLVED OXYGEN,PH,SALINITY AND POLLUTANTS INFORMATION SIMULTANEOUSLY COLLECTED WAS CORRELATED WITH THE SPECTRAL DIFFERENCES OBSERVED IN THE VARIOUS SKYLAB DATA. THE THERMAL BAND ON THE SKYLAB MULTISPECTRAL SCANNER (S-192) COMPUTER TAPE DATA WAS UTILIZED IN DIFFERENTIATING SURFACE TEMPERATURES,COLOR ENHANCED FALSE COLOR PICTURES OF DENSITY-STRETCHED S-192 DATA WAS CORRELATED WITH THE COLOR PHOTOGRAPHIC AND MULTISPECTRAL PHOTOGRAPHY RESULTING IN SEDIMENT DISTRIBUTION MAPS OF THE BAY SURFACE. THE PLANNING FOR DREDGING NEAR PREVIOUSLY CONSTRUCTED STRUCTURES,DREDGING OF SHIPPING CHANNELS,AND THE POSSIBLE RESULT OF NEW SHORELINE CONSTRUCTION ON SEDIMENT DEPOSITION ARE AREAS IN WHICH THE SKYLAB INTERPRETATIONS WERE APPLIED. WITH DEEPER DRAFT VESSELS NEEDING DEEPER CHANNELS, THE EVER-INCREASING EXPENSIVE DREDGING OPERATIONS MUST BE UTILIZED AT MAXIMUM EFFICIENCY. IN THE PLANNING OF SHORELINE CONSTRUCTION THE DETERMINATION OF PRESENT SEDIMENT TRANSPORT PATTERNS AND THE EFFECTS OF MODIFYING SUCH PATTERNS MUST BE THOROUGHLY CONSIDERED.SKYLAB IMAGERY ALLOWS THE INVESTIGATOR TO DETERMINE THE DYNAMIC PATTERNS THAT ARE THE RESULT OF NATURAL AS WELL AS MAN-MADE MODIFICATIONS IN THE BAY SURFACE AND NEAR-SURFACE WATERS.THE MOST USEFUL SKYLAB SENSOR FILM WAS THE S-190B COLOR PHOTOGRAPHY./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/

ANN ARBOR,MI,USA/
6 OCT 1975/
52.0100/
DATA ANALYSIS / DEPOSITION:Q2/DIFFUSION/IMAGES/PHOTOGRAPHY/PLANNING/REMOTE SENSING:Q1,Q3/RIVERS/SAN FRANCISCO BAY:T1/SEDIMENTS:T2/SKYLAB/SPECTRA/WATER POLLUTION:T3/

RS78-4-326

78C0075776 EDB-78-14 52.020
CONF-7510172--P1/
SWEDISH REMOTE SENSING PROGRAM/
ZENKER,S./
SWEDISH SPACE CORP.,STOCKHOLM/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
SF/
US/
ERA-03:038067/EDB-78:075776/
A BRIEF DESCRIPTION IS GIVEN OF SWEDEN'S OVERALL STRATEGY IN DEVELOPING OPERATIONAL REMOTE SENSING SYSTEMS TO HELP SOLVE PRESSING NATIONAL PROBLEMS. OIL SPILL SURVEILLANCE AND SEA-ICE MAPPING ARE GIVEN AS TWO APPLICATIONS WHERE AN OPERATIONAL CAPABILITY IS EXPECTED WITHIN THE SHORT-TERM FUTURE./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0200/02.0900/
MONITORING/OIL SPILLS:T2/REMOTE SENSING:T1,G2/RESEARCH PROGRAMS:Q1/SEAS/SWEDEN:T/TOPOLOGICAL MAPPING/

RS78-4-327

A78-43324 # Diurnal temperature variations and their usefulness in mapping sea ice from thermal infrared imagery. J. Cihlar and K. P. B. Thomson (Can. Centre for Remote Sensing, Ottawa, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 208-219. 12 refs.

An 8-14-micron thermal infrared scanner and a PRT-5 were flown at 390 m at sunset and in the afternoon over the Beaufort Sea in order to measure ice surface temperature changes. The scanner magnetic tape was used to produce a black and white transparency of the recorded and reference signals. A gray level stepwedge was used to relate film density to voltage and surface temperature. It was found that solar radiation dominates the surface temperature distribution during the afternoon. The surface temperature patterns at sunset reflected the spatial thermal resistivity fluctuations of ice-snow thickness combinations. The difference between measured temperatures represents the combined effect of solar radiation and heat passing upward from the ice-water boundary. It is observed that daytime or nighttime surface temperature distributions may be useful in mapping from high-resolution thermal infrared imagery. S.C.S.

RS78-4-328

A78-43350 # Remote sensing of chlorophyll - A new experimental approach to the problem (Télédétection de la chlorophylle - Une nouvelle approche expérimentale du problème). P. Y. Deschamps, P. Lecomte, and M. Viollier (Lille I, Université, Villeneuve d'Ascq, Nord, France). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 543-548. 9 refs. In French. Research supported by the Muséum National d'Histoire Naturelle.

A radiometer has been designed for the remote sensing of ocean color in order to determine chlorophyll content. Upwellings and downwellings are simultaneously measured at 466, 525, 550, and 600 nm. Calculations of albedo differences at two wavelengths are used to relate ocean color to optical characteristics and to eliminate distortions caused by surface reflection and atmospheric disturbances. Color variations are noted to be related to the cycle of coastal upwellings. Experiments indicate that factors such as the vertical gradients of phytoplankton, water turbidity, and the discontinuity of chlorophyll content relative to depth influence the results. S.C.S.

RS78-4-329

A78-43638 The problem of remote sensing of substances in water using a multispectral scanner (Zum Problem der Fernerkundung von Substanzen im Wasser mit dem Multispektralabtaster). R. Doerffer (Hamburg, Universitat, Hamburg, West Germany). *(Symposium uber Flugzeugmessprogramm, Technische Universität Hannover, Hanover, West Germany, Aug. 29-31, 1977.) Bildmessung und Luftbildwesen*, vol. 46, July 1, 1978, p. 133-138. 8 refs. In German.

An important objective of remote sensing in the case of marine investigations is related to a mapping of substances found in the water close to the surface of the sea. The employment of the multispectral scanner as measurement device provides information regarding the type and concentration of a substance on the basis of the spectrum of the radiation which is reflected by the water. In accordance with their optical characteristics, the substances to be studied can be divided into three groups, including dissolved organic substances, suspended matter, and phytoplankton. Attention is given to signal sources, the dependence of the wanted signal on the concentration of the substances, and the effect of disturbing signal sources. G.R.

RS78-4-330

A78-47950 # Measurement of ocean wave heights with a satellite radar altimeter. L. S. Fedor and D. E. Barrick (NOAA, Wave Propagation Laboratory, Boulder, Colo.) *EOS*, vol. 59, Sept. 1978, p. 843-847. 9 refs.

Sample wave height tracks obtained by Geos 3 equipment during passage over the North Atlantic are reported, and the signal processing procedure is explained. The data indicate the potential of short-pulse microwave radar altimeters operating from space to measure ocean wave height along the nadir track. Limited ground truth and hindcasts show favorable agreement. Laser profilometer agreement with altimeter wave heights is considered, and the causes of wave height measurement errors are examined. M.L.

RS78-4-331

A78-43339 # Microwave sensing of sea surface wave patterns. J. F. R. Gower (Institute of Ocean Sciences, Victoria, British Columbia, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 395-406. 5 refs.

Sea-surface wave patterns in the northeast Pacific have been monitored by the GEOS-3 altimeter and airborne synthetic aperture radar. Waveheight values obtained from the altimeter are compared to surface truth measurements and weather reports. An accuracy to within plus or minus one meter is found. When the measurements are processed by a technique based on a pulse-variation model and which compensates for timing and tracking loop errors, accuracy to within 0.5 meter is found. S.C.S.

RS78-4-332

A78-43349 # A method for the remote measurement of the vertical distribution of phytoplankton in seawater. J. F. R. Gower and R. A. Neville (Institute of Ocean Sciences, Victoria, British Columbia, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 532-542. 16 refs.

RS78-4-333

A78-43320 # Thermal studies of the Grand Banks Gulf Stream slope using airborne radiation thermometers and satellite data. H. G. Ketchen (International Ice Patrol, Governors Island, N.Y.), P. E. La Violette (U.S. Navy, Naval Ocean Research and Development Activity, Bay St. Louis, Miss.), and R. D. Worsfold (Newfoundland, Memorial University, St. John's, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 163-179. 19 refs.

Three sources of thermal infrared data on the Grand Banks Gulf Stream slope are discussed: NOAA satellite data, airborne radiation thermometer data, and sea-surface temperature data as recorded by ships. Two correction techniques to account for atmospheric attenuation are evaluated: the Pickett method which uses a correction equation derived by multiple regression, and the atmospheric environment service method which determines instrument drift, plots an environmental correction graph, and applies a correction factor for errors due to the water vapor mass below the aircraft. It is concluded that the correlation of the three data sources constitutes a feasible method for determining iceberg deterioration rates. S.C.S.

RS78-4-334

A78-43346 # On the analysis of airborne synthetic aperture radar imagery of the ocean. R. T. Lowry, D. G. Goodenough (Canada Centre for Remote Sensing, Ottawa, Canada), J. S. Zelenka, and R. A. Shuchman (Michigan, Environmental Research Institute, Ann Arbor, Mich.). In Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 480-505. 25 refs.

Using the ERIM optical/digital-data correlator, synthetic-aperture radar (SAR) imagery has been used for studies of the ocean. Procedures for correcting radar data for geometric distortion and radiometric nonuniformity of imagery are outlined. The influence of wave train movement on the design of a Seasat correlator is evaluated. Techniques for calculating the two-dimensional Fourier transform of an SAR image are presented along with the necessary radar parameters for specific surveillance tasks. These tasks include deep-water waves, in shore waves and the surf zone, and ships located in at least 10 m of water. Wave-imaging mechanisms are described with reference to a velocity modulation model, radar cross-section models, and the tangent plane model. S.C.S.

RS78-4-335

A78-43315 # Ocean information and management systems. L. W. Morley, A. K. McQuillan (Canada Centre for Remote Sensing, Ottawa, Canada), and D. J. Clough (Waterloo, University, Waterloo, Ontario, Canada). In Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 113-124.

Management systems for ocean surveillance are discussed with reference to satellites, aircraft, ship, data-buoy, and fixed land- and ocean-stages providing multilevel data integration. Areas requiring particular surveillance are identified as renewable resources (e.g., fisheries), nonrenewable resources (e.g., oil, gas, minerals), marine-environment protection, navigation control, and ocean-service activities (e.g., forecasting, rescue). Various data-generating subsystems are outlined such as sensors (including synthetic aperture radar), telemetry methods to transmit data from sensors to receivers, and commercial networks for electronic data distribution. Cost-effective aspects of mixed surveillance systems are considered along with predicted gross benefits for environmental surveillance systems to the year 2000. S.C.S.

RS78-4-336

A78-47084 Extraction of rich-plankton area off the northern Japan from Skylab multispectral pictures. K. Watanabe (Tokai University, Shimizu, Japan). In International Symposium on Space Technology and Science, 12th, Tokyo, Japan, May 16-20, 1977, Proceedings. (A78-47001 21-12) Chofu, Tokyo, National Aerospace Laboratory, 1977, p. 611-616.

RS78-4-337

A78-40474 Lateral oscillations of the Pacific Equatorial Countercurrent. K. Wyrtki (Hawaii, University, Honolulu, Hawaii). *Journal of Physical Oceanography*, vol. 8, May 1978, p. 530-532. NSF-supported research.

Long equatorial waves recently discovered in the Pacific Ocean on satellite photographs are being linked to oscillations in sea level at Fanning Island and to the oscillatory trajectory of a drifting buoy. The drift pattern of the buoy suggests that lateral oscillations of the Equatorial Countercurrent with a period of about 34 days are responsible for the observed variations of sea level. (Author)

RS78-4-338

N78-27487*# Vought Corp., Hampton, Va.
SEGREGATION OF ACID PLUME PIXELS FROM BACKGROUND WATER PIXELS, SIGNATURES OF BACKGROUND WATER AND DISPERSED ACID PLUMES, AND IMPLICATIONS FOR CALCULATION OF IRON CONCENTRATION IN DENSE PLUMES
Gilbert S. Bahn. May 1978. 62 p.
(Contract NAS1-13500)
(NASA-CR-145372) Avail: NTIS HC A04/MF A01 CSCL 08H

Two files of data, obtained with a modular multiband scanner, for an acid waste dump into ocean water, were analyzed intensively. Signatures were derived for background water at different levels of effective sunlight intensity, and for different iron concentrations in the dispersed plume from the dump. The effect of increased sunlight intensity on the calculated iron concentration was found to be relatively important at low iron concentrations and relatively unimportant at high values of iron concentration in dispersed plumes. It was concluded that the basic equation for iron concentration is not applicable to dense plumes, particularly because lower values are indicated at the very core of the plume, than in the surrounding sheath whereas radiances increase consistently from background water to dispersed plume to inner sheath to innermost core. It was likewise concluded that in the dense plume the iron concentration would probably best be measured by the higher wave length radiances, although the suitable relationship remains unknown. G.Y.

RS78-4-339

N78-26426*# Mitre Corp., McLean, Va. Metrek Div.
STUDY OF THE EFFECT OF SCATTERING FROM TURBID WATER ON THE POLARIZATION OF A LASER BEAM
Robert G. Henderson and Ali H. Hovanlou. Mar. 1978. 138 p. refs.
(Contract F19628-77-C-0001)
(NASA-CR-145327: MTR-7666) Avail: NTIS HC A07/MF A01 CSCL 20E

A Monte Carlo simulation method was used to determine the effect of scattering from turbid water on the polarization of a backscattered beam of laser light. The relationship between the polarization and the type and amount of suspended particulates in the water was investigated. G.G.

RS78-4-340

N78-27725*# National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, Md.
THE ANALYSIS OF TEMPORAL VARIATIONS IN REGIONAL MODELS OF THE SARGASSO SEA FROM GEOS-3 ALTIMETRY. Technical Memorandum, Jul. 1975 - Aug. 1976
R. S. Mather, R. Coleman (Johns Hopkins Univ., Baltimore, Md.), and B. Hirsch (Johns Hopkins Univ., Baltimore, Md.). May 1978. 58 p. refs. Presented at the 2d Intern. Symp. on The Use of Artificial Satellites for Geodesy and Geodynamics, Lagonissi, Greece, 29 May - 3 Jun. 1978.
(Grant NsG-5225)
(NASA-TM-79549) Avail: NTIS HC A04/MF A01 CSCL 08C

The dense coverage of short pulse mode GEOS-3 altimeter data in the western North Atlantic provides a basis for studying time variations in the sea surface heights in the Sargasso Sea. Two techniques are utilized, the method of regional models, and the analysis of overlapping passes. An 88 percent correlation is obtained between the location of cyclonic eddies obtained from infrared imagery and sea surface height minima in the altimeter models. This figure drops to 59 percent in the case of correlations with maxima and minima of surface temperature fields. The analysis of overlapping passes provides a better picture of instantaneous sea state through wavelengths greater than 30 km. The variability of the Sargasso Sea through wavelengths between 150 km and 5000 km is estimated at — or - 28 cm. This value is in reasonable agreement with oceanographic estimates and is compatible with the eddy kinetic energy of a wind driven circulation. G.G.

RS78-4-341

N78-27724*# National Aeronautics and Space Administration Goddard Space Flight Center, Greenbelt, Md.
DETERMINATION OF SOME DOMINANT PARAMETERS OF THE GLOBAL DYNAMIC SEA SURFACE TOPOGRAPHY FROM GEOS-3 ALTIMETRY
P S Mather, F J Lerch, C Rizos (Johns Hopkins Univ., Baltimore Md.), E G. Masters (Johns Hopkins Univ., Baltimore, Md.), and S Hirsch (Johns Hopkins Univ., Baltimore, Md.) May 1978 46 p refs Presented at 2d Intern Symp on the Use of Artificial Satellites for Geodesy and Geodynamics, Lagonissi, Greece 29 May - 3 Jun. 1978 Submitted for publication
(NASA-TM-79558) Avail. NTIS HC A03/MF A01 CSCL 08J

The 1977 altimetry data bank is analyzed for the geometrical shape of the sea surface expressed as surface spherical harmonics after referral to the higher reference model defined by GEM 9 The resulting determination is expressed as quasi-stationary dynamic SST Solutions are obtained from different sets of long arcs in the GEOS-3 altimeter data bank as well as from sub-sets related to the September 1975 and March 1976 equinoxes assembled with a view to minimizing seasonal effects. The results are compared with equivalent parameters obtained from the hydrostatic analysis of sporadic temperature, pressure and salinity measurements of the oceans and the known major steady state current systems with comparable wavelengths The most clearly defined parameter (the zonal harmonic of degree 2) is obtained with an uncertainty of — or - 6 cm The preferred numerical value is smaller than the oceanographic value due to the effect of the correction for the permanent earth tide Similar precision is achieved for the zonal harmonic of degree 3 The precision obtained for the fourth degree zonal harmonic reflects more closely the accuracy expected from the level of noise in the orbital solutions. G G.

RS78-4-342

LANDSAT APPLICATION OF REMOTE SENSING TO SHORELINE FORM ANALYSIS,
Virginia Univ., Charlottesville. Dept. of Environmental Sciences
R Dolan, B Hayden, J. Heywood, J. Michel, and K Schroeder.
Available from the National Technical Information Service, Springfield, VA 22161 as N77-19551, Price codes: A01 in paper copy. Quarterly Report for Period 1/1/77 to 3/1/77. Prepared for NASA/Goddard Space Flight Center, Greenbelt, Maryland. 1977. 8 p.

Descriptors: *Shores, *Aerial photography, Erosion, Beaches, Coasts, *LANDSAT, *Assateague Island(MD VA), Maryland, Virginia

Data on beach-zone width, swash slope, and sand-grain size were collected at 89 locations along Assateague Island (MD/VA). Correlations were run among these data sets and for coastal orientation and historical shoreline erosion. The analysis indicates that there are organized relationships between physical beach features and shoreline form and erosion, but weak relationships between sand-grain size and shoreline form and erosion. (Stihler-Mass)
W78-09093

RS78-4-343

THE SURFACE TEMPERATURE STRUCTURE ASSOCIATED WITH THE KEWEENAW CURRENT IN LAKE SUPERIOR,
Wisconsin Univ.-Madison. Marine Studies Center.
T. Green, and R. E. Terrell
Journal of Geophysical Research, Vol 83, No. C1, p 419-426, January 20, 1978. 11 fig, 2 tab, 24 ref.

Descriptors: *Remote sensing, *Water temperature, *Currents(Water), *Lake Superior, *Great Lakes, Temperature, Lakes, Aircraft, Surveys, Data processing, Winds, Meanders, Limnology, *Keweenaw Current(Lake Superior), Radiometers, Airborne radiometers, Surface temperatures.

A number of closely spaced airborne radiometer flights over the entire Keweenaw Current in Lake Superior suggested that bathymetry plays a major role in determining the overall features of the current. The crosscurrent surface temperature variations are correlated over long-current distances of kilometers only in a loose sense, and the crosscurrent fine structure is essentially uncorrelated over the same distance. The crosscurrent temperature variations are often dominated by very sharp fronts, which seem to become unstable and spawn meanders along their outer edge. (Sims-ISWS)
W78-07992

RS78-4-344

LABORATORY REQUIREMENTS FOR IN-SITU AND REMOTE SENSING OF SUSPENDED MATERIAL,
Old Dominion Uni., Norfolk, VA. School of Engineering.
C. Y. Kuo, and R. Y. K. Cheng.
Available from the National Technical Information Service, Springfield, VA 22161 as N78-10539, Price codes: A05 in paper copy, A01 in microfiche Technical Report No 76-C2, March, 1976 86 p, 53 fig, 3 tab, 55 ref, 1 append. NAS1-11707.

Descriptors: *Suspended solids, *Sediments, *Remote sensing, *Upwelling radiance, *Sediment distribution, *Sediment load, *Monitoring, *Turbidity, Analytical techniques, Clays, Silts, Calibrations, *Pollutant identification, Data collections, *Upwelling radiance.

Results of a study investigating the properties of suspended materials, factors influencing the upwelling radiance, and the various types of remote sensing techniques are presented. Calibration and correlation procedures to obtain the accuracy necessary to quantify the suspended materials by remote sensing are included. A survey of the national need for sediment data, the agencies that deal with and require the data of suspended sediment, and a summary of some recent findings of sediment measurements are detailed. Recommended laboratory and in-situ tests required for remote sensing include: (1) determination of the relationship of upwelling radiance as a function of types of clay, percent of clay mixture, and concentration; (2) variation of type of organics, percent of clay, silt, and organics in the test mixture, (3) variation of water composition, (4) penetration depth of bands for various types of suspended material and water composition; (5) effects of sea states (such as wind and waves), and (6) impact assessment of atmospheric conditions. The appendix summarizes the proceedings and recommendations of the turbidity workshop sponsored by the NOAA National Oceanographic Instrumentation Center, May 1974. (Sebp-IPA)
W78-08008

RS78-4-345

APPLICATION OF REMOTE SENSING TO THE CHESAPEAKE BAY REGION: VOLUME 1 - EXECUTIVE SUMMARY.
National Aeronautics and Space Administration, Greenbelt, MD. Goodard Space Flight Center.
Available from the National Technical Information Service, Springfield, VA 22161 as NASA CP-6. Price codes: A17 in paper copy, A01 in microfiche. Report No. NASA CP-6 Summary of Conference held Apirl 12-15, 1977, Berkeley Springs, WV, Coolfont Conference Center, April, 1978, 43 p.

Descriptors: *Chesapeake Bay, *Remote sensing, *Conferences, *Water quality, *Environmental control, Standards, Surveys, Equipment, Economics, Programs, Planning, Pollutant identification, *Environmental quality, Policies.

Recommendations that resulted from the Conference on the Application of Remote Sensing of the Chesapeake Bay Region and brief summaries of papers and reports of the working groups are presented. The Conference assembled representatives of Federal and State government agencies engaged in research on the condition and evolution of the Chesapeake Bay to compose a status report, to present current activities and future plans, and to recommend a long-range future course of policies and programs Findings of the Conference were developed and presented by the attendees divided into six working groups, each of which filed a report containing conclusions and recommendations. Conference presentations, discussions, and reports document the availability of suitable remote sensing monitoring techniques for diagnosing, prescribing, and forecasting the conditios of the Chesapeake Bay. Conference recommendations are summarized under the following headings: (1) Intergroup cooperation/organization/coordination, (2) Environmental quality, (3) Geophysical and environmental surveys, (4) Standards, (5) Advanced sensor development, and (6) Funding. Complete papers, detailed discussions of some of the sessions, and the complete reports of the working groups are found in the Conference Proceedings, Volume 2. (Seip-IPA)
W78-08232

RS78-4-346

THE USE OF AERIAL COLOR INFRARED PHOTOGRAPHY IN MAPPING THE VEGETATION OF A FRESHWATER MARSH,
American Univ., Washington, DC. Dept. of Biology.
L. J. Shima, R. R. Anderson, and V. P. Carter.
Chesapeake Science, Vol. 17, No. 2, p.74-85, June, 1976. 4 fig, 2 tab, 25 ref.

Descriptors: *Aerial photography, *Infrared radiation, *Mapping, *Vegetation, *Freshwater marshes, *Remote sensing, Plant groupings, Color infrared photography, *Patuxent River(Md), *Maryland.

Spring and fal vegetation maps were prepared from a freshwater marsh on the Patuxent River, Maryland. Low altitude, color infrared (IR) aerial photos were correlated with data obtained from field surveys. The vegetation units mapped refer to areas of homogenous color on the photos. These areas of homogenous color represent species associations or monospecific stands which produce a distinctive tonal signature. Color fluctuations within an area having a distinctive tonal signature are primarily caused by a quantitative variation of plant species but are also related to the growth habit, vigor of the plant species, and environmental conditions which affect the vegetation and in turn the color of the recorded image Changes in the color over the growing season reflect plant successions were due to their unique colors, saturations, and textures. Comparisons of photographs made in nearby marshes demonstrated that three of the twelve spring, and five of the fourteen fall vegetation units were mapped can be reliably indentified. (Maroncelli-Mass)
W78-08421

RS78-4-347

ID NO.- EI780747263 847263
AERIAL COLOR AND COLOR INFRARED SURVEY OF MARINE PLANT RESOURCES.
Austin, Alan; Adams, Robert
Univ of Victoria, BC
Photogramm Eng Remote Sensing v 44 n 4 Apr 1978 p 469-480 CODEN: PERSDV
DESCRIPTORS: *AERIAL PHOTOGRAPHY.
CARD ALERT: 742
Color, color infrared, and water penetration aerial photographs at various scales were assessed for identification, mapping, and inventory of macroalgal vegetation along extensive shoreline of Georgia Strait in the northeast Pacific. Natural color proved to be the most useful for definition of submerged vegetation to depths of 7 m, while CIR and natural color together provided th best definition of above-water intertidal seaweed vegetation. Using both films, exposed under rarely occurring optimum weather and tide conditions, and with the aid of ground data, a total of 11 vegetation units were classified and mapped at a scale of 1:10,000. Boundaries of the vegetation unit containing a valuable red seaweed resource, Iridaea cordata, could be defined equally well at a scale of 1:10,000 as at 1:2500. 22 refs.

RS78-4-348

ID NO.- EI780855895 855895
COASTAL WETLANDS: THE PRESENT AND FUTURE ROLE OF REMOTE SENSING.
Carter, Virginia
US Geol Surv, Reston, Va
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 301-323 CODEN: PISEDM
DESCRIPTORS: (*COASTAL ENGINEERING, *Remote Sensing), ENVIRONMENTAL PROTECTION, AERIAL PHOTOGRAPHY.
IDENTIFIERS: COASTAL ZONES, WETLANDS
CARD ALERT: 472, 901, 742
During the past decade, there has been a rapid expansion of remote sensing research and technology development related to coastal wetlands. As a result of this research, all of the 23 coastal states have ongoing or completed wetland inventories, most utilizing aerial photographs as the data source for producing a variety of map products with varying scales, formats, classification systems and intended uses. The U. S. Geological Survey is increasing emphasis on map production and revision for the coastal zone. The new U. S. Fish and Wildlife Service National Wetland Inventory is intended to provide a standardized method for comparison of wetlands on a national basis $EM DASH$ it too will use available aerial photographs as a basic data source. At present, satellite data is not used for operational mapping of coastal wetlands because of resolution and geometric constraints. In the future, however, satellite data may provide an accurate reliable and economical source to update wetland inventories and to monitor or evaluate coastal wetlands. Refs.

RS78-4-349

ID NO.- EI780859726 859726
REMOTE SENSING OF OCEAN COLOR AND DETECTION OF CHLOROPHYLL CONTENT.
Deschamps, P. Y.; Lecomte, P.; Viollier, M.
Univ des Sci et Tech de Lille, Villeneuve d'Ascq, Fr
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1021-1033 CODEN: PISEDM
DESCRIPTORS: (*OCEANOGRAPHY, *Remote Sensing), (COLOR, Measurements), RADIOMETERS,
IDENTIFIERS: CHLOROPHYLL CONCENTRATION
CARD ALERT: 471, 716, 741
The chlorophyll enrichment of the water in an equatorial upwelling was surveyed and described during two one month periods in 1975 and 1976 with the aid of a radiometer specially designed for the airborne measurement of ocean color. Based upon the results of this experiment and some theoretical considerations, a relation is proposed between airborne measurement of difference of albedos at two wavelengths in the blue and green, and the concentration of chlorophyll in the ocean. Refs.

RS78-4-350

ID NO.- EI780968896 868896
VALUE OF REMOTE SENSING IN STUDYING THE PHYSICAL OCEANOGRAPHY AND METEOROLOGY OF THE SOUTH ATLANTIC OCS AREA.
Hayes, John G.; Kirshen, Paul H.; Bowley, Clinton J.; Bernard, Harold R.; Welch, Christopher S.
Environ Res & Technol, Inc, Lexington, Mass
Offshore Technol Conf 10th Annu, Proc, Houston, Tex, May 8-10 1978. Available from Offshore Technol Conf, Dallas, Tex, 1978 v 3 Pap OTC 327 p 1937-1946 CODEN: OSTCBA
DESCRIPTORS: *REMOTE SENSING, OCEANOGRAPHY, METEOROLOGY,
CARD ALERT: 405, 4 3, 471, 742
The use of remote sensing in conjunction with conventionally collected data to study the physical oceanography and meteorology of the South Atlantic Outer Continental Shelf (OCS) area (extending from Cape Canaveral to Cape Hatteras, from the spring tide mark to the 1500 m isobath, including Blake Plateau) is discussed. Innovative uses of remote sensing used in this study include: (1) the preparation of a climatology of the study area based upon remote sensing; (2) an analysis of the interaction of the Gulf Stream with the Continental Shelf and Blake Plateau; (3) the determination of the six hourly offshore wind structure and storm tracks for three significant meteorological forcing events that occurred in the study area. 14 refs.

RS78-4-351

ID NO.- EI780859727 859727
SURFACE TEMPERATURES AND TEMPERATURE GRADIENT FEATURES OF THE U. S. GULF COAST WATERS.
Huh, Oscar K.; Rouse, Lawrence J. Jr.; Smith, Glenn W.
La State Univ, Baton Rouge
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1609-1 18 CODEN: PISEDM
DESCRIPTORS: (*OCEANOGRAPHY, *Temperature Measurement), (REMOTE SENSING, Environmental Applications), (DATA PROCESSING, Data Reduction and Analysis).
CARD ALERT: 471, 7 1, 723
Satellite thermal infrared data on the Gulf of Mexico show that a seasonal cycle exists in the horizontal surface temperature structure. In the fall, the surface temperatures of both coastal and deep waters are nearly uniform. With the onset of winter, atmospheric cold fronts, which are accompanied by dry, low-temperature air and strong winds, draw heat from the sea. Digital analysis of the satellite data has been carried out in an interactive mode using a minicomputer and software developed at the Coastal Studies Institute. A time series of temperature profiles illustrates the temporal and spatial changes in the sea-surface temperature field.

RS78-4-352

ID NO.- EI780752839 852839
FOCUSING EFFECTS IN THE SYNTHETIC APERTURE RADAR IMAGING OF OCEAN WAVES.
Jain, Atul
Calif Inst of Technol, Jet Propul Lab, Pasadena
Appl Phys v 15 n 3 Mar 1978 p 323-333 CODEN: APHYCC
DESCRIPTORS: (*RADAR, *Imaging Techniques), WATER WAVES, OCEANOGRAPHY.
CARD ALERT: 471, 631, 716
Properties are derived of the image obtained for an ocean wave whose cross-section may be given by $sigma$ //w(x,y,t) and surface profile by H(x,y,t). $sigma$ //w and h are functions representing the wave phenomena, but whose exact properties are determined by the ocean wave surface properties, for an ocean wavelength of $lambda$ //wm height H, and orbital frequency $omega$. The effect of defocusing of the wave image due to its temporal motion is calculated, and both the resolution of the radar system if no focus compensation is provided in the processor and the necessary distance of azimuth telescope has to be moved to provide diffraction-limited imaging are derived. These results are illustrated for data taken by the JPL synthetic aperture radar over Hurricane Gloria on September 30, 1976, and the ERIM radar over Marineland, Florida, on December 15, 1975. 17 refs.

RS78-4-353

ID NO.- EI780862403 862403
MULTISPECTRAL ANALYSIS OF OCEAN DUMPED MATERIALS.
Johnson, Robert W.
NASA, Langley Res Cent, Hampton, Va
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1619-1627 CODEN: PISEDM
DESCRIPTORS: (*WATER POLLUTION, *Remote Sensing), (REMOTE SENSING, Multispectral Scanners), AERIAL PHOTOGRAPHY,
CARD ALERT: 453, 716, 742
Experiments conducted in the Atlantic coastal zone indicate that plumes resulting from ocean dumping of acid wastes and sewage sludge have unique spectral characteristics. Remotely sensed wide area synoptic coverage provides information on these pollution features that is not readily available from other sources. Aircraft remotely sensed photographic and multispectral scanner data were interpreted by two methods. First, qualitative analyses in which pollution features are located, mapped, and identified without concurrent sea truth and, second, quantitative analyses in which concurrently collected sea truth is used to calibrate the remotely sensed data and to determine quantitative distributions of one or more parameters in a plume. As a result of the data analyses in these experiments, an in-scene calibration technique was developed that $left double quote$ normalizes $right double quote$ atmospheric effects, thereby potentially providing a means of plume identification that is independent of the specific scene and the multispectral scanner used. 11 refs.

RS78-4-354

ID NO.- EI780860789 860789
MAPPING OF CHLOROPHYLL A DISTRIBUTIONS IN COASTAL ZONES.
Johnson, Robert W.
NASA/Langley Res Cent, Hampton, Va
Photogramm Eng Remote Sensing v 44 n 5 May 1978 p 617-624 CODEN: PERSDV
DESCRIPTORS: *REMOTE SENSING, ENVIRONMENTAL PROTECTION, (WATER POLLUTION, Control),
IDENTIFIERS: CHLOROPHYLL A
CARD ALERT: 405, 4 3, 742, 901
Remotely sensed data may be calibrated by concurrently measured sea truth. Regression equations from the analysis may be used to map quantitative distributions of chlorophyll $left double quote$ a $right double quote$ in coastal zone areas, thereby providing information that is readily available from other sources. Results of experiments with aircraft multispectral scanners over the turbid James River, Virginia, and the New York Bight ocean area, indicate that statistically significant quantitative relationships exist between remotely sensed data and chlorophyll $left double quote$ a $right double quote$ measurements in these environmentally different areas. 13 refs.

RS78-4-355

ID NO.- EI780859724 859724
PRESENT AND FUTURE OPERATIONAL NOAA SATELLITE OCEANOGRAPHIC PRODUCTS: AN INTRODUCTION.
Kalinowski, J. Keith; Signore, Theodore L.; Pichel, William G.; Walton, Charles C.; Brower, Robert L.; Brown, Stanley R.; Bennekamper, Kenneth G.
NOAA, Natl Environ Satell Serv, Suitland, Md
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 625-633 CODEN: PISEDM
DESCRIPTORS: (*OCEANOGRAPHY, *Remote Sensing), SATELLITES,
IDENTIFIERS: TIROS-N
CARD ALERT: 471, 6 5
A review of operational satellite-derived National Oceanic and Atmospheric Adminstration/National Environmental Satellite Service oceanographic products is presented and some current applications of these products are noted. Recent improvements to procedures used in deriving sea surface temperature observations and fields are described. Changes to data reduction techniques and products which will be incorporated with the advent of TIROS-N are outlined and some potential future developments are mentioned. Refs.

RS78-4-356

ID NO.- EI780857454 857454
REMOTE SENSING OF COASTAL FOOD RESOURCES.
Klemas, V.; Bartlett, D. S.
Univ of Del, Coll of Mar Stud, Newark, Del
Environ Manage v 2 n 2 Mar 1978 p 119-126 CODEN: EMNGDC
DESCRIPTORS: (*FISHERIES, *Remote Sensing), (RADAR, Applications),
IDENTIFIERS: COASTAL ZONES, FOOD RESOURCES, MULTISPECTRAL ANALYSIS
CARD ALERT: 471, 716
With the launch of LANDSAT, NOAA-2, and Skylab, relatively high resolution spacecraft data became available for mapping and inventorying tidal marshes and their productivity on a global scale. Upwelling regions that attract large fish populations as well as other coastal water properties relating to the presence of finfish, crustacea, and shellfish could be identified and observed. Using multispectral analysis techniques, classification accuracies greater than 80 percent have been obtained for most marsh plant species, and a greater than 90 percent for key types such as Spartina alterniflora, which is the primary producer in large tide marshes of the coastal such as NOAA-2, LANDSAT, and Skylab to assess coastal food resources on a global scale is discussed from the point of view of resoution, classification accuracy, and cost effectiveness. Refs.

RS78-4-357

ID NO.- EI780968895 868895
CANADIAN SURVEILLANCE SATELLITE PROGRAM AND INTEGRATED OCEAN INFORMATION SYSTEMS.
Morley, Lawrence W.; McQuillan, A. K.; Clough, Donald J.
Can Cent for Remote Sensing, Ottawa, Ont
Offshore Technol Conf 10th Annu, Proc, Houston, Tex, May 8-10 1978. Available from Offshore Technol Conf, Dallas, Tex, 1978 v 2 Pap OTC 3134 p 703-714 CODEN: OSTCBA
DESCRIPTORS: +REMOTE SENSING, OCEANOGRAPHY.
IDENTIFIERS: OFFSHORE TECHNOLOGY
CARD ALERT: 405, 471, 742
Description of the Canadian Surveillance Satellite Program (SURSAT), a three-year program to assess the technical and economic feasibility of a microwave remote sensing satellite system for monitoring of the 200-mile coastal fisheries zones, the continental shelf offshore oil and gas zones, and the arctic development zones. The SURSAT Program includes participation in NASA's SEASAT-A Program, research and development, and applications experiments. Interest is focused on SEASAT's high-resolution imaging synthetic aperture radar (SAR), and the integration of satellite data into overall ocean management information systems. 20 refs.

RS78-4-358

ID NO.- EI780859714 859714
ACOUSTIC OBSERVATIONS OF HIGH-FREQUENCY, NEAR-SURFACE INTERNAL WAVE GROUPS IN THE DEEP OCEAN DURING GATE.
Proni, J. R.; Ostapoff, F.; Sellers, R. L.
Atl Oceanogr & Meteorol Lab, Sea-Air Interact Lab, Miami, Fla
Deep Sea Res v 25 n 3 Mar 1978 p 299-307 CODEN: DESRAY
DESCRIPTORS: *OCEANOGRAPHY, WATER WAVES, ACOUSTICS, UNDERWATER,
CARD ALERT: 471, 631, 751
The observed wave groups have several structural features in common with internal wave groups observed on continental shelves. It is suggested that the wave groups are distinguishable because of their structural features from the generally present high-frequency internal wave background, and that these same features are to be expected on a theoretical basis from the work of T. B. Benjamin. Some evidence supporting the acoustic data is derived from simultaneously observed temperature and salinity data and from some imaging radar gathered in the same overall area. Refs.

RS78-4-359

ID NO.- EI780860841 860841
PROTOTYPE ACTIVE SCANNER FOR NIGHTTIME OIL SPILL MAPPING AND CLASSIFICATION.
Sandness, G. A.; Ailes, S. B.
Battelle Pac Northwest Lab, Richland, Wash
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1445-1 52 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Multispectral Scanners), (WATER POLLUTION, Oil Spills),
CARD ALERT: 716, 4 3
A prototype, active, aerial scanner system has been constructed for nighttime water pollution detection and nighttime multispectral imaging of the ground. An arc lamp is used to produce the transmitted light and four detector channels provide a multispectral measurement capability. The feasibility of the design concept has been demonstrated by laboratory and flight tests of the prototype system.

RS78-4-360

ID NO.- EI780859722 859722
CURRENT AND FUTURE SATELLITES FOR OCEANIC MONITORING.
Sherman, John W. III
NOAA, Natl Environ Satell Serv, Washington, DC
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 279-297 CODEN: PISEDM
DESCRIPTORS: (*OCEANOGRAPHY, *Remote Sensing), (REMOTE SENSING, Environmental Applications),
CARD ALERT: 471, 901
This paper reviews current applications and products from existing operational satellites and the future data and information that will become available before the end of this decade with emphasis on global oceanic data. Specific oceanic applications using visible and infrared data have been developed operationally for sea surface temperature, major current tracking, limited area ship routing, and lake and sea ice. The satellites planned for launch in 1978 will significantly extend this present capability, expand the knowledge of oceanic dynamics, and increase the operational uses of space technology. The first noteworthy applications will be near all-weather analyses and prediction of surface winds; waves and wave spectra; circulation and oceanic current processes, and surface layer transport; severe storms, storm surge and setup, and tides; surface temperature; oil spills; ice dynamics, mapping and statistics; and determination of the earth's geoid. 17 refs.

RS78-4-361

ID NO.- EI780859720 859720
EDDIES IN THE KAMCHATKA CURRENT.
Solomon, Harold; Ahlnas, Kristina
Univ of Tokyo, Geophys Inst, Jpn
Deep Sea Res v 25 n 4 Apr 1978 p 403-410 CODEN: DESRAY
DESCRIPTORS: (*OCEANOGRAPHY, *Currents), (REMOTE SENSING, Environmental Applications),
CARD ALERT: 471, 7 2
Visible images from the National Oceanic and Atmospheric Administration (NOAA) satellites show intense vortices which are believed to be oceanic eddies, in the Kamchatka Current in winter. Infra-red images from the same satellites show eddies in the Kamchatka Current, and trains of eddies covering much of the western Bering Sea; in autumn. Such thermal features, which were not explicitly taken into account in previous oceanographic studies of this region, might cause the exceptionally high space and time variability in computer geostrophic transports and indicate a need for a new approach in attempts to clarify the nature of the net circulation and its seasonal and year-to-year variability. Some of the observed eddies show a distinct spiral arm structure. This is thought to be the first instance of published evidence of such structure in oceanic eddies. Refs.

RS78-4-362

ID NO.- EI780859721 859721
STUDY OF THE BRAZIL AND FALKLAND CURRENTS USING THEIR IMAGES OF NIMBUS V AND OCEANOGRAPHIC DATA IN 1972 TO 1973.
Tseng, Y. C.; Inostroza, H. M.; Kumar, R.
Inst de Pesqui Espec (INPE), Sao Jose dos Compos, Braz
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 859-871 CODEN: PISEDM
DESCRIPTORS: (*OCEANOGRAPHY, *Currents), (REMOTE SENSING, Environmental Applications), INFRARED IMAGING,
IDENTIFIERS: NIMBUS V
CARD ALERT: 471, 716, 741
An oceanographic study of the Western Edge of the Sub-tropical convergence of the Southwestern Atlantic Ocean, called the Front, which is a thermal discontinuity between the Brazil and Falkland Currents, was done utilizing the Temperature Humidity Infrared Radiometer (THIR) of Nimbus V in the 10. 5 to 12. 5 mu m channel and historical oceanographic data in the period of 1972 to 1973. Some important results obtained are: the oceanographic Front could be detected from Nimbus V THIR data: oceanographic charts clearly showed that the transition zone where the Brazil and the Falkland Currents meet, was the Front detected from satellite data: ocean current speeds calculated with THIR data were of the same order of magnitude as those calculated oceanographically; fisheries statistics for Pargo Roseo showed that the maximum catches were in September of 1973, in the period when the Front was observed most distinctly and clearly. Refs.

RS78-4-363

ID NO.- EI780967690 867690
BATHYMETRIC MAPPING WITH LANDSAT: A PRACTICAL APPROACH.
Warne, Denis Keith
Aust Natl Univ, Canberra
Offshore Technol Conf 10th Annu, Proc, Houston, Tex, May 8-10 1978. Available from Offshore Technol Conf, Dallas, Tex, 1978 v 3 Pap OTC 322 p 1485-1492 CODEN: OSTCBA
DESCRIPTORS: (*OCEANOGRAPHY, *Bathymetry), REMOTE SENSING,
IDENTIFIERS: OFFSHORE TECHNOLOGY
CARD ALERT: 405, 471, 742
A description is given of work which has concentrated on the development of a production oriented approach which utilizes both shipborne and satellite data collection supplemented by meteorological and tidal information. Test surveys off the north-east coast of Australia have verified that this approach, with its integration of Landsat data, interpretation and shipborne survey, is a viable survey method. 13 refs.

RS78-4-364

HF Coastal Current Mapping Radar System

Department of the Interior, Washington, D.C. (109 950)

Patent Application
AUTHOR: Barrick, Donald E.; Evans, Michael W.
E0795A4 Fld: 8C, 17I, 8B, 90G, 47F, 47B GRAI7809
Filed 8 Aug 77 20p
Rept No: PAT-APPL-822 868
Monitor: 18
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Abstract: The patent application relates to a system for radar remote sensing of near surface ocean currents in coastal regions. The system employs a pair of low power, transportable high frequency radar units to scatter signals from the shore off of the ocean waves. Underlying surface currents impart a slight change in velocity to the ocean waves which is detected by the radar units. Each radar unit can determine the angular direction of arrival of the radar echo signals by comparing the phase of the signals received at three short antennas on the shore. Signals scattered from the same point on the ocean by each of the two geographically separated radar units are used to construct a complete current vector for that point. The radar pair takes simultaneous measurements over an ocean area with a predetermined grid pattern. Vectors are constructed for each square section of the grid, and a map of the near surface current field is output in real-time by an on-site minicomputer.

Descriptors: *Radar mapping, *Patent applications, *Ocean currents, Oceanographic charts, Remote sensing

Identifiers: Coastal regions, Oceanographic equipment, NTISGPINT

PB-275 547/8ST NTIS Prices: PC A02/MF A01

RS78-4-365

Development and Application of Operational Techniques for the Inventory and Monitoring of Resources and Uses for the Texas Coastal Zone. Volume 1. Text

General Land Office of Texas, Austin.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept. Apr 75-Oct 77
AUTHOR: Harwood, Peggy; Finley, Robert; McCulloch, Samuel; Malin, Patricia A.; Schell, John A.
E0675J4 Fld: 8F, 8B, 93A, 48C GRAI7808
Oct 77 299p
Contract: NAS5-20986
Monitor: NASA-CR-155342
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. Image interpretation and computer-assisted techniques were developed to analyze LANDSAT scenes in support of resource inventory and monitoring requirements for the Texas coastal region. Land cover and land use maps, at a scale of 1:125,000 for the image interpretation product and 1:24,000 for the computer-assisted product, were generated covering four Texas coastal test sites. Classification schemes which parallel national systems were developed for each procedure, including 23 classes for image interpretation technique and 13 classes for the computer-assisted technique. Results indicate that LANDSAT-derived land cover and land use maps can be successfully applied to a variety of planning and management activities on the Texas coast. Computer-derived land/water maps can be used with tide gage data to assess shoreline boundaries for management purposes. (Color illustrations reproduced in black and white)

Descriptors: *Texas, *Land use, Environmental monitoring, Coasts, Earth Resources program, Inventories, Photointerpretation, Maps

Identifiers: Natural resources, Mapping, LANDSAT satellites, Image processing, NTISNASA

E78-10042 NTIS Prices: PC A13/MF A01

RS78-4-366

Application of LANDSAT to the Management of Delaware's Marine and Wetland Resources

Delaware Univ., Newark. Center for Remote Sensing.**Bendix Aerospace Div., Ann Arbor, Mich.*National Aeronautics and Space Administration. Greenbelt, Md. Goddard Space Flight Center.

Final rept. Feb 76-Dec 77
AUTHOR: Klemas, V.; Bartlett, D.; Davis, G.; Philpot, W.; Rogers, R.
E0884I3 Fld: 8C, 93A, 48B GRAI7810
Dec 77 142p
Contract: NAS5-20983
Monitor: NASA-CR-155609
Prepared in cooperation with Bendix Aerospace Div., Ann Arbor, Mich.
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. LANDSAT data were found to be the best source of synoptic information on the distribution of horizontal water mass discontinuities (fronts) at different portions of the tidal cycle. Distributions observed were used to improve an oil slick movement prediction model for the Delaware Bay. LANDSAT data were used to monitor the movement and dispersion of industrial acid waste material dumped over the continental shelf. A technique for assessing aqueous sediment concentration with limited ground truth was proposed.

Descriptors: *Delaware, *Wetlands, *Marine resources, Sediments, Vegetation, Delaware River Basin(US), Earth Resources program, Estuaries, Industrial wastes, Pollution monitoring, Ground truth

Identifiers: NTISNASA

E78-10068 NTIS Prices: PC A07/MF A01

RS78-4-367

Assessment of Aquatic Vegetation with Satellite-Derived Data

Cornell Univ., Ithaca, N.Y. School of Civil and Environmental Engineering.*Office of Water Research and Technology, Washington, D.C.*National Aeronautics and Space Administration, Washington, D.C.

Completion rept.
AUTHOR: Markham, B. L.; Philipson, W. R.; Ng, J.; Liang, T.
E0692G4 Fld: 8H, 6F, 48G, 57H, 57C GRAI7808
Nov 77 24p
Contract: DI-14-34-0001-7068
Grant: NGL-33-010-171
Project: OWRT-A-082-NY
Monitor: OWRT-A-082-NY(1)

Abstract: LANDSAT satellite data were analyzed manually and digitally to determine whether they can provide any useful information concerning freshwater, aquatic vegetation. The study focused on central New York State, where aerial photographic coverage and field data for three lakes were available for comparison.

Descriptors: *Limnology, *Fresh water biology, *Remote sensing, *Vegetation, *Aquatic plants, Plants(Botany), Canadarago Lake, Cayuga Lake, Oneida Lake, New York, Lakes, Data processing, Scientific satellites

Identifiers: LANDSAT satellites, NTISDIOWRT

PB-275 768/0ST NTIS Prices: PC A02/MF A01

RS78-4-368

Oil Spill and Oil Pollution Reports

California Univ., Santa Barbara. Marine Science Inst.*Industrial Environmental Research Lab., Cincinnati, Ohio.

Quarterly rept. May-Jul 77
AUTHOR: Melvin, Penelope; Ehrenspeck, Helmut; Nordin, Paul
E0803G2 Fld: 13B, 68D*, 88E GRAI7809
Nov 77 389p*
Grant: EPA-R-805052
Monitor: EPA/600/2-77/243
See also report dated Jun 77, PB-272 689.

Abstract: This issue contains summaries of articles, reports, patents, documents, and other materials relating to oil pollution published during the period 1974 to 1976. Subject coverage includes aquatic and terrestrial oil pollution with emphasis on the marine environment. A list of the periodicals reviewed in preparing this series appears in the Appendix. Section II presents titles of active or recently completed oil pollution research projects; summaries of project objectives, and current status information and/or resulting publications provided upon request by the principal investigators or performing organization. Section III, Current Oil-Related Conferences, contains descriptive information on recently held and upcoming conferences relevant to any aspects of oil pollution. Conference dates are listed; and, when information is available, titles, authors, and abstracts of conference papers are included.

Descriptors: *Oil spills, *Oil pollution, *Water pollution, *Bibliographies, Oil pollution control, Monitoring, Remote sensing, Sampling, Water analysis, Sources, Containment, Chemical analysis, Cleaning, Sources, Materials recovery, Recycling, Environmental impacts, Reclamation, Regulations, Legislation, Marine biology, Offshore drilling, Economic analysis, Government policies, Oil exploration, Transport properties, Patents, Meetings, Degradation, Accidents, Tanker ships

Identifiers: Oil pollution detection, Water pollution detection, Oil pollution removal, Waste recycling, Water pollution effects(Animals), Contingency planning, NTISEPAORD

PB-276 691/3ST NTIS Prices: PC A17/MF A01

RS78-4-369

Microwave Emission from Sea Ice

Helsinki Univ. of Technology, Espoo (Finland). Radio Lab.
AUTHOR: Parashar, S. K.
E0522C1 Fld: 8L, 8J, 47C STAR1602
1976 19p
Rept No: REPT-S-90, ISBN-951-750-797-6
Monitor: 18

Abstract: The available literature on microwave emission from sea ice is reviewed. Sections are included on the formation of sea ice and its relevant characteristics, radiometry theory, and theory of emission. Some of the past radiometric measurements of sea ice are given. In addition, different methods which can be used to analyze the radiometric data are presented.

Descriptors: *Brightness temperature, *Microwave emission, *Sea ice, Microwave radiometers, Remote sensors, Data processing, Dielectric properties, Ground truth, Wave scattering

Identifiers: Finland, NTISNASAE

N78-11292/7ST NTIS Prices: PC A02/MF A01

RS78-4-370

NASA/Cousteau Ocean Bathymetry Experiment. Remote Bathymetry Using High Gain LANDSAT Data

Environmental Research Inst. of Michigan, Ann Arbor.

Final Report, Aug. 1975 - Apr. 1976.
AUTHOR: Polcyn, F. C.
E0923H4 Fld: 8J, 47G STAR1606
Jul 76 132p
Rept No: NASA-CR-156658, ERIM-118500-1-F

Contract: NAS5-22597
Monitor: 18

Abstract: Satellite remote bathymetry was varified to 22 m depths where water clarity was defined by alpha = .058 1/m and bottom reflection, r(b), was 26%. High gain band 4 and band 5 CCT data from LANDSAT 1 was used for a test site in the Bahama Islands and near Florida. Near Florida where alpha = .11 1/m and r(b) = 20%, depths to 10 m were verified. Depth accuracies within 10% rms were achieved. Position accuracies within one LANDSAT pixel were obtained by reference to the Transit navigation satellites. The Calypso and the Beayondan, two ships, were at anchor on each of the seven days during LANDSAT 1 and 2 overpasses: LORAN C position information was used when the ships were underway making depth transects. Results are expected to be useful for updating charts showing shoals hazardous to navigation or in monitoring changes in nearshore topography.

Descriptors: *Atlantic Ocean, Bathymeters, LANDSAT satellites, Remote sensors, Depth measurement, LORAN C, Multispectral band scanners, Nasa programs, Oceanography, Shoals

Identifiers: *Bathymetry, *Remote sensing, NTISNASA

N78-15662/7ST NTIS Prices: PC A07/MF A01

RS78-4-371

Georgia's Coastal Zone - An Inventory of Photographic and Satellite Coverage 1945-1977

Georgia Marine Science Center, Savannah.**Coastal Area Planning and Development Commission, Brunswick, Ga.*National Oceanic and Atmospheric Administration, Rockville, Md. Office of Sea Grant.
AUTHOR: Reimold, Robert J.; Keeler, Ronald
E0504L1 Fld: 8B, 8F, 48, 86M GRAI7806
1977 49p
Rept No: TR-77-5
Monitor: NOAA-77111105
Prepared in cooperation with Coastal Area Planning and Development Commission, Brunswick, Ga.

Abstract: The numerous aerial surveys and Landsat images that are available for the six coastal counties of Georgia are summarized. The aerial photographic surveys that have been completed since 19 5 are listed as well as the Landsat coverage of the region. The surveys are categorized by county and subclassified by date. Each of the entries identifies: (1) The date; (2) percentage of coverage of the county; (3) type of film; (4) scale; (5) agency that conducted the survey; (6) project identification number; and (7) map indicating the location of the flight. Entire surveys are enumerated; individual photographs are not listed.

Descriptors: *Aerial surveys, *Spaceborne photography, *Coasts, Oceanographic data, Georgia, Remote sensing, Maps, Infrared photography, Land surveys, Photographic images, Photointerpretation, Vegetation, Color photography, Time series analysis, Cloud cover, Tables(Data), Inventories

Identifiers: Landsat satellites, Sea Grant program, Bryan County(Georgia), Camden County(Georgia), Chatham County(Georgia), Glynn County(Georgia), Liberty County(Georgia), McIntosh County(Georgia), NTISCOMNOA

PB-275 356/4ST NTIS Prices: PC A03/MF A01

RS78-4-372

Laboratory Measurements of Radiance and Reflectance Spectra of Dilute Primary-Treated Sewage Sludge

National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
AUTHOR: Usry, J. W.; Witte, W. G.; Whitlock, C. H.; Gurganus, E. A.
E062184 Fld: 13B, 7D, 68D, 99A STAR1603
Nov 77 27p
Rept No: NASA-TP-1038, L-11767
Monitor: 18

Abstract: The feasibility of remotely monitoring ocean dumping of waste products such as acid and sewage sludge is evaluated. The laboratory arrangement, solar simulator, and test results from three experiments conducted in the laboratory are described. Radiance and reflectance spectra are presented for primary-treated sewage sludge mixed with two types of base water. Results indicate that upwelled reflectance varies in a near-linear manner with concentration and that the sludge has a practically flat signal response between 420 and 970 nm. Well-defined upwelled reflectance spectra were obtained for the sewage-sludge mixtures at all wavelengths and concentrations. The spectral-reflectance values appeared to be influenced by the type of base water, but this influence was small, especially for the mixtures with low concentrations of sewage sludge.

Descriptors: *Ocean dumping, Radiance, Reflectance, Sewage treatment, Dumping, Laboratory equipment, Oceans, Remote sensors

Identifiers: *Acids, *Sewage sludge, Feasibility, Monitoring, Concentration(Composition), *Water pollution detection, Water analysis, Chemical analysis, Remote sensing, NTISNASA

N78-12554/9ST NTIS Prices: PC A03/MF A01

RS78-4-373

Laboratory Measurements of Radiance and Reflectance Spectra of Dilute Secondary-Treated Sewage Sludge

National Aeronautics and Space Administration. Langley Research Center. Langley Station, Va.
AUTHOR: Witte, W. G.; Usry, J. W.; Whitlock, C. H.; Gurganus, E. A.
E0621C1 Fld: 13B, 7D, 68D, 99A STAR1603
Dec 77 23p
Rept No: NASA-TP-1089, L-11870
Monitor: 18

Abstract: The National Aeronautics and Space Administration (NASA), in cooperation with the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA), conducted a research program to evaluate the feasibility of remotely monitoring ocean dumping of waste products such as acid and sewage sludge. One aspect of the research program involved the measurements of upwelled spectral signatures for sewage-sludge mixtures of different concentrations in an 11600-liter tank. This paper describes the laboratory arrangement and presents radiance and reflectance spectra in the visible and near-infrared ranges for concentrations ranging from 9.7 to 180 ppm of secondary-treated sewage sludge mixed with two types of base water. Results indicate that upwelled radiance varies in a near-linear manner with concentration and that the sludge has a practically flat signal response between 420 and 970 nm. Reflectance spectra were obtained for the sewage-sludge mixtures at all wavelengths and concentrations.

Descriptors: *Ocean dumping, *Waste disposal, Oceans, Remote sensors, Dumping, Sludge, Spectral signatures

Identifiers: *Acids, *Sewage sludge, Feasibility, Monitoring, Concentration(Composition), Chemical analysis, Water analysis, *Water pollution detection, Remote sensing, NTISNASA

N78-12555/6ST . NTIS Prices: PC A02/MF A01

Section 5

URBAN LAND USE

Geography, Environmental and Population Studies,
Lower Tropospheric Meteorology and Land-Use Studies

RS78-5-264

78C0070589 EDB-78-13 51.050
CONF-7510172--P2/
IMPROVED RESOURCE USE DECISIONS AND ACTIONS THROUGH REMOTE SENSING/
DUYLAN,M./ENGLIN,W.R./HILL-ROWLEY,R./VLASIN,R.D./
MICHIGAN STATE UNIV.,EAST LANSING/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
JS/
US/
ERA-03:035693/EDB-78:070589/
THE MICHIGAN STATE UNIVERSITY REMOTE SENSING RESEARCH PROGRAM CONTINUES TO EXPERIMENT WITH APPLICATIONS OF REMOTE SENSING TECHNOLOGY BY ASSISTING A VARIETY OF PUBLIC AGENCIES AND PRIVATE ORGANIZATIONS IN IMPROVING MANAGEMENT DECISIONS AND ACTIONS, PARTICULARLY THOSE RELATED TO NATURAL AND CULTURAL RESOURCES.EXPERIENCE CONTINUES TO EMPHASIZE IMPORTANT DIFFERENCES BETWEEN MOST APPLICATIONS,DISTINCTIONS WHICH INFLUENCE THE SELECTION OF CASE STUDIES,CRITERIA FOR RESEARCH DESIGN AND METHODS,FOR TIME AND BUDGET ALLOCATIONS,AND FOR THE KINDS OF PERSONNEL TO BE UTILIZED.FROM THE APPLICATIONS COMPLETED DURING 1974--1975,EIGHT CASE STUDIES ARE DESCRIBED BRIEFLY WITH SOME IMPORTANT DISTINCTIONS HIGHLIGHTED.THESE SELECTIONS CONSIST OF: LAND VALUE REAPPRAISAL FOR TAX ASSESSMENT PURPOSES/OPTIMIZING AGRI-BUSINESS PROCESSING PLANT LOCATIONS /LOCATING ABANDONED VEHICLES FOR REMOVAL AND RECYCLING/MAPPING OF SURFACE WATER BODIES FOR RURAL FIRE-FIGHTING UNITS / TIMBER MANAGEMENT AND UTILIZATION / HIGHWAY CORRIDOR SELECTION IN A MAJOR RIVER BASIN/LAND USE INVENTORY OF MICHIGAN'S LARGEST URBAN REGION./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0500/
FORESTRY/INVENTORIES/LAND USE:T3/MANAGEMENT:02,03/MICHIGAN/PERSONNEL/RECYCLING/REMOTE SENSING:T1/RESEARCH PROGRAMS:01/RESOURCES:T2/ROADS/SURFACE WATERS:T5/TOPOLOGICAL MAPPING:05/URBAN AREAS/USES/VEHICLES/

RS78-5-265

78C0105269 EDB-78-19 58.020
CONF-770478--P1/
REMOTE SENSING IN RANGELAND MANAGEMENT:AN OVERVIEW OF APPLICATIONS AND BENEFITS/
CARNEGGIE,D.M./
GEOLOGICAL SURVEY,SIOUX FALLS,SD/
1977/
PROCLEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.1/
JS/
US/
ERA-03:061313/EDB-78:105269/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0202/51.0500/
BASELINE ECOLOGY / GEOPHYSICAL SURVEYS / LAND USE/MANAGEMENT/REMOTE SENSING:T1/RESOURCE CONSERVATION/SURFACE MINING/TECHNOLOGY UTILIZATION:01/

RS78-5-266

78C0075590 EDB-78-13 $1.050
CONF-7510172--P2/
USE OF REMOTE SENSING IMAGERY AND THE PIDS SYSTEM IN LAND USE STUDIES AT THE SOUTHERN CALIFORNIA EDISON COMPANY/
CROUCH,R.G.(SOUTHERN CALIFORNIA EDISON CO.,ROSEMEAD)/DANGERMOND,J.P./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:015994/EDB-78:070590/
OVER THE PAST THREE YEARS THE SOUTHERN CALIFORNIA EDISON COMPANY (SCE)HAS DEVELOPED AND IMPLEMENTED AN ONGOING LAND USE STUDY PROGRAM TO ASSIST IN FORECASTING FUTURE ELECTRICAL LOAD GROWTH AND GENERAL FACILITY PLANNING.THE TECHNICAL ELEMENTS OF THIS PROGRAM INVOLVE COLLECTION OF LAND USE DATA FROM HIGH ALTITUDE IMAGERY,AUTOMATING THIS DATA USING THE PIDS SYSTEM, CONDUCTING VARIOUS AREA OVERLAY AND MAPPING STUDIES, AND INCORPORATING THIS DATA INTO A GENERALIZED METHODOLOGY FOR FORECASTING LAND USE.IN ADDITION TO A SUCCESSFUL TECHNICAL PROGRAM,SCE HAS WORKED CLOSELY WITH THREE COUNTY AGENCIES IN DEFINITION OF A MUTUALLY USABLE DATA INVENTORY AND IN ESTABLISHING A JOINT SPONSORSHIP PROGRAM.AS THE SCE PROGRAM CONTINUES,THERE MAY BE ADDITIONAL AREAS OF INFORMATION SYSTEM DEVELOPMENT THAT BECOME BOTH POSSIBLE AND COST EFFECTIVE.SOME OF THESE CONCEPTS ARE SUGGESTED HEREIN./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0500/53.0100/
AUTOMATION / COST / DATA ANALYSIS / ELECTRIC POWER:T2/FORECASTING/IMAGES/INFORMATION SYSTEMS/INVENTORIES/LAND USE:T1/PLANNING:Q1,Q2/REMOTE SENSING:Q1/TOPOLOGICAL MAPPING/

RS78-5-267

78C0075716 EDB-78-14 $1.010
CONF-7510172--P1/
UTILIZATION OF HIGH ALTITUDE PHOTOGRAPHY AND LANDSAT-1 DATA FOR CHANGE DETECTION AND SENSITIVE AREA ANALYSIS/
DEGLORIA,S.D./DAUS,S.J./TOSTA,N./BONNER,K./
UNIV.OF CALIFORNIA,BERKELEY/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-04:016010/EDB-78:075716/
A MULTI-DISCIPLINARY AND MULTI-PURPOSE REMOTE SENSING STUDY WAS CONDUCTED IN THE NORTHERN DESERT SHRUB ENVIRONMENT TO EVALUATE THE APPLICABILITY OF REMOTELY-SENSED DATA AS AN INPUT TO THE BUREAU OF LAND MANAGEMENT (BLM)PLANNING SYSTEM,AND TO PROVIDE MAP PRODUCTS AND DATA SUMMARIES TO BE UTILIZED BY DISTRICT-LEVEL LAND MANAGERS.THE EXPERIMENTAL DESIGN, PROCEDURES, AND RESULTS OF THE ENVIRONMENTAL MONITORING TASKS OF THAT STUDY ARE REPORTED.SENSITIVE AREAS WERE MAPPED AND MONITORED WITHIN AND BETWEEN TWO SEASONS UTILIZING BOTH MANUAL AND AUTOMATIC ANALYSES OF HIGH-ALTITUDE CIR PHOTOGRAPHY AND LANDSAT-1 DATA.PHOTOGRAPHIC ILLUSTRATIONS,PHOTO AND BASE MAP OVERLAYS,AND DIGITAL OUTPUT WERE GENERATED FOR A 500,000 HECTARE REGION IN NORTHEASTERN CALIFORNIA AND NORTHWESTERN NEVADA./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/51.0500/
DATA ACQUISITION / DESERTS: T4 / DIGITAL COMPUTERS/LAND USE:T3/MONITORING/PHOTOGRAPHY/PLANNING:Q3/REMOTE SENSING:Q4/SATELLITES/SHRUBS/TOPOLOGICAL MAPPING/

RS78-5-268

78C0075715 EDB-78-14 $1.010
CONF-7510172--P1/
APPLICATION OF REMOTE SENSING DATA TO GEOGRAPHIC-BASED INFORMATION MANAGEMENT SYSTEMS/
HALPERN,J.A./ALEXANDER,L.D./O'REGAN,D.M./
DAMES AND MOORE,CRANFORD,NJ/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:038009/EDB-78:075715/
REMOTE SENSING DATA ARE APPLIED TO A DATA MANAGEMENT SYSTEM FOR A PRELIMINARY POWER PLANT SITING INVESTIGATION.A SITING SURVEY WAS PERFORMED FOR LOCATION OF A LARGE POWER PLANT FACILITY ON THE DELMARVA PENINSULA (DELAWARE,MARYLAND, VIRGINIA) . THE FINAL OUTPUT OF THE SYSTEM IS A DECISION MAP THAT REFLECTS ALL THE TECHNICAL AND ARBITRARY DECISIONS AND WEIGHTS THAT WENT INTO THE COMBINING OF SOURCE DATA MAPS.THE GEOLOGIC LINEAR MAP WAS CONSTRUCTED BY PHOTOGEOLOGIC INTERPRETATION OF BLACK-AND-WHITE LANDSAT FRAMES IN BANDS 5 AND 7 AT A SCALE OF 1:500,000.THE VEGETATION MAP,THE LAND USE MAP,AND SURFACE WATER MAP WERE ALL DERIVED BY SUPERVISED MULTISPECTRAL PROCESSING OF DIGITAL LANDSAT DATA.(HLW)/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/51.0500/
DATA ACQUISITION: Q1 / DATA PROCESSING / INFORMATION SYSTEMS/LAND USE/MANAGEMENT/POWER PLANTS:T2/REMOTE SENSING:T1/SATELLITES/SITE SELECTION:Q2/SURFACE WATERS/TOPOLOGICAL MAPPING/USES/

RS78-5-269

78C0075743 EDB-78-14 $1.050
CONF-7510172--01/
EVALUATION OF LAND USE AND ITS COLOR REPRESENTATION IN TOKYO DISTRICTS WITH LANDSAT DIGITAL DATA/
MURAI,S./
UNIV.OF TOKYO,MINATOKU,JAPAN/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
JP/
US/
ERA-03:038034/EDB-78:075743/
A PIXEL OF LANDSAT DIGITAL DATA WITH AN AREA OF 57 METERS BY 76 METERS CONTAINS COMPOSITE REFLECTIONS FROM SEVERAL DIFFERENT LAND USES IN AN OVERPOPULATED CITY AS TOKYO DISTRICTS.A CONVENTIONAL MAP OF LAND USE HAS BEEN REPRESENTED IN DIFFERENT COLORS, CORRESPONDING TO THE NOMINAL LAND USE.FOR EXAMPLE,INDUSTRIAL ZONE IS PAINTED IN BLUE,WITHOUT BEING DISCRIMINATED BETWEEN BUILDINGS AND OPEN SPACES NEAR THOSE BUILDINGS.HOWEVER,REMOTELY SENSED DATA SHOW QUITE DIFFERENT VALUES BETWEEN THOSE BUILDINGS AND OPEN SPACES.IN ADDITION,A PADDY FIELD SHOULD BE PAINTED IN YELLOW IN THE MAP OF LAND USE AS **LAND TO BE USED AS PADDY FIELD**,REGARDLESS OF THE SEASONAL VARIATION.REMOTELY SENSED DATA SHOULD BE CLASSIFIED INTO CATEGORIES WHICH REPRESENT THE REAL STATUS OF LAND USE OR LAND COVER AT THE TIME OF FLIGHT.AS IT IS NOT APPROPRIATE TO ASSIGN A PIXEL OF UNRESOLVED REMOTELY SENSED DATA TO A NAME OF LAND USE,A NEW CRITERION FOR CLASSIFICATION OF REAL STATUS OF LAND USE WILL BE REQUIRED TO BE ESTABLISHED.IN THIS STUDY,LAND USE IS ASSUMED TO BE COMPOSED OF A MIXTURE OF THREE PRIMARY COMPONENTS,WATER,VEGETATION AND NON ORGANIC MATTER (BARE SOIL,ROCK,SAND,CONCRETE,ASPHALT AND SO ON).THREE COMPONENTS CAN BE EVALUATED BY THE REMOTELY SENSED DATA BECAUSE OF THEIR UNIQUE SPECTRAL CHARACTERISITIES.THREE PRIMARY COMPONENTS, WATER, VEGETATION AND NON ORGANIC MATTER ARE CORRESPONDED TO THREE PRIMARY COLORS,BLUE,GREEN,AND RED RESPECTIVELY.THE REAL STATUS OF LAND USE OR LAND COVER WITH A MIXTURE OF WATER,VEGETATION AND NON ORGANIC MATTER WILL BE REPRESENTED IN A MIXTURE OF THREE PRIMARY COLORS,BASED UPON THE CRITERION OF COLOR INDEX,WHICH PROVIDES MEANING TO A MIXTURE OF LAND USE./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
$1.0500/
DATA ACQUISITION/DIGITAL COMPUTERS/EVALUATION/JAPAN:T/LAND USE:T1,03/REMOTE SENSING:01/URBAN AREAS:T3/

RS78-5-270

78C0075772 EDB-78-14 $2.020
CONF-7510172--P1/
DEGRADATION OF THE VEGETATION COVER WITH URBANIZATION AND ITS INFLUENCE ON THE FLOW OF POLLUTED AIR/
NAKAJIMA,I./
MINISTRY OF AGRICULTURE AND FORESTRY,TOKYO/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
JP/
US/
ERA-03:038063/EDB-78:075772/
ALONG WITH THE DEGRADATION OF VEGETATION COVER AND THE CONSTANT SPREAD OF ARTIFICIAL SURFACE STRUCTURES SUCH AS CONCRETE BUILDINGS AND ASPHALT PAVEMENTS,URBANIZATION IS SEEN TO CAUSE A RAPID INCREASE IN SURFACE RADIATION HEAT.THE HOT AIR-MASS RISING ABOVE SUCH SURFACES BRING,IN TURN,THE INFLOW OF POLLUTED AIR TO DENSELY POPULATED URBAN AREAS.URBAN PLANNING, THEREFORE, MUST INCLUDE MEASURES TO CONSERVE ADEQUATE VEGETATION COVER.IT WAS EXPLAINED HOW POLLUTED AIR COMES TO BE CONCENTRATED AS A RESULT OF HOT AIR MASSES RISING OVER DENSELY POPULATED AREAS WITH LITTLE VEGETATION COVER--A PHENOMENON CAUSED BY RADIATION HEAT WAVES.IT WAS ALSO SEEN THAT THE RATIO OF RADIATION HEAT WAVES IS CLOSELY RELATED WITH THE TYPE OF LAND SURFACE.THIS RATIO INCREASES RAPIDLY WHEN SURFACE VEGETATION DIPS BELOW 20-25 PERCENT OF THE TOTAL SURFACE AREA. A STUDY WAS MADE BY LANDSAT AND THROUGH AERIAL PHOTOGRAPHY OF METROPOLITAN TOKYO'S SURFACE TEMPERATURE PATTERN TAKEN DURING THE MORNING HOURS AND AGAIN AT NOON.TOKYO'S BIO-ENVIRONMENTAL QUALITY PATTERN WAS LIKEWISE MAPPED, USING THE NUMERICAL SCORE CHART WHICH DEDUCED THE RELATIONSHIP BETWEEN POLLUTION-CAUSED VEGETATION DAMAGE AND LAND SURFACE CONDITIONS.THESE RESULTS HAVE SERVED TO SHOW US WHAT MINIMUM PERCENTAGE OF SURFACE VEGETATION IS NEEDED IN URBAN AREAS.IT IS ALSO AN EFFECTIVE METHOD OF CONDUCTING ENVIRONMENTAL QUALITY SURVEYS OVER WIDE REGIONS./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
$2.0200/
AIR POLLUTION:T2,01/DECOMPOSITION:03/HEAT/HUMAN POPULATIONS/LAND POLLUTION:05/PHOTOGRAPHY/PLANTS:T3/REMOTE SENSING:02/SATELLITES/SOILS:T5/TEMPERATURE EFFECTS:01/URBAN AREAS:T1/

RS78-5-271

78C00S9892 EDB-78-13 32.060
(CONF-7510172--P1)REVIEW OF THE FEDERAL HIGHWAY ADMINISTRATION PROGRAM/
BERCHALSKI,F.R./
FEDERAL HIGHWAY ADMINISTRATION,WASHINGTON,DC/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
32.0602/51.0100/
EXPLORATION/MANAGEMENT:01/REMOTE SENSING/ROADS:T1/SOILS:T2/TOPOLOGICAL MAPPING:02/

RS78-5-272

78C00756774 EDB-78-14 52.020
CONF-7510172--P1/
GREAT LAKES ENVIRONMENTAL LAND USE MAPPING/
RISLEY,C.JR./
ENVIRONMENTAL PROTECTION AGENCY,CHICAGO/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:038065/EDB-78:075774/
THE GOVERNMENT OF CANADA AND THE UNITED STATES REQUESTED THE INTERNATIONAL JOINT COMMISSION TO CONDUCT A STUDY OF POLLUTION OF THE BOUNDARY WATERS OF THE GREAT LAKES SYSTEM FROM AGRICULTURE,FORESTRY,AND OTHER LAND USE ACTIVITIES.A PROGRAM WAS PROPOSED BY THE U.S.EPA IN SUPPORT OF THE GREAT LAKES WATER QUALITY AGREEMENT OF 1972 TO FURNISH A LAND USE INVENTORY OF THE U. S. PORTION OF THE GREAT LAKES DRAINAGE BASIN.THIS LAND USE INVENTORY WILL BE USED TO QUANTIFY POLLUTION FROM LAND USE ACTIVITIES IN THE U.S.PORTION.WHILE CANADA IS CHARGED WITH THE RESPONSIBILITY OF OBTAINING A SIMILAR INVENTORY FOR THE CANADIAN PORTION OF THE GREAT LAKES DRAINAGE BASIN.THE PROJECT USES EARTH RESEARCH TECHNOLOGY SATELLITE (ERTS)IMAGERY AND ADVANCED SOPHISTICATED COMPUTER TECHNOLOGY TO MEET THIS NEED.THE LABORATORY FOR APPLICATIONS OF REMOTE SENSING (LARS) ,PURDUE UNIVERSITY,HAS PRODUCED THE DESIRED INVENTORY UNDER CONTRACT FROM EPA USING COMPUTER ANALYSIS OF MULTISPECTRAL SCANNER DATA OBTAINED BY ERTS.LAND USE CLASSES WERE SPECTRALLY SEPARATED BY THE ANALYSIS INTO 17 CLASSES INCLUDING FOUR PRIMARY CLASSIFICATIONS/URBAN-COMMERCIAL-INDUSTRIAL,AGRICULTURAL,FOREST,AND WATER (WET-LANDS, ETC.) AND SECONDARY LEVEL CLASSIFICATIONS IN FURTHER DETAIL SUCH AS DENSITY OF URBAN USE AND TYPES OF AGRICULTURAL USE SUCH AS ROW CROPS,PASTURE AND MEADOWS./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
52.0200/51.0500/
AGRICULTURE /COMPUTERS/DATA ANALYSIS/GREAT LAKES:T/INVENTORIES/LAND USE:T2/REMOTE SENSING:02,03/SATELLITES/TOPOLOGICAL MAPPING/US EPA/WATER POLLUTION:T3/

RS78-5-273

78R00S6729 EDB-78-10 51.050
(PB--273463)AQUATIC AND TERRESTRIAL SURVEYS IN THE VICINITY OF POWER PLANTS USING REMOTE SENSING.FINAL REPORT/
SCHOTT,J.R./GAUCHER,D.W./
CALSPAN CORP.,BUFFALO,N.Y.(USA)/
15 APR 1977/
CALSPAN-NA--6013-M-2/NTIS PC A05/MF A01./
CC=9 500 462/
US/
US/
51.0500/50.0200/52.0200/20.0200/
AERIAL MONITORING: 02, 03/AIR POLLUTION:T2/AQUATIC ECOSYSTEMS/CHLOROPHYLL/FORESTS/FOSSIL-FUEL POWER PLANTS/GEOLOGICAL SURVEYS/HUDSON RIVER/LUMINESCENCE/PHOTOGRAPHY/PHOTOMETRY/RADIOMETERS/REFLECTIVITY/REMOTE SENSING/TEMPERATURE MEASUREMENT /TERRESTRIAL ECOSYSTEMS/THERMAL EFFLUENTS/WATER POLLUTION:T3/

RS78-5-274

78C0075745 EDB-78-14 $1.050
CONF-7510172--P1/
NATIONAL LAND USE SURVEY OF THE DEVELOPED AREAS OF ENGLAND AND WALES BY REMOTE SENSING/
VAN GENDEREN,J.L.(FAIREY SURVEYS LTD.,MAIDENHEAD,ENG.)/SMITH,T.F./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
GB/
US/
ERA-03:038036/EDB-78:075745/
THE SECRETARY OF STATE FOR THE ENVIRONMENT IN THE UNITED KINGDOM HAS COMMISSIONED A PROJECT TO MAP ALL THE DEVELOPED AREAS OF ENGLAND AND WALES BY MEANS OF REMOTE SENSING.THE CONTRACT WAS AWARDED TO FAIREY SURVEYS LIMITED'S **ENVIRONMENT AND RESOURCES CONSULTANCY**.THIS NATIONAL LAND USE SURVEY OF DEVELOPED LAND IS BEING CARRIED OUT AT A SCALE OF 1:50,000 ON TRANSPARENT MAP OVERLAYS USING THE LATEST ORDNANCE SURVEY SHEETS AT THE SAME SCALE,AND WITH CONSTANT REFERENCE TO ROYAL AIR FORCE PANCHROMATIC SMALL SCALE AERIAL PHOTOGRAPHY FLOWN IN 1969.THE SURVEY,WHICH WILL BE COMPLETED WITHIN TWELVE MONTHS OF COMMENCEMENT,WILL RESULT IN THE COMPILATION OF A SERIES OF OVER 120 LAND USE MAPS TO COVER THE WHOLE OF ENGLAND AND WALES.THE DEPARTMENT OF THE ENVIRONMENT INTENDS, THEN TO COMPUTERIZE THE HANDLING OF THE MAPPED INFORMATION, ESPECIALLY FOR MEASUREMENT PURPOSES AND IN ORDER TO RELATE IT TO CENSUS INFORMATION.THE FINAL MAPS,TOGETHER WITH THE STATISTICAL DATA DERIVED FROM THEM,WILL FORM AN IMPORTANT BASE LINE AGAINST WHICH TO MONITOR SUBSEQUENT CHANGES IN THE NATURE,EXTENT,AND DISTRIBUTION OF THE DEVELOPED AREAS OF ENGLAND AND WALES BY MEANS OF REMOTE SENSING TECHNIQUES./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
$1.0500/
COMPUTERS / DATA COMPILATION / LAND USE: T1,Q2/MONITORING/REMOTE SENSING:T2,Q1/STATISTICS/TOPOLOGICAL MAPPING/UNITED KINGDOM/

RS78-5-275

78C0075744 EDB-78-14 $1.050
CONF-7510172--P1/
LANDSAT INVESTIGATIONS OF RECENT URBAN LAND USE CHANGES IN NORTHEAST CHINA/
WELCH,R./PANTELL,C.W./
UNIV.OF GEORGIA,ATHENS/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
ERA-03:038035/EDB-78:075744/
INFORMATION ON LAND USE CHANGES IN FOUR CHINESE CITIES,SHENYANG,ANSHAN,FUSHUN AND CHANGCHUN,FOR THE PERIOD 1945 TO 1972, WAS OBTAINED BY COMPARING LANDSAT IMAGES WITH MAPS AND AERIAL PHOTOGRAPHS PRODUCED AT THE END OF WORLD WAR II.BOTH VISUAL INTERPRETATION OF IMAGES AND MACHINE PROCESSING OF COMPUTER COMPATIBLE TAPES WERE EMPLOYED TO ANALYZE THE LANDSAT DATA. OF THE TWO TECHNIQUES, THE VISUAL APPROACH WAS CONSIDERED TO BE SUPERIOR IN TERMS OF ACCURACY,TIME AND COST. COMPARATIVE STUDIES OF AVAILABLE DATA INDICATE ALL CITIES UNDERWENT EXTENSIVE GROWTH AND CHANGE DURING THE STUDY PERIOD. THE PREDOMINANT PATTERN OF GROWTH AND CHANGE SEEMS TO INVOLVE A SHIFT FROM THE FUNCTIONALLY DISTINCT URBAN SECTORS ORIGINALLY DEVELOPED BY THE JAPANESE TO A MIXTURE OF HOUSING ESTATES,ADMINISTRATIVE BUILDINGS AND INDUSTRIAL SITES. THESE CHANGES ARE THOUGHT TO BE CONSISTENT WITH CONTEMPORARY CHINESE PLANNING POLICIES OF CREATING SELF-CONTAINED URBAN COMMUNITIES./
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
$1.0500/
CHINA: T2 /COMPUTERS/DATA ANALYSIS/GROWTH/IMAGES/LAND USE:T1,Q2/PHOTOGRAPHY/REMOTE SENSING:Q1/SATELLITES:T/TOPOLOGICAL MAPPING/URBAN AREAS/

RS78-5-276

78C0068637 EDB-78-13 29.600
LAND-USE INFORMATION FOR SMALL-AREA LOAD FORECASTING/
WILREKER,V.F./
WESTINGHOUSE ELECTRIC CORP.,PITTSBURGH/
INSTRUMENT SOCIETY OF AMERICA/PITTSBURGH/1977/
MODELING AND SIMULATION,VOLUME 8,PART 1/
VOGT,W.G./MICKLE,M.H.(EDS.)/
US/
IS/
8.ANNUAL CONFERENCE ON MODELING AND SIMULATION/
PITTSBURGH,PA,USA/
21 APR 1977/
29.6000/$1.0500/29.0100/
COMMUNITIES / COMPARATIVE EVALUATIONS / DEMAND FACTORS/ELECTRIC POWER/ELECTRIC UTILITIES:T4/EPRI/FORECASTING:Q3/HUMAN POPULATIONS/LAND REQUIREMENTS:Q4/LAND USE:T5/MAPS/PLANNING/POWER DEMAND:T3,Q2/POWER TRANSMISSION/SATELLITES/SIMULATION:C5/URBAN AREAS:T2/

RS78-5-277

A78-40183 * Tabular data base construction and analysis from thematic classified Landsat imagery of Portland, Oregon N. A Bryant (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.), A. J George, Jr (Oregon State, Dept of Environmental Quality, Portland, Ore.), and R. Hegdahl (Columbia Region Association of Governments, Portland, Ore.) In: Annual symposium on Machine Processing of Remotely Sensed Data 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 313-318. 7 refs Contract No. NAS7-100.

A systematic verification of Landsat data classifications of the Portland, Oregon metropolitan area has been undertaken on the basis of census tract data. The degree of systematic misclassification due to the Bayesian classifier used to process the Landsat data was noted for the various suburban, industrialized and central business districts of the metropolitan area The Landsat determinations of residential land use were employed to estimate the number of automobile trips generated in the region and to model air pollution hazards. J M.B.

RS78-5-278

A78-43325 # Detection of heat loss from buildings through aerial thermography - Applications and methodology. G. R Lawrence (Ontario Centre for Remote Sensing, Toronto, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 220-226. 5 refs.

The article discusses the application of aerial thermography for the identification of building heat losses. The following necessary conditions are identified: (1) the overflight should begin 3 hours after sunset or 1 hour after the expected nighttime low, (2) daytime temperature should be about 5 C and nighttime temperature should be about 3 C, (3) the air should be relatively calm, (4) the sky should be relatively clear, (5) there should not be a temperature inversion between the ground and the aircraft, (6) the dew point should be at least 3 C, and (7) the aircraft should be flown at an altitude in the 360-540 m range. Building heat loss is related to the apparent roof-top temperature sensed by the scanner. This temperature is translated into grey tones on the film. Information gathered by field checking has indicated that the technique yields reasonably accurate measurements of building heat loss. S.C.S.

RS78-5-279

A78-44236 A methodology for employing Landsat data for rural land use surveys in developing countries. B. F. Lock (Salisbury College of Advanced Education, Adelaide, Australia) and J. L. van Genderen (Fairey Surveys, Ltd., Maidenhead, Berks., England). *British Interplanetary Society, Journal (Remote Sensing)*, vol. 31, Aug. 1978, p. 293-304. 18 refs. Research supported by the University of Sheffield

A Landsat MSS 1:250,000 survey of Murcia Province, Spain, is presented as an illustration of the usefulness of Landsat data for the mapping of semi-arid regions of developing countries, in general. The methodology of the survey is divided into two parts: pre-operational and operational. The pre-operational phase consists of a formulation of objectives and techniques, with special attention to the development of the classification scheme to be used. The operational phase involves the interpretation of specific data. After Ground Truth has been established, a final map can be produced. D.M.W.

RS78-5-280

A78-43329 # Computer processing of Landsat data as a means of mapping land use for the Canada land inventory. J. S. Schubert (Gregory Geoscience, Ltd., Ottawa, Canada), J. Trie, and D. Gierman (Environment Canada, Ottawa, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 268-281. 14 refs.

Techniques for computer processing Landsat data for land-use mapping in Canada are described. Visual classification is performed using a television display of computer-enhanced remotely sensed data. The visual classification includes the simulation of color infrared imagery and Taylor's enhancement technique. Computer classification consists of both supervised and nonsupervised interactive methods and the Land-Analysis automatic classification technique developed for the classification of vegetation. S.C.S.

RS78-5-281

A78-43319 # Use of topographic data for land-use land-cover identification by Landsat imagery. S. I. Solomon (Waterloo, University, Waterloo, Ontario, Canada), A. S. Aggarwal, T. Nazar (Environment Canada, Water Resources Branch, Ottawa, Canada), and T. Chadwick (Ontario Ministry of the Environment, Toronto, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 158-162. 9 refs.

Landsat imagery has been used along with topographic data for land-use and land-cover identification. Based on the WATMAP software system, slope and slope-orientation data for square grid elements approximately corresponding to pixels are given. The WATMAP data is then superimposed on the Landsat data using an affine transformation. For maize, a distinct correlation is found between reflectance and slope and slope orientation. The technique yields accuracy to within 75-85% for samples of 100 field data per class. S.C.S.

RS78-5-282

N78-28558 State Univ. of New York, Buffalo
A PHOTOGRAPHIC REMOTE SENSING SYSTEM FOR THE DETECTION AND QUANTIFICATION OF URBAN TREE STRESS Ph.D. Thesis
Bov Bang Eav 1977 207 p
Avail: Univ Microfilms Order No 78-06180

A statistical model was developed to permit quantitative prediction of urban tree stress levels based on spot microdensitometric measurements Multidate, large scale, 70 mm color and color infrared photography was acquired simultaneously with ground data for 1156 maple trees at four study sites in Syracuse, New York Results indicated that: (1) broad band microdensitometric data extracted from color infrared photography can be used in some cases to previsually detect the presence of urban tree stress, (2) the multiple regression model developed permitted accurate prediction of quantitative tree stress indices for drought-induced stress, (3) an index expressing tree foliage symptoms was most accurately predicted from the aerial photographic data, (4) color infrared film proved to be superior to normal color film in predicting tree stress symptoms, (5) multiple stress symptom parameters measured on the ground can be combined into a small number of composite stress indices through factor analysis, and, (6) the timing of aerial photography with respect to rainfall and development of stress manifestation accrued on the ability of aerial data to predict drought-related stress.
Dissert. Abstr.

RS78-5-283

N78-26523# Los Alamos Scientific Lab., N. Mex.
GMAPS USER'S MANUAL
Mona J. Wecksung, Richard J. Wiley, and A. Keith Turner (Colorado Energy Res. Inst., Golden) Jan. 1978 50 p
(Contract W-7405-eng-36)
(LA-6975-M) Avail. NTIS HC A03/MF A01

Land use planners involved in siting analyses must make complex decisions based on their in-depth knowledge of numerous factors. These factors include resource location, accessibility to transportation corridors, and legal, social, and environmental constraints. The General Map Analyses Planning System (GMAPS) is a composite computer mapping system designed to assist the planning team in making these decisions rapidly and efficiently. GMAPS allows the user to define a series of different scenarios and to investigate quickly a wide range of planning alternatives. It is a remote access interactive system that can be operated by nontechnical personnel from portable terminals at field offices. ERA

RS78-5-284

REMOTE SENSING OF EFFECTS OF LAND USE PRACTICES ON WATER QUALITY,
Kentucky Univ., Lexington. Dept. Forestry.
D. H. Graves, and G. B. Coltharp.
Available from the National Technical Information Service, Springfield, VA 22161 as N77-26581, Price codes: A08 in paper copy, A01 in microfiche. Final Report, May 31, 1977. 159 p, 30 fig, 25 tab, 23 ref, 4 append. NAS 8-31006.

Descriptors: *Land use, *Areal hydrogeology, Water quality, *Aerial sensing, *Aerial photography, Satellites(Artificial), *Forest watersheds, *Strip mines, *Vegetation, *Kentucky, Aircraft, Remote sensing, Cost analysis, Watershed management, Densitometry, Color additive viewing, *Landsat, *Land use change, Vegetation survey, *Cumberland Plateau(KY), Linear regression analysis.

An intensive 2-year study of 6 watersheds in the Cumberland Plateau region of eastern Kentucky determined the utility of manual densitometry and color additive viewing of aircraft and LANDSAT transparencies for monitoring land use and land use change. The study area was comprised of reclaimed surface-mined land and forestland. Manual photo interpretation techniques stratified the study area into vegetation types. An intensive ground survey was undertaken to ascertain kind, size, and extent of vegetation present in each. Values obtained from subsequent densitometric sampling of NASA research aircraft and LANDSAT imagery were examined for correlation and predictability of corresponding vegetation types.

RS78-5-285

REMOTE SENSING INPUTS TO LANDSCAPE MODELS WHICH PREDICT FUTURE SPATIAL LAND USE PATTERNS FOR HYDROLOGIC MODELS,
National Aeronautics and Space Administration, Greenbelt, Md. Goddard Space Flight Center.
L. D. Miller, C. Tom, and K. Nualchawee
Available from the National Technical Information Service, Springfield, VA 22161 as N77-25607, Price codes: A03 in paper copy, A01 in microfiche. Report, May, 1977. 41 p, 22 fig, 10 tab, 9 ref.

Descriptors: *Land use, *Topographic mapping, *Urban mapping, *Urban hydrology, *Remote sensing, *Terrain analysis, *Model studies, *Hydrologic data, Analytical techniques, Watersheds, Colorado, Tropical regions, *Denver(Colo), Landscaping, *Landscape model studies, *Land use patterns, *Tropical hydrology, Thailand.

Landscape modeling organizes and overlays information from existing maps, tabular sources, and from the analysis of remote sensing imagery into a computer framework. This critical endeavor provides higher-order inputs to the hydrological analysis of an area. Landscape modeling with attendant inputs from remote sensing is illustrated by two case studies. Application to the Denver, Colorado, urban area typifies use of he procedure to predict future spatial evolution of man-induced land use patterns of an urban area which can assist in the simulation of future urban hydrographs. A tropical forest site in Thailand illustrates application to more natural watersheds as the basis for analysis of the hydrological implications of alteration of land cover; primitive watersheds subject to change due to natural (e.g., drought) or man-made (e.g., forest cutting) alteration can be modeled to yield map-like projections of the future distribution of each land use or cover. Remote sensing imagery subjected to proper computer analysis provides input to hydrological models and practical data bases for planning large and small-scale hydrological developments. Combining available remote sensing imagery with map information in the landscape model substantially improves these applications. Coincident, registered overlays of the map information upon multispectral remote sensing imagery of Landsat provide a basis for marked improvements in the accuracy of the computer interpretation of land use and land cover maps to be used directly in hydrological analysis (Seip-IPA)
W78-08236

RS78-5-286

ID NO.- EI780860825 860825
SATELLITE LAND USE ACQUISITION AND APPLICATIONS TO HYDROLOGIC PLANNING MODELS.
Algazi, V. R.; Suk, Minsoo
Univ of Calif, Davis
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1171-1181 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (REGIONAL PLANNING, Land Use), IMAGE PROCESSING, WATERSHEDS,
CARD ALERT: 716, 403, 723, 444
The paper reports on a developing operational procedure for use by the Corps of Engineers in the acquisition of land use information for hydrologic planning purposes. The operational conditions preclude the use of dedicated, interactive image processing facilities. Given the constraints, an approach to land use classification based on clustering seems promising and is being explored in detail. The procedure is outlined and examples of application to two watersheds given.

RS78-5-287

ID NO.- EI780860813 860813
PRODUCTION OF A MAP OF LAND-USE IN IOWA THROUGH MANUAL INTERPRETATION OF LANDSAT IMAGERY.
Anderson, Raymond R.
Iowa Geol Surv, Remote Sensing Lab, Iowa City
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 827-83 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (REGIONAL PLANNING, Land Use), MAPS AND MAPPING, GEOLOGICAL SURVEYS,
IDENTIFIERS: LANDSAT IMAGERY, LAND USE MAPS
CARD ALERT: 741, 712, 403, 405
The map, the first of its kind for Iowa, was prepared at a scale of 1:250,000 and printed at a 1:500,000 scale. It displays nine categories of land-use: urban residential, urbar commercial/industrial, urban open, transportation network, extractive land, agricultural land, forest land, water, and reservoir flood pool. Interpretations were verified through the use of Skylab, high altitude aircraft photography, and information from maps produced by the various federal and state agencies. A total of 6 $one-half$ man-months was needed to produce the map at a total cost, from image acquisition through printing, of 18 cents per square mile.

RS78-5-288

ID NO.- EI780963158 863158
ANTI-COLLISION RADAR MAKING PROGRESS.
Anon
Automot Eng v 86 n 7 Jul 1978 p 78-80 CODEN: AUEGBB
DESCRIPTORS: (*AUTOMOBILES, *Safety Devices), (RADAR, Measurement Application), (RADAR EQUIPMENT, Displays), (ALARM SYSTEMS, Computer Applications), (ANTENNAS, PARABOLIC, Microwave), (HIGHWAY ACCIDENTS, Accident Prevention),
IDENTIFIERS: ANTI-COLLISON AUTOMOBILE RADAR
CARD ALERT: 662, 914, 716, 723, 432
An exceptionally high radar frequency of 35 GHz has the ultrashort wavelength of about 1 cm, so the antenna size can be reduced to headlight proportions. The transmitter/receiver array is a pair of rectangular parabolic reflectors enclosed by polystyrene radomes protruding through the car's radiator grill. Effective range is restricted to around 100 meters, regarded as sufficient for early warning even at high cruising speeds. This reduces signal clutter from unwanted echoes on the road farther ahead. The fixed beam has an angular width of only 2. 4 deg, which not only concentrates the radiated power but also limits radar vision to a straight-ahead path. In the vertical plane the beam is narrowed to 3. 4 deg to avoid responses from bridges and other overhanging structures. A simple arrangement minmizes false echoes on curves, where the 100-meter beam might respond to stationary objects like trees and houses on left-hand bends, and traffic in adjacent lanes on right-hand ones. The beam range is effectively reduced according to the steering angle of the car wheels. Systems described are by the Stuttgart firms of Robert Bosch and Daimler Benz. Both systems measure distance to the car ahead; an on-board computer calculates the instantaneous safe following distance, considering the car's own speed, road condition (dry, wet, or snow), and driver reaction time. Displays use light-emitting diodes.

RS78-5-289

ID NO.- EI780860799 860799
REMOTE SENSING OF ENVIRONMENTAL IMPACT OF LAND USE ACTIVITIES.
Paul. C. K.
Agency for Int Dec. Washington, DC
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 363-377 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (REGIONAL PLANNING, Land Use),
IDENTIFIERS: MULTISPECTRAL SCANNERS
CARD ALERT: 711, 901, 403
Aircraft and spacecraft multispectral scanning sensors have increased substantially the capability to monitor land cover over that associated in the past with aerial film cameras and radar systems. A proposed Thematic Mapper with greater spectral and spatial resolutions for the fourth Landsat will usher in new environmental monitoring capability. In addition, continuing improvements in image classification by supervised and unsupervised computer techniques are being operationally verified for discriminating environmental impacts of human activities on the land. The benefits of employing remote sensing for this discrimination as opposed to more traditional ground sampling methodologies have been shown to far outweigh the incremental costs of converting to an aircraft-satellite multistage system. An example of land impact assessments are the Central Atlantic Regional Ecological Test Site (CARETS) by the U. S. Geological Survey. Other examples are included in the discussion. 16 refs.

RS78-5-290

ID NO.- EI780860800 860800
REMOTE MONITORING AND TENNESSEE VALLEY AUTHORITY PROGRAMS.
Stevens, Alan R.; Voss, Alan W.
TVA, Chattanooga, Tenn
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 385-392 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), PHOTOGRAMMETRY, REGIONAL PLANNING, MAPS AND MAPPING,
IDENTIFIERS: RESOURCE DEVELOPMENT
CARD ALERT: 742, 403, 405
In 1933 the Tennessee Valley Authority was created as a resource development agency and charged with the basic mission of improving the economy of a depressed region. To accomplish this, three tasks were identified as part of the original act: power production; flood control, and navigation. The purpose of this paper is to examine some of those programs that either directly or indirectly support the Authority's mission and tasks and avail themselves of remotely monitored data. The chief determinant in any decision to use one method of data gathering over another is its cost-effectiveness. Some programs are identified as using remote sensing techniques while others are still in the investigative stages.

RS78-5-291

ID NO.- EI780854930 854930
LARGE SCALE 70mm PHOTOGRAPHY FOR RANGE RESOURCES ANALYSIS IN THE WESTERN UNITED STATES.
Tueller, Paul T.
Univ of Nev, Reno
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1507-1 22 CODEN: PISEDM
DESCRIPTORS: *AERIAL PHOTOGRAPHY, (ENVIRONMENTAL PROTECTION, Management),
IDENTIFIERS: RANGELAND STUDIES
CARD ALERT: 741, 7 2, 821
Large scale 70mm aerial photography is a valuable supplementary tool for rangeland studies. A wide assortment of applications have been developed varying from vegetation mapping to assessing environmental impact on rangelands. Color and color infrared stereo pairs are useful for effectively sampling sites limited by ground accessibility. They allow an increased sample size at similar or lower cost than ground sampling techniques and provide a permanent record. Refs.

RS78-5-292

ID NO.- EI780860806 860806
TESTING THE ACCURACY OF REMOTE SENSING LAND USE MAPS.
Van Genderen, J. L.; Lock, B. F.; Vass, P. A.
Fairey Surv Ltd, Maidenhead, Berkshire, Engl
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 615-623 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (IMAGING TECHNIQUES, Sampling), MATHEMATICAL STATISTICS,
IDENTIFIERS: LAND USE SURVEYS, INTERPRETATION
CARD ALERT: 901, 922, 741
The function of the ground truth survey in an operational remote sensing land use survey is to utilize a sound statistical sampling design which will test the correctness of the attribution by interpretation of specific sites to classes in the classification. Some of the main aspects that need to be considered in such a remote sensing sampling design are: the frequency that any one land use type (on the ground) is erroneously attributed to another class by the interpreter; the frequency that the wrong land use (as observed on the ground) is erroneously included in any one class by the remote sensing interpreter; the proportion of all land (as determined in the field) that is mistakenly attributed by the interpreter; and the determination of whether the mistakes are random. Refs.

RS78-5-293

ID NO.- EI780860830 860830
APPLICATIONS OF LANDSAT DATA TO THE INTEGRATED ECONOMIC DEVELOPMENT OF MINDORO, PHILIPPINES.
Wagner, T. W.; Fernandez, J. C.
Environ Res Inst of Mich, Ann Arbor
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1375-1380 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), MAPS AND MAPPING, (REGIONAL PLANNING, Land Use), IMAGE PROCESSING,
IDENTIFIERS: LANDSAT DATA
CARD ALERT: 716, 7-2, 405, 403
Landsat data is seen as providing essential up-to-date resource information for the planning process. As part of a USAID-funded grant, Landsat data of Mindoro Island in the Philippines was processed to provide thematic maps showing patterns of agriculture, forest cover, terrain, wetlands and water turbidity. A hybrid approach using both supervised and unsupervised classification techniques resulted in 30 different scene classes which were subsequently color-coded and mapped at a scale of 1:250,000. The images, maps, and aerial statistics are being used to provide data to seven technical departments in planning the economic development of Mindoro. Multispectral aircraft imagery has been collected to compliment the application of Landsat data and validate the classification results.

RS78-5-294

The Use of Satellite Imagery for Highway Engineering in Overseas Countries

Transport and Road Research Lab., Crowthorne (England).
AUTHOR: Beaumont, T. E.; Beaven, P. J.
E0705F4 Fld: 13B, 14E, 82B, 50A GRAI7808
1977 26p
Rept No: TRRL-SUPPLEMENTARY-279
Monitor: 18
Also pub. as ISSN-0305-1315.

Abstract: Landsat imagery has been used on two road investigations in the Sudan to provide information on the four main factors that affect route location, i.e., soil strength, earthworks, drainage requirements and construction materials. The interpretation techniques included the production and enhancement of color composites in a purpose built additive viewer which was also used for examining photographically prepared density slices of infrared 'band 7' imagery. The work in the Sudan, together with a review outlining the advantages gained by repeated observations of the earth from space, is used to define the main techniques that can be employed and to identify the major areas where satellite imagery could assist the highway engineer. It is concluded that the present generation of imagery is most suited for the planning and feasibility stages of engineering survey for road projects, such as the preparation of regional maps and inventories of terrain characteristics or reconnaissance studies involving decisions on route location. (Copyright (c) Crown Copyright 1977.)

Descriptors: *Infrared reconnaissance, *Aerial mapping, *Highway planning, Spaceborne photography, Infrared photography, Soil structure, Drainage, Construction materials, Photographic techniques, Roads, Earthwork, Sudan, Route surveys, Terrain, Mapping, Great Britain

Identifiers: Landsat satellites, NTISFNDMTR

PB-276 669/9ST NTIS Prices: PC A03/MF A01

RS78-5-295

Use of Remote Sensing for Land Use Policy Formulation

Michigan State Univ., East Lansing.*National Aeronautics and Space Administration, Washington, D.C. (228 500)

Semiannual progress rept. Dec 76-May 77
AUTHOR: Boylan, Myles; Vlasin, Raymond D.
E0485K1 Fld: 93B d7806
28 Aug 77 32p
Grant: NGL-23-004-083
Monitor: NASA-CR-155247

Abstract: No abstract available.

Land use, Michigan, Saginaw Bay(MI), Agriculture, Surface water, Farmlands policies, Earth resources program, Information systems

Identifiers: NTISNASA

E78-10020 NTIS Prices: PC A03/MF A01

RS78-5-296

Thermal Pollution. Part 1. Control Techniques and General Studies (A Bibliography with Abstracts)

National Technical Information Service, Springfield, Va. (391 812)

Rept. for 1964-Feb 78
AUTHOR: Brown, Robena J.
E0893F3 Fld: 13B, 68D*, 97R*, 47, 86W GRAI7810
Mar 78 211p*
Monitor: 18
Supersedes NTIS/PS-77/0184, NTIS/PS-76/0127 and NTIS/PS-75/21-8.

Abstract: Reports concerned with control techniques for heated effluents from power and industrial plants are cited. Also included are studies on general thermal pollution problems and their abatement. Many reports on the remote sensing of thermal effluents are also cited. However, the control of thermal pollution by using the waste heat for constructive purposes is not covered in this bibliography. (This updated bibliography contains 206 abstracts, 48 of which are new entries to the previous edition.)

Descriptors: *Thermal pollution, *Bibliographies, *Water pollution control, *Cooling water, *Electric power plants, *Industrial water, Rivers, Industrial waste treatment, Steam power plants, Boilers, Thermal power plants, Nuclear power plants, Industrial wastes, Remote sensing, Water pollution abatement, Heat exchangers, Plants(Botany), Waste disposal

Identifiers: NTISNTIS

NTIS/PS-78/0171/5ST NTIS Prices: PC N01/MF N01

RS78-5-297

Tennessee-Tombigbee Industrial Siting Project: A Study of Physical and Environmental Factors of Potential Industrial Sites

Mississippi State Univ., Mississippi State. Dept. of Geology and Geography.*NASA Earth Resources Survey Program, Washington, D.C.
AUTHOR: Higgs, Gary K.
E0485L2 Fld: 93B d7806
31 Jan 77 178p
Grant: NGL-25-001-054
Monitor: NASA-CR-155260

Abstract: No abstract available.

Tennessee Valley(AL-KY-TN), Mississippi, Industrial areas, Land use, Regional planning, Terrain analysis, Soil science, Geological surveys, Environment effects, Resources management, Photomapping, Rivers, Earth Resources program, Environmental monitoring, Multispectral band scanners, Infrared photography

Identifiers: NTISNASA

E78-10035 NTIS Prices: PC A09/MF A01

RS78-5-298

Procedures for Gathering Ground Truth Information for a Supervised Approach to a Computer-Implemented Land Cover Classification of LANDSAT-Acquired Multispectral Scanner Data

National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
AUTHOR: Joyce, A. T.
E0923D1. Fld: 08F, 48I STAR1606
1978 48p
Rept No: NASA-RP-101 , JSC-12910
Monitor: 18

Abstract: Procedures for gathering ground truth information for a supervised approach to a computer-implemented land cover classification of LANDSAT acquired multispectral scanner data are provided in a step by step manner. Criteria for determining size, number, uniformity, and predominant land cover of training sample sites are established. Suggestions are made for the organization and orientation of field team personnel, the procedures used in the field, and the format of the forms to be used. Estimates are made of the probable expenditures in time and costs. Examples of ground truth forms and definitions and criteria of major land cover categories are provided in appendixes.

Descriptors: *Ground truth, *LANDSAT satellites, *Multispectral band scanners, *Terrain, Crop identification, Earth resources, Land use, Pattern recognition

Identifiers: Methodology, Data acquisition, NTISNASA

N78-15549/6ST NTIS Prices: PC A03/MF A01

RS78-5-299

Contributions of LANDSAT to Natural Resources Protection and Future Recreational Development in the State of West Virginia

West Virginia Dept. of Natural Resources, Charleston.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept. Jun 75-Oct 77
AUTHOR: Latimer, Ira S. Jr; Callaghan, David C.
E0485J4 Fld: 93B d7806
31 Oct 77 117p
Contract: NAS5-22327
Monitor: NASA-CR-155246
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: No abstract available.

West Virginia. Environment protection. Land use. Regional planning. Wetlands. Recreation. Mining. Photomaps. Ecology. Vegetation growth. Earth Resources program. Multispectral band scanners. Photointerpretation. Environmental monitoring

Identifiers: NTISNASA

E78-10019 NTIS Prices: PC A06/MF A01

RS78-5-300

An Example of Appying Remote Sensing to a Corps of Engineers Archeological Problem

Army Engineer Waterways Experiment Station Vicksburg Miss (038100)

Final rept. Sep 76-Aug 77
AUTHOR: Link. Lewis E. Jr
E0481I4 Fld: 5F. 92D GRAI7806
Nov 77 22p
Rept No: WES-MP-M-77-14
Project: 4A762720A896
Task: 01
Monitor: 18

Abstract: This report documents a study that illustrates the applicability of conventional remote sensor imagery for obtaining archeological information. The study exemplifies the use of imagery for a problem common to both Corps district offices and military facilities; determining if a feature of archeological significance will be impacted by some planned action such as construction or training. In this instance, aerial photography and supporting historical charts were readily available for an area suspected to be the site of an old French village, Old Kaskaskia, near St. Genevieve, Missouri. The U. S. Army Engineer District, St. Louis, was interested in the site of the village because of a proposed levee improvement project under consideration for the area. The available information and nature of the problem provided an excellent opportunity to demonstrate at low cost the applicability of remote sensing techniques for locating features of archeological significance at military installations and acquire information relevant to an existing Corps district problem. (Author)

Descriptors: *Archaeology, *Aerial photography, Fortifications, Preservation, Aerial reconnaissance, History, Case studies, Missouri, Mississippi River, Remote systems, Topographic maps, Water, Level(Quantity), Villages

Identifiers: Old Kashaskia, Remote sensing, Missouri, NTISDODXA

AD-A048 106/9ST NTIS Prices: PC A02/MF A01

RS78-5-301

Investigation of Environmental Change Pattern in Japan

Tokyo Univ. (Japan).*National Aeronautics and Space Administration. Greenbelt, Md. Goddard Space Flight Center.

Final rept.
AUTHOR: Maruyasu, Takakazu
E0884G2 Fld: 8E, 93A, 48 GRAI-7810
Nov 77 180p
Monitor: NASA-CR-155550
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. In the Plains of Tokachi, where the scale of agricultural field was comparatively large in Japan, LANDSAT data with its accuracy have proved to be useful enough to observe the actual condition of agricultural land use and changes more accurately than present methods. Species and ages of grasses in pasture were identified and soils were classified into several types. The actual land cover and ecological environment were remarkably changeable at the rapidly industrialized area by the urbanization in the flat plane and also by the forest works and road construction in the mountainous area. The practical use of the recognition results was proved as the base map of the field survey or the retouching work of the vegetation and land use. There was a 10% cut in cost, labor, and time. Vegetation cover in Tokyo districts was estimated by both the multiregression model and the parametric model. Multicorrelation coefficient between observed value and estimated value was 0.87 and standard deviation was + or - 15%. Vegetation cover in Tokyo was mapped into five levels with equal intervals of 20%.

Descriptors: *Japan, *Land use, Environmental monitoring, Agriculture, Forests, Coasts, Oceanography, Shorelines, Earth Resources program, Fishes, Meteorology, Multispectral band scanners

Identifiers: NTISNASA

E78-10056 NTIS Prices: PC A09/MF A01

RS78-5-302

Applications of Remote Sensing in the Boston Urban Studies Program. Part I

Cold Regions Research and Engineering Lab Hanover N H (037100)
AUTHOR: Merry, Carolyn J.; McKim, Harlan L.
E0673G2 Fld: 8B, 48I GRAI7808
Jun 77 22p
Rept No: CRREL-77-13-PT-1
Monitor: 18
See also Part 2, AD-A049 286.

Abstract: The cost effectiveness of remote sensing techniques was compared to that of the conventional techniques used by the U.S. Army Engineer Division, New England, in the Boston Harbor - Eastern Massachusetts Metropolitan Area study. A total of 6 level I, 18 level II, and 18 level III land use categories were mapped from NASA RB-57/RC-8 high altitude aircraft photography for six selected 7 1/2-minute quadrangles located in the Boston area. Watershed and political boundaries could not be mapped from the NASA photography. Impervious surfaces and curb lengths were mapped from low altitude aircraft photography obtained with a Zeiss RMK 15/23 camera system (measured scale 1:3500) for two sites in the Boston South and Newton quadrangles. The remote sensing procedures used in this study usually provided much greater detail than conventional procedures. The remote sensing procedures were not always cost-effective when compared to the conventional procedures, but they were always more accurate. Therefore, remote sensing techniques should be used and appropriate photographic resolution and scale factors taken into consideration when mapping land use, curb density and impervious surfaces for use in the STORM (storage, treatment, overflow, runoff) model. (Author)

Descriptors: *Drainage, *Watersheds, *Aerial photographs, *Mapping, Cost effectiveness, Remote detectors, Urban areas, Pavements, Land use, Runoff, Boundaries, Water flow, Water pollution, Dust, Dirt, Water quality, Rainfall, Hydrology, Thunderstorms, Computerized simulation, Mathematical prediction

Identifiers: Boston(Massachusetts), Remote sensing, NTISDODXA

AD-A049 285/0ST NTIS Prices: PC A02/MF A01

RS78-5-303

Applications of Remote Sensing in the Boston Urban Studies Program. Part II

Cold Regions Research and Engineering Lab Hanover N H (037100)
AUTHOR: Merry, Carolyn J.; McKim, Harlan L.
E0673G3 Fld: 8B, 48I GRAI7808
Jun 77 101p
Rept No: CRREL-77-13-PT-2
Monitor: 18
Original contains color plates: All DDC and NTIS reproductions will be in black and white. See also Part 1, AD-A049 285.

Abstract: For abstract see Part 1, AD-A049 285.

Descriptors: *Drainage, *Watersheds, *Aerial photographs, *Mapping, Cost effectiveness, Remote detectors, Urban areas, Pavements, Land use, Runoff, Boundaries, Water flow, Water pollution, Dust, Dirt, Water quality, Rainfall, Hydrology, Thunderstorms, Computerized simulation, Mathematical prediction

Identifiers: Boston(Massachusetts), Remote sensing, NTISDODXA

AD-A049 286/8ST NTIS Prices: PC A06/MF A01

RS78-5-304

Application of Remote Sensing to State and Regional Problems

Mississippi State Univ., Mississippi State.*NASA Earth Resources Survey Program, Washington, D.C.

Semiannual progress rept. 1 May-31 Oct 77
AUTHOR: Miller, W. Frank; Carter, Bradley D.; Pettry, David E. ; Higgs, Gary K.; Solomon, James L.
E0485L1 Fld: 93B d7806
7 Nov 77 97p
Grant: NGL-25-001-05
Monitor: NASA-CR-155261
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: No abstract available.

Parks, Regional planning, Infestation, Strip mining, Tennessee , Earth Resources program, Reclamation, Forests, Industries, Rivers

Identifiers: NTISNASA

E78-10034 NTIS Prices: PC A05/MF A01

RS78-5-305

A Regional Land Use Survey Based on Remote Sensing and Other Data: A Report on a LANDSAT and Computer Mapping Project

Federation of Rocky Mountain States, Inc., Denver, Colo.*NASA Earth Resources Survey Program, Washington, D.C.

Final rept.
AUTHOR: Nez, George; Mutter, Doug
E0884J1 Fld: 8B, 93A GRAI7810
Apr 77 25p
Contract: NAS5-22338
Monitor: NASA-CR-155610

Abstract: The author has identified the following significant results. New LANDSAT analysis software and linkages with other computer mapping software were developed. Significant results were also achieved in training, communication, and identification of needs for developing the LANDSAT/computer mapping technologies into operational tools for use by decision makers.

Descriptors: *Land use, Arizona, Colorado, Montana, New Mexico , Utah, Wyoming, Rocky Mountains(North America), Earth Resources program, Thematic mapping, Digital data

Identifiers: *Rocky Mountain Region(United States), NTISNASA

E78-10070 NTIS Prices: PC A02/MF A01

RS78-5-306

A Regional Land Use Survey Based on Remote Sensing and Other Data: A Report of a LANDSAT and Computer Mapping Project, Volume 2

Federation of Rocky Mountain States, Inc., Denver, Colo.*National Aeronautics and Space Administration, Greenbelt, Md. Goddard Space Flight Center.

Final rept.
AUTHOR: Nez, George; Mutter, Douglas L.
E0884J2 Fld: 8B, 93A, 48 GRAI7810
Apr 77 117p
Contract: NAS5-22338
Monitor: NASA-CR-155611

Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. The project mapped land use/cover classifications from LANDSAT computer compatible tape data and combined those results with other multisource data via computer mapping/compositing techniques to analyze various land use planning/natural resource management problems. Data were analyzed on 1:24,000 scale maps at 1.1 acre resolution. LANDSAT analysis software and linkages with other computer mapping software were developed. Significant results were also achieved in training, communication, and identification of needs for developing the LANDSAT/computer mapping technologies into operational tools for use by decision makers. (Portions of this document are not fully legible)

Descriptors: *Land use, Regional planning, Thematic mapping, Resources management, Rocky Mountains(North America), Arizona, Colorado, Utah, Wyoming, New Mexico, Montana, Earth Resources program, Computer techniques

Identifiers: Remote sensing, NTISNASA

E78-10071 NTIS Prices: PC A06/MF A01

RS78-5-307

A Regional Land Use Survey Based on Remote Sensing and Other Data: A Report of a LANDSAT and Computer Mapping Project. Volume 3

Federation of Rocky Mountain States, Inc., Denver, Colo.*National Aeronautics and Space Administration, Greenbelt, Md. Goddard Space Flight Center.

Final rept.
AUTHOR: Nez, George; Mutter, Douglas L.
E0884J3 Fld: 8B, 93A, 48 GRAI7810
Aug 77 761p
Contract: NAS5-22338
Monitor: NASA-CR-156676
Original contains imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: The author has identified the following significant results. The project mapped land use/cover classifications from LANDSAT computer compatible tape data and combined those results with other multisource data via computer mapping/compositing techniques to analyze various land use planning/natural resource management problems. Data were analyzed on 1:24,000 scale maps at 1.1 acre resolution. LANDSAT analysis software and linkages with other computer mapping software were developed. Significant results were also achieved in training, communication, and identification of needs for developing the LANDSAT/computer mapping technologies into operational tools for use by decision makers. (Portions of this document are not fully legible)

Descriptors: *Land use, Regional planning, Thematic mapping, Resources management, Rocky Mountains(North America), Arizona, Colorado, Utah, Wyoming, New Mexico, Montana, Earth Resources program, Computer techniques, Digital data, Data processing

Identifiers: Remote sensing, NTISNASA

E78-10072 NTIS Prices: PC A99/MF A01

RS78-5-308

Roof Moisture Survey, Ten State of New Hampshire Buildings

Cold Regions Research and Engineering Lab Hanover N H (037100)
AUTHOR: Tobiasson, W. N.; Korhonen, C. J.; Dudley, T.
E0662D3 Fld: 13M, 17E, 89B GRAI7808
Dec 77 36p
Rept No: CRREL-77-31
Monitor: 18

Abstract: Ten roofs in Concord, New Hampshire, were surveyed for wet insulation using a hand-held infrared camera. Suspected wet areas were marked on the roof with spray paint and roof samples were obtained to verify wet and dry conditions. Recommendations for maintenance and repair were made based on infrared findings, water contents, and visual examinations. An incremental economic study is presented to serve as a guide in determining the most cost-effective approach. (Author)

Descriptors: *Roofs, *Moisture content, *Thermography, *Infrared scanning, Moisture, Infrared equipment, Thermographs, Insulation, Failure(Mechanics), Cracks, Infrared photography, Ice prevention, Repair, Replacement, Costs, Cost analysis, Cost benefits

Identifiers: Infrared cameras, NTISDODXA

AD-A048 986/4ST NTIS Prices: PC A03/MF A01

Section 6

INSTRUMENTATION

Data Systems and Methods of Remote Sensing

RS78-6-187

78Y0091099 EDB-78-17 55.060
DYNAMIC TIME-DEPENDENT ANALYSIS AND STATIC THREE-DIMENSIONAL IMAGING PROCEDURES FOR COMPUTER-ASSISTED CNS STUDIES/
HUDINGER,T.F./DELAN),F.H./DUGGAN,H.E./DOUZ,J.J./HOOP,B.JR./MCLAUGHLIN,W.T./WEBER,P.M./
PUBLISHING SCIENCES GROUP,INC./ACTON,MA/1975/
NONINVASIVE BRAIN IMAGING:COMPUTED TOMOGRAPHY AND RADIONUCLIDES/
DEBLANC,H.J.JR./SORENSON,J.A./
US/
US/
INS-78:012678/ERA-03:045393/EDB-78:091899/
TWO-DIMENSIONAL COMPUTER IMAGE-PROCESSING TECHNIQUES HAVE NOT PROVED TO BE OF IMPORTANCE IN DIAGNOSTIC NUCLEAR MEDICINE PRIMARILY BECAUSE THE RADIONUCLIDE DISTRIBUTION REPRESENTS A THREE-DIMENSIONAL PROBLEM.MORE RECENT DEVELOPMENTS IN THREE-DIMENSIONAL RECONSTRUCTION FROM MULTIPLE VIEWS OR MULTIPLE DETECTORS PROMISE TO OVERCOME THE MAJOR LIMITATIONS IN PREVIOUS WORK WITH DIGITAL COMPUTERS. THESE TECHNIQUES ARE NOW IN CLINICAL USE FOR STATIC IMAGING/HOWEVER,SPEED LIMITATIONS HAVE PREVENTED APPLICATION TO DYNAMIC IMAGING. THE FUTURE DEVELOPMENT OF THESE METHODS WILL REQUIRE INNOVATIONS IN PATIENT POSITIONING AND MULTIPLE-VIEW DEVICES FOR EITHER SINGLE-GAMMA OR POSITRON ANNIHILATION DETECTION.
/
55.0601/55.1000/
BLOOD FLOW: 13 /BRAIN:T2/CEREBROSPINAL FLUID:T6/COMPUTER CALCULATIONS/DATA ANALYSIS/DIAGNOSTIC TECHNIQUES:04;05/FLUID FLOW: 06 /IMAGES/NEOPLASMS:T5/NERVOUS SYSTEM DISEASES:T4/NUCLEAR MEDICINE/PATIENTS/RADIOISOTOPE SCANNING:03/RADIONUCLIDE ADMINISTRATION/RADIOPHARMACEUTICALS/REGIONAL ANALYSIS:03/SCINTILLATION COUNTERS/TOMOGRAPHY/TRACER TECHNIQUES/

RS78-6-188

78X0046370 EDB-78-08 50.020
(BNWL--2100(PT.3))VERY LOW FREQUENCY NAVIGATION SYSTEM AS A RESEARCH TOOL/
EDWARDS,R.F./GLADFELDER,F.D./LUGAR,J.R./
AUG 1977/
PACIFIC NORTHWEST LABORATORY ANNUAL REPORT FOR 1976 TO THE ERDA ASSISTANT ADMINISTRATOR FOR ENVIRONMENT AND SAFETY. PART 3.ATMOSPHERIC SCIENCES/
HALES,J.M./
US/
US/
50.0200/
AERIAL MONITORING:02/AIR POLLUTION:T2/AIRCRAFT/ALTITUDE/NAVIGATIONAL INSTRUMENTS:T1/USES:01/VELOCITY/WIND/

RS78-6-189

78J0056457 EDB-78-10 44.010
COMPARISON RESULTS OF AUTOMATIC AND SEMIAUTOMATIC PROCESSING OF IMAGES FROM THE ITEF 1.5 M SPECTROMETER/
EFREMENKO, V. I. / ZAITSEV, YU.M./LIPKIN,I.M./OL'SHANETSKII,M.A./SUCHKOV,B.A./FOMINYKH,B.A.(GOSUDARSTVENNYJ KOMITET PO ISPOL'ZOVANIYU ATOMNOJ ENERGII SSSR,MOSCOW.INST.TEORETICHESKOJ I EKSPERIMENTAL'NOJ FIZIKI)/
PRIB.TEKH.EKSP./2/MAR 1976/32-34/(IN RUSSIAN)
SU/
SU/
(PRTEA)
44.0104/
ALGORITHMS / AUTOMATION / DATA PROCESSING: 01/DIAGRAMS/EFFICIENCY/IMAGES/ON-LINE MEASUREMENT SYSTEMS/PARTICLE TRACKS/ PATTERN RECOGNITION/SPARK CHAMBERS:T1/

RS78-6-190

78C0070304 EDB-78-13 44.010
FURTHER DEVELOPMENT OF THE INSTRUMENT AND TECHNIQUE FOR PHOTOMETRIC EVALUATION OF AUTORADIOGRAMS/
FREYER, K. / BAUMBACH, H. / BIRKHOLZ, M. / KIESEWETTER, J.(AKADEMIE DER WISSENSCHAFTEN DER DDR,LEIPZIG.ZENTRALINSTITUT FUER ISOTOPEN- UND STRAHLENFORSCHUNG)/
NUKLEONIKA/21/2/1976/183-189/
PL/
PL/
(NUKLA)
7.INTERNATIONAL AUTORADIOGRAPHY CONFERENCE/
ZAKOPANE,POLAND/
JAN 1974/
44.0101/42.0500/
ANALOG SYSTEMS / AUTORADIOGRAPHY / DATA PROCESSING: 01 / DENSITOMETERS / DIGITAL SYSTEMS/IMAGES/PATTERN RECOGNITION/ PHOTOGRAPHIC FILMS:T1/PHOTOMETERS/

RS78-6-191

78R0011762 EDB-78-03 05.020
(GJBX--46(77)(VOL.2)LAKE MEAD DYNAMIC TEST RANGE FOR CALIBRATION OF AIRBORNE GAMMA RADIATION MEASURING SYSTEMS/
GEODATA INTERNATIONAL,INC.,DALLAS,TEX.(USA)/
1977/DEP.NTIS,PC A05/MF A01./
DATA ARE PRESENTED FOR CALIBRATING AIRBORNE GAMMA RADIATION MEASURING SYSTEMS FOR SURFACE CONCENTRATIONS OF U,TH,AND K.DATA ARE INCLUDED FOR SIX FLIGHT PATHS AT ALTITUDES OF 200,400,600,800,1000,AND 1200 FEET.LAKE MEAD DYNAMIC TEST RANGE IS DESCRIBED IN DETAIL IN VOLUME I OF THIS REPORT.(WHK)/

36/5/0000401-0000493// 429
78R0011761 EDB-78-03 05.020
(GJBX--46(77) (VOL.1))DEVELOPMENT OF A USERDA DYNAMIC TEST RANGE FOR CALIBRATION OF AIRBORNE GAMMA RADIATION MEASURING SYSTEMS/
GEODATA INTERNATIONAL,INC.,DALLAS,TEX.(USA)/
17 NOV 1976/DEP.NTIS,PC A06/MF A01./
THE DYNAMIC TEST RANGE HAS BEEN DEVELOPED FOR THE UNITED STATES ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION FOR THE PURPOSE OF PROVIDING A SURFACE REGION OVER WHICH AIRBORNE GAMMA RADIATION MEASURING SYSTEMS MAY BE CALIBRATED FOR MEASUREMENT OF SURFACE CONCENTRATIONS OF EU,ETH AND K.DIFFERENT AIRBORNE GAMMA RADIATION DETECTOR CONFIGURATIONS WILL HAVE DIFFERENT SPECTRAL ENERGY RESPONSES FOR THE MEASUREMENT OF THE GAMMA RADIATION EMITTED FROM THE DECAY DAUGHTERS OF THORIUM AND URANIUM AND FROM / SUP 40 / K,AND DIFFERENT GAMMA RAY ENERGY INTERVALS MAY BE USED TO REDUCE THE DATA. THEREFORE, THE ''DYNAMIC TEST RANGE'' IS PROVIDED IN ORDER TO HAVE ALL AIRBORNE SYSTEMS SUPPLY DATA ON THE SAME BASIS.A COMPLETE DESCRIPTION OF THE DYNAMIC TEST RANGE IS PRESENTED INCLUDING LOCATION MAPS,CLIMATE AND HYDROLOGY,SOILS AND VEGETATION, GEOLOGY AND SURFACE GEOPHYSICAL DATA. RESULTS OF SURFACE SOIL ANALYSES ARE INCLUDED.CALIBRATION DATA ARE PRESENTED IN VOLUME II OF THIS REPORT FOR SIX FLIGHT PATHS AT ALTITUDES OF 200,400,600,800,1000,AND 1200 FEET.(WHK)/

RS78-6-192

78I0094299 EDB-78-18 02.020
BERC/IC--78/2/
MINICOMPUTER GRAPHIC METHODS FOR GEOCHEMICAL SURVEYS/
HEEMSTRA,R.J./RAY,R.M./ABRAMS,J.R./
DEPARTMENT OF ENERGY,BARTLESVILLE,OKLA.(USA).BARTLESVILLE ENERGY RESEARCH CENTER/
MAY 1978/
DEP.NTIS,PC A04/MF A01./
9 505 777/
US/
US/
ERA-04:046564/EDB-78:094295/
THIS REPORT DESCRIBES A MINICOMPUTER GRAPHIC APPROACH TO THE ANALYSIS AND DISPLAY OF GEOCHEMICAL SURVEY DATA.THE HARDWARE CONFIGURATION AND OPERATING SOFTWARE SYSTEM AND THE MAJOR FEATURES OF EACH ARE PRESENTED.METHODS OF ENTERING AND EDITING DATA INTO UNIVERSAL FILES ARE EXPLAINED.THE ANALYSIS AND DISPLAY OF EACH FILE AS A FREQUENCY DISTRIBUTION HISTOGRAM,CONTOUR MAP,OR THREE-DIMENSIONAL PROJECTION ARE DESCRIBED.STATISTICAL CORRELATIONS BETWEEN FILES,RATIO FILES, SUM FILES, AND DATA LOCATION MAPS ARE ALSO SOME OF THE FEATURES DESCRIBED.A SPECIAL PROGRAM IS DESCRIBED FOR CONTOURING RANDOMLY SPACED DATA TO PROVIDE BOTH TREND AND DIFFERENCE MAPS WITH UP TO 3 DEGREES OF POLYNOMIAL SMOOTHING.APPLICATIONS ARE INDICATED./
FOSSIL ENERGY/
P/
02.0200/03.0200/58.0203/
COMPUTER GRAPHICS:T1/COMPUTERS/DATA PROCESSING/EXPLORATION:02,03/GEOCHEMICAL SURVEYS:T1/MAPS/NATURAL GAS DEPOSITS:T3/PETROLEUM DEPOSITS:T2/PULSE ANALYZERS/TOPOLOGICAL MAPPING/

RS78-6-193

78J0011097 EDB-78-02 55.100
EVALUATION OF AUTORADIOGRAPHS AND IMAGES OF BIOLOGICAL OBJECTS WITH THE ELECTRONICALLY OPERATING IMAGE ANALYZER 'DENSITRON II'.II.DETERMINATION OF THE SPECIFIC AND TOTAL RADIOACTIVITY OF SINGLE CELLS/
HESS, J. / KORN, U. / FROYER, K. / ERMISCH, A. (KARL-MARX-UNIVERSITAET, LEIPZIG (GERMAN DEMOCRATIC REPUBLIC). SEKTION BIOWISSENSCHAFTEN/AKADEMIE DER WISSENSCHAFTEN DER DDR,LEIPZIG.ZENTRALINSTITUT FUER ISOTOPEN- UND STRAHLENFORSCHUNG)/
ACTA MECH./56/2/1976/
180-187/(IN GERMAN)
USING THE TV IMAGE ANALYZER DENSITRON,TRANSPARENCIES AND AREAS CAN BE MEASURED BY THE GREY VALUE DISCRIMINATION METHOD EQUIDENSITOMETRY. THE TIME NECESSARY FOR ONE MEASUREMENT IS APPROXIMATELY 1 MIN,THE STANDARD DEVIATIONS DO NOT EXCEED 2 PERCENT . MICROSCOPICAL OBJECTS SUCH AS SINGLE CELLS CAN BE ANALYZED BY THIS METHOD.PHOTO-BLACKINGS AND AREAS HAVE BEEN MEASURED IN AUTORADIOGRAPHS OF GOLDFISH BRAIN-SECTIONS AFTER INJECTION OF /SUP 3/H-PHENYLALANINE.AS A PARALLEL,BLACKING AND AREA CALIBRATION CURVES WERE OBTAINED WHICH ALLOWED A CONVERSION OF THE RELATIVE VALUES INTO ABSOLUTE ONES.USING THIS CONVERSION METHOD,NEURONS OF DIFFERENT BRAIN REGIONS WERE IN THE RANGE FROM 104 TO 1476MUM/SUP 2/IN AREA AND FROM 4.17 TO 14.431UCI.CM/SUP -3/IN SPECIFIC RADIOACTIVITY.THE STANDARD DEVIATIONS OF THE ABSOLUTE VALUES WERE 6 AND 4.5 PERCENT , RESPECTIVELY, ON THE BASIS OF THESE AND ADDITIONAL VALUES (THICKNESS OF SECTION,NUMBER OF SECTIONS PER CELL), CALCULATIONS OF THE TOTAL RADIOACTIVITY OF A CELL SECTION OR THE WHOLE CELL CAN BE MADE./

RS78-6-197

78C0005500 EDB-78-01 44.030
SIMULTANEOUS THREE ELEMENT X-RAY MAPPING USING COLOR TV/
PAWLEY,J.B.(UNIV.OF CALIFORNIA,BERKELEY)/HAYES,T./FALK,R.H./
ELECTRON BEAM-EXCITED X-RAY MAPS/
IIT RESEARCH INST./CHICAGO/1976/
SCANNING ELECTRON MICROSCOPY,I/
THIS STUDY INTRODUCES AN X-RAY DEVICE CAPABLE OF SIMULTANEOUSLY MAPPING THREE ELEMENTS IN THREE DIFFERENT COLORS.SUCH MAPPING IS DESIRABLE BECAUSE IT PERMITS THE COLLECTION AND DISPLAY OF INFORMATION ABOUT SEVERAL ELEMENTS SIMULTANEOUSLY RATHER THAN BY SEQUENTIAL SCANS.SIMULTANEOUS MAPPING AT TV RATES PROVIDES SAVINGS IN TIME AND REDUCTION OF RADIATION DOSE, TWO FACTORS PARTICULARLY IMPORTANT FOR STUDIES OF BIOLOGICAL MATERIALS.THE THREE ELEMENTAL DISTRIBUTIONS ARE DISPLAYED IN A SINGLE IMAGE WHERE IMPORTANT RELATIONSHIPS BETWEEN THE VARIOUS ELEMENTAL CONCENTRATIONS CAN BE SEEN.THE PRESENT SYSTEM UTILIZES AN ENERGY DISPERSIVE X-RAY DETECTOR AND STANDARD PREAMPLIFIER.THE AMPLIFIER AND PULSE HEIGHT ANALYZER DESIGN RECOGNIZES THE IMPORTANCE OF A SHORT SHAPING CONSTANT AND A RAPID METHOD FOR PULSE HEIGHT TESTING.THREE SINGLE CHANNEL ANALYZERS WITH THEIR EMERGING PULSES GATED BY A STROBE OUTPUT FOR UNIFORM DELAY TIME PROVIDE THE THREE INDIVIDUAL PULSE HEIGHT WINDOWS,ONE FOR EACH OF THE THREE ELEMENTS BEING MAPPED.IF A PEAK IS FOUND IN A WINDOW IT CAN BE SENSED AND PASSED ON TO THE MULTI-CHANNEL ANALYZER COINCIDENCE INPUT SO THAT THE PEAKS ONLY IN THE SINGLE CHANNEL ANALYZER WINDOWS WILL BE DISPLAYED.THE IMAGE IS RECORDED ON POLAROID COLOR FILM USING A 4** X 5** CAMERA FITTED WITH AN OSCILLOSCOPE LENS AND CAPABLE OF RECORDING THE SHADOW MASK TUBE IMAGE./

RS78-6-198

78C0044005 EDB-78-08 29.040
(CONF-761061--)XIV APCOM SYMPOSIUM,PREPRINTS/
PENNSYLVANIA STATE UNIV.,UNIVERSITY PARK (USA)/
1976/PENNSYLVANIA STATE UNIV.,UNIVERSITY PARK./
CC=5 118 000/
US/
US/
14.INTERNATIONAL SYMPOSIUM FOR THE APPLICATION FOR COMPUTERS AND MATHEMATICS IN THE MINERAL INDUSTRIES/
UNIVERSITY PARK,PA,USA/
4 OCT 1976/
29.0400/29.0100/
COMPUTER CODES:T/COMPUTERS/DECISION MAKING/ECONOMICS/ENERGY ANALYSIS/EXPLORATION:Q2/GLOBAL ASPECTS:Q3/INFORMATION:Q4/INFORMATION SYSTEMS / INVESTMENT/MEETINGS/MINERAL INDUSTRY:T3/MINERAL RESOURCES:T2,Q3/MINERALS:T1/MINING:T/PLANNING:Q1/PROCESSING:Q2/PROGRAMMING:Q1,Q2/RESERVES/SIMULATION/STATISTICS:Q2/SYSTEMS ANALYSIS/UNDERGROUND MINING:T4/USA/

RS78-6-199

78C0070418 EDB-78-13 44.030
(CONF-751072--P2)CHANGE DETECTION IN MULTI-SENSOR IMAGES/
PRICE,K./REDDY,R./
CARNEGIE-MELLON UNIV.,PITTSBURGH/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
44.0300/51.0100/
AERIAL SURVEYING/AIRCRAFT/CROPS:T2/IMAGES:Q4/REMOTE SENSING:T4,Q1,Q2,Q3/SATELLITES/SNOW:T1/SOILS:T3/

RS78-6-200

78C0056580 EDB-78-10 50.020
(AEC-CONF--77-165-002)REMOTE SENSING USING TUNABLE LASERS/
ROTHE,K.W./WALTHER,H./
DESCHLEUNIGERLABORATORIUM DER UNIV.UND TECHNISCHEN UNIV.MUENCHEN,GARCHING (GERMANY,F.R.)/
1977/DEP.NTIS (US SALES ONLY),PC A02/MF A01./
CC=0 802 500/
DE/
DE/
50.0200/51.0200/52.0200/
INDUSTRY/LASERS:T2/MONITORING:Q1/POLLUTION:T1/REMOTE SENSING:Q1/SENSITIVITY/USES:Q2/

RS78-6-194

78R0016261 EDB-78-16 50.020
PB--272987/
VEHICLE INSPECTION INSTRUMENTATION.FINAL REPORT,30 JUNE 1972--30 JUNE 1973/
HOSHIZAKI,H./WOOD,A.D./KEMP,D.D./
LOCKHEED MISSILES AND SPACE CO.,PALO ALTO,CALIF.(USA)/
CONTRACT ARB-643/
30 JUN 1973/
NTIS PC A05/MF A01./
3 793 000/
US/
US/
EDB-78:086261/
THE OBJECTIVE WAS TO DEVELOP AN INSTRUMENT WHICH WOULD REMOTELY MEASURE THE CO,HC AND NO EMISSION FROM VEHICLES. THE BASIC OPERATION OF THE INSTRUMENT DEVELOPED IS BASED ON THE SELECTIVE INFRARED ABSORPTION BY POLLUTANT SPECIES IN THE REAR WAKE OF A VEHICLE AS IT IS DRIVEN THROUGH AN INFRARED BEAM WHICH SPANS THE ROADWAY;THE ENTIRE MEASUREMENT SEQUENCE IS PERFORMED AUTOMATICALLY.THE INSTRUMENT MEASURES CO AND HC EMISSION CONCENTRATIONS AT LOW DRIVE-THROUGH SPEEDS,BEING LIMITED BY UNEXPECTED SPREADING OF THE INFRARED BEAM BY NON-ISOTHERMAL WAKE TURBULENCE WHICH CREATES A FALSE ABSORPTION SIGNAL. THIS FALSE ABSORPTION SIGNAL BECOMES UNACCEPTABLY LARGE AT VELOCITIES GREATER THAN 20 MPH.DEVELOPMENT PROBLEMS ENCOUNTERED PRECLUDE THE RELIABLE MEASUREMENT OF NO EMISSIONS./
NP/
50.0200/
AIR POLLUTION: P9/AIR POLLUTION MONITORS:T8,01,02;03,04,05,06,07/AUTOMOBILES:T2/CARBON DIOXIDE:T4/CARBON MONOXIDE:T3/COMBUSTION PRODUCTS:T6/DESIGN:Q8/EXHAUST GASES:T1/HYDROCARBONS:T5/NITRIC OXIDE:T7/PERFORMANCE:Q8/REMOTE SENSING:Q9/

RS78-6-195

78C0013766 EDB-78-03 05.020
METHOD OF DETECTING SMALL OR INDISTINCT RADIOACTIVE SOURCES BY AIRBORNE GAMMA-RAY SPECTROMETRY/
LINDEN,A.H./AKERBLOM,G.(GEOLOGICAL SURVEY OF SWEDEN,STOCKHOLM (SWEDEN))/
INSTITUTION OF MINING AND METALLURGY/LONDON/1977/
GEOLOGY,MINING,AND EXTRACTIVE PROCESSING OF URANIUM/
JONES,M.J.(ED.)/
THE GEOLOGICAL SURVEY OF SWEDEN (SGU)HAS DEVELOPED A SYSTEM FOR AIRBORNE RADIOMETRIC SURVEYING WHICH FACILITATES THE DETECTION OF SMALL RADIOACTIVE SOURCES SUCH AS POORLY EXPOSED URANIUM MINERALIZATION.BY FLYING AT A LOW HEIGHT (30 M) AND MEASURING OVER A SHORT TIME PERIOD, THE AREA REPRESENTED BY EACH MEASURING STATION IS KEPT TO A MINIMUM.TO ACHIEVE SUFFICIENT PRECISION THE ENTIRE SPECTRUM BETWEEN 0.45 AND 2.85 MEV IS UTILIZED FOR THE CALCULATION OF THE RADIATION RELATED TO K,U AND TH.THE RESULTS ARE DISPLAYED IN THE FORM OF A MAP,ON WHICH EVERY MEASURING STATION IS REPRESENTED BY COLUMNS IN THREE COLORS,ONE FOR EACH ELEMENT.THE MAP NOT ONLY INDICATES POINT ANOMALIES BUT ALSO GIVES A PICTURE OF THE DISTRIBUTION OF THE ELEMENTS OVER A LARGE AREA.IT CAN THEREFORE BE OF ASSISTANCE IN GEOLOGICAL MAPPING IN ADDITION TO ITS APPLICATION TO URANIUM PROSPECTING./

RS78-6-196

78H0091651 EDB-78-17 50.020
BNWL--2100(PT.4)/
APPLICATIONS OF HOLOGRAPHY/
NIELSEN,J.M.(ED.)/
AIR POLLUTION MONITORING/
JUN 1977/
PACIFIC NORTHWEST LABORATORY ANNUAL REPORT FOR 1976 TO THE ERDA ASSISTANT ADMINISTRATOR FOR ENVIRONMENT AND SAFETY. PART 4,PHYSICAL AND TECHNOLOGICAL PROGRAMS/
US/
US/
ERA-07:043564/EDB-78:091651/
HOLOGRAPHY USING SHORT LASER PULSES IS BEING STUDIED TO DETERMINE ITS APPLICABILITY TO ENVIRONMENTAL AIR POLLUTION MONITORING.A Q-SWITCHED KORAD 1500 RUBY LASER IS BEING USED FOR LABORATORY EXPERIMENTS TO DETERMINE SPATIAL AND TEMPORAL RESOLVING CAPABILITY.DEMONSTRATION EXPERIMENTS SIMULATING TWO APPLICATIONS WERE PERFORMED WITH SATISFACTORY RESULTS./
50.0200/
AEROSOL MONITORING/AIR POLLUTION:M2/AIR POLLUTION MONITORS:M1/LASERS:Q1/PHOTOGRAPHY:Q1/REMOTE SENSING:Q2/

RS78-6-205

78I000610J ECB-78-01 58.020
LOOKING THROUGH ROCKS WITH RADAR/
UNTERBERGER,R.R./
(TEX AANDM UNIV,COLLEGE STATION)
MIN.CONGR.J./63/6/JUN 1977/
38-41/
IF ROCK IS DRY, RADAR CAN PENETRATE TO RANGES OF OVER 6000 FT ONE WAY.THIS IS EQUIVALENT TO OVER 12,000 FT OF TOTAL TRAVEL OF THE RADAR ENERGY.RADAR PROBING HAS BEEN USED TO:MAP THE TOP OF SALT DOMES FROM INSIDE SALT MINES/MAP THE DOME FLANK/DETECT FRACTURES IN SALT OR OTHER DISCONTINUITIES SUCH AS SAND LENSES,ANHYDRITE STRINGERS,ETC./DETECT AND RANGE TO FOREIGLES IN ADVANCE OF MINING/AND DETECT AND RANGE TO FAULTS IN ADVANCE OF MINING.IF ROCK IS WET,A SONAR (SOUND WAVE) PROBING SYSTEM IS USED TO DO SIMILAR THINGS.14 REFS./

RS78-6-206

78C0061711 ECB-78-11 58.020
(LA-UR--78-347)TECHNIQUE FOR DYNAMIC RANGE REDUCTION FOR LANDSAT RATIO IMAGES/
WECKSUNG,G.W./BREEDLOVE,J.R.JR./
LOS ALAMOS SCIENTIFIC LAB.,N.MEX.(USA)/
1978/
CONF-780410--1/DEP.NTIS,PC A02/MF A01./
CC=3 820 000/
US/
US/
ELECTRONICS IN RESOURCES MANAGEMENT CONFERENCE/
ALAMOGORDO,NM,USA/
12 APR 1978/
58.0203/
AERIAL MONITORING/COMPUTER GRAPHICS:Q2/GEOLOGICAL SURVEYS:T1/IMAGES:T2/PHOTOGRAPHY:Q1/SATELLITES/

RS78-6-201

78C0057062 EDB-78-10 58.020
(SAND--78-0042C)ACCELEROMETER SYSTEM FOR MAPPING MARINE SEDIMENT INSTABILITIES/
SANDIA LABS.,ALBUQUERQUE,N.MEX.(USA)/
1978/
CONF-780508--1/DEP.NTIS.MF A01./
CC=5 659 000/
US/
US/
OFFSHORE TECHNOLOGY CONFERENCE/
HOUSTON,TX,USA/
8 MAY 1978/
58.0203/42.3000/
ACCELEROMETERS: T1/DESIGN:Q1/ENVIRONMENTAL TRANSPORT:Q2/GEOLOGICAL SURVEYS/GULF OF MEXICO/MEASURING METHODS:Q2/MOTION/
OFFSHORE SITES/PERFORMANCE TESTING:Q1/REMOTE SENSING/SEAS/SEDIMENTS:T2/SENSITIVITY/UNDERWATER OPERATIONS/WATER CURRENTS/
WATER WAVES/

RS78-6-202

78Y0039991 EDB-78-07 58.020
COMPUTER APPLICATION FOR AUTOMATIC RESULTS PROCESSING OF FIELD GAMMA-SPECTROMETRICAL WORKS/
SINYAVSKIJ, A. G. / GRISHIN, G.V./GORBAN,YU.D./KOLPAKOV,O.V./NITROVANOV,V.Z.(VOLGOGRADSKIJ NAUCHNO-ISSLEDOVATEL'SKIJ I
PROEKTNYJ INST.NEFTYANOJ PROMYSHLENNOSTI (USSR))/
NIZHNE-VOLZHSKOE KNIZHNOE IZDATEL'STVO/VOLGOGRAD/1976/(IN RUSSIAN)
GEOLOGIYA I NEFTEGAZONOSNOST' ZAPADNOJ CHASTI PRIKASPIJSKOJ VPADINY.TRUDY VOLGOGRADNIPINEFT'/
SU/
SU/
58.0202/
AERIAL PROSPECTING:T/COMPUTER CALCULATIONS/COMPUTER CODES/DATA PROCESSING:Q1/GAMMA SPECTROSCOPY:T1/GEOLOGICAL SURVEYS/

RS78-6-203

78R0035625 EDB-78-07 05.020
(GJBX--88(77))STUDY OF AIRBORNE GAMMA-RAY SPECTROMETER DATA PROCEDURES,CASPER QUADRANGLE,WYOMING,VOLUME 2/
TEXAS INSTRUMENTS,INC.,DALLAS (USA)/
OCT 1977/NTIS,MF A01./
CC=6 196 000/
US/
US/
05.0200/
AERIAL PROSPECTING: Q2 /DATA COMPILATION:Q3/FREQUENCY MEASUREMENT/GAMMA SPECTRA:T3/GAMMA SPECTROMETERS/MAPS/POTASSIUM
ISOTOPES/SPECTRA/THORIUM ISOTOPES/URANIUM DEPOSITS:T2,Q1/URANIUM ISOTOPES/WYOMING:T1/

RS78-6-204

78C0073414 EDB-78-13 44.030
(CONF-7510172--P1)THEMATIC MAPPER PERFORMANCE OPTIMIZATION STUDY/
THUNSON,F.J.(ENVIRONMENTAL RESEARCH INST.OF MICHIGAN,ANN ARBOR)/ERICKSON,J.D./KOERBER,K./HARNAGE,M.J./
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
44.0300/58.0203/
AIRCRAFT / DATA ANALYSIS/EARTH PLANET/MONITORING/NASA/OPTIMIZATION/PERFORMANCE/REMOTE SENSING:T1/RESOURCES/SATELLITES/
SPACE VEHICLES/SPECTROMETERS:Q1/TOPOLOGICAL MAPPING/

RS78-6-207

A78-45876 # The Meteosat system and its missions. D. Breton (ESA, Meteorological Programmes Dept., Toulouse, France). *ESA Bulletin*, no. 11, Dec 1977, p. 11-15.

The main services of the Meteosat system are discussed. Earth monitoring, including studies of cloud cover, cloud and sea-surface temperature, water vapor, radiation balance, and winds, is effected by an onboard three-channel radiometer. Meteosat also provides the dissemination of cloud-coverage pictures and meteorological data to remote-user receiving stations. The collection of environmental data is made by in situ automatic or semiautomatic data-collection platforms System components are described including the earth-observation package, data-transmission and relay package, and ground segment. S.C.S.

RS78-6-208

A78-43322 # At last real temperature and high resolution - Two new airborne radiometers (Enfin la température vraie et la haute résolution - Deux nouveaux radiometres aéroportés). P. Bricard and M. Vieillefosse (Centre National d'Etudes Spatiales, Toulouse, France). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings (A78-43303 19 43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 189-199. In French.

An infrared multispectral scanner has been developed to determine temperatures and emissions with an accuracy of 0 20 K and 5.0 percent. The device simultaneously measures radiation at 4.71, 7.95, 9:1, and 10 5 microns Each channel contains a 24 x 36 objective lens, a 500-element photosensitive charge-transfer array, and an electron beam recorder The device may be used to measure aerosol diffusion, absorption by CO2 and water vapor, and emissions by radiation-absorbing atmospheric components. S.C.S.

RS78-6-209

A78-40168 * Parametric design of ground data processing/support systems for advanced sensor systems. C Denny, E. M. Johnson (Ford Aerospace and Communications Corp., Houston, Tex.), and E. L. Davis (NASA, Langley Research Center, Hampton, Va.) In. Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 150-159.

A parametric system design technique has been applied to ground data processing/support systems for advanced sensor applications. The system establishes a direct link between budget analysts and system planners. Three primary phases are identified the definition of requirements, system design, and system costing. The system is evaluated for three cases. (1) a study of ground data handling systems for earth resource satellites, (2) a ground data mass storage and processing system for agricultural remote-sensing studies, and (3) a parametric study of shuttle era data processing support required for atmospheric and space physics. S.C.S

RS78-6-210

A78-48008 Aided-track cursor for improved digitizing accuracy. G. W. Hunka (RCA, Camden, N.J.). *Photogrammetric Engineering and Remote Sensing*, vol. 44, Aug. 1978, p. 1061-1066.

An aided-track cursor for use on any backlighted table is described. Cursor position is sensed by an x-y servo slaved to cursor motion by magnetic position sensing. Coordinate data are generated by incremental optical encoders coupled to the carriage guide system. Key feature is the incorporation of a linear photosensitive array consisting of 64 photodiodes spaced at a 2-mil pitch distance. As the operator views the function to be digitized, it is simultaneously imaged onto the array by means of a beamsplitter and lens. To achieve accuracy in the presence of line curvature, a computer used in conjunction with the cursor calculates a rotational signal from prior coordinate values to maintain the array perpendicular to the curve Processing the detected array signal combines both analog and digital circuitry. P.T.H.

RS78-6-211

A78-44992 High-speed photography and photonic recording. A E Huston (John Hadland (Photo), Ltd., Bovingdon, Herts, England). *Journal of Physics E - Scientific Instruments*, vol. 11, July 1978, p 601-609. 38 refs.

The basic techniques used in high-speed photography (i.e., cine, framing and streak photography) are briefly discussed and the various instrumental arrangements are mentioned (i e , moving film, rotating-drum, rotating mirror, image converter, flash, etc). Recent developments in image converters have led to cameras capable of resolving times of the order of 10 to the -12th/s, where some versions have a sensitivity in the soft X-ray region of the spectrum. Electronic tubes incorporating microchannel plates have been used as intensifiers in picosecond streak cameras and as high-gain shutters for single-frame photography. Holographic methods have been adopted in the design of high-speed camera systems for detecting small movements such as the deformation of plates on impact and vibration studies. Electronic methods are being developed for handling the information produced by high-speed cameras, some systems dispense with the photographic process entirely (Author)

RS78-6-212

A78-43344 # A synthetic aperture radar /SAR/ program for environmental and resource management in Canada. R. Inkster and M. Kirby (INTERA Environmental Consultants, Ltd., Ottawa, Canada). In. Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 469 473 7 refs.

Canadian environmental and resource management using synthetic aperture radar (SAR) systems is outlined. The program is designed to identify cost-effective potential applications for radar remote sensing. The ERIM X-L SAR system, consisting of imaging sensors transmitting in the X- and L-bands, is described. Attention is given to hybrid optical-digital signal processing. This procedure consists of an optical processor interfaced to an image dissector, a computer program providing digitization, and recording and display apparatus. S.C.S.

RS78-6-213

A78-43161 Remote sensing of air pollutants by correlation spectroscopy - Instrumental response characteristics. M. M. Millán and R. M. Hoff (Department of the Environment, Atmospheric Environment Service, Downsview, Ontario, Canada). *Atmospheric Environment*, vol. 12, no. 4, 1978, p 853 864. 19 refs.

The philosophy behind the development of the correlation spectroscopic techniques now in use for the remote sensing of air pollutants is briefly examined. In order to focus attention on the operational characteristics common to most of these, dispersive as well as non-dispersive, sensors, the authors select one of the commercially available instruments to describe in certain detail how the instrumental design parameters, the available backgrounds or sources, and the geometry of the observation interact to affect the output signal. This work is intended to review the development of the selected instrumental technique, and also to alert the user about some factors which must be considered both with the gathering and during the analysis of the data collected with these types of sensors. (Author)

RS78-6-214

A78-44574 Charge transfer devices for infrared imaging. A. F. Milton (U.S. Navy, Naval Research Laboratory, Washington, D.C.). In: Optical and infrared detectors. (A78-44569 19-35) Berlin and New York, Springer-Verlag, 1977, p. 197-228. 33 refs.

A great number of infrared photodetectors has been developed for use in thermal imaging systems operating in either the 3-5 micrometer or 8-12 micrometer atmospheric windows. At present the number of detectors used in IR imaging systems is limited by the requirement to connect each detector to its own preamplifier. It is hoped that the use of charge transfer devices (principally charge coupled devices, CCDs, and charge injection devices, CIDs) at or near the focal plane for multiplexing and signal processing will make practical IR focal planes with thousands of IR detectors. There exists a wide variety of approaches to the use of charge transfer devices in infrared focal planes. Five high packing density, high quantum efficiency, approaches appropriate for series-parallel scan are discussed. Attention is given to IR sensitive CCD, direct injection (hybrid), direct injection (extrinsic silicon), the accumulation mode (extrinsic silicon), and infrared sensitive CID with silicon CCD signal processing. G.R.

RS78-6-215

A78-43338 # Interpretation techniques for X-band SLAR. J. T. Parry (McGill University, Montreal, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 376-394. 22 refs.

The operation and interpretation of X-ray side-looking airborne radar (SLAR) are discussed with reference to both real aperture and synthetic aperture configurations. Operational parameters associated with the aircraft flight and the radar equipment are reviewed. Limits to SLAR performance are identified, including range display, swath width, scale, and resolution. The terrain features which influence radar return are considered, noting the conductivity and dielectric constant of the ground, surface geometry, local surface roughness, relief, and slope. Procedures for SLAR imagery interpretation, considering tone, speckle, texture, size, shape, shadow, and association, are outlined. S.C.S.

RS78-6-216

A78-45888 # LEDA - An ESA data bank dedicated to images of earth seen from space (LEDA - Une Banque de Données de l'ESA consacrée aux images de la Terre vue de l'espace). G. A. Proca (ESA, Space Documentation Service, Frascati, Italy). *ESA Bulletin*, no. 13, May 1978, p. 47-51. In French.

The Line Earthnet Data Availability (LEDA) system created by the Space Documentation Service of the ESA is described. LEDA is a data bank which can be interrogated in real time and in conversational mode by means of terminals connected to the SDS computer. The data acquired can be applied to the interpretation of space images. The scope of data and operations available is explained. M.L.

RS78-6-217

A78-44571 Thermal detectors. E. H. Putley (Royal Signals and Radar Establishment, Malvern, Worcs., England). In: Optical and infrared detectors. (A78-44569 19-35) Berlin and New York, Springer-Verlag, 1977, p. 71-100. 81 refs.

In thermal detectors, the energy of the absorbed radiation raises the temperature of the detecting element. This increase in temperature will cause changes in the temperature dependent properties of the detector. The radiation is detected by monitoring these changes. The basic principles of operation of a thermal detector are considered and a description is presented of the various devices which are used as thermal detectors. The thermopile, one of the oldest infrared detectors, is still widely used. In its latest form, as thin film thermopile, it is employed in space instrumentation. Attention is also given to the bolometer, the Golay cell and related detectors, the pyroelectric detector, a device employing an optical lever developed by Jones and Richards (1959), and studies concerning a utilization of the Nernst effect in suitable semiconductors. The use of thermal detectors in infrared imaging systems is also discussed. G.R.

RS78-6-218

A78-48004 Remote sensing on a shoestring. S. L. Richardson *Photogrammetric Engineering and Remote Sensing*, vol. 44, Aug 1978, p. 1027-1032. 6 refs.

The paper describes a multispectral photoviewer, based on the principle of additive light, that can be built at a cost of $20. Two photos of the original are viewed simultaneously through two different color filters, and the images are superposed. Materials needed include a beam splitting mirror, a 5 x 5 inch mirror, colored acetate, and possibly some gelatin filters. Although the principle can be extended to three colors, experiments have shown that additional colors do not yield better images or informational content. .P.T.H.

RS78-6-219

A78-43637 An experimental radar device for the observation of the earth from an aircraft (Ein Experimental-Radargerat zur Erdbeobachtung vom Flugzeug aus). F. Schlude (Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt, Institut für Flugfunk und Mikrowellen, Oberpfaffenhofen, West Germany). *Bildmessung und Luftbildwesen*, vol. 46, July 1, 1978, p. 123-131. In German.

Remote sensing data in the optical, infrared, and microwave range have become indispensible for a number of scientific investigations. The importance of the microwave sensor has increased in recent years in connection with its all-weather capability, which is vital for the geographical latitudes of Central Europe. Current limitations regarding the use of the microwave sensor are related to technological problems. In connection with the clearly recognized European need for a suitable microwave sensor, West Germany wants to improve the technology related to the microwave remote sensing of the earth. It is planned to provide for the basis an operational satellite sensor system during the mid-1980s. A program for implementing this objective is being prepared. The first step taken in this connection was the design of a cost-efficient experimental radar device for the observation of the earth from an aircraft. Basic information regarding the observation of the earth from space is considered and a survey is provided regarding the performance of the new device, taking into account the first results. G.R.

RS78-6-220

A78-41188 Map intensification from small format camera photography. R. D. Spencer (Victoria Forests Commission, Melbourne, Australia). *Photogrammetric Engineering and Remote Sensing*, vol. 44, June 1978, p. 697-707. 14 refs.

The use of light, low-performance aircraft and 70 mm or 35 mm cameras with wide-angle lenses provides an economical means of obtaining current photographs for mapping plantation extensions. Increasing the aircraft ceiling to permit photo coverage with narrow-angle lenses or adopting automated camera assemblies, can make the map updating process even more efficient. Mapping 4,000 hectares of plantation extensions was found to involve a budget in which 13% of the expenses were for aircraft hire, 16% for photography, and 71% for map compilation. Photographic intensification of maps through use of small-format cameras may cost less than half the amount required for field surveys, and involve one tenth to one fifth the number of man-days. J.M.B.

RS78-6-221

A78-45750 * Central swath mapping by a future satellite-borne fan-beam microwave scatterometer for inferring global ocean wind fields. K. Tomiyasu (General Electric Co., Valley Forge Space Center, Philadelphia, Pa.). *IEEE Journal of Oceanic Engineering*, vol. OE-3, July 1978, p. 70-72. 6 refs. Contract No. NAS1-14173.

The Seasat-A satellite scatterometer is a microwave sensor designed to provide a capability for mapping the global ocean surface wind speed and direction. Four fan beams whose major axes are oriented at + or - 45 deg and + or - 135 deg to the flight vector cover a swath width of 1900 km, but a central region remains that is inadequately mapped. In this paper, two additional fan beams for a future scatterometer are suggested which provide more complete coverage of the central region. (Author)

RS78-6-222

A78-44573 Photoemissive detectors. H. R. Zwicker (MIT, Lexington, Mass.). In: Optical and infrared detectors. (A78-44569 19-35) Berlin and New York, Springer-Verlag, 1977, p. 149-196. 171 refs.

General detector applications for which photoemissive devices are uniquely suited are related to the detection of low-intensity signals, the high-speed detection of low-level signals, and the acquisition of high resolution spatial information (imaging). The ease with which fast, high gain, low noise amplification can be incorporated within the detector by use of an integral electron multiplier is a major advantage of photoemissive (photoelectron emitting) detectors over other detection devices. A second advantage is the ease with which uniform, large-area detector surfaces can be fabricated. A major limitation is the restricted range of the spectrum over which response can be obtained. Classical and negative electron affinity types of photoemissive surfaces are considered. A description of the photoemission process is presented, taking into account the fundamentals of electron escape energy, the escape-energy parameters for metals and semiconductors, and the thresholds of various materials. G.R.

RS78-6-223

N78-29424*# Barnes Engineering Co., Waltham, Mass
ADVANCED MULTISPECTRAL SCANNER (AMS) STUDY Final Report

30 Jun 1978 217 p refs
(Contract NAS9-15323 Proj 2738)
(NASA-CR-151753, MA-183T) Avail: NTIS HC A10/MF A01 CSCL 14B

The status of aircraft multispectral scanner technology was accessed in order to develop preliminary design specifications for an advanced instrument to be used for remote sensing data collection by aircraft in the 1980 time frame. The system designed provides a no-moving parts multispectral scanning capability through the exploitation of linear array charge coupled device technology and advanced electronic signal processing techniques. Major advantages include: 10.1 V/H rate capability, 120 deg FOV at V/H = 0.25 rad/sec; 1 to 2 rad resolution; high sensitivity, large dynamic range capability, geometric fidelity; roll compensation; modularity; long life; and 24 channel data acquisition capability. The field flattening techniques of the optical design allow wide field view to be achieved at fast f/nos for both the long and short wavelength regions. The digital signal averaging technique permits maximization of signal to noise performance over the entire V/H rate range. A.R.H.

RS78-6-224

N78-27904* National Aeronautics and Space Administration, Langley Research Center, Langley Station, Va.
DEVICE FOR MEASURING THE CONTOUR OF A SURFACE Patent
Ernest E. Burcher, Stephen J. Katzberg, and William L. Kelly, IV, inventors (to NASA) Issued 9 May 1978 6 p Filed 8 Nov 1976 Supersedes N77-10497 (15 - 01, p 0069)
(NASA-Case-LAR-11869-1 US-Patent-4,088,408; US-Patent-Appl-SN-740155, US-Patent-Class-356-120, US-Patent-Class-356-167) CSCL 20F

Light from a source is imaged by a lens onto a surface so that the energy from the source is concentrated into a spot. As the spot across the surface is scanned, the surface moves relative to the point of perfect focus. When the surface moves away from perfect focus the spot increases in size, while the total energy in the spot remains virtually constant. The lens then reimages the light reflected by the surface onto two detectors through two different sized apertures. The light energy going to the two detectors is separated by a beam splitter. This second path of the light energy through the lens further defocuses the spot, but as a result of the different sizes of the apertures in each light detector path, the amount of defocus for each is different. The ratio of the outputs of the two detectors which are indicative of the contour of the surface is obtained by a divider. Official Gazette of the U.S. Patent Office

RS78-6-225

N78-28145*# Environmental Research Inst., Moose, Wyo
ASSESSMENT OF NEEDS FOR SATELLITE TRACKING OF BIRDS AND SUGGESTIONS FOR EXPEDITING A PROGRAM Final Report, Mar. 1976 - Feb. 1978
Frank C. Craighead, Jr. Mar. 1978 81 p refs
(Grant NsG-2157)
(NASA-CR-152168) Avail: NTIS HC A05/MF A01 CSCL 22A

Equipment development and testing, animal-instrument interphase or attachment methods, and the evaluation of various feasibility-tracking experiments with raptors are described as well as suggestions for expediting a future program. Results of animal-instrument interphases work indicate that large free-flying birds can be successfully instrumented with radio packages comparable in weight to satellite-transmitter packages. The 401 MHz frequency proved satisfactory for a combination of satellite and ground tracking of migrating birds. Tests run for nearly a year with the Nimbus 6 satellite and a miniaturized, one-watt prototype RAMS transmitter produced encouraging results in regard to location accuracy, frequency of contact with satellite and use of whip antennas. A future program is recommended with priority given to development of six operational transmitters for feasibility experiments. A.R.H.

RS78-6-226

N78-27742 Nebraska Univ., Lincoln
DEVELOPMENT OF A SINGLE-UNIT, MULTIOUTPUT SENSING ELEMENT IN A FORCE PLATFORM FOR USE IN BIOMECHANICS APPLICATIONS Ph.D. Thesis
William Edward Handy 1977 289 p
Avail Univ Microfilms Order No 7809155

The platform can be used to determine the three orthogonal components of a force applied to it the two-dimensional location of the force and the torque about the vertical axis Force components are directly proportional to strain outputs Position and torque must be calculated from measured quantities The sensing element was constructed from a 24-inch square by 1 5-inch thick aluminum plate Slots in the plate form four sensing beams and a torque-sensing cross A top walk plate is attached at the center of the element The element is supported at the four outside corners A load applied to the top plate is transferred through the torque sensing cross to each of the two pairs of opposed load-sensing beams in sequence Sixty-four strain gages are mounted on the four load-sensing beams and the torque-sensing cross to form the six multi-gage-arm bridges
Dissert Abstr

RS78-6-227

N78-29548# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Oberpfaffenhofen (West Germany) Inst. fuer Dynamik der Flugsysteme
THE COVERAGE BEHAVIOR OF EOSAT FOR SOME SELECTED REGIONS OF THE WORLD [UEBERDECKUNGS-VERHALTEN DES ERDSAT FUER EINIGE AUSGEWAEHLTE GEBIETE AUF DER ERDOBERFLAECHE]
E F Jochim Mar 1978 72 p refs In GERMAN, ENGLISH summary Report will also be announced as translation (ESA-TT-494)
(DLR-IB-552-78/1) Avail NTIS HC A04/MF A01

The coverage behavior of a proposed European remote sensing satellite was investigated for each of its onboard sensors for Europe, the Amazon Basin, Indonesia and Brazil The proposed satellite will carry a multispectral scanner and a microwave sensor It is concluded that the satellite orbit can be optimal only for one sensor for one region on the earth ESA

RS78-6-228

N78-27405*# National Aeronautics and Space Administration Goddard Space Flight Center, Greenbelt, Md.
ENGINEERING A LASER REMOTE SENSOR FOR ATMOSPHERIC PRESSURE AND TEMPERATURE
James Edward Kalshoven, Jr. and Charles Laurence Korb Apr. 1978 19 p
(NASA-TM-79538) Avail NTIS HC A02/MF A01 CSCL 20E

A system for the remote sensing of atmospheric pressure and temperature is described. Resonant lines in the 7600 Angstrom oxygen A band region are used and an organic dye laser beam is tuned to measure line absorption changes with temperature or pressure A reference beam outside this band is also transmitted for calibration Using lidar techniques, profiling of these parameters with altitude can be accomplished. Author

RS78-6-229

N78-28579*# Ocean Data Systems Inc., Monterey, Calif.
ATMOSPHERIC MODEL DEVELOPMENT IN SUPPORT OF SEASAT. VOLUME 1: SUMMARY OF FINDINGS Final Technical Report
Philip G. Kesel 30 Sep. 1977 303 p Prepared for JPL 5 Vol.
(Contracts NAS7-100, JPL-954668)
(NASA-CR-157327) Avail. NTIS HC A14/MF A01 CSCL 22A

Atmospheric analysis and prediction models of varying (grid) resolution were developed The models were tested using real observational data for the purpose of assessing the impact of grid resolution on short range numerical weather prediction. The discretionary model procedures were examined so that the computational viability of SEASAT data might be enhanced during the conduct of (future) sensitivity tests. The analysis effort covers (1) examining the procedures for allowing data to influence the analysis, (2) examining the effects of varying the weights in the analysis procedure; (3) testing and implementing procedures for solving the minimization equation in an optimal way, (4) describing the impact of grid resolution on analysis, and (5) devising and implementing numerous practical solutions to analysis problems, generally. G.Y.

RS78-6-230

N78-28583*# Ocean Data Systems, Inc., Monterey, Calif.
ATMOSPHERIC MODEL DEVELOPMENT IN SUPPORT OF SEASAT. VOLUME 5: TEST RESULTS WITH FINE-MESH (187 BY 187 BY 10) MODEL Final Technical Report
Philip G. Kesel 30 Sep 1977 73 p Prepared for JPL 5 Vol.
(Contracts NAS7-100; JPL-954668)
(NASA-CR-157331) Avail NTIS HC A04/MF A01 CSCL 22A

A model (187 x 187 grid with ten layers) was used to produce a 24 hour forecast using initial conditions for 1200Z. 20 May 1976. This forecast was compared to its five layer counterpart on the 187 x 187 grid and to its 63 x 63 coarse mesh counterpart having the same number of layers. Increases in horizontal resolution lead to significant differences in a one day forecast Many of these differences represent improvements Increases in vertical resolution tend to produce smaller impacts on the forecast, except in the region near and above the tropopause. The effect on forecast precipitation is in the 10-20% range, as opposed to the 100% for increases in the horizontal resolution. With respect to model energetics (kinetic energy; square vorticity, square divergence), the model tend to group according to horizontal resolution. The time variations of these parameters show that dynamic initialization is needed to. (1) minimize initialization shock; and (2) stabilize the model context to prevent wash-out of small scale information during the adjustment period (first 6-12 forecast hours). G.Y.

RS78-6-231

N78-28580*# Ocean Data Systems, Inc., Monterey, Calif
ATMOSPHERIC MODEL DEVELOPMENT IN SUPPORT OF SEASAT. VOLUME 2: ANALYSIS MODELS Final Technical Report
Rodger A. Langland 30 Sep. 1977 153 p refs Prepared for JPL 5 Vol.
(Contracts NAS7-100, JPL-954668)
(NASA-CR-57328) Avail NTIS HC A08/MF A01 CSCL 22A

As part of the SEASAT program of NASA, two sets of analysis programs were developed for the Jet Propulsion Laboratory One set of programs produce 63 x 63 horizontal mesh analyses on a polar stereographic grid The other set produces 187 x 187 third mesh analyses. The parameters analyzed include sea surface temperature, sea level pressure and twelve levels of upper air temperature, height and wind analyses. The analysis output is used to initialize the primitive equation forecast models. G.Y.

RS78-6-232

N78-28582*# Ocean Data Systems, Inc., Monterey, Calif.
ATMOSPHERIC MODEL DEVELOPMENT IN SUPPORT OF SEASAT. VOLUME 4: FORECAST MODEL SENSITIVITY STUDY Final Technical Report
Howard L. Lewit 30 Sep. 1977 183 p Prepared for JPL 5 Vol.
(Contracts NAS7-100; JPL-954668)
(NASA-CR-157330) Avail: NTIS HC A09/MF A01 CSCL 22A

Atmospheric analysis and prediction models of varying (grid) resolution were developed. The models were tested using real observational data for the purpose of assessing the impact of grid resolution on short range numerical weather prediction. The work statement was amended to include the performance of sensitivity tests using a coarse mesh (63 x 63 x 5 level) prediction model in order to identify and order factors which might mask or impair the utility of SEASAT data on short range weather prediction. Such factors included: initial conditions; topography, surface friction; latent heating, diffusion of momentum and temperature; and computational devices such as tendency truncators, pressure smoothers, and temporal filters G.Y.

RS78-6-233

N78-27488*# National Aeronautics and Space Administration Goddard Space Flight Center Greenbelt Md
A PROPOSED TEST AREA FOR THE SPACEBORNE GEODYNAMIC RANGING SYSTEM
Paul D Lowman, Jr Jul 1978 15 p refs Presented at the SGRS Spaceborne Laser Ranging Workshop, Texas Univ., Austin, 17-21 Jul 1978
(NASA-TM-79592) Avail: NTIS HC A02/MF A01 CSCL 08B

Precise geodetic measurements are proposed in which an orbiting laser obtains intersite distance between retroreflectors 25 to 100 km apart on the ground The recommended area is a rectangle 200 by 400 km in southern California and adjacent Nevada, trending northeast It includes the entire width of the San Andreas fault zone the Garlock fault the thrust faults of the Transverse Ranges, and the active strike-slip faults of the Mojave-Desert. G G

RS78-6-234

N78-26515*# Old Dominion Systems, Inc., Gaithersburg, Md
SIMULATION OF RADIOMETER DATA FROM A SPIN STABILIZED SATELLITE Final Report
S. Rangaswamy Oct. 1976 26 p refs
(Contract NAS5-22377)
(NASA-CR-156789) Avail NTIS HC A03/MF A01 CSCL 04B

The effect of misregistration on cloud brightness threshold is investigated by simulating radiometric data as observed from a spin stabilized synchronous satellite such as the SMS. Clouds were introduced randomly and a bidirectional reflectance model was used to create radiance data from clouds and ocean A theoretical and an empirical reflectance model were compared Author

RS78-6-235

N78-27485*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
SEASAT-A SATELLITE SCATTEROMETER (SASS) VALIDATION AND EXPERIMENT PLAN
Lyle C Schroeder, ed May 1978 106 p refs
(NASA-TM-78751) Avail: NTIS HC A06/MF A01 CSCL 14B

This plan was generated by the SeaSat-A satellite scatterometer experiment team to define the pre-and post-launch activities necessary to conduct sensor validation and geophysical evaluation. Details included are an instrument and experiment description/performance requirements, success criteria, constraints, mission requirements, data processing requirement and data analysis responsibilities. J A M.

RS78-6-236

N78-28142*# Rensselaer Polytechnic Inst., Troy, N Y. School of Engineering
PROCEDURES FOR THE INTERPRETATION AND USE OF ELEVATION SCANNING LASER/MULTI-SENSOR DATA FOR SHORT RANGE HAZARD DETECTION AND AVOIDANCE FOR AN AUTONOMOUS PLANETARY ROVER
N. Troiani and S Yerazunis Jul. 1978 107 p refs
(Grant NsG-7369)
(NASA-CR-157337; RPI-TR-MP-57) Avail: NTIS HC A06/MF A01 CSCL 22B

An autonomous roving science vehicle that relies on terrain data acquired by a hierarchy of sensors for navigation was one method of carrying out such a mission The hierarchy of sensors included a short range sensor with sufficient resolution to detect every possible obstacle and with the ability to make fast and reliable terrain characterizations A multilaser, multidetector triangulation system was proposed as a short range-sensor. The general system was studied to determine its perception capabilities and limitations. A specific rover and low resolution sensor system was then considered. After studying the data obtained, a-hazard detection algorithm was developed that accounts for all possible terrains given the sensor resolution Computer simulation of the rover on various terrains was used to test the entire hazard detection system. J.A M

RS78-6-237

N78-29535*# National Aeronautics and Space Administration, Washington, D C.
SOYUZ 22: NEW CONTRIBUTION TO EARTH STUDY FROM SPACE
L. A. Vedeshin, V. V. Ivanov, and Ye D. Sulidi-Kondratyev Oct 1977 9 p Transl. into ENGLISH from Priroda (USSR), no 3, Mar 1977 p 20-23 Original language doc announced as N77-28559 Original doc Prep. by Interkosmos Council, Academy of Sciences, USSR Transl by Transemantics, Inc., Washington, D C
(Contract NASw-2792)
(NASA-TM-75055) Avail NTIS HC A02/MF A01 CSCL 05B

The mission of space flight Soyuz-22 was to develop new and improved methods and means for finding tthe Earth's natural resources from outer space to aid the economy. With the help of the new multispectral space camera, MKF-6, the cosmonauts were able to photograph selected areas of U S S R and the German Democratic Republic in 4 visible and 2 infrared regions of the spectrum The MKF-6 can simultaneously photograph areas in 6 spectral regions and register both the natural electromagnetic radiation of surface objects and the solar radiation reflected by them LS

RS78-6-238

N78-28581*# Ocean Data Systems, Inc., Monterey, Calif.
ATMOSPHERIC MODEL DEVELOPMENT IN SUPPORT OF SEASAT. VOLUME 3: PREDICTION MODELS Final Technical Report
Robert E. Wellck 30 Sep 1977 165 p refs Prepared for JPL 5 Vol.
(Contracts NAS7-100, JPL-954668)
(NASA-CR-157329) Avail: NTIS HC A08/MF A01 CSCL 22A

As part of the SEASAT program of NASA a set of four hemispheric, atmospheric models are developed. The four models use a polar stereographic grid in the horizontal and a sigma coordinate in the vertical Conservation forms of the difference equations are integrated using either a fifteen or four minute time step on a 381 km or 127 km grid (at 60 deg N) for the 63 x 63 or 187 x 187 models respectively. A nonlinear pressure smoother is used along with momentum and temperature diffusion to help control computational noise. The horizontal boundary conditions are insulated slippery walls. Centered time differencing with time averaging of the pressure gradient force term in the momentum equations is used. Robert time filtering on of the temperature and moisture solutions is used for computational stability. The moisture and heat source/sink terms are modeled Terms representing evaporation and large scale condensation, sensible heat exchange, parameterized cumulus convection and precipitation, and solar and terrestrial radiation are included Initialization of the models is based on a pattern conservation technique to obtain objective analysis of the state parameter structure from the surface to 50 mb G Y.

RS78-6-239

N78-27496# Naval Surface Weapons Center, Dahlgren, Va
NSWC/DL FILTERING OF GEOS-3 RADAR ALTIMETRY DATA Final Report
G B West, T. I Hicks, and R B. Manrique Nov. 1977 54 p refs
'AD-A053957: NSWC/DL-TR-3686) Avail: NTIS HC A04/MF A01 CSCL 22/2

The along-track geoid heights and vertical deflections over the oceans are estimated by a Wiener filter based on The Analytic Sciences Corporation (TASC) Model with pre-filter parameters derived from an analysis of the GEOS-3 satellite radar altimetry data A study of 81 passes (716 intersections) of the radar altimetry data from the Perth, Australia telemetry site shows a mean geoid height difference of 0 75 m and a standard deviation of 2 33 m before bias removal, and a mean geoid height of -0 06 m and a standard deviation of 0 53 m after bias removal. The geoidal contours derived from this data reveal known geoidal features in regions where ship surveys are available.

Author (GRA)

RS78-6-240

ANALYSIS OF LASER FLUOROSENSOR SYSTEMS FOR REMOTE ALGAE DETECTION AND QUALIFICATION,
National Aeronautics and Space Asministration, Langley Station, VA. Langley Research Center.
E V. Browell.
Available from the National Technical Information Service, Springfield, VA 22161 as N77-26480, Price codes: A03 in paper copy, A01 in microfiche.
NASA Technical Note D-8447, June 1977. 39 p, 16 fig, 5 tab, 30 ref. 176-20-32-07.

Descriptors: *Pollutant\ identification, *Lasers, *Fluorosensors, *Algae, *Remote sensing, *Chlorophyll, Fluorescence, Primary productivity, Rhodophyta, Chlorophyta, Cyanophyta, Phaeophyta.

The development and use of single- and multiple-wavelength laser fluorosensor systems in remote detection and quantification of algae are discussed, as well as the importance of algae and algal measurements, and the spectral characteristics of algae. An equation for fluorescence power received by a laser fluorosensor system is derived in detail; results differ by as much as a factor of 10 from those reported by other studies. The multiple-wavelength system is capable of selectivity exciting algae in the four primary algal color groups: green, golden-brown, red, and blue-green A comprehensive error analysis is reported which evaluates the uncertainty in reote determination of chlorophyll-a concentration by laser fluorosensor systems. Factors which can greatly affect the fluorescence cross-section of algae include long- and short-run light history, and nutrient and age effects. Results of the error analysis indicate that remote quantification of chlorophyll-a by a laser fluorosensor system requires optimum excitation wavelengths, remote measurement of marine attenuation coefficients, and supplemental instrumentation. In these systems, the laser excites the chlorophyll-a pigment in the algae, and a collocated telescope receiver detects the emitted fluorescence at 685 nm. The system can be used as night and when there is a high-altitude cloud cover, and can distinguish the algal color groups, in contrast to passive techniques relying on spectral characteristics of reflected sunlight. (Lynch-Wisconsin)
W78-09166

RS78-6-241

OBSERVATIONS OF COASTAL WATER SURFACE CURRENTS USING AN AIRBORNE INERTIAL SIGHTING SYSTEM,
Department of the Environment, Victoria (British Columbia) Inst. of Ocean Sciences.
J. F. R. Gower, and B. M. Oliver.
Journal of Geophysical Research, Vol 83, No. C4, p 1941-1946, April 20, 1978. 4 fig, 1 tab, 7 ref.

Descriptors: *Remote sensing, *Aircraft, *Ocean currents, *Coasts, Drifting(Aquatic), Navigation, Instrumentation, Equipment, Waste dumps, Spoil banks, Dredging, Circulation, Water circulation, Ocean circulation, Ocean currents, Oceanography, Inertial navigations.

This paper described the use of an inertial sighting system for measuring the position of surface water features from an aircraft. Sight angle and navigation data for any target sighted by the system operator during flight were recorded and later were used to compute the target's position to an accuracy of about 10 m. The system makes use of a standard inertial navigation unit. The drift errors inherent in these units are corrected by making periodic sightings of reference targets. The system also has the capability of recording data from a variety of other airborne sensors. This paper described the accuracy and limitations of the system and discussed examples of measurements of position and movement of surface water features and drogues. (Sims-ISWS)
W78-07994

RS78-6-242

THERMAL REMOTE SENSING CALIBRATION TECHNIQUES,
Calspan Corp., Buffalo, NY.
J. R. Schott.
Available from the Nationala Technical Information Service, Springfield, VA 22161 as PB-269 471, Price codes: A06 in paper copy, A01 in microfiche.
Report No. NYSERDA-75-22, Calspan NA-6019-M-1, March 15, 1977. 97 p, 28 fig, 7 tab, 28 ref, 7 append.

Descriptors: *Water temperature, *Remote sensing, *Aerial sensing, Aircraft, *Mapping, *Data collections, Data transmission, Data processing, Analytical techniques, Statistics, Radiometric image calibration, *Radiometry, Surface radiometric temperatures, Thermal mapping, Thermal plumes, Thermal scanning.

A technique for measuring water surface temperatures from airborne platforms was developed and is demonstrated. A number of techniques were tested and evaluated to determine their suitability and the precision with which surface water temperatures could be measured from the air. Approaches considered were wholly airborne requiring no ground truth and thus represent a major difference from current approaches which require ground data if true surface temperatures are to be calibrated. Data derived from boat measurements were compared. The mean of the absolute value of the differences between the two data sets is 0.70F, with a standard deviation of 0.59F (63 points considered), which compares quite favorably to a standard deviation of about 0 5F for successive measurements of the thermal data collected by the boat. Results indicate that wholly airborne monitoring and mapping of thermal plumes using the approaches described is an operational procedure with accuracies comparable to surface measurements. The improved mapping and quality control procedures developed, when combined with the advances in the theoretical approach to the radiometric physics, enable rapid collection, analysis and product generation. This greatly facilitates quantitative analysis in a rapid and cost effective manner Sufficient detail is given to serve as a guide for using the approaches discussed for collection, calibration or mapping of power plant thermal discharges. (Seip-IPA)
W78-08241

RS78-6-243

ID NO.- EI780862395 862395
AIRBORNE MONITORING OF SURFACE WATER POLLUTANTS BY FLUORESCENCE SPECTROSCOPY.
Bristow, M. P. F.
Mines & Resour, Can Cent for Remote Sensing, Ottawa, Ont
Remote Sensing Environ v 7 n 2 Apr 1978 p 105-127 CODEN: RSEEA7
DESCRIPTORS: (*WATER POLLUTION, *Monitoring), SPECTROSCOPY, EMISSION, REMOTE SENSING, FLUORESCENCE.
CARD ALERT: 405, 453, 741, 742, 931
An airborne laserfluorosensor has been used to record fluorescence profiles of a controlled oil spill and of the river effluent from a pulp and paper mill. A pulsed ultraviolet laser is used as the excitation source in conjunction with a telesope receiver and photomultiplier detector. The complete system, including power supplies and monitoring and recording equipment, was installed and flown on a Canadian Forces DC-3 aircraft. The fluorscence profiles exhibited excellent signal-to-noise ratios and ground resolution, thereby providing for good discrimination between targets of different fluorescence quantum efficiency. By making a number of passes over a particular target area, it is shown how the measured fluorescence profiles demonstrate the manner in which the target changes both in space and time. 13 refs.

RS78-6-244

ID NO.- EI780752996 852996
SPECTRORADIOMETER FOR AIRBORNE REMOTE SENSING.
Chiu, Hong-Yee; Collins, William
NASA/Inst for Space Stud, New York, NY
Photogramm Eng Remote Sensing v 44 n 4 Apr 1978 p 507-517 CODEN: PERSDV
DESCRIPTORS: *REMOTE SENSING, RADIOMETERS.
IDENTIFIERS: SPECTRORADIOMETER
CARD ALERT: 405, 742, 941, 944
Sensor design and calibration, and applications to geologic mapping of altered rock, to vegetation canopy studies, and to water body studies, are described. 11 refs.

RS78-6-245

ID NO.- EI780858236 858236
PULSED RADAR METHOD OF MEASURING ICE-COVER THICKNESS.
Chizhov, A. N.; Glushnev, V. G.; Slutsker, B. D.
State Hydrol Inst, USSR
Sov Meteorol Hydrol n 4 1977 p 71-75 CODEN: SMHYDK
DESCRIPTORS: (*ICE, *Measurements), (RADAR, Measurement Application), REMOTE SENSING.
IDENTIFIERS: PULSED RADAR
CARD ALERT: 443, 716, 941
The principles of a pulsed radar method for measuring the thickness of ice on rivers, lakes, and reservoirs are discussed. A structural diagram of the experimental setup and its parameters are given, as well as an analysis of results from testing of the method on an airplane and a helicopter over several rivers and lakes.

RS78-6-246

ID NO.- EI780859725 859725
POLARIMETER MEASURES SEA STATE CHARACTERISTICS USING EMITTED INFRARED RADIATION.
Egan, W. G.; Hilgeman, T.
Grumman Aerosp Corp, Bethpage, NY
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 635-644 CODEN: PISEDM
DESCRIPTORS: (*OCEANOGRAPHY, *Remote Sensing), POLARIMETERS, INFRARED RADIATION.
IDENTIFIERS: SEA STATE CHARACTERISTICS
CARD ALERT: 471, 741, 941
An infrared polarimeter, capable of operating between 1 and 12 micrometers wavelength, has been used to measure the polarization of emitted radiation from the sea. The observed polarization at 10. 6 micrometers from a smooth sea was found to be positive, indicating the dominance of reflected infrared sky radiation over the emitted. With the appearance of waves, the percent polarization increased, as expected, for a zenith angle well above the Brewster angle for water. This is qualitatively in accordance with a model presented to explain the behavior. Initial analyses indicate that the polarized components of the sea's emitted and reflected radiation are affected by type and direction of waves, angle of viewing, and foam.. Refs.

RS78-6-247

ID NO.- EI780969614 869614
MICROWAVE CHARACTERISTICS OF SNOW.
Ellerbruch, D. A.; Little, W. E.; Boyne, H. S.; Bachman, D. D.
NBS, Boulder, Colo
Proc West Snow Conf 45th Annu Meet, Albuquerque, NM, Apr 18-21 1977. Publ by West Snow Conf, Spokane, Wash, 1977 p 68-74 CODEN: PWSCA9
DESCRIPTORS: (*SNOW AND SNOWFALL, *Research), MICROWAVES, REMOTE SENSING.
CARD ALERT: 443, 711, 732
The objective of this program is to develop a better fundamental understanding of microwave signal-snow material interaction. Microwave signals nondestructively penetrate snow, but they are modified by the material properties of snow (density, moisture content, resistance, temperature, etc.). There is a distinct possibility of developing miniaturized microwave instrumentation to remotely sense and measure those undisturbed snow properties as a function of depth. 12 refs.

RS78-6-248

ID NO.- EI780860835 860835
SIMULATOR FOR REMOTE SENSING AND ITS APPLICATION TO SOIL MOISTURE MEASUREMENTS.
Genda, Hidesaburo; Okayama, Hiroshi
Chiba Univ, Inst of Color Technol, Dep of Remote Sensing Image
Appl Opt v 17 n 5 Mar 1 1978 p 807-813 CODEN: APOPAI
DESCRIPTORS: (*REMOTE SENSING, *Instruments), (SOILS, Moisture Determination),
CARD ALERT: 483, 9 1
It is of great significance to experiment with a simulator for remote sensing to confirm the properties and meaning of remote-sensed information and to forecast certain phenomena. This paper describes a simulator for remote sensing. The simulator, suitable for the measurement of soil moisture, consists of an optical source, a polarimeter, orbital guides for them, and a sample stage. SiC and MgO were used as soil models. The moisture in beach sand was also estimated. The degree of polarization increases with the moisture content and particle size of the sample. The field capacity point of each sample is determined by means of the polarimeter. 8 refs.

RS78-6-249

ID NO.- EI780752997 852997
GENERALIZED METHOD FOR ENVIRONMENTAL SURVEILLANCE BY REMOTE PROBING.
Gjessing, Dag T.
Norw Def Res Establ, Kjeller
Radio Sci v 13 n 2 Mar-Apr 1978 p 233-244 CODEN: RASCAD
DESCRIPTORS: *REMOTE SENSING, ENVIRONMENTAL ENGINEERING.
IDENTIFIERS: ENVIRONMENTAL SURVEILLANCE
CARD ALERT: 711, 716, 901
A set of unified detection methods is proposed which may conceivably have an impact on several application areas (environmental surveillance, detection/identification of specific objects). The basic principle is the following: Most of the existing detection/identification systems do not make optimum use of all the a priori information that one generally is in possession of with regard to the target of interest. Knowing the geometrical shape of the target of interest and its molecular surface structure (e. g. , structure of paint), an illumination function can be structured (matched filter concept) which gives optimum system sensitivity (minimum receiver bandwidth) with respect to the target of interest at the expense of the sensitivity for background objects (interferents). Theoretical results are given for a limited number of geometrical objects and for two different molecular surface compositions. It is shown that the system sensitivity and identification capability can be improved considerably using the suggested matched filter illumination technique. 4 refs.

RS78-6-250

ID NO.- EI780860033 860033
METHOD CUTS ERROR IN RADIANT TUBE TEMPERATURE SENSING.
Grandfield, Stuart D.
Grandfield Assoc, Santa Barbara, Calif
Oil Gas J v 76 n 18 May 1 1978 p 68-70 CODEN: OIGJAV
DESCRIPTORS: (*PETROLEUM REFINERIES, *Temperature Measurement), (FURNACES, INDUSTRIAL, Heat Exchangers), (HEAT EXCHANGERS, Tubes), REMOTE SENSING.
CARD ALERT: 513, 944, 616, 642, 732
Radiant furnace tube temperatures are difficult to determine. Contact sensing can be difficult and in error. A method is described that has been developed to sense such tube temperatures without contact, and at less error. The equations and a sample calculation show how to use the method.

RS78-6-251

ID NO.- EI780754443 854443
USING CROSS-BOREHOLE ELECTROMAGNETIC PROBING TO LOCATE A TUNNEL.
Lytle, R. J.; Lager, D. L.; Laine, E. F.; Davis, D. T.
Univ of Calif, Lawrence Livermore Lab
US Dep Transp, (Rep) DOT/TST n 77-76 Jan 1977 44 p CODEN: USDTDF
DESCRIPTORS: (*TUNNELS AND TUNNELING, *Construction), (SOILS, Surveys), (RADAR, Surveillance Application),
IDENTIFIERS: SITE EXPLORATION, ELECTROMAGNETIC PROBING
CARD ALERT: 401, 405, 483, 716
Experiments were made around a tunnel near Gold Hill, Colorado. The tunnel was horizontally and vertically located within three feet by the earth probing radar system described. Theoretical and experimental studies of electromagnetic interaction with the tunnel found that signal minima can be used to detect and locate the tunnel. These signal minima are found on the transmission side of the tunnel, the side opposite the signal transmitter. 18 refs.

RS78-6-252

ID NO.- EI780860838 860838
INVESTIGATION OF THEMATIC MAPPER SPATIAL, RADIOMETRIC, AND SPECTRAL RESOLUTION.
Morganstern, James P.; Nalepka, Richard F.; Erickson, Jon D.
Environ Res Inst of Mich, Ann Arbor
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 693-701 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Multispectral Scanners), IMAGING TECHNIQUES,
IDENTIFIERS: THEMATIC MAPPERS, LANDSAT DATA
CARD ALERT: 716, 741, 723
The paper reports on a study to provide additional empirical evidence for the definition of system specifications for the Landsat Follow-On Thematic Mapper (TM) and other future space multispectral scanner (MSS) sensor systems. Specific sensor parameters addressed were spatial resolution, radiometric sensitivity, and to a lesser degree spectral bandwidths and locations. The study used selected available aircraft MSS data, characterized by narrow spectral bands, fine spatial resolution, and high signal-to-noise, as the basis for simulating spacecraft TM data of various spatial resolutions, radiometric sensitivities, and sets of spectral bands. The primary measure used in evaluating the effects of varying spatial and radiometric resolutions was agricultural crop mensuration accuracy using automatic (computer) information extraction techniques.

RS78-6-253

ID NO.- EI780854931 854931
ACCURACY CHECK OF A BALLOON PHOTOGRAMMETRIC SYSTEM.
Oshima, Taichi
Hosei Univ, Coll of Eng, Tokyo, Jpn
Bull Coll Eng Hosei Univ n 13 Mar 1977 p 69-77 CODEN: HDKSAY
DESCRIPTORS: (*AERIAL PHOTOGRAPHY, *Applications), (PHOTOGRAMMETRY, Applications),
CARD ALERT: 405, 7-2
The aerial photogrammetric technique is generally used for topographic mapping. But it has limitation on the points of flying height, economy and required time. Nowadays large scale mapping such as 1/50 and 1/1000 scale at the excavated sites of historical remains and monuments are increasingly required and especially at the relatively narrow areas and remote country sites. This paper discusses the balloon system and their technical data, especially on the fundamental experiments of accuracy check performed at the test area.

RS78-6-254

ID NO.- E1
SPACE RADAR SYSTEM SPECIFICATIONS.
Ulaby, F. T.; Bush, T. F.; Stiles, W. H.
Univ of Kans Cent for Res, Inc, Lawrence
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 407-425. CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), (RADAR, Imaging Techniques), SATELLITES,
IDENTIFIERS: SYNTHETIC APERTURE RADAR, SEASAT-A
CARD ALERT: 716, 901, 741
SEASAT-A, scheduled for a 1978 launch, will carry the first synthetic aperture imaging radar aboard a space platform for civilian purposes. The SEASAT-A system, now in the construction stage, was designed primarily for oceanographic studies. However, plans also call for the development of a spaceborne imaging radar for land applications. Specifications for this system are not yet finalized. The purpose of this paper is to propose system specifications for an imaging radar whose primary objective is to provide useful information for land applications including hydrology, agriculture and geology. 10 refs.

RS78-6-255

Imaging Natural Materials with a Quasi-Microscope

Washington Univ., St. Louis, Mo. Dept. of Earth and Planetary Sciences.

Final Report, 1 Jul. 1974 - 31 Aug. 1977.
AUTHOR: Bragg, S.; Arvidson, R.
E0524K2 Fld: 14E, 17H, 8G, 38, 48E, 48F, 54A, 63F, 82B, 84B
STAR1602
31 Aug 77 47p
Rept No: NASA-CR-155250
Grant: NSG-1084
Monitor: 18

Abstract: A Viking lander camera with auxilliary optics mounted inside the dust post was evaluated to determine its capability for imaging the inorganic properties of granular materials. During mission operations, prepared samples would be delivered to a plate positioned within the camera's field of view and depth of focus. The auxiliary optics would then allow soil samples to be imaged with an 11 pm pixel size in the broad band (high resolution, black and white) mode, and a 33 pm pixel size in the multispectral mode. The equipment will be used to characterize: (1) the size distribution of grains produced by igneous (intrusive and extrusive) processes or by shock metamorphism, (2) the size distribution resulting from crushing, chemical alteration, or by hydraulic or aerodynamic sorting; (3) the shape and degree of grain roundness and surface texture induced by mechanical and chemical alteration; and (4) the mineralogy and chemistry of grains.

Descriptors: *Granular materials, *Imaging techniques, *Microscopes, *Multispectral band cameras, *Photomicrography, Spectrophotometry, Infrared spectroscopy, Mineralogy, Multispectral photography, Particle size distribution, Soils

Identifiers: *Soil analysis, *Mars probes, Multiband spectral reconnaissance, Scientific satellites, NTISNASA

N78-11813/0ST NTIS Prices: PC A03/MF A01

RS78-6-256

Synthetic Aperture Radar Image Processing Techniques Development and Evaluation

Hughes Aircraft Co Culver City Calif Display Systems and Human Factors Dept (405763)

Final technical rept. Mar 76-Feb 77
AUTHOR: Dragavon, E. J.; Hershberger, M. L.; Whitt, P. J.
E0483G3 Fld: 17I, 63H GRAI7806
Oct 77 137p
Rept No: HAC-P77-189, HAC-REF-D5676
Contract: F33615-76-C-1115
Project: 7622
Task: 01
Monitor: AFAL-TR-77-113
Original contains color plates: all DDC and NTIS reproductions will be in black and white.

Abstract: Synthetic aperture radar (SAR) has a dynamic range much greater than displays used to present the radar ground map video to human observers. This study program was undertaken to explore techniques by which the information contained within the large SAR dynamic range could be presented to human observers. In the pursuit of this goal, monochromatic adaptive gray shade transform, pseudocolor encoding, and feature analytic techniques were examined. Although some of the monochromatic and pseudocolor techniques resulted in improved quality of SAR video images, the improvement was judged insufficient to justify implementation of such techniques in real- or near-real-time SAR systems. Feature analytic techniques used as automatic search, detection, and cueing aids to human observers showed considerable promise, and further work was recommended in this area. (Author)

Descriptors: *Synthetic aperture radar, *Radar images, *Image processing, Image intensification, Dynamic range, Human factors engineering, Mathematical filters, Radar mapping

Identifiers: Fourier filters, HAAR filters, Pseudocolor technique, NTISDODXA

AD-A048 193/7ST NTIS Prices: PC A07/MF A01

RS78-6-257

Design and Fabrication of Nosecone for WB-57F Aircraft Fitted with APQ-102A Side Looking Radar

Hacking Labs., Santa Clara, Calif.

Final Report.
E0915J3 Fld: 01C, 17I, 51C, 63H STAR1606
Dec 77 104p
Rept No: NASA-CR-151592
Contract: NAS9-15189, HL PROJ. 22
Monitor: 18

Abstract: The design, fabrication, and testing of a nose cone which included a radome for a NASA WB-57F high altitude natural resources mapping aircraft was reviewed. The plane was fitted with a APQ-102A side looking radar operating at 9.6 GHz. The radar is directed normally to the direction of the flight and downward by a changeable angle, and it is assumed that the axis of the plane will not deviate from this direction by more than + or - 6 deg. The radome is required to subtend an angle of 160 deg centered 30 deg below the left horizon.

Descriptors: *Earth resources survey aircraft, *Nose cones, *Radomes, *Side-looking radar, Structural engineering, Aerial photography, Aerial reconnaissance, High altitude, Mapping, Radome materials

Identifiers: B-57 aircraft, WB-57F aircraft, AN/APQ-102A, NTISNASA

N78-15028/1ST NTIS Prices: PC A06/MF A01

RS78-6-258

Global Sensing of Gaseous and Aerosol Trace Species Using Automated Instrumentation on 747 Airliners

National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
AUTHOR: Perkins, P. J.; Papathakos, L. C.
E0714H3 Fld: 04A, 68A, 55E STAR1604
1977 11p
Rept No: NASA-TM-73810, E-9396
Monitor: 18
Conf-Presented at 4TH Joint Conf. On Sensing of Environmental Pollutants, New Orleans, La., 6-11 Nov. 1977.

Abstract: The Global Atmospheric Sampling Program (GASP) by NASA is collecting and analyzing data on gaseous and aerosol trace species in the upper troposphere and lower stratosphere. Measurements are obtained from automated systems installed on four 747 airliners flying global air routes. Advances were made in airborne sampling instrumentation. Improved instruments and analysis techniques are providing an expanding data base for trace species including ozone, carbon monoxide, water vapor, condensation nuclei and mass concentrations of sulfates and nitrates. Simultaneous measurements of several trace species obtained frequently can be used to uniquely identify the source of the air mass as being typically tropospheric or stratospheric. A quantitative understanding of the tropospheric-stratospheric exchange processes leads to better knowledge of the atmospheric impact of pollution through the development of improved simulation models of the atmosphere.

Descriptors: *Aerosols, *Stratosphere, *Troposphere, Remote sensing, Sampling, Concentration (Composition), Nitrates, Ozone, Sulfates, Water vapor

Identifiers: Aerial surveys, *Trace elements, *Air pollution sampling, Particles, Atmospheric composition, Global Atmospheric Sampling Program, NTISNASA

N78-13670/2ST NTIS Prices: PC A02/MF A01

RS78-6-259

Tornado Identification from Analyses of Digital Radar Data

Air Force Inst of Tech Wright-Patterson AFB Ohio (012200)

Master's thesis
AUTHOR: Pittman, Donald Wayne
E0465I2 Fld: 4B, 17I, 55C, 63H GRAI7806
Dec 76 104p
Rept No: AFIT-CI-78-9
Monitor: 18

Abstract: An investigation was conducted to determine whether tornadoes presented a unique signature in analyses of digital radar data from central Oklahoma during the Spring. The data were collected by the 10-cm-WSR-57 radar at the National Severe Storms Laboratory at Norman, Oklahoma. Three types of numerical analyses were used in this study: constant-altitude reflectivity maps (CAZM), total vertically-summed reflectivity maps (TVSZ), and partial vertically-summed reflectivity maps (PVSZ), with greatest emphasis placed on the PVSZ maps. Presentations covering a 100-km square were constructed at either 5 to 10 min intervals. From the analysis of three case studies during during 1974 and 1975, that contained five tornadoes, it was concluded that tornadoes did not produce a singular identifying signature in analyses of digital radar data, but rather produced a combination of features which indicated, with a high probability, the presnce of a tornado. Such features were the appearance of a small area of reduced reflectivity known as a Bounded Weak-Echo Region (BWER), a tilt of the core of the storm toward the BWER, and a rapid decrease in the upper-level mass of the storm as indicated by a rapid decrease in the reflectivity of the upper PVSZ.

Descriptors: *Radar signatures, *Tornadoes, *Target signatures, Meteorological radar, Spring season, Radar mapping, Altitude, Reflectivity, Vertical orientation, Experimental data, Tiltmeters, Identification, Data processing, S band

Identifiers: NTISDODXA

AD-A047 816/4ST NTIS Prices: PC A06/MF A01

RS78-6-260

Return Beam Vidicon (RBV) Panchromatic Two-Camera Subsystem for LANDSAT-C

RCA Astro-Electronics Div., Princeton, N. J.

Final Report.
E0522K1 Fld: 14E, 48I, 82B STAR1602
17 Jun 77 189p
Rept No: NASA-CR-156639, AE-R-4231
Contract: NAS5-22350
Monitor: 18

Abstract: A two-inch Return Beam Vidicon (RBV) panchromatic two camera Subsystem, together with spare components was designed and fabricated for the LANDSAT-C Satellite; the basis for the design was the LANDSAT 1&2 RBV Camera System. The purpose of the RBV Subsystem is to acquire high resolution pictures of the Earth for a mapping application. Where possible, residual LANDSAT 1 and 2 equipment was utilized.

Descriptors: *LANDSAT satellites, *Mapping, *Return beam vidicons, *Satellite-borne photography, Cameras, Imagery, Satellite instruments, Spaceborne photography

Identifiers: *Cartographic cameras, NTISNASA

N78-11371/9ST NTIS Prices: PC A09/MF A01

RS78-6-261

A Feasibility Study for the Application of K-Band Radar in the Investigation of Cooling Tower Plumes

National Oceanic and Atmospheric Administration, Idaho Falls, Idaho. Air Resources Labs.

Technical memo.
AUTHOR: Ricks, Norman R.
E0895A1 Fld: 13B, 17I, 4B, 68A, 63H, 55B, 97R, 86D GRAI 7810
Aug 77 45p
Rept No: NOAA-TM-ERL-ARL-66
Monitor: NOAA-77110803

Abstract: The feasibility of using commercially available K-band (1 cm) radar for indirect sensing of cooling tower plumes is investigated. Using the radar equation, commercially available systems are evaluated by means of a computer model which estimates the strength of the expected return signal under sampled conditions known to exist in actual plumes. Recommendations are made for the adaptation of available radar systems and for areas of additional study. Complete data and program documentation are provided.

Descriptors: *Air pollution, *Plume detection, *Radar detection, *Cooling towers, Plumes, Feasibility, K band, Computer programs, Electric power plants, Remote sensing, Water vapor

Identifiers: Air pollution detection, NTISCOMNOA

PB-275 380/4ST NTIS Prices: PC A03/MF A01

RS78-6-262

Frequency Band Justifications for Passive Sensors, 1 to 10 Ghz

Systematics General Corp., McLean, Va.
E0922F2 Fld: 8F, 48C, 45A, 63H STAR1606
Dec 76 218p
Rept No: NASA-CR-155 31
Contract: NAS5-23434
Monitor: 18

Abstract: Remote sensor systems operating in the microwave region of the frequency spectrum provide information unobtainable with basic imaging techniques such as photography, television, or multispectral imaging. The frequency allocation requirements for passive microwave sensors used in the earth exploration satellite and space research services are presented for: (1) agriculture, forestry, and range resources; (2) land use survey and mapping; (3) water resources; (4) weather and climate; (5) environmental quality; and (6) marine resources, estuarine and oceans. Because measurements are required simultaneously in multiple frequency bands to adequately determine values of some phenomena, the relationships between frequency bands are discussed. The various measurement accuracies, dynamic range, resolutions and frequency needs are examined. A band-by-band summary of requirements, unique aspects, and sharing analyses of the required frequency bands is included.

Descriptors: *Earth resources, *Environmental monitoring, *Frequency assignment, *Microwave sensors, *Remote sensors, Microwave frequencies, Hydrology, Land use, Mapping, Marine environments, Meteorology, Radio astronomy

Identifiers: NTISNASA

N78-15327/7ST NTIS Prices: PC A10/MF A01

RS78-6-263

Frequency Band Justifications for Passive Sensors 10.0 to 385 Ghz, Chapter 1

Systematics General Corp., McLean, Va.
E0922F3 Fld: 8F, 48C, 45A, 63H STAR1606
Dec 76 255p
Rept No: NASA-CR-155530
Contract: NAS5-23434
Monitor: 18

Abstract: For abstract, see N78-15327.

Descriptors: *Earth resources, *Environmental monitoring, *Frequency assignment, *Microwave sensors, *Remote sensors, Microwave frequencies, Hydrology, Land use, Mapping, Marine environments, Meteorology, Radio astronomy

Identifiers: NTISNASA

N78-15328/5ST NTIS Price: PC A12/MF A01

RS78-6-264

Frequency Band Justifications for Passive Sensors 10.0 to 385 Ghz, Chapter 2

Systematics General Corp., McLean, Va.
E0922F4 Fld: 8F, 48C, 45A, 63H STAR1606
Dec 76 301p
Rept No: NASA-CR-155532
Contract: NAS5-23434
Monitor: 18

Abstract: Sensitivity requirements of the various measurements obtained by microwave sensors, and radiometry techniques are described. Analytical techniques applied to detailed sharing analyses are discussed. A bibliography of publications pertinent to the scientific justification of frequency requirements for passive microwave remote sensing is included.

Descriptors: *Earth resources, *Environmental monitoring, *Frequency assignment, *Microwave sensors, *Remote sensors, Microwave frequencies, Hydrology, Land use, Mapping, Marine environments, Meteorology, Radio astronomy

Identifiers: NTISNASA

N78-15329/3ST NTIS Prices: PC A14/MF A01

RS78-6-265

The National Measurement System for Spectrophotometry

National Bureau of Standards, Washington, D.C. Inst. for Basic Standards. (401 299)

Final rept.
AUTHOR: Venable, William H. Jr
E06120D2 Fld: 7D, 14B, 99A*, 86V GRA:I7807
Nov 77 102p*
Rept No: NBSIR-75-940
Project: NBS-2321146
Monitor: 18

Abstract: A special study of the spectrophotometric measurement system was made in order to determine what could be done to improve these measurements and what benefits would result from the improvements. It was found that improvements in the measurements could make large contributions to productivity, health, and safety in the U.S., and that, because of the fragmented nature of this measurement community, the improvements in spectrophotometric measurements can be realized most efficiently through the efforts of a centralized agency such as NBS. With the aid of this study, the program in spectrophotometry at NBS has been revised in order to bring about these improvements more rapidly and effectively.

Descriptors: *Spectrophotometry, Laboratory equipment, Performance evaluation, Sources, Economics, Remote sensing, Agricultural products, Photography, Warning systems

Identifiers: NTISCOMNBS

PB-276 020/5ST NTIS Prices: PC A06/MF A01

Section 7

IMAGE PROCESSING AND MACHINE PROCESSING

RS78-7-161

78J00137a4 EDB-78-04 03.020
PATTERN RECOGNITION APPLIED TO URANIUM PROSPECTING/
BRIGGS,P.J./PRESS,F.(MASSACHUSETTS INST.OF TECH.,CAMBRIDGE (USA).DEPT.OF EARTH AND PLANETARY SCIENCES)/
NATURE (LONDON)/284/5016/14 JUL 1977/
125-127/
IT IS STATED THAT PATTERN RECOGNITION TECHNIQUES PROVIDE ONE WAY OF COMBINING QUANTITATIVE AND DESCRIPTIVE GEOLOGICAL DATA FOR MINERAL PROSPECTING.A QUANTIFIED DECISION PROCESS USING COMPUTER-SELECTED PATTERNS OF GEOLOGICAL DATA HAS THE POTENTIAL FOR SELECTING AREAS WITH UNDISCOVERED DEPOSITS OF URANIUM OR OTHER MINERALS.WHEN A NATURAL RESOURCE IS MINED MORE RAPIDLY THAN IT IS DISCOVERED,ITS CONTINUED PRODUCTION BECOMES INCREASINGLY DIFFICULT,AND IT HAS BEEN NOTED THAT, ALTHOUGH A CONSIDERABLE URANIUM RESERVE MAY REMAIN IN THE U. S. A.,THE DISCOVERY RATE FOR URANIUM IS DECREASING EXPONENTIALLY WITH CUMULATIVE EXPLORATION FOOTAGE DRILLED. PATTERN RECOGNITION METHODS OF ORGANISING GEOLOGICAL INFORMATION FOR PROSPECTING MAY PROVIDE NEW PREDICTIVE POWER,AS WELL AS INSIGHT INTO THE OCCURRENCE OF URANIUM ORE DEPOSITS.OFTEN THE TASK OF PROSPECTING CONSISTS OF THREE STAGES OF INFORMATION PROCESSING:(1)COLLECTION OF DATA ON KNOWN ORE DEPOSITS /(2)OUTLINING ANY REGULARITIES COMMON TO THE KNOWN EXAMPLES OF AN ORE/(3)SELECTION OF NEW EXPLORATION TARGETS BASED ON THE RESULTS OF THE SECOND STAGE.A LOGICAL PATTERN RECOGNITION ALGORITHM IS HERE DESCRIBED THAT IMPLEMENTS THIS GEOLOGICAL PROCEDURE TO DEMONSTRATE THE POSSIBILITY OF BUILDING A QUANTIFIED URANIUM PROSPECTING GUIDE FROM DIVERSE GEOLOGIC DATA./

RS78-7-162

78X00463a9 EDB-78-08 50.020
(PNWL--2100(PT.3)) ALGORITHM FOR PROCESSING AND ANALYZING DATA FROM THE BNW DC-3 RESEARCH AIRCRAFT/
DRENES,D.R./ALKEZWEENY,A.J./
AUG 1977/
PACIFIC NORTHWEST LABORATORY ANNUAL REPORT FOR 1976 TO THE ERDA ASSISTANT ADMINISTRATOR FOR ENVIRONMENT AND SAFETY. PART 3.ATMOSPHERIC SCIENCES/
HALES,J.M./
US/
US/
30.0200/
AERIAL MONITORING: T2 / AIR POLLUTION: T1/AIRCRAFT/ALGORITHMS/COMPUTER CODES/COMPUTERS/DATA ACQUISITION SYSTEMS/DATA ANALYSIS:Q1,Q2/DATA PROCESSING/DISPLAY DEVICES/

RS78-7-163

78C01046a3 EDB-78-19 53.010
CONF-780622--38/
GEOGRAPHICAL DATA STRUCTURES SUPPORTING REGIONAL ANALYSIS/
EDWARDS,R.G./DURFEE,R.C./
UNION CARBIDE CORP.,OAK RIDGE,TENN.(USA).COMPUTER SCIENCES DIV./
CONTRACT W-7405-ENG-26/
1978/
DEP.NTIS,PC A02/MF A01./
9 500 445/
US/
US/
FRA-03:048741/NTS-78:064548/INS-78:014909/EDB-78:104663/
IN RECENT YEARS THE COMPUTER HAS BECOME A VALUABLE AID IN SOLVING REGIONAL ENVIRONMENTAL PROBLEMS.OVER A HUNDRED DIFFERENT GEOGRAPHIC INFORMATION SYSTEMS HAVE BEEN DEVELOPED TO DIGITIZE,STORE,ANALYZE,AND DISPLAY SPATIALLY DISTRIBUTED DATA. ONE IMPORTANT ASPECT OF THESE SYSTEMS IS THE DATA STRUCTURE (E.G.GRIDS,POLYGONS,SEGMENTS) USED TO MODEL THE ENVIRONMENT BEING STUDIED.THIS PAPER PRESENTS EIGHT COMMON GEOGRAPHIC DATA STRUCTURES AND THEIR USE IN STUDIES OF COAL RESOURCES,POWER PLANT SITING,POPULATION DISTRIBUTIONS,LANDSAT IMAGERY ANALYSIS,AND LANDUSE ANALYSIS./
ANS ANNUAL MEETING/
SAN DIEGO,CA,USA/
18 JUN 1978/
OTHER/
P/
53.0100/29.0100/
AERIAL SURVEYING: Q6 / COAL RESERVES: T5/COMPUTER GRAPHICS:Q2/DATA COMPILATION:Q3,Q5/ENERGY SOURCES:T1/ENVIRONMENTAL EFFECTS: Q1 / GEOGRAPHY: T2 /GEOLOGICAL SURVEYS/HUMAN POPULATIONS:T4/IMAGES/LAND USE:T3/MATHEMATICAL MODELS/MINERALS:T6/ POPULATION DENSITY: Q4 / POWER PLANTS:T7/REGIONAL ANALYSIS:Q1/REMOTE SENSING/SITE SELECTION:Q7/TERRESTRIAL ECOSYSTEMS/ TOPOGRAPHY/

RS78-7-164

78C0100187 EDB-78-19 01.100
GEOGRAPHICAL DATA STRUCTURES SUPPORTING REGIONAL ANALYSIS/
EDWARDS,R.G./CURPER,R.C./
UNION CARBIDE CORP.,OAK RIDGE,TN/
TRANS.AM.NUCL.SOC./28/JUN 1978/
270-271/
JS/
US/
TANSA/
ERA-03:046390/INS-78:014013/EDB-78:100187/
NONE/
SEE CONF-780622--/
ANS ANNUAL MEETING/
SAN DIEGO,CA,USA/
18 JUN 1978/
01.1000/20.0203/51.0500/55.0100/99.0300/
AERIAL SURVEYING: T2 / COAL RESERVES: T7 / COMPUTERS:Q8/DATA ANALYSIS:T8,Q1,Q2/ENVIRONMENT/GEOGRAPHY:T1/LAND USE:T6/
POPULATION DYNAMICS:T5/POWER PLANTS:T3/REGIONAL ANALYSIS:Q4,Q5,Q6,Q7/SATELLITES/SITE SELECTION:T4,Q3/

RS78-7-165

78C0104652 EDB-78-19 52.040
PROCESSING AERIAL AND SATELLITE DATA/
ELIASON,J.R./FOOTE,H.P./
BATTELLE NORTHWEST LAB.,RICHLAND,WA/
TRANS.AM.NUCL.SOC./28/JUN 1978/
272/
JS/
US/
TANSA/
ERA-03:046738/INS-78:014906/EDB-78:104652/
NONE/
SEE CONF-780622--/
ANS ANNUAL MEETING/
SAN DIEGO,CA,USA/
18 JUN 1978/
52.0400/52.0500/51.0500/02.0900/58.0100/99.0300/
AERIAL MONITORING: T6; Q1, Q2 / AERIAL SURVEYING: T7, Q3, Q4,Q5/COMPUTERS:T9,Q8/DATA PROCESSING:T8,Q6,Q7/GEOLOGY:T2/
INTERACTIVE DISPLAY DEVICES: Q9 / LAND USE: T4 / MINERAL RESOURCES:T5/OIL SPILLS:T2/REMOTE SENSING/SATELLITES/THERMAL
POLLUTION:T1/

RS78-7-166

78C0070546 EDB-78-13 51.010
(CONF-7510172--P2)COMPUTER-ASSISTED ANALYSIS OF ERTS-1 DATA FOR MAPPING OF SUPERFICIAL DEPOSITS IN THE ALTA TEST AREA,
FINNMARK COUNTY,NORWAY/
FOLLESTAD,F.A./
NORWEGIAN GEOLOGICAL SURVEY,TRONDHEIM/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
NO/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/58.0100/
COMPUTERS / DATA ANALYSIS / DATA PROCESSING/GEOLOGIC DEPOSITS:T1/GLACIERS/NORWAY:T2/PLANTS/REMOTE SENSING/SATELLITES/
SPECTRA/TOPOLOGICAL MAPPING:Q2,Q1/TREES/

RS78-7-167

78R00853529 EDB-78-17 05.020
GJBX--20(78)-1/
AERIAL GAMMA RAY AND MAGNETIC SURVEY: FREMONT QUADRANGLE, NEBRASKA, IOWA / LINCOLN QUADRANGLE,NEBRASKA/MANHATTAN QUADRANGLE,KANSAS/HUTCHINSON QUADRANGLE,KANSAS.FINAL REPORT.VOLUME I/
GEOMETRICS, INC., SUNNYVALE,CALIF.(USA)/
CONTRACT EY-76-C-13-1664/
NOV 1977/
DEP.NTIS.MF A01./
9 506 626/
US/
US/
INS-78:011466/NTS-78:063119/ERA-03:042291/EDB-78:088529/
A HIGH SENSITIVITY AIRBORNE RADIOMETRIC AND MAGNETIC SURVEY OF THE EAST SALINA BASIN AREA (KANSAS AND NEBRASKA) WAS CONDUCTED. THE PROJECT AREA,THE HUTCHINSON AND MANHATTAN,KANSAS SHEETS, CONSISTS OF APPROXIMATELY 30,800 SQUARE MILES.A TOTAL OF 11,287 LINE MILES OF HIGH SENSITIVITY RADIOMETRIC AND MAGNETIC DATA WERE COLLECTED.ALL DATA WERE COLLECTED UTILIZING A FIXED WING AIRCRAFT,AND OVER 3,500 CUBIC INCHES OF NAI CRYSTAL DETECTOR,MAGNETOMETER DATA WERE COLLECTED UTILIZING A HIGH SENSITIVITY 0.25 GAMMA, PROTON MAGNETOMETER.ALL FIELD DATA WERE RETURNED TO GEOMETRICS,SUNNYVALE, CALIFORNIA COMPUTER FACILITIES FOR PROCESSING,STATISTICAL ANALYSIS AND INTERPRETATION.AS AN INTEGRAL PART OF THIS FINAL REPORT,OTHER DATA ARE PRESENTED WHICH INCLUDE CORRECTED PROFILES OF ALL RADIOMETRIC VARIABLES (TOTAL COUNT,K,U,TH,U/TH,U/K, AND TH/K, RATIOS), MAGNETIC DATA,RADAR ALTIMETER DATA,BAROMETRIC ALTIMETER DATA,AIR TEMPERATURE AND AIRBORNE BI CONTRIBUTIONS. RADIOMETRIC DATA PRESENTED ARE CORRECTED FOR COMPTON SCATTER,ALTITUDE DEPENDENCE AND ATMOSPHERIC BISMUTH. THESE DATA ARE PRESENTED IN THE FORM OF STRIP CHARTS AS AVERAGED ONE SECOND SAMPLES USING A 5 SECOND MOVING AVERAGE WINDOW, MICROFICHE AND DIGITAL MAGNETIC TAPES CONTAINING RAW SPECTRAL DATA,SINGLE RECORD DATA,AVERAGED RECORD DATA,AND STATISTICAL ANALYSIS RESULTS.IN ADDITION,COMPUTER GENERATED ANOMALY MAPS AND INTERPRETATION MAPS ARE PRESENTED RELATING KNOWN GEOLOGY OR SOIL DISTRIBUTION TO THE CORRECTED RADIOMETRIC DATA./
PORTIONS OF DOCUMENT ARE ILLEGIBLE/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING:03/DATA ACQUISITION/DATA COMPILATION/IOWA:T4/KANSAS:T1/MAGNETIC SURVEYS:Q1,Q2,Q4/MAPS/NEBRASKA:T2/RADIOMETRIC SURVEYS:Q1,Q2,Q4/URANIUM DEPOSITS:T3/

RS78-7-168

78R0088530 EDB-78-17 05.020
GJBX--20(78)-2/
AERIAL GAMMA RAY AND MAGNETIC SURVEY:FREMONT QUADRANGLE,NEBRASKA,IOWA.FINAL REPORT.VOLUME II/
GEOMETRICS, INC., SUNNYVALE,CALIF.(USA)/
CONTRACT EY-76-C-13-1664/
NOV 1977/
DEP.NTIS.PC A06/MF A01./
9 506 626/
US/
US/
INS-78:011467/NTS-78:063120/ERA-03:042292/EDB-78:088530/
DATA FROM THE AERIAL GAMMA RAY AND MAGNETIC SURVEY OF THE FREMONT QUADRANGLE IN NEBRASKA AND IOWA ARE PRESENTED IN THE FORM OF RADIOMETRIC PROFILES,FLIGHT PATH RECOVERY MAPS,ANOMALY MAPS, AND HISTOGRAMS.(LK)/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING: 03 / DATA COMPILATION/IOWA:T2/MAGNETIC SURVEYS:Q1,Q2/MAPS/NEBRASKA:T1/RADIOMETRIC SURVEYS:Q1,Q2/URANIUM DEPOSITS:T3/

RS78-7-169

78R00885331 EDB-78-17 05.020
GJBX--20(78)-3/
AERIAL GAMMA RAY AND MAGNETIC SURVEY:MANHATTAN QUADRANGLE,KANSAS.FINAL REPORT.VOLUME II/
GEOMETRICS, INC., SUNNYVALE,CALIF.(USA)/
CONTRACT EY-76-C-13-1664/
NOV 1977/
DEP.NTIS.PC A06/MF A01./
9 506 626/
US/
US/
INS-78:011490/NTS-78:063122/ERA-03:042295/EDB-78:088533/
DATA FROM THE AERIAL GAMMA RAY AND MAGNETIC SURVEY OF THE MANHATTAN QUADRANGLE IN KANSAS ARE PRESENTED IN THE FORM OF RADIOMETRIC PROFILES,FLIGHT PATH RECOVERY MAPS,ANOMALY MAPS,AND HISTOGRAMS.(LK)/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING:02/DATA COMPILATION/KANSAS:T1/MAGNETIC SURVEYS:Q1/MAPS/RADIOMETRIC SURVEYS:Q1/URANIUM DEPOSITS:T2/

RS78-7-170

78R00881531 EDB-78-17 05.020
GJBX--20(78)-3/
AERIAL GAMMA RAY AND MAGNETIC SURVEY:LINCOLN QUADRANGLE,NEBRASKA.FINAL REPORT.VOLUME II/
GEOMETRICS, INC., SUNNYVALE,CALIF.(USA)/
CONTRACT EY-76-C-13-1664/
NOV 1977/
DEP.NTIS,PC A09/MF A01./
9 506 626/
US/
US/
ENS-78:011488/NTS-78:063121/ERA-03:042293/EDB-78:088531/
DATA FROM THE AERIAL GAMMA RAY AND MAGNETIC SURVEY OF THE LINCOLN QUADRANGLE IN NEBRASKA ARE PRESENTED IN THE FORM OF RADIOMETRIC PROFILES,FLIGHT PATH RECOVERY MAPS,ANOMALY MAPS,AND HISTOGRAMS.(LK)/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING:Q2/DATA COMPILATION/MAGNETIC SURVEYS:Q1/MAPS/NEBRASKA:T1/RADIOMETRIC SURVEYS:Q1/URANIUM DEPOSITS:T2/

RS78-7-171

78R00883332 EDB-78-17 05.020
GJBX--20(78)-4/
AERIAL GAMMA RAY AND MAGNETIC SURVEY:HUTCHINSON QUADRANGLE,KANSAS.FINAL REPORT.VOLUME II/
GEOMETRICS, INC., SUNNYVALE,CALIF.(USA)/
CONTRACT EY-76-C-13-1664/
NOV 1977/
DEP.NTIS,PC A06/MF A01./
9 506 626/
US/
US/
ENS-78:011489/NTS-78:063122/ERA-03:042294/EDB-78:088532/
DATA FROM THE AERIAL GAMMA RAY AND MAGNETIC SURVEY OF THE HUTCHINSON QUADRANGLE IN KANSAS ARE PRESENTED IN THE FORM OF RADIOMETRIC PROFILES,FLIGHT PATH RECOVERY MAPS,ANOMALY MAPS,AND HISTOGRAMS.(LK)/
FUEL CYCLE/
P/
05.0200/
AERIAL PROSPECTING:Q2/DATA COMPILATION/KANSAS:T1/MAGNETIC SURVEYS:Q1/MAPS/RADIOMETRIC SURVEYS:Q1/URANIUM DEPOSITS:T2/

RS78-7-172

78C01052?0 EDB-78-19 58.020
CONF-770478--P1/
QUATERNARY GEOLOGIC MAP OF MINNESOTA/
GOEBEL,J.E./
UNIV.OF MINNESOTA,ST.PAUL/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.I/
US/
US/
ERA-03:051314/EDB-78:106270/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
58.0203/
DATA ANALYSIS/DATA COMPILATION/GEOLOGICAL SURVEYS:T2,01/GLACIERS/MAPS/MINNESOTA:T1/REMOTE SENSING:Q2/SATELLITES/

RS78-7-173

78R00826J EDB-78-10 50.020
UCRL--51444-77/
ATMOSPHERIC AND GEOPHYSICAL SCIENCES DIVISION,PHYSICS DEPARTMENT PROGRAM REPORT,FY 1977/
KNOX,J.B./ORPEN,A.C.(EDS.)/
CALIFORNIA UNIV.,LIVERMORE (USA).LAWRENCE LIVERMORE LAB./
MATHEMATICAL MODELS FOR ENVIRONMENTAL TRANSPORT OF CHEMICAL AND RADIOACTIVE EFFLUENTS/
CONTRACT W-7405-ENG-48/
DEC 1977/
DEP.NTIS,PC A05/MF A01./
9 500 007/
US/
US/
ERA-03:041458/NTS-78:062371/INS-78:011923/EDB-78:086263/
PROGRESS IS REPORTED ON THE DEVELOPMENT OF A NUMBER OF MATHEMATICAL MODELS FOR THE SIMULATION AND COMPUTER ANALYSIS OF A VARIETY OF ENVIRONMENTAL CONDITIONS.REGIONAL,LOCAL,AND GLOBAL MODELS FOR THE ENVIRONMENTAL TRANSPORT OF CHEMICAL AND RADIOACTIVE EFFLUENTS AT SURFACE AND STRATOSPHERIC LEVELS ARE DESCRIBED.A LIST IS INCLUDED OF PUBLICATIONS IN THE ATMOSPHERIC SCIENCES DURING THE TIME COVERED BY THIS REPORT./
ENVIRONMENT AND SAFETY/
0/
50.0200/50.0300/
AERODYNAMICS / AIR POLLUTION / BOUNDARY LAYERS / CHEMICAL EFFLUENTS: M1 / CLIMATES/COMPUTER CALCULATIONS/DIFFUSION/ENVIRONMENTAL TRANSPORT:M4,01,02,03/FALLOUT/HAZARDOUS MATERIALS:M3/MATHEMATICAL MODELS:Q4/METEOROLOGY/MONITORING/PLUMES/PRECIPITATION SCAVENGING / RADIOACTIVE AEROSOLS / RADIOACTIVE EFFLUENTS: M2 /REMOTE SENSING/STRATOSPHERE/SURFACE AIR/TOPOGRAPHY/TURBULENCE/VELOCITY/WASHOUT/WIND/

RS78-7-174

78R00249I7 EDB-78-04 99.020
(ZFI-MITT--4)CONTRIBUTIONS TO THE QUANTITATIVE EVALUATION OF AUTORADIOGRAPHS WITH THE AID OF COMPUTERS/
KUHNER,G./
AKADEMIE DER WISSENSCHAFTEN DER DDR,LEIPZIG.ZENTRALINSTITUT FUER ISOTOPEN- UND STRAHLENFORSCHUNG/
SEP 1976/(IN GERMAN)DEP.NTIS (US SALES ONLY),PC A04/MF A01./
CC=/ 041 2F8/
DD/
DD/
99.0200/
AUTORADIOGRAPHY: T1 / COMPUTER CALCULATIONS: 02 / IMAGE PROCESSING: 01,T2/IMAGES/MATHEMATICAL MODELS/OPACITY/PATTERN RECOGNITION/PHOTOGRAPHIC EMULSIONS/PHOTOGRAPHIC FILMS/

RS78-7-175

78C007054/ EDB-78-13 51.010
(CONF-751072--P2)MAPPING IN THE CRATERS OF THE MOON VOLCANIC FIELD,IDAHO WITH LANDSAT (ERTS) IMAGERY/
LEFEBVRE,R.H./
GEOLOGICAL SURVEY,RESTON,VA/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
51.0100/58.0100/
DATA PROCESSING / IDAHO: T2 / IMAGES/LAVA/MINERALOGY/PHOTOGRAPHY/PLANTS/SEDIMENTS/SURFACES/TOPOLOGICAL MAPPING:Q1,Q2/VOLCANIC REGIONS:T1/

RS78-7-176

78C0104574 EDB-78-19 $1.050
CONF-770478--P2/
EXPERIMENTAL LAND SYSTEMS MAPPING WITH DIGITAL LANDSAT IMAGES/
ROBINOVE,C.J./
GEOLOGICAL SURVEY,RESTON,VA/
1977/
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT,VOL.II/
US/
US/
ERA-03:051037/EDB-78:104574/
NONE/
11.SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
25 APR 1977/
$1.0500/
ARID LANDS/BIOMASS/CLASSIFICATION/DATA ANALYSIS/FEASIBILITY STUDIES:Q2/IMAGE PROCESSING/INFRARED SPECTRA/INVENTORIES:
Q1/LAND USE:T1/MAPS/PLANTS/REMOTE SENSING:T2/ROCKS/SOILS/

RS78-7-177

78C0070541 EDB-78-13 $1.010
(CONF-7510172--P2)TRUTH ABOUT GROUND-TRUTH MAPS/
SMEDES,H.W./
GEOLOGICAL SURVEY,DENVER/
1975/
PROCEEDINGS OF THE TENTH INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
US/
US/
10.INTERNATIONAL SYMPOSIUM ON REMOTE SENSING OF ENVIRONMENT/
ANN ARBOR,MI,USA/
6 OCT 1975/
$1.0100/
COMPUTERS/DATA COMPILATION/MAPS:T1/PLANTS:T3/REMOTE SENSING:Q2,Q3,Q4/SOILS:T2/SURFACES/TOPOLOGICAL MAPPING/WATER:T4/

RS78-7-178

78I0104792 EDB-78-19 $5.060
INVESTIGATION AND APPLICATION OF PATTERN RECOGNITION TECHNIQUES TO MEDICAL PICTURE DATA (SCINTIGRAMS)/
VAKNINE, R. / AMMANN, W. W. / LORENZ, W. J. (DEUTSCHES KREBSFORSCHUNGSZENTRUM, HEIDELBERG (GERMANY, F. R.).INST.FUER
NUKLEARMEDIZIN)/
KERNTECHNIK/19/12/DEC 1977/
524-529/
DE/
DE/
KERTA/
AIX-09:376231/EDB-78:104792/
THE APPLICATION OF PATTERN RECOGNITION TECHNIQUES TO SCINTIGRAMS IS INVESTIGATED.A PREPROCESSING METHOD WHICH PRODUCES
THE 'CURVATURE SCINTIGRAM',AND A BOUNDARY DETECTION ALGORITHM FOR FEATURE EXTRACTION PURPOSES ARE DESCRIBED.CLINICALLY
RELEVANT PARAMETERS ARE THEN EXTRACTED FROM THE BOUNDED COUNT RATE SCINTIGRAM AND THE CURVATURE SCINTIGRAM.FOR
CLASSIFICATION,THE FACTOR ANALYSIS OF CORRESPONDENCE AND THE DISCRIMINANT ANALYSIS ARE USED.THESE PROCEDURES ARE APPLIED
TO LIVER SCINTIGRAMS OF 47 PATIENTS WHO HAVE BEEN CATEGORIZED BY BIOPSY.AS THE RESULTS SHOW,THE CURVATURE SCINTIGRAM AND
THE PARAMETER EXTRACTION FROM THE BOUNDED COUNT RATE SCINTIGRAMS IMPROVE THE QUALITY OF THE DIAGNOSIS AND SUPPORT THE
CRUCIAL DISTINCTION BETWEEN DIFFUSE 'PATCHY' STRUCTURES AND THE PRESENCE OF A FEW DISTINCT LESIONS IN SCINTIGRAMS./
55.0601/
COMPARATIVE EVALUATIONS / DATA PROCESSING/DIAGNOSIS/IMAGE PROCESSING:Q2/IMAGES/LIVER:T1/PATIENTS/PATTERN RECOGNITION/
SCINTISCANNING:T2,Q1/

RS78-7-179

78R0030485 EDB-78-06 $5.030
(N--77-10618)DATA PROCESSING OF INFORMATION FROM REMOTE SENSORS IN MEXICO/
ZARCO,M.A.E./
COMISION NACIONAL DEL ESPACIO EXTERIOR,MEXICO CITY/
1974/NTIS,PC A03/MF A01./
CC=1 H9o 500/
MX/
US/
15.0201/
AGRICULTURE:T3/DATA PROCESSING/GEOTHERMAL RESOURCES:T1/MEXICO/REMOTE SENSING:Q1,Q2,Q3/SALINITY:T2/SOILS/WATER/

RS78-7-180

A78-43355 # Landsat atmospheric corrections at CCRS. F. J. Ahern, D. G. Goodenough, S. C. Jain, V. R. Rao (Canada Centre for Remote Sensing, Ottawa, Canada), and G. Rochon (Université Laval, Quebec, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 583-594. 15 refs.

Methods used to correct Landsat data for atmospheric variability are discussed. Attention is given to the Multiplicative and Additive Scene Correction (MASC) algorithm (Henderson, 1975), which assumes that certain types of ground cover have stable spectral reflectances. Atmospheric corrections utilizing oligotrophic lakes as standard reflectors (Ahern, et al., 1977) are described. The methods are evaluated for ground and aircraft measurements made with Landsat passes over Canadian lake regions. It is found that when using oligotrophic lakes as standard reflectance targets, atmospheric variability is removed to within plus or minus one grey level on a 128-grey-level scale. S.C.S.

RS78-7-181

A78-45881 # Meteosat image processing. J. P. Antikidis (ESA, Meteorological Programmes Dept., Toulouse, France). *ESA Bulletin*, no. 11, Dec. 1977, p. 40-44.

Attention is given to the image processing system of Meteosat. Image conditioning, i.e., amplitude processing, is discussed with reference to optical and detector response, electrical filter transfer functions, sampling, and analog-to-digital conversion. Image referencing, which presents a mathematical description of the deformation, is outlined. Processes such as real-time correction, datation, landmark detection, horizon extraction, deformation model computation, grid computation, segmentation and storage, rectification, and registration are briefly noted. S.C.S.

RS78-7-182

A78-40174 * Estimating costs and performance of systems for machine processing of remotely sensed data. R. J. Ballard and L. F. Eastwood, Jr. (Washington University, St. Louis, Mo.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 208-214. 8 refs. Contract No. NAS5-20680.

This paper outlines a method for estimating computer processing times and costs incurred in producing information products from digital remotely sensed data. The method accounts for both computation and overhead, and may be applied to any serial computer. The method is applied to estimate the cost and computer time involved in producing Level II Land Use and Vegetative Cover Maps for a five-state midwestern region. The results show that the amount of data to be processed overloads some example computer systems, but that the processing is feasible on others. (Author)

RS78-7-183

A78-43306 * Digital processing of Landsat data for cartography (Le traitement numérique des données de Landsat pour la cartographie). J. Beaubien (Ministere des Pêches et de l'Environnement, Centre de Recherches Forestières des Laurentides, Sainte-Foy, Quebec, Canada) and S. J. Daus (California, University at Berkeley, Calif.). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 19-26. 13 refs. In French.

A study has been made to determine the applicability of using Landsat data for the mapping of the forest cover in Quebec, Canada. The two-site study (Anticosti Island and the Laurentian Plateau) was based on photographic records and a mixed classification technique. The Anticosti Island study indicates that various types of forest cover, reforested and nonforested areas, and damaged forest land may be identified. The Laurentian Plateau study indicates that deciduous and coniferous areas may be distinguished along with post-damage stages of development. Factors influencing reflectance are identified as atmospheric conditions (such as the amount of water vapor) and conditions inherent to the ground surface (such as the slope exposure). S.C.S.

RS78-7-184

A78-48003 * Photographic contrast enhancement of Landsat imagery. R. G. Best and J. R. Smith (South Dakota State University, Brookings, S. Dak.). *Photogrammetric Engineering and Remote Sensing*, vol. 44, Aug. 1978, p. 1023-1026. Grant No. NGL-42-003-007.

The effect of increased contrast of Landsat imagery is to stretch the informational content over a much greater density range. This results in greater density differences among scene features and provides a more interpretable image. The stretch required for MSS 5 and 7 is in the gamma range of 1.5 to 3.0. Several different film types, developers, and development times were used to reprocess Landsat images in a range of gammas from 1.0 to above 4.0. The gamma value to which the imagery was processed depended on the densitometric range of scene features in the image relative to the gray scale. An example of a photographically enhanced MSS 4 image is shown, in which the standard 0.94 density units was increased to 2.19 density units. The results are similar to those obtained in a computerized contrast stretch of digital CCT data, but are obtained at a far lesser cost. P.T.H.

RS78-7-185

A78-40172 Correlation of intensity variations and false color displays of multispectral digital images. J. Burkle and E. Barón (IBM de America Latina, Centro Científico, Mexico City, Mexico). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 190-193.

It is noted that when viewed by a multispectral sensor, ground resolution elements may manifest mixtures of object categories in such a way that image pixels are not representative of any category. A method is derived for the correlation of intensity variations and false color displays. The technique indicates whether a particular image may be represented by a linear mixture model. In addition, it is found that false color displays may filter the effects of intensity variations caused by shadows or changes in incident light conditions so that uniform combined colors are produced for homogeneous areas. The results of these effects are evaluated for a series of Landsat images. S.C.S.

RS78-7-186

A78-43352 # Computer processing of remotely-sensed data and automatic cartography (Le traitement par ordinateur des données de télédétection et leur cartographie automatique). D.-J. David (Paris I, Université, Paris, France), G. Joly (CNRS, Laboratoire d'Information et de Documentation en Géographie, Paris, France), and F. Verger (Ecole Normale Supérieure, Montrouge, Hauts-de-Seine, France). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 558-564. 5 refs. In French. Centre National d'Etudes Spatiales Contract No. 75-322.

Techniques for automatic cartography on the basis of computer-processed remotely sensed data are outlined. Several correction and classification programs are described, including the FRACORCA, FRALISSE, FRACARTO, and FRACAM programs. Applications to studies of mud-flat geomorphology and marine turbidity are noted. S.C.S.

RS78-7-187

A78-43351 # Recognition and modification of areas less than a minimum. W. A. Davis (Alberta, University, Edmonton, Canada) and F. G. Peet (Canadian Forestry Service, Forest Management Institute, Ottawa, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 549-557. 7 refs. National Research Council of Canada Grant No. A-7634.

With reference to related studies, the article discusses the processing of digital thematic maps from classified Landsat imagery such that after processing, the map regions have areas less than a preset minimum. The technique is based on an algorithm developed by Davis and Peet (1976) which finds all regions having areas less than a determined minimum and converts them to their most likely neighbor. S.C.S.

RS78-7-188

A78-48546 = An algorithm for the automatic recognition of textures on aerial photographs (Ob odnom algoritme avtomaticheskogo raspoznavaniia tekstur na aerofotosnimkakh). B. N. Epifantsev and V. A. Molodykh (Tomskii Politekhnicheskii Institut, Tomsk, USSR). *Geodeziia i Aerofotos emka* no. 2 1978. p 84-90. 5 refs. In Russian

In the present paper, an attempt is made to obtain a compact description of the elements of black-and-white 1:5000 aerial photographs of forest, meadow, plowland, and water areas. An automatic recognition algorithm employing a group of characters in the form of the frequency characteristics of textures obtained by the method of identifying hidden periodicities is proposed. The textures under consideration are recognized by a Bayesian procedure within the framework of a minimized system of characters. The applicability of the obtained system of characters to the solution of texture recognition problems is demonstrated. V P

RS78-7-189

A78-48002 Macrophotography of satellite images. J R. Eyton and R. P. Kuether (Illinois, University, Urbana, Ill.). *Photogrammetric Engineering and Remote Sensing*, vol 44, Aug. 1978, p. 1019-1021

A method for obtaining high-quality macrophotography of Landsat and Skylab images with the aid of an enlarger and high-definition, high contrast film is briefly described. A list of enlarger bulbs and color balancing filters recommended for the process and a list of films, both conventional and unconventional, with which excellent results have been obtained, are provided. Enlargement factors for high-resolution color images from the Skylab mission are given. P.T.H.

RS78-7-190

A78-40169 A remote sensing system for a nationwide data-bank. H. D. Foster, J. Bos, and W. C Richie (H Dell Foster Co , San Antonio, Tex.). In. Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc , 1977, p. 160 171.

The paper discusses a remote sensing system which has been developed for a nationwide data bank Eight instruments, including minicomputers and optomechanical devices, are used to convert aerial photography data into a digital data file on magnetic tape. The data file comprises a series of X-Y-Z real-world coordinates divided into descriptive primary levels and line-type identification The output consists of a graphic manuscript file and a digital data-bank file. Component specifications are noted. S.C S.

RS78-7-191

A78-43313 # An efficient algorithm for classification of Landsat data. M. Goldberg (Ottawa, University, Ottawa, Canada) and P. M. Narendra (Honeywell Systems and Research Center, Minneapolis, Minn). In. Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 95-105. 7 refs.

A nonparametric classification algorithm applicable to Landsat data is presented. The noniterative algorithm clusters data in the form of a histogram calculated from the image as an estimate of the probability density function At each stage of the clustering scheme the computational requirements are linearly dependent on the number of vectors or pixels. A directional graph is determined for each cluster (which may be of arbitrary shape) with the boundary between the classes running through the valleys in the density. Results found for two Landsat scenes show the effectiveness of the algorithm. S.C.S.

RS78-7-192

A78-40178 A four-dimensional histogram approach to the clustering of Landsat data. M Goldberg and S. Shlien (Canada Centre for Remote Sensing, Ottawa, Canada). In Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind , June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc , 1977, p. 250-259. 10 refs.

Unsupervised classification of Landsat data in spectrally distinct sets may be accomplished by use of a four-dimensional histogram in table form. The classification algorithm described here is designed to be implemented in a timesharing system and therefore requires a minimum of computer core memory. At least 280,000 pixels may be clustered at a time with the algorithm. Because of the high speed of the clustering operation (two minutes for the 280,000-pixel unit), the algorithm is suitable for an interactive system. J M.B.

RS78-7-193

A78-43326 # The Canada Centre for Remote Sensing's image analysis system /CIAS/. D. G. Goodenough (Canada Centre for Remote Sensing, Ottawa, Canada) In. Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p 227-244. 19 refs.

Attention is given to the image analysis system developed by the Canada Centre for Remote Sensing. The system consists of a modified Image-100 device and a PDS color microdensitometer. The system makes it possible to classify a full Landsat frame into 93 distinct classes with maximum likelihood discrimination. The entire process takes less than 14 minutes. Three parallel data paths are provided. the UNIBUS, the RH70/DWR70 bus, and the IAP-supported path. Images are stored in 44-megaword disks. A graphics tablet is employed for limited map-information digitization, map-information selection, the selection of test sites, and map overlay. Output consists of single-class plots matching map scales from 1.50,000 to 1:1,000,000 color photographs S C.S.

RS78-7-194

A78-47082 Image processing in remote sensing. A K. S Gopalan, D. S. Kamat, K. L. Majumder, C. V. S. Prakash, and V. L. Svaminatnan (Indian Space Research Organization, Space Applications Centre, Ahmedabad, India). In: International Symposium on Space Technology and Science, 12th, Tokyo, Japan, May 16-20, 1977, Proceedings. (A78-47001 21-12) Chofu, Tokyo, National Aerospace Laboratory, 1977, p. 599-604. 11 refs.

Certain aspects of image processing in remote sensing is reviewed with reference to extraction of information on earth resources from Landsat and aircraft pictures. Attention is given to agricultural land use using supervised and unsupervised classification, and to the study of forest cover. Digital processing techniques are applied to photo-geology, and water turbidity and quality studies Analog processing is also discussed. B J.

RS78-7-195

A78-44237 Methods and accuracy of location of Landsat MSS points on maps. J. R. Hardy (Reading, University, Reading, Berks, England). *British Interplanetary Society, Journal (Remote Sensing)*, vol. 31, Aug. 1978, p. 305-311 7 refs.

The linear least squares method of transformation of co-ordinates from Landsat MSS to map systems and vice versa is described and illustrated, with reference to Landsat and map geometry. It is shown that, for a whole Landsat scene, map points can be matched with a standard deviation of about plus or minus 200 metres, while for small areas this figure can be improved to about plus or minus 50 metres. It is shown that eight to ten pairs of homologous points are sufficient to achieve this accuracy and that little or no improvement is achieved by using more. The implications for mapping scales are discussed. (Author)

RS78-7-196

A78-40177 A least-square error approach to Landsat image classification. A. Y Hung (TRW Defense and Space Systems Group, Redondo Beach, Calif.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind , June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p 240-249. 15 refs.

A nonparametric classifier based on a least-square-error approach has been developed to discriminate features or substances in Landsat imagery even when the functional form of the class distributions is unknown Software implementation of the nonparametric classification is described, and an application of the technique to the classification of geological features in a region of Nevada is presented. The least-square-error classifier provides better results than a density slice technique and may be a useful alternative to the nonmetric Bayes classification J.M.B

RS78-7-197

A78-40184 ISURSL levels classification - A low cost approach to multispectral data analysis. R F. Hyde, S N. Goward, and P W Mausel (Indiana State University, Terre Haute, Ind) In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 322-332. 6 refs

An economical levels classification of multispectral remote sensing data has been developed, identification of numeric boundaries in a multidimensional feature space is the key component of the classification algorithm. Single and multidimensional histogram analysis provides a sophisticated means for identifying the levels boundaries Applications of the levels classification to a land cover inventory of Indiana, coastal area ecological zone mapping, a land use inventory, and a forest survey are reported. J.M.B.

RS78-7-198

A78-45687 # A distortion-free map projection for analysis of satellite remote sensing. J L. Junkins and J. D. Turner (Virginia Polytechnic Institute and State University, Blacksourg, Va.). *American Institute of Aeronautics and Astronautics and American Astronautical Society, Astrodynamics Conference, Palo Alto, Calif., Aug. 7-9, 1978, AIAA Paper 78-1425* 12 p Grant No. DAAG53-76-C-0067.

A dynamic map projection is formulated and tested numerically. In contrast to classical static map projections, the invariant line (projected free of length and normal-view curvature distortions) is not restricted to be an equator, a meridian, or a parallel; rather the satellite's subpoint trace (groundtrack) on the reference ellipsoid is the invariant line. Since the projection is dynamic, a local sensing time is associated with each (phi, lambda) in the satellite sensors' field of view (assumed to be a Landsat-type scanner/electro-optical detector). Length and angle distortions are rigorously zero along the groundtrack projection, the largest distortions within the finite sensed strip of the earth's surface are a few parts per 10,000 for most applications. The formulation is valid for any continuous satellite orbit or orbit segment (interfacing with state-of-the-art orbit integration software is straightforward). (Author)

RS78-7-199

A78-43311 # Evaluation of a semiautomatic interpretation method for the cartography of clearcut zones in the southern James Bay area (Evaluation d'une méthode d'interprétation semi-automatique pour la cartographie des zones de coupe dans le sud du territoire de la Baie James) P. Latramboise and P. Bedard (Société de Développement de la Baie James, Montreal, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 67-70 In French.

A semiautomatic interpretation method for Landsat data has been used to establish land occupation and land use maps in the southern James Bay area. The data included Landsat imagery, aerial photographs, and maps on various scales Based on the multispectral analyzer display system, which utilizes the maximum likelihood algorithm and the unsupervised classification method, information categories were identified including clearcut zones, upgrowth zones, hardwood regions, resinous regions, peat bogs, and infrastructures. S.C.S.

RS78-7-200

A78-40155 * Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, Purdue University, West Lafayette, Ind., June 21-23, 1977, Proceedings. Symposium sponsored by IEEE, American Society of Agronomy, NASA, et al. Edited by D. B. Morrison and D. J. Scherer. New York, Institute of Electrical and Electronics Engineers, Inc., 1977. 370 p. Members, $18.75; nonmembers, $25. (For individual items see A78-40156 to A78-40185)

Papers are presented on a variety of techniques for the machine processing of remotely sensed data. Consideration is given to preprocessing methods such as the correction of Landsat data for the effects of haze, sun angle, and reflectance and to the maximum likelihood estimation of signature transformation algorithm. Several applications of machine processing to agriculture are identified. Various types of processing systems are discussed such as ground-data processing/support systems for sensor systems and the transfer of remotely sensed data to operational systems. The application of machine processing to hydrology, geology, and land-use mapping is outlined. Data analysis is considered with reference to several types of classification methods and systems. S.C.S.

RS78-7-201

A78-40157 Rectification and registration of digital images and the effect of cloud detection. M. L. Nack (Computer Sciences Corp., Silver Spring, Md.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 12-23. 10 refs.

Procedures for the rectification and registration of digital images are outlined along with the effect of cloud detection. The procedures basically consist of (1) removing cloud or cloud-shadow information from edge images before image correlation, (2) representing the geometric shapes of the image features (including resampling techniques, sequential geometric corrections, and sampling time delay corrections), and (3) determining fractional pixel registration accuracy including the automatic location of ground control points. S.C.S.

RS78-7-202

A78-40158 * The correction of Landsat data for the effects of haze, sun angle, and background reflectance. J. F. Potter (Lockheed Electronics Co., Inc., Houston, Tex.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 24-32. 9 refs. Contract No. NAS9-15200.

A technique has been developed for simulating the effects of haze, sun angle, and background reflectance in Landsat data and correcting for them. The atmospheric model assumes a two-layer atmosphere: a Rayleigh scattering molecular layer and a Mie scattering haze layer next to the earth's surface. Reflection and transmission matrices describe the reflection and transmission properties of the plane parallel scattering layers. The multispectral scanner response is computed for various values of the parameters under evaluation. This yields expressions for Landsat gray-scale levels used for determining the effect of changes in any parameter. The Atmospheric Correction computer program is used to determine the haze level from the data, to compute the reflectance, and to interpolate in order to find the correction coefficients necessary to make the desired correction. S.C.S.

RS78-7-203

A78-43967 * Use of a remote computer terminal during field checking of Landsat digital maps. C. J. Robinove and C. F. Hutchinson. *U.S. Geological Survey, Journal of Research*, vol. 6, July-Aug. 1978, p. 511-514.

Small-scale, land-classification maps digitally produced from Landsat data have been field checked using a remote portable teletypewriter linked to the Interactive Digital Image Manipulation System. The terminal provided image classification, statistical manipulation, class grouping, and map printout in alphanumeric form. The process is observed to make field checking faster, to provide statistical data integration, and to reduce the required time and costs. Some difficulties were encountered with the telephone lines. It is suggested that the original computer-produced maps taken to the field contain more classes than are expected to be mapped because in the field it is easier to group classes than to reclassify or separate classes when only the remote terminal is available for display. S.C.S.

RS78-7-204

A78-40176 Application of image principal component technique to the geological study of a structural basin in Central Spain. A. Santisteban (Madrid, Universidad Autónoma, Madrid, Spain) and L. Munoz (Madrid, Universidad Complutense, Madrid, Spain). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 228-236. 8 refs.

A method is described for obtaining the principal components of a multispectral image. It allows a simultaneous radiometric enhancement by means of a suitable finer level quantization that does not introduce artifacts. Using this method we are able to produce good photographic prints of the principal components of Landsat MSS images. The first two components alone contain nearly all the information existing on the original image while the others contain only noise. This technique was applied to the geological study of Campo Arañuelo Basin, in Central Spain, with the aim of confirming the hypothesis of different geological histories since Miocene times of this area and the remainder of Tajo Basin. (Author)

RS78-7-205

A78-43353 # Computerized generation of control points on Landsat imagery (Génération automatisée de points de contrôle sur les images Landsat). A. Scott (CDC System, Ottawa, Canada) and G. Rochon (Université Laval, Quebec, Canada). In: Canadian Symposium on Remote Sensing, 4th, Quebec, Canada, May 16-18, 1977, Proceedings. (A78-43303 19-43) Ottawa, Canadian Aeronautics and Space Institute, 1977, p. 565-572. In French.

A new procedure for generating control points on Landsat imagery with a view to subsequent geometric correction has been designed and tested. The procedure is based on locating by computer the mass centers of [illegible] on the Landsat maps. The lakes which are located and identified and whose morphometric characteristics remain largely unchanged from one image to the next are retained as control points. An affine transformation using these control points and applied to an image of 500 pixels per side gave a residual error of less than 0.5 RMS pixels. (Author)

RS78-7-206

A78-40185 Advancements in machine-assisted analysis of multispectral data for land use applications. P. H. Swain (Purdue University, West Lafayette, Ind.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 336-343. 7 refs. U.S. Geological Survey Contract No. 14-08-0001-14725.

Results are reported of a three-year study participated in by the Laboratory for Applications of Remote Sensing of Purdue University, the Center for Advanced Computation of the University of Illinois, and the Geographic Applications Program of the U.S. Geological Survey. The outcome of the study has been a demonstration of the feasibility of applying digital analysis of satellite data to land use inventory and mapping. Advancements have been made in the areas of data analysis techniques, data processing products, and education and training of personnel within the potential user agency. (Author)

RS78-7-207

A78-47083 Standard Mesh compatible Landsat mapping. S. Tanaka, H. Kano (Remote Sensing Technology Center of Japan, Tokyo, Japan), and Y. Suga (Hosei University, Koganei, Tokyo, Japan). In: International Symposium on Space Technology and Science, 12th, Tokyo, Japan, May 16-20, 1977, Proceedings. (A78-47001 21-12) Chofu, Tokyo, National Aerospace Laboratory, 1977, p. 605-610.

A procedure is described for rendering Landsat MSS data for Japan compatible with the Standard Areal Mesh established by the Japanese Statistics Bureau. The basic features of this Standard-Mesh-compatible Landsat map are that (1) the pixel feature is almost square, (2) the pixel number corresponding to the Mesh is the same in every image, and (3) the radiometric value of MSS data is sufficiently preserved. B.J.

RS78-7-208

A78-40170 * On the transfer of remote sensing technology to an operational data system. J. D. Tarbet, L. H. Bradford, Jr. (Ford Aerospace and Communications Corp., Houston, Tex.), T. T. White (NASA, Johnson Space Center, Earth Observations Div., Houston, Tex.), and R. F. Purnell, Jr. (U.S. Department of Agriculture, Houston, Tex.). In: Annual Symposium on Machine Processing of Remotely Sensed Data, 4th, West Lafayette, Ind., June 21-23, 1977, Proceedings. (A78-40155 17-43) New York, Institute of Electrical and Electronics Engineers, Inc., 1977, p. 172-176.

Data processing techniques for the transfer of remote sensing technology to an operational data system are evaluated. The study is aimed at developing a scheme for the improvement of the quantifying cost/performance ratio, noting the timeliness of the results, the ease of system development, system operating costs, and accuracy. The method is applicable to the Production Area and Yield Estimation System (PAYES) and the Large Area Crop Inventory Experiment (LACIE). S.C.S.

RS78-7-209

A78-47085 The analyses of multispectral data obtained from space. K. Tsuchiya, T. Iwata, H. Nakamura (National Space Development Agency of Japan, Tokyo, Japan), H. Ochiai (Toba National Merchant Marine College, Toba, Japan), and K. Takeda (Science and Technology Agency, Tokyo, Japan). In: International Symposium on Space Technology and Science, 12th, Tokyo, Japan, May 16-20, 1977, Proceedings. (A78-47001 21-12) Chofu, Tokyo, National Aerospace Laboratory, 1977, p. 617-622. 12 refs.

Two Landsat MSS images of four areas in Japan - a farming area, a city, a mountain area, and a bay - are examined in an effort to compare radiance values. The radiance value of Band 4 (0.5-0.6 micron) taken in October 1972 is greater than that of Band 4 taken in September 1975 for all the areas, while the reverse is true for Band 6 (0.7-0.8 micron). The differences in radiance are apparently due to the effects of weather and vegetation. Using the same images, four different methods of ground control point matching are tested. Landsat data is then applied to the detection of red tide off Japan. B.J.

RS78-7-210

A78-43056 Contextual pattern classification for remotely sensed multispectral data. T. S. Yu and K. S. Fu (Purdue University, West Lafayette, Ind.). In: Modeling and simulation. Volume 8 - Proceedings of the Eighth Annual Pittsburgh Conference, Pittsburgh, Pa., April 21, 22, 1977. Part 1. (A78-43026 18-66) Pittsburgh, Pa., Instrument Society of America, 1977, p. 469-473. 17 refs.

A technique employing contextual information in recognition systems for evaluating multispectral data obtained by remote sensing is discussed with reference to the minimization of the simple Bayes risk. Attention is given to a compound decision process, which generalizes the data so that evaluations of individual information cells can be made. An experiment involving data on a 128 x 128 format (200-327 lines, 120-247 columns) is described in terms of the simple decision, four neighbor, and eight neighbor rule. Overall accuracy improved as the number of neighbors for an individual cell was increased. D.M.W.

RS78-7-211

N78-30027*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

A NEW INVERSION METHOD FOR REMOTE SOUNDING OF PLANETARY ATMOSPHERES

Mian M. Abbas (Maryland Univ., College Park, Md.) Jul. 1978 32 p. refs. Submitted for publication

(Grant NGL-21-002-033)

(NASA-TM-79604) Avail: NTIS HC A03/MF A01 CSCL 03B

An inversion method which is applicable to high resolution observations where the spectral lines are fully resolved is described. The technique is based on matching calculated slopes of the spectral line profiles with slopes of the observed lineshapes and involves finding an inverse solution to the derivative of the radiative transfer equation with respect to frequency. The method is applied to inversion of ozone absorption lines in the earth's atmosphere and the results are compared with those obtained by a conventional method. Advantages include narrower weighting functions providing a higher vertical resolution, higher atmospheric level which may be probed, more faster and more stable convergence, and more accurate retrieved profiles. A.R.H.

RS78-7-212

N78-28593# Committee on Space Research (COSPAR), Paris (France)
SATELLITE IMAGERY INTERPRETATION: SUGGESTIONS FOR LABORATORY DESIGN
T T Alfoeldi (Can Centre for Remote Sensing, Ottawa) and R. A Ryerson (Can. Centre for Remote Sensing, Ottawa) May 1976 24 p refs
(Tech-Man-Ser-5) Avail NTIS HC A02/MF A01

Suggestions for the design, staffing, and instrumentation of a basic satellite imagery analysis laboratory are presented. The cost of the equipment and furniture for the basic laboratory is approximately $60,000 Recommended optimal equipment is also listed. ESA

RS78-7-213

N78-29541# Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil).
INTRODUCTION TO A MULTISPECTRAL DATA ANALYSIS SYSTEM [APRESENTACAO DE UMA SISTEMATICA PARA A ANALISE DE DADOS MULTIESPECTRAIS]
Vitor Celso CelsodeCarvalho Apr. 1978 40 p refs In PORTUGUESE
(INPE-1227-NTE/115) Avail. NTIS HC A03/MF A01

A system that automatically translates multispectral data obtained by remote sensing is described Basic concepts were examined briefly, and examples of application in various areas of natural resources were reviewed Transl. by B B

RS78-7-214

N78-29545# Army Engineer Topographic Labs., Fort Belvoir, Va
NEAR REAL TIME APPLICATION OF DIGITAL TERRAIN DATA IN A MINICOMPUTER ENVIRONMENT
James R Jancaitis and William R. Moore Apr. 1978 30 p
(AD-A054008; ETL-0142) Avail: NTIS HC A03/MF A01 CSCL 08/2

Two developments have combined to significantly impact the growing number of applications dependent upon digital terrain elevation data, mathematical terrain modeling, and minicomputer growth Digital representation of terrain form has previously required vast amounts of mass storage with the relatively slow speed data access associated with large databases A technique has been developed for compact digital storage of elevation data which also decreases the data access times significantly, a polynomial terrain model. Also, the minicomputer industry has been experiencing dramatic increases in the processing speeds and digital storage capabilities along with steadily declining costs Preliminary results of a recently initiated study into the impact of these developments on utilization of digital terrain elevation data is presented Author (GRA)

RS78-7-215

N78-27494# Army Engineer Topographic Labs., Fort Belvoir, Va.
INVESTIGATION OF THE APPLICATION OF ARRAY OF ALGEBRA TO TERRAIN MOD
James R Jancaitis and Ronald L. Magee Apr 1978 59 p refs
AD-A054007; ETL-0141) Avail: NTIS HC A04/MF A01 CSCL 09/2

This report investigates the application of array algebra to ETL's terrain modeling procedure in the following manner: analyze array algebra to verify specifically the equivalence of array algebra and the conventional least-squares solutions, analytically and empirically compare the computational efficiency of ETL's terrain modeling algorithm using the current least-squares method and the array algebra technique and investigate the applicability of Tsuhala's array algebra to the ETL terrain modeling algorithm The results showed that the array algebra algorithm is computationally equivalent to the least squares algorithm but has higher implementational overhead The array algebra algorithm is also less efficient for the ETL terrain modeling problem GRA

RS78-7-216

N78-28576*# Purdue Univ., Lafayette, Ind. Lab. for Applications of Remote Sensing
A PARAMETRIC MULTICLASS BAYES ERROR ESTIMATOR FOR THE MULTISPECTRAL SCANNER SPATIAL MODEL PERFORMANCE EVALUATION
D. G. Mobasseri, C. D. McGillem, and P. E. Anuta, Principal Investigators 1978 294 p refs EREP
(Contracts NAS9-14016, NAS9-14970; NAS9-15466)
(E78-10171; NASA-CR-151745; LARS-TR-061578; TR-EE-78-22) Avail: NTIS HC A13/MF A01 CSCL 05B

The author has identified the following significant results The probability of correct classification of various populations in data was defined as the primary performance index. The multispectral data being of multiclass nature as well, required a Bayes error estimation procedure that was dependent on a set of class statistics alone. The classification error was expressed in terms of an N dimensional integral, where N was the dimensionality of the feature space The multispectral scanner spatial model was represented by a linear shift, invariant multiple, port system where the N spectral bands comprised the input processes The scanner characteristic function, the relationship governing the transformation of the input spatial, and hence, spectral correlation matrices through the systems, was developed

RS78-7-217

N78-28933 Utah Univ., Salt Lake City.
THEORY OF IMAGE TRANSFER THROUGH A FABRY-PEROT INTERFEROMETER AND CONVERSION TO VISIBLE OF INFRARED IMAGES Ph.D. Thesis
Abbas Riazi 1978 206 p
Avail Univ Microfilms Order No 78-07207

Image transformation through a Fabry-Perot interferometer and the conversion of infrared to visible images are studied A Fourier expansion of the fields in conjunction with the FFT algorithm was used in determining the level of image distortion due to passage through an FPI The phenomenon of image deterioration was also examined by a mode decomposition technique Various theoretical expressions are derived and curves relating the characteristics of the FPI to the spatial content of the image are generated It is seen that initially as Fresnel number (N) increases, the resolving number of transits (M) increases rapidly; however, for values of N greater than 1000, the increase in M is very slow This is shown to be due to the asymptotic behavior of the additional phase shift per transit of each transverse model Dissert Abstr

RS78-7-218

N78-28585*# Bendix Aerospace Systems Div., Ann Arbor, Mich
MULTISPECTRAL DATA RESTORATION STUDY Final Report
Navinchandra J. Shah and C. L. Wilson May 1977 84 p refs (Contract NAS5-23384)
(NASA-CR-156790; BSR-4246) Avail NTIS HC A05/MF A01 CSCL 05B

A digital resampling technique for LANDSAT data is reported that incorporates a deconvolution concept to minimize spatial and radiometric degradation of data during resampling for geometric correction A quantitative comparison of cubic convolution and digital restoration methods establishes the latter as the superior technique G.G

RS78-7-219

N78-26528# Deutsches Geodaetisches Forschungsinstitut, Munich (West Germany)

VARIATION OF THE AERIAL PHOTOGRAPHIC ARRANGEMENT. ITS INFLUENCE ON THE MEAN ADJUSTMENT IN THE PRESENCE OF RANDOM AND SYSTEMATIC IMAGE FAILURES Ph.D. Thesis - Bonn Univ. **[VARIATION DER BILDFLUGANORDNUNG, IHRE AUSWIRKUNG AUF DIE BUENDELAUSGLEICHUNG BEI VORLIEGEN ZUFAELLIGER UND SYSTEMATISCHER BILDFEHLER]**

Joachim Thomas Bayerische Akad. der Wiss. 1977 133 p refs In GERMAN

(Ser-C/Diss-233, ISBN-3-7696-9289-6) Avail: NTIS HC A07/MF A01

Failure theory relations in aerial photography for the application of block adjustment according to the least squares method are discussed. Topics include the influence of normal distributed random image failures, systematic image failures, and mixed failures on the beam adjustment and compensation of systematic failures by the aerial photographic arrangement ESA

RS78-7-220

N78-29546# Los Alamos Scientific Lab., N Mex

TECHNIQUE FOR DYNAMIC RANGE REDUCTION FOR LANDSAT RATIO IMAGES

G. W Wecksung and J. R Breedlove, Jr 1978 7 p refs Presented at Electron. in Resources Management Conf., Alamogordo, N.M., 12-14 Apr. 1978

(Contract W-7405-eng-36)

(LA-UR-78-347, Conf-780410-1) Avail NTIS HC A02/MF A01

A scheme for dynamic range reduction, based on a mathematical model of the multispectral image, is presented It can be implemented on stand-alone digital image processing systems as well as general purpose computers This technique also has potential application in machine classification of geological data. Digital image processing examples are presented in which this new scheme is compared with other commonly used techniques for dynamic range reduction ERA

RS78-7-221

N78-26526# California Univ., Berkeley Lawrence Berkeley Lab.

INTERACTIVE DISPLAY OF POLYGONAL DATA Computer Science and Applied Mathematics Dept.

P. M Wood Oct 1977 37 p refs

(Contract W-7405-eng-48)

(LBL-6490; Conf-7710100-1) Avail: NTIS HC A03/MF A01

The interactive thematic mapping system called CARTE, combines polygonal base maps with statistical data to produce shaded maps using a variety of shading symbolisms on a variety of output devices A polygonal base map is one where geographic entities are described by points, lines, or polygons. It is combined with geocoded data to produce special subject or thematic maps. Shading symbolisms include texture shading for areas, varying widths for lines, and scaled symbols for points Output devices include refresh and storage CRTs and auxiliary Calcomp or COM hardcopy. The system is designed to aid in the quick display of spatial data and in detailed map design GRA

RS78-7-222

ID NO.- EI780858260 858260
PERFORMANCE TESTS OF SIGNATURE EXTENSION ALGORITHMS.
Abotteen, R.; Levy, S.; Mendlowitz, M.; Moritz, T.; Potter, J.; Thadani, S.; Wehmanen, O.
Lockheed Electron Co, Inc. Houston, Tex
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1523-1532 CODEN: PISEDM
DESCRIPTORS: (*IMAGE PROCESSING, *Analysis), AGRICULTURAL ENGINEERING, (REMOTE SENSING, Environmental Applications),
IDENTIFIERS: CROP SIGNATURES
CARD ALERT: 723, 821
Comparative tests were performed on seven signature extension algorithms to evaluate their effectiveness in correcting for changes in atmospheric haze and sun angle in a Landsat scene. Four of the algorithms were cluster matching, and two were maximum likelihood algorithms. The seventh algorithm determined the haze level in both training and recognition segments and used a set of tables calculated from an atmospheric model to determine the affine transformation that corrects the training signatures for changes in sun angle and haze level. Three of the algorithms were tested on a simulated data set, and all of the algorithms were tested on consecutive-day data. The classification performance on the data sets using the algorithms is presented, along with results of statistical tests on the accuracy and proportion estimates.

RS78-7-223

ID NO.- EI780860810 860810
USE OF CLEAR LAKES AS STANDARD REFLECTORS FOR ATMOSPHERIC MEASUREMENTS.
Ahern, F. J.; Goodenough, D. G.; Jain, S. C.; Rao, V. R.; Rochon, G.
Can Cent for Remote Sensing, Ottawa, Ont
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 731-755 CODEN: PISEDM
DESCRIPTORS: (*REMOTE SENSING, *Environmental Applications), ATMOSPHERIC OPTICS, (ELECTROMAGNETIC WAVES, Reflection), ATMOSPHERIC RADIATION,
IDENTIFIERS: MULTISPECTRAL SCANNERS
CARD ALERT: 716, 481
A method is proposed for using clear lakes as dark backgrounds against which the atmospheric path radiance can be determined from satellite observations. If the path radiance can be determined to sufficient accuracy, the atmospheric extinction can be inferred with suitable radiative transfer models. It is shown that atmospheric extinction can be inferred from the path radiance observation after systematic differences between the model and observations are removed. The individual sources of error in the path radiance and extinction coefficient estimates are determined, and the total error in these estimates is calculated, with and without sunglint. Refs.

RS78-7-224

ID NO.- EI780752999 852999
VEGETATION MODELED AS A WATER CLOUD.
Attema, E. P. W.; Ulaby, Fawwaz T.
Delft Univ of Technol, Neth
Radio Sci v 13 n 2 Mar-Apr 1978 p 357-364 CODEN: RASCAD
DESCRIPTORS: *REMOTE SENSING, AGRICULTURAL ENGINEERING, MICROWAVES.
IDENTIFIERS: VEGETATION
CARD ALERT: 711, 821, 901
Because the microwave dielectric constant of dry vegetative matter is much smaller (by an order of magnitude or more) than the dielectric constant of water, and because a vegetation canopy is usually composed of more than 99% air by volume, it is proposed that the canopy can be modeled as a water cloud whose droplets are held in place by the vegetative matter. Such a model was developed assuming that the canopy $left double quote$ cloud $right double quote$ contains identical water droplets randomly distributed within the canopy. By integrating the scattering and attenuation cross-section contributions of N droplets per unit volume over the signal pathlength through the canopy, an expression is derived for the backscattering coefficient as a function of three target parameters: volumetric moisture content of the soil, volumetric water content of the vegetation, and plant height. 15 refs.

RS78-7-225

ID NO.- EI780857832 857832
ALTERATION MAPPING AT GOLDFIELD, NEVADA, BY CLUSTER AND DISCRIMINANT ANALYSIS OF LANDSAT DIGITAL DATA.
Ballew, Gary
Stanford Univ, Remote Sensing Lab, Calif
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 783-790 CODEN: PISEDM
DESCRIPTORS: (*GEOLOGICAL SURVEYS, *Remote Sensing), (RADAR, Imaging Techniques), IMAGE PROCESSING, STATISTICAL METHODS.
IDENTIFIERS: MULTISPECTRAL DIGITAL DATA, INTERPRETATION
CARD ALERT: 481, 716, 922
The ability of Landsat multispectral digital data to differentiate among 2 combinations of rock and alteration types at the Goldfield mining district of Western Nevada was investigated by using statistical techniques of cluster and discriminant analysis. Multivariate discriminant analysis was not effective in classifying each of the 62 groups, with classification results essentially the same whether data of four channels alone or combined with six ratios of channels were used. Bivariate plots of group means revealed a cluster of three groups including mill tailings, basalt and all other rock and alteration types. Automatic hierarchical clustering was performed using S. C. Johnson's HICLUS program. The results of the cluster analysis revealed hierarchies of mill tailing vs. natural materials, basalt vs. non-basalt, highly reflectant rocks vs. other rocks and exclusively unaltered rocks vs. predominantly altered rocks. The hierarchies were used to determine the order in which sets of multiple discriminant analyses were to be performed and the resulting discriminant functions were used to produce a map of geology and alteration.

RS78-7-226

ID NO.- EI780860788 860788
HUMAN PERCEPTION OF GEOLOGICAL LINEAMENTS AND OTHER DISCRETE FEATURES IN REMOTE SENSING IMAGERY: SIGNAL STRENGTHS, NOISE LEVELS AND QUALITY.
Burns, K. L.; Brown, G. Q.
CSIRO, North Ryde, NSW, Aust
v 7 n 2 Apr 1978 p 163-176 RSEEA7
DESCRIPTORS: *REMOTE SENSING, GEOLOGICAL SURVEYS.
IDENTIFIERS: GEOLOGICAL LINEAMENTS
CARD ALERT: 405, 481, 742
A model of human perception is presented which describes the results of a photointerpeter's annotation of discrete features in an image. In this example, the features are geological lineaments. However, the model carries no assumptions as to connectivity or shape and is, in principle, applicable to discrete features of any type, such as multispectral or textural themes in geology, agriculture, forestry, and hydrology. It is believed to be the first perception model fitted to an observational process in geology and a novel description of the human feature-extraction process in remote sensing. The model ascribes the classification of pixels in a digitized annotation to their being drawn from a mixture of binomial distributions. The two distributions of the model represent the presence or absence of a message at each pixel. 3 refs.

RS78-7-227

ID NO.- EI780859723 859723
ON THE PHOTOGRAPHIC PROCESSING AND DIGITAL TEXTURE FOR REMOTE SENSING OF KUJUKURI COAST OF CHIBA IN JAPAN.
Genda, Hidesaburo; Okayama, Hiroshi; Tshiyama, Takashi; Takeda, Kaname
Chiba Univ, Chiba-shi, Jpn
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 571-578 CODEN: PISEDM
DESCRIPTORS: (*OCEANOGRAPHY, *Remote Sensing), IMAGE PROCESSING, COASTAL ENGINEERING, (PHOTOGRAMMETRY, Interpretation),
IDENTIFIERS: COASTAL ZONES, EQUIDENSITOGRAPHS
CARD ALERT: 471, 723, 716, 742
Remote sensing of various coastal phenomena on the Kujukuri Coast and Kashimanda Coast has been done by use of aircraft for the purpose of investigating the characteristics of shore reefs and floating sand, and the depth of the sea. A multispectral camera and a video ITV camera have been used as sensor. Various data are represented by equidensitographs using texture. The digital graphs are analyzed by a hybrid system. Correlations between the textures represented by equidensitographs, digital graphs and analog display are estimated.

RS78-7-228

ID NO.- EI780968898 868898
CLASSIFICATION CONSISTENCY OF BANDWIDTH COMPRESSED MULTISPECTRAL SCANNED (MSS) IMAGES USING BAYES SUPERVISED CLASSIFIER.
Habibi, A.; Hung, A. Y.
TRW Def & Space Syst Group, Redondo Beach, Calif
SPIE Semin Proc v 119; Appl of Digital Image Process, at the Int Opt Comput Conf, San Diego, Calif, Aug 25-26 1977. Publ by SPIE (IEEE Cat n 77CH1265-8C (vol 2)), Bellingham, Wash, 1977 p 79-84 CODEN: SPIECJ
DESCRIPTORS: (*REMOTE SENSING, *Multispectral Scanners), PATTERN RECOGNITION SYSTEMS, IMAGE PROCESSING,
CARD ALERT: 723, 741
For many pattern classification and pattern recognition applications, the multispectral data is first used to obtain a classified image (map). This image is then used for different image data extraction and classification applications. It is important that a particular bandwidth compression method should not result in significant changes in the resulting classification map. In this work the performance of a hybrid encode (Hadamard/DPCM) in retaining the classification accuracy of the classified image is evaluated. It is shown that using a Bayes supervised classifier the classification accuracy of the bandwidth compressed picture is actually higher than the original picture. 6 refs.

RS78-7-229

ID NO.- EI780858242 858242
BLOB: AN UNSUPERVISED CLUSTERING APPROACH TO SPATIAL PREPROCESSING OF MSS IMAGERY.
Kauth, R. J.; Pentland, A. P.; Thomas, G. S.
Environ Res Inst of Mich, Ann Arbor
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1309-1317 CODEN: PISEDM
DESCRIPTORS: *IMAGE PROCESSING, (REMOTE SENSING, Multispectral Scanners), PATTERN RECOGNITION SYSTEMS,
IDENTIFIERS: AGRICULTURAL INVENTORIES
CARD ALERT: 723, 741
A basic concept of multispectral scanner (MSS) data processing has been developed for use in agricultural inventories; namely, to introduce spatial coordinates of each pixel into the vector description of the pixel and to use this information along with the spectral channel values in a conventional unsupervised clustering of the scene. The result is to isolate spectrally homogeneous field-like patches (called $left double quote$ blobs $right double quote$). The spectral mean vector of a blob can be regarded as a defined feature and used in a conventional pattern recognition procedure. The benefits of use are: ease in locating training units in imagery; data compression of from 10 to 30 depending on the application; reduction of scanner noise and consequently potential improvements in classification/proportion estimation performances.

RS78-7-230

ID NO.- EI780962742 862742
RAPID SCREENIL.G OF AERIAL PHOTOGRAPHY BY OPS ANALYSIS.
Lukes, George E.
US Army Eng Topogr Lab, Fort Belvoir, Va
SPIE Semin Proc v 117; Data Extr and Classif from Film, for Meet. San Diego, Calif, Aug 23-24 1977. Publ by SPIE, Bellingham, Wash, 1977 p 89-97 CODEN: SPIECJ
DESCRIPTORS: *AERIAL PHOTOGRAPHY,
CARD ALERT: 742
Applications of high-speed optical power spectrum analysis (OPSA) utilizing telecentric scanning systems for the automated analysis of aerial photography for several relatively simple problems are described. Cloud screening is discussed as an example where a statistical pattern recognition approach is successfully applied to OPS data. Examples of image analysis based on characterization of image structure and orientational content are presented. Projective sampling concepts, which permit image sampling based on ground coordinates in conjunction with a digital data base, are introduced. Finally, use of projective sampling with OPSA is illustrated by an image-to-image cartographic change detection experiment. 12 refs.

RS78-7-231

ID NO.- EI780862431 862431
PRODUCTION OF A WATER QUALITY MAP OF SAGINAW BAY BY COMPUTER PROCESSING OF LANDSAT-2 DATA.
McKeon, John B.; Rogers, Robert H.; Smith, V. Elliott
Bendix Aerosp Syst Div, Ann Arbor, Mich
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1045-1054 CODEN: PISEDM
DESCRIPTORS: (*WATER RESOURCES, *Remote Sensing), IMAGE PROCESSING, MAPS AND MAPPING,
IDENTIFIERS: WATER QUALITY, LANDSAT DATA
CARD ALERT: 444, 716, 741, 723
Surface truth and LANDSAT measurements collected July 31, 1975 for Saginaw Bay are used to demonstrate a technique for producing a color coded water quality map. On this map, color is used as a code to quantify five discrete ranges in the following water quality parameters: temperature, Secchi depth, chloride, conductivity, total Kjeldahl nitrogen, total phosphorus, chlorophyll a, total solids and suspended solids. The LANDSAT and water quality relationship is established through the use of a set of linear regression equations where the water quality parameters are the dependent variables and LANDSAT measurements are the independent variables.

RS78-7-232

ID NO.- EI780857835 857835
EVALUATION OF ALGORITHMS FOR GEOLOGICAL THERMAL-INERTIA MAPPING.
Miller, S. H.; Watson, Kenneth
US Geol Surv, Denver, Colo
Proc Int Symp Remote Sensing Environ 11th, Univ of Mich, Ann Arbor, Apr 25-29 1977. Publ by Environ Res Inst of Mich, Ann Arbor, 1977 p 1147-1160 CODEN: PISEDM
DESCRIPTORS: (*GEOLOGICAL SURVEYS, *Remote Sensing), (MATHEMATICAL TECHNIQUES, Error Analysis), IMAGING TECHNIQUES.
IDENTIFIERS: THERMAL-INERTIA MAPPING
CARD ALERT: 481, 7 1, 921
The errors incurred in producing a thermal-inertia map are of three general types: measurement, analysis, and model simplification. To emphasize the geophysical relevance of these errors, the paper expresses them in terms of uncertainty in thermal inertia and compares these uncertainties with the thermal-inertia values of geologic materials. Three surface temperature algorithms were evaluated: linear fourier series, finite difference, and Laplace transform. Model simplification errors result from three sources: transient effects, topography, and surface coating effects. The total system errors in thermal inertia are placed in geologic context by noting the separation in thermal-inertia values for various geologic materials. 12 refs.

RS78-7-233

ID NO.- EI780752088 852088
NON-PARAMETRIC CLUSTERING SCHEME FOR LANDSAT.
Narendra, P. M.; Goldberg, M.
Honeywell Inc, Minneapolis, Minn
Pattern Recogn v 9 n 4 1977 p 207-215 CODEN: PTNRA8
DESCRIPTORS: *PATTERN RECOGNITION SYSTEMS, IMAGE PROCESSING.
CARD ALERT: 723
A 4-dimensional histogram is computed to reduce the large LANDSAT pixel data to the much smaller number of distinct vectors and their frequency of occurrence in the scene. Hashing is used to generate the histogram and also subsequent table look-up classification of the individual pixels in the image after the histogram vectors are clustered. The resultant clustering scheme is very efficient and a 512 $multiplied by$ 512 LANDSAT scene can be clustered in less than 2 min of CPU time on a PDP-10 computer. Results of the application of the clustering scheme on representative LANDSAT scenes are included. 6 refs.

RS78-7-234

ID NO.- EI780966988 866988
DATA PREPARATION AND ENTRY FOR COMPUTER-AIDED MAPPING.
Schechter, Bernard
Chicago Aerial Surv, Des Plaines, Ill
Des Autom Conf, 15th, Proc, Las Vegas, Nev, Jun 19-21 1978 Publ by IEEE (Cat n 78CH1363-1C), New York, NY, 1978. Also available from IEEE Comput Soc, Long Beach, Calif and ACM, New York, NY p 48-52
DESCRIPTORS: (*MAPS AND MAPPING, *Computer Applications), COMPUTER GRAPHICS,
CARD ALERT: 405, 723
The rapid growth in use of interactive graphic systems for geo-coded data bases has expanded interest about the computer-aided mapping processes by many groups involved in automation. Surveying and mapping were early users of computer technology and the current systems and practices are evolving through changes to modern classical analog mapping. The various phases of the process, from aerial photography acquisition through computer-driven hard copy output plots are reviewed as a basis for understanding and appreciating the problems associated with data preparation and entry. 5 refs.

RS78-7-235

ID NO.- EI780750283 850283
MAPPING EARTH CONDUCTIVITIES USING A MULTIFREQUENCY AIRBORNE ELECTROMAGNETIC SYSTEM.
Siegel, H. O.; Pitcher, D. H.
Scintrex Ltd. Concord, Ont
Geophysics v 43 n 3 Apr 1978 p 563-575 CODEN: GPYSA7
DESCRIPTORS: (*GEOPHYSICS, *Electromagnetic), (ELECTRIC MEASUREMENTS, Conductivity), DATA PROCESSING.

CARD ALERT: 481, 9 2, 723

The Tridem vertical coplanar airborne electromagnetic system provides simultaneous in-phase and quadrature information at frequencies of 500, 2000 and 8000 Hz. The system can map a broad range of earth conductors of simple geometry and provide quantitative estimates of their conductivities and dimensions. Computer programs have been developed to automatically interpret the six channels of Tridem data, plus the output of an accurate radar altimeter, to determine the depth of burial, conductivity and thickness of a near-surfce, flat-lying conducting horizon. In limiting cases, the interpretation provides the conductance (conductivity-thickness product) of a thin sheet (ranging from 100 mmhos to 100 mhos) or the conductivity of a homogeneous earth (ranging from 1 mmho/m to 10 mhos/m). Two actual field examples are presented from Ontario, Canada; one relating to the mapping of overburden conditions (sand, clay and rock, etc) and the other to the mapping of the distribution of a buried lignite deposit.

RS78-7-236

ID NO.- EI780859020 859020
SPACE OBLIQUE MERCATOR PROJECTION.
Snyder, John P.
Photogramm Eng Remote Sensing v 44 n 5 May 1978 p 585-596 CODEN: PERSDV
DESCRIPTORS: *MAPS AND MAPPING, REMOTE SENSING,
IDENTIFIERS: SPACE OBLIQUE MERCATOR PROJECTION
CARD ALERT: 405, 7 2

The Space Oblique Mercator projection, a concept that was originated by A. P. Colvocoresses in 1974, has been mathematically implemented as the first map projection to provide continuous mapping of satellite imagery true to scale along the groundtrack, and within a few millionths of accurate conformal projection. Specifically designed for Landsat (formerly ERTS) imagery, it is also suitable for other satellites with broader scans. Formulas are given for both sphere and ellipsoid. A unique feature is the need for a curved groundtrack and skewed scan lines on the SOM projection, although they would be straight and parallel, respectively, on a normal oblique cylindrical projection. 5 refs.

RS78-7-237

ID NO.- EI780858265 858265
COLOR ANALYSIS BY COLOR INFORMATION PROCESSING SYSTEM (CIPS-I).
Tajima, Joji; Arakawa, Takeshi; Ido, Keiko
Nippon Electric Co, Ltd, Tokyo, Jpn
NEC Res Dev n 47 Oct 1977 p 13-19 CODEN: NECRAU
DESCRIPTORS: (*IMAGE PROCESSING, *Computer Applications), COLOR.
IDENTIFIERS: COLOR INFORMATION PROCESSING SYSTEM
CARD ALERT: 723, 741
In recent years, image processing and pattern recognition by computers have been extensively developed. The difficulty in feature extraction, using monochromatic image data only, has resulted in system development which utilizes color information in images. This paper describes a Color Information Processing System which analyzes either true color images or false color images through computer programs. The hardware of this system includes a TV camera, supplemented with a color filter disk, and a multifunction color TV display, which has some color analyzing capabilities. Color analyzing processes are described. Color image data are analyzed by raw tristimulus values or lightness and chromaticity values. The result can be displayed on the color TV display. Because simple analyzing processes are speedily executed through functions of the color TV display, interactive color analysis is realized using this display and a data tablet. Such an interactive capability is a great advantage of the system. The system also was successfully applied to color analysis of aerial color photographs, surfaces of oranges and LANDSAT satellite images. 5 refs.

RS78-7-238

Determination of Scattering Functions and Their Effects on Remote Sensing of Turbidity in Natural Waters

Mitre Corp., McLean, Va. METREK Div.
AUTHOR: Ghovanlou, A. H.; Gupta, J. N.; Henderson, R. G.
E0923D3 Fld: 17H, 8J, 13B, 47C, 68D, 63F STAR1606
Jul 77 148p
Rept No: NASA-CR-145239
Contract: F19628-77-C-0001
Monitor: 18
Subm-Sponsored by NASA.

Abstract: The development of quantitative analytical procedures for relating scattered signals, measured by a remote sensor, was considered. The applications of a Monte Carlo simulation model for radiative transfer in turbid water are discussed. The model is designed to calculate the characteristics of the backscattered signal from an illuminated body of water as a function of the turbidity level, and the spectral properties of the suspended particulates. The optical properties of the environmental waters, necessary for model applications, were derived from available experimental data and/or calculated from Mie formalism. Results of applications of the model are presented.

Descriptors: *Backscattering, *Remote sensors, *Turbidity, *Water quality, Computer programs, Monte Carlo method, Optical properties, Radiative transfer

Identifiers: Remote sensing, Mathematical models, Computerized simulation, Optical detection, Optical measurement, Water pollution detection, Quantitative analysis, NTISNASA

N78-15551/2ST NTIS Prices: PC A07/MF A01

RS78-7-239

Pilot Study of the Potential Contributions of LANDSAT Data in the Construction of Area Sampling Frames

Statistical Reporting Service (USDA), Washington, D.C.*National Aeronautics and Space Administration, Washington, D.C.
AUTHOR: Hanuschak, George A.; Morrissey, Kathleen M.
E0583G4 Fld: 93B d7807
Oct 77 70p
Monitor: NASA-CR-155262
Original contains color imagery. Original photography may be purchased from the EROS Data Center, Sioux Falls, S.D.

Abstract: No abstract available.

Sampling, Agriculture, Information systems, Land use, Earth Resources program, Photointerpretation, Digital systems, Computer techniques

Identifiers: NTISNASA

E78-10037 NTIS Prices: PC A04/MF A01

RS78-7-240

Instrumentation and Data Processing Used in Earth Resources Technology Satellites (ERTS). Volume 1. 1973-1975 (A Bibliography with Abstracts)

National Technical Information Service, Springfield, Va. (391 812)

Rept. for 1973-75
AUTHOR: Hundemann, Audrey S.
E0593G4 Fld: 14B, 22B, 8F, 9B, 48C*, 62, 86W GRAI7807
Feb 78 157p*
Monitor: 18

Abstract: Abstracts are cited dealing with new or improved remote sensing techniques. Topic areas cover pattern recognition, spectrum analysis, image enhancement, photointerpretation, multispectral photography, and mapping. (This updated bibliography contains 152 abstracts, none of which are new entries to the previous edition.)

Descriptors: *Bibliographies, *Remote sensing, Spacecraft instruments, Data processing, Pattern recognition, Spectrum analysis, Image intensifiers, Photointerpretation, Spaceborne photography, Mapping, Digital techniques, Unmanned spacecraft

Identifiers: ERTS satellites, LANDSAT satellites, NTISNTIS

NTIS/PS-78/0069/1ST NTIS Prices: PC N01/MF N01

RS78-7-241

Instrumentation and Data Processing Used in Earth Resources Technology Satellites (ERTS). Volume 2. 1976-1977 (A Bibliography with Abstracts)

National Technical Information Service, Springfield, Va. (391 812)

Rept. for 1976-77
AUTHOR: Hundemann, Audrey S.
E0593H1 Fld: 14B, 22B, 8F, 9B, 48C*, 62, 86W GRAI7807
Feb 78 152p*
Monitor: 18
Supersedes NTIS/PS-77/0081, NTIS/PS-76/0055 and NTIS/PS-75/10-5. See also Volume 1, 1973-75, NTIS/PS-78/0069.

Abstract: Abstracts are cited dealing with new or improved remote sensing techniques. Topic areas cover pattern recognition, spectrum analysis, image enhancement, photointerpretation, multispectral photography, and mapping. (This updated bibliography contains 147 abstracts, 67 of which are new entries to the previous edition.)

Descriptors: *Bibliographies, *Remote sensing, Spacecraft instruments, Data processing, Pattern recognition, Spectrum analysis, Image intensifiers, Photointerpretation, Spaceborne photography, Mapping, Digital techniques, Unmanned spacecraft

Identifiers: ERTS satellites, LANDSAT satellites, NTISNTIS

NTIS/PS-78/0070/9ST NTIS Prices: PC N01/MF N01

RS78-7-242

Signature Extension Preprocessing for LANDSAT MSS Data

Environmental Research Inst. of Michigan, Ann Arbor. Infrared and Optics Div.*NASA Earth Resources Survey Program. Washington, D.C.

Final rept. 15 May 76-14 Nov 77
AUTHOR: Malepka, Richard F.; Lambeck, Peter F.
E0491A1 Fld: 93B d7806
Nov 77 71p
Rept No: ERIM-122700-32-F
Contract: NAS9-14988
Monitor: NASA-CR-151 63

Abstract: No abstract available.

Spectral signatures, Multispectral band scanners, Ground truth, Agriculture, Skylab program, EREP, Algorithms, Radiative transfer

Identifiers: NTISNASA

E78-10040 NTIS Prices: PC A04/MF A01

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January 1979 - September 1979	ISURSL Short Courses Applications of Remote Sensing Data Terre Haute, IN	Dr. Paul Mausel or Dr. Samuel Goward Indiana State Univ. Remote Sensing Lab Geog. & Geol. Depts. Terre Haute, IN 47809
January 24-26, 1979	Satellite Systems Performance in the Space Environment	Continuing Engineering Education Program George Washington Univ. Washington, D.C. 20062 (202) 676-6106
February 5-9, 1979	Digital Satellite Systems and Technology	Continuing Engineering Education Program George Washington Univ. Washington, D.C. 20052 (202) 676-6106
March 5-9, 1979	Introduction to Renewable Resource Inventory Methods (Sponsored by UC and EROS Data Center)	Univ. of California at Berkeley Div. of Letters and Sciences Berkeley, CA 94720 (415) 642-1061
March 18-23, 1979	ASP/ACSM Annual Convention "The Change and the Challenge"	Rosalie Breckenridge Chairperson Registration Committee 2047 Golf Course Drive Reston, VA 22091
May 21-24, 1979	Symposium on Measurement, Mapping and Management in the Coastal Zone	LCDR John E. Chubb, USN DMA Hydrographic/ Topographic Center Attn: PPII Washington, D.C. 20315 (202) 227-2064
June 27-29, 1979	Fifth Purdue Symposium on Machine Processing of Remotely Sensed Data	Laboratory for Applications of Remote Sensing (LARS), Purdue Univ. 1220 Potter Drive W. Lafayette, IN 47906 (317) 749-2052