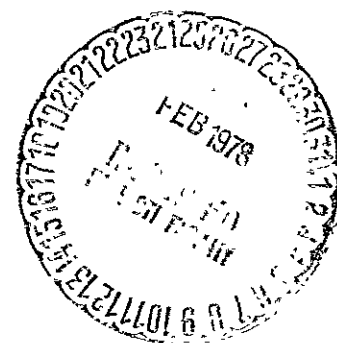
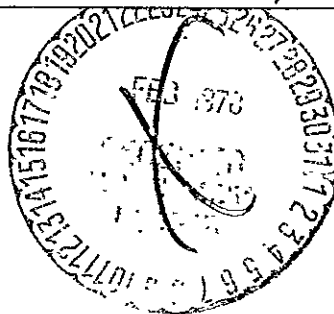


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# THE NIMBUS 6 DATA CATALOG VOLUME 7

1 JULY 1976 THROUGH 31 AUGUST 1976  
DATA ORBITS 5156 THROUGH 5985

|  |           |
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| (NASA-CR-155898) THE NIMBUS 6 DATA CATALOG.  | N78-17128 |
| VOLUME 7: 1 JULY - 31 AUGUST 1976. DATA      |           |
| ORBITS 5156 - 5985 (Management and Technical |           |
| Services Co.) 349 p HC A15/MF A01 CACL 22A   | Unclas    |
|  | 05033     |
|  | G3/15     |




GODDARD SPACE FLIGHT CENTER  
GREENBELT, MARYLAND

## FOREWORD

This is the seventh volume of a series of catalogs to be published by the National Aeronautics and Space Administration to document data acquired from the Nimbus 6 meteorological satellite. This volume covers the period from 1 July 1976 through 31 August 1976. Subsequent catalogs will contain documentation for succeeding periods throughout the useful lifetime of Nimbus 6.

Background information concerning the Nimbus 6 meteorological satellite system and a description of the experiments and data formats has been published separately in The Nimbus 6 User's Guide. Post-launch User's Guide information changes and corrections are included in the data catalogs. The Nimbus 6 catalogs present the type of data available, anomalies in the data, if any, and geographic location and time of the data.

The assembly and editing of this catalog was accomplished by the Management and Technical Services Company (MATSCO), Beltsville, Maryland, under contract number NAS5-23740 with the Goddard Space Flight Center, NASA, Greenbelt, Maryland.



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Landsat/Nimbus Project  
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## SECTION 1

### SUMMARY OF OPERATIONS

#### 1.1 Introduction

Nimbus 6 was successfully launched from the Western Test Range, Vandenberg Air Force Base, California at 08 hr. 12 min. 00 sec. GMT on 12 June 1975. The Orbit was nearly circular at  $1093 \times 1105$  km. Satellite operations from launch through 14 July (orbit 425) consisted of engineering evaluation of all spacecraft systems. As a result of that effort, data reception, accountability and processing were intermittent during that period. Therefore, Volume 1 in this catalog series mainly reflects documentation from orbit 426 (14 July) through orbit 1082 (31 August). During orbit 4905 (12 June), Nimbus 6 successfully completed one year of operations. Table 1-1 is a summary of the documentation for each Nimbus 6 Data Catalog volume.

Because the spacecraft power is limited, all experiments are not on the same time. During this catalog period the THIR, ESMR, ERB, PMR and TWERLE were recorded for almost all orbits. Normally, the procedure has been to have the ERB and ESMR split their time; however, a new schedule has been implemented and both sensors are operating simultaneously. ESMR data quality from both Horizontal and Vertical channels is good. These data are being used in the analysis of hurricanes and tropical storms. The SCAMS instrument functioned through orbit 4751 (31 May); after the above mentioned orbit, the SCAMS instrument ceased to function due to a scan mechanism anomaly (see Section 5.3) this catalog. The HIRS instrument failed during orbit 4697 (27 May) when a filter chopper motor anomaly occurred. As a precautionary measure, the HIRS subsystem was turned off. The T&DRE was not operational during this catalog period. Due to the depletion of methane in the cryogenic cooler, the last useable data from the LRIR experiment was received during orbit 2801 (7 January). The on-off cycle for each experiment is shown in Table 2-2 in Section 2 of this catalog.

Table 1-1  
Nimbus 6 Catalog Documentation Summary

| Volume | Dates                 | Orbits    |
|--------|-----------------------|-----------|
| 1      | 12 June 75-31 Aug. 75 | 1-1082    |
| 2      | 1 Sept. 75-31 Oct. 75 | 1083-1900 |
| 3      | 1 Nov. 75-31 Dec. 75  | 1901-2717 |
| 4      | 1 Jan. 76-29 Feb. 76  | 2718-3521 |
| 5      | 1 Mar. 76-30 Apr. 76  | 3522-4338 |
| 6      | 1 May 76-30 Jun. 76   | 4339-5155 |
| 7      | 1 July 76-31 Aug. 76  | 5156-5985 |

Because of an anomaly in the functioning of the High Data Range Storage subsystem (HDRSS) B, first noted during orbit 33 (14 June), HDRSS B has been limited to 65 minutes of record capability (out of a possible 120 minutes). With only HDRSS B available for full-time use, there are occasional periods when global experiment coverage is not obtained. (These occur when the Orroral, Australia STDN station is not available for playback of recorded experiment data.) The areas not covered are usually over the western part of the Pacific Ocean and/or the eastern part of the Atlantic Ocean. During orbit 4641 the HDRSS A recorder failed to record. Prior to the above date, HDRSS A was successfully used operationally 120 minutes every other orbit with HDRSS B providing 65 minutes of alternate coverage. Complete failure of HDRSS A occurred during orbit 4713 and despite many attempts to engage the system in a record mode, it has not recorded since orbit 4713 (28 May). The areas most affected by the lack of HDRSS A experiment coverage are the latitudes north of the Equator during the nighttime orbital passes. The daytime coverage remains virtually unchanged with the exception as noted in the above paragraph.

The pitch of the Nimbus 6 satellite has been made to alternate between +2.0 degrees, +0.6 degrees, and 0.0 degrees since launch. Table 1-2 lists the orbits when each pitch position was used.

A positive pitch angle of 0.6 degrees moves the nadir-looking position 11.5 kilometers ahead of the subsatellite point. A positive pitch angle of 2.0 degrees moves the nadir-looking position 38.3 kilometers ahead of the subsatellite point.

At these pitch angles, a scanner-type instrument no longer scans the earth along a great circle arc through the subpoint, but scans along the small circle formed by the intersection of the scan plane with the earth. Since the plane of the small circle is tilted with respect to the nominal scan plane, points on the arc are displaced farther from the great circle as the scan angle increases. As noted above, a pitch angle of 0.6 degrees causes a displacement of 11.5 kilometers at nadir, but when the scanner turns 45 degrees away from nadir the displacement increases slightly to 12.8 kilometers. Similarly, for a 2.0 degree pitch the displacement is 38.3 kilometers at nadir and increases to 42.6 kilometers at a 45 degree scan angle. Thus, although the instrument records in lines normal to the orbit plane (in the absence of yaw) the perpendicular displacement from the perfect-attitude scan line is not uniform across the scan line.

Subsections 1.2 through 1.10 of this catalog summarize the operational highlights of the individual experiments, present preliminary experiment results, and call attention to known data anomalies. Section 2 lists the on-off times for each experiment and provides a method for determining the geographical coverage of each experiment. Section 3 shows selected ESMR images, and Section 4 presents THIR montages. Section 5 presents corrections to The Nimbus 6 User's Guide.

The user is referred to The Nimbus 6 User's Guide for a complete description of each experiment and to Section 1.7 of that Guide for the requesting procedure and sources for all data. Sections 2, 3, and 4 of this Data Catalog should help users select data to meet their needs.

Table 1-2  
Pitch Positions for Nimbus 6  
01 July thru 01 September 1976 (Orbits 5156-5990)

| Pitch Change   |                   |               | Pitch Bias |       |
|----------------|-------------------|---------------|------------|-------|
| Date<br>(1976) | Orbit and<br>STDN | Time<br>(GMT) | +0.6°      | +0.0° |
| 1 July         | 5163A             | 1405          |            | X     |
| 1 July         | 5169W             | 0051          | X          |       |
| 2 July         | 5176A             | 1323          |            | X     |
| 3 July         | 5182A             | 0000          | X          |       |
| 3 July         | 5190A             | 1428          |            | X     |
| 3 July         | 5194A             | 2129          | X          |       |
| 4 July         | 5201A             | 1018          |            | X     |
| 4 July         | 5207A             | 2048          | X          |       |
| 5 July         | 5216A             | 1306          |            | X     |
| 5 July         | 5221A             | 2152          | X          |       |
| 6 July         | 5229A             | 1228          |            | X     |
| 6 July         | 5234A             | 2110          | X          |       |
| 7 July         | 5244A             | 1000          |            | X     |
| 7 July         | 5247A             | 2030          | X          |       |
| 8 July         | 5255A             | 1104          |            | X     |
| 8 July         | 5261A             | 2138          | X          |       |
| 9 July         | 5269A             | 1208          |            | X     |
| 9 July         | 5274A             | 2052          | X          |       |
| 10 July        | 5282A             | 1125          |            | X     |
| 10 July        | 5288A             | 2157          | X          |       |
| 11 July        | 5297A             | 1410          |            | X     |
| 11 July        | 5302A             | 2303          | X          |       |
| 12 July        | 5308A             | 1003          |            | X     |
| 12 July        | 5314A             | 2035          | X          |       |
| 13 July        | 5322A             | 1107          |            | X     |
| 13 July        | 5328A             | 2138          | X          |       |
| 14 July        | 5336A             | 1213          |            | X     |
| 14 July        | 5342A             | 2240          | X          |       |
| 15 July        | 5350A             | 1318          |            | X     |
| 15 July        | 5355A             | 2203          | X          |       |
| 16 July        | 5362A             | 1049          |            | X     |
| 16 July        | 5368A             | 2121          | X          |       |
| 17 July        | 5375A             | 1011          |            | X     |
| 17 July        | 5382A             | 2225          | X          |       |
| 18 July        | 5389A             | 1108          |            | X     |
| 18 July        | 5395A             | 2144          | X          |       |
| 19 July        | 5403A             | 1219          |            | X     |
| 20 July        | 5410O             | 0148          | X          |       |
| 20 July        | 5412R             | 0435          |            | X     |



Table 1-2 (Continued)

| Pitch Change   |                   |               | Pitch Bias |       |
|----------------|-------------------|---------------|------------|-------|
| Date<br>(1976) | Orbit and<br>STDN | Time<br>(GMT) | +0.6°      | +0.0° |
| 20 July        | 5416A             | 1135          | X          |       |
| 20 July        | 5422A             | 2210          |            | X     |
| 20 July        | 5422A             | 2211          | X          |       |
| 21 July        | 5428A             | 0927          |            | X     |
| 21 July        | 5430A             | 1241          | X          |       |
| 21 July        | 5430A             | 1241          |            | X     |
| 21 July        | 5435A             | 2127          | X          |       |
| 22 July        | 5443A             | 1158          |            | X     |
| 22 July        | 5449A             | 2231          | X          |       |
| 23 July        | 5456A             | 1117          |            | X     |
| 23 July        | 5462A             | 2147          | X          |       |
| 24 July        | 5470A             | 1220          |            | X     |
| 24 July        | 5476A             | 2254          | X          |       |
| 25 July        | 5484A             | 1326          |            | X     |
| 25 July        | 5490A             | 2359          | X          |       |
| 26 July        | 5496A             | 1056          |            | X     |
| 26 July        | 5502A             | 2127          | X          |       |
| 27 July        | 5511A             | 1346          |            | X     |
| 28 July        | 5517O             | 0134          | X          |       |
| 28 July        | 5527A             | 1820          |            | X     |
| 29 July        | 5536A             | 1039          | X          |       |
| 30 July        | 5546R             | 0447          |            | X     |
| 30 July        | 5554A             | 1843          | X          |       |
| 31 July        | 5564A             | 1247          |            | X     |
| 31 July        | 5570O             | 2335          | X          |       |
| 1 August       | 5577A             | 1205          |            | X     |
| 1 August       | 5583W             | 2253          | X          |       |
| 2 August       | 5591A             | 1310          |            | X     |
| 2 August       | 5597A             | 2340          | X          |       |
| 3 August       | 5603A             | 1043          |            | X     |
| 3 August       | 5608A             | 1959          | X          |       |
| 4 August       | 5615A             | 0814          |            | X     |
| 4 August       | 5621A             | 1846          | X          |       |
| 5 August       | 5629A             | 0920          |            | X     |
| 5 August       | 5635A             | 1953          | X          |       |
| 6 August       | 5642A             | 0840          |            | X     |
| 6 August       | 5648A             | 1909          | X          |       |
| 7 August       | 5653R             | 0430          |            | X     |
| 7 August       | 5661A             | 1842          | X          |       |
| 8 August       | 5667R             | 0537          |            | X     |
| 8 August       | 5671A             | 1234          | X          |       |

Table 1-2 (Continued)

| Pitch Change   |                   |               | Pitch Bias |       |
|----------------|-------------------|---------------|------------|-------|
| Date<br>(1976) | Orbit and<br>STDN | Time<br>(GMT) | +0.6°      | +0.0° |
| 9 August       | 5678O             | 0210          |            | X     |
| 9 August       | 5686A             | 1525          | X          |       |
| 10 August      | 5696A             | 0919          |            | X     |
| 10 August      | 5703A             | 2141          | X          |       |
| 11 August      | 5703A             | 2141          |            | X     |
| 12 August      | 5718W             | 0554          | X          |       |
| 12 August      | 5725A             | 1321          |            | X     |
| 12 August      | 5729A             | 2024          | X          |       |
| 13 August      | 5737A             | 1054          |            | X     |
| 13 August      | 5743A             | 2125          | X          |       |
| 14 August      | 5751A             | 1157          |            | X     |
| 14 August      | 5753A             | 1525          | X          |       |
| 14 August      | 5753A             | 1526          |            | X     |
| 14 August      | 5756A             | 2043          | X          |       |
| 15 August      | 5763A             | 0930          |            | X     |
| 15 August      | 5769A             | 1958          | X          |       |
| 16 August      | 5777A             | 1034          |            | X     |
| 16 August      | 5783A             | 2105          | X          |       |
| 17 August      | 5790A             | 0953          |            | X     |
| 17 August      | 5798O             | 0110          | X          |       |
| 18 August      | 5807A             | 1614          |            | X     |
| 18 August      | 5810A             | 2127          | X          |       |
| 19 August      | 5816A             | 0829          |            | X     |
| 19 August      | 5823A             | 2047          | X          |       |
| 20 August      | 5831A             | 1121          |            | X     |
| 20 August      | 5837A             | 2152          | X          |       |
| 21 August      | 5845A             | 1227          |            | X     |
| 21 August      | 5851A             | 2259          | X          |       |
| 22 August      | 5857A             | 0956          |            | X     |
| 22 August      | 5863A             | 2027          | X          |       |
| 23 August      | 5870A             | 0913          |            | X     |
| 23 August      | 5876A             | 1946          | X          |       |
| 24 August      | 5883A             | 0835          |            | X     |
| 24 August      | 5890A             | 2051          | X          |       |
| 25 August      | 5898A             | 1123          |            | X     |
| 25 August      | 5905A             | 2344          | X          |       |
| 26 August      | 5913A             | 1413          |            | X     |
| 26 August      | 5918A             | 2259          | X          |       |
| 27 August      | 5924A             | 1001          |            | X     |
| 27 August      | 5930A             | 2035          | X          |       |

Table 1-2 (Continued)

| Pitch Change   |                   |               | Pitch Bias |       |
|----------------|-------------------|---------------|------------|-------|
| Date<br>(1976) | Orbit and<br>STDN | Time<br>(GMT) | +0.6°      | +0.0° |
| 28 August      | 5950A             | 0837          |            | X     |
| 29 August      | 5958A             | 2242          | X          |       |
| 30 August      | 5965O             | 1201          |            | X     |
| 30 August      | 5972A             | 2348          | X          |       |
| 31 August      | 5978A             | 1046          |            | X     |
| 31 August      | 5984A             | 2119          | X          |       |
| 1 Sept.        | 5990A             | 0816          |            | X     |

A = Fairbanks, Alaska

R = Rosman, North Carolina

O = Orroral, Australia

W = Winkfield, England

E = Goddard Space Flight Center, Maryland

## 1.2 The Temperature Humidity Infrared Radiometer (THIR) Subsystem

The quality of the THIR data from both channels (11.5  $\mu\text{m}$  and 6.7  $\mu\text{m}$ ) and telemetry have been good since launch. Daily world montages of the THIR are presented in Section 4 of this catalog. All processed THIR film is archived and available through the National Space Science Data Center, as is all available THIR digital data. The THIR digital products are processed to final format only on request. Users should refer to Section 4 of this catalog, and to Sections 1.7 and 2.4 of The Nimbus 6 User's Guide for a discussion of the formats and procedure to order these products.

## 1.3 The High Resolution Infrared Radiation Sounder (HIRS) Experiment

During this reporting period, the HIRS instrumentation system did not operate. The last operational data was obtained during orbit 4697 (27 May) when a subsystem anomaly (Filter Chopper motor failed) occurred; causing the subsystem to be turned off as a precautionary move. Subsequent operations after orbit 4697 are to be construed as evaluations of the subsystem anomaly. Valid operational data is not available after the above date (27 May 1976).

## 1.4 The Scanning Microwave Spectrometer (SCAMS) Experiment

The instrument ceased functioning during orbit 4751 (31 May) due to jamming of the scan mechanism. Scan problems as discussed in Volume 5 first developed during orbit 3862 (26 March), when the drive belt for channel 2 (31.65 Ghz) antenna started slipping. The loss of data from channel 2 prevented retrieval of atmospheric water vapor and liquid water during said catalog period; the inversion matrices for atmospheric

temperature were redefined to exclude channel 2, and temperature retrievals were continued until 31 May. (Since this last date, various improvements have been made with respect to data retrieval, calibration of oxygen band channel and inversion of H<sub>2</sub>O channels. For a current summary of events as relates to SCAMS, see Section 5.3.)

#### 1.5 The Electrically Scanning Microwave Radiometer (ESMR) Experiment

The ESMR performance continued to be satisfactory during this catalog period. As stated in Volume 6, the ESMR continues to operate on a full-time basis and will continue this schedule through the hurricane season. The Gunn oscillator and hot reference temperature continued to run at a higher than expected temperature with no adverse results on the data. Selected ESMR images for this catalog period appear in Section 3.

#### 1.6 The Earth Radiation Budget (ERB) Experiment

The Solar and wide-angle Earth-Flux channels continued to operate in the non-scanning mode. The data quality is good and the ERB sensor is operating full-time as power permits. The scanning channels operate only in the nadir position because of mechanical scan problems.

#### 1.7 The Limb Radiance Inversion Radiometer (LRIR) Experiment

The last useable data from the LRIR was received during orbit 2801 (7 January). By this orbit the methane used to cool the detector was depleted and the telemetry indicating the detector temperature was saturated at 73.6°K. The ammonia temperature was constant until orbit 2787 (6 January) when it began to increase and then became erratic-varying from 145.6°K to 150.0°K. An orbit 2802 (7 January) the temperature of 145.6°K began increasing and by orbit 2806 it was at 165.7°K, when the LRIR was turned off. Since the above date, the experiment has been turned on during several occasions to record the ammonia temperature. The last reading, orbit 5014 (20 June) indicated that the cryogen shield temperature reached telemetry saturation at 263°K. With all of the coolants (Methane-ammonia) depleted and useable experiment data non-existent; the LRIR is expected to be in a permanent non-operational mode even though the instrument and telemetry are completely functional.

#### 1.8 The Pressure Modulator Radiometer (PMR) Experiment

The PMR performance was satisfactory during this reporting period. The instrument was on continuously. Data quality was good.

From orbit 1727 (19 October) through orbit 5526 (28 July), channel 1 operated in the nadir-looking mode. This was necessary because in the scan mode this channel appears to operate between ±10° from nadir rather than ±15° from nadir. During orbit 5526,

channel 1 was enabled for 5 minutes and then 60 minutes during orbit 5594 (2 August). Since orbit 5633 (5 August) channel 1 scan operations have been satisfactory. Data quality from both channels are satisfactory. All acquired data was routinely transmitted from GSFC to the experimenter at Oxford, England.

### 1.9 The Tropical Wind Energy Conversion and Reference Level Experiment (TWERLE)

The TWERLE continued to operate very well during this catalog period. Determination, location accuracy of system reference platforms was temporarily affected during the orbital period 4600 through 4780. This effect was due to the negative drag factor caused by the outgassing of the LRIR cryogen (NH<sub>3</sub>). During this time-frame proper corrections and the constant updating of the ephemeris time slip held location errors to well within system specifications of 1.5 kilometers of their true position.

As of 12 June 1976, (Nimbus 6 one year anniversary) over 700 platforms had been activated. Table 1-3 shows distribution of these platforms. The full address of each experimenter is given in Table 9-2 in the Nimbus 6 User's Guide. (Corrected addresses for many of these experimenters, and addresses for several new experimenters, are given in Section 5.8 of this catalog.) Anyone interested in results from a particular experiment should write to the principal investigator for that experiment.

### 1.10 The Tracking and Data Relay Experiment (T&DRE)

The T&DRE performance was satisfactory during this catalog period. The orbits when the T&DRE was operated are listed in Table 2-2 in Section 2. Significant accomplishments of T&DRE are discussed in Data Catalog Volume 1, Section 1.10.

Table 1-3  
TWERLE Platform Activity as of 12 June 1976

| Principal Investigator                                | Platform         |        |          |       |
|---|------------------|--------|----------|-------|
|   | Type             | Active | Inactive | Total |
| Dr. Paul R. Julian<br>Boulder, Colorado               | Balloons         | 81     | 275      | 356   |
| Professor Norbert Untersteiner<br>Seattle, Washington | Ice<br>Buoy      | 26     | 6        | 32    |
| Dr. Hanson<br>Miami, Florida                          | Drifting<br>Buoy | 12     | 33       | 45    |
| Mr. Vincent Lally<br>Boulder, Colorado                | Balloons         | 0      | 21       | 21    |

Table 1-3 (continued)

| Principal Investigator                           | Platform          |        |          |       |
|--|-------------------|--------|----------|-------|
|  | Type              | Active | Inactive | Total |
| Dr. P. Richardson<br>Woods Hole, Massachusetts   | Drifting<br>Buoys | 0      | 1        | 1     |
| Arnold Gordon<br>Palisades, New York             | Drifting<br>Buoys | 4      | 20       | 24    |
| Tim P. Barnett<br>La Jolla, California           | Drifting<br>Buoys | 3      | 13       | 16    |
| Mr. Robert Kee<br>Washington, D. C.              | Drifting<br>Buoys | 0      | 2        | 2     |
| Mr. R. E. Vockeroth<br>Ontario, Canada           | Buoys             | 2      | 0        | 2     |
| Mr. Jack Lentfer<br>Anchorage, Alaska            | Polar<br>Bears    | 1      | 1        | 2     |
| Mr. B. M. Buck<br>Santa Barbara, California      | Drifting<br>Buoys | 3      | 2        | 5     |
| Mr. Fernando DeMendonca<br>Sao Paulo, Brazil     | Buoys             | 0      | 2        | 2     |
| Mr. George Cresswell<br>Cronulla, Australia      | Drifting<br>Buoys | 9      | 5        | 14    |
| Dr. A. Dyer<br>Mordialloc, Australia             | Drifting<br>Buoys | 0      | 3        | 3     |
| Professor Lacombe<br>Paris, France               | Drifting<br>Buoys | 1      | 4        | 5     |
| Mr. C. K. Jenson/J. Nordo<br>Oslo, Norway        | Buoys             | 2      | 0        | 2     |
| Mr. T. Haegh/T. Vinje<br>Oslo, Norway            | Ice<br>Buoys      | 5      | 5        | 10    |
| Mr. Frank Anderson<br>Congella, South Africa     | Drifting<br>Buoys | 5      | 5        | 10    |
| Professor H. Stommel<br>Cambridge, Massachusetts | Drifting<br>Buoys | 0      | 6        | 6     |
| Dr. A. D. Kirwan, Jr.<br>College Station, Texas  | Drifting<br>Buoys | 0      | 12       | 12    |

Table 1-3 (continued)

| Principal Investigator                         | Platform            |        |          |       |
|--|---------------------|--------|----------|-------|
|  | Type                | Active | Inactive | Total |
| Mr. H. N. Brann<br>Melbourne, Australia        | Drifting<br>Buoys   | 1      | 5        | 6     |
| Professor Morel<br>Paris, France               | Balloons<br>& Buoys | 0      | 47       | 47    |
| Dr. John Garrett<br>Victoria, B. C. Canada     | Drifting<br>Buoys   | 2      | 33       | 35    |
| Professor Tchernia<br>Paris, France            | Drifting<br>Buoys   | 3      | 2        | 5     |
| Mr. R. R. Dickson<br>Lowestoft, Suffolk, U. K. | Drifting<br>Buoys   | 1      | 5        | 6     |
| Dr. Michael Hall<br>Bay St. Louis, Mississippi | Buoys               | 9      | 10       | 19    |
| Mr. David Thomas, Jr.<br>Hampton, Virginia     | Buoys               | 0      | 6        | 6     |
| Dr. J. Williamson<br>La Jolla, California      | Balloons            | 0      | 1        | 1     |
| Mr. J. C. O'Rourke<br>Calgary, Canada          | Buoys               | 2      | 0        | 2     |
| Mr. Robert Oehlkers<br>Madison, Wisconsin      | Buoys               | 2      | 8        | 10    |
| Capt. E. A. Delaney<br>Washington, D. C.       | Buoys               | 1      | 0        | 1     |
| Dr. R. H. Goodman<br>Alberta, Canada           | Buoys               | 1      | 1        | 2     |
| Dr. D. Halpern<br>Seattle, Washington          | Buoys               | 2      | 1        | 3     |
| TOTALS   |                     | 178    | 535      | 713   |

## SECTION 2

### THE ORBITAL ELEMENTS AND DATA AVAILABILITY ON-OFF TIMES

This section presents the Nimbus orbital elements for selected epochs, tabulates the time when each of the experiments was recording data, and gives procedures for determining the time and orbit when the satellite is over a given geographical area (and thus determining the location of coverage for each experiment).

The Nimbus 6 Brouwer Mean orbital elements for selected epochs during July and August 1976 are listed in Table 2-1

Since 26 May, the orbital period appears to have stabilized and has remained almost constant at 107.418 minutes. Thus with the depletion of the solid methane and ammonia from the LRIR now complete; the predicted (Vol. 4, Sec. 2) stabilization of the orbital period by mid-1976 has been confirmed. When these elements are used more than seven days from epoch, however, location errors of greater than 60 km (about ten seconds of time), can be expected. If more accurate ephemeris are needed for a specific time period, write to the Nimbus Project, Code 430, Goddard Space Flight Center, Greenbelt, Maryland 20771.

The data availability on-off times, listed in Table 2-2, are the times when the data from each experiment was recorded on a HDRSS and processed through the Meteorological Data Handling System (MDHS) at Goddard Space Flight Center. The Table 2-2 header labels and their meaning are as follows:

- INT ORBIT AND STDN

The satellite orbit number in progress when the satellite data is relayed to a ground station is called the interrogation orbit (INT ORBIT). The ground stations receiving the Nimbus 6 satellite data are part of the Spacecraft and Tracking Data Network (STDN). There are five STDN stations receiving Nimbus 6 experiment data: Fairbanks, Alaska (denoted by the letter "A"); Rosman, North Carolina (R); Orroral, Australia (O); Winkfield, England (W); and Goddard Space Flight Center, Maryland (E).

- HDRS

The HDRS (High Data Rate Storage System - HDRSS) is the acronym for the satellite tape recorder system. Recorder "A" or "B" (or both) is played back during each STDN station interrogation.



Table 2-1  
Nimbus 6 Brouwer Mean Orbital Elements for  
July and August 1976

| Epoch                             | GMT          | 12 July 76<br>00 00 00 | 23 July 76<br>00 00 00 | 13 Aug. 76<br>00 00 00 | 27 Aug. 76<br>00 00 00 |
|-----------------------------------|--------------|------------------------|------------------------|------------------------|------------------------|
| Semi-Major Axis                   | Km           | 7485.374               | 7485.371               | 7485.370               | 7485.367               |
| Eccentricity                      | Km           | .000791                | .000756                | .000710                | .000707                |
| Inclination                       | Degrees      | 99.954                 | 99.952                 | 99.950                 | 99.949                 |
| Argument of Perigee               | Degrees      | 17.263                 | 350.018                | 296.134                | 258.075                |
| Right Ascension of Ascending Node | Degrees      | 105.506                | 116.298                | 136.897                | 150.629                |
| Height of Perigee                 | Km           | 1101.23                | 1101.54                | 1101.89                | 1101.91                |
| Height of Apogee                  | Km           | 1113.13                | 1112.87                | 1112.52                | 1112.49                |
| Anomalistic Period                | Minutes      | 107.41817              | 107.41810              | 107.41807              | 107.41801              |
| Motion of Perigee                 | Deg. Per Day | -2.4197                | -2.4199                | -2.4200                | -2.4201                |

- HDRSS TIME ON-OFF

The HDRSS ON and OFF times are given in GMT to the nearest minute. The ON time is the time the (A or B) HDRSS begins recording experiment measurements; the OFF time is when it stops recording. Usually, the ON and OFF times occurs when the satellite is within acquisition range on one of the four STDN stations. The time span between each ON and OFF usually covers part of two DATA ORBITS.

- LRIR, THIR, TDRE, SCAM, ESMR, ERB, PMR, TWRL, HIRS

These are the acronyms for each of the experiments on Nimbus 6. (Acronyms longer than four letters have been shortened.) The column beneath each acronym contains a series of "X's" or "blanks." Each "X" in the column indicates that the experiment was turned on for the HDRSS ON-OFF time in that line. A single "blank" in the middle of a series of "X's" frequently means that the experiment was on during that time span but the data has not been processed, or is unavailable for any of several reasons.

- DATA ORBIT

A DATA ORBIT begins when the satellite crosses the equator heading in a northbound direction, and ends after the satellite has circled the earth and is about to cross the equator heading in a northbound direction. The DATA ORBIT number increases by one with each successive northbound equator crossing. The ASCENDING NODE and DESCENDING NODE information is referenced to the DATA ORBIT number.

- ASCENDING NODE TIME (and) LONG

The ASCENDING NODE is the point in the orbit when the satellite crosses the equator heading in a northbound direction. The TIME of ASCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of ASCENDING NODE is given to the nearest tenth of a degree of east (E) or west (W) longitude. For Nimbus 6, the ascending node crossings always occur during the daytime portion of the orbit at approximately 11:45 a.m. local time.

- DESCENDING NODE TIME (and) LONG

The DESCENDING NODE is the point within a DATA ORBIT when the satellite crosses the equator heading in a southbound direction. The TIME of DESCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of DESCENDING NODE is given to the nearest degree of east (E) or west (W) longitude. The descending node crossings always occur during the nighttime portion of each orbit at approximately 11:45 p.m. local time.

Table 2-2 together with the World Map (Figure 2-1) and the vellum Subsatellite Tracks Overlay attached to the back of this catalog, can be used to determine approximate geographic coverages and times for experiment data that the user may wish to order. The Overlay contains 14 correctly spaced satellite subpoint tracks, which end at the approximate earth day-to-night transitions. The tracks contain time ticks spaced 5 minutes apart, approximately annotated at the edge of the overlay and referenced to the equator.

Orbital coverage for all orbits on any day is then determined by placing one of the orbit tracks on the overlay at its appropriate ascending node (for daytime data) or descending node (for nighttime data) longitude. (The nodes for each day are listed in Table 2-2.) The orbit track (or tracks) which covers the area of interest is readily apparent.

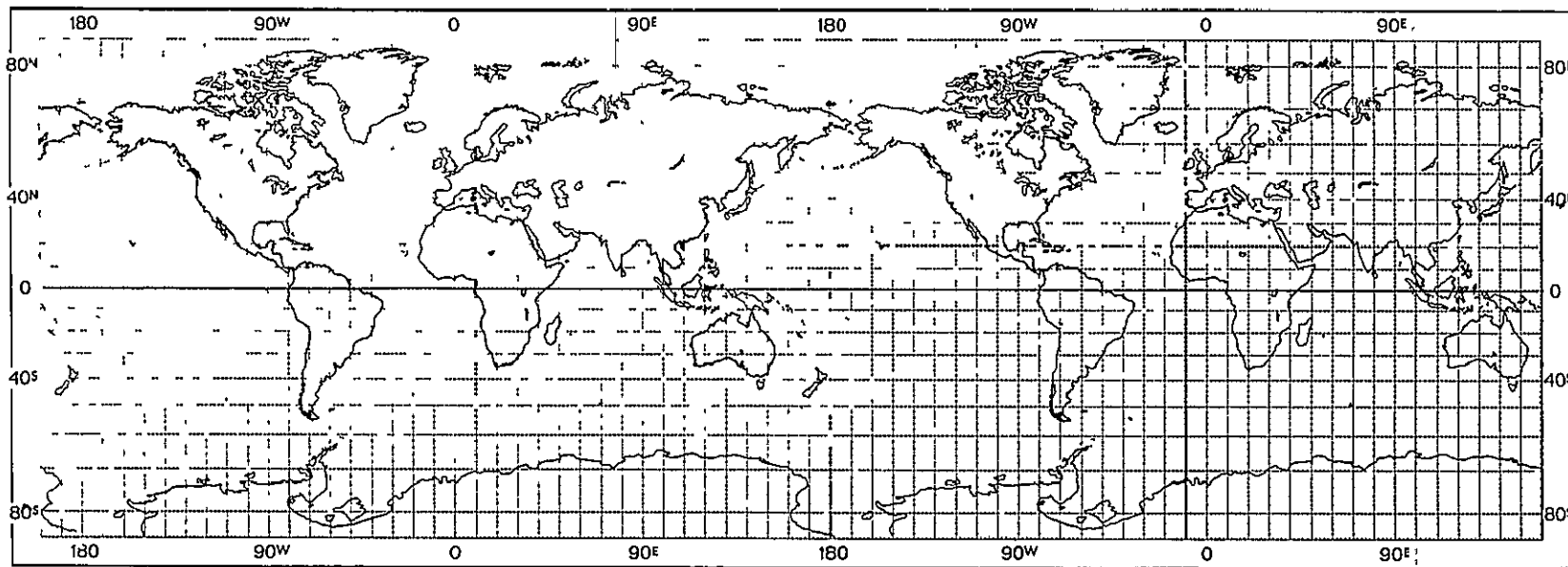


Figure 2-1. World Map

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The time (GMT) of satellite passage over an area of interest is calculated by adding or subtracting the minutes from equator crossing (as determined from the overlay) to the appropriate node time (derived from Table 2-2). For daytime orbits, time is added to the ascending node for areas north of the equator, and subtracted from the ascending node for areas south of the equator. For nighttime orbits, time is subtracted from the descending node for areas north of the equator, and added to the descending node for areas south of the equator.

To determine if an experiment was ON during the calculated orbit and time of interest, the user must first "fit" the calculated time into the correct ON-OFF interval of an interrogation orbit listed in Table 2-2. Then the user must check the appropriate experiment column for that line. If an "X" is in the column, the experiment was on and the data has been processed. If the column is "blank", the experiment was off (or the data was not processed) and no data for that orbit is available.

An alternate method of determining geographic coverage and time of data is to use the method described in Section 4. The THIR montages and the vellum Location Guides (attached in the back of this catalog) are used to locate the geographical coverage of each orbit of THIR. The data coverage from other experiments will be within the limits of each THIR swath. The TIME of coverage over a particular area is obtained by using Table 4-1 and adding or subtracting this computed time to the appropriate ascending or descending node time given in Table 2-2.

Each request for data should contain, as a minimum, the name of the experiment for which data is requested, the calendar date of the data, the orbit, the time (GMT) interval of the data needed, and the geographic limits of the area of interest. The procedures described above will provide this information.

The nature and format of the data available from each experiment are explained in detail in the respective sections of The Nimbus 6 User's Guide. The appropriate sources for requesting the various data types are listed in Section 1.7 of the same manual.

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
01 JULY 1976

| INT   | H | HDRSS |      | L | T | T | S | E | T H |   |   | ASCENDING |       | DESCENDING |        |        |        |
|-------|---|-------|------|---|---|---|---|---|-----|---|---|-----------|-------|------------|--------|--------|--------|
| ORBIT | D | TIME  |      | R | H | D | C | S | F   | P | W | I         | NODE  |            | NODE   |        |        |
| AND   | R | ON    | OFF  | I | I | R | A | M | R   | M | R | R         | DATA  | TIME       | LONG   | TIME   | LONG   |
| STDN  | S | HRMN  | HRMN | R | R | E | M | R | B   | R | L | S         | ORBIT | HRMNSS     | DEGREE | HRMNSS | DEGREE |
| 51550 | 3 | 2337  | 0100 |   |   |   |   | X | X   | X | X |           | 5156  | 010312     | E159.8 | 015652 | W033.6 |
| 51560 | 3 | 0054  | 0248 |   |   |   |   | X | X   | X | X |           | 5157  | 034423     | E132.9 | 034423 | W060.5 |
| 5158R | 3 | 0412  | 0528 | X |   |   |   | X | X   | X | X |           | 5158  | 053155     | E106.0 | 053155 | W087.4 |
| 5159A | 3 | 0557  | 0713 | X |   |   |   | X | X   | X | X |           | 5159  | 071927     | E079.1 | 071927 | W114.3 |
| 5160A | 3 | 0737  | 0854 | X |   |   |   | X | X   | X | X |           | 5160  | 090659     | E052.2 | 090659 | W141.2 |
| 5161A | 3 | 0924  | 1042 | X |   |   |   | X | X   | X | X |           | 5161  | 105431     | E025.4 | 105431 | W168.1 |
| 5162A | 3 | 1109  | 1229 | X |   |   |   | X | X   | X | X |           | 5162  | 124202     | W001.6 | 124202 | E165.1 |
| 5163A | 3 | 1256  | 1408 | X |   |   |   | X | X   | X | X |           | 5163  | 142934     | W028.4 | 142934 | E138.2 |
| 5164A | 3 | 1438  | 1556 | X |   |   |   | X | X   | X | X |           | 5164  | 161706     | W055.3 | 161706 | E111.3 |
| 5165A | 3 | 1622  | 1741 | X |   |   |   | X | X   | X | X |           | 5165  | 180438     | W082.2 | 180438 | E084.4 |
| 5166A | 3 | 1808  | 1928 | X |   |   |   | X | X   | X | X |           | 5166  | 195209     | W109.0 | 195209 | E057.5 |
| 5167A | 3 | 1935  | 2113 | X | X | X |   | X | X   | X | X | X         | 5167  | 213941     | W135.9 | 213941 | E030.7 |
| 5168A | 3 | 2142  | 2258 | X |   |   |   | X | X   | X | X |           | 5168  | 232713     | W162.8 | 232713 | E003.8 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
02 JULY 1976

| INT   | H | HDRSS |      | L | T | T | S | E | T H |   |   | ASCENDING |       | DESCENDING |        |        |        |
|-------|---|-------|------|---|---|---|---|---|-----|---|---|-----------|-------|------------|--------|--------|--------|
| ORBIT | D | TIME  |      | R | H | D | C | S | F   | P | W | I         | NODE  |            | NODE   |        |        |
| AND   | R | ON    | OFF  | I | I | R | A | M | R   | M | R | R         | DATA  | TIME       | LONG   | TIME   | LONG   |
| STDN  | S | HRMN  | HRMN | R | R | E | M | R | B   | R | L | S         | ORBIT | HRMNSS     | DEGREE | HRMNSS | DEGREE |
| 5171R | 3 | 0332  | 0448 | X |   |   |   | X | X   | X | X |           | 5169  | 002105     | E170.3 | 011445 | W023.1 |
| 5172R | 3 | 0516  | 0633 | X |   |   |   | X | X   | X | X |           | 5170  | 020837     | E143.4 | 030217 | W050.0 |
| 5173A | 3 | 0656  | 0811 | X |   |   |   | X | X   | X | X |           | 5171  | 035609     | E116.5 | 044948 | W076.9 |
| 5174A | 3 | 0841  | 1000 | X |   |   |   | X | X   | X | X |           | 5172  | 054340     | E089.7 | 063720 | W103.8 |
| 5175A | 3 | 1028  | 1131 | X |   |   |   | X | X   | X | X |           | 5173  | 073112     | E062.8 | 082452 | W130.6 |
| 5176A | 3 | 1213  | 1325 | X |   |   |   | X | X   | X | X |           | 5174  | 091849     | E035.9 | 101224 | W157.5 |
| 5177A | 3 | 1358  | 1516 | X |   |   |   | X | X   | X | X |           | 5175  | 110616     | E009.0 | 115955 | E175.6 |
| 5178A | 3 | 1528  | 1643 | X |   |   |   | X | X   | X | X |           | 5176  | 125347     | W017.9 | 134727 | E148.7 |
| 5179A | 3 | 1726  | 1846 | X |   |   |   | X | X   | X | X |           | 5177  | 144119     | W044.9 | 153459 | E121.8 |
| 5180A | 3 | 1913  | 2032 | X |   |   |   | X | X   | X | X |           | 5178  | 162851     | W071.7 | 172231 | E094.0 |
| 5182A | 3 | 2250  | 0003 | X |   |   |   | X | X   | X | X |           | 5179  | 181623     | W098.6 | 191002 | E068.1 |
|       |   |       |      |   |   |   |   |   |     |   |   |           | 5180  | 200355     | W125.5 | 205734 | E041.2 |
|       |   |       |      |   |   |   |   |   |     |   |   |           | 5181  | 215126     | W152.3 | 224506 | E014.3 |
|       |   |       |      |   |   |   |   |   |     |   |   |           | 5182  | 233858     | W179.2 | 003238 | W012.6 |

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TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
03 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS |      | L<br>R | T<br>R | T<br>R | S<br>E | E<br>P | W<br>I | T<br>H | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |               | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN | R      | R      | E      | M      | R      | B      | R      | L             | S                 | HRMNSS | DEGREE             | HRMNSS | DEGREE |
| 51820                       | B                | 0002  | 0123 |        |        |        |        | X      | X      | X      | X             | 5183              | 012630 | E153.9             | 022010 | W039.5 |
| 51830                       | B                | 0118  | 0222 |        |        |        |        | Y      | X      | X      | X             | 5184              | 031402 | E127.0             | 040741 | W066.4 |
| 5184R                       | B                | 0308  | 0359 | Y      |        |        |        | Y      | X      | X      | X             | 5185              | 050133 | E100.2             | 055513 | W093.2 |
| 5185R                       | B                | 0433  | 0552 | Y      |        |        |        | X      | X      | X      | X             | 5186              | 064905 | E073.3             | 074245 | W120.1 |
| 5186R                       | B                | 0621  | 0733 | Y      |        |        |        | X      | X      | Y      | X             | 5187              | 083637 | E046.4             | 093017 | W147.0 |
| 5187A                       | B                | 0800  | 0918 | Y      |        |        |        | X      | X      | X      | X             | 5188              | 102409 | E019.5             | 111748 | W173.0 |
| 5188A                       | B                | 0946  | 1105 | Y      |        |        |        | Y      | X      | X      | X             | 5189              | 121140 | W007.4             | 130520 | E159.2 |
| 5189A                       | B                | 1132  | 1252 | Y      |        |        |        | X      | Y      | X      | X             | 5190              | 135912 | W034.3             | 145252 | E132.4 |
| 5190A                       | B                | 1317  | 1436 | Y      |        |        |        | X      | Y      | X      | X             | 5191              | 154644 | W061.1             | 164024 | E105.5 |
| 5191A                       | B                | 1501  | 1618 | Y      |        |        |        | Y      | X      | X      | X             | 5192              | 173416 | W088.0             | 182756 | E078.6 |
| 5192A                       | B                | 1645  | 1804 | Y      |        |        |        | X      | Y      | X      | X             | 5193              | 192148 | W114.9             | 201527 | E051.7 |
| 5193A                       | B                | 1830  | 1951 | Y      |        |        |        | Y      | Y      | X      | X             | 5194              | 210919 | W141.8             | 220259 | E024.8 |
| 5194A                       | B                | 2018  | 2136 | Y      |        |        |        | Y      | Y      | X      | X             | 5195              | 225651 | W168.2             | 235031 | W002.1 |
| 5195A                       | B                | 2206  | 2322 | Y      |        |        |        | X      | X      | X      | X             |                   |        |                    |        |        |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
04 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS |      | L<br>R | T<br>R | T<br>R | S<br>E | E<br>P | W<br>I | T<br>H | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |               | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN | R      | R      | E      | M      | R      | B      | R      | L             | S                 | HRMNSS | DEGREE             | HRMNSS | DEGREE |
| 51960                       | B                | 2318  | 0039 |        |        |        |        | Y      | X      | X      | X             | 5196              | 004423 | E164.4             | 013803 | W029.0 |
| 5198R                       | B                | 0353  | 0510 | Y      |        |        |        | X      | Y      | X      | X             | 5197              | 023155 | E137.6             | 032534 | W055.9 |
| 5199R                       | B                | 0538  | 0655 | Y      |        |        |        | X      | X      | X      | X             | 5198              | 041926 | E110.7             | 051306 | W082.7 |
| 5201A                       | B                | 0904  | 1022 | Y      |        |        |        | Y      | Y      | X      | X             | 5199              | 060658 | E083.8             | 070038 | W109.6 |
| 5202A                       | B                | 1050  | 1201 | Y      |        |        |        | Y      | Y      | X      | X             | 5200              | 075430 | E056.9             | 084810 | W136.5 |
| 5203A                       | B                | 1236  | 1355 | Y      |        |        |        | X      | Y      | X      | X             | 5201              | 094202 | E030.0             | 103541 | W163.4 |
| 5204A                       | B                | 1421  | 1539 | Y      |        |        |        | X      | X      | X      | X             | 5202              | 112933 | E003.2             | 122313 | E169.7 |
| 5205A                       | B                | 1605  | 1722 | Y      |        |        |        | Y      | Y      | X      | X             | 5203              | 131705 | W023.7             | 141045 | E142.8 |
| 5206A                       | B                | 1749  | 1908 | Y      |        |        |        | X      | Y      | X      | X             | 5204              | 150437 | W050.6             | 155817 | E116.0 |
| 5207A                       | B                | 1937  | 2055 | Y      |        |        |        | X      | X      | X      | X             | 5205              | 165209 | W077.5             | 174549 | E089.1 |
| 5208A                       | B                | 2124  | 2240 | Y      |        |        |        | Y      | X      | X      | X             | 5206              | 183940 | W104.4             | 193320 | E062.2 |
|                             |                  |       |      |        |        |        |        |        |        |        |               | 5207              | 202712 | W131.3             | 212052 | E035.4 |
|                             |                  |       |      |        |        |        |        |        |        |        |               | 5208              | 221444 | W158.1             | 230824 | E006.5 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
05 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>R | T<br>R | S<br>E | E<br>M | P<br>R | W<br>R | I<br>R | T<br>H<br>S | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|-------------------|----------------|--------------------|----------------|----------------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |             | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |
| 52090                       | 3                | 2332          | 0036 |        |        |        |        |        | X      | Y      | X      | X           | 5209              | 000216         | E175.0             | 005556         | W018.4         |
| 52100                       | 3                | 0138          | 0243 |        |        |        |        |        | X      | X      | X      | X           | 5210              | 014948         | E148.1             | 024328         | W045.3         |
| 5211R                       | 3                | 0325          | 0429 |        | Y      |        |        |        | X      | X      | Y      | X           | 5211              | 033719         | E121.2             | 043059         | W072.2         |
| 5212R                       | 3                | 0520          | 0616 |        | Y      |        |        |        | X      | Y      | X      | Y           | 5212              | 052451         | E094.3             | 061831         | W099.1         |
| 5213A                       | 3                | 0637          | 0752 |        | Y      |        |        |        | Y      | X      | X      | X           | 5213              | 071223         | E067.4             | 080603         | W126.0         |
| 5214A                       | 3                | 0824          | 0941 |        | Y      |        |        |        | Y      | Y      | X      | Y           | 5214              | 085955         | E040.6             | 095335         | W152.0         |
| 5215A                       | 3                | 1009          | 1128 |        | Y      |        |        |        | Y      | Y      | X      | Y           | 5215              | 104726         | E013.7             | 114106         | W179.7         |
| 5216A                       | 3                | 1156          | 1314 |        | Y      |        |        |        | X      | X      | X      | X           | 5216              | 123458         | W013.2             | 132838         | E153.4         |
| 5217A                       | 3                | 1340          | 1458 |        | Y      |        |        |        | X      | X      | X      | X           | 5217              | 142230         | W040.1             | 151610         | E126.5         |
| 5218A                       | 3                | 1524          | 1641 |        | Y      |        |        |        | X      | X      | X      | Y           | 5218              | 161002         | W067.0             | 170342         | E099.6         |
| 5219A                       | 3                | 1708          | 1827 |        | Y      |        |        |        | Y      | X      | X      | X           | 5219              | 175733         | W093.8             | 185114         | E072.7         |
| 5220A                       | 3                | 1854          | 2014 |        | Y      |        |        |        | X      | X      | X      | Y           | 5220              | 194505         | W120.7             | 203845         | E045.8         |
| 5221A                       | 3                | 2041          | 2159 |        | Y      |        |        |        | X      | X      | X      | X           | 5221              | 213237         | W147.6             | 222617         | E019.0         |
| 5222A                       | 3                | 2230          | 2344 |        | Y      |        |        |        | X      | X      | X      | Y           | 5222              | 232009         | W174.5             | 001349         | W007.0         |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
06 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>R | T<br>R | S<br>E | E<br>M | P<br>R | W<br>R | I<br>R | T<br>H<br>S | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|-------------------|----------------|--------------------|----------------|----------------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |             | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |
| 52220                       | 3                | 2342          | 0104 |        |        |        |        |        | X      | X      | Y      | X           | 5223              | 010741         | E158.6             | 020121         | W034.8         |
| 52230                       | 3                | 0058          | 0203 |        |        |        |        |        | X      | X      | X      | Y           | 5224              | 025514         | E131.7             | 034854         | W061.7         |
| 5225R                       | 3                | 0416          | 0533 |        | Y      |        |        |        | Y      | X      | X      | X           | 5225              | 044246         | E104.8             | 053626         | W088.5         |
| 5226R                       | 3                | 0601          | 0717 |        | Y      |        |        |        | Y      | Y      | X      | X           | 5226              | 063018         | E078.0             | 072358         | W115.5         |
| 5227A                       | 3                | 0741          | 0900 |        | Y      |        |        |        | Y      | X      | X      | X           | 5227              | 081750         | E051.1             | 091130         | W142.3         |
| 5228A                       | 3                | 0928          | 1047 |        | Y      |        |        |        | X      | X      | X      | X           | 5228              | 100521         | E024.2             | 105902         | W169.2         |
| 5229A                       | 3                | 1113          | 1233 |        | Y      |        |        |        | X      | Y      | X      | X           | 5229              | 115253         | W002.7             | 124633         | E163.9         |
| 5230A                       | 3                | 1300          | 1417 |        | Y      |        |        |        | X      | X      | X      | Y           | 5230              | 134025         | W029.6             | 143405         | E137.0         |
| 5231A                       | 3                | 1444          | 1600 |        | Y      |        |        |        | Y      | Y      | X      | X           | 5231              | 152757         | W056.5             | 162137         | E110.2         |
| 5232A                       | 3                | 1626          | 1745 |        | Y      |        |        |        | X      | Y      | X      | X           | 5232              | 171529         | W083.3             | 180909         | E083.3         |
| 5233A                       | 3                | 1812          | 1931 |        | Y      |        |        |        | X      | X      | X      | X           | 5233              | 190300         | W110.2             | 195640         | E056.4         |
| 5234A                       | 3                | 2000          | 2118 |        | Y      |        |        |        | X      | X      | X      | X           | 5234              | 205032         | W137.1             | 214412         | E029.5         |
| 5235A                       | 3                | 2146          | 2303 |        | Y      |        |        |        | Y      | X      | X      | X           | 5235              | 223804         | W164.6             | 233144         | E002.6         |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
07 JULY 1976

| INT ORBIT | H AND STDN | HDRSS TIME |          | L R | T R | T R | S R | E R | P R | W R | I R | ASCENDING NODE | DESCENDING NODE |             |             |             |
|-----------|------------|------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----------------|-------------|-------------|-------------|
|           |            | ON HRMN    | OFF HRMN |     |     |     |     |     |     |     |     |                | TIME HRMNSS     | LONG DEGREE | TIME HRMNSS | LONG DEGREE |
| 52360     | 3          | 2354       | 0059     |     |     |     |     | X   | X   | X   | X   | 5236           | 002536          | E169.1      | 011916      | W024.3      |
| 52370     | 3          | 0201       | 0306     |     |     |     |     | X   | X   | X   | X   | 5237           | 021307          | E142.3      | 030648      | W051.2      |
| 5238R     | 3          | 0348       | 0443     | Y   |     |     |     | Y   | X   | X   | X   | 5238           | 040039          | E115.4      | 045419      | W078.1      |
| 5239R     | 3          | 0520       | 0638     | Y   |     |     |     | Y   | X   | X   | X   | 5239           | 054811          | E088.5      | 064151      | W104.0      |
| 5240A     | 3          | 0700       | 0815     | Y   |     |     |     | X   | X   | X   | X   | 5240           | 073543          | E061.6      | 082923      | W131.8      |
| 5241A     | 3          | 0846       | 1003     | Y   |     |     |     | X   | X   | X   | X   | 5241           | 092314          | E034.7      | 101655      | W158.7      |
| 5242A     | 3          | 1032       | 1151     | Y   |     |     |     | X   | X   | X   | X   | 5242           | 111046          | E007.8      | 120427      | E174.4      |
| 5243A     | B          | 1218       | 1331     | Y   |     |     |     | Y   | Y   | X   | X   | 5243           | 125818          | W019.0      | 135158      | E147.5      |
| 5244A     | 3          | 1402       | 1521     | X   |     |     |     | X   | X   | X   | X   | 5244           | 144550          | W045.9      | 153930      | E120.6      |
| 5245A     | 3          | 1532       | 1652     | Y   |     |     |     | Y   | X   | X   | X   | 5245           | 163322          | W072.8      | 172702      | E093.8      |
| 5246A     | 3          | 1730       | 1848     | Y   |     |     |     | Y   | X   | X   | X   | 5246           | 182053          | W099.7      | 191434      | E066.0      |
| 5247A     | 3          | 1917       | 2033     | Y   |     |     |     | Y   | Y   | X   | X   | 5247           | 200825          | W126.6      | 210205      | E040.0      |
| 5248A     | 3          | 2105       | 2221     | Y   |     |     |     | Y   | X   | X   | X   | 5248           | 215557          | W153.5      | 224937      | E013.2      |
| 5249A     | 3          | 2256       | 0007     | Y   |     |     |     | X   | Y   | X   | X   | 5249           | 234329          | E179.7      | 003709      | W013.8      |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
08 JULY 1976

| INT ORBIT | H AND STDN | HDRSS TIME |          | L R | T R | T R | S R | E R | P R | W R | I R | ASCENDING NODE | DESCENDING NODE |             |             |             |
|-----------|------------|------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----------------|-------------|-------------|-------------|
|           |            | ON HRMN    | OFF HRMN |     |     |     |     |     |     |     |     |                | TIME HRMNSS     | LONG DEGREE | TIME HRMNSS | LONG DEGREE |
| 52490     | 3          | 0006       | 0128     |     |     |     |     | X   | X   | X   | X   | 5250           | 013100          | E152.8      | 022441      | W040.6      |
| 52500     | 3          | 0122       | 0227     |     |     |     |     | Y   | X   | X   | X   | 5251           | 031832          | E125.9      | 041213      | W067.5      |
| 5251R     | 3          | 0306       | 0400     | Y   |     |     |     | Y   | Y   | X   | X   | 5252           | 050604          | E099.0      | 055944      | W094.4      |
| 5252R     | 3          | 0437       | 0558     | Y   |     |     |     | Y   | Y   | X   | X   | 5253           | 065336          | E072.1      | 074716      | W121.3      |
| 5253A     | 3          | 0620       | 0732     | Y   |     |     |     | Y   | Y   | X   | X   | 5254           | 084108          | E045.2      | 093448      | W148.2      |
| 5254A     | 3          | 0804       | 0923     | Y   |     |     |     | X   | Y   | X   | X   | 5255           | 102839          | E018.4      | 112220      | W175.1      |
| 5255A     | 3          | 0950       | 1110     | Y   |     |     |     | X   | X   | X   | X   | 5256           | 121611          | W008.5      | 130952      | F158.1      |
| 5256A     | 3          | 1136       | 1256     | Y   |     |     |     | Y   | X   | X   | X   | 5257           | 140343          | W035.4      | 145723      | E131.2      |
| 5257A     | 3          | 1321       | 1440     | Y   |     |     |     | X   | Y   | X   | X   | 5258           | 155115          | W062.3      | 164455      | F104.3      |
| 5258A     | 3          | 1505       | 1623     | Y   |     |     |     | X   | X   | X   | X   | 5259           | 173846          | W089.2      | 183227      | E077.4      |
| 5259A     | B          | 1649       | 1807     | Y   |     |     |     | Y   | Y   | X   | X   | 5260           | 192618          | W116.0      | 201959      | E050.5      |
| 5260A     | 3          | 1835       | 1954     | Y   |     |     |     | Y   | X   | X   | X   | 5261           | 211350          | W142.9      | 220731      | F023.6      |
| 5261A     | 3          | 2023       | 2140     | Y   |     |     |     | X   | X   | X   | X   | 5262           | 230122          | W169.8      | 235502      | W003.2      |
| 5262A     | 3          | 2210       | 2326     | Y   |     |     |     | X   | X   | X   | X   |                |                 |             |             |             |



TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
09 JULY 1976

| INT ORBIT AND STDN | H | HDRSS TIME |      | L | T | T | S | E | T | H | DATA ORBIT | ASCENDING NODE |        | DESCENDING NODE |        |        |
|--------------------|---|------------|------|---|---|---|---|---|---|---|------------|----------------|--------|-----------------|--------|--------|
|                    |   | ON         | OFF  | I | I | R | A | M | R | M | R          | TIME           | LONG   | TIME            | LONG   |        |
|                    | S | HRMN       | HRMN | R | R | E | M | R | B | R | L          | HRMNSS         | DEGREE | HRMNSS          | DEGREE |        |
| 5265R              | B | 0358       | 0515 |   |   |   |   | X | X | X | X          | 5263           | 004854 | E163.3          | 014234 | W030.1 |
| 5266R              | B | 0542       | 0700 |   |   |   |   | X | X | X | X          | 5264           | 023625 | E136.4          | 033006 | W057.0 |
| 5267A              | B | 0723       | 0840 |   |   |   |   | X | X | X | X          | 5265           | 042357 | E109.5          | 051738 | W083.0 |
| 5268A              | B | 0909       | 1027 |   |   |   |   | X | X | X | X          | 5266           | 061129 | E082.7          | 070509 | W110.8 |
| 5269A              | B | 1055       | 1214 |   |   |   |   | X | X | X | X          | 5267           | 075901 | E055.8          | 085241 | W137.6 |
| 5270A              | B | 1241       | 1358 |   |   |   |   | X | X | X | X          | 5268           | 094632 | E028.9          | 104013 | W164.5 |
| 5271A              | B | 1425       | 1543 |   |   |   |   | X | X | X | X          | 5269           | 113404 | E002.0          | 122745 | E168.6 |
| 5272A              | B | 1608       | 1727 |   |   |   |   | X | X | X | X          | 5270           | 132136 | W024.9          | 141517 | E141.7 |
| 5274A              | B | 1941       | 2059 |   |   |   |   | X | X | X | X          | 5271           | 150908 | W051.8          | 160248 | E114.8 |
| 5275A              | B | 2127       | 2230 |   |   |   |   | X | X | X | X          | 5272           | 165639 | W078.6          | 175020 | E087.0 |
|                    |   |            |      |   |   |   |   |   |   |   |            | 5273           | 184411 | W105.5          | 193752 | E061.1 |
|                    |   |            |      |   |   |   |   |   |   |   |            | 5274           | 203143 | W132.4          | 212524 | E034.2 |
|                    |   |            |      |   |   |   |   |   |   |   |            | 5275           | 221915 | W159.3          | 231255 | E007.3 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
10 JULY 1976

| INT ORBIT AND STDN | H | HDRSS TIME |      | L | T | T | S | E | T | H | DATA ORBIT | ASCENDING NODE |        | DESCENDING NODE |        |        |
|--------------------|---|------------|------|---|---|---|---|---|---|---|------------|----------------|--------|-----------------|--------|--------|
|                    |   | ON         | OFF  | I | I | R | A | M | R | M | R          | TIME           | LONG   | TIME            | LONG   |        |
|                    | S | HRMN       | HRMN | R | R | E | M | R | B | R | L          | HRMNSS         | DEGREE | HRMNSS          | DEGREE |        |
| 52760              | B | 2335       | 0039 |   |   |   |   | X | X | X | X          | 5276           | 000647 | E173.8          | 010027 | W019.6 |
| 52770              | B | 0145       | 0249 |   |   |   |   | X | X | X | X          | 5277           | 015418 | E147.0          | 024759 | W046.5 |
| 5278R              | B | 0330       | 0432 |   |   | X |   | X | X | X | X          | 5278           | 034150 | E120.1          | 043531 | W073.4 |
| 5279R              | B | 0501       | 0621 |   |   | X |   | X | X | X | X          | 5279           | 052922 | E093.2          | 062303 | W100.2 |
| 5280A              | B | 0642       | 0757 |   |   | X |   | X | X | X | X          | 5280           | 071654 | E066.3          | 081034 | W127.1 |
| 5281A              | B | 0827       | 0945 |   |   | X |   | X | X | X | X          | 5281           | 090425 | E039.4          | 095806 | W154.0 |
| 5282A              | B | 1013       | 1133 |   |   | X |   | X | X | X | X          | 5282           | 105157 | E012.5          | 114538 | E179.1 |
| 5283A              | B | 1159       | 1319 |   |   | X |   | X | X | X | X          | 5283           | 123929 | W014.4          | 133310 | E152.2 |
| 5284A              | B | 1344       | 1502 |   |   | X |   | X | X | X | X          | 5284           | 142701 | W041.3          | 152041 | E125.3 |
| 5285A              | B | 1527       | 1646 |   |   | X |   | X | X | X | X          | 5285           | 161433 | W068.1          | 170813 | E098.5 |
| 5286A              | B | 1712       | 1832 |   |   | X |   | X | X | X | X          | 5286           | 180204 | W095.0          | 185546 | E071.6 |
| 5287A              | B | 1858       | 2018 |   |   | X |   | X | X | X | X          | 5287           | 194036 | W121.0          | 204317 | E044.7 |
| 5288A              | B | 2046       | 2204 |   |   | X |   | X | X | X | X          | 5288           | 213708 | W148.8          | 223049 | E017.8 |
| 5289A              | B | 2235       | 2350 |   |   | X |   | X | X | X | X          | 5289           | 232440 | W175.6          | 001820 | W009.1 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
11 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>I | T<br>R | S<br>E | E<br>M | P<br>R | W<br>M | I<br>R | T<br>H<br>R<br>L<br>S | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------|-------------------|----------------|--------------------|----------------|----------------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |                       | TIME              | LONG           | TIME               | LONG           |                |
|                             |                  | HRMN          | HRMN | R      | R      | E      | M      | R      | B      | R      | L      | S                     | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |
| 52890                       | B                | 2347          | 0049 |        |        |        |        | X      | X      | X      | X      |                       | 5290              | 011211         | E157.5             | 020552         | W035.0         |
| 52900                       | B                | 0105          | 0209 |        |        |        |        | Y      | Y      | X      | X      |                       | 5291              | 025943         | E130.6             | 035324         | W062.8         |
| 5292R                       | B                | 0422          | 0539 |        | Y      |        |        | X      | X      | X      | X      |                       | 5292              | 044715         | E103.7             | 054056         | W089.7         |
| 5293R                       | B                | 0606          | 0723 |        | X      |        |        | X      | X      | Y      | X      |                       | 5293              | 063447         | E076.8             | 072828         | W116.6         |
| 5294A                       | B                | 0746          | 0904 |        | X      |        |        | Y      | Y      | X      | Y      |                       | 5294              | 082219         | E050.0             | 091559         | W143.5         |
| 5295A                       | B                | 0932          | 1051 |        | X      |        |        | X      | Y      | X      | X      |                       | 5295              | 100950         | E023.1             | 110331         | W170.4         |
| 5296A                       | B                | 1118          | 1238 |        | X      |        |        | X      | Y      | X      | X      |                       | 5296              | 115722         | W003.8             | 125102         | E152.8         |
| 5297A                       | B                | 1303          | 1422 |        | Y      |        |        | X      | X      | X      | X      |                       | 5297              | 134454         | W030.7             | 143835         | E135.0         |
| 5298A                       | B                | 1447          | 1605 |        | Y      |        |        | Y      | X      | X      | X      |                       | 5298              | 153226         | W057.6             | 162606         | E109.0         |
| 5299A                       | B                | 1631          | 1750 |        | Y      |        |        | X      | X      | X      | X      |                       | 5299              | 171957         | W084.5             | 181334         | E082.1         |
| 5300A                       | B                | 1816          | 1937 |        | X      |        |        | X      | Y      | X      | X      |                       | 5300              | 190729         | W111.4             | 200110         | E055.2         |
| 5301A                       | B                | 2005          | 2122 |        | X      |        |        | X      | Y      | X      | X      |                       | 5301              | 205501         | W138.3             | 214842         | E028.3         |
| 5302A                       | B                | 2151          | 2309 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5302              | 224233         | W165.1             | 233614         | E001.5         |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
12 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>I | T<br>R | S<br>E | E<br>M | P<br>R | W<br>M | I<br>R | T<br>H<br>R<br>L<br>S | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------|-------------------|----------------|--------------------|----------------|----------------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |                       | TIME              | LONG           | TIME               | LONG           |                |
|                             |                  | HRMN          | HRMN | R      | R      | E      | M      | R      | B      | R      | L      | S                     | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |
| 53030                       | B                | 0000          | 0101 |        |        |        |        | X      | X      | X      | Y      |                       | 5303              | 003004         | E168.0             | 012345         | W025.4         |
| 53040                       | B                | 0208          | 0311 |        |        |        |        | X      | Y      | X      | X      |                       | 5304              | 021736         | E141.1             | 031117         | W052.3         |
| 5305R                       | B                | 0353          | 0451 |        | Y      |        |        | X      | X      | X      | X      |                       | 5305              | 040508         | E114.2             | 045849         | W079.2         |
| 5306R                       | B                | 0525          | 0637 |        | X      |        |        | X      | X      | Y      | Y      |                       | 5306              | 055240         | E087.4             | 064621         | W106.1         |
| 5307A                       | B                | 0705          | 0817 |        | Y      |        |        | X      | Y      | X      | Y      |                       | 5307              | 074012         | E060.5             | 083353         | W133.0         |
| 5308A                       | B                | 0850          | 1006 |        | Y      |        |        | X      | X      | X      | X      |                       | 5308              | 092743         | E033.6             | 102124         | W159.8         |
| 5309A                       | B                | 1036          | 1156 |        | Y      |        |        | X      | Y      | X      | Y      |                       | 5309              | 111515         | E006.7             | 120856         | E173.3         |
| 5310A                       | B                | 1222          | 1341 |        | Y      |        |        | X      | X      | X      | Y      |                       | 5310              | 130247         | W020.2             | 135628         | E146.4         |
| 5311A                       | B                | 1407          | 1524 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5311              | 145019         | W047.1             | 154400         | E119.5         |
| 5312A                       | B                | 1550          | 1709 |        | Y      |        |        | X      | X      | Y      | X      |                       | 5312              | 163750         | W074.0             | 173131         | E092.6         |
| 5313A                       | B                | 1735          | 1855 |        | Y      |        |        | X      | Y      | X      | Y      |                       | 5313              | 182522         | W100.8             | 191903         | E065.8         |
| 5314A                       | B                | 1922          | 2041 |        | Y      |        |        | X      | X      | Y      | X      |                       | 5314              | 201254         | W127.7             | 210635         | E038.0         |
| 5315A                       | B                | 2109          | 2227 |        | Y      |        |        | X      | Y      | X      | Y      |                       | 5315              | 220026         | W154.6             | 225407         | E012.0         |
| 5316A                       | B                | 2300          | 0013 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5316              | 234758         | E178.5             | 004139         | W014.0         |

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TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
13 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R | HDRSS<br>TIME |      | L<br>R | T<br>R | T<br>R | S<br>A | E<br>M | P<br>R | W<br>R | I<br>R | ASCENDING<br>NODE |                |                | DESCENDING<br>NODE |                |        |
|-----------------------------|-------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|----------------|----------------|--------------------|----------------|--------|
|                             |             | ON            | OFF  |        |        |        |        |        |        |        |        | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |
| 53160                       | 3           | 0010          | 0113 |        |        |        |        |        | Y      | Y      | X      | X                 | 5317           | 013529         | E151.6             | 022911         | W041.8 |
| 53170                       | 3           | 0127          | 0230 |        |        |        |        |        | Y      | Y      | X      | X                 | 5318           | 032302         | E124.8             | 041643         | W068.7 |
| 5318P                       | 3           | 0311          | 0414 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5319           | 051034         | E097.9             | 060415         | W095.6 |
| 5319R                       | 3           | 0441          | 0602 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5320           | 065806         | E071.0             | 075147         | W122.4 |
| 5320A                       | 3           | 0623          | 0734 | Y      |        |        |        |        | X      | Y      | X      | Y                 | 5321           | 084538         | E044.1             | 093010         | W140.7 |
| 5321A                       | 3           | 0809          | 0927 | X      |        |        |        |        | Y      | X      | Y      | Y                 | 5322           | 103309         | E017.2             | 112650         | W176.2 |
| 5322A                       | 3           | 0955          | 1113 | Y      |        |        |        |        | X      | Y      | X      | X                 | 5323           | 122041         | W009.6             | 131422         | E156.0 |
| 5324A                       | 3           | 1141          | 1300 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5324           | 140813         | W036.6             | 150154         | E130.0 |
| 5325A                       | 3           | 1509          | 1625 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5325           | 155545         | W063.4             | 164926         | E103.0 |
| 5326A                       | 3           | 1654          | 1814 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5326           | 174317         | W090.3             | 183658         | E076.3 |
| 5327A                       | 3           | 1839          | 1950 | Y      |        |        |        |        | Y      | Y      | Y      | X                 | 5327           | 193048         | W117.2             | 202429         | E049.4 |
| 5328A                       | 3           | 2027          | 2144 | Y      |        |        |        |        | Y      | Y      | Y      | Y                 | 5328           | 211820         | W144.1             | 221201         | E022.5 |
| 5329A                       | 3           | 2215          | 2332 | Y      |        |        |        |        | Y      | Y      | Y      | X                 | 5329           | 230552         | W171.0             | 235933         | W004.4 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
14 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R | HDRSS<br>TIME |      | L<br>R | T<br>R | T<br>R | S<br>A | E<br>M | P<br>R | W<br>R | I<br>R | ASCENDING<br>NODE |                |                | DESCENDING<br>NODE |                |        |
|-----------------------------|-------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|----------------|----------------|--------------------|----------------|--------|
|                             |             | ON            | OFF  |        |        |        |        |        |        |        |        | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |
| 53290                       | 3           | 2329          | 0033 |        |        |        |        |        | Y      | X      | Y      | X                 | 5330           | 005324         | E162.2             | 014705         | W031.7 |
| 53300                       | 3           | 0047          | 0151 |        |        |        |        |        | Y      | X      | X      | X                 | 5331           | 024055         | E135.3             | 033437         | W058.1 |
| 5332R                       | 3           | 0404          | 0519 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5332           | 042827         | E108.4             | 052208         | W085.0 |
| 5333R                       | 3           | 0549          | 0659 | X      |        |        |        |        | X      | Y      | Y      | X                 | 5333           | 061559         | E081.5             | 070940         | W111.0 |
| 5334A                       | 3           | 0728          | 0840 | Y      |        |        |        |        | X      | Y      | X      | X                 | 5334           | 080331         | E054.4             | 085712         | W138.8 |
| 5335A                       | 3           | 0913          | 1027 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5335           | 095102         | E027.8             | 104444         | W165.7 |
| 5336A                       | 3           | 1100          | 1217 | Y      |        |        |        |        | X      | Y      | Y      | X                 | 5336           | 113834         | E000.8             | 123215         | E157.4 |
| 5337A                       | 3           | 1245          | 1401 | Y      |        |        |        |        | X      | X      | Y      | X                 | 5337           | 132606         | W026.0             | 141647         | E140.6 |
| 5338A                       | 3           | 1429          | 1545 | Y      |        |        |        |        | Y      | Y      | Y      | Y                 | 5338           | 151338         | W052.9             | 160719         | E113.7 |
| 5339A                       | 3           | 1613          | 1730 | Y      |        |        |        |        | X      | Y      | Y      | Y                 | 5339           | 170110         | W079.8             | 175451         | E086.8 |
| 5340A                       | 3           | 1759          | 1915 | Y      |        |        |        |        | Y      | Y      | Y      | X                 | 5340           | 184842         | W106.7             | 194223         | E059.0 |
| 5341A                       | 3           | 1947          | 2103 | Y      |        |        |        |        | X      | Y      | Y      | X                 | 5341           | 203613         | W133.6             | 212954         | E033.0 |
| 5342A                       | 3           | 2133          | 2249 | Y      |        |        |        |        | Y      | Y      | Y      | X                 | 5342           | 222345         | W160.4             | 231726         | E006.2 |

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TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
15 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HRRSS |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>R | T<br>H | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |        |        | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN | R      | R      | E      | M      | R      | B      | R      | L      | S      | ORBIT             | HRMNSS | DEGREE             | HRMNSS | DEGREE |
| 53430                       | B                | 2341  | 0044 |        |        |        |        | X      | X      | X      | X      |        | 5343              | 001117 | 010458             | W020.7 |        |
| 53440                       | B                | 0150  | 0252 |        |        |        |        | Y      | Y      | X      | X      |        | 5344              | 015849 | 025230             | W047.6 |        |
| 5345R                       | B                | 0336  | 0438 | Y      |        |        |        | X      | X      | X      | X      |        | 5345              | 034620 | 044002             | W074.5 |        |
| 5346R                       | B                | 0506  | 0625 | Y      |        |        |        | Y      | X      | Y      | Y      |        | 5346              | 053352 | 062733             | W101.4 |        |
| 5347A                       | B                | 0647  | 0801 | Y      |        |        |        | Y      | Y      | X      | X      |        | 5347              | 072124 | 081505             | W128.3 |        |
| 5348A                       | B                | 0833  | 0950 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5348              | 090856 | 100237             | W155.2 |        |
| 5349A                       | B                | 1024  | 1137 | Y      |        |        |        | Y      | Y      | Y      | X      |        | 5349              | 105627 | 115009             | F178.0 |        |
| 5350A                       | B                | 1205  | 1322 | Y      |        |        |        | Y      | Y      | X      | X      |        | 5350              | 124350 | 133741             | F151.1 |        |
| 5351A                       | B                | 1348  | 1453 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5351              | 143131 | 152512             | F124.2 |        |
| 5352A                       | B                | 1532  | 1637 | Y      |        |        |        | Y      | X      | X      | Y      |        | 5352              | 161903 | 171244             | E097.7 |        |
| 5353A                       | B                | 1716  | 1836 | Y      |        |        |        | X      | Y      | X      | X      |        | 5353              | 180635 | 190016             | E070.4 |        |
| 5354A                       | B                | 1903  | 2021 | Y      |        |        |        | Y      | Y      | Y      | Y      |        | 5354              | 195406 | 204748             | F043.6 |        |
| 5355A                       | B                | 2050  | 2207 | Y      |        |        |        | Y      | Y      | Y      | X      |        | 5355              | 214138 | 223519             | F016.7 |        |
| 5356A                       | B                | 2241  | 2353 | Y      |        |        |        | X      | X      | X      | X      |        | 5356              | 232910 | 002251             | W010.2 |        |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
16 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HRRSS |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>R | T<br>H | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |        |        | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN | R      | R      | E      | M      | R      | B      | R      | L      | S      | ORBIT             | HRMNSS | DEGREE             | HRMNSS | DEGREE |
| 5359R                       | B                | 0438  | 0530 | Y      |        |        |        | Y      | X      | X      | X      |        | 5357              | 011642 | E156.3             | 021023 | W037.1 |
| 5360R                       | B                | 0611  | 0727 | Y      |        |        |        | X      | X      | Y      | X      |        | 5358              | 030413 | E129.5             | 035755 | W064.0 |
| 5361A                       | B                | 0750  | 0908 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5359              | 045145 | E102.5             | 054527 | W090.0 |
| 5362A                       | B                | 0936  | 1051 | Y      |        |        |        | Y      | Y      | Y      | Y      |        | 5360              | 063917 | E075.7             | 073258 | W117.8 |
| 5363A                       | B                | 1122  | 1241 | Y      |        |        |        | Y      | X      | X      | X      |        | 5361              | 082649 | E048.8             | 092030 | W144.7 |
| 5364A                       | B                | 1307  | 1419 | Y      |        |        |        | Y      | Y      | X      | X      |        | 5362              | 101421 | E021.9             | 110802 | W171.5 |
| 5365A                       | B                | 1451  | 1610 | Y      |        |        |        | Y      | Y      | Y      | Y      |        | 5363              | 120152 | W005.0             | 125539 | E161.6 |
| 5367A                       | B                | 1623  | 1727 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5364              | 134924 | W031.9             | 144306 | F134.7 |
| 5368A                       | B                | 2000  | 2123 | Y      |        |        |        | Y      | Y      | Y      | X      |        | 5365              | 153656 | W058.7             | 163037 | F107.0 |
| 5369A                       | B                | 2156  | 2312 | Y      |        |        |        | X      | X      | Y      | X      |        | 5366              | 172428 | W085.6             | 181809 | E081.0 |
|                             |                  |       |      |        |        |        |        |        |        |        |        |        | 5367              | 191159 | W112.5             | 200541 | E054.1 |
|                             |                  |       |      |        |        |        |        |        |        |        |        |        | 5368              | 205931 | W139.4             | 215313 | E027.2 |
|                             |                  |       |      |        |        |        |        |        |        |        |        |        | 5369              | 224703 | W166.3             | 234046 | E000.3 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
17 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS<br>TIME |             | L<br>R | T<br>R | T<br>R | S<br>E | E<br>P | T<br>H<br>I | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |        |        |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|-------------|---------------|-------------------|----------------|--------------------|----------------|--------|--------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |             |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |        |
| 53690                       | 3                | 2310          | 0014        |        |        |        |        | X      | X           | X             | X                 | 5370           | 003435             | E166.9         | 012815 | W026.6 |
| 53700                       | 3                | 0027          | 0131        |        |        |        |        | Y      | X           | X             | X                 | 5371           | 022207             | E140.0         | 031548 | W053.5 |
| 5372R                       | 3                | 0345          | 0501        |        | X      |        |        | X      | X           | Y             | X                 | 5372           | 040938             | E113.1         | 050320 | W080.4 |
| 5373R                       | 3                | 0529          | 0647        |        | Y      |        |        | Y      | X           | X             | X                 | 5373           | 055710             | E086.2         | 065052 | W107.2 |
| 5374A                       | 3                | 0700          | 0826        |        | Y      |        |        | X      | X           | Y             | X                 | 5374           | 074442             | E059.3         | 083824 | W134.1 |
| 5375A                       | 3                | 0855          | 1013        |        | Y      |        |        | Y      | Y           | X             | X                 | 5375           | 093214             | E032.4         | 102555 | W161.0 |
| 5376A                       | 3                | 1041          | 1200        |        | X      |        |        | X      | Y           | X             | X                 | 5376           | 111945             | E005.5         | 121327 | E172.1 |
| 5377A                       | 3                | 1227          | 1333        |        | Y      |        |        | X      | Y           | Y             | X                 | 5377           | 130717             | W021.3         | 140059 | E145.3 |
| 5378A                       | 3                | 1411          | 1529        |        | Y      |        |        | Y      | Y           | Y             | X                 | 5378           | 145449             | W048.2         | 154831 | E118.4 |
| 5379A                       | 3                | 1554          | 1712        |        | Y      |        |        | Y      | X           | X             | X                 | 5379           | 164221             | W075.1         | 173602 | E091.5 |
| 5380A                       | 3                | 1730          | 1854        |        | Y      |        |        | X      | X           | X             | X                 | 5380           | 182953             | W102.0         | 192334 | E064.6 |
| 5381A                       | 3                | 1927          | 2039        |        | Y      |        |        | X      | Y           | X             | Y                 | 5381           | 201724             | W128.9         | 211106 | E037.7 |
| 5382A                       | 3                | 2113          | 2231        |        | Y      |        |        | X      | Y           | Y             | X                 | 5382           | 220456             | W155.7         | 225838 | E010.8 |
| 5383A                       | 3                | 2305          | 0016        |        | Y      |        |        | X      | Y           | Y             | Y                 | 5383           | 235228             | E177.4         | 004610 | W016.1 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
18 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS<br>TIME |             | L<br>R | T<br>R | T<br>R | S<br>E | E<br>P | T<br>H<br>I | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |        |        |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|-------------|---------------|-------------------|----------------|--------------------|----------------|--------|--------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |             |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |        |
| 53840                       | 3                | 0014          | 0110        |        |        |        |        | Y      | Y           | Y             | Y                 | 5384           | 014000             | E150.5         | 023341 | W043.0 |
| 5385R                       | 3                | 0316          | 0419        |        | X      |        |        | X      | Y           | X             | X                 | 5385           | 032731             | E123.6         | 042113 | W069.8 |
| 5386R                       | 3                | 0446          | 0605        |        | Y      |        |        | X      | Y           | Y             | Y                 | 5386           | 051503             | E096.7         | 060845 | W096.7 |
| 5387A                       | 3                | 0629          | 0741        |        | Y      |        |        | X      | Y           | X             | X                 | 5387           | 070235             | E069.8         | 075617 | W123.6 |
| 5388A                       | 3                | 0813          | 0922        |        | X      |        |        | X      | Y           | X             | X                 | 5388           | 085007             | E043.0         | 094349 | W150.4 |
| 5389A                       | 3                | 0950          | 1110        |        | Y      |        |        | X      | Y           | X             | X                 | 5389           | 103739             | E016.1         | 113120 | W177.4 |
| 5390A                       | 3                | 1145          | 1255        |        | Y      |        |        | Y      | X           | X             | Y                 | 5390           | 122510             | W010.8         | 131852 | E155.8 |
| 5391A                       | 3                | 1330          | 1442        |        | Y      |        |        | X      | X           | X             | X                 | 5391           | 141242             | W037.7         | 150624 | E128.0 |
| 5392A                       | 3                | 1514          | 1626        |        | Y      |        |        | Y      | Y           | X             | X                 | 5392           | 160014             | W064.6         | 165356 | E102.0 |
| 5393A                       | 3                | 1658          | 1817        |        | Y      |        |        | Y      | Y           | Y             | X                 | 5393           | 174746             | W091.5         | 184128 | E075.1 |
| 5394A                       | 3                | 1844          | 2002        |        | Y      |        |        | Y      | Y           | X             | X                 | 5394           | 193518             | W118.3         | 202859 | E048.3 |
| 5395A                       | 3                | 2031          | 2149        |        | X      |        |        | X      | X           | Y             | Y                 | 5395           | 212249             | W145.2         | 221631 | E021.7 |
| 5396A                       | 3                | 2221          | 2334        |        | Y      |        |        | Y      | Y           | Y             | Y                 | 5396           | 231021             | W172.1         | 000403 | W005.8 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
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| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HRRSS<br>TIME |      | L T T S E T H<br>R H D C S E P W I<br>I I R A M R M R R<br>R R F M R B R L S |   |   |   |   |   |   |   |   | ASCENDING<br>NODE<br>TIME LONG<br>HRMNSS DEGREE |        | DESCENDING<br>NODE<br>TIME LONG<br>HRMNSS DEGREE |        |        |
|-----------------------------|------------------|---------------|------|--|---|---|---|---|---|---|---|---|---|--------|--|--------|--------|
|                             |                  | ON            | OFF  | R  | R | F | M | R | B | R | L | S | ORBIT   | HRMNSS | DEGREE   | HRMNSS | DEGREE |
| 53960                       | B                | 2333          | 0035 |  |   |   |   |   |   |   |   |   | 5397  | 005754 | E161.0   | 015135 | W032.4 |
| 53970                       | B                | 0050          | 0153 |  |   |   |   |   |   |   |   |   | 5398  | 024525 | E134.1   | 033906 | W059.3 |
| 5399R                       | B                | 0407          | 0524 |  |   |   |   |   |   |   |   |   | 5399  | 043256 | E107.2   | 052639 | W086.2 |
| 5400R                       | B                | 0551          | 0709 |  |   |   |   |   |   |   |   |   | 5400  | 062028 | E080.4   | 071410 | W113.1 |
| 5401A                       | B                | 0732          | 0840 |  |   |   |   |   |   |   |   |   | 5401  | 080800 | E053.5   | 090142 | W140.0 |
| 5402A                       | B                | 0918          | 1037 |  |   |   |   |   |   |   |   |   | 5402  | 095532 | E026.6   | 104914 | W166.8 |
| 5403A                       | B                | 1104          | 1224 |  |   |   |   |   |   |   |   |   | 5403  | 114304 | W000.3   | 123645 | E166.3 |
| 5404A                       | B                | 1249          | 1408 |  |   |   |   |   |   |   |   |   | 5404  | 133035 | W027.2   | 142417 | E139.4 |
| 5405A                       | B                | 1433          | 1552 |  |   |   |   |   |   |   |   |   | 5405  | 151807 | W054.0   | 161149 | E112.5 |
| 5406A                       | B                | 1617          | 1736 |  |   |   |   |   |   |   |   |   | 5406  | 170539 | W080.9   | 175921 | E085.6 |
| 5407A                       | B                | 1810          | 1922 |  |   |   |   |   |   |   |   |   | 5407  | 185311 | W107.8   | 194653 | E058.7 |
| 5408A                       | B                | 1950          | 2107 |  |   |   |   |   |   |   |   |   | 5408  | 204042 | W134.7   | 213424 | E031.0 |
| 5409A                       | B                | 2137          | 2254 |  |   |   |   |   |   |   |   |   | 5409  | 222814 | W161.6   | 232156 | E005.0 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
20 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HRRSS<br>TIME |      | L T T S E T H<br>R H D C S E P W I<br>I I R A M R M R R<br>R R F M R B R L S |   |   |   |   |   |   |   |   | ASCENDING<br>NODE<br>TIME LONG<br>HRMNSS DEGREE |        | DESCENDING<br>NODE<br>TIME LONG<br>HRMNSS DEGREE |        |        |
|-----------------------------|------------------|---------------|------|--|---|---|---|---|---|---|---|---|---|--------|--|--------|--------|
|                             |                  | ON            | OFF  | R  | R | F | M | R | B | R | L | S | ORBIT   | HRMNSS | DEGREE   | HRMNSS | DEGREE |
| 54100                       | B                | 2344          | 0049 |  |   |   |   |   |   |   |   |   | 5410  | 001546 | E171.5   | 010929 | W021.8 |
| 54110                       | B                | 0154          | 0258 |  |   |   |   |   |   |   |   |   | 5411  | 020318 | E144.7   | 025700 | W048.9 |
| 5412R                       | B                | 0340          | 0443 |  |   |   |   |   |   |   |   |   | 5412  | 035050 | E117.8   | 044431 | W075.7 |
| 5413R                       | B                | 0511          | 0628 |  |   |   |   |   |   |   |   |   | 5413  | 053821 | E090.9   | 063203 | W102.5 |
| 5414A                       | B                | 0651          | 0755 |  |   |   |   |   |   |   |   |   | 5414  | 072553 | E064.0   | 081935 | W129.4 |
| 5415A                       | B                | 0837          | 0952 |  |   |   |   |   |   |   |   |   | 5415  | 091325 | E037.1   | 100707 | W156.3 |
| 5416A                       | B                | 1032          | 1142 |  |   |   |   |   |   |   |   |   | 5416  | 110057 | E010.2   | 115439 | E176.8 |
| 5417A                       | B                | 1209          | 1328 |  |   |   |   |   |   |   |   |   | 5417  | 124828 | W016.7   | 134210 | E149.9 |
| 5418A                       | B                | 1354          | 1511 |  |   |   |   |   |   |   |   |   | 5418  | 143600 | W043.6   | 152942 | E123.0 |
| 5419A                       | B                | 1537          | 1654 |  |   |   |   |   |   |   |   |   | 5419  | 162331 | W070.4   | 171714 | E096.2 |
| 5420A                       | B                | 1722          | 1840 |  |   |   |   |   |   |   |   |   | 5420  | 181104 | W097.3   | 190446 | E069.7 |
| 5421A                       | B                | 1908          | 2027 |  |   |   |   |   |   |   |   |   | 5421  | 195836 | W124.2   | 205218 | E042.4 |
| 5422A                       | B                | 2055          | 2213 |  |   |   |   |   |   |   |   |   | 5422  | 214607 | W151.0   | 223949 | E015.5 |
|                             |                  |               |      |  |   |   |   |   |   |   |   |   | 5423  | 233339 | W177.9   | 002721 | W011.4 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
21 JULY 1976

| INT ORBIT AND STDN | I J R S | HRSS TIME |          | L R | T R | T R | S R | E M | F R | P R | W R | I R | ASCENDING NODE |             | DESCENDING NODE |             |        |
|--------------------|---------|-----------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-------------|-----------------|-------------|--------|
|                    |         | ON HRMN   | OFF HRMN |     |     |     |     |     |     |     |     |     | TIME HRMNSS    | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |        |
| 54230              | 3       | 2301      | 0006     |     |     |     |     |     | Y   | V   | Y   | X   | 5424           | 012111      | E155.2          | 021453      | W038.3 |
| 54240              | 3       | 0111      | 0215     |     |     |     |     |     | Y   | V   | Y   | X   | 5425           | 030843      | E128.3          | 040225      | W065.1 |
| 5425R              | 3       | 0258      | 0350     |     |     | X   |     |     | Y   | V   | Y   | X   | 5426           | 045614      | E101.4          | 054507      | W092.0 |
| 5426R              | 3       | 0427      | 0540     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5427           | 064346      | E074.5          | 073728      | W118.0 |
| 5427A              | 3       | 0600      | 0722     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5428           | 083118      | E047.7          | 092500      | W145.8 |
| 5428A              | 3       | 0754      | 0917     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5429           | 101850      | E020.8          | 111232      | W172.7 |
| 5429A              | 3       | 0941      | 1100     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5430           | 120622      | W006.1          | 130004      | E160.4 |
| 5430A              | 3       | 1127      | 1247     |     |     | Y   |     |     | X   | V   | Y   | X   | 5431           | 135353      | W033.0          | 144736      | E133.6 |
| 5431A              | 3       | 1311      | 1431     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5432           | 154125      | W059.9          | 163707      | E106.7 |
| 5432A              | 3       | 1457      | 1614     |     |     | Y   |     |     | X   | V   | Y   | X   | 5433           | 172857      | W086.8          | 182239      | E070.8 |
| 5433A              | 3       | 1640      | 1750     |     |     | Y   |     |     | X   | V   | Y   | X   | 5434           | 191629      | W113.6          | 201011      | E052.0 |
| 5434A              | 3       | 1822      | 1945     |     |     | Y   |     |     | X   | V   | Y   | X   | 5435           | 210400      | W140.5          | 215743      | E026.0 |
| 5435A              | 3       | 2010      | 2131     |     |     | Y   |     |     | Y   | X   | Y   | X   | 5436           | 225132      | W167.4          | 234515      | W000.8 |
| 5436A              | 3       | 2157      | 2317     |     |     | Y   |     |     | Y   | V   | Y   | X   |                |             |                 |             |        |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
22 JULY 1976

| INT ORBIT AND STDN | I J R S | HRSS TIME |          | L R | T R | T R | S R | E M | F R | P R | W R | I R | ASCENDING NODE |             | DESCENDING NODE |             |        |
|--------------------|---------|-----------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-------------|-----------------|-------------|--------|
|                    |         | ON HRMN   | OFF HRMN |     |     |     |     |     |     |     |     |     | TIME HRMNSS    | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |        |
| 54360              | 3       | 2314      | 0018     |     |     |     |     |     | Y   | V   | Y   | X   | 5437           | 003904      | E165.7          | 013246      | W027.7 |
| 54370              | 3       | 0031      | 0135     |     |     |     |     |     | Y   | V   | Y   | X   | 5438           | 022636      | E138.8          | 032018      | W054.6 |
| 54380              | 3       | 0218      | 0322     |     |     |     |     |     | Y   | V   | Y   | X   | 5439           | 041408      | E111.9          | 050750      | W081.5 |
| 5439R              | 3       | 0402      | 0506     |     |     | X   |     |     | Y   | V   | Y   | X   | 5440           | 060139      | E085.1          | 065522      | W108.4 |
| 5440R              | 3       | 0530      | 0651     |     |     | Y   |     |     | Y   | X   | Y   | X   | 5441           | 074911      | E058.2          | 084254      | W135.3 |
| 5441A              | 3       | 0710      | 0824     |     |     | Y   |     |     | X   | V   | Y   | X   | 5442           | 093643      | E031.3          | 103025      | W162.1 |
| 5442A              | 3       | 0857      | 1016     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5443           | 112415      | E004.4          | 121757      | E171.0 |
| 5443A              | 3       | 1042      | 1205     |     |     | X   |     |     | Y   | V   | Y   | X   | 5444           | 131146      | W022.5          | 140522      | E144.1 |
| 5444A              | 3       | 1229      | 1350     |     |     | Y   |     |     | X   | V   | Y   | X   | 5445           | 145918      | W049.4          | 155301      | E117.2 |
| 5445A              | 3       | 1413      | 1533     |     |     | Y   |     |     | Y   | X   | Y   | X   | 5446           | 164650      | W076.3          | 174032      | E090.3 |
| 5446A              | 3       | 1557      | 1717     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5447           | 183422      | W103.1          | 192804      | E063.4 |
| 5448A              | 3       | 1928      | 2050     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5448           | 202154      | W130.0          | 211536      | E036.6 |
| 5449A              | 3       | 2115      | 2235     |     |     | Y   |     |     | Y   | V   | Y   | X   | 5449           | 220925      | W156.9          | 230308      | E009.7 |
| 5450A              | 3       | 2307      | 0021     |     |     | X   |     |     | X   | V   | Y   | X   | 5450           | 235657      | E176.2          | 005040      | W017.2 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
23 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HQRSS |      | L T T S E T H |   |   |   |   |   |   |   | ASCENDING |       |        | DESCENDING |        |        |
|-----------------------------|------------------|-------|------|---------------|---|---|---|---|---|---|---|-----------|-------|--------|------------|--------|--------|
|                             |                  | TIME  |      | R             | H | D | C | S | F | P | W | I         | NODE  |        | NODE       |        |        |
|                             |                  | ON    | OFF  | I             | J | R | A | M | R | M | R | R         | DATA  | TIME   | LONG       | TIME   | LONG   |
|                             |                  | HRMN  | HRMN | R             | R | E | M | R | R | R | L | S         | ORBIT | HRMNSS | DEGREE     | HRMNSS | DEGREE |
| 5452R                       | B                | 0304  | 0423 |               |   |   |   |   |   |   |   |           | 5451  | 014429 | E149.3     | 023811 | W044.1 |
| 5453R                       | B                | 0450  | 0611 |               |   |   |   |   |   |   |   |           | 5452  | 033201 | E122.4     | 042543 | W071.0 |
| 5454A                       | B                | 0629  | 0734 |               |   |   |   |   |   |   |   |           | 5453  | 051933 | E095.6     | 061315 | W097.8 |
| 5455A                       | B                | 0814  | 0936 |               |   |   |   |   |   |   |   |           | 5454  | 070704 | E068.7     | 080047 | W124.7 |
| 5456A                       | B                | 1001  | 1123 |               |   |   |   |   |   |   |   |           | 5455  | 085436 | E041.8     | 094819 | W151.6 |
| 5457A                       | B                | 1147  | 1309 |               |   |   |   |   |   |   |   |           | 5456  | 104208 | E014.9     | 113550 | W178.5 |
| 5458A                       | B                | 1331  | 1452 |               |   |   |   |   |   |   |   |           | 5457  | 122940 | W012.0     | 132322 | E154.6 |
| 5459A                       | B                | 1515  | 1636 |               |   |   |   |   |   |   |   |           | 5458  | 141711 | W038.9     | 151054 | E127.7 |
| 5460A                       | B                | 1659  | 1819 |               |   |   |   |   |   |   |   |           | 5459  | 160443 | W065.7     | 165826 | E100.8 |
| 5461A                       | B                | 1845  | 2008 |               |   |   |   |   |   |   |   |           | 5460  | 175215 | W092.6     | 184557 | E074.0 |
| 5462A                       | B                | 2033  | 2138 |               |   |   |   |   |   |   |   |           | 5461  | 193947 | W119.5     | 203329 | E047.1 |
| 5463A                       | B                | 2222  | 2340 |               |   |   |   |   |   |   |   |           | 5462  | 212719 | W146.4     | 222101 | E020.2 |
|                             |                  |       |      |               |   |   |   |   |   |   |   |           | 5463  | 231450 | W173.3     | 000833 | W006.7 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
24 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HQRSS |      | L T T S E T H |   |   |   |   |   |   |   | ASCENDING |       |        | DESCENDING |        |        |
|-----------------------------|------------------|-------|------|---------------|---|---|---|---|---|---|---|-----------|-------|--------|------------|--------|--------|
|                             |                  | TIME  |      | R             | H | D | C | S | F | P | W | I         | NODE  |        | NODE       |        |        |
|                             |                  | ON    | OFF  | I             | J | R | A | M | R | M | R | R         | DATA  | TIME   | LONG       | TIME   | LONG   |
|                             |                  | HRMN  | HRMN | R             | R | E | M | R | R | R | L | S         | ORBIT | HRMNSS | DEGREE     | HRMNSS | DEGREE |
| 54630                       | B                | 2337  | 0039 |               |   |   |   |   |   |   |   |           | 5464  | 010222 | E159.9     | 015605 | W033.6 |
| 54640                       | B                | 0054  | 0159 |               |   |   |   |   |   |   |   |           | 5465  | 024954 | E133.0     | 034336 | W060.4 |
| 5466R                       | B                | 0406  | 0529 |               |   |   |   |   |   |   |   |           | 5466  | 043726 | E106.1     | 053108 | W087.3 |
| 5467R                       | B                | 0553  | 0713 |               |   |   |   |   |   |   |   |           | 5467  | 062457 | E079.2     | 071840 | W114.2 |
| 5468A                       | B                | 0733  | 0853 |               |   |   |   |   |   |   |   |           | 5468  | 081229 | E052.4     | 090612 | W141.1 |
| 5469A                       | B                | 0919  | 1041 |               |   |   |   |   |   |   |   |           | 5469  | 100001 | E025.4     | 105344 | W168.0 |
| 5470A                       | B                | 1105  | 1228 |               |   |   |   |   |   |   |   |           | 5470  | 114733 | W001.4     | 124115 | E165.1 |
| 5471A                       | B                | 1251  | 1412 |               |   |   |   |   |   |   |   |           | 5471  | 133505 | W028.3     | 142847 | E138.3 |
| 5472A                       | B                | 1435  | 1554 |               |   |   |   |   |   |   |   |           | 5472  | 152236 | W055.2     | 161619 | E111.4 |
| 5473A                       | B                | 1618  | 1741 |               |   |   |   |   |   |   |   |           | 5473  | 171008 | W082.1     | 180351 | E084.5 |
| 5475A                       | B                | 1951  | 2113 |               |   |   |   |   |   |   |   |           | 5474  | 185740 | W109.0     | 195123 | E057.6 |
| 5476A                       | B                | 2138  | 2258 |               |   |   |   |   |   |   |   |           | 5475  | 204512 | W135.9     | 213854 | E030.7 |
|                             |                  |       |      |               |   |   |   |   |   |   |   |           | 5476  | 223243 | W162.7     | 232626 | E003.9 |



TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
25.JULY.1976

| INT   | H | HDRSS |      | L | T | T | S | E | T | H | ASCENDING |   |       | DESCENDING |        |        |        |
|-------|---|-------|------|---|---|---|---|---|---|---|-----------|---|-------|------------|--------|--------|--------|
| ORBIT | J | TIME  |      | R | H | D | C | S | F | P | W         | I | NODE  |            | NODE   |        |        |
| AND   | R | ON    | OFF  | I | I | R | A | M | P | M | R         | R | DATA  | TIME       | LONG   | TIME   | LONG   |
| STDN  | S | HRMN  | HRMN | R | R | E | M | R | R | R | L         | S | ORBIT | HRMNSS     | DEGREE | HRMNSS | DEGREE |
| 54770 | B | 2340  | 0053 |   |   |   |   | Y | Y | Y | Y         |   | 5477  | 002015     | E170.4 | 011358 | W023.0 |
| 54780 | B | 0158  | 0302 |   |   |   |   | Y | Y | Y | Y         |   | 5478  | 020747     | E143.5 | 030130 | W049.0 |
| 5479R | B | 0345  | 0447 | Y |   |   |   | Y | Y | Y | Y         |   | 5479  | 035519     | E116.6 | 044902 | W076.8 |
| 5480R | B | 0511  | 0634 | Y |   |   |   | Y | Y | Y | Y         |   | 5480  | 054251     | E089.7 | 063633 | W103.7 |
| 5481A | B | 0652  | 0810 | Y |   |   |   | Y | Y | Y | Y         |   | 5481  | 073022     | E062.9 | 082405 | W130.6 |
| 5482A | B | 0837  | 0959 | Y |   |   |   | Y | Y | Y | Y         |   | 5482  | 091754     | E036.0 | 101137 | W157.4 |
| 5483A | B | 1024  | 1145 | Y |   |   |   | Y | Y | Y | Y         |   | 5483  | 110526     | E009.1 | 115909 | E175.7 |
| 5484A | B | 1210  | 1332 | Y |   |   |   | Y | Y | Y | Y         |   | 5484  | 125258     | W017.8 | 134640 | E148.8 |
| 5485A | B | 1354  | 1515 | Y |   |   |   | Y | Y | Y | Y         |   | 5485  | 144029     | W044.7 | 153412 | E121.0 |
| 5486A | B | 1537  | 1659 | Y |   |   |   | Y | Y | Y | Y         |   | 5486  | 162801     | W071.6 | 172144 | E095.0 |
| 5487A | B | 1722  | 1845 | Y |   |   |   | Y | Y | Y | Y         |   | 5487  | 181533     | W098.4 | 190916 | E068.1 |
| 5489A | B | 1917  | 2021 | Y |   |   |   | Y | Y | Y | Y         |   | 5489  | 200305     | W125.3 | 205648 | E041.3 |
| 5490A | B | 2246  | 0003 | X |   |   |   | Y | Y | Y | Y         |   | 5489  | 215037     | W152.2 | 224410 | E014.4 |
|       |   |       |      |   |   |   |   |   |   |   |           |   | 5490  | 233808     | W179.1 | 003151 | W012.5 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
26 JULY 1976

| INT   | H | HDRSS |      | L | T | T | S | F | T | H | ASCENDING |   |       | DESCENDING |        |        |        |
|-------|---|-------|------|---|---|---|---|---|---|---|-----------|---|-------|------------|--------|--------|--------|
| ORBIT | J | TIME  |      | R | H | D | C | S | F | P | W         | I | NODE  |            | NODE   |        |        |
| AND   | R | ON    | OFF  | I | I | R | A | M | P | M | R         | R | DATA  | TIME       | LONG   | TIME   | LONG   |
| STDN  | S | HRMN  | HRMN | R | R | E | M | P | R | R | L         | S | ORBIT | HRMNSS     | DEGREE | HRMNSS | DEGREE |
| 54900 | B | 0001  | 0103 |   |   |   |   | Y | Y | Y | Y         |   | 5491  | 012540     | E154.0 | 021923 | W039.4 |
| 54910 | B | 0118  | 0222 |   |   |   |   | Y | Y | Y | Y         |   | 5492  | 031312     | E127.1 | 040655 | W066.3 |
| 5492R | B | 0307  | 0403 | Y |   |   |   | Y | Y | Y | Y         |   | 5493  | 050044     | E100.3 | 055427 | W093.2 |
| 5493R | B | 0420  | 0552 | Y |   |   |   | Y | Y | Y | Y         |   | 5494  | 064815     | E073.4 | 074158 | W120.1 |
| 5494A | B | 0611  | 0726 | Y |   |   |   | Y | Y | Y | Y         |   | 5495  | 083547     | E046.5 | 092930 | W147.0 |
| 5495A | B | 0757  | 0917 | Y |   |   |   | Y | Y | Y | Y         |   | 5496  | 102319     | E019.6 | 111702 | W173.8 |
| 5496A | B | 0942  | 1104 | Y |   |   |   | Y | Y | Y | Y         |   | 5497  | 121051     | W007.3 | 130434 | E159.3 |
| 5497A | B | 1128  | 1251 | X |   |   |   | Y | Y | Y | Y         |   | 5498  | 135823     | W034.2 | 145206 | E132.4 |
| 5498A | B | 1313  | 1433 | X |   |   |   | Y | Y | Y | Y         |   | 5499  | 154554     | W061.0 | 163937 | E105.6 |
| 5500A | B | 1641  | 1804 | Y |   |   |   | Y | Y | Y | Y         |   | 5500  | 173326     | W087.9 | 182700 | E078.7 |
| 5501A | B | 1826  | 1949 | Y |   |   |   | Y | Y | Y | Y         |   | 5501  | 192058     | W114.8 | 201441 | E051.8 |
| 5502A | B | 2014  | 2135 | Y |   |   |   | Y | Y | Y | Y         |   | 5502  | 210830     | W141.7 | 220213 | E024.0 |
| 5503A | B | 2202  | 2322 | Y |   |   |   | X | Y | Y | Y         |   | 5503  | 225602     | W168.6 | 234944 | W002.0 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
27 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |             | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>R | A<br>M | R<br>M | R<br>M | R<br>R | R<br>L | S<br>S | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |        |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|----------------|--------------------|----------------|----------------|--------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |        |        |        |        |        |        |        |        |        | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |        |
| 55030                       | 3                | 2318          | 0022        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                   | 5504           | 004330             | E164.6         | 013713         | W028.0 |
| 55040                       | 3                | 0035          | 0130        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                   | 5505           | 023101             | E137.7         | 032444         | W055.7 |
| 5506R                       | 3                | 0340          | 0510        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5506           | 041833             | E110.8         | 051216         | W082.6 |
| 5507R                       | 3                | 0534          | 0655        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5507           | 060605             | E083.9         | 065948         | W100.5 |
| 5509A                       | 3                | 0900          | 1022        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5508           | 075337             | E057.1         | 084720         | W136.4 |
| 5510A                       | 3                | 1046          | 1209        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5509           | 094108             | E030.2         | 103451         | W163.3 |
| 5511A                       | 3                | 1232          | 1347        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5510           | 112840             | E003.3         | 122223         | E169.8 |
| 5512A                       | 3                | 1417          | 1537        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5511           | 131612             | W023.6         | 140955         | E143.0 |
| 5513A                       | 3                | 1601          | 1722        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5512           | 150344             | W050.5         | 155727         | E116.1 |
| 5514A                       | 3                | 1745          | 1908        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5513           | 165116             | W077.4         | 174459         | E080.2 |
| 5515A                       | 3                | 1933          | 2054        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5514           | 183847             | W104.3         | 193230         | E062.3 |
| 5516A                       | 3                | 2119          | 2241        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5515           | 202619             | W131.2         | 212002         | E035.5 |
|                             |                  |               |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                   | 5516           | 221351             | W158.0         | 230734         | E008.5 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
28 JULY 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |             | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>R | A<br>M | R<br>M | R<br>M | R<br>R | R<br>L | S<br>S | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |        |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|----------------|--------------------|----------------|----------------|--------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |        |        |        |        |        |        |        |        |        | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |        |
| 55170                       | 3                | 2330          | 0035        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                   | 5517           | 000126             | E175.1         | 005506         | W018.3 |
| 55180                       | 3                | 0139          | 0243        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                   | 5518           | 014854             | E148.2         | 024237         | W045.2 |
| 5519R                       | 3                | 0324          | 0427        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5519           | 033626             | E121.4         | 043009         | W072.1 |
| 5520R                       | 3                | 0453          | 0615        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5520           | 052358             | E094.5         | 061741         | W099.0 |
| 5521A                       | 3                | 0633          | 0751        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5521           | 071130             | E067.6         | 080513         | W125.0 |
| 5522A                       | 3                | 0819          | 0939        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5522           | 085901             | E040.7         | 095244         | W152.7 |
| 5523A                       | 3                | 1005          | 1127        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5523           | 104633             | E013.8         | 114016         | W179.6 |
| 5524A                       | 3                | 1151          | 1312        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5524           | 123405             | W013.1         | 132720         | E153.5 |
| 5525A                       | 3                | 1337          | 1456        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5525           | 142137             | W040.0         | 151520         | E126.6 |
| 5526A                       | 3                | 1522          | 1641        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5526           | 160908             | W066.9         | 170252         | E099.7 |
| 5527A                       | 3                | 1705          | 1826        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5527           | 175640             | W093.7         | 185023         | E072.8 |
| 5529A                       | 3                | 1850          | 1955        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5528           | 194412             | W120.6         | 203755         | E046.0 |
| 5530A                       | 3                | 2226          | 2345        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        |                   | 5529           | 213144             | W147.5         | 222527         | E019.1 |
|                             |                  |               |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                   | 5530           | 231915             | W174.4         | 001259         | W007.8 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
29 JULY 1976

| INT ORBIT AND STDN | H C R S | HORSS TIME |          | L R | T R | T R | S F | E P | T H | DATA ORBIT | ASCENDING NODE |             | DESCENDING NODE |             |        |        |
|--------------------|---------|------------|----------|-----|-----|-----|-----|-----|-----|------------|----------------|-------------|-----------------|-------------|--------|--------|
|                    |         | ON HRMN    | OFF HRMN |     |     |     |     |     |     |            | TIME HRMNSS    | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |        |        |
| 55300              | B       | 2341       | 0045     |     |     |     |     | Y   | Y   | Y          | Y              | 5531        | 010647          | E158.8      | 020030 | W034.7 |
| 55310              | B       | 0058       | 0203     |     |     |     |     | Y   | Y   | Y          | Y              | 5532        | 025419          | E131.9      | 034802 | W061.6 |
| 5533R              | B       | 0410       | 0532     | Y   |     |     |     | Y   | Y   | Y          | Y              | 5533        | 044151          | E105.0      | 053534 | W088.5 |
| 5534R              | B       | 0557       | 0715     | Y   |     |     |     | Y   | Y   | Y          | X              | 5534        | 062923          | E078.1      | 072306 | W115.3 |
| 5535A              | B       | 0737       | 0858     | Y   |     |     |     | X   | Y   | Y          | X              | 5535        | 081654          | E051.2      | 091038 | W142.2 |
| 5536A              | B       | 0923       | 1046     | Y   |     |     |     | X   | Y   | Y          | X              | 5536        | 100426          | E024.3      | 105809 | W169.1 |
| 5537A              | B       | 1109       | 1232     | Y   |     |     |     | X   | Y   | Y          | X              | 5537        | 115158          | W002.6      | 124541 | E164.0 |
| 5538A              | B       | 1255       | 1417     | Y   |     |     |     | X   | Y   | Y          | X              | 5538        | 133930          | W029.4      | 143313 | E137.1 |
| 5539A              | B       | 1439       | 1600     | Y   |     |     |     | X   | Y   | Y          | X              | 5539        | 152701          | W056.3      | 162045 | E110.3 |
| 5541A              | B       | 1809       | 1931     | Y   |     |     |     | X   | Y   | Y          | X              | 5540        | 171433          | W083.2      | 180816 | E083.4 |
| 5542A              | B       | 1957       | 2117     | Y   |     |     |     | Y   | Y   | Y          | X              | 5541        | 190205          | W110.1      | 195548 | E056.5 |
|                    |         |            |          |     |     |     |     |     |     |            |                | 5542        | 204937          | W137.0      | 214320 | E029.6 |
|                    |         |            |          |     |     |     |     |     |     |            |                | 5543        | 223708          | W163.0      | 233052 | E002.7 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
30 JULY 1976

| INT ORBIT AND STDN | H C R S | HORSS TIME |          | L R | T R | T R | S F | E P | T H | DATA ORBIT | ASCENDING NODE |             | DESCENDING NODE |             |        |        |
|--------------------|---------|------------|----------|-----|-----|-----|-----|-----|-----|------------|----------------|-------------|-----------------|-------------|--------|--------|
|                    |         | ON HRMN    | OFF HRMN |     |     |     |     |     |     |            | TIME HRMNSS    | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |        |        |
| 5546R              | B       | 0330       | 0451     | Y   |     |     |     | Y   | Y   | Y          | X              | 5544        | 002440          | E169.3      | 011823 | W024.2 |
| 5547R              | B       | 0517       | 0637     | Y   |     |     |     | X   | Y   | Y          | X              | 5545        | 021212          | E142.4      | 030555 | W051.0 |
| 5548A              | B       | 0656       | 0815     | Y   |     |     |     | X   | Y   | Y          | X              | 5546        | 035944          | E115.5      | 045327 | W077.0 |
| 5549A              | B       | 0842       | 1003     | Y   |     |     |     | Y   | Y   | X          | X              | 5547        | 054715          | E088.6      | 064059 | W104.8 |
| 5550A              | B       | 1029       | 1151     | Y   |     |     |     | X   | Y   | Y          | X              | 5548        | 073447          | E061.7      | 082931 | W131.7 |
| 5551A              | B       | 1214       | 1332     | Y   |     |     |     | Y   | Y   | Y          | X              | 5549        | 092219          | E034.8      | 101602 | W158.6 |
| 5552A              | B       | 1358       | 1519     | Y   |     |     |     | Y   | Y   | X          | X              | 5550        | 110951          | E008.0      | 120334 | E174.5 |
| 5553A              | B       | 1542       | 1703     | Y   |     |     |     | X   | Y   | Y          | X              | 5551        | 125723          | W018.9      | 135106 | E147.7 |
| 5554A              | B       | 1726       | 1849     | Y   |     |     |     | Y   | Y   | Y          | X              | 5552        | 144454          | W045.8      | 153838 | E120.8 |
| 5555A              | B       | 1913       | 2035     | Y   |     |     |     | Y   | Y   | Y          | X              | 5553        | 163226          | W072.7      | 172609 | E093.9 |
| 5557A              | B       | 2251       | 0007     | Y   |     |     |     | Y   | Y   | Y          | X              | 5554        | 181958          | W099.6      | 191341 | E067.0 |
|                    |         |            |          |     |     |     |     |     |     |            |                | 5555        | 200730          | W126.4      | 210113 | E040.1 |
|                    |         |            |          |     |     |     |     |     |     |            |                | 5556        | 215501          | W153.3      | 224845 | E013.3 |
|                    |         |            |          |     |     |     |     |     |     |            |                | 5557        | 234233          | E179.8      | 003617 | W013.6 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
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| INT ORBIT AND STDN | H | HRSS |      | L | T | T | S | E | T | H | ASCENDING NODE |             |             | DESCENDING NODE |             |        |        |
|--------------------|---|------|------|---|---|---|---|---|---|---|----------------|-------------|-------------|-----------------|-------------|--------|--------|
|                    |   | ON   | OFF  |   |   |   |   |   |   |   | DATA ORBIT     | TIME HRMNSS | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |        |        |
| 55570              | B | 0005 | 0109 |   |   |   |   |   | X | Y | X              | Y           | 5558        | 013005          | E152.9      | 022348 | W040.5 |
| 55580              | B | 0125 | 0229 |   |   |   |   |   | X | Y | X              | X           | 5559        | 031737          | E126.7      | 041120 | W067.4 |
| 5559P              | B | 0306 | 0408 | Y |   |   |   |   | Y | Y | Y              | Y           | 5560        | 050508          | E099.1      | 055852 | W094.3 |
| 5560R              | B | 0433 | 0555 | Y |   |   |   |   | X | Y | Y              | X           | 5561        | 065240          | E072.3      | 074624 | W121.2 |
| 5562A              | B | 0800 | 0922 | Y |   |   |   |   | Y | Y | X              | X           | 5562        | 084012          | E045.4      | 093355 | W148.0 |
| 5563A              | B | 0946 | 1109 | Y |   |   |   |   | Y | Y | Y              | X           | 5563        | 102744          | E018.5      | 112127 | W175.0 |
| 5564A              | B | 1131 | 1253 | Y |   |   |   |   | Y | Y | Y              | X           | 5564        | 121515          | W008.4      | 130859 | E158.2 |
| 5565A              | B | 1317 | 1438 | Y |   |   |   |   | X | Y | Y              | X           | 5565        | 140247          | W035.3      | 145631 | E131.3 |
| 5566A              | B | 1501 | 1622 | Y |   |   |   |   | Y | Y | Y              | X           | 5566        | 155019          | W062.2      | 164402 | E104.4 |
| 5568A              | B | 1831 | 1948 | Y |   |   |   |   | Y | Y | Y              | X           | 5567        | 173751          | W089.0      | 183134 | E077.5 |
|                    |   |      |      |   |   |   |   |   |   |   |                |             | 5568        | 192522          | W115.9      | 201906 | E050.7 |
|                    |   |      |      |   |   |   |   |   |   |   |                |             | 5569        | 211254          | W142.8      | 220638 | E023.8 |
|                    |   |      |      |   |   |   |   |   |   |   |                |             | 5570        | 230026          | W169.7      | 235410 | W003.1 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
01 AUGUST 1976

| INT ORBIT AND STDN | H | HRSS |      | L | T | T | S | E | T | H | ASCENDING NODE |             |             | DESCENDING NODE |             |        |        |
|--------------------|---|------|------|---|---|---|---|---|---|---|----------------|-------------|-------------|-----------------|-------------|--------|--------|
|                    |   | ON   | OFF  |   |   |   |   |   |   |   | DATA ORBIT     | TIME HRMNSS | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |        |        |
| 55700              | B | 2227 | 2331 |   |   |   |   |   | X | Y | Y              | X           | 5571        | 004758          | E163.4      | 014141 | W030.0 |
| 55710              | B | 0039 | 0144 |   |   |   |   |   | X | Y | Y              | X           | 5572        | 023530          | E136.6      | 032913 | W056.0 |
| 5573R              | B | 0352 | 0514 | Y |   |   |   |   | X | Y | Y              | X           | 5573        | 042301          | E109.7      | 051845 | W083.7 |
| 5574P              | B | 0539 | 0659 | Y |   |   |   |   | Y | Y | Y              | X           | 5574        | 061033          | E082.8      | 070417 | W110.6 |
| 5576A              | B | 0855 | 1026 | Y |   |   |   |   | X | Y | X              | X           | 5575        | 075805          | E055.9      | 085148 | W137.5 |
| 5577A              | B | 1051 | 1214 | Y |   |   |   |   | Y | Y | Y              | X           | 5576        | 094537          | E029.0      | 103920 | W164.4 |
| 5578A              | B | 1237 | 1359 | Y |   |   |   |   | Y | Y | Y              | X           | 5577        | 113308          | E002.1      | 122652 | E168.7 |
| 5579A              | B | 1421 | 1542 | Y |   |   |   |   | X | Y | Y              | X           | 5578        | 132040          | W024.7      | 141424 | E141.8 |
| 5580R              | B | 1553 | 1714 | Y |   |   |   |   | X | Y | Y              | X           | 5579        | 150812          | W051.6      | 160156 | E115.0 |
|                    |   |      |      |   |   |   |   |   |   |   |                |             | 5580        | 165544          | W078.5      | 174927 | E088.1 |
|                    |   |      |      |   |   |   |   |   |   |   |                |             | 5581        | 184315          | W105.4      | 193659 | E061.2 |
|                    |   |      |      |   |   |   |   |   |   |   |                |             | 5582        | 203047          | W132.3      | 212431 | E034.3 |
|                    |   |      |      |   |   |   |   |   |   |   |                |             | 5583        | 221819          | W159.2      | 231203 | E007.4 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
02 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS |      | L<br>R | T<br>R | T<br>E | S<br>A | E<br>M | P<br>R | W<br>R | I<br>R | T<br>H<br>S | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |        |             | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN |        |        |        |        |        |        |        |        |             | HRMNSS            | DEGREE | HRMNSS             | DEGREE |        |
| 55840                       | 3                | 2333  | 0038 |        |        |        |        |        |        |        |        |             | 5584              | 000551 | E174.0             | 005934 | W019.5 |
| 55850                       | 3                | 0145  | 0240 |        |        |        |        |        |        |        |        |             | 5585              | 015322 | E147.1             | 024706 | W046.3 |
| 5586R                       | 3                | 0329  | 0432 |        | X      |        |        |        |        |        |        |             | 5586              | 034054 | E120.2             | 043437 | W073.2 |
| 5587R                       | 3                | 0457  | 0610 |        | Y      |        |        |        |        |        |        |             | 5587              | 052826 | E093.3             | 062210 | W100.1 |
| 5589A                       | 3                | 0823  | 0945 |        | Y      |        |        |        |        |        |        |             | 5588              | 071558 | E066.4             | 080941 | W127.0 |
| 5590A                       | 3                | 1009  | 1133 |        | Y      |        |        |        |        |        |        |             | 5589              | 090330 | E039.6             | 095713 | W153.0 |
| 5591A                       | 3                | 1155  | 1317 |        | Y      |        |        |        |        |        |        |             | 5590              | 105101 | E012.7             | 114445 | E179.3 |
| 5592A                       | 3                | 1340  | 1502 |        | Y      |        |        |        |        |        |        |             | 5591              | 123833 | W014.2             | 133217 | E152.4 |
| 5593A                       | 3                | 1525  | 1645 |        | Y      |        |        |        |        |        |        |             | 5592              | 142605 | W041.1             | 151949 | E125.5 |
| 5594A                       | 3                | 1708  | 1831 |        | Y      |        |        |        |        |        |        |             | 5593              | 161337 | W068.0             | 170720 | E098.6 |
| 5595A                       | 3                | 1854  | 2017 |        | Y      |        |        |        |        |        |        |             | 5594              | 180108 | W094.9             | 185452 | E071.7 |
| 5596A                       | 3                | 2042  | 2202 |        | Y      |        |        |        |        |        |        |             | 5595              | 194840 | W121.7             | 204224 | E044.8 |
| 5597A                       | 3                | 2231  | 2348 |        | Y      |        |        |        |        |        |        |             | 5596              | 213612 | W148.6             | 222056 | E018.0 |
|                             |                  |       |      |        |        |        |        |        |        |        |        |             | 5597              | 232344 | W175.5             | 001727 | W009.0 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
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| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS |      | L<br>R | T<br>R | T<br>E | S<br>A | E<br>M | P<br>R | W<br>R | I<br>R | T<br>H<br>S | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |        |             | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN |        |        |        |        |        |        |        |        |             | HRMNSS            | DEGREE | HRMNSS             | DEGREE |        |
| 55970                       | 3                | 2346  | 0100 |        |        |        |        |        |        |        |        |             | 5598              | 011118 | E157.6             | 020501 | W035.0 |
| 55980                       | 3                | 0105  | 0207 |        |        |        |        |        |        |        |        |             | 5599              | 025849 | E130.7             | 035233 | W062.8 |
| 5600R                       | 3                | 0415  | 0537 |        | Y      |        |        |        |        |        |        |             | 5600              | 044621 | E103.8             | 054005 | W089.6 |
| 5601R                       | 3                | 0602  | 0721 |        | Y      |        |        |        |        |        |        |             | 5601              | 063353 | E076.9             | 072737 | W116.5 |
| 5602A                       | 3                | 0742  | 0903 |        | Y      |        |        |        |        |        |        |             | 5602              | 082125 | E050.0             | 091509 | W143.4 |
| 5603A                       | 3                | 0929  | 1051 |        | Y      |        |        |        |        |        |        |             | 5603              | 100857 | E023.1             | 110240 | W170.3 |
| 5604A                       | 3                | 1114  | 1237 |        | Y      |        |        |        |        |        |        |             | 5604              | 115628 | W003.7             | 125012 | E162.8 |
| 5605A                       | 3                | 1259  | 1421 |        | Y      |        |        |        |        |        |        |             | 5605              | 134400 | W030.6             | 143744 | E135.0 |
| 5606A                       | 3                | 1443  | 1558 |        | Y      |        |        |        |        |        |        |             | 5606              | 153132 | W057.5             | 162516 | E109.1 |
| 5607A                       | 3                | 1627  | 1749 |        | Y      |        |        |        |        |        |        |             | 5607              | 171904 | W084.4             | 181247 | E082.2 |
| 5608A                       | 3                | 1813  | 1935 |        | Y      |        |        |        |        |        |        |             | 5608              | 190635 | W111.3             | 200019 | E055.7 |
| 5609A                       | 3                | 2001  | 2121 |        | Y      |        |        |        |        |        |        |             | 5609              | 205407 | W138.2             | 214751 | E028.4 |
| 5610A                       | 3                | 2147  | 2307 |        | Y      |        |        |        |        |        |        |             | 5610              | 224139 | W165.0             | 233523 | E001.5 |

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TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
04 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME    |      | L<br>R | T<br>R | T<br>I | S<br>R | E<br>A | P<br>M | W<br>R | I<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |
|-----------------------------|------------------|------------------|------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|--------|--------------------|--------|
|                             |                  | ON               | OFF  |        |        |        |        |        |        |        |        |               | HRMN              | DEGREE | HRMN               | DEGREE |
| 56110                       | 3                | 2355             | 0059 |        |        |        |        | X      | X      | X      | X      | 5611          | 002911            | E168.1 | 012255             | W025.4 |
| 56120                       | 3                | 020 <sup>A</sup> | 0311 |        |        |        |        | Y      | Y      | X      | X      | 5612          | 021642            | E141.2 | 031026             | W052.2 |
| 5613R                       | 3                | 0351             | 0456 | Y      |        |        |        | Y      | Y      | X      | X      | 5613          | 040414            | E114.3 | 045758             | W079.1 |
| 5614R                       | 3                | 0521             | 0642 | Y      |        |        |        | Y      | Y      | X      | X      | 5614          | 055146            | E087.4 | 064530             | W106.0 |
| 5615A                       | 3                | 0701             | 0820 | Y      |        |        |        | X      | Y      | X      | X      | 5615          | 073918            | E060.6 | 083302             | W132.0 |
| 5616A                       | 3                | 0846             | 1008 | Y      |        |        |        | Y      | Y      | X      | X      | 5616          | 092650            | E037.7 | 102033             | W159.8 |
| 5617A                       | 3                | 1033             | 1155 | Y      |        |        |        | X      | Y      | X      | X      | 5617          | 111421            | E006.8 | 120805             | E173.4 |
| 5618A                       | 3                | 121 <sup>A</sup> | 1341 | X      |        |        |        | X      | Y      | X      | X      | 5618          | 130153            | W020.1 | 135537             | E146.5 |
| 5619A                       | 3                | 1403             | 1524 | Y      |        |        |        | X      | Y      | X      | X      | 5619          | 144925            | W047.0 | 154302             | E119.6 |
| 5620A                       | 3                | 1546             | 1707 | Y      |        |        |        | Y      | Y      | X      | X      | 5620          | 163657            | W073.9 | 173041             | E092.7 |
| 5621A                       | 3                | 1721             | 1854 | Y      |        |        |        | X      | Y      | X      | X      | 5621          | 182428            | W100.8 | 191812             | E065.8 |
| 5622A                       | 3                | 191 <sup>A</sup> | 2039 | Y      |        |        |        | Y      | Y      | X      | X      | 5622          | 201200            | W127.6 | 210544             | E038.9 |
| 5623A                       | 3                | 2105             | 2226 | Y      |        |        |        | X      | Y      | X      | X      | 5623          | 215932            | W154.5 | 225316             | F012.1 |
| 5624A                       | 3                | 2256             | 0011 | X      |        |        |        | Y      | Y      | X      | X      | 5624          | 234704            | E178.6 | 004048             | W014.8 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
05 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>R | T<br>I | S<br>R | E<br>A | P<br>M | W<br>R | I<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|--------|--------------------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |               | HRMN              | DEGREE | HRMN               | DEGREE |
| 56240                       | 3                | 0009          | 0113 |        |        |        |        | Y      | Y      | X      | X      | 5625          | 013436            | E151.7 | 022819             | W041.7 |
| 56250                       | 3                | 0126          | 0230 |        |        |        |        | Y      | Y      | X      | X      | 5626          | 032207            | E124.8 | 041551             | W068.6 |
| 5626R                       | 3                | 0315          | 0413 | Y      |        |        |        | X      | Y      | X      | X      | 5627          | 050939            | E098.0 | 060323             | W095.5 |
| 5627R                       | 3                | 0438          | 0601 | Y      |        |        |        | X      | Y      | X      | X      | 5628          | 065711            | E071.1 | 075055             | W122.4 |
| 5628R                       | 3                | 0629          | 0742 | Y      |        |        |        | Y      | Y      | X      | X      | 5629          | 084443            | E044.2 | 093827             | W149.2 |
| 5629A                       | 3                | 0805          | 0926 | Y      |        |        |        | Y      | Y      | X      | X      | 5630          | 103214            | E017.3 | 112558             | W176.1 |
| 5630A                       | 3                | 0951          | 1114 | Y      |        |        |        | X      | Y      | Y      | X      | 5631          | 121946            | W009.6 | 131330             | E157.0 |
| 5631A                       | 3                | 1137          | 1300 | X      |        |        |        | Y      | Y      | Y      | X      | 5632          | 140718            | W036.5 | 150102             | E130.1 |
| 5632A                       | 3                | 1322          | 1443 | Y      |        |        |        | Y      | Y      | X      | X      | 5633          | 155450            | W063.3 | 164834             | E103.2 |
| 5633A                       | 3                | 1505          | 1626 | Y      |        |        |        | Y      | Y      | Y      | X      | 5634          | 174222            | W090.2 | 183605             | E076.3 |
| 5634A                       | 3                | 1650          | 1811 | Y      |        |        |        | X      | Y      | Y      | X      | 5635          | 191953            | W117.1 | 202337             | E049.5 |
| 5635A                       | 3                | 1835          | 1958 | Y      |        |        |        | Y      | Y      | Y      | X      | 5636          | 211725            | W144.0 | 221109             | E022.6 |
| 5636A                       | 3                | 2023          | 2144 | X      |        |        |        | X      | Y      | X      | X      | 5637          | 230457            | W170.9 | 235841             | W004.3 |
| 5637A                       | 3                | 2211          | 2330 | Y      |        |        |        | X      | Y      | X      | X      |               |                   |        |                    |        |

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TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
06 AUGUST 1976

| INT ORBIT AND STDN | H J R S | HRSS TIME |      | L R | T R | T R | S E | F P | W J | T H | DATA ORBIT | ASCENDING NODE |        | DESCENDING NODE |        |
|--------------------|---------|-----------|------|-----|-----|-----|-----|-----|-----|-----|------------|----------------|--------|-----------------|--------|
|                    |         | ON        | OFF  |     |     |     |     |     |     |     |            | TIME           | LONG   | TIME            | LONG   |
|                    |         | HRMN      | HRMN |     |     |     |     |     |     |     |            | HRMN           | DEGREE | HRMN            | DEGREE |
| 5640R              | 3       | 0357      | 0510 |     |     |     |     |     |     |     | 5638       | 005229         | E162.3 | 014613          | W031.0 |
| 5641R              | 3       | 0543      | 0704 |     |     |     |     |     |     |     | 5639       | 024000         | E135.4 | 033344          | W058.1 |
| 5642A              | 3       | 0723      | 0844 |     |     |     |     |     |     |     | 5640       | 042732         | E108.5 | 052115          | W085.0 |
| 5643A              | 3       | 0900      | 1030 |     |     |     |     |     |     |     | 5641       | 061504         | E081.6 | 070848          | W111.8 |
| 5644A              | 3       | 1055      | 1218 |     |     |     |     |     |     |     | 5642       | 080236         | E054.7 | 085620          | W138.7 |
| 5645A              | 3       | 1241      | 1402 |     |     |     |     |     |     |     | 5643       | 095007         | E027.8 | 104352          | W165.6 |
| 5646A              | 3       | 1425      | 1546 |     |     |     |     |     |     |     | 5644       | 113739         | E001.0 | 123123          | E167.5 |
| 5647A              | 3       | 1600      | 1731 |     |     |     |     |     |     |     | 5645       | 132511         | W025.9 | 141855          | E140.6 |
| 5648A              | 3       | 1754      | 1916 |     |     |     |     |     |     |     | 5646       | 151243         | W052.8 | 160627          | E113.8 |
| 5649A              | 3       | 1916      | 1942 |     |     |     |     |     |     |     | 5647       | 170015         | W079.7 | 175350          | E086.0 |
| 5650A              | 3       | 2120      | 2248 |     |     |     |     |     |     |     | 5648       | 184746         | W106.6 | 194130          | E060.0 |
|                    |         |           |      |     |     |     |     |     |     |     | 5649       | 203518         | W133.5 | 212902          | E033.1 |
|                    |         |           |      |     |     |     |     |     |     |     | 5650       | 222250         | W160.4 | 231634          | E006.2 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
07 AUGUST 1976

| INT ORBIT AND STDN | H J R S | HRSS TIME |      | L R | T R | T R | S E | F P | W J | T H | DATA ORBIT | ASCENDING NODE |        | DESCENDING NODE |        |
|--------------------|---------|-----------|------|-----|-----|-----|-----|-----|-----|-----|------------|----------------|--------|-----------------|--------|
|                    |         | ON        | OFF  |     |     |     |     |     |     |     |            | TIME           | LONG   | TIME            | LONG   |
|                    |         | HRMN      | HRMN |     |     |     |     |     |     |     |            | HRMN           | DEGREE | HRMN            | DEGREE |
| 56100              | 3       | 2337      | 0041 |     |     |     |     |     |     |     | 5651       | 001022         | E172.8 | 010406          | W020.7 |
| 56520              | 3       | 0140      | 0252 |     |     |     |     |     |     |     | 5652       | 015753         | E145.9 | 025138          | W047.6 |
| 5653R              | 3       | 0332      | 0437 |     |     |     |     |     |     |     | 5653       | 034525         | E119.0 | 043902          | W074.4 |
| 5654R              | 3       | 0501      | 0624 |     |     |     |     |     |     |     | 5654       | 053257         | E092.1 | 062641          | W101.3 |
| 5656A              | 3       | 0820      | 0940 |     |     |     |     |     |     |     | 5655       | 072029         | E065.2 | 081413          | W128.2 |
| 5657A              | 3       | 1014      | 1136 |     |     |     |     |     |     |     | 5656       | 090800         | E038.4 | 100145          | W155.1 |
| 5658A              | 3       | 1200      | 1322 |     |     |     |     |     |     |     | 5657       | 105532         | E011.5 | 114916          | E178.0 |
| 5659A              | 3       | 1345      | 1506 |     |     |     |     |     |     |     | 5658       | 124304         | W015.4 | 133648          | E151.2 |
| 5660R              | 3       | 1514      | 1636 |     |     |     |     |     |     |     | 5659       | 143036         | W042.3 | 152420          | E124.3 |
| 5661A              | 3       | 1713      | 1836 |     |     |     |     |     |     |     | 5660       | 161808         | W069.2 | 171152          | E097.4 |
| 5662A              | 3       | 1859      | 2022 |     |     |     |     |     |     |     | 5661       | 180539         | W096.1 | 185924          | E070.5 |
| 5663A              | 3       | 2047      | 2207 |     |     |     |     |     |     |     | 5662       | 195311         | W122.9 | 204655          | E043.6 |
| 56640              | 3       | 2257      | 0000 |     |     |     |     |     |     |     | 5663       | 214043         | W149.8 | 223427          | E016.7 |
|                    |         |           |      |     |     |     |     |     |     |     | 5664       | 232815         | W176.7 | 002159          | W010.1 |

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TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
08 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>R | T<br>R | S<br>E | F<br>M | P<br>R | W<br>R | I<br>R | T<br>H<br>L<br>S | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |                  | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN          | HRMN |        |        |        |        |        |        |        |        |                  | ORBIT             | HRMNSS | DEGREE             | HRMNSS | DEGREE |
| 56650                       | 3                | 0107          | 0211 |        |        |        |        | X      | Y      | Y      | Y      |                  | 5665              | 011546 | E156.4             | 020931 | W037.0 |
| 5667R                       | 3                | 0252          | 0343 |        | Y      |        |        | X      | Y      | Y      | Y      |                  | 5666              | 030318 | E129.5             | 035702 | W063.0 |
| 5668R                       | 3                | 0607          | 0726 |        | Y      |        |        | Y      | Y      | Y      | Y      |                  | 5667              | 045050 | E102.6             | 054434 | W090.8 |
| 5669A                       | 3                | 0746          | 0907 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5668              | 063822 | E075.8             | 073206 | W117.7 |
| 5670A                       | 3                | 0933          | 1055 |        | Y      |        |        | X      | Y      | X      | Y      |                  | 5669              | 082554 | E048.9             | 091939 | W144.6 |
| 5671A                       | 3                | 1118          | 1241 |        | Y      |        |        | X      | Y      | Y      | Y      |                  | 5670              | 101325 | E022.0             | 110710 | W171.7 |
| 5672A                       | 3                | 1303          | 1425 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5671              | 120057 | W004.9             | 125441 | E161.7 |
| 5673A                       | 3                | 1447          | 1609 |        | Y      |        |        | Y      | Y      | Y      | Y      |                  | 5672              | 134829 | W031.8             | 144213 | E134.8 |
| 5674A                       | 3                | 1631          | 1754 |        | Y      |        |        | X      | Y      | Y      | Y      |                  | 5673              | 153601 | W058.7             | 162945 | E107.0 |
| 5675A                       | 3                | 1817          | 1940 |        | Y      |        |        | X      | Y      | Y      | Y      |                  | 5674              | 172332 | W085.5             | 181717 | E081.0 |
| 5676A                       | 3                | 2005          | 2126 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5675              | 191104 | W112.4             | 200448 | E054.2 |
| 5677A                       | 3                | 2153          | 2312 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5676              | 205836 | W139.3             | 215220 | E027.3 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                  | 5677              | 224608 | W166.2             | 233952 | E000.4 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
09 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>R | T<br>R | S<br>E | F<br>M | P<br>R | W<br>R | I<br>R | T<br>H<br>L<br>S | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |                  | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN          | HRMN |        |        |        |        |        |        |        |        |                  | ORBIT             | HRMNSS | DEGREE             | HRMNSS | DEGREE |
| 56770                       | 3                | 2310          | 0011 |        |        |        |        | Y      | Y      | Y      | Y      |                  | 5678              | 003339 | E166.9             | 012724 | W026.5 |
| 56780                       | 3                | 0026          | 0129 |        |        |        |        | Y      | Y      | Y      | Y      |                  | 5679              | 022111 | E140.1             | 031456 | W053.4 |
| 56790                       | 3                | 0212          | 0315 |        |        |        |        | X      | Y      | Y      | Y      |                  | 5680              | 040843 | E113.2             | 050227 | W080.7 |
| 5680R                       | 3                | 0358          | 0500 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5681              | 055615 | E086.3             | 064959 | W107.0 |
| 5681R                       | 3                | 0525          | 0646 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5682              | 074347 | E059.4             | 083731 | W134.0 |
| 5682A                       | 3                | 0655          | 0820 |        | Y      |        |        | Y      | Y      | Y      | Y      |                  | 5683              | 093118 | E032.5             | 102503 | W160.0 |
| 5683A                       | 3                | 0851          | 1011 |        | Y      |        |        | X      | Y      | Y      | Y      |                  | 5684              | 111850 | E005.6             | 121234 | E172.2 |
| 5684A                       | 3                | 1037          | 1200 |        | Y      |        |        | Y      | Y      | Y      | Y      |                  | 5685              | 130622 | W021.2             | 140006 | E145.3 |
| 5685A                       | 3                | 1223          | 1345 |        | Y      |        |        | X      | Y      | X      | Y      |                  | 5686              | 145354 | W048.1             | 154738 | E118.4 |
| 5686A                       | 3                | 1407          | 1528 |        | Y      |        |        | X      | Y      | Y      | Y      |                  | 5687              | 164125 | W075.0             | 173510 | E091.6 |
| 5687A                       | 3                | 1551          | 1712 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5688              | 182857 | W101.9             | 192242 | E064.7 |
| 5688A                       | 3                | 1735          | 1858 |        | Y      |        |        | Y      | Y      | X      | Y      |                  | 5689              | 201629 | W128.8             | 211013 | E037.8 |
| 5690A                       | 3                | 2109          | 2230 |        | Y      |        |        | X      | Y      | Y      | Y      |                  | 5690              | 220401 | W155.7             | 225745 | E010.0 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                  | 5691              | 235133 | E177.5             | 004517 | W016.0 |



TABLE 2-2  
 DATA AVAILABILITY ON-OFF TIMES  
 10 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HORSS<br>TIME |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>W | I<br>I | T<br>R | H<br>A | M<br>M | R<br>R | M<br>R | R<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|--------|--------------------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |        |        |        |        |        |               | HRMN              | HRMN   | HRMN               | HRMN   |
| 56920                       | B                | 0130          | 0234 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5692          | 013005            | E150.6 | 023250             | W042.0 |
| 5701A                       | B                | 1710          | 1817 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5693          | 032637            | E123.7 | 042021             | W069.7 |
| 5703A                       | B                | 2020          | 2140 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5694          | 051409            | E096.8 | 060753             | W096.6 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5695          | 070141            | E069.9 | 075525             | W123.5 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5696          | 084912            | E043.1 | 094257             | W150.4 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5697          | 103644            | E016.2 | 113029             | W177.3 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5698          | 122416            | W010.7 | 131800             | E155.9 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5699          | 141148            | W037.6 | 150532             | E129.0 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5700          | 155020            | W064.5 | 165304             | E102.1 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5701          | 174651            | W091.4 | 184036             | E075.2 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5702          | 193423            | W118.3 | 202807             | E048.3 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5703          | 212155            | W145.1 | 221539             | E021.4 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5704          | 230927            | W172.0 | 000311             | W005.5 |

\* DUE TO COMMAND PROBLEMS ONLY THREE  
 DATA ORBITS ARE AVAILABLE FOR THIS  
 DATE

TABLE 2-2  
 DATA AVAILABILITY ON-OFF TIMES  
 11 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HORSS<br>TIME |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>W | I<br>I | T<br>R | H<br>A | M<br>M | R<br>R | M<br>R | R<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|--------|--------------------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |        |        |        |        |        |               | HRMN              | HRMN   | HRMN               | HRMN   |
| 57040                       | B                | 2237          | 2340 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5705          | 005659            | E161.1 | 015043             | W032.3 |
| 57050                       | B                | 0049          | 0153 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5706          | 024430            | E134.2 | 033815             | W059.2 |
| 5707R                       | B                | 0401          | 0524 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5707          | 043202            | E107.3 | 052546             | W086.1 |
| 5708R                       | B                | 0547          | 0707 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5708          | 061934            | E080.5 | 071318             | W113.0 |
| 5710A                       | B                | 0914          | 1035 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5709          | 080706            | E053.6 | 090050             | W139.0 |
| 5711A                       | B                | 1101          | 1222 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5710          | 095437            | E026.7 | 104822             | W166.8 |
| 5712A                       | B                | 1245          | 1406 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5711          | 114209            | W000.2 | 123554             | E166.4 |
| 5713A                       | B                | 1427          | 1550 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5712          | 132941            | W027.1 | 142325             | E139.5 |
| 5714A                       | B                | 1613          | 1734 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5713          | 151713            | W054.0 | 161057             | E112.6 |
| 5715A                       | B                | 1758          | 1922 |        |        |        |        |        |        |        |        |        |        |        |        |        | 5714          | 170444            | W080.8 | 175829             | E085.7 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5715          | 185216            | W107.7 | 194601             | E058.8 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5716          | 203948            | W134.6 | 213332             | E032.0 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |        |        |        |        |        | 5717          | 222720            | W161.5 | 232104             | E005.1 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
12 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>W | I<br>I | T<br>H | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|----------------|--------------------|----------------|----------------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |        |
| 57180                       | 3                | 2341          | 0044 |        |        |        |        |        | Y      | Y      | X      | X                 | 5718           | 001452             | E171.6         | 010836         | W021.8 |
| 57190                       | 3                | 0152          | 0255 |        |        |        |        |        | Y      | X      | Y      | X                 | 5719           | 020223             | E144.7         | 025608         | W048.7 |
| 5720R                       | 3                | 0330          | 0442 | Y      |        |        |        |        | Y      | Y      | Y      | X                 | 5720           | 034955             | E117.9         | 044340         | W075.6 |
| 5721R                       | 3                | 0506          | 0628 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5721           | 053727             | F091.0         | 063111         | W102.5 |
| 5722A                       | 3                | 0647          | 0804 | Y      |        |        |        |        | Y      | Y      | Y      | X                 | 5722           | 072459             | E064.1         | 081843         | W129.3 |
| 5723A                       | 3                | 0833          | 0954 | Y      |        |        |        |        | Y      | X      | Y      | Y                 | 5723           | 091230             | E037.2         | 100615         | W156.2 |
| 5724A                       | 3                | 1018          | 1141 | X      |        |        |        |        | Y      | X      | Y      | Y                 | 5724           | 110002             | F010.3         | 115347         | F176.0 |
| 5725A                       | 3                | 1205          | 1326 | Y      |        |        |        |        | Y      | Y      | X      | X                 | 5725           | 124734             | W016.6         | 134119         | E150.0 |
| 5726A                       | 3                | 1340          | 1510 | Y      |        |        |        |        | X      | Y      | Y      | Y                 | 5726           | 143506             | W043.4         | 152850         | F123.1 |
| 5727A                       | 3                | 1533          | 1654 | Y      |        |        |        |        | Y      | X      | Y      | Y                 | 5727           | 162238             | W070.3         | 171622         | F096.3 |
| 5728A                       | 3                | 1717          | 1840 | Y      |        |        |        |        | X      | Y      | Y      | X                 | 5728           | 181009             | W097.2         | 190354         | F069.4 |
| 5729A                       | 3                | 1900          | 2026 | Y      |        |        |        |        | Y      | X      | Y      | Y                 | 5729           | 195741             | W124.1         | 205126         | F042.5 |
| 5730A                       | 3                | 2050          | 2211 | Y      |        |        |        |        | Y      | X      | Y      | Y                 | 5730           | 214513             | W151.0         | 223857         | E015.6 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                   | 5731           | 233245             | W177.9         | 002629         | W011.3 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
13 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>W | I<br>I | T<br>H | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |                |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|----------------|--------------------|----------------|----------------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        | DATA<br>ORBIT     | TIME<br>HRMNSS | LONG<br>DEGREE     | TIME<br>HRMNSS | LONG<br>DEGREE |        |
| 5733R                       | 3                | 0241          | 0358 | Y      |        |        |        |        | X      | Y      | Y      | X                 | 5732           | 012016             | E155.3         | 021401         | W038.2 |
| 5734R                       | 3                | 0425          | 0547 | X      |        |        |        |        | Y      | X      | Y      | X                 | 5733           | 030748             | E128.4         | 040133         | W065.1 |
| 5735A                       | 3                | 0605          | 0721 | X      |        |        |        |        | Y      | Y      | Y      | X                 | 5734           | 045520             | E101.5         | 054905         | W091.0 |
| 5736A                       | 3                | 0751          | 0911 | Y      |        |        |        |        | X      | X      | Y      | X                 | 5735           | 064252             | E074.6         | 073636         | W118.8 |
| 5737A                       | 3                | 0937          | 1059 | Y      |        |        |        |        | X      | Y      | Y      | X                 | 5736           | 083024             | E047.7         | 092408         | W145.7 |
| 5738A                       | 3                | 1123          | 1245 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5737           | 101755             | E020.9         | 111140         | W172.6 |
| 5739A                       | 3                | 1309          | 1429 | X      |        |        |        |        | X      | Y      | Y      | Y                 | 5738           | 120527             | W006.0         | 125912         | E160.5 |
| 5740A                       | 3                | 1453          | 1612 | Y      |        |        |        |        | X      | Y      | Y      | X                 | 5739           | 135259             | W032.9         | 144643         | E133.7 |
| 5741A                       | 3                | 1637          | 1758 | Y      |        |        |        |        | Y      | Y      | X      | X                 | 5740           | 154031             | W059.8         | 163415         | E106.8 |
| 5742A                       | 3                | 1829          | 1944 | Y      |        |        |        |        | X      | Y      | Y      | Y                 | 5741           | 172802             | W086.7         | 182147         | E079.0 |
| 5743A                       | 3                | 2009          | 2130 | Y      |        |        |        |        | Y      | X      | Y      | X                 | 5742           | 191534             | W113.6         | 200919         | F053.0 |
| 5744A                       | 3                | 2157          | 2317 | Y      |        |        |        |        | X      | Y      | Y      | X                 | 5743           | 210306             | W140.4         | 215651         | F026.1 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                   | 5744           | 225038             | W167.3         | 234422         | W000.0 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
14 AUGUST 1976

| INT ORBIT AND STDN | H J R S | HRSS TIME |          | L R | T R | T R | S R | E M | T R | H R | ASCENDING NODE |             |             | DESCENDING NODE |             |
|--------------------|---------|-----------|----------|-----|-----|-----|-----|-----|-----|-----|----------------|-------------|-------------|-----------------|-------------|
|                    |         | ON HRMN   | OFF HRMN |     |     |     |     |     |     |     | DATA ORBIT     | TIME HRMNSS | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |
| 57440              | B       | 2311      | 0015     |     |     |     |     |     |     |     | 5745           | 003810      | E165.8      | 013154          | W027.6      |
| 57450              | B       | 0031      | 0134     |     |     |     |     |     |     |     | 5746           | 022541      | E178.9      | 031926          | W054.5      |
| 57460              | B       | 0217      | 0320     |     |     |     |     |     |     |     | 5747           | 041313      | E112.0      | 050658          | W081.4      |
| 5747R              | B       | 0401      | 0505     | Y   |     |     |     |     |     |     | 5748           | 060045      | E085.1      | 065429          | W108.3      |
| 5748R              | B       | 0529      | 0651     | Y   |     |     |     |     |     |     | 5749           | 074817      | E058.3      | 084201          | W135.2      |
| 5749A              | B       | 0709      | 0829     | Y   |     |     |     |     |     |     | 5750           | 093548      | E031.4      | 102933          | W162.1      |
| 5750A              | B       | 0855      | 1016     | Y   |     |     |     |     |     |     | 5751           | 112320      | E004.5      | 121705          | E171.1      |
| 5751A              | B       | 1042      | 1204     | Y   |     |     |     |     |     |     | 5752           | 131052      | W022.4      | 140437          | E144.2      |
| 5752A              | B       | 1227      | 1349     | Y   |     |     |     |     |     |     | 5753           | 145824      | W049.3      | 155208          | E117.3      |
| 5753A              | B       | 1413      | 1530     | Y   |     |     |     |     |     |     | 5754           | 164556      | W076.2      | 173940          | E090.4      |
| 5754A              | B       | 1555      | 1717     | Y   |     |     |     |     |     |     | 5755           | 183327      | W103.0      | 192712          | E063.5      |
| 5755A              | B       | 1742      | 1903     | Y   |     |     |     |     |     |     | 5756           | 202059      | W129.9      | 211444          | E036.7      |
| 5756A              | B       | 1927      | 2049     | Y   |     |     |     |     |     |     | 5757           | 220831      | W156.8      | 230215          | E009.8      |
| 5758A              | B       | 2306      | 0019     | Y   |     |     |     |     |     |     | 5758           | 235603      | E176.3      | 004947          | W017.1      |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
15 AUGUST 1976

| INT ORBIT AND STDN | H J R S | HRSS TIME |          | L R | T R | T R | S R | E M | T R | H R | ASCENDING NODE |             |             | DESCENDING NODE |             |
|--------------------|---------|-----------|----------|-----|-----|-----|-----|-----|-----|-----|----------------|-------------|-------------|-----------------|-------------|
|                    |         | ON HRMN   | OFF HRMN |     |     |     |     |     |     |     | DATA ORBIT     | TIME HRMNSS | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |
| 57580              | B       | 0018      | 0120     |     |     |     |     |     |     |     | 5759           | 014334      | E149.4      | 023719          | W044.0      |
| 57590              | B       | 0136      | 0239     |     |     |     |     |     |     |     | 5760           | 033106      | E122.6      | 042450          | W070.9      |
| 5760R              | B       | 0321      | 0423     | Y   |     |     |     |     |     |     | 5761           | 051838      | E095.7      | 061222          | W097.8      |
| 5761R              | B       | 0447      | 0610     | Y   |     |     |     |     |     |     | 5762           | 070609      | E068.8      | 075954          | W124.7      |
| 5762A              | B       | 0629      | 0746     | Y   |     |     |     |     |     |     | 5763           | 085341      | E041.9      | 094726          | W151.5      |
| 5763A              | B       | 0813      | 0932     | Y   |     |     |     |     |     |     | 5764           | 104113      | E015.0      | 113459          | W178.4      |
| 5764A              | B       | 1001      | 1120     | Y   |     |     |     |     |     |     | 5765           | 122845      | W011.9      | 132229          | E154.7      |
| 5765A              | B       | 1146      | 1305     | Y   |     |     |     |     |     |     | 5766           | 141617      | W038.8      | 151001          | E127.8      |
| 5766A              | B       | 1330      | 1450     | Y   |     |     |     |     |     |     | 5767           | 160348      | W065.6      | 165733          | E100.9      |
| 5767A              | B       | 1514      | 1633     | Y   |     |     |     |     |     |     | 5768           | 175120      | W092.5      | 184505          | E074.1      |
| 5768A              | B       | 1658      | 1817     | Y   |     |     |     |     |     |     | 5769           | 193852      | W119.4      | 203236          | E047.2      |
| 5770A              | B       | 2033      | 2152     | Y   |     |     |     |     |     |     | 5770           | 212624      | W146.3      | 222008          | E020.3      |
| 5771A              | B       | 2225      | 2338     | Y   |     |     |     |     |     |     | 5771           | 231355      | W173.2      | 000740          | W006.6      |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
16 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HRRSS<br>TIME |             | L<br>R | T<br>R | T<br>I | S<br>R | E<br>A | P<br>M | W<br>R | I<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|----------------|--------------------|----------------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |        |        |        |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |
| 57710                       | B                | 2335          | 0030        |        |        |        |        |        |        |        |        | 5772          | 010127            | E160.0         | 015512             | W033.5         |
| 57720                       | B                | 0054          | 0157        |        |        |        |        |        |        |        |        | 5773          | 024859            | E133.1         | 034244             | W060.4         |
| 5774P                       | B                | 0355          | 0526        |        |        |        |        |        |        |        |        | 5774          | 043631            | E106.2         | 053015             | W087.3         |
| 5775R                       | B                | 0553          | 0713        |        |        |        |        |        |        |        |        | 5775          | 062403            | E070.3         | 071747             | W114.1         |
| 5776A                       | B                | 0733          | 0853        |        |        |        |        |        |        |        |        | 5776          | 081134            | E052.4         | 090519             | W141.0         |
| 5777A                       | B                | 0918          | 1041        |        |        |        |        |        |        |        |        | 5777          | 095906            | E025.5         | 105251             | W167.0         |
| 5778A                       | B                | 1105          | 1227        |        |        |        |        |        |        |        |        | 5778          | 114638            | W091.3         | 124023             | E165.2         |
| 5779A                       | B                | 1250          | 1412        |        |        |        |        |        |        |        |        | 5779          | 133410            | W028.2         | 142754             | E138.3         |
| 5780A                       | B                | 1437          | 1555        |        |        |        |        |        |        |        |        | 5780          | 152141            | W055.1         | 161526             | E111.5         |
| 5781A                       | B                | 1617          | 1740        |        |        |        |        |        |        |        |        | 5781          | 170913            | W082.0         | 180258             | E084.6         |
| 5783A                       | B                | 1951          | 2112        |        |        |        |        |        |        |        |        | 5782          | 185645            | W108.9         | 195030             | E057.7         |
| 5784A                       | B                | 2137          | 2256        |        |        |        |        |        |        |        |        | 5783          | 204417            | W135.8         | 213801             | E030.8         |
|                             |                  |               |             |        |        |        |        |        |        |        |        | 5784          | 223149            | W162.6         | 232533             | E003.9         |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
17 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HRRSS<br>TIME |             | L<br>R | T<br>R | T<br>I | S<br>R | E<br>A | P<br>M | W<br>R | I<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|----------------|--------------------|----------------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |        |        |        |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |
| 57850                       | B                | 2345          | 0048        |        |        |        |        |        |        |        |        | 5785          | 001920            | E170.5         | 011305             | W023.0         |
| 57860                       | B                | 0158          | 0302        |        |        |        |        |        |        |        |        | 5786          | 020652            | E143.6         | 030037             | W049.8         |
| 5787R                       | B                | 0342          | 0446        |        |        |        |        |        |        |        |        | 5787          | 035424            | E116.7         | 044809             | W076.7         |
| 5788R                       | B                | 0510          | 0633        |        |        |        |        |        |        |        |        | 5788          | 054156            | E089.8         | 063540             | W103.6         |
| 5789A                       | B                | 0651          | 0805        |        |        |        |        |        |        |        |        | 5789          | 072927            | E063.0         | 082312             | W130.5         |
| 5790A                       | B                | 0837          | 0954        |        |        |        |        |        |        |        |        | 5790          | 091659            | E036.1         | 101044             | W157.4         |
| 5791A                       | B                | 1023          | 1140        |        |        |        |        |        |        |        |        | 5791          | 110431            | E009.2         | 115816             | E175.7         |
| 5792A                       | B                | 1209          | 1325        |        |        |        |        |        |        |        |        | 5792          | 125203            | W017.7         | 134548             | E148.0         |
| 5793A                       | B                | 1353          | 1515        |        |        |        |        |        |        |        |        | 5793          | 143935            | W044.6         | 153310             | E122.0         |
| 5794A                       | B                | 1537          | 1652        |        |        |        |        |        |        |        |        | 5794          | 162706            | W071.5         | 172051             | E095.1         |
| 5795A                       | B                | 1721          | 1836        |        |        |        |        |        |        |        |        | 5795          | 181438            | W098.4         | 190823             | E068.2         |
| 5796A                       | B                | 1909          | 2029        |        |        |        |        |        |        |        |        | 5796          | 200210            | W125.2         | 205555             | E041.3         |
| 57980                       | B                | 2245          | 2350        |        |        |        |        |        |        |        |        | 5797          | 214942            | W152.1         | 224326             | E014.5         |
|                             |                  |               |             |        |        |        |        |        |        |        |        | 5798          | 233713            | W179.0         | 003058             | W012.4         |

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TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
18 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>R | T<br>H | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |        |        | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN |        |        |        |        |        |        |        |        |        | HRMNSS            | DEGREE | HRMNSS             | DEGREE |        |
| 57990                       | 3                | 0117  | 0221 |        |        |        |        | X      | Y      | X      | X      |        | 5799              | 012445 | E154.1             | 021870 | W039.7 |
| 5800P                       | 3                | 0300  | 0403 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5800              | 031217 | E127.2             | 040602 | W066.2 |
| 5801R                       | 3                | 0429  | 0551 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5801              | 045949 | E100.4             | 055334 | W093.1 |
| 5802A                       | 3                | 0610  | 0725 | Y      |        |        |        | X      | Y      | X      | Y      |        | 5802              | 064721 | E073.5             | 074105 | W120.0 |
| 5803A                       | 3                | 0755  | 0916 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5803              | 083452 | E046.6             | 092837 | W146.9 |
| 5804A                       | 3                | 0941  | 1104 | Y      |        |        |        | X      | Y      | X      | Y      |        | 5804              | 102224 | E019.7             | 111609 | W173.7 |
| 5805A                       | 3                | 1127  | 1250 | Y      |        |        |        | Y      | Y      | X      | Y      |        | 5805              | 120956 | W007.2             | 130341 | E159.4 |
| 5806A                       | 3                | 1313  | 1434 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5806              | 135728 | W034.1             | 145112 | E132.5 |
| 5807A                       | 3                | 1457  | 1617 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5807              | 154459 | W060.9             | 163844 | E105.6 |
| 5808A                       | 3                | 1641  | 1802 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5808              | 173231 | W087.8             | 182616 | E078.7 |
| 5810A                       | 3                | 2014  | 2134 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5809              | 192003 | W114.7             | 201348 | E051.9 |
| 58110                       | 3                | 2221  | 2325 |        |        |        |        | X      | Y      | X      | X      |        | 5810              | 210735 | W141.6             | 220120 | E025.0 |
|                             |                  |       |      |        |        |        |        |        |        |        |        |        | 5811              | 225507 | W168.5             | 234851 | W002.0 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
19 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>R | T<br>H | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |        |
|-----------------------------|------------------|-------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------|--------|--------------------|--------|--------|
|                             |                  | ON    | OFF  |        |        |        |        |        |        |        |        |        | TIME              | LONG   | TIME               | LONG   |        |
|                             |                  | HRMN  | HRMN |        |        |        |        |        |        |        |        |        | HRMNSS            | DEGREE | HRMNSS             | DEGREE |        |
| 58120                       | 3                | 0035  | 0139 |        |        |        |        | X      | Y      | X      | Y      |        | 5812              | 004238 | E164.6             | 013623 | W028.8 |
| 5814R                       | 3                | 0349  | 0509 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5813              | 023010 | E137.8             | 032355 | W055.7 |
| 5815R                       | 3                | 0537  | 0654 | Y      |        |        |        | X      | Y      | X      | Y      |        | 5814              | 041742 | E110.9             | 051127 | W082.6 |
| 5816A                       | 3                | 0714  | 0834 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5815              | 060514 | E084.0             | 065859 | W109.4 |
| 5817A                       | 3                | 0901  | 1005 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5816              | 075246 | E057.1             | 084630 | W136.3 |
| 5818A                       | 3                | 1046  | 1209 | Y      |        |        |        | X      | Y      | X      | Y      |        | 5817              | 094017 | E030.2             | 103402 | W163.2 |
| 5819A                       | 3                | 1231  | 1354 | Y      |        |        |        | X      | Y      | Y      | X      |        | 5818              | 112749 | E003.4             | 122134 | E169.9 |
| 5820A                       | 3                | 1417  | 1537 | Y      |        |        |        | X      | Y      | X      | Y      |        | 5819              | 131521 | W023.5             | 140906 | E143.0 |
| 5821A                       | 3                | 1559  | 1720 | Y      |        |        |        | X      | Y      | X      | Y      |        | 5820              | 150253 | W050.4             | 155637 | E116.1 |
| 5822A                       | 3                | 1745  | 1907 | Y      |        |        |        | X      | Y      | X      | Y      |        | 5821              | 165024 | W077.3             | 174409 | E089.3 |
| 5823A                       | 3                | 1937  | 2053 | Y      |        |        |        | Y      | Y      | Y      | Y      |        | 5822              | 183756 | W104.2             | 193141 | E062.4 |
| 5824A                       | 3                | 2118  | 2230 | Y      |        |        |        | X      | Y      | X      | X      |        | 5823              | 202528 | W131.1             | 211913 | E035.5 |
|                             |                  |       |      |        |        |        |        |        |        |        |        |        | 5824              | 221300 | W158.0             | 230645 | E008.6 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
20 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS      |             | L<br>R | T<br>R | T<br>R | S<br>E | E<br>M | T<br>H | I<br>S | P<br>W | R<br>R | R<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |
|-----------------------------|------------------|------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|----------------|--------------------|----------------|
|                             |                  | ON<br>HRMN | OFF<br>HRMN |        |        |        |        |        |        |        |        |        |        |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |
| 5827R                       | B                | 0307       | 0427        |        |        |        |        |        |        |        |        |        |        | 5825          | 000032            | E175.2         | 005416             | W018.3         |
| 5828R                       | B                | 0451       | 0615        |        |        |        |        |        |        |        |        |        |        | 5826          | 014803            | E148.3         | 024148             | W045.2         |
| 5829A                       | B                | 0633       | 0751        |        |        |        |        |        |        |        |        |        |        | 5827          | 033535            | E121.4         | 042920             | W072.0         |
| 5830A                       | B                | 0818       | 0940        |        |        |        |        |        |        |        |        |        |        | 5828          | 052307            | E094.5         | 061652             | W098.0         |
| 5831A                       | B                | 1005       | 1127        |        |        |        |        |        |        |        |        |        |        | 5829          | 071039            | E067.6         | 080424             | W125.8         |
| 5832A                       | B                | 1150       | 1313        |        |        |        |        |        |        |        |        |        |        | 5830          | 085810            | E040.8         | 095155             | W152.7         |
| 5833A                       | B                | 1335       | 1456        |        |        |        |        |        |        |        |        |        |        | 5831          | 104542            | E013.0         | 113927             | W179.6         |
| 5834A                       | B                | 1518       | 1640        |        |        |        |        |        |        |        |        |        |        | 5832          | 123314            | W013.0         | 132659             | F153.6         |
| 5835A                       | B                | 1703       | 1825        |        |        |        |        |        |        |        |        |        |        | 5833          | 142046            | W039.0         | 151431             | E126.7         |
| 5837A                       | B                | 2037       | 2157        |        |        |        |        |        |        |        |        |        |        | 5834          | 162818            | W066.8         | 170202             | F099.8         |
| 5838A                       | B                | 2225       | 2343        |        |        |        |        |        |        |        |        |        |        | 5835          | 175549            | W093.7         | 184934             | F072.0         |
|                             |                  |            |             |        |        |        |        |        |        |        |        |        |        | 5836          | 194321            | W120.5         | 203706             | F046.0         |
|                             |                  |            |             |        |        |        |        |        |        |        |        |        |        | 5837          | 213053            | W147.4         | 222438             | F019.1         |
|                             |                  |            |             |        |        |        |        |        |        |        |        |        |        | 5838          | 231825            | W174.3         | 001210             | W007.8         |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
21 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>D<br>R<br>S | HDRSS      |             | L<br>R | T<br>R | T<br>R | S<br>E | E<br>M | T<br>H | I<br>S | P<br>W | R<br>R | R<br>R | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |
|-----------------------------|------------------|------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|-------------------|----------------|--------------------|----------------|
|                             |                  | ON<br>HRMN | OFF<br>HRMN |        |        |        |        |        |        |        |        |        |        |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |
| 58380                       | B                | 2342       | 0043        |        |        |        |        |        |        |        |        |        |        | 5839          | 010556            | E158.8         | 015941             | W034.6         |
| 58390                       | B                | 0058       | 0202        |        |        |        |        |        |        |        |        |        |        | 5840          | 025328            | E131.9         | 034713             | W061.5         |
| 5841R                       | B                | 0410       | 0532        |        |        |        |        |        |        |        |        |        |        | 5841          | 044100            | E105.0         | 053445             | W088.4         |
| 5842R                       | B                | 0557       | 0717        |        |        |        |        |        |        |        |        |        |        | 5842          | 062832            | E078.2         | 072217             | W115.3         |
| 5843A                       | B                | 0737       | 0858        |        |        |        |        |        |        |        |        |        |        | 5843          | 081604            | E051.3         | 090948             | W142.2         |
| 5844A                       | B                | 0923       | 1046        |        |        |        |        |        |        |        |        |        |        | 5844          | 100335            | E024.4         | 105720             | W169.0         |
| 5845A                       | B                | 1109       | 1231        |        |        |        |        |        |        |        |        |        |        | 5845          | 115107            | W002.5         | 124452             | E164.1         |
| 5846A                       | B                | 1254       | 1416        |        |        |        |        |        |        |        |        |        |        | 5846          | 133839            | W029.4         | 143224             | E137.2         |
| 5847A                       | B                | 1438       | 1559        |        |        |        |        |        |        |        |        |        |        | 5847          | 152611            | W056.3         | 161956             | F110.3         |
| 5848A                       | B                | 1622       | 1744        |        |        |        |        |        |        |        |        |        |        | 5848          | 171343            | W083.1         | 180727             | F083.4         |
| 5851A                       | B                | 2142       | 2301        |        |        |        |        |        |        |        |        |        |        | 5849          | 190114            | W110.0         | 195459             | F056.5         |
|                             |                  |            |             |        |        |        |        |        |        |        |        |        |        | 5850          | 204846            | W136.0         | 214231             | F029.7         |
|                             |                  |            |             |        |        |        |        |        |        |        |        |        |        | 5851          | 223618            | W163.8         | 233003             | F002.8         |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
22 AUGUST 1976

| INT ORBIT | H | HDRSS |      | L | T | T | S | E | P | W | I | ASCENDING NODE |        | DESCENDING NODE |        |        |
|-----------|---|-------|------|---|---|---|---|---|---|---|---|----------------|--------|-----------------|--------|--------|
|           |   | ON    | OFF  |   |   |   |   |   |   |   |   | TIME           | LONG   | TIME            | LONG   |        |
| AND STDN  | R | HRMN  | HRMN | R | R | R | R | R | R | R | R | DATA ORBIT     | HRMNSS | DEGREE          | HRMNSS | DEGREE |
| 58520     | 3 | 2340  | 0054 |   |   |   |   | X | Y | Y | X | 5852           | 002348 | E169.3          | 011732 | W024.1 |
| 58530     | 3 | 0205  | 0307 |   |   |   |   | X | Y | Y | X | 5853           | 021119 | E142.5          | 030504 | W051.0 |
| 5855R     | 3 | 0515  | 0637 | Y |   |   |   | X | Y | Y | X | 5854           | 035851 | E115.6          | 045236 | W077.0 |
| 5856A     | 3 | 0655  | 0815 | Y |   |   |   | X | Y | Y | X | 5855           | 054624 | E088.7          | 064008 | W104.7 |
| 5857A     | 3 | 0841  | 1002 | Y |   |   |   | X | Y | Y | X | 5856           | 073355 | E061.8          | 082730 | W131.6 |
| 5858A     | 3 | 1027  | 1145 | Y |   |   |   | X | Y | Y | X | 5857           | 092126 | E034.9          | 101511 | W158.5 |
| 5859A     | 3 | 1213  | 1334 | Y |   |   |   | X | Y | Y | X | 5858           | 110858 | E008.1          | 120243 | E174.6 |
| 5860A     | 3 | 1358  | 1510 | Y |   |   |   | X | Y | Y | X | 5859           | 125630 | W018.8          | 135015 | E147.7 |
| 5861A     | 3 | 1541  | 1703 | Y |   |   |   | X | Y | Y | X | 5860           | 144402 | W045.7          | 153747 | E120.0 |
| 5862A     | 3 | 1717  | 1834 | Y |   |   |   | X | Y | Y | X | 5861           | 163134 | W072.6          | 172518 | E004.0 |
| 5863R     | 3 | 1913  | 2035 | Y |   |   |   | X | X | Y | X | 5862           | 181905 | W099.5          | 191250 | E067.1 |
| 5864A     | 3 | 2050  | 2221 | Y |   |   |   | X | Y | Y | X | 5863           | 200637 | W126.4          | 210022 | E040.2 |
| 5865A     | 3 | 2250  | 0006 | Y |   |   |   | X | Y | Y | Y | 5864           | 215409 | W153.3          | 224754 | E013.3 |
|           |   |       |      |   |   |   |   |   |   |   |   | 5865           | 234141 | E179.9          | 003525 | W013.6 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
23 AUGUST 1976

| INT ORBIT | H | HDRSS |      | L | T | T | S | E | P | W | I | ASCENDING NODE |        | DESCENDING NODE |        |        |
|-----------|---|-------|------|---|---|---|---|---|---|---|---|----------------|--------|-----------------|--------|--------|
|           |   | ON    | OFF  |   |   |   |   |   |   |   |   | TIME           | LONG   | TIME            | LONG   |        |
| AND STDN  | R | HRMN  | HRMN | R | R | R | R | R | R | R | R | DATA ORBIT     | HRMNSS | DEGREE          | HRMNSS | DEGREE |
| 58650     | 3 | 0003  | 0106 |   |   |   |   | X | Y | Y | X | 5866           | 012912 | E153.0          | 022257 | W040.5 |
| 58660     | 3 | 0121  | 0224 |   |   |   |   | X | Y | Y | X | 5867           | 031644 | E126.1          | 041029 | W067.3 |
| 5867R     | 3 | 0304  | 0407 | Y |   |   |   | X | Y | Y | X | 5868           | 050416 | E099.2          | 055801 | W094.2 |
| 5868R     | 3 | 0433  | 0556 | Y |   |   |   | X | Y | Y | X | 5869           | 065148 | E072.3          | 074533 | W121.1 |
| 5869A     | 3 | 0614  | 0730 | Y |   |   |   | X | Y | Y | X | 5870           | 083920 | E045.5          | 093304 | W148.0 |
| 5870A     | 3 | 0750  | 0921 | X |   |   |   | Y | Y | X | X | 5871           | 102651 | E018.6          | 112036 | W174.0 |
| 5871A     | 3 | 0946  | 1108 | Y |   |   |   | X | Y | Y | X | 5872           | 121423 | W008.3          | 130808 | E158.3 |
| 5872A     | 3 | 1133  | 1255 | Y |   |   |   | X | Y | Y | X | 5873           | 140155 | W035.2          | 145540 | E131.4 |
| 5873A     | 3 | 1317  | 1437 | X |   |   |   | X | Y | X | X | 5874           | 154927 | W062.1          | 164311 | E104.5 |
| 5874A     | 3 | 1501  | 1605 | Y |   |   |   | X | Y | X | X | 5875           | 173658 | W089.0          | 183043 | E077.6 |
| 5875A     | 3 | 1645  | 1757 | Y |   |   |   | X | Y | Y | Y | 5876           | 192430 | W115.8          | 201815 | E050.7 |
| 5876A     | 3 | 1830  | 1948 | X |   |   |   | X | Y | X | X | 5877           | 211202 | W142.7          | 220547 | E023.8 |
| 5877A     | 3 | 2018  | 2137 | Y |   |   |   | X | Y | Y | X | 5878           | 225934 | W169.6          | 235312 | W003.0 |
| 5878A     | 3 | 2206  | 2325 | Y |   |   |   | X | Y | Y | X |                |        |                 |        |        |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
24 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS      |             | L<br>R | T<br>R | T<br>R | S<br>E | E<br>P | T<br>H | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |        |        |
|-----------------------------|------------------|------------|-------------|--------|--------|--------|--------|--------|--------|---------------|-------------------|----------------|--------------------|----------------|--------|--------|
|                             |                  | ON<br>HRMN | OFF<br>HRMN |        |        |        |        |        |        |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |        |
| 58780                       | 3                | 2321       | 0025        |        |        |        |        | Y      | Y      | X             | X                 | 5879           | 004705             | E163.5         | 014050 | W029.0 |
| 58790                       | 3                | 0041       | 0143        |        |        |        |        | X      | Y      | X             | X                 | 5880           | 023437             | E136.6         | 032822 | W056.8 |
| 5881R                       | 3                | 0353       | 0514        | Y      |        |        |        | Y      | Y      | Y             | X                 | 5881           | 042209             | E100.8         | 051554 | W083.7 |
| 5882R                       | 3                | 0538       | 0659        | X      |        |        |        | Y      | X      | Y             | X                 | 5882           | 060941             | E082.9         | 070326 | W110.6 |
| 5883A                       | 3                | 0718       | 0839        | Y      |        |        |        | Y      | Y      | Y             | X                 | 5883           | 075713             | E056.0         | 085057 | W137.5 |
| 5884A                       | 3                | 0905       | 1026        | Y      |        |        |        | X      | Y      | X             | Y                 | 5884           | 094444             | E029.1         | 103829 | W164.3 |
| 5885A                       | 3                | 1050       | 1213        | Y      |        |        |        | Y      | Y      | Y             | X                 | 5885           | 113216             | E002.2         | 122601 | E168.8 |
| 5886A                       | 3                | 1237       | 1358        | Y      |        |        |        | Y      | Y      | X             | X                 | 5886           | 131948             | W024.7         | 141333 | E141.0 |
| 5887A                       | B                | 1421       | 1541        | Y      |        |        |        | X      | Y      | Y             | X                 | 5887           | 150720             | W051.6         | 160104 | E115.0 |
| 5888A                       | 3                | 1603       | 1725        | Y      |        |        |        | Y      | Y      | Y             | X                 | 5888           | 165451             | W078.4         | 174836 | E088.1 |
| 5890A                       | 3                | 1937       | 2055        | Y      |        |        |        | X      | Y      | Y             | X                 | 5889           | 184223             | W105.3         | 193608 | E061.7 |
| 5891A                       | 3                | 2123       | 2239        | Y      |        |        |        | X      | Y      | Y             | Y                 | 5890           | 202955             | W132.2         | 212340 | E034.4 |
|                             |                  |            |             |        |        |        |        |        |        |               |                   | 5891           | 221727             | W159.1         | 231112 | E007.5 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
25 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS      |             | L<br>R | T<br>R | T<br>R | S<br>E | E<br>P | T<br>H | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |        |        |
|-----------------------------|------------------|------------|-------------|--------|--------|--------|--------|--------|--------|---------------|-------------------|----------------|--------------------|----------------|--------|--------|
|                             |                  | ON<br>HRMN | OFF<br>HRMN |        |        |        |        |        |        |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |        |
| 58920                       | 3                | 2330       | 0035        |        |        |        |        | X      | Y      | Y             | X                 | 5892           | 000459             | E174.0         | 005843 | W019.4 |
| 58930                       | 3                | 0143       | 0247        |        |        |        |        | X      | Y      | X             | X                 | 5893           | 015230             | E147.2         | 024615 | W046.3 |
| 5894R                       | 3                | 0329       | 0432        | Y      |        |        |        | X      | X      | Y             | X                 | 5894           | 034002             | E120.3         | 043347 | W073.2 |
| 5895R                       | 3                | 0457       | 0619        | X      |        |        |        | X      | Y      | Y             | X                 | 5895           | 052734             | E093.4         | 062119 | W100.1 |
| 5896R                       | 3                | 0637       | 0755        | Y      |        |        |        | Y      | Y      | X             | X                 | 5896           | 071506             | E066.5         | 080850 | W126.0 |
| 5897R                       | 3                | 0822       | 0944        | Y      |        |        |        | Y      | Y      | Y             | X                 | 5897           | 090237             | E039.6         | 095622 | W153.8 |
| 5898R                       | 3                | 1009       | 1132        | X      |        |        |        | Y      | Y      | Y             | X                 | 5898           | 105009             | E012.7         | 114354 | E179.3 |
| 5899R                       | B                | 1154       | 1317        | Y      |        |        |        | X      | Y      | X             | X                 | 5899           | 123741             | W014.1         | 133126 | E152.4 |
| 5900R                       | 3                | 1339       | 1501        | X      |        |        |        | X      | Y      | X             | Y                 | 5900           | 142513             | W041.0         | 151858 | E125.5 |
| 5901R                       | 3                | 1509       | 1631        | Y      |        |        |        | X      | Y      | Y             | X                 | 5901           | 161244             | W067.9         | 170629 | E098.7 |
| 5902A                       | 3                | 1707       | 1830        | X      |        |        |        | Y      | Y      | Y             | X                 | 5902           | 180016             | W094.8         | 185401 | E071.8 |
| 5903A                       | 3                | 1853       | 2010        | Y      |        |        |        | X      | Y      | Y             | X                 | 5903           | 194748             | W121.7         | 204133 | E044.0 |
| 5905A                       | 3                | 2230       | 2348        | Y      |        |        |        | X      | Y      | Y             | X                 | 5904           | 213520             | W148.6         | 222905 | E018.0 |
|                             |                  |            |             |        |        |        |        |        |        |               |                   | 5905           | 232251             | W175.4         | 001636 | W008.0 |



TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
26 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |             | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>W | T<br>H<br>I | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |        |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|--------|-------------|---------------|-------------------|----------------|--------------------|----------------|--------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |        |             |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |
| 59050                       | B                | 2345          | 0047        |        |        |        |        | X      | Y      | X           | X             | 5906              | 011023         | E157.7             | 020408         | W035.8 |
| 59060                       | B                | 0105          | 0209        |        |        |        |        | Y      | Y      | X           | X             | 5907              | 025755         | E130.8             | 035140         | W062.6 |
| 5908R                       | B                | 0414          | 0537        | Y      |        |        |        | Y      | Y      | Y           | X             | 5908              | 044527         | E103.9             | 053912         | W089.5 |
| 5909R                       | B                | 0601          | 0721        | Y      |        |        |        | X      | Y      | Y           | X             | 5909              | 063259         | E077.0             | 072643         | W116.4 |
| 5910A                       | B                | 0741          | 0902        | Y      |        |        |        | Y      | Y      | Y           | X             | 5910              | 082030         | E050.2             | 091415         | W143.3 |
| 5911A                       | B                | 0927          | 1050        | Y      |        |        |        | Y      | Y      | Y           | X             | 5911              | 100802         | E023.3             | 110147         | W170.2 |
| 5912A                       | B                | 1113          | 1236        | Y      |        |        |        | Y      | Y      | Y           | X             | 5912              | 115534         | W003.6             | 124919         | E162.0 |
| 5913A                       | B                | 1258          | 1415        | Y      |        |        |        | Y      | Y      | Y           | X             | 5913              | 134306         | W030.5             | 143651         | E136.1 |
| 5914A                       | B                | 1442          | 1604        | Y      |        |        |        | X      | Y      | X           | X             | 5914              | 153038         | W057.4             | 162422         | E109.2 |
| 5915A                       | B                | 1626          | 1749        | Y      |        |        |        | X      | Y      | X           | X             | 5915              | 171809         | W084.3             | 181154         | E082.3 |
| 5917A                       | B                | 1959          | 2121        | Y      |        |        |        | X      | Y      | Y           | X             | 5916              | 190541         | W111.2             | 195926         | E055.4 |
| 5918A                       | B                | 2146          | 2307        | Y      |        |        |        | X      | Y      | Y           | X             | 5917              | 205313         | W138.0             | 214658         | E028.5 |
|                             |                  |               |             |        |        |        |        |        |        |             |               | 5918              | 224045         | W164.9             | 233429         | E001.7 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
27 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |             | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>W | T<br>H<br>I | DATA<br>ORBIT | ASCENDING<br>NODE |                | DESCENDING<br>NODE |                |        |
|-----------------------------|------------------|---------------|-------------|--------|--------|--------|--------|--------|--------|-------------|---------------|-------------------|----------------|--------------------|----------------|--------|
|                             |                  | ON<br>HRMN    | OFF<br>HRMN |        |        |        |        |        |        |             |               | TIME<br>HRMNSS    | LONG<br>DEGREE | TIME<br>HRMNSS     | LONG<br>DEGREE |        |
| 5921R                       | B                | 0334          | 0455        | Y      |        |        |        | X      | Y      | Y           | X             | 5919              | 002816         | E168.2             | 012201         | W025.2 |
| 5922R                       | B                | 0519          | 0641        | Y      |        |        |        | X      | Y      | Y           | X             | 5920              | 021548         | E141.3             | 030933         | W052.1 |
| 5924A                       | B                | 0845          | 1007        | Y      |        |        |        | X      | Y      | X           | X             | 5921              | 040320         | E114.4             | 045705         | W079.0 |
| 5925A                       | B                | 1031          | 1154        | Y      |        |        |        | X      | Y      | X           | X             | 5922              | 055052         | E087.6             | 064437         | W105.9 |
| 5926A                       | B                | 1217          | 1339        | Y      |        |        |        | Y      | Y      | X           | X             | 5923              | 073824         | E060.7             | 083208         | W132.8 |
| 5927A                       | B                | 1402          | 1522        | X      |        |        |        | X      | Y      | X           | X             | 5924              | 092555         | E033.8             | 101940         | W159.7 |
| 5928A                       | B                | 1545          | 1707        | Y      |        |        |        | X      | Y      | X           | X             | 5925              | 111327         | E006.9             | 120712         | E173.5 |
| 5930A                       | B                | 1917          | 2039        | Y      |        |        |        | Y      | Y      | Y           | X             | 5926              | 130059         | W020.0             | 135444         | E146.6 |
| 5931A                       | B                | 2105          | 2225        | Y      |        |        |        | X      | Y      | X           | X             | 5927              | 144831         | W046.9             | 154215         | E119.7 |
| 5932A                       | B                | 2258          | 0010        | Y      |        |        |        | X      | Y      | X           | X             | 5928              | 163602         | W073.8             | 172947         | E092.8 |
|                             |                  |               |             |        |        |        |        |        |        |             |               | 5929              | 182334         | W100.6             | 191719         | E065.9 |
|                             |                  |               |             |        |        |        |        |        |        |             |               | 5930              | 201106         | W127.5             | 210451         | E039.1 |
|                             |                  |               |             |        |        |        |        |        |        |             |               | 5931              | 215838         | W154.4             | 225222         | E012.2 |
|                             |                  |               |             |        |        |        |        |        |        |             |               | 5932              | 234609         | E178.7             | 003954         | W014.7 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
28 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>M | T<br>H<br>R<br>L<br>S | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------|---------------|-------------------|--------|--------------------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |                       |               | HRMN              | HRMN   | TIME               | LONG   |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                       |               | HRMNSS            | DEGREE | HRMNSS             | DEGREE |
| 59320                       | 3                | 0007          | 0111 |        |        |        |        | X      | Y      | X      | X      |                       | 5933          | 013341            | E151.8 | 022726             | W041.6 |
| 59330                       | 3                | 0126          | 0230 |        |        |        |        | X      | Y      | X      | X      |                       | 5934          | 032113            | E125.0 | 041458             | W068.5 |
| 5934R                       | 3                | 0310          | 0412 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5935          | 050845            | E098.1 | 060230             | W095.4 |
| 5935R                       | 3                | 0437          | 0600 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5936          | 065617            | E071.2 | 075001             | W122.2 |
| 5936A                       | 3                | 0610          | 0735 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5937          | 084348            | E044.3 | 093733             | W140.1 |
| 5937A                       | B                | 0805          | 0925 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5938          | 103120            | E017.4 | 112505             | W176.0 |
| 5938A                       | 3                | 0950          | 1113 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5939          | 121852            | W009.5 | 131237             | E157.1 |
| 5939A                       | 3                | 1137          | 1258 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5940          | 140624            | W036.3 | 150008             | E130.2 |
| 5940A                       | B                | 1325          | 1442 |        | Y      |        |        | Y      | Y      | Y      | X      |                       | 5941          | 155355            | W063.2 | 164740             | E103.3 |
| 5941A                       | 3                | 1455          | 1626 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5942          | 174127            | W090.1 | 183512             | E076.5 |
| 5942A                       | 3                | 1640          | 1811 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5943          | 192859            | W117.0 | 202244             | E049.6 |
| 5943A                       | B                | 1834          | 1955 |        | Y      |        |        | Y      | X      | Y      | Y      |                       | 5944          | 211631            | W143.9 | 221016             | E022.7 |
| 5944A                       | B                | 2022          | 2144 |        | Y      |        |        | X      | Y      | Y      | Y      |                       | 5945          | 230403            | W170.8 | 235747             | W004.2 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
29 AUGUST 1976

| INT<br>ORBIT<br>AND<br>STDN | H<br>J<br>R<br>S | HDRSS<br>TIME |      | L<br>R | T<br>H | T<br>D | S<br>C | E<br>S | P<br>M | W<br>R | I<br>M | T<br>H<br>R<br>L<br>S | DATA<br>ORBIT | ASCENDING<br>NODE |        | DESCENDING<br>NODE |        |
|-----------------------------|------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------|---------------|-------------------|--------|--------------------|--------|
|                             |                  | ON            | OFF  |        |        |        |        |        |        |        |        |                       |               | HRMN              | HRMN   | TIME               | LONG   |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                       |               | HRMNSS            | DEGREE | HRMNSS             | DEGREE |
| 5948R                       | 3                | 0357          | 0518 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5946          | 005131            | E162.4 | 014516             | W031.1 |
| 5949R                       | 3                | 0542          | 0702 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5947          | 023903            | E135.5 | 033248             | W057.8 |
| 5950A                       | B                | 0722          | 0843 |        | Y      |        |        | Y      | Y      | Y      | X      |                       | 5948          | 042635            | E108.6 | 052019             | W084.8 |
| 5951A                       | 3                | 0909          | 1030 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5949          | 061406            | E081.7 | 070751             | W111.7 |
| 5952A                       | 3                | 1054          | 1218 |        | Y      |        |        | X      | Y      | X      | X      |                       | 5950          | 080138            | E054.9 | 085523             | W138.6 |
| 5953A                       | 3                | 1241          | 1401 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5951          | 094910            | E028.0 | 104255             | W165.5 |
| 5954A                       | B                | 1425          | 1544 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5952          | 113642            | E001.1 | 123027             | E167.7 |
| 5955R                       | 3                | 1557          | 1717 |        | Y      |        |        | X      | Y      | Y      | Y      |                       | 5953          | 132413            | W025.0 | 141758             | E140.8 |
| 5956A                       | 3                | 1753          | 1916 |        | Y      |        |        | X      | Y      | Y      | X      |                       | 5954          | 151145            | W052.7 | 150530             | E113.0 |
| 5957A                       | 3                | 1941          | 2102 |        | Y      |        |        | X      | Y      | X      | Y      |                       | 5955          | 165917            | W079.6 | 175302             | E087.0 |
| 5958A                       | 3                | 2127          | 2247 |        | Y      |        |        | Y      | Y      | Y      | X      |                       | 5956          | 184649            | W106.5 | 194033             | E060.1 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                       | 5957          | 203421            | W133.3 | 212805             | E033.2 |
|                             |                  |               |      |        |        |        |        |        |        |        |        |                       | 5958          | 222152            | W160.2 | 231537             | E006.4 |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
30 AUGUST 1976

| INT ORBIT AND STDN | H | HDRSS TIME |          | L R | T R | T R | S R | E R | F R | P R | W R | I R | DATA ORBIT | ASCENDING NODE |             | DESCENDING NODE |             |
|--------------------|---|------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|----------------|-------------|-----------------|-------------|
|                    |   | ON HRMN    | OFF HRMN |     |     |     |     |     |     |     |     |     |            | TIME HRMNSS    | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |
| 59590              | 3 | 2334       | 0030     |     |     |     |     | X   | Y   | X   | Y   |     | 5959       | 000924         | E172.9      | 010300          | W020.5      |
| 59600              | 3 | 0150       | 0254     |     |     |     |     | X   | Y   | X   | X   |     | 5960       | 015656         | E146.0      | 025040          | W047.4      |
| 5961R              | 3 | 0333       | 0435     | Y   |     |     |     | Y   | Y   | Y   | X   |     | 5961       | 034428         | E110.1      | 043812          | W074.3      |
| 5962R              | 3 | 0501       | 0623     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5962       | 053159         | E092.3      | 062544          | W101.2      |
| 5963A              | 3 | 0641       | 0800     | Y   |     |     |     | Y   | Y   | X   | Y   |     | 5963       | 071931         | E065.4      | 081316          | W128.1      |
| 5964A              | 3 | 0827       | 0948     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5964       | 090703         | E038.4      | 100047          | W155.0      |
| 59650              | 3 | 1047       | 1150     |     |     |     |     | X   | Y   | X   | X   |     | 5965       | 105435         | E011.6      | 114819          | E178.2      |
| 5967A              | 3 | 1345       | 1505     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5966       | 124206         | W015.3      | 133551          | E151.3      |
| 5968A              | 3 | 1527       | 1643     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5967       | 142938         | W042.2      | 152323          | E124.4      |
| 5969A              | 3 | 1713       | 1834     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5968       | 161710         | W069.0      | 171054          | E007.5      |
| 5970A              | 3 | 1858       | 2021     | Y   |     |     |     | Y   | Y   | Y   | Y   |     | 5969       | 180442         | W095.9      | 185826          | E070.6      |
| 5971A              | 3 | 2045       | 2206     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5970       | 195213         | W122.8      | 204558          | E043.8      |
| 5972A              | 3 | 2235       | 2352     | Y   |     |     |     | Y   | Y   | Y   | X   |     | 5971       | 213945         | W149.7      | 223330          | E016.0      |
|                    |   |            |          |     |     |     |     |     |     |     |     |     | 5972       | 232717         | W176.6      | 002101          | W010.0      |

TABLE 2-2  
DATA AVAILABILITY ON-OFF TIMES  
31 AUGUST 1976

| INT ORBIT AND STDN | H | HDRSS TIME |          | L R | T R | T R | S R | E R | F R | P R | W R | I R | DATA ORBIT | ASCENDING NODE |             | DESCENDING NODE |             |
|--------------------|---|------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|----------------|-------------|-----------------|-------------|
|                    |   | ON HRMN    | OFF HRMN |     |     |     |     |     |     |     |     |     |            | TIME HRMNSS    | LONG DEGREE | TIME HRMNSS     | LONG DEGREE |
| 59730              | 3 | 0107       | 0211     |     |     |     |     | Y   | Y   | Y   | X   |     | 5973       | 011449         | E156.5      | 020833          | W036.9      |
| 5974R              | 3 | 0252       | 0351     | Y   |     |     |     | X   | Y   | X   | X   |     | 5974       | 030220         | E129.7      | 035605          | W063.8      |
| 5975R              | 3 | 0418       | 0541     | Y   |     |     |     | Y   | Y   | Y   | X   |     | 5975       | 044952         | E102.8      | 054337          | W090.7      |
| 5976R              | 3 | 0606       | 0723     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5976       | 063724         | E075.9      | 073109          | W117.5      |
| 5977A              | 3 | 0745       | 0907     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5977       | 082456         | E049.0      | 091840          | W144.4      |
| 5978A              | 3 | 0931       | 1055     | Y   |     |     |     | Y   | Y   | Y   | X   |     | 5978       | 101227         | E022.1      | 110612          | W171.3      |
| 5979A              | 3 | 1117       | 1240     | Y   |     |     |     | X   | Y   | Y   | X   |     | 5979       | 115959         | W004.8      | 125244          | E161.8      |
| 5980A              | 3 | 1302       | 1425     | Y   |     |     |     | Y   | Y   | X   | X   |     | 5980       | 134731         | W031.6      | 144115          | E134.9      |
| 5981A              | 3 | 1446       | 1607     | Y   |     |     |     | X   | Y   | Y   | X   |     | 5981       | 153503         | W058.5      | 162847          | E108.1      |
| 5983A              | 3 | 1817       | 1939     | Y   |     |     |     | Y   | Y   | Y   | Y   |     | 5982       | 172234         | W085.4      | 181612          | E091.2      |
| 5984A              | 3 | 2005       | 2125     | Y   |     |     |     | Y   | Y   | Y   | Y   |     | 5983       | 191006         | W112.3      | 200351          | E054.3      |
| 5985A              | 3 | 2151       | 2310     | Y   |     |     |     | Y   | Y   | Y   | X   |     | 5984       | 205738         | W139.2      | 215123          | E027.4      |
|                    |   |            |          |     |     |     |     |     |     |     |     |     | 5985       | 224510         | W166.1      | 233854          | E000.5      |

## SECTION 3

### ORBIT DISPLAYS OF ESMR

This section briefly describes the ESMR experiment, the format of the image displays derived from the data of this experiment and presents image examples of selected data. A complete description of the ESMR experiment is found in Section of The Nimbus 6 User's Guide.

The ESMR is a two-channel scanning radiometer receiving microwave radiation in a 250 MHz band centered at 37 GHz. One channel is used to measure the vertical polarization of the radiation, and the other measures the horizontal polarization. The antenna beam scans ahead of the spacecraft along a conical surface with a constant angle of 45 degrees with respect to the antenna axis. Spatial resolution of each element is about 20 km in the cross-track direction by 45 km in the direction parallel to the sub-point track.

For a brief description of the HIRS and SCAMS experiments formerly described in this Section, see The Nimbus 6 Data Catalog, Volume 5, Section 3. A complete description of the HIRS and SCAMS experiments may be found in The Nimbus 6 User's Guide, Sections 3 and 4 respectively.

All useable HIRS and SCAMS data have been converted to 4" x 5" black and white images. ESMR data will continue to be converted to 4" x 5" black and white image as long as the experiment continues to function in an operational mode. Selected images from the ESMR experiment from July and August 1976 are presented in this section. Complete coverage times are listed in the Data Availability ON-OFF Times in Table 2-2.

Section 5 of The Nimbus 6 User's Guide describes in detail the image format of the ESMR. The following is a summary of the format, detailing changes to the User's Guide where needed. The processed display contains the following items:

- NIMBUS 6 (ESMR)

This identifies the satellite and the experiment.

- (DATE)

This identifies the Greenwich month, day, and year the data were recorded on board the satellite.

- SCALE F (P2)

Since orbit 3933, ESMR has operated in the P (partial mode). For each experiment the data from each interrogation orbit is displayed on a single image. Through orbit 3932 (31 March 1976), each ESMR scan line is displayed once and twice after orbit 3932. Similarly, each of the 71 scan-spot elements is displayed once through orbit 3932 and twice after orbit 3933.

- INT ORBIT

The interrogation orbit number identifies the orbit in progress when the recorded data is transmitted to a STDN station. Usually parts of two data orbits are on the same display. The interrogation orbit number will only identify the last orbit of each display.

- TIME (and) SUBPOINT

Satellite time and latitude-longitude information are presented along the vertical line down the center of each display. The line represents the satellite subpoint track, which is located down the center of each of the swaths on each display. Time is GMT with ticks along the left side of the line at each five minutes mark (on the five minutes). Time is annotated (hour and minute) every 15 minutes (on the quarter hour).

Subpoint information presents latitude and longitude positions of the satellite subpoint. Each tick mark on the right side of the vertical line is annotated with the subpoint latitude and longitude (to the nearest degree). Latitude is labeled N (north or S (south). Longitude is labeled E (east) or W (west).

After orbit 3933, the ESMR data display was changed. The following condensed changes apply for TIME and SUBPOINT information: Satellite time information is presented along the vertical lines to the left and to the right of the data display. Time is GMT with 5 minute tick marks. Time annotations consist of hour-minute displays with 15 minute intervals or quarter-hour notations.

Latitude and longitude coordinates are in grid form centrally placed between two sets of data; each data set are a compliment of the appropriate grid overlay immediately adjacent to its border. For a complete description of new format see ESMR CHANNEL-RANGE DISPLAYS, this section of the catalog.

- GRAY SCALE

Each image has an 18-step gray scale along the bottom of the display. The gray scales are used to define parameter value intervals for each image swath of each display by assigning different parameter values to the gray scale for each swath. Tables 3-1 and 3-2 define the parameter values versus gray scale for each ESMR image swath.

- 3200

This identifies the computer used to process the data. All data was processed by the Control Data Corporation (CDC) 3200.

## ESMR CHANNEL-RANGE DISPLAYS

Through orbit 3932 (31 March) the ESMR displays contained 20 swaths of data, as shown in the ESMR image displays up to orbit 3932 in Section 3.3. The swaths are numbered (numbers not shown) from 1 on the left to 20 on the right. Each of the ten swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 3-1. The right set of ten swaths has a similar format, and displays the earliest recorded data. If the right swaths were cut and placed above the group on the left, the new display would show the continuous coverage recorded for that orbit. Swaths 1 and 11 have the same polarization and temperature range. Similarly, swaths 2 and 12, 3 and 13, etc., are the same. Table 3-1 is set up to show this duplication of parameter information.

The ESMR display format was modified at orbit 3933 (31 March 1976). After this orbit all displays will have the following new format.

The new displays contain ten swaths of data plus a geographic grid overlay for each swath, as shown in the ESMR image displays after orbit 3933 in Section 3.3.

The swaths are numbered (numbers not displayed) from 1 on the left to 10 on the right. Each of the five swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 3-2. The right set of five swaths has a similar format, and displays the latest recorded data. If the right swaths were cut and placed below the group on the left, the new display would show the continuous coverage of that display.

Swaths 1 and 6 display the same parameter. That is, the temperature range and polarization for swaths 1 and 6 are the same. Similarly, swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Table 3-2 is set up to show this duplication of parameter information.

Data time (GMT) references for the left set of five swaths are shown adjacent to the vertical line at the left. Time tick marks are every five minutes with hour and minute annotation every fifteen minutes. Data time references for the right set of five swaths are shown in a similar manner adjacent to the vertical line at the right.

The center portion of the display contains two swaths of grid overlay information: the left grid for overlay on each of the five swaths on the left, and the right grid for overlay on each of the five swaths on the right. The grid longitudes are generated at ten degree intervals between 55 degrees south and 55 degrees north, and at 20 degree intervals from 55 degrees to the Poles. Latitude grids are generated every five degrees. All grid lines consist of a series of dots at one degree intervals. Latitudes are labeled at 60°S, 30°S, EQ, 30°N, and 60°N. Longitude labels are normally placed next to each latitude label.

Table 3-1

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays  
for Orbits 828 through 3932 (13 August 1975 through 31 March 1976)  
(Brightness Temperatures are in °K)

| Gray Scale Number | Swath Number and ESMR Display Parameter |                               |  |                               |                               |  |                               |                               |  |   |
|-------------------|---|-------------------------------|--|-------------------------------|-------------------------------|--|-------------------------------|-------------------------------|--|---|
|                   | 1 and 11<br>(T <sub>H</sub> )           | 2 and 12<br>(T <sub>V</sub> ) | 3 and 13<br>$\left(\frac{T_H+T_V}{2}\right)$ | 4 and 14<br>(T <sub>H</sub> ) | 5 and 15<br>(T <sub>V</sub> ) | 6 and 16<br>$\left(\frac{T_H+T_V}{2}\right)$ | 7 and 17<br>(T <sub>H</sub> ) | 8 and 18<br>(T <sub>V</sub> ) | 9 and 19<br>$\left(\frac{T_H+T_V}{2}\right)$ | 10 and 20<br>(T <sub>V</sub> -0.6T <sub>H</sub> ) |
| (black) 1         | > 200                                   | > 230                         | > 210  | > 250                         | > 270                         | > 250  | > 290                         | > 300                         | > 280  | >140  |
| 2                 | 196-200                                 | 226-230                       | 206-210                                      | 246-250                       | 267-270                       | 247-250                                      | 287-290                       | 298-300                       | 278-280                                      | 136-140   |
| 3                 | 191-196                                 | 223-226                       | 203-206                                      | 243-246                       | 264-267                       | 244-247                                      | 284-287                       | 295-298                       | 275-278                                      | 133-136   |
| 4                 | 187-191                                 | 219-223                       | 199-203                                      | 239-243                       | 261-264                       | 241-244                                      | 281-284                       | 293-295                       | 273-275                                      | 129-133   |
| 5                 | 183-187                                 | 215-219                       | 195-199                                      | 235-239                       | 258-261                       | 238-241                                      | 278-281                       | 290-293                       | 270-273                                      | 125-129   |
| 6                 | 178-183                                 | 211-215                       | 191-195                                      | 231-235                       | 254-258                       | 234-238                                      | 274-278                       | 288-290                       | 268-270                                      | 121-125   |
| 7                 | 174-178                                 | 208-211                       | 188-191                                      | 228-231                       | 251-254                       | 231-234                                      | 271-274                       | 285-288                       | 265-268                                      | 118-121   |
| 8                 | 169-174                                 | 204-208                       | 184-188                                      | 224-228                       | 248-251                       | 228-231                                      | 268-271                       | 283-285                       | 263-265                                      | 114-118   |
| 9                 | 165-169                                 | 200-204                       | 180-184                                      | 220-224                       | 245-248                       | 225-228                                      | 265-268                       | 280-283                       | 260-263                                      | 110-114   |
| 10                | 161-165                                 | 196-200                       | 176-180                                      | 216-220                       | 242-245                       | 222-225                                      | 262-265                       | 278-280                       | 258-260                                      | 106-110   |
| 11                | 156-161                                 | 193-196                       | 173-176                                      | 213-216                       | 239-242                       | 219-222                                      | 259-262                       | 275-278                       | 255-258                                      | 103-106   |
| 12                | 152-156                                 | 189-193                       | 169-173                                      | 209-213                       | 236-239                       | 216-219                                      | 256-259                       | 273-275                       | 253-255                                      | 99-103  |
| 13                | 148-152                                 | 185-189                       | 165-169                                      | 205-209                       | 233-236                       | 213-216                                      | 253-256                       | 270-273                       | 250-253                                      | 95-99   |
| 14                | 143-148                                 | 181-185                       | 161-165                                      | 201-205                       | 229-233                       | 209-213                                      | 249-253                       | 268-270                       | 248-250                                      | 91-95   |
| 15                | 139-143                                 | 178-181                       | 158-161                                      | 198-201                       | 226-229                       | 206-209                                      | 246-249                       | 265-268                       | 245-248                                      | 88-91   |
| 16                | 134-139                                 | 174-178                       | 154-158                                      | 194-198                       | 223-226                       | 203-206                                      | 243-246                       | 263-265                       | 243-245                                      | 84-88   |
| 17                | 130-134                                 | 170-174                       | 150-154                                      | 190-194                       | 220-223                       | 200-203                                      | 240-243                       | 260-263                       | 240-243                                      | 80-84   |
| (white) 18        | < 130                                   | < 170                         | < 150  | < 190                         | < 220                         | < 200  | < 240                         | < 260                         | < 240  | > 80  |

T<sub>H</sub> = Brightness temperature derived from the ESMR horizontal polarization data

T<sub>V</sub> = Brightness temperature derived from the ESMR vertical polarization data

Table 3-2

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image  
Displays for Orbits 3933 through 5985 (31 March through 31 August 1976)

(Brightness Temperatures are in °K)

| Gray<br>Scale<br>Number | Swath Number and ESMR Display Parameter |                      |                      |                      |  |
|-------------------------|---|----------------------|----------------------|----------------------|--|
|                         | 1 and 6<br>( $T_H$ )                    | 2 and 7<br>( $T_H$ ) | 3 and 8<br>( $T_H$ ) | 4 and 9<br>( $T_V$ ) | 5 and 10<br>$\left(\frac{T_H + T_V}{2}\right)$ |
| (black) 1               | > 200                                   | > 230                | > 210                | > 250                | > 270  |
| 2                       | 196-200                                 | 296-230              | 206-210              | 246-250              | 267-270  |
| 3                       | 191-196                                 | 223-226              | 203-206              | 243-246              | 264-267  |
| 4                       | 187-191                                 | 219-223              | 199-203              | 239-243              | 261-264  |
| 5                       | 183-187                                 | 215-219              | 195-199              | 235-239              | 258-261  |
| 6                       | 178-183                                 | 211-215              | 191-195              | 231-235              | 254-258  |
| 7                       | 174-178                                 | 208-211              | 188-191              | 228-231              | 252-254  |
| 8                       | 169-174                                 | 204-208              | 184-188              | 224-228              | 248-251  |
| 9                       | 165-169                                 | 200-204              | 180-184              | 220-224              | 245-248  |
| 10                      | 161-165                                 | 196-200              | 176-180              | 216-220              | 242-245  |
| 11                      | 156-161                                 | 193-196              | 173-176              | 213-216              | 239-242  |
| 12                      | 152-156                                 | 189-193              | 169-173              | 209-213              | 236-239  |
| 13                      | 148-152                                 | 185-189              | 165-169              | 205-209              | 233-236  |
| 14                      | 143-148                                 | 181-185              | 161-165              | 201-205              | 229-233  |
| 15                      | 139-143                                 | 178-181              | 158-161              | 198-201              | 226-229  |
| 16                      | 134-139                                 | 174-178              | 154-158              | 194-198              | 223-226  |
| 17                      | 130-134                                 | 170-174              | 150-154              | 190-194              | 220-223  |
| (white) 18              | < 130                                   | < 170                | < 150                | < 190                | < 220  |

$T_H$  = Brightness temperature derived from the ESMR horizontal polarization data

$T_V$  = Brightness temperature derived from the ESMR vertical polarization data



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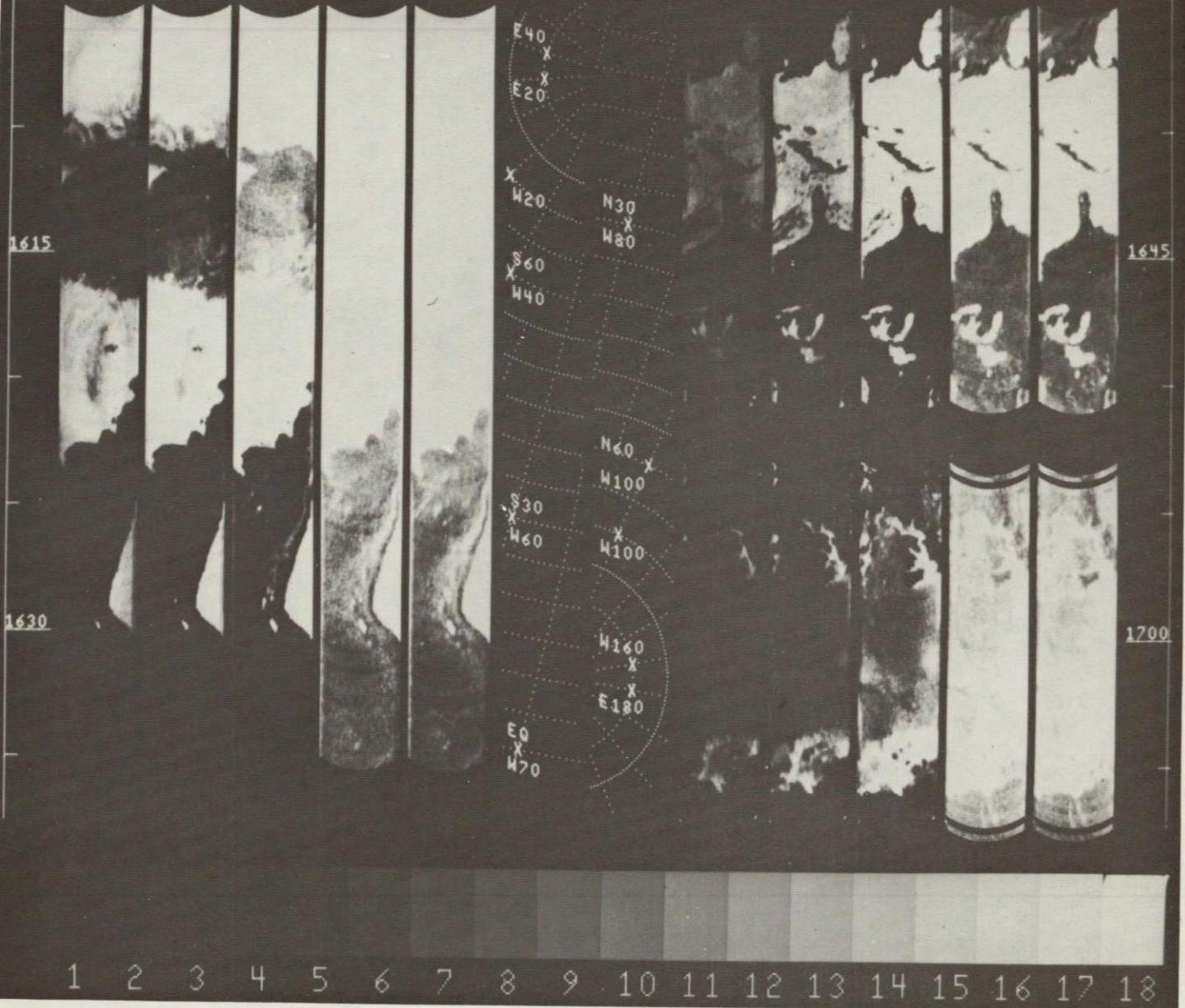
SECTION 3.1

SELECTED ESMR IMAGE DISPLAYS

NIMBUS 6-ESMR 07-05-76 SCALE-P2 INT ORBIT 005217  
DISPLAY VERSION 02 3200

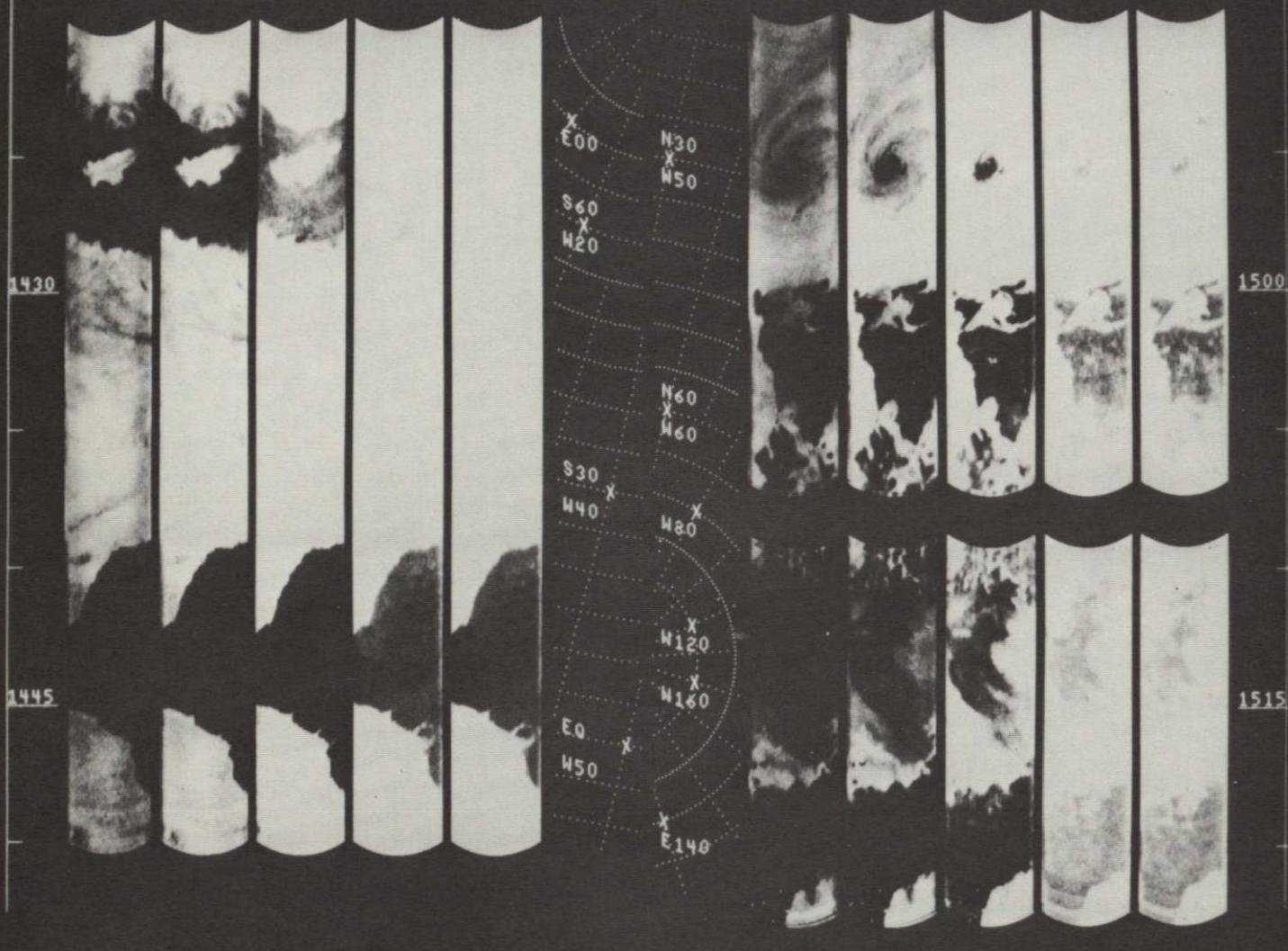


NIMBUS 6-ESMR 08-04-76 SCALE-P2 INT ORBIT 005620  
DISPLAY VERSION 02 3200



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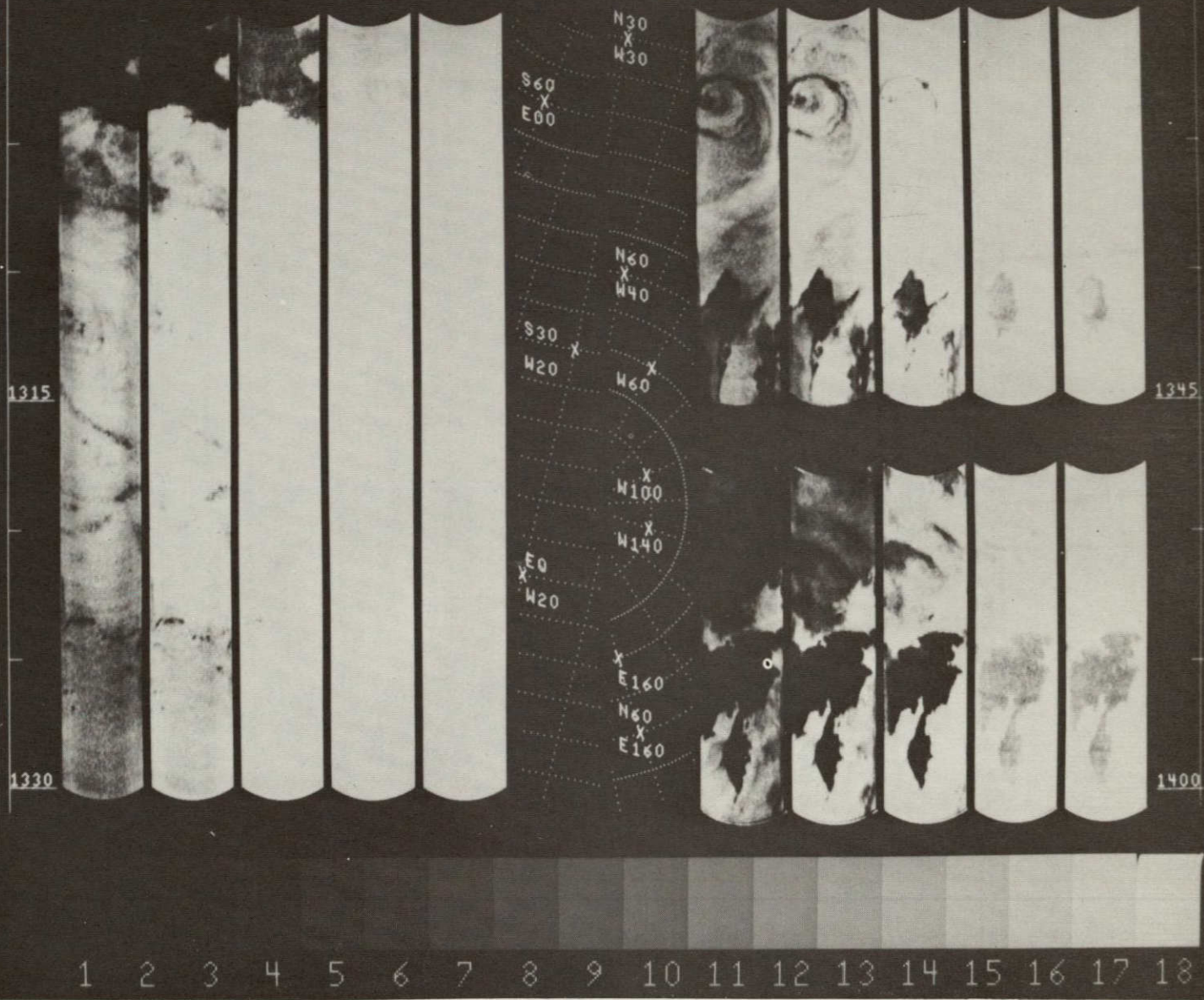
NIMBUS 6-ESMR 08-27-76 SCALE-P2 INT ORBIT 005927  
DISPLAY VERSION 02 3200



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

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NIMBUS 6-ESMR 08-29-76 SCALE-P2 INT. ORBIT 005953  
DISPLAY VERSION 02 3200

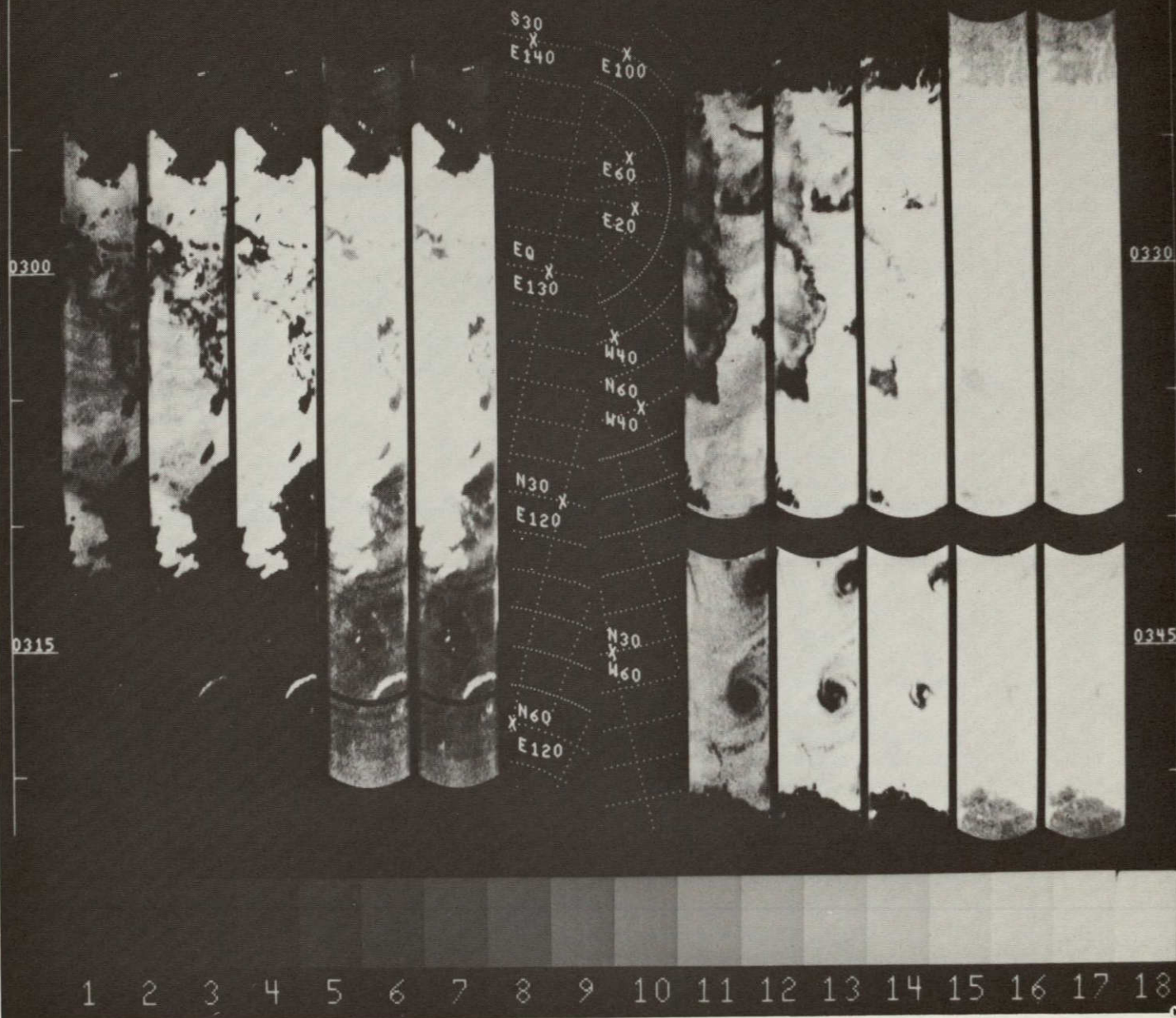


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NIMBUS 6-ESMR 08-30-76 SCALE-P2 INT ORBIT 005967  
DISPLAY VERSION 02 3200



NIMBUS 6-ESMR 08-31-76 SCALE-P2 INT ORBIT 005974  
DISPLAY VERSION 02 3200



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When ordering THIR photographic data from NSSDC the following information should be given:

- Satellite (e. g. Nimbus 6)
- Date of data
- Data orbit number, channel (11.5  $\mu\text{m}$  or 6.7  $\mu\text{m}$ ), and whether day or night data
- Data format, i. e. , positive or negative transparencies, or prints
- Area of interest defined by latitude and longitude

In addition to the THIR film strips, photographic copies of the daily day or night montages prepared from film strips can be obtained.

Quantitative digital data are obtained when the original analog signals are digitized with full fidelity, and processed by an IBM 360 computer, where calibration and geographic referencing are applied. Each reduced radiation data tape prepared by the IBM 360 is called a Nimbus Meteorological Radiation Tape-THIR (NMRT-THIR). The NMRT can be used to generate grid print maps or to accomplish special scientific analyses. The format of this tape may be found in The Nimbus 6 User's Guide, Section 2.

Due to the large volume and the long computer running time required for processing THIR into NMRTs, Nimbus 6 THIR digital data are not routinely reduced to final NMRT format. Only those data which are specifically requested by the user will be processed. Requests should be made through NSSDC. The user is urged to make full use of the film strips which are abundantly available in nearby real time from the NSSDC.

A series of programs at GSFC produce printed and contoured data referenced to a grid on Polar Stereographic or Mercator map bases. These are called grid print maps. The advantages of the grid print map presentation are the display of absolute values of temperatures in their approximate location and geographical rectification of the data. Grid print maps may be produced for either a single orbit or a composite of several orbits. The following standard options are available and should be specified when requesting grid print maps from NSSDC.

- Map and Approximate Scale
  - a. Polar Stereographic, 1:30 million
  - b. Polar Stereographic, 1:10 million



- c. Multi-resolution Mercator maps are available down to 1:1 million scale.
- Maximum Scan Angle (50 degrees is practical limit)
- Field Values and Contouring. Unless otherwise specified, all maps will include field values and contouring except Mercator maps of scales larger than 1:20 million. A data population map, indicating the number of individual measurements contained in each grid point average, as well as a latitude-longitude description for geographically locating the data, will be provided along with each grid print map.

When ordering grid print map data, the following identifying information should be given:

- Satellite (e. g. , Nimbus 6)
- Sensor (THIR)
- Channel (6, 7  $\mu\text{m}$  or 11. 7  $\mu\text{m}$ )
- Data Orbit Number
- Calendar Date of Equator Crossing
- Beginning and Ending Times of Data in GMT
- Latitude and Longitude Limits of Area of Interest
- Map Type and Map Scale
- Scan Angle Limits
- Contouring or No Contouring of Data Points

When ordering NMRTs, the "Calendar Date of Equator Crossing" and "Map type and Map Scale" can be omitted.

Beginning and ending times of data in GMT can be interpolated using Table 4-1 which gives the elapsed time from either ascending or descending node as a function of latitude. These elapsed time values can be appropriately added or subtracted from node times given in Table 2-2.

A complete description of the THIR experiment may be found in The Nimbus 6 User's Guide, Section 2.

Table 4-1

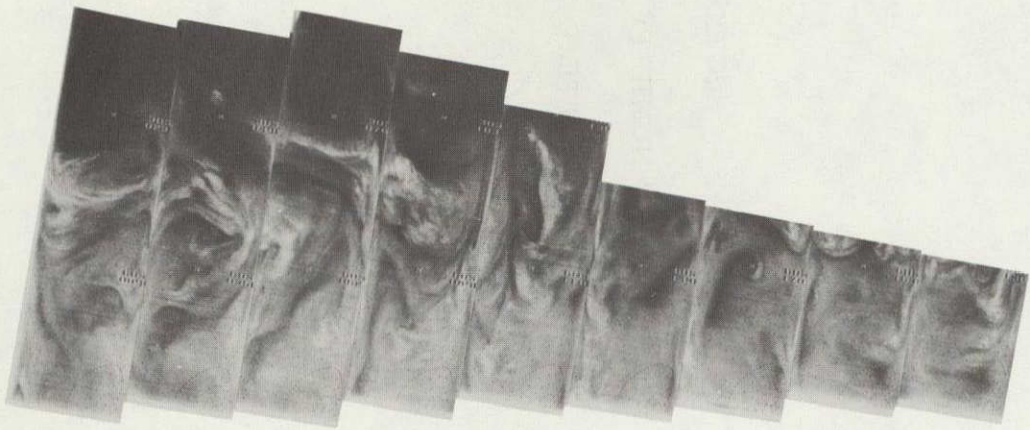
Latitude Versus Minutes From  
Ascending or Descending Node

| Latitude from<br>AN or DN | Minutes and Seconds<br>from AN or DN |
|---------------------------|--------------------------------------|
| 0                         | 0:00                                 |
| 5                         | 1:31                                 |
| 10                        | 3:02                                 |
| 15                        | 4:33                                 |
| 20                        | 6:03                                 |
| 25                        | 7:34                                 |
| 30                        | 9:05                                 |
| 35                        | 10:36                                |
| 40                        | 12:08                                |
| 45                        | 13:40                                |
| 50                        | 15:12                                |
| 55                        | 16:44                                |
| 60                        | 18:18                                |
| 65                        | 19:52                                |
| 70                        | 21:33                                |
| 75                        | 23:26                                |
| 78                        | 24:44                                |
| 80.1                      | 26:49                                |
| 78                        | 29:00                                |
| 75                        | 30:09                                |
| 70                        | 31:51                                |
| 65                        | 33:35                                |

SECTION 4.1

TEMPERATURE HUMIDITY INFRARED RADIOMETER

NIGHTTIME MONTAGES



5168 5167 5166 5165 5164 5163 5162 5161 5160 5159 5158 5157 5156

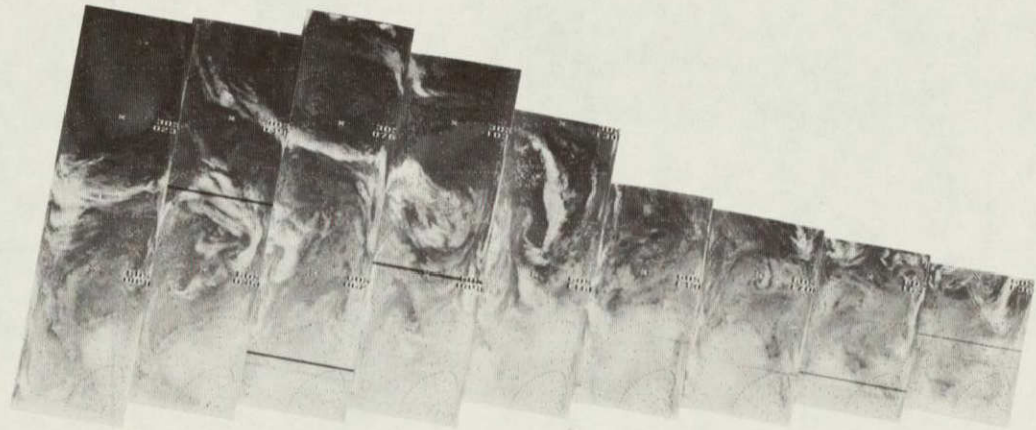
1 JULY 76

6.7  $\mu\text{m}$

4-6

+

+



5168 5167 5166 5165 5164 5163 5162 5161 5160 5159 5158 5157 5156

1 JULY 76

11.5  $\mu$ m

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5182 5181 5180 5179 5178 5177 5176 5175 5174 5173 5172 5171 5170 5169

2 JULY 76

6.7  $\mu\text{m}$



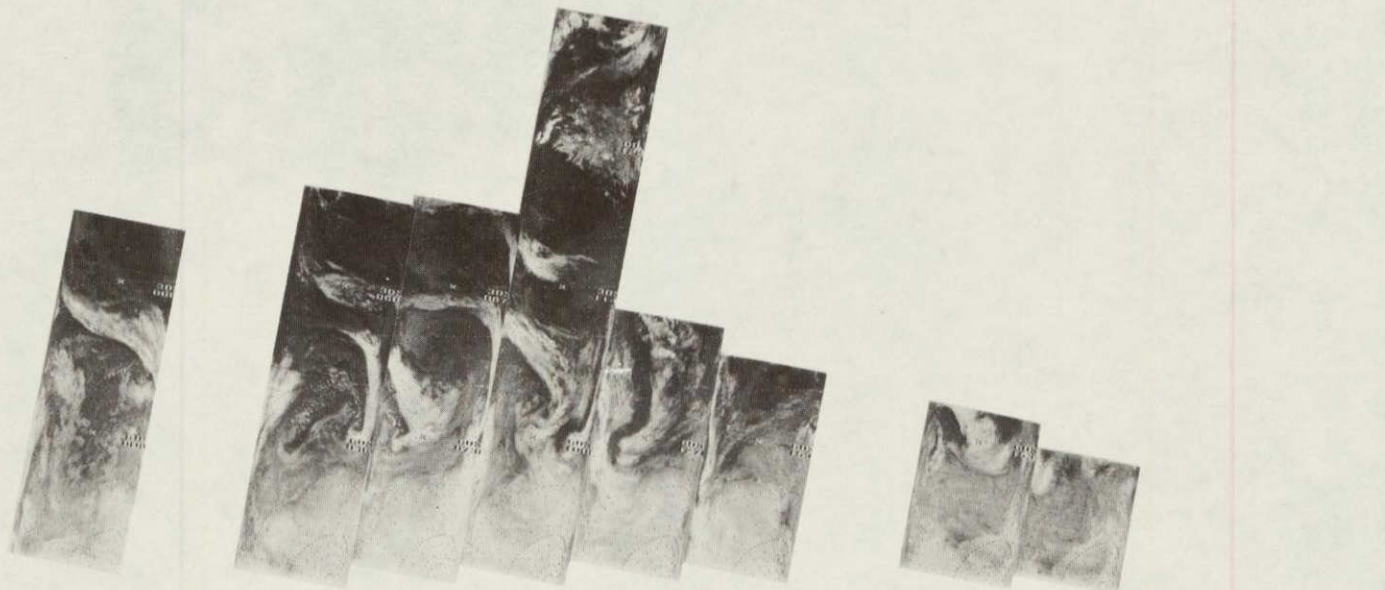
4-9

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5182 5181 5180 5179 5178 5177 5176 5175 5174 5173 5172 5171 5170 5169

2 JULY 76

11.5  $\mu$ m



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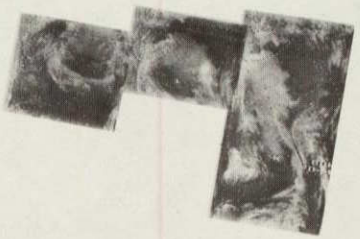


5195 5194 5193 5192 5191 5190 5189 5188 5187 5186 5185 5184 5183

3 JULY 76

6.7  $\mu$ m





5195 5194 5193 5192 5191 5190 5189 5188 5187 5186 5185 5184 5183

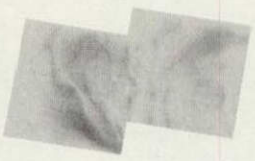
3 JULY 76

11.5  $\mu$ m

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PLATE 11  
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11



5208 5207 5206 5205 5204 5203 5202 5201 5200 5199 5198 5197 5196

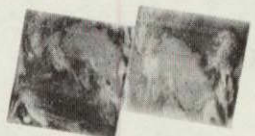
4 JULY 76

6.7  $\mu$ m

4-12

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+



5208 5207 5206 5205 5204 5203 5202 5201 5200 5199 5198 5197 5196

4 JULY 76

11.5  $\mu$ m

4-13

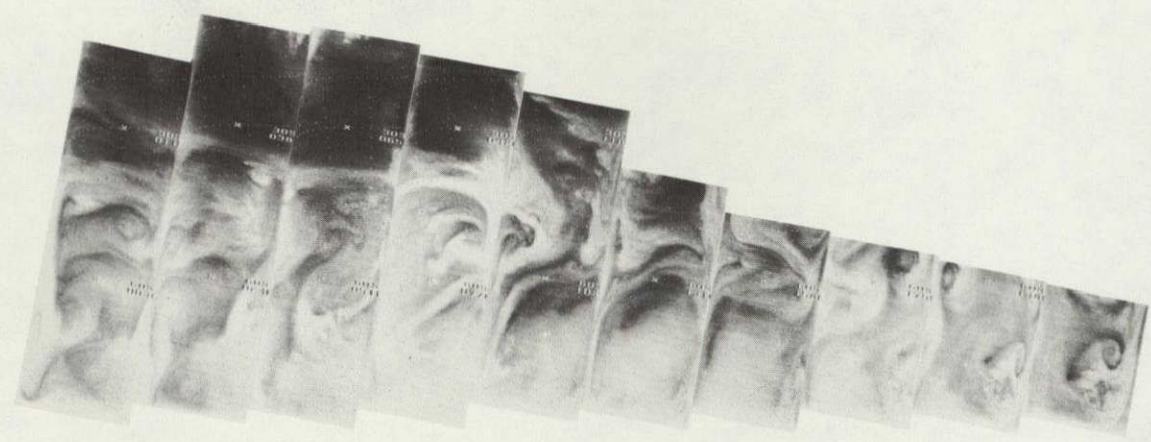
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*Dr. Bruce M. Miller  
University of Michigan  
Ann Arbor, Michigan*

4-14

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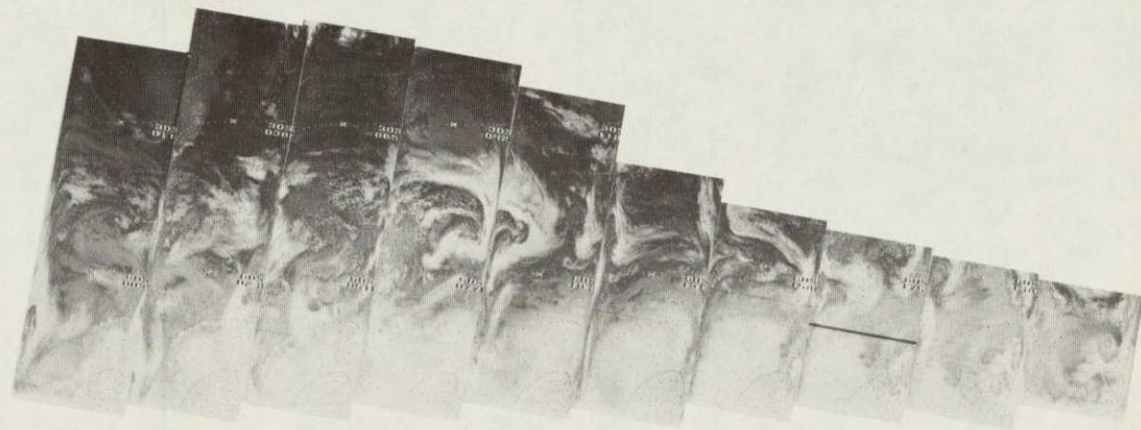
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5222 5221 5220 5219 5218 5217 5216 5215 5214 5213 5212 5211 5210 5209

5 JULY 76

6.7  $\mu$ m



5222 5221 5220 5219 5218 5217 5216 5215 5214 5213 5212 5211 5210 5209

5 JULY 76

11.5  $\mu$ m

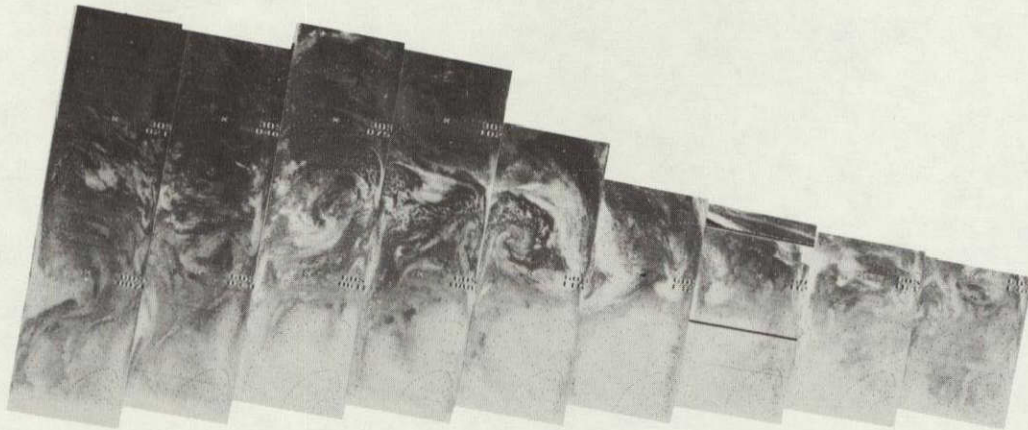
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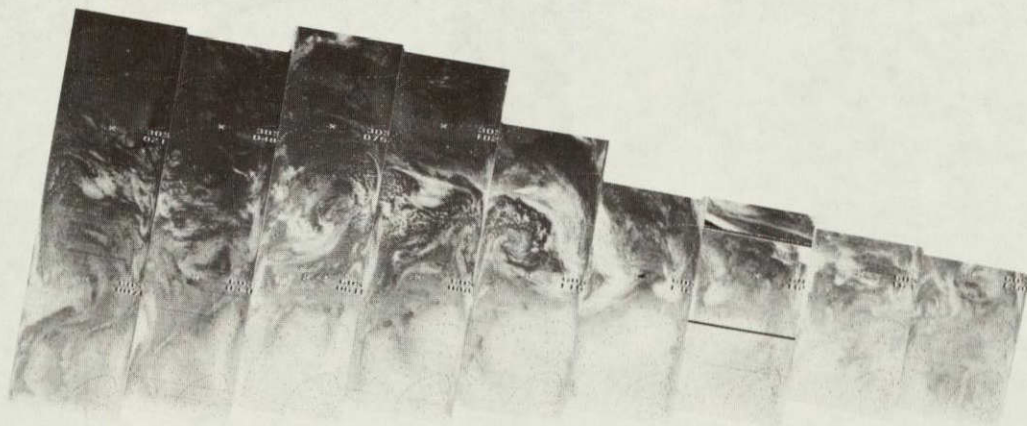


5235 5234 5233 5232 5231 5230 5229 5228 5227 5226 5225 5224 5223

6 JULY 76

6.7  $\mu\text{m}$





5235 5234 5233 5232 5231 5230 5229 5228 5227 5226 5225 5224 5223

6 JULY 76

11.5  $\mu$ m

4-17

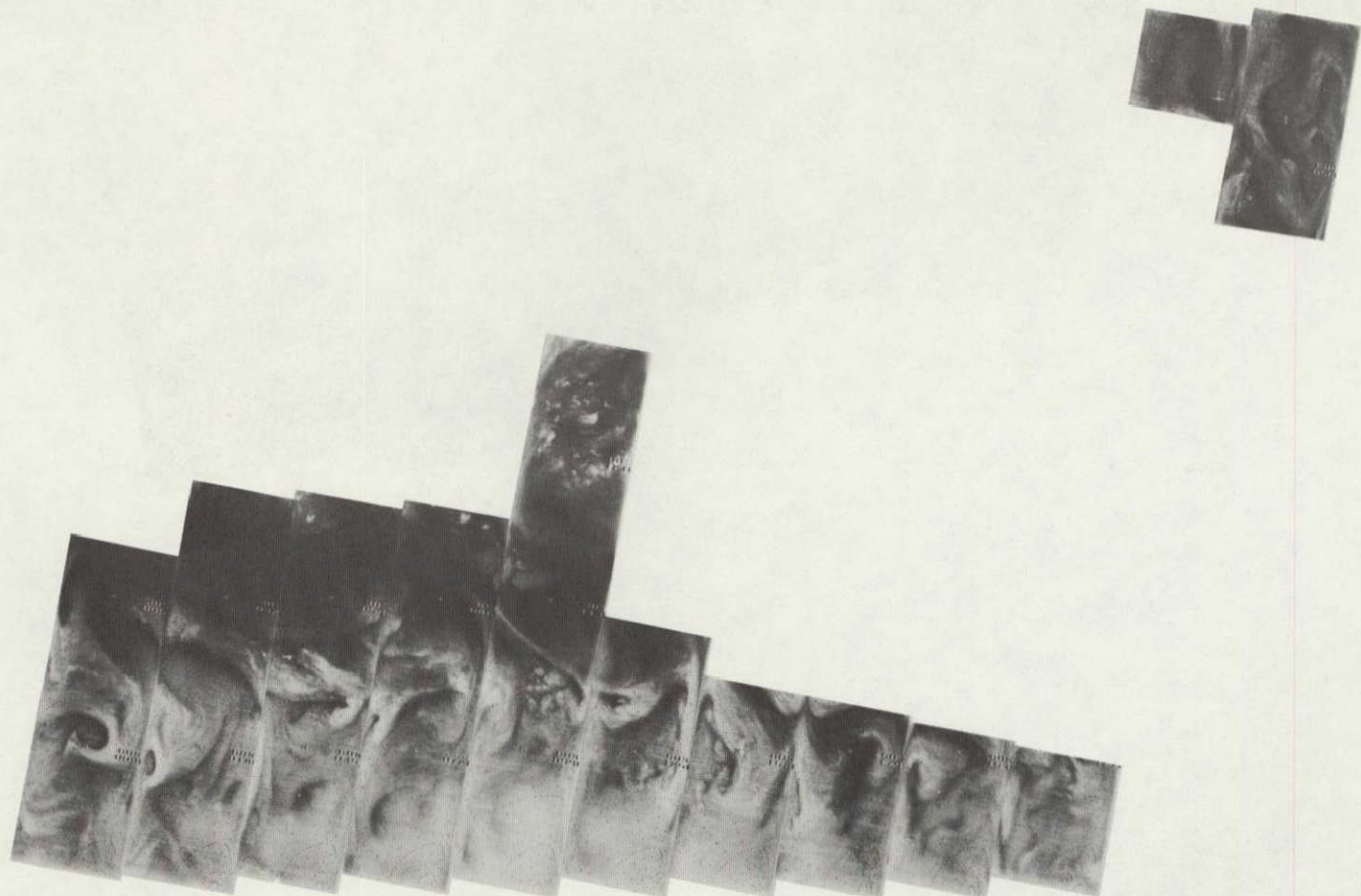
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5249-5236  
7 JULY 76  
6.7 μm

4-18

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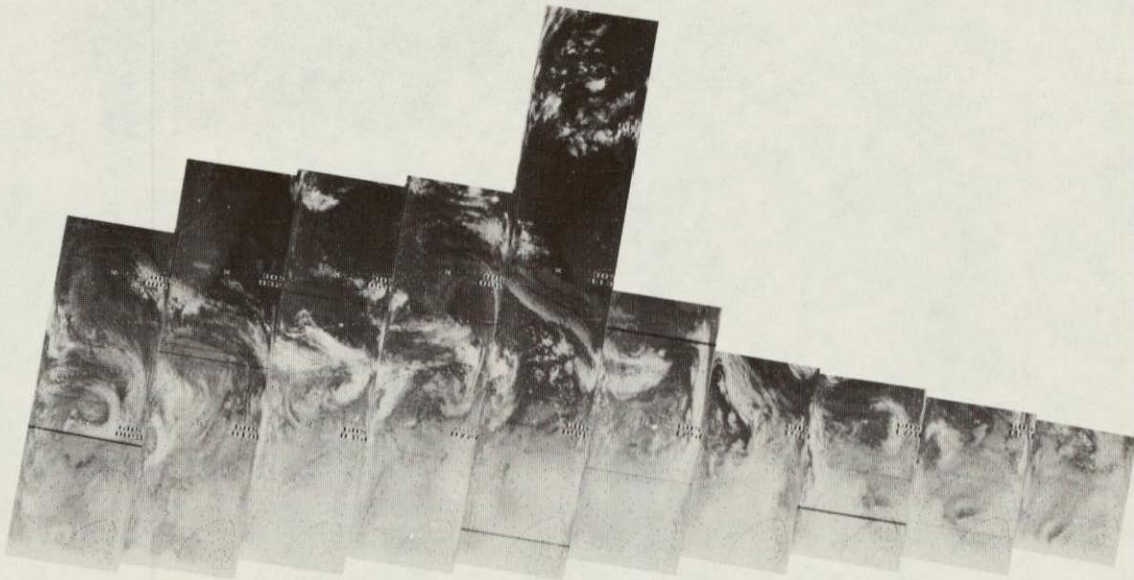


5249 5248 5247 5246 5245 5244 5243 5242 5241 5240 5239 5238 5237 5236

7 JULY 76

6.7 μm





5249 5248 5247 5246 5245 5244 5243 5242 5241 5240 5239 5238 5237 5236

7 JULY 76

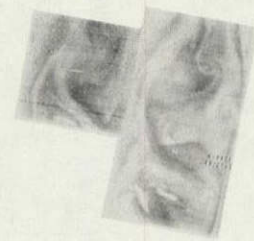
11.5  $\mu$ m

4-19

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5262 5261 5260 5259 5258 5257 5256 5255 5254 5253 5252 5251 5250

8 JULY 76

6.7  $\mu\text{m}$

4-20

+

+



5262 5261 5260 5259 5258 5257 5256 5255 5254 5253 5252 5251 5250

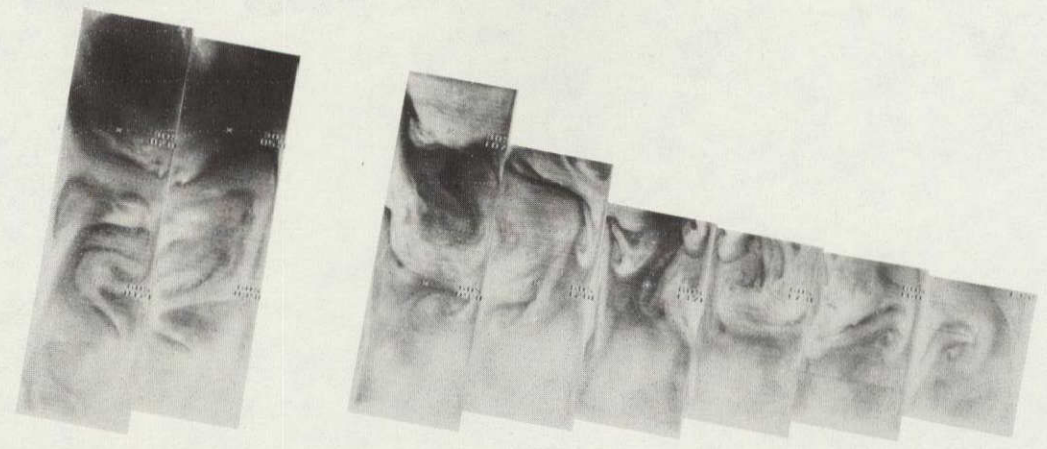
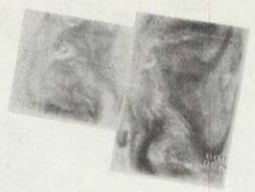
8 JULY 76

11.5  $\mu\text{m}$

4-21

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5275 5274 5273 5272 5271 5270 5269 5268 5267 5266 5265 5264 5263

9 JULY 76

6.7  $\mu\text{m}$

4-22

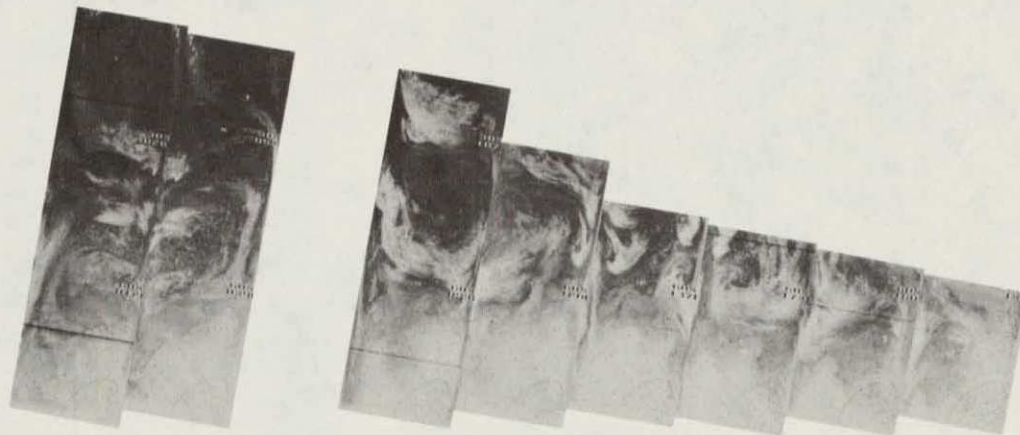
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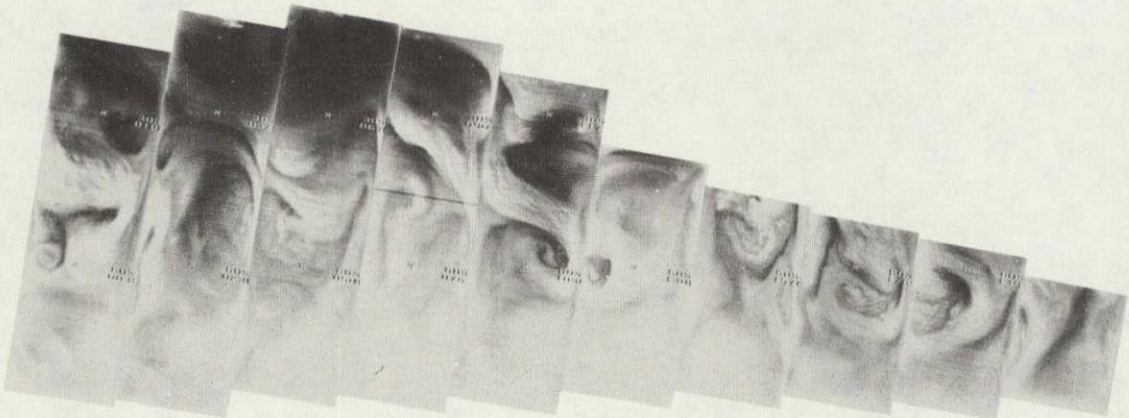
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5275 5274 5273 5272 5271 5270 5269 5268 5267 5266 5265 5264 5263

9 JULY 76

11.5  $\mu$ m



5289 5288 5287 5286 5285 5284 5283 5282 5281 5280 5279 5278 5277 5276

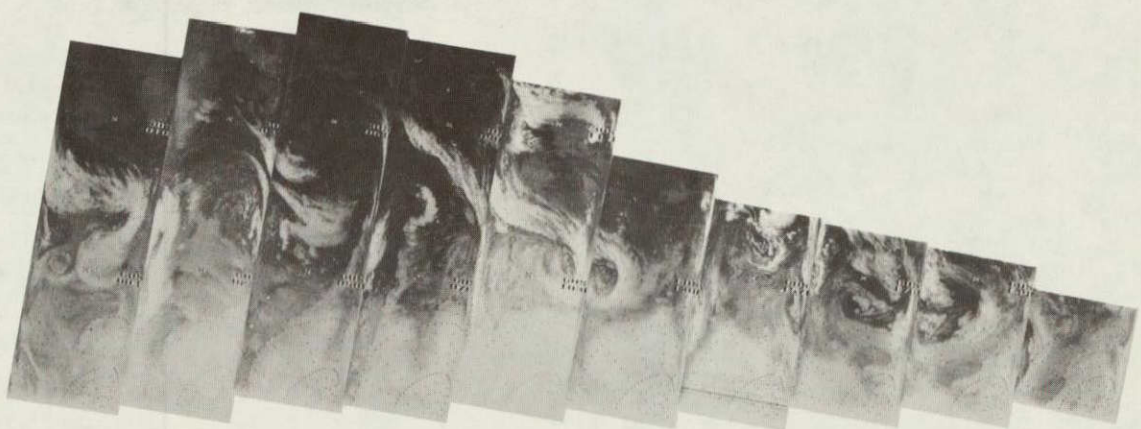
10 JULY 76

6.7  $\mu\text{m}$

4-24

+

+



5289 5288 5287 5286 5285 5284 5283 5282 5281 5280 5279 5278 5277 5276

10 JULY 76

11.5  $\mu$ m

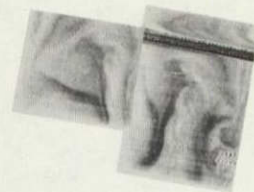
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5302 5301 5300 5299 5298 5297 5296 5295 5294 5293 5292 5291 5290

11 JULY 76

6.7  $\mu\text{m}$





5302 5301 5300 5299 5298 5297 5296 5295 5294 5293 5292 5291 5290

11 JULY 76

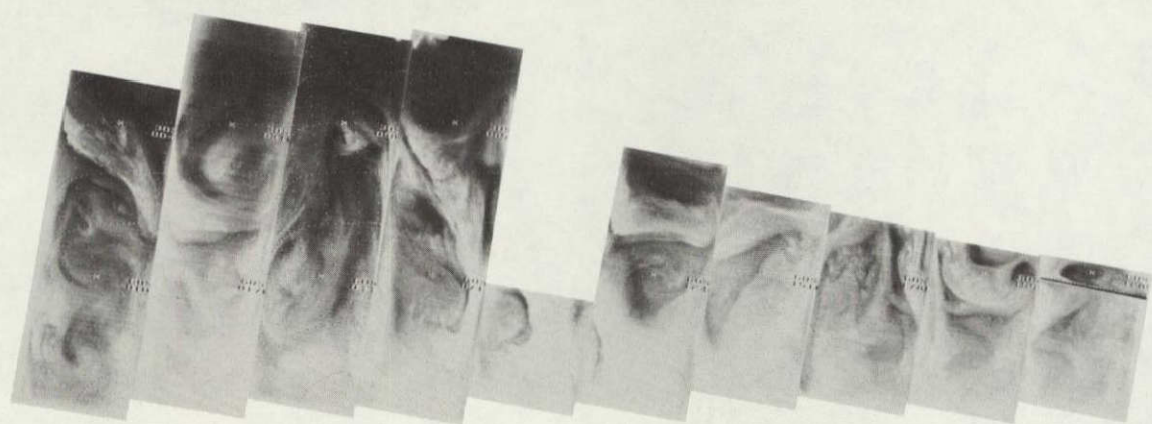
11.5  $\mu$ m

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5316 5315 5314 5313 5312 5311 5310 5309 5308 5307 5306 5305 5304 5303

12 JULY 76

6.7  $\mu$ m

4-28

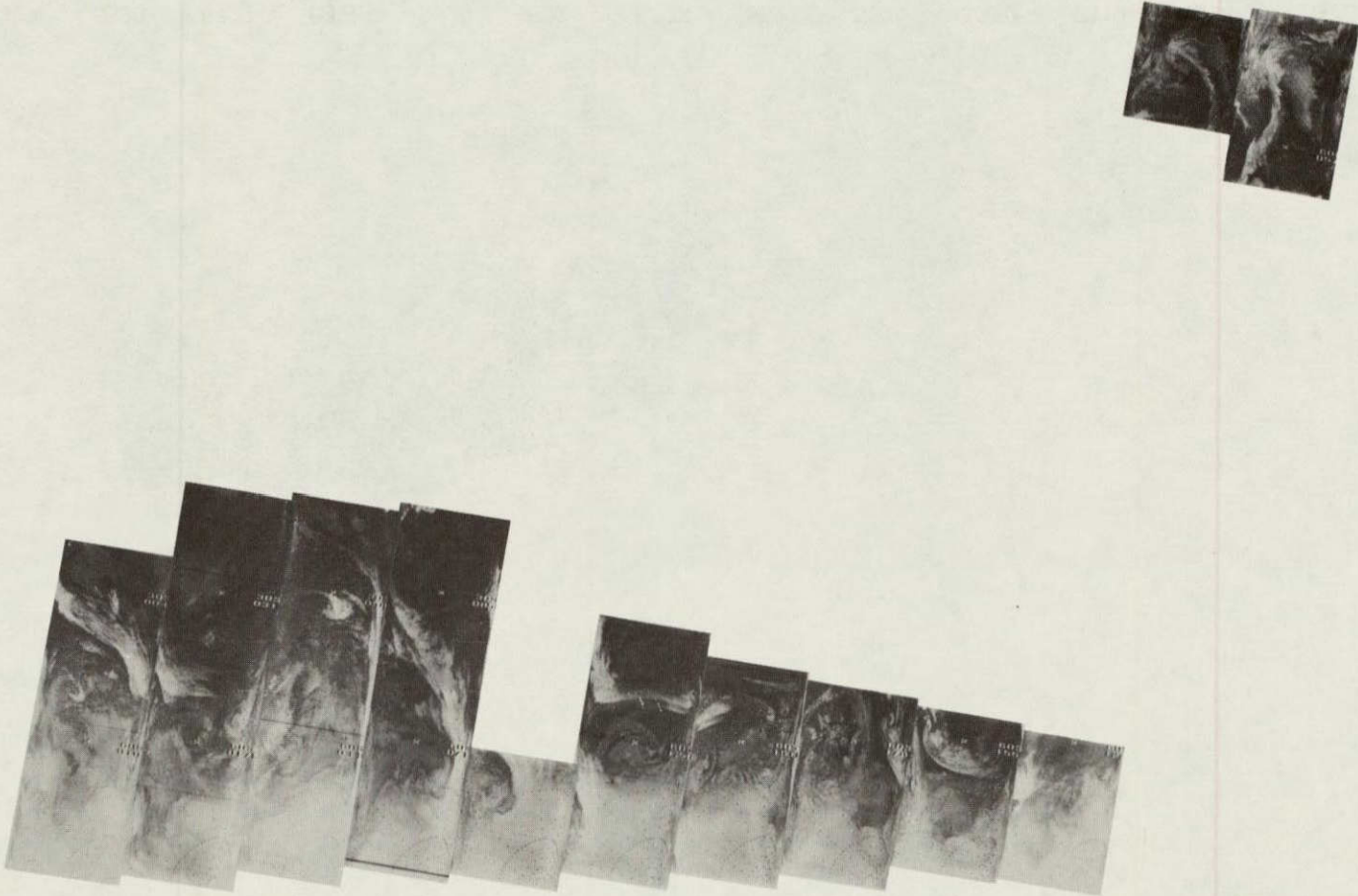
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4-29

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5316 5315 5314 5313 5312 5311 5310 5309 5308 5307 5306 5305 5304 5303

12 JULY 76

11.5  $\mu\text{m}$



+

+

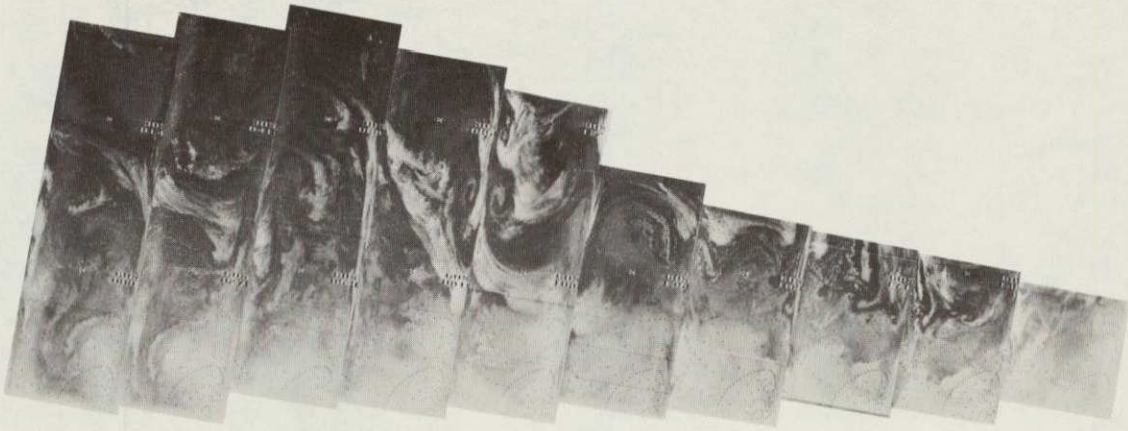
4-30



5329 5328 5327 5326 5325 5324 5323 5322 5321 5320 5319 5318 5317

13 JULY 76

6.7  $\mu$ m



5329 5328 5327 5326 5325 5324 5323 5322 5321 5320 5319 5318 5317

13 JULY 76

11.5  $\mu$ m

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4-31

1976 JULY 14  
10:00 AM  
30

4-32

+

+



5342 5341 5340 5339 5338 5337 5336 5335 5334 5333 5332 5331 5330

14 JULY 76

6.7  $\mu$ m



+

+

4-33



5342

5341

5340

5339

5338

5337

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5335

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5332

5331

5330

14 JULY 76

11.5  $\mu$ m

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9.9

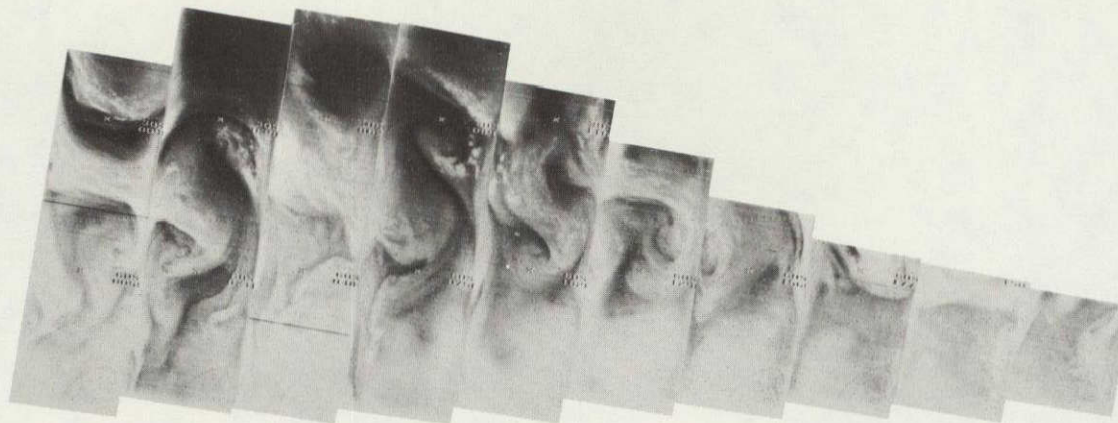
C-2



4-34

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5356 5355 5354 5353 5352 5351 5350 5349 5348 5347 5346 5345 5344 5343

15 JULY 76

6.7  $\mu$ m





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4-35



5356 5355 5354 5353 5352 5351 5350 5349 5348 5347 5346 5345 5344 5343

15 JULY 76

11.5  $\mu$ m

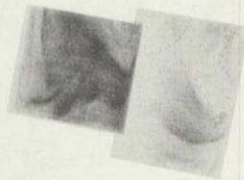
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OL 10008 DIVISION  
ZIMMERMAN  
05/10/76

4-36

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5369 5368 5367 5366 5365 5364 5363 5362 5361 5360 5359 5358 5357

16 JULY 76

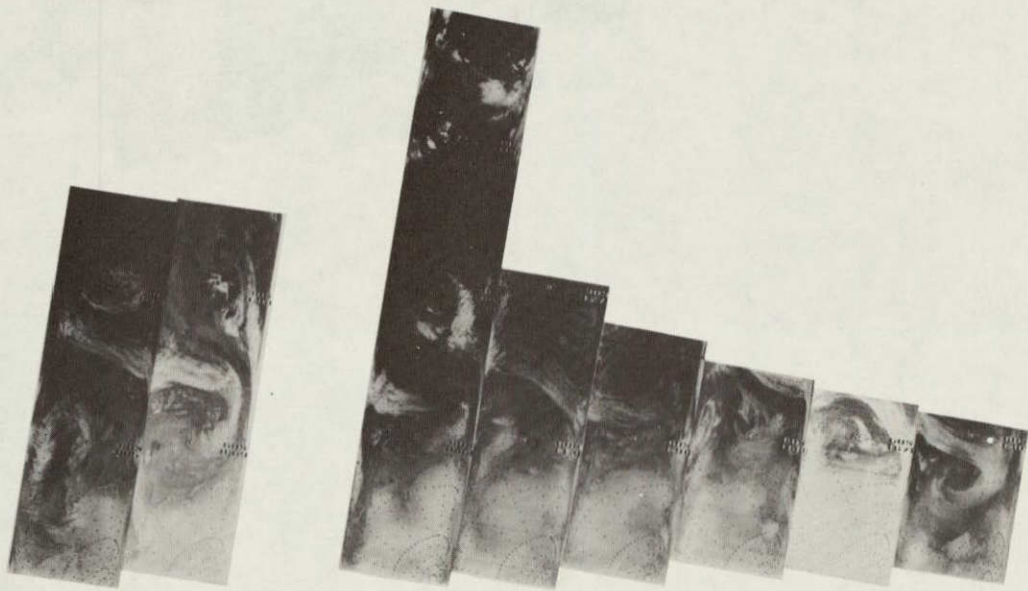
6.7  $\mu$ m

4-37

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OF POOR QUALITY

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5369 5368 5367 5366 5365 5364 5363 5362 5361 5360 5359 5358 5357

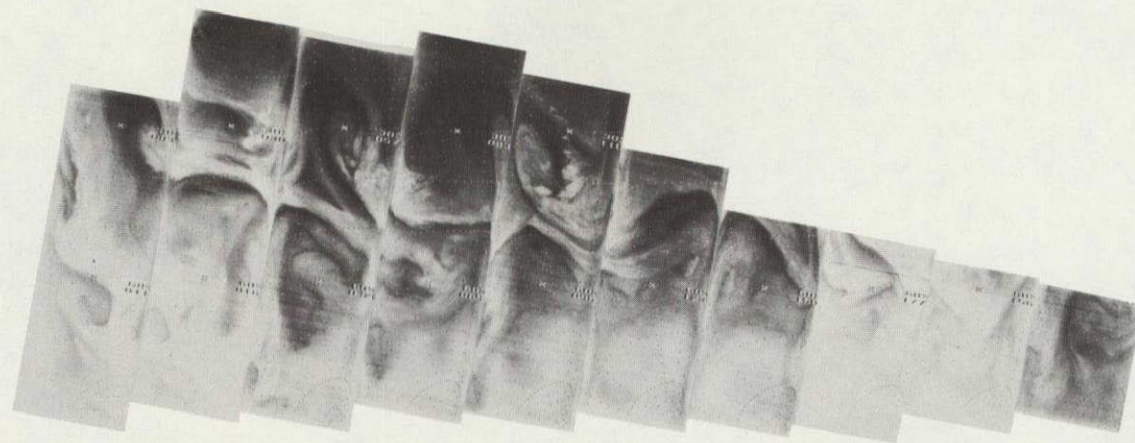
16 JULY 76

11.5  $\mu\text{m}$

4-38

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5383 5382 5381 5380 5379 5378 5377 5376 5375 5374 5373 5372 5371 5370

17 JULY 76

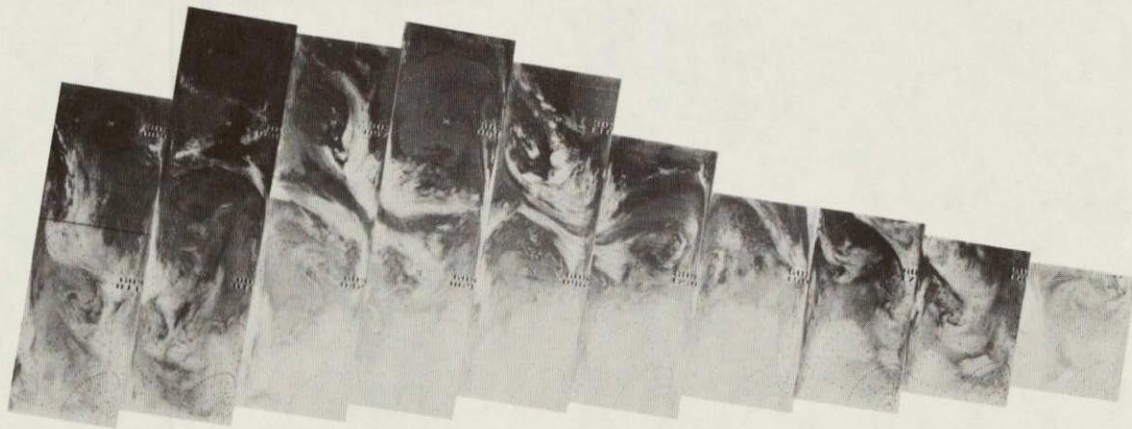
6.7  $\mu\text{m}$



4-39

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+



5383 5382 5381 5380 5379 5378 5377 5376 5375 5374 5373 5372 5371 5370

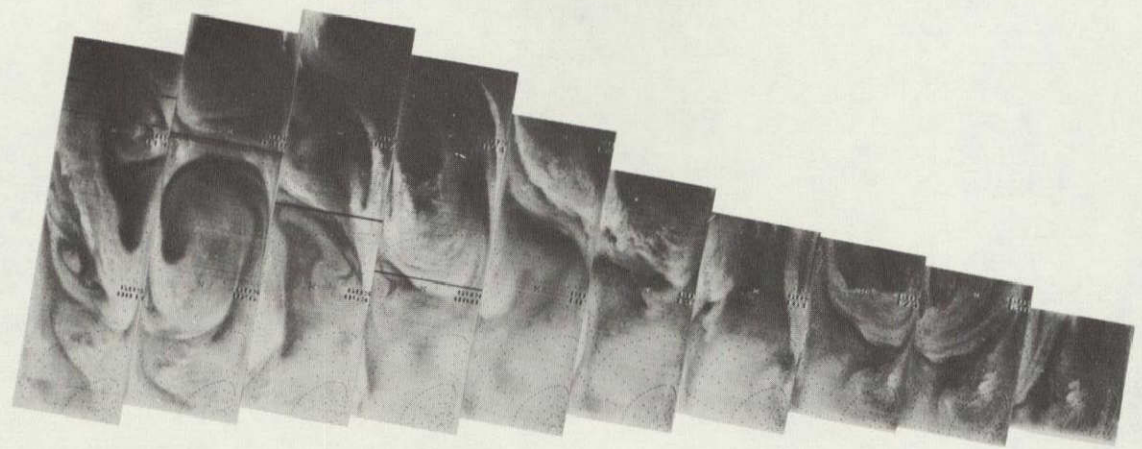
17 JULY 76

11.5  $\mu$ m

4-40

+

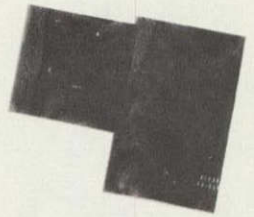
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5396 5395 5394 5393 5392 5391 5390 5389 5388 5387 5386 5385 5384

18 JULY 76

6.7  $\mu$ m





5396 5395 5394 5393 5392 5391 5390 5389 5388 5387 5386 5385 5384

18 JULY 76

11.5  $\mu$ m

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OF POOR QUALITY

4-41

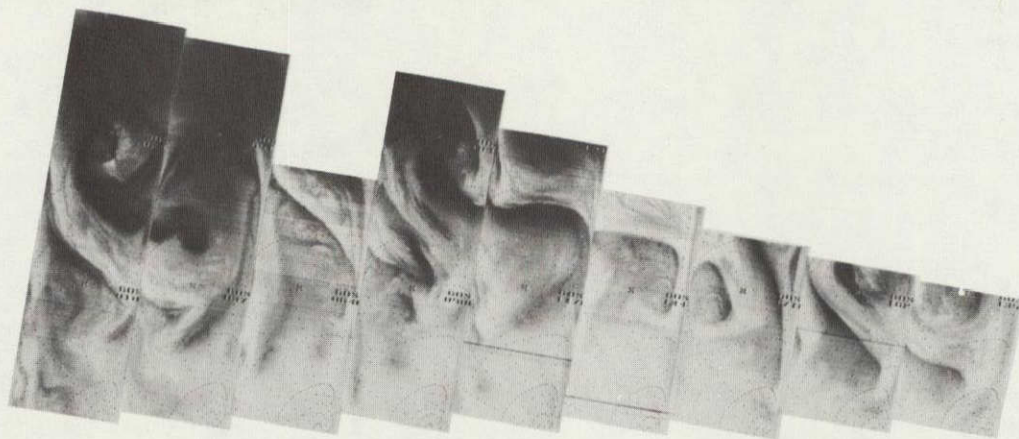
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4-42

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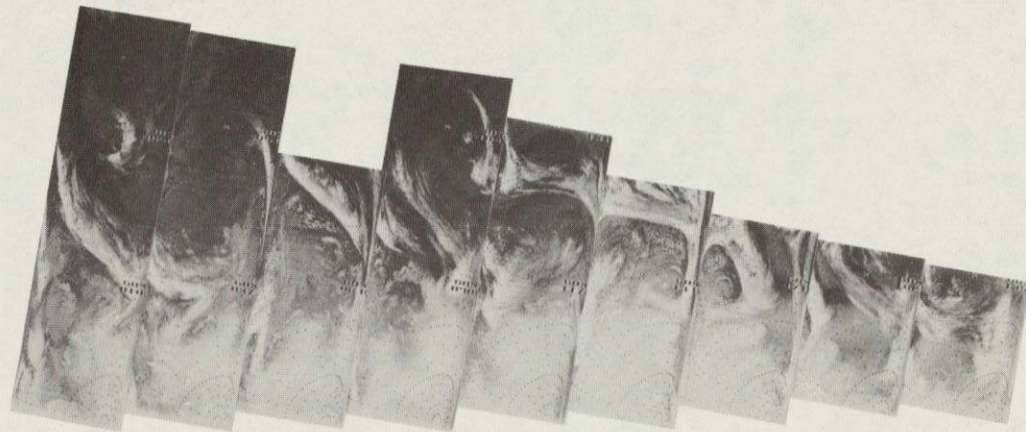
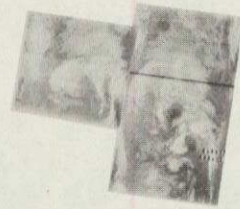
5409 5408 5407 5406 5405 5404 5403 5402 5401 5400 5399 5398 5397

19 JULY 76

6.7  $\mu\text{m}$







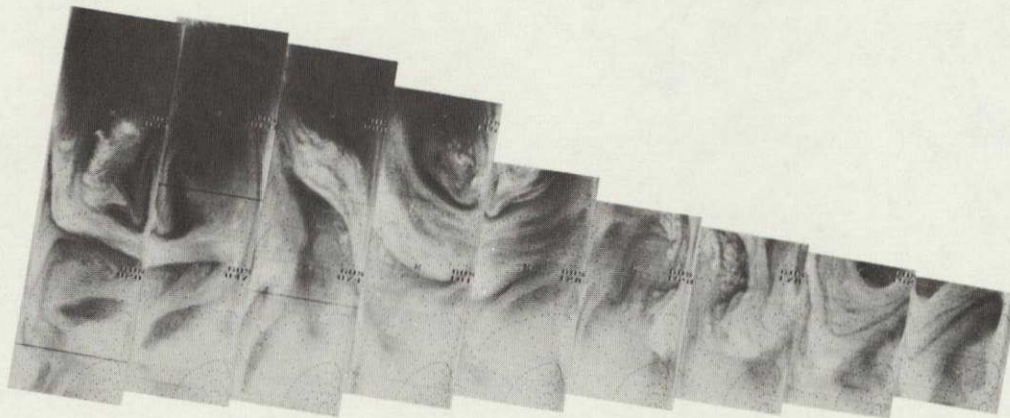
5409 5408 5407 5406 5405 5404 5403 5402 5401 5400 5399 5398 5397

19 JULY 76

11.5  $\mu$ m

4-43

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5423 5422 5421 5420 5419 5418 5417 5416 5415 5414 5413 5412 5411 5410

20 JULY 76

6.7  $\mu\text{m}$

4-44

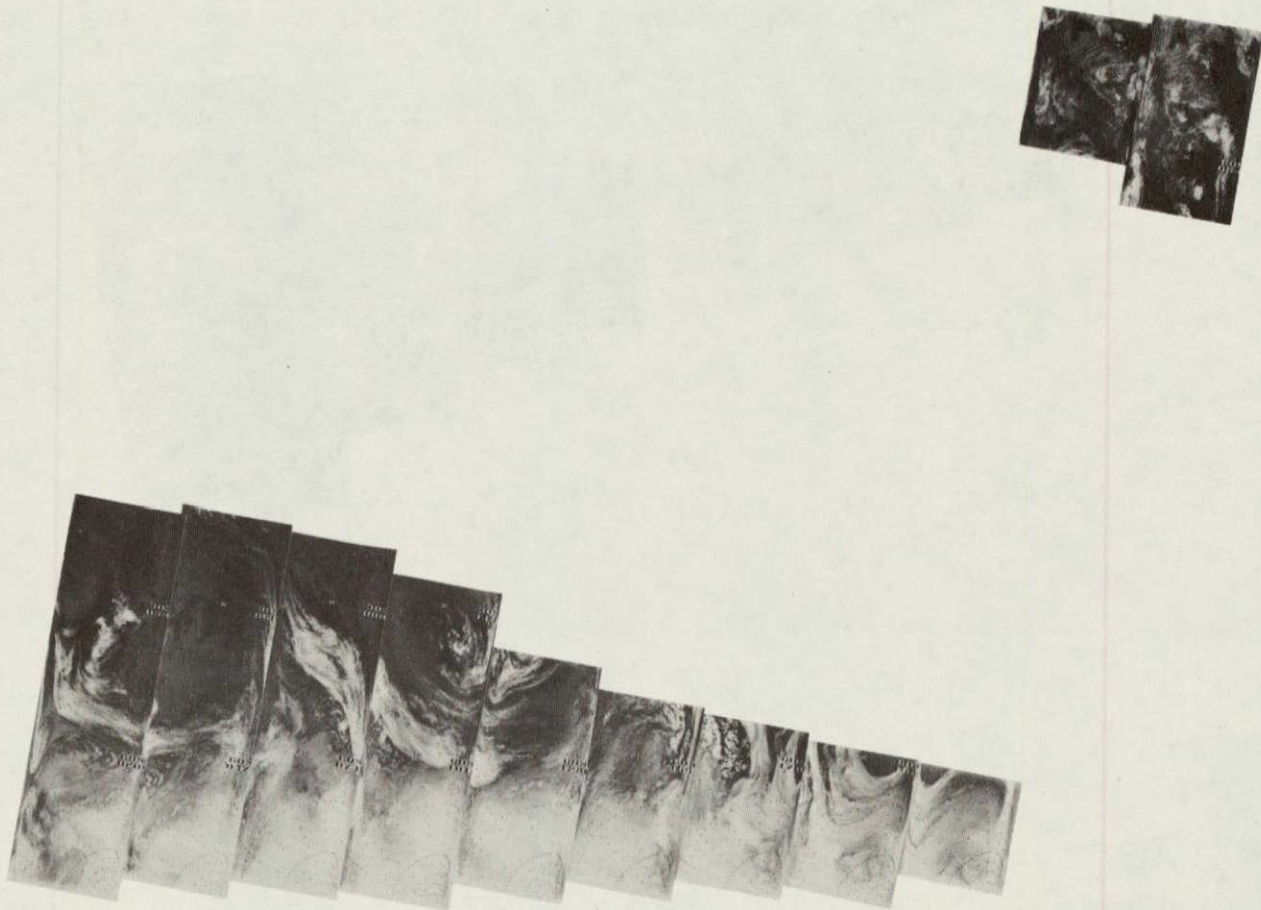
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4-45

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+



5423 5422 5421 5420 5419 5418 5417 5416 5415 5414 5413 5412 5411 5410

20 JULY 76

11.5  $\mu\text{m}$

4-46

+

+



5436 5435 5434 5433 5432 5431 5430 5429 5428 5427 5426 5425 5424

21 JULY 76

6.7  $\mu$ m

4-47

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+



5436 5435 5434 5433 5432 5431 5430 5429 5428 5427 5426 5425 5424

21 JULY 76

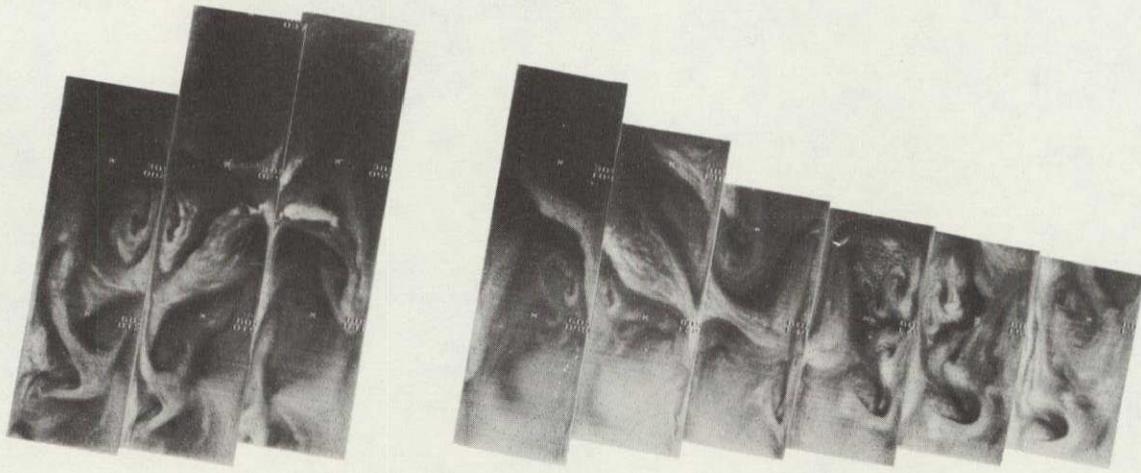
11.5  $\mu$ m

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PHOTOGRAPHY  
UNIT  
AFSC 61-100-10000

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5450 5449 5448 5447 5446 5445 5444 5443 5442 5441 5440 5439 5438 5437

22 JULY 76

6.7  $\mu$ m

4-49

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+

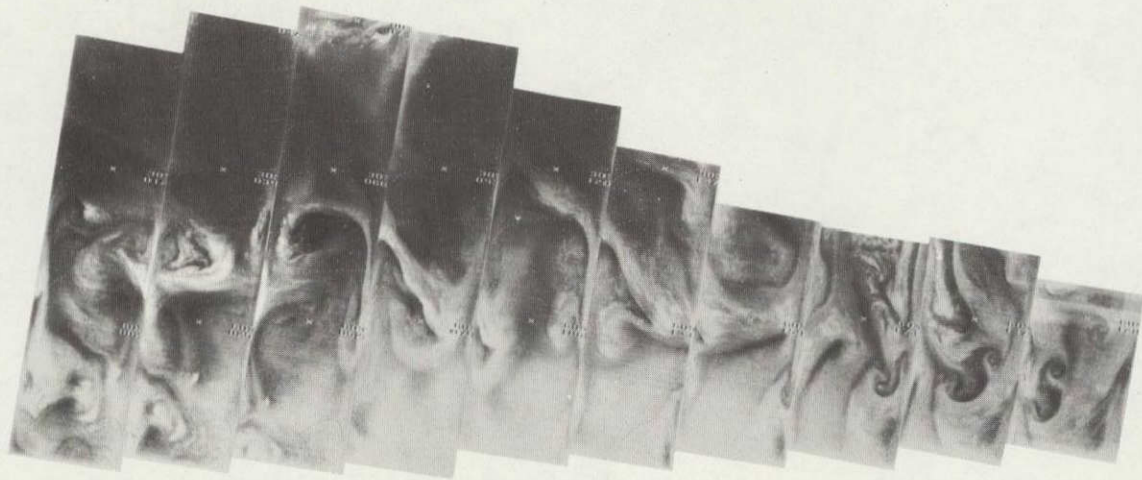


5450 5449 5448 5447 5446 5445 5444 5443 5442 5441 5440 5439 5438 5437

22 JULY 76

11.5  $\mu$ m

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5463 5462 5461 5460 5459 5458 5457 5456 5455 5454 5453 5452 5451

23 JULY 76

6.7  $\mu\text{m}$

4-50

+

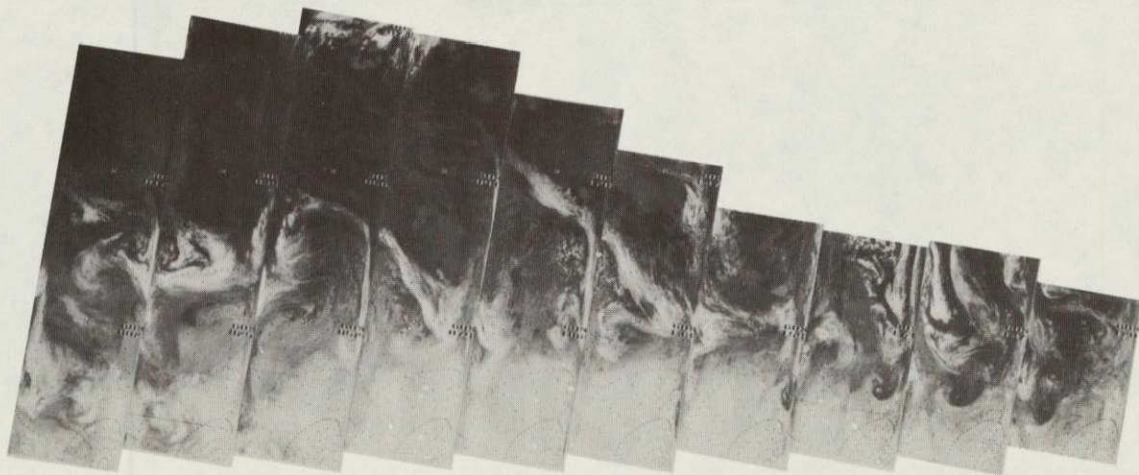
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4-51

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+



5463 5462 5461 5460 5459 5458 5457 5456 5455 5454 5453 5452 5451

23 JULY 76

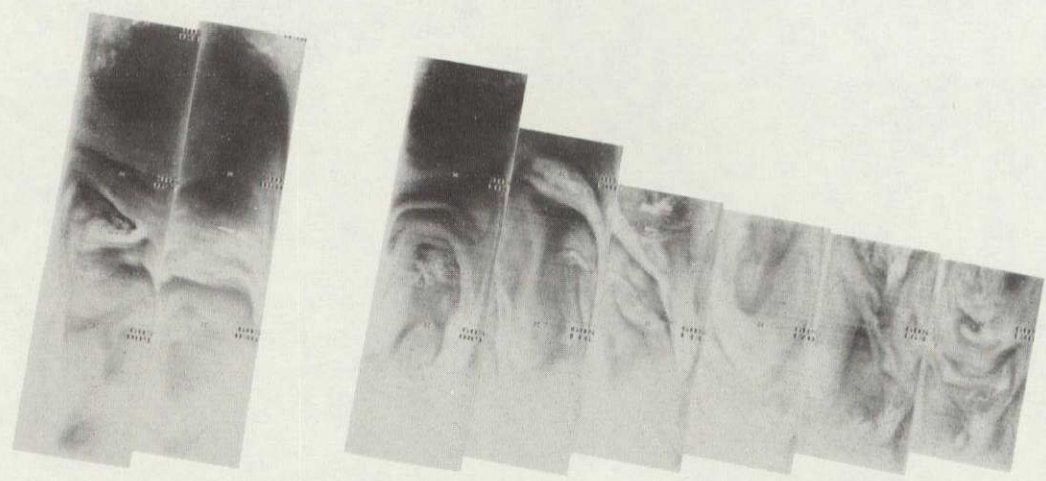
11.5  $\mu$ m

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OF POOR QUALITY

FILED IN READING ROOM

4-52

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5476 5475 5474 5473 5472 5471 5470 5469 5468 5467 5466 5465 5464

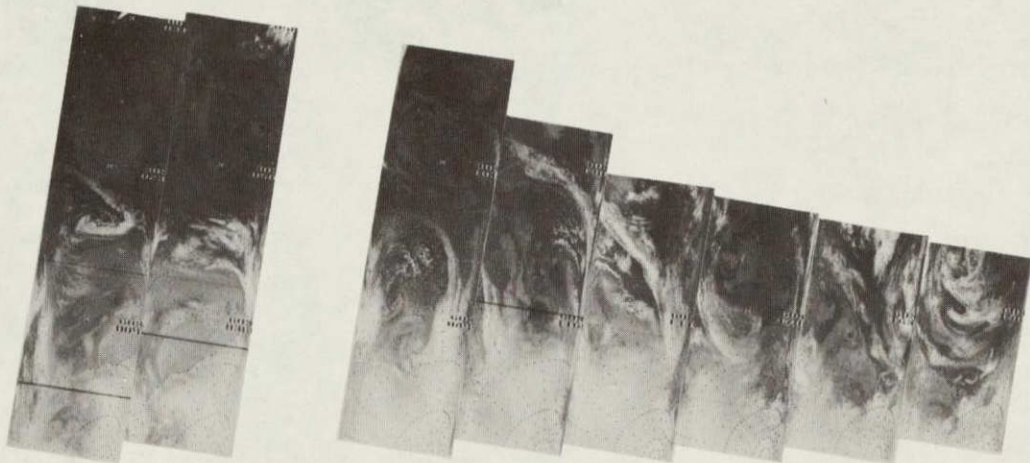
24 JULY 76

6.7  $\mu$ m

4-53

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+



5476 5475 5474 5473 5472 5471 5470 5469 5468 5467 5466 5465 5464

24 JULY 76

11.5  $\mu$ m

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OF POOR QUALITY

4-54

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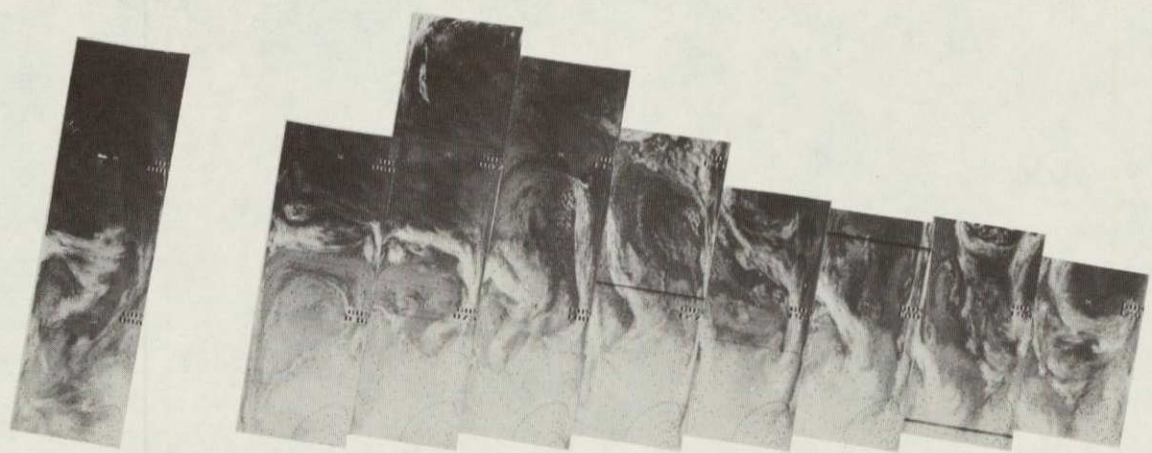
+



5490 5489 5488 5487 5486 5485 5484 5483 5482 5481 5480 5479 5478 5477

25 JULY 76

6.7  $\mu$ m



5490 5489 5488 5487 5486 5485 5484 5483 5482 5481 5480 5479 5478 5477

25 JULY 76

11.5  $\mu$ m

4-55

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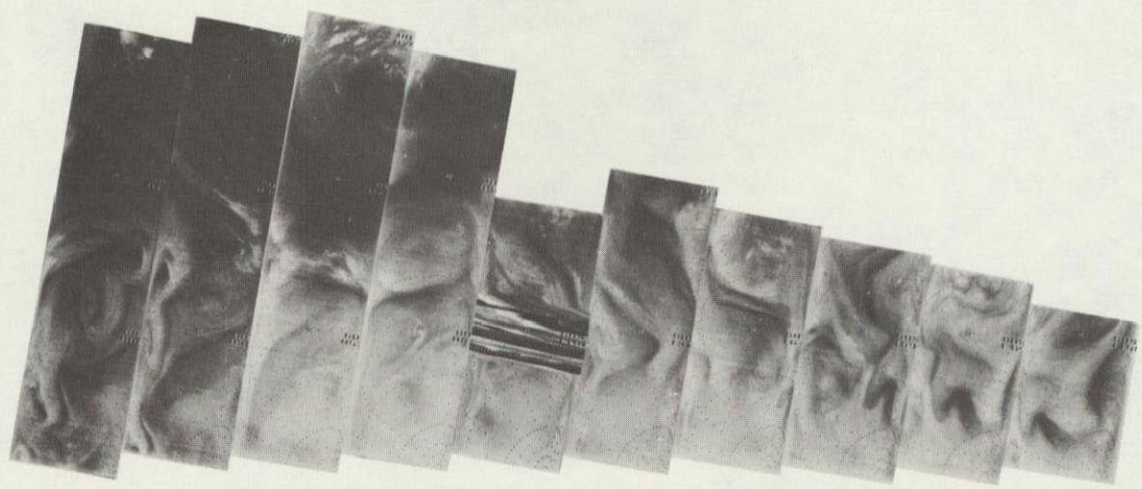
01 JUL 1976 09:11:10  
01 JUL 1976 09:11:10



4-56

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+



5503 5502 5501 5500 5499 5498 5497 5496 5495 5494 5493 5492 5491

26 JULY 76

6.7  $\mu$ m



5503 5502 5501 5500 5499 5498 5497 5496 5495 5494 5493 5492 5491

26 JULY 76

11.5  $\mu\text{m}$

4-57

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OF POOR QUALITY

4-58

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+



5516 5515 5514 5513 5512 5511 5510 5509 5508 5507 5506 5505 5504

27 JULY 76

6.7  $\mu\text{m}$



4-59

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5516 5515 5514 5513 5512 5511 5510 5509 5508 5507 5506 5505 5504

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OF POOR QUALITY

27 JULY 76

11.5  $\mu$ m

4-60  
4-60  
4-60



4-60

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5530 5529 5528 5527 5526 5525 5524 5523 5522 5521 5520 5519 5518 5517

28 JULY 76

6.7  $\mu$ m

4-61

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5530 5529 5528 5527 5526 5525 5524 5523 5522 5521 5520 5519 5518 5517

28 JULY 76

11.5  $\mu$ m

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4-63

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5543 5542 5541 5540 5539 5538 5537 5536 5535 5534 5533 5532 5531

29 JULY 76

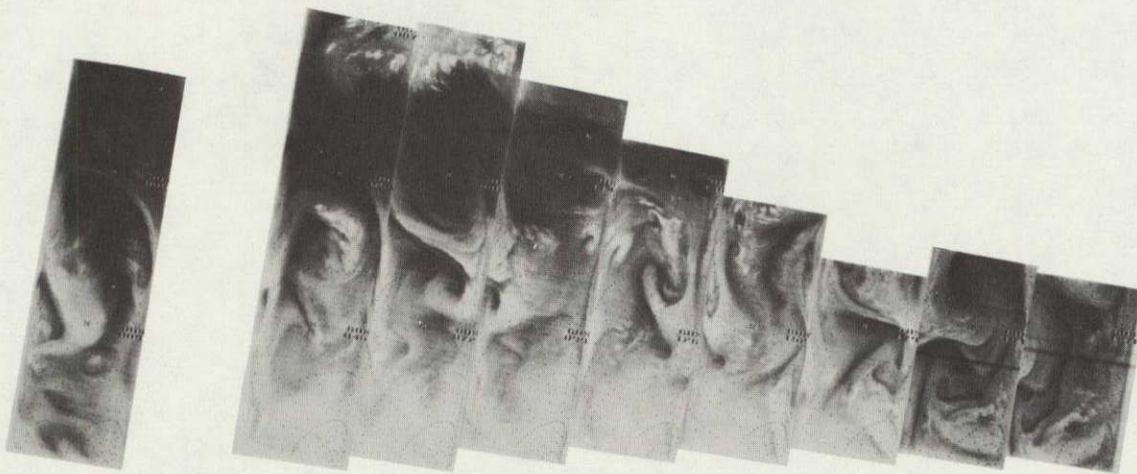
11.5  $\mu$ m

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4-64

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5557 5556 5555 5554 5553 5552 5551 5550 5549 5548 5547 5546 5545 5544

30 JULY 76

6.7  $\mu\text{m}$



5557 5556 5555 5554 5553 5552 5551 5550 5549 5548 5547 5546 5545 5544

30 JULY 76

11.5  $\mu$ m

4-65

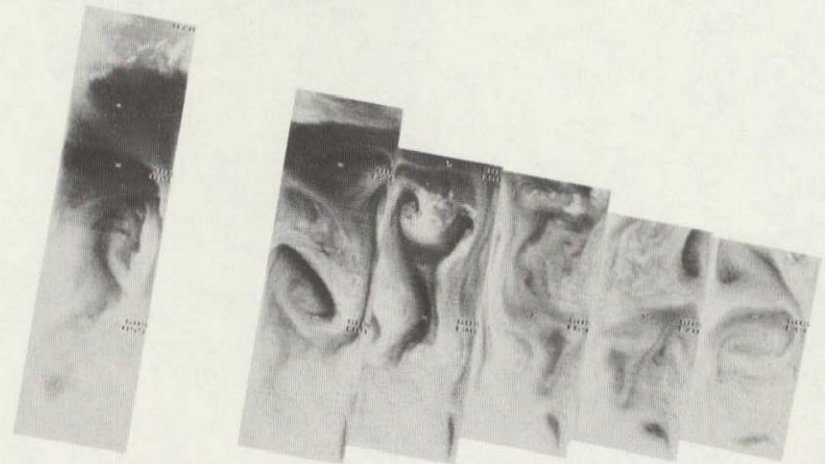
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THE MOON CENTER  
GREENSBORO, NC

4-66

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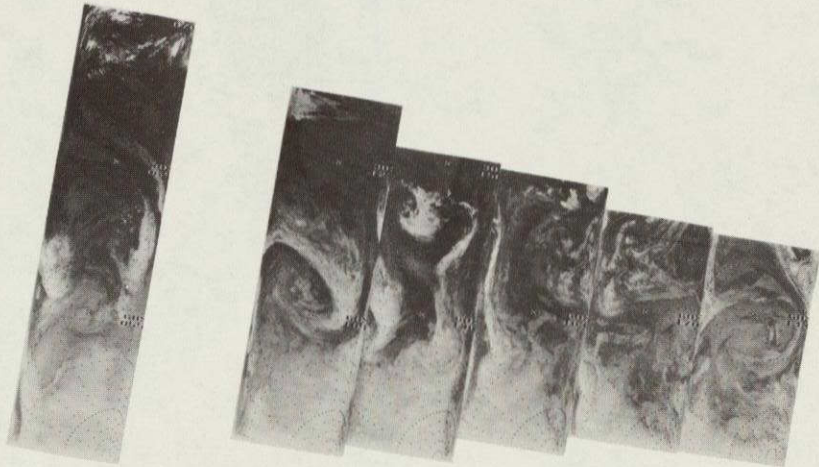


5570 5569 5568 5567 5566 5565 5564 5563 5562 5561 5560 5559 5558

31 JULY 76

6.7  $\mu$ m





5570 5569 5568 5567 5566 5565 5564 5563 5562 5561 5560 5559 5558

31 JULY 76

11.5  $\mu$ m

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4-67

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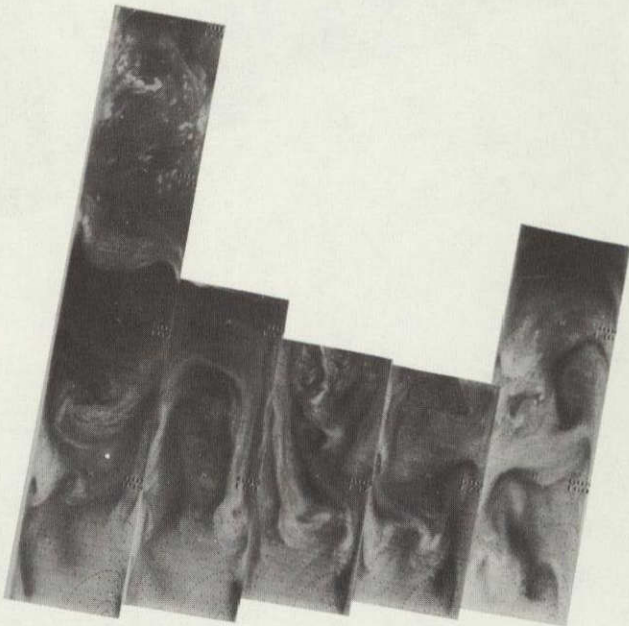
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DE BOOR (M77) HA  
OBRIDGE 1908 29

4-68

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5583 5582 5581 5580 5579 5578 5577 5576 5575 5574 5573 5572 5571

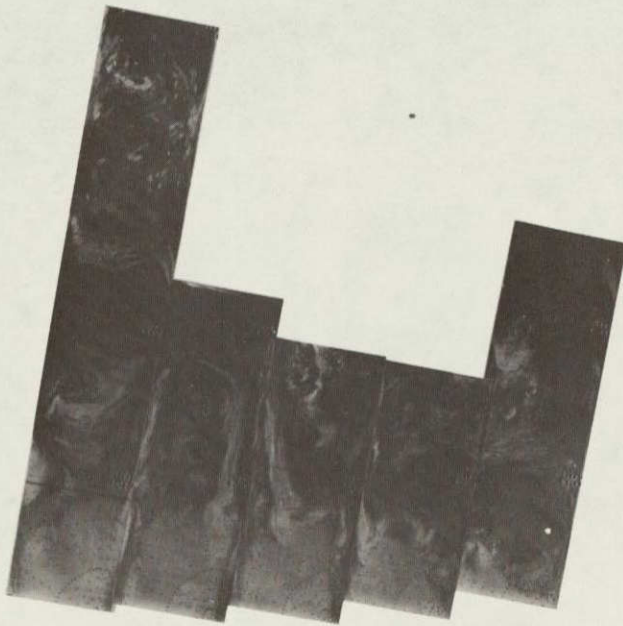
1 AUG 76

6.7  $\mu$ m

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5583 5582 5581 5580 5579 5578 5577 5576 5575 5574 5573 5572 5571

1 AUG 76

11.5  $\mu$ m

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*Faint handwritten notes in the top left corner.*



4-70

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5597 5596 5595 5594 5593 5592 5591 5590 5589 5588 5587 5586 5585 5584

2 AUG 76  
6.7  $\mu$ m



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4-71

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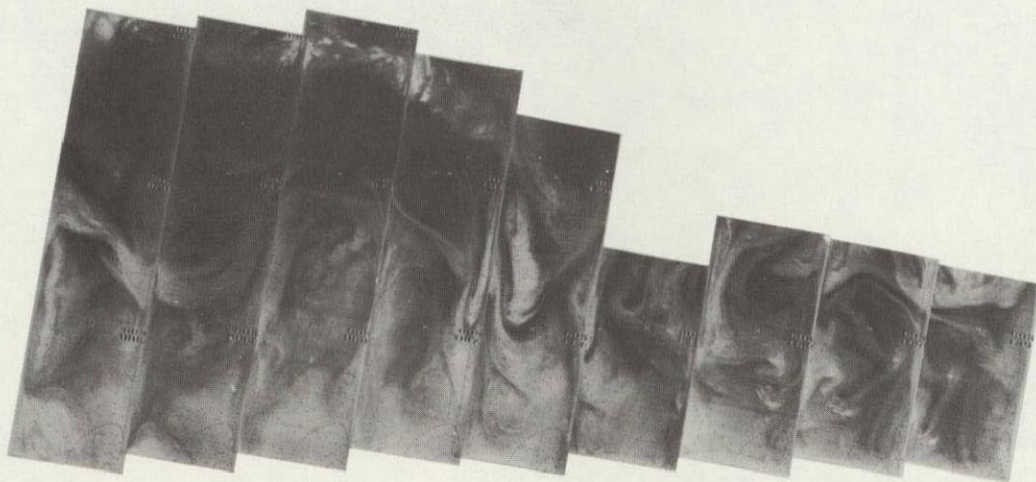
5597 5596 5595 5594 5593 5592 5591 5590 5589 5588 5587 5586 5585 5584

2 AUG 76

11.5  $\mu$ m

4-72  
4-72  
4-72

4-72



5610 5609 5608 5607 5606 5605 5604 5603 5602 5601 5600 5599 5598

3 AUG 76

6.7  $\mu\text{m}$

4-73

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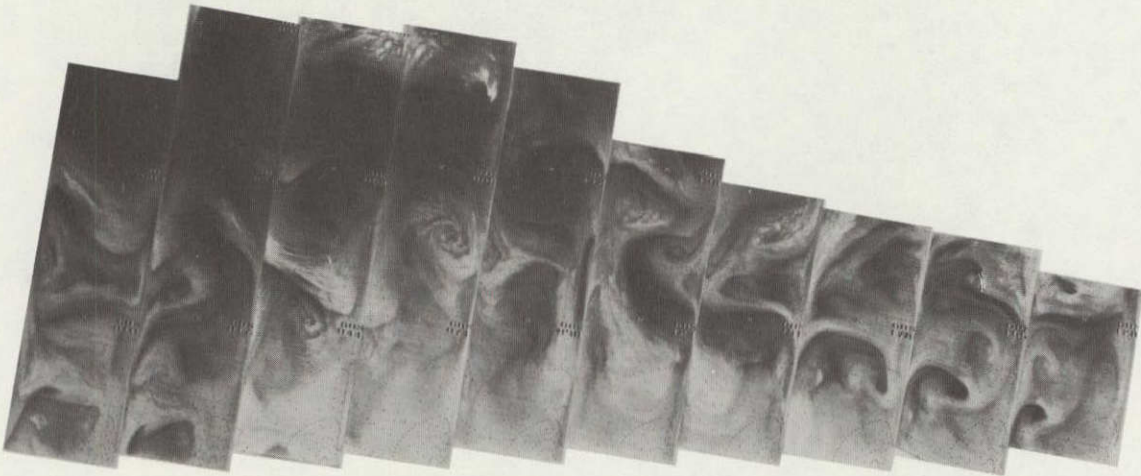


5610 5609 5608 5607 5606 5605 5604 5603 5602 5601 5600 5599 5598

3 AUG 76

11.5  $\mu$ m

4-74

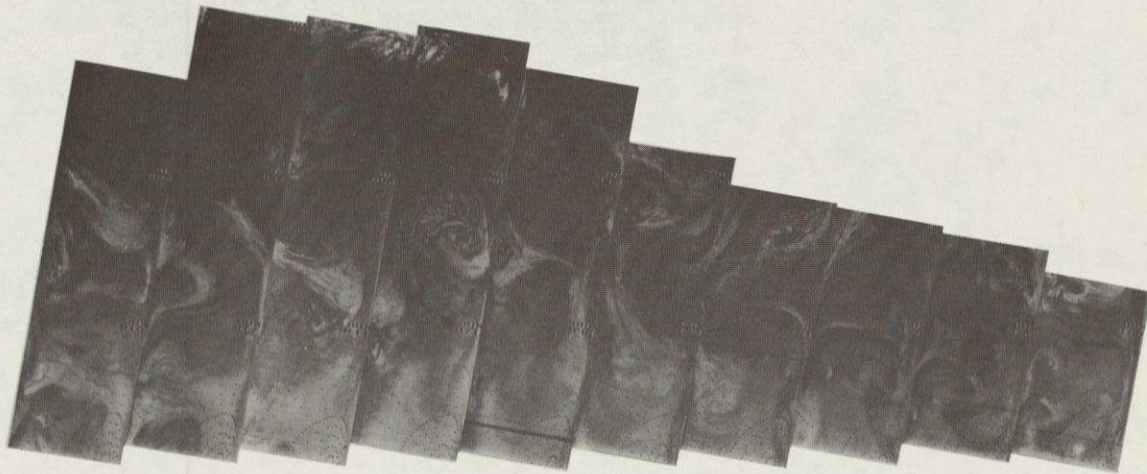


5624 5623 5622 5621 5620 5619 5618 5617 5616 5615 5614 5613 5612 5611

4 AUG 76

6.7  $\mu\text{m}$





5624 5623 5622 5621 5620 5619 5618 5617 5616 5615 5614 5613 5612 5611

4 AUG 76

11.5  $\mu\text{m}$

4-75

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4-76

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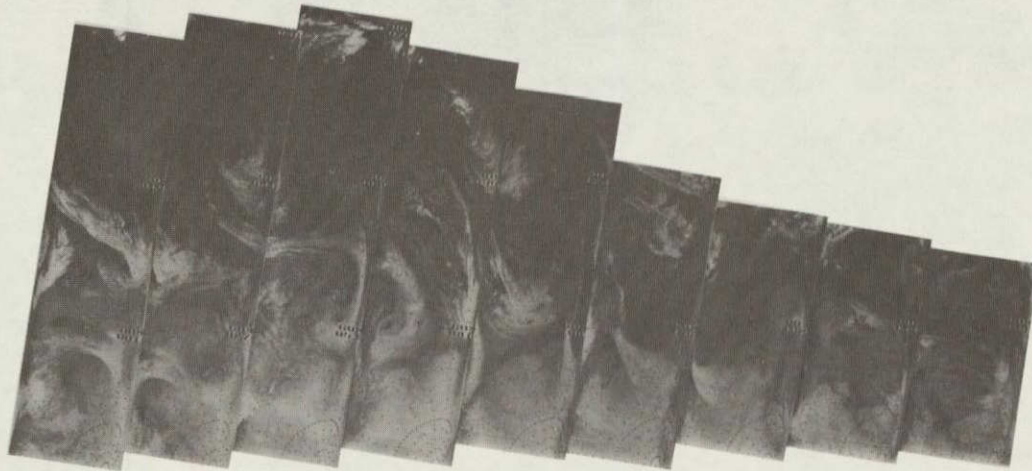


5637 5636 5635 5634 5633 5632 5631 5630 5629 5628 5627 5626 5625

5 AUG 76

6.7  $\mu$ m

4-77



5637 5636 5635 5634 5633 5632 5631 5630 5629 5628 5627 5626 5625

5 AUG 76

11.5  $\mu\text{m}$





5650 5649 5648 5647 5646 5645 5644 5643 5642 5641 5640 5639 5638

6 AUG 76

11.5  $\mu$ m

4-79

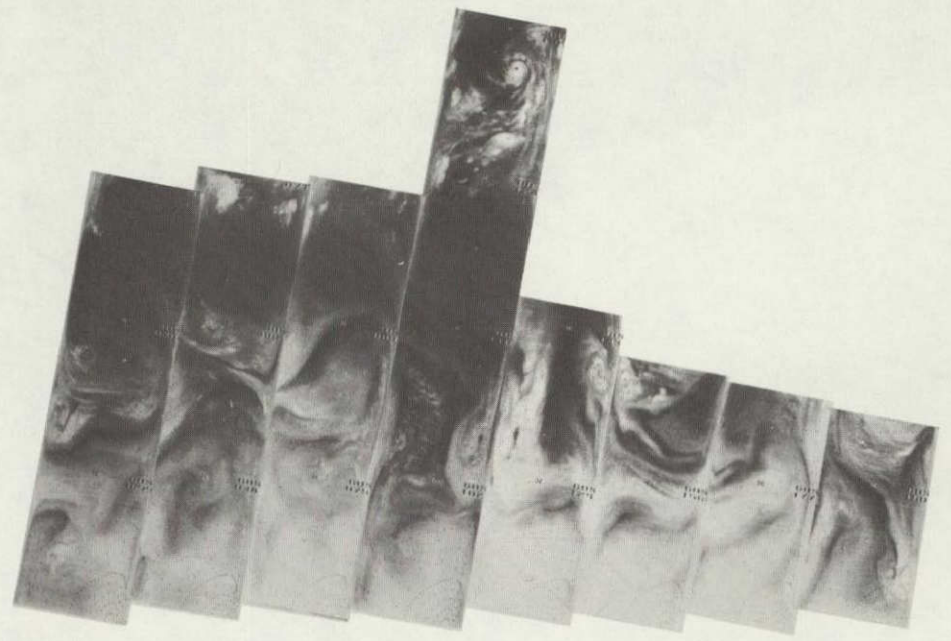
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OF THE UNIVERSITY OF TEXAS AT AUSTIN

4-80

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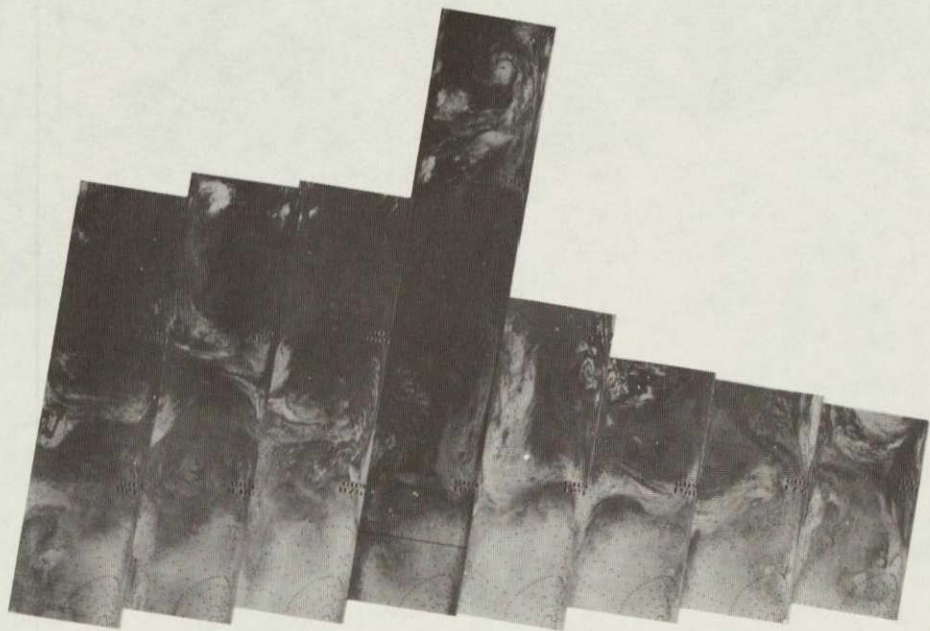
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5664 5663 5662 5661 5660 5659 5658 5657 5656 5655 5654 5653 5652 5651

7 AUG 76

6.7  $\mu$ m



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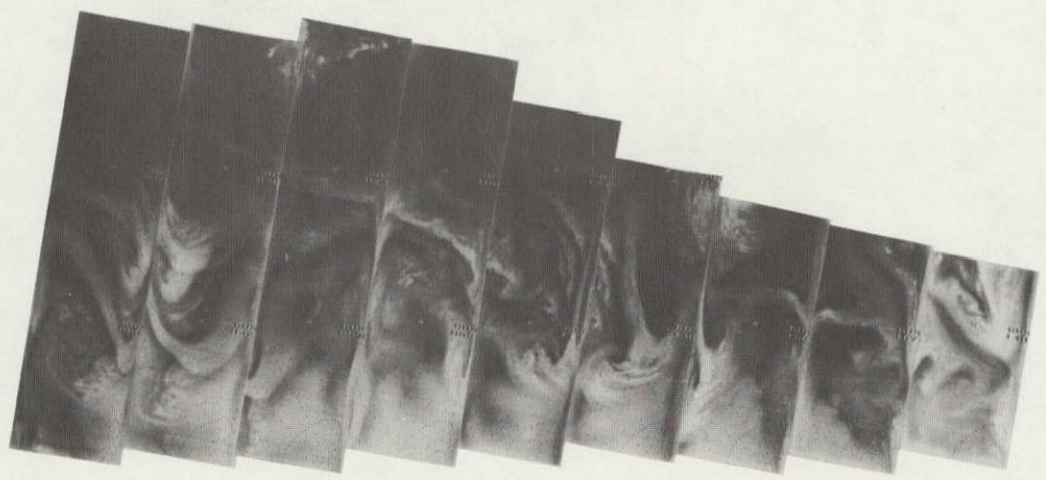
4-81

5664 5663 5662 5661 5660 5659 5658 5657 5656 5655 5654 5653 5652 5651

7 AUG 76

11.5  $\mu$ m

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5677 5676 5675 5674 5673 5672 5671 5670 5669 5668 5667 5666 5665

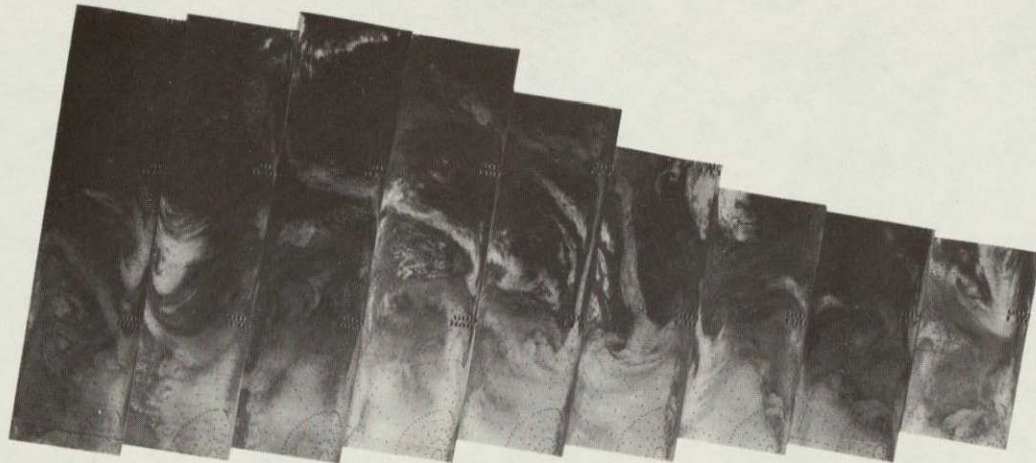
8 AUG 76  
6.7  $\mu$ m

4-82

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5677 5676 5675 5674 5673 5672 5671 5670 5669 5668 5667 5666 5665

8 AUG 76

11.5  $\mu$ m

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PHOTOGRAPHY  
UNITED STATES AIR FORCE  
WALLINGFORD AIRFIELD  
WALLINGFORD, CONNECTICUT 06495

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5691 5690 5689 5688 5687 5686 5685 5684 5683 5682 5681 5680 5679 5678

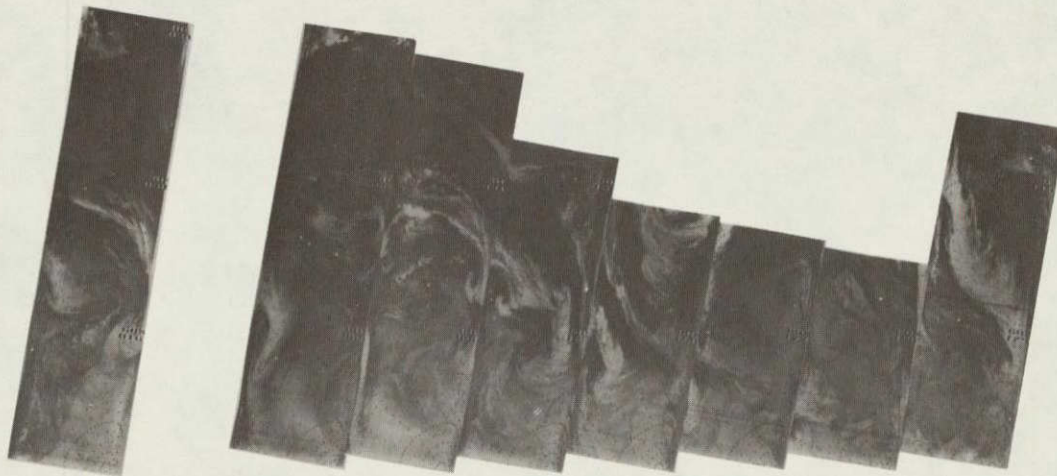
9 AUG 76

6.7  $\mu$ m

4-85

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5691 5690 5689 5688 5687 5686 5685 5684 5683 5682 5681 5680 5679 5678

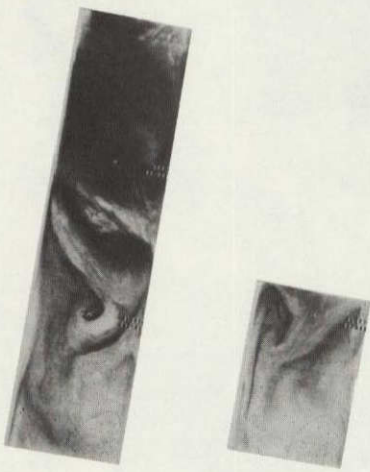
9 AUG 76

11.5  $\mu$ m

4-86

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5704 5703 5702 5701 5700 5699 5698 5697 5696 5695 5694 5693 5692

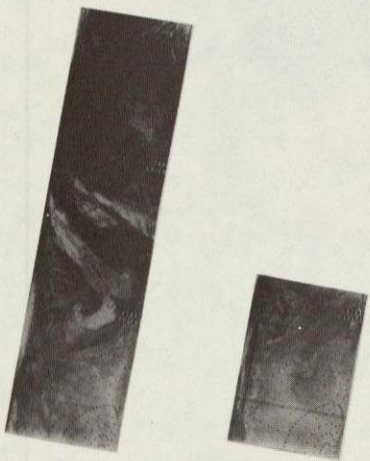
10 AUG 76

6.7  $\mu$ m

4-87

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OF POOR QUALITY

5704 5703 5702 5701 5700 5699 5698 5697 5696 5695 5694 5693 5692



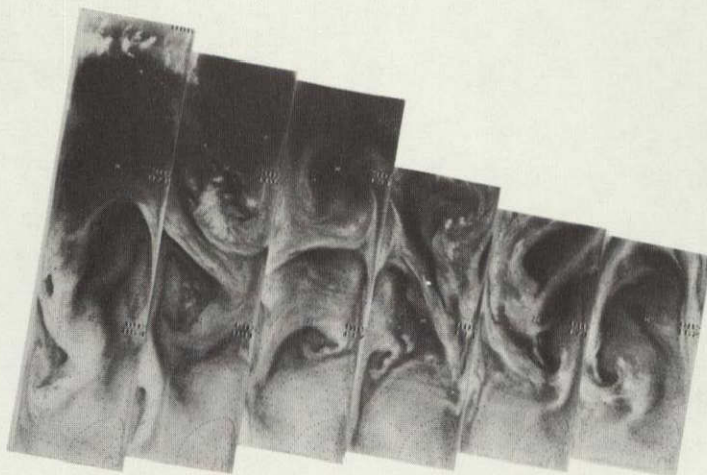
10 AUG 76

11.5  $\mu$ m

4-88

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5717 5716 5715 5714 5713 5712 5711 5710 5709 5708 5707 5706 5705

11 AUG 76

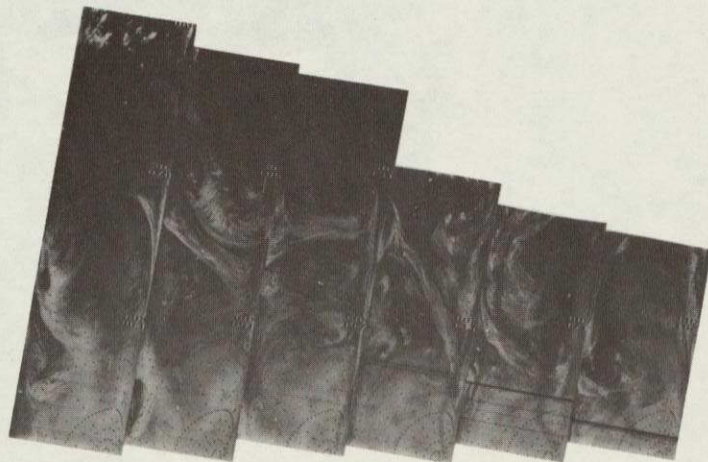
6.7  $\mu\text{m}$

4-89

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OF POOR QUALITY



5717 5716 5715 5714 5713 5712 5711 5710 5709 5708 5707 5706 5705

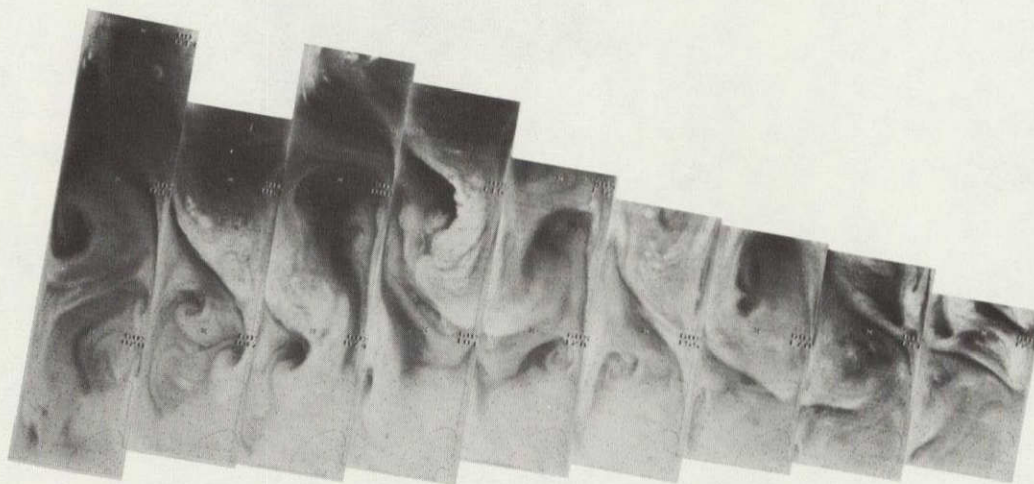
11 AUG 76

11.5  $\mu$ m

4-90

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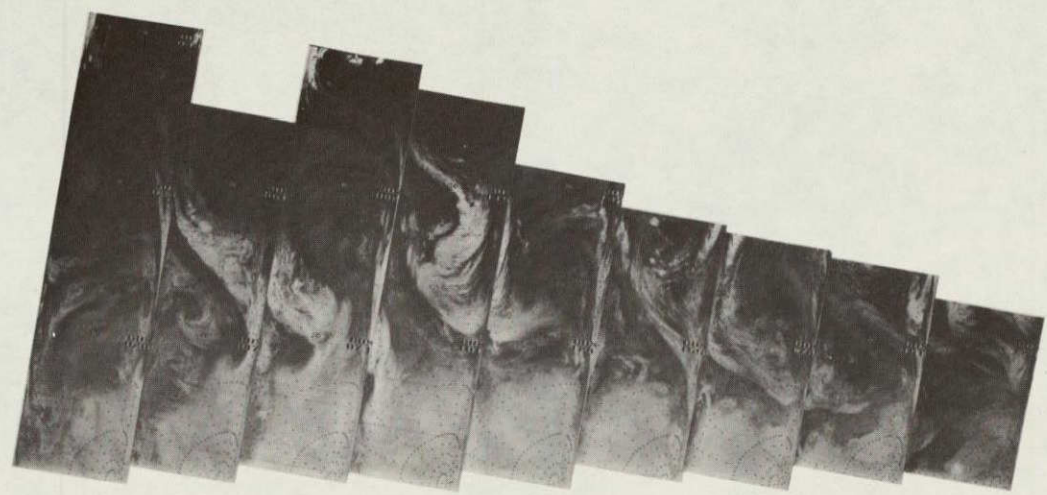


5731 5730 5729 5728 5727 5726 5725 5724 5723 5722 5721 5720 5719 5718

12 AUG 76

6.7  $\mu\text{m}$





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4-91

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5731 5730 5729 5728 5727 5726 5725 5724 5723 5722 5721 5720 5719 5718

12 AUG 76

11.5  $\mu$ m

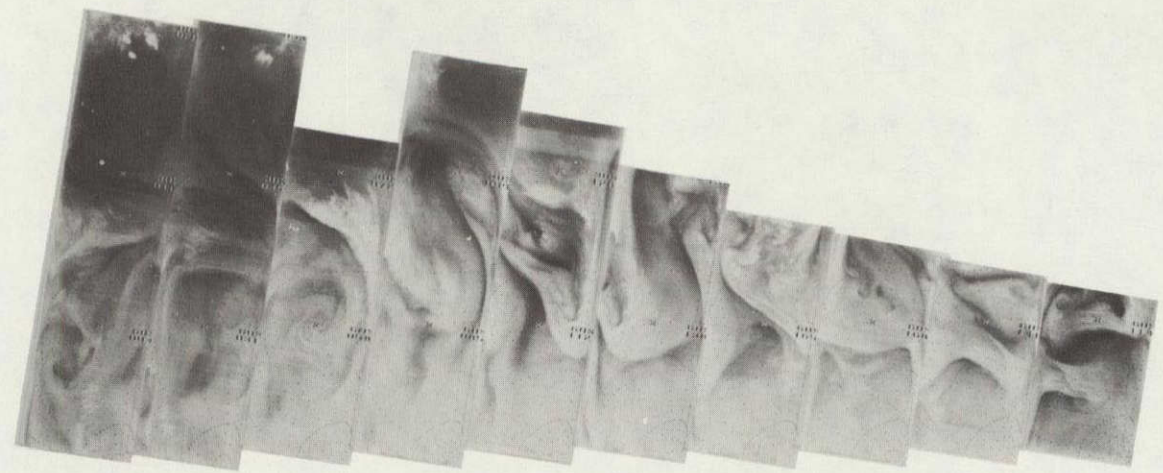
06 100W 301110  
0010147 1500



4-92

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5744 5743 5742 5741 5740 5739 5738 5737 5736 5735 5734 5733 5732

13 AUG 76

6.7  $\mu$ m



5744 5743 5742 5741 5740 5739 5738 5737 5736 5735 5734 5733 5732

13 AUG 76

11.5  $\mu$ m

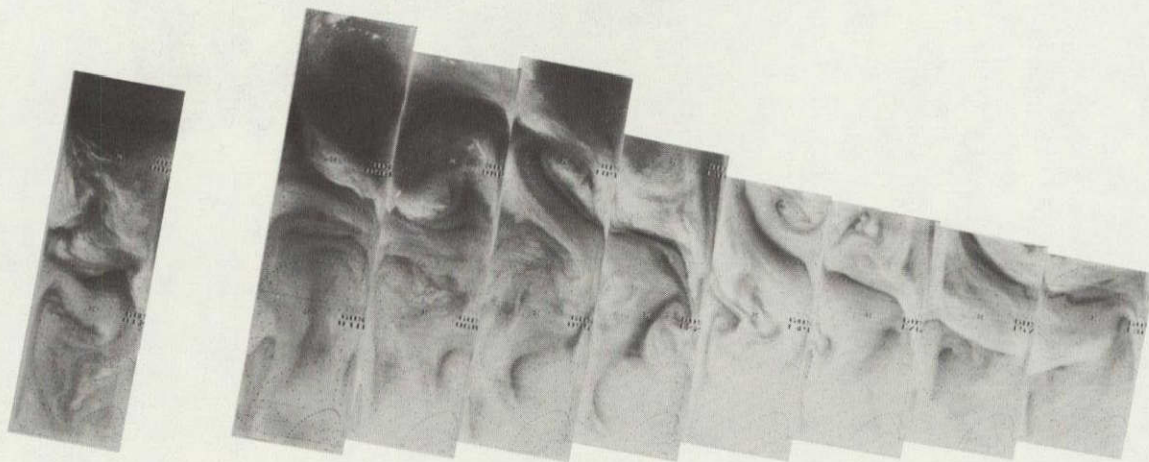
4-93

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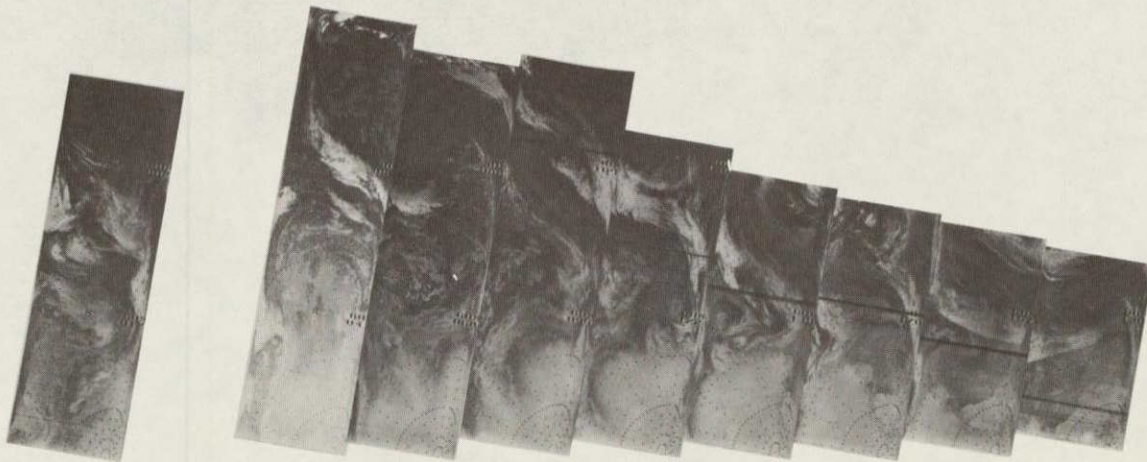


5758 5757 5756 5755 5754 5753 5752 5751 5750 5749 5748 5747 5746 5745

14 AUG 76

6.7  $\mu\text{m}$

4-95



5758 5757 5756 5755 5754 5753 5752 5751 5750 5749 5748 5747 5746 5745

14 AUG 76

11.5  $\mu$ m

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OF LONG-DURATION  
CONTINUED FROM 10

4-96

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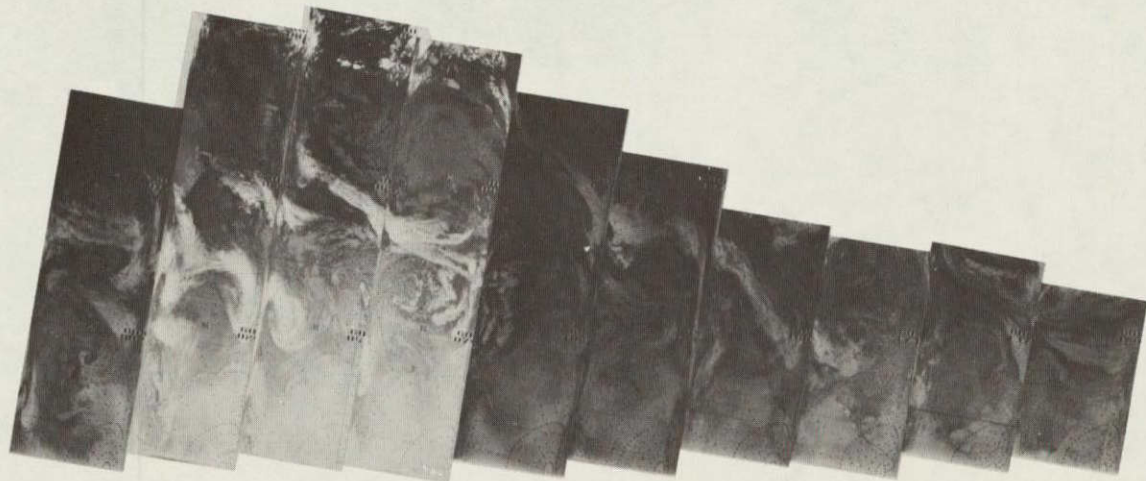
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5771 5770 5769 5768 5767 5766 5765 5764 5763 5762 5761 5760 5759

15 AUG 76

6.7  $\mu$ m



5771 5770 5769 5768 5767 5766 5765 5764 5763 5762 5761 5760 5759

15 AUG 76

11.5  $\mu$ m

4-97

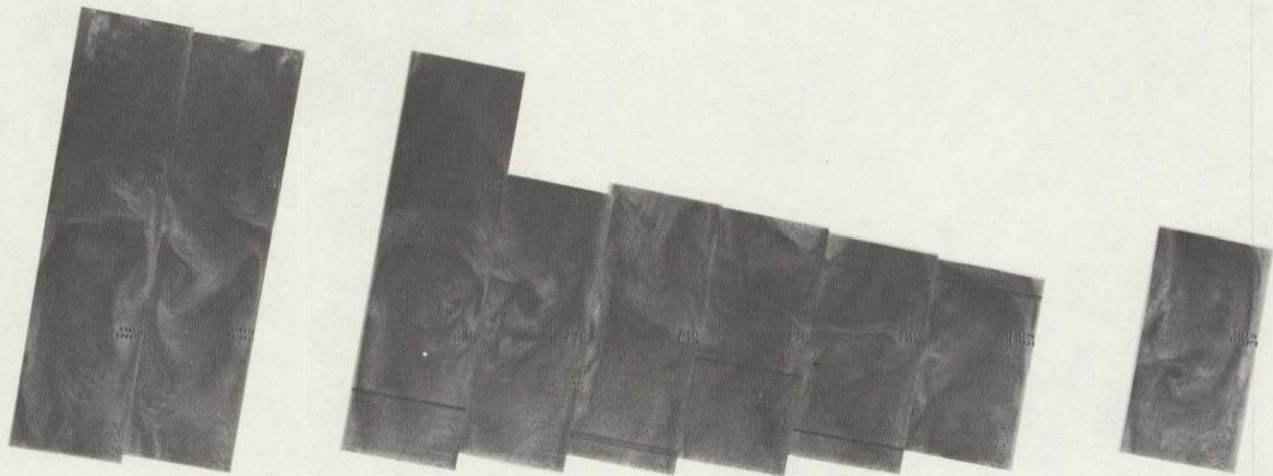
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OF POOR QUALITY

TO: MR. J. G. ...  
FROM: ...  
DATE: ...

4-98

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5784 5783 5782 5781 5780 5779 5778 5777 5776 5775 5774 5773 5772

16 AUG 76

6.7  $\mu$ m



4-99

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5784 5783 5782 5781 5780 5779 5778 5777 5776 5775 5774 5773 5772

16 AUG 76

11.5 μm

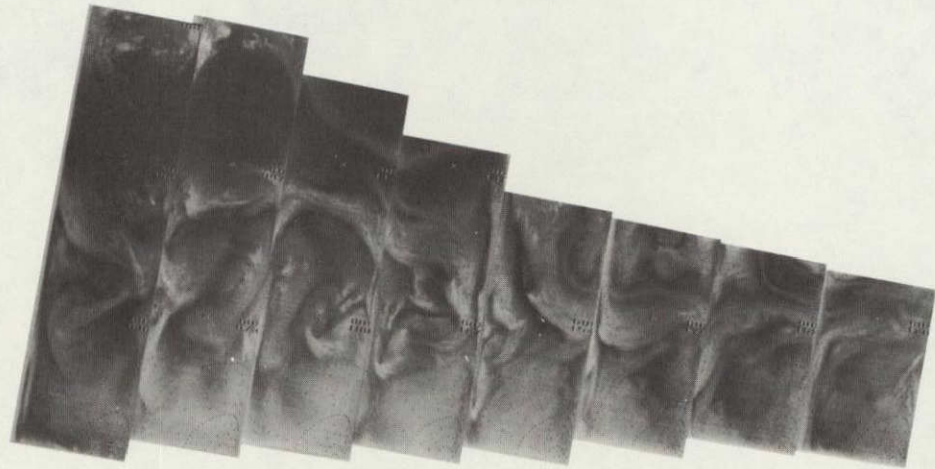
06 6008 BOTTLE  
01002/1 6008 16



4-100

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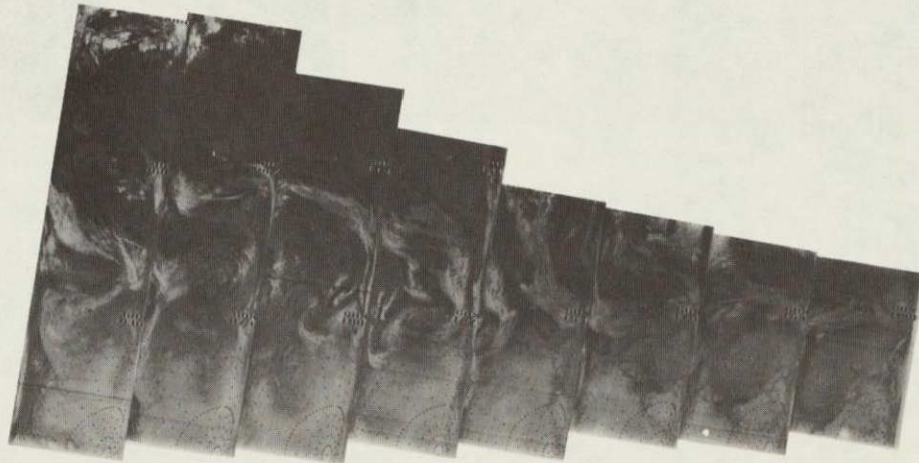
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5798 5797 5796 5795 5794 5793 5792 5791 5790 5789 5788 5787 5786 5785

17 AUG 76

6.7  $\mu$ m



5798 5797 5796 5795 5794 5793 5792 5791 5790 5789 5788 5787 5786 6785

17 AUG 76

11.5  $\mu$ m

4-101

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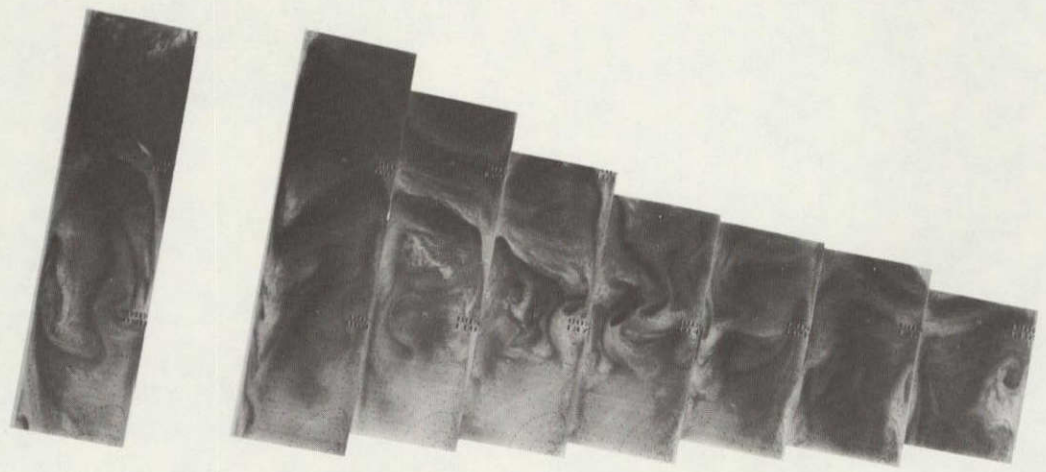
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WILLIAMS BROWN

4-102

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5811 5810 5809 5808 5807 5806 5805 5804 5803 5802 5801 5800 5799

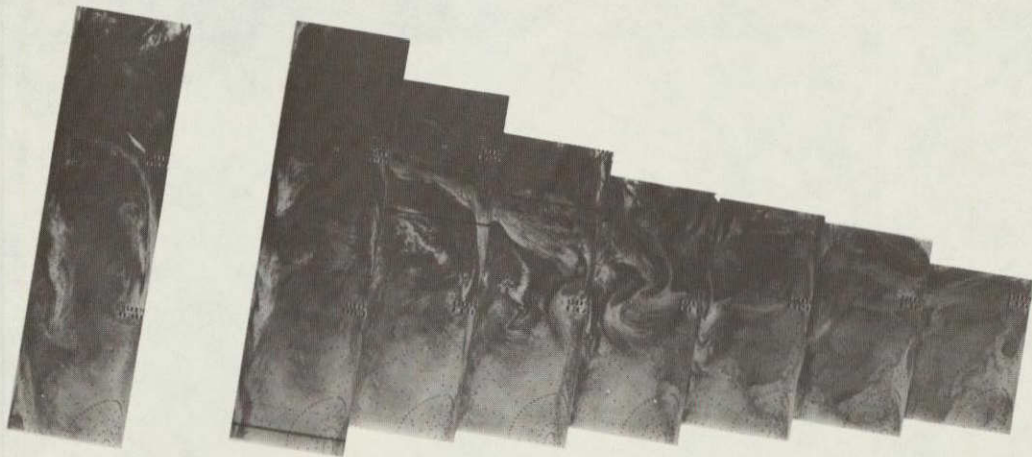
18 AUG 76

6.7  $\mu$ m

4-103

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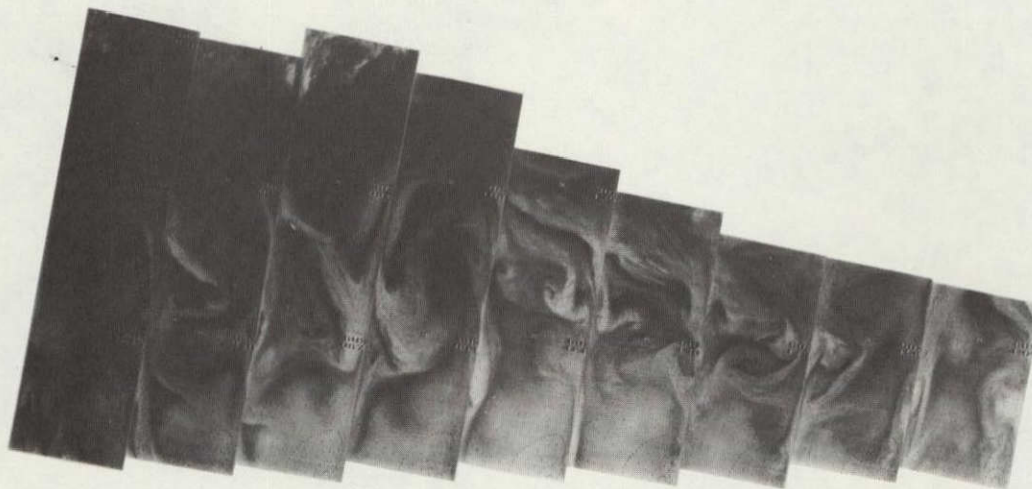
18 AUG 76

11.5  $\mu$ m

4-104

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5824 5823 5822 5821 5820 5819 5818 5817 5816 5815 5814 5813 5812

19 AUG 76

6.7  $\mu\text{m}$



5824 5823 5822 5821 5820 5819 5818 5817 5816 5815 5814 5813 5812

19 AUG 76

11.5  $\mu$ m

4-105

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4-106  
20 AUG 76  
6.7 μm

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4-106

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5838 5837 5836 5835 5834 5833 5832 5831 5830 5829 5828 5827 5826 5825

20 AUG 76

6.7 μm

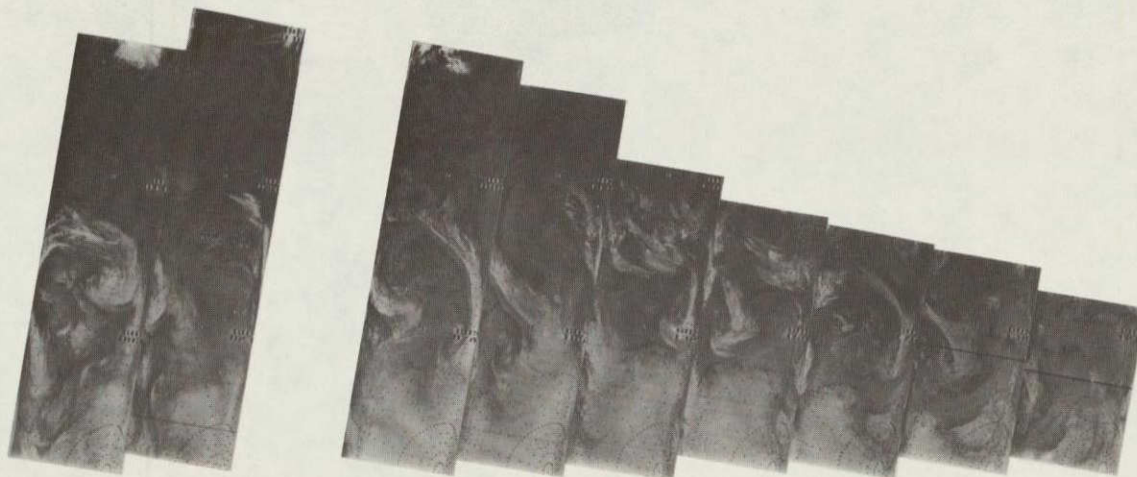




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4-1107



5838 5837 5836 5835 5834 5833 5832 5831 5830 5829 5828 5827 5826 5825

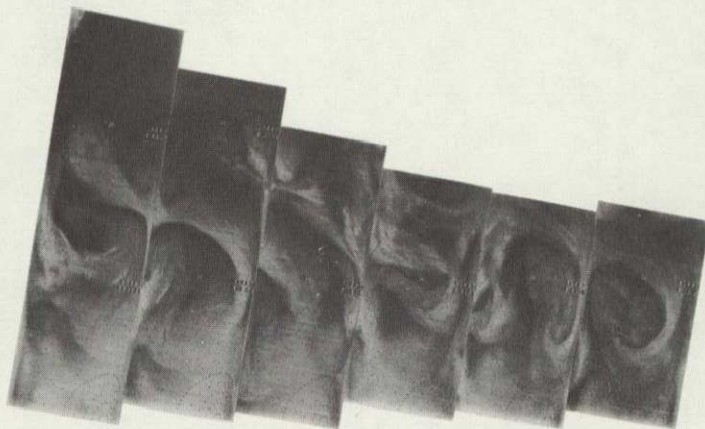
20 AUG 76

11.5  $\mu$ m

4-108

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5851 5850 5849 5848 5847 5846 5845 5844 5843 5842 5841 5840 5839

21 AUG 76

6.7  $\mu$ m

4-109

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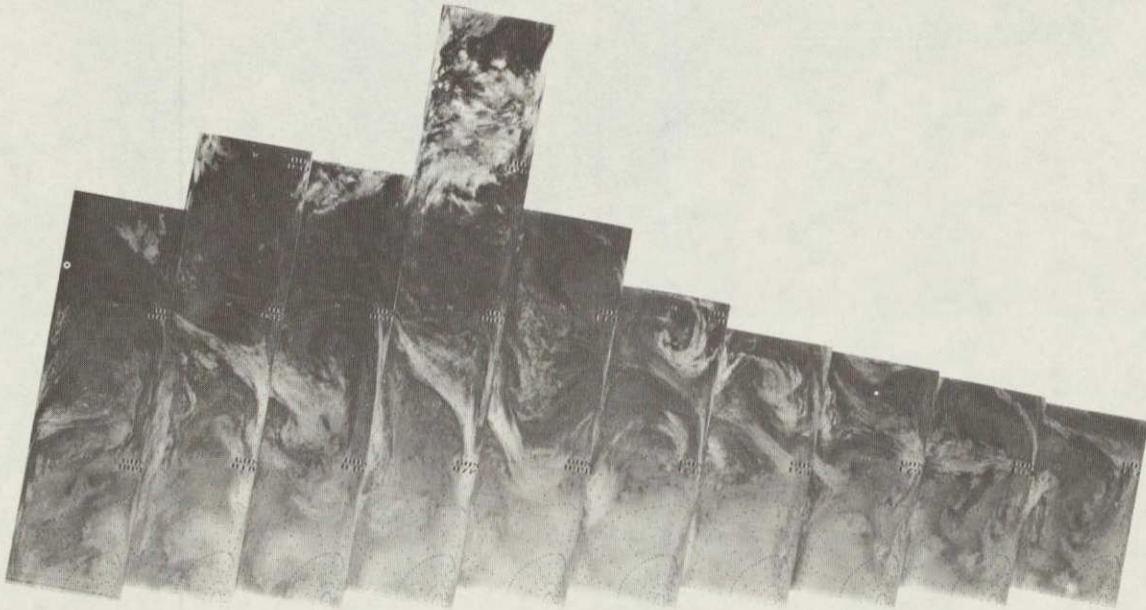


5851 5850 5849 5848 5847 5846 5845 5844 5843 5842 5841 5840 5839

21 AUG 76

11.5  $\mu$ m





5865 5864 5863 5862 5861 5860 5859 5858 5857 5856 5855 5854 5853 5852

22 AUG 76

11.5  $\mu$ m

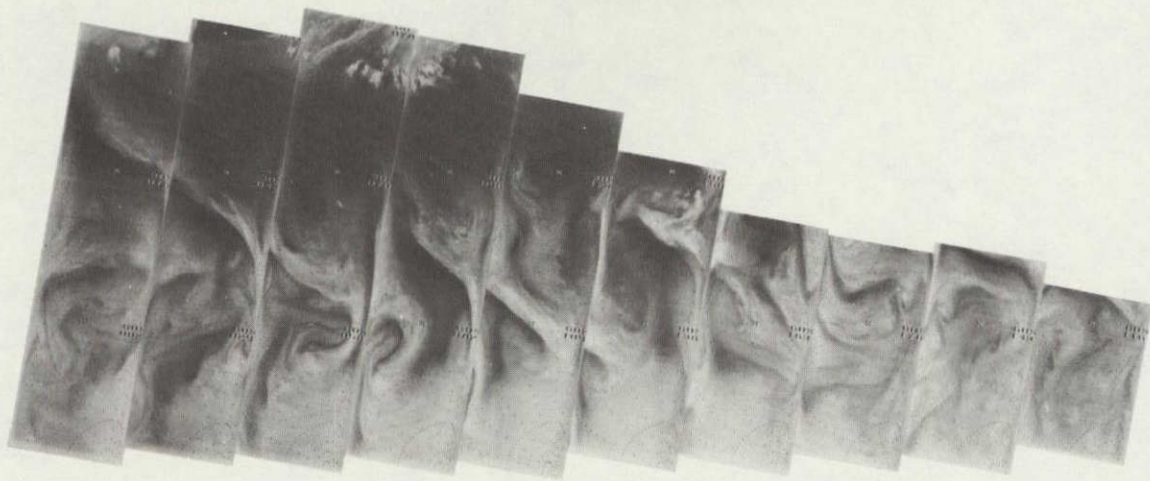
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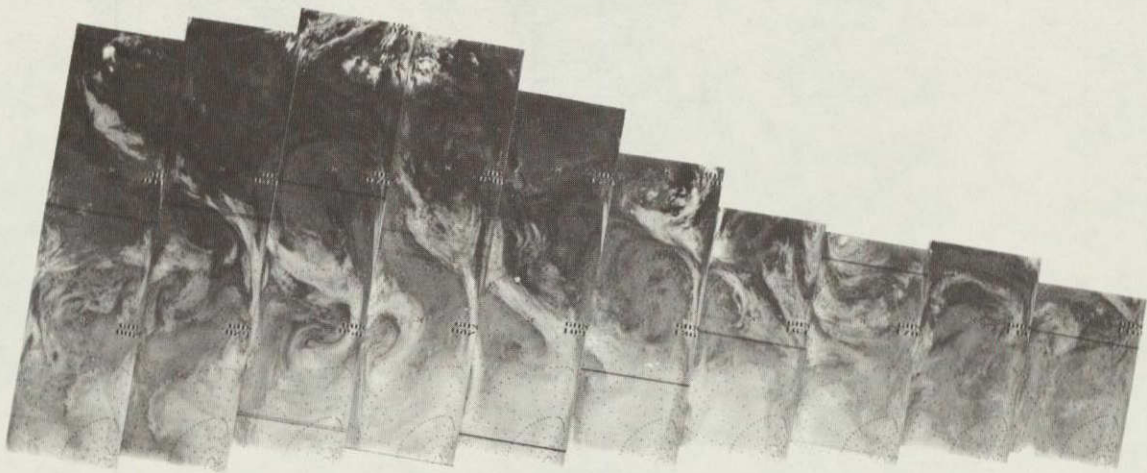
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5878 5877 5876 5875 5874 5873 5872 5871 5870 5869 5968 5967 5866

23 AUG 76

6.7  $\mu$ m



5878 5877 5876 5875 5874 5873 5872 5871 5870 5869 5868 5867 5866

23 AUG 76

11.5  $\mu\text{m}$

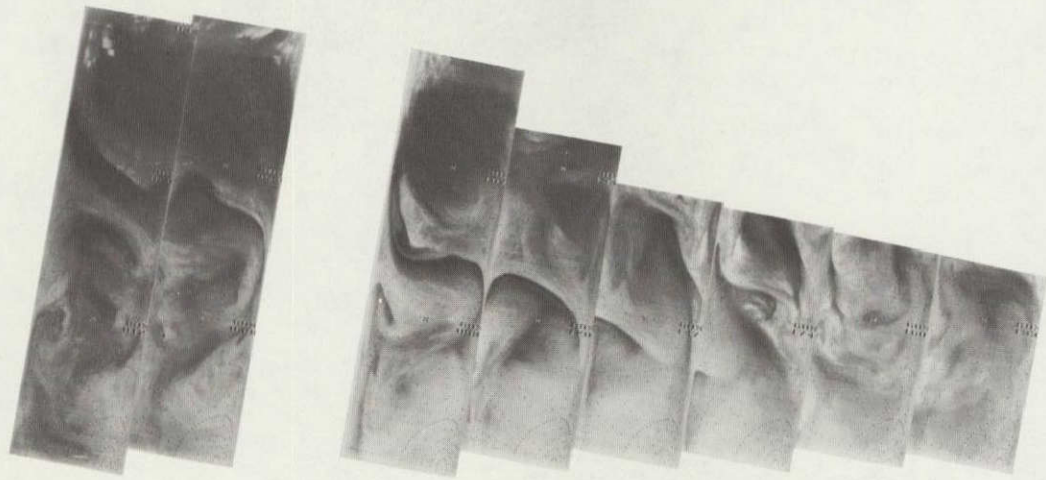
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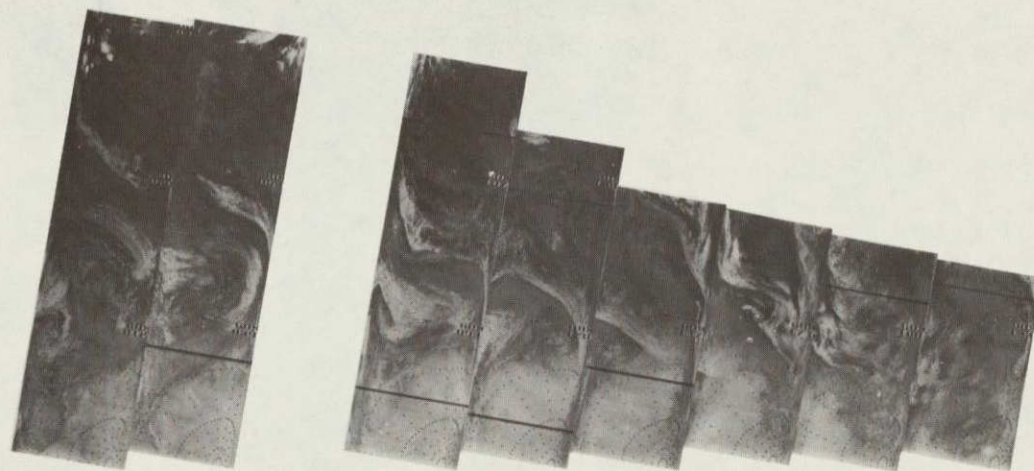
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24 AUG 76

6.7  $\mu$ m



4-115



5891 5890 5889 5888 5887 5886 5885 5884 5883 5882 5881 5880 5879

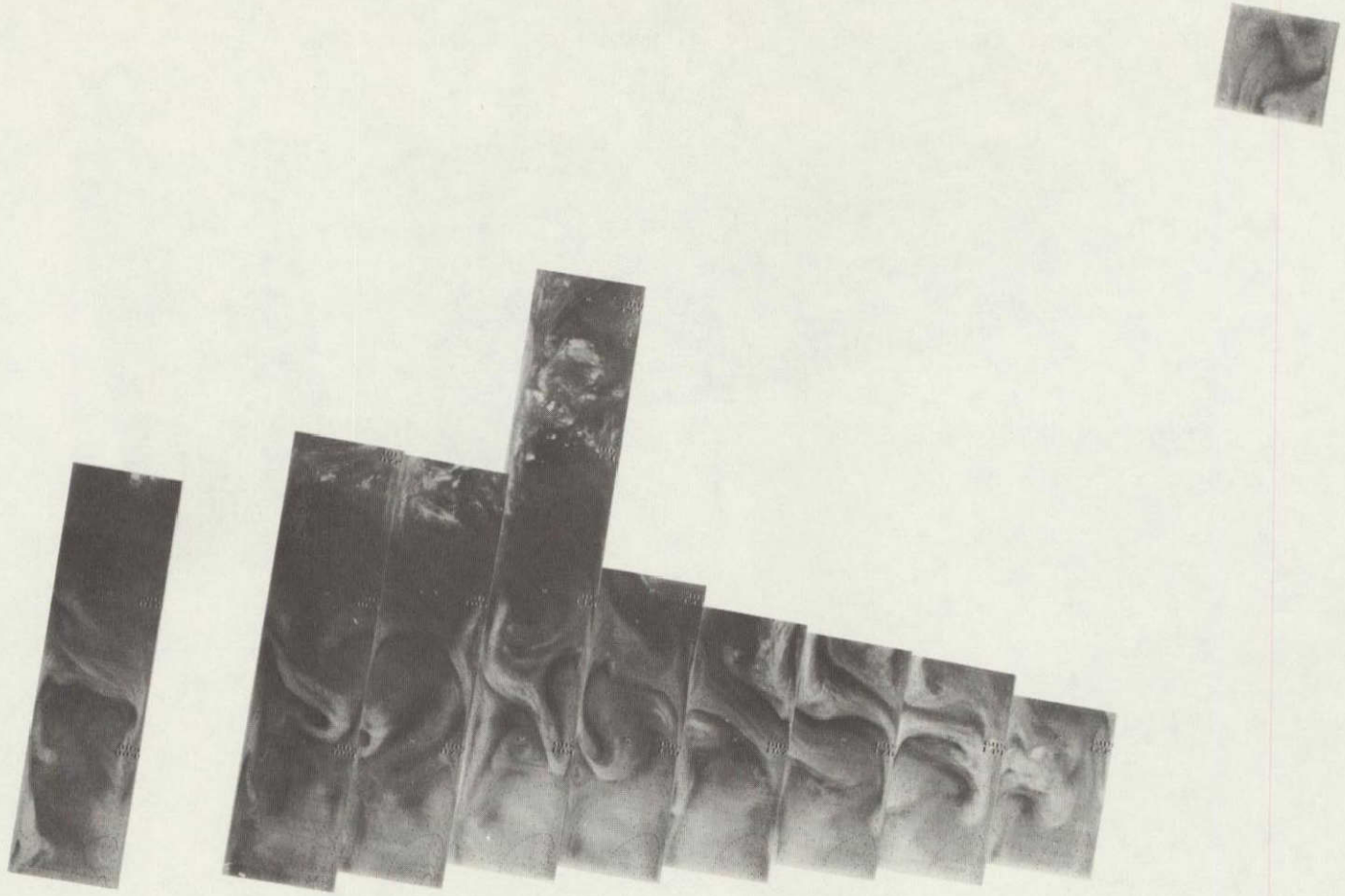
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11.5  $\mu$ m

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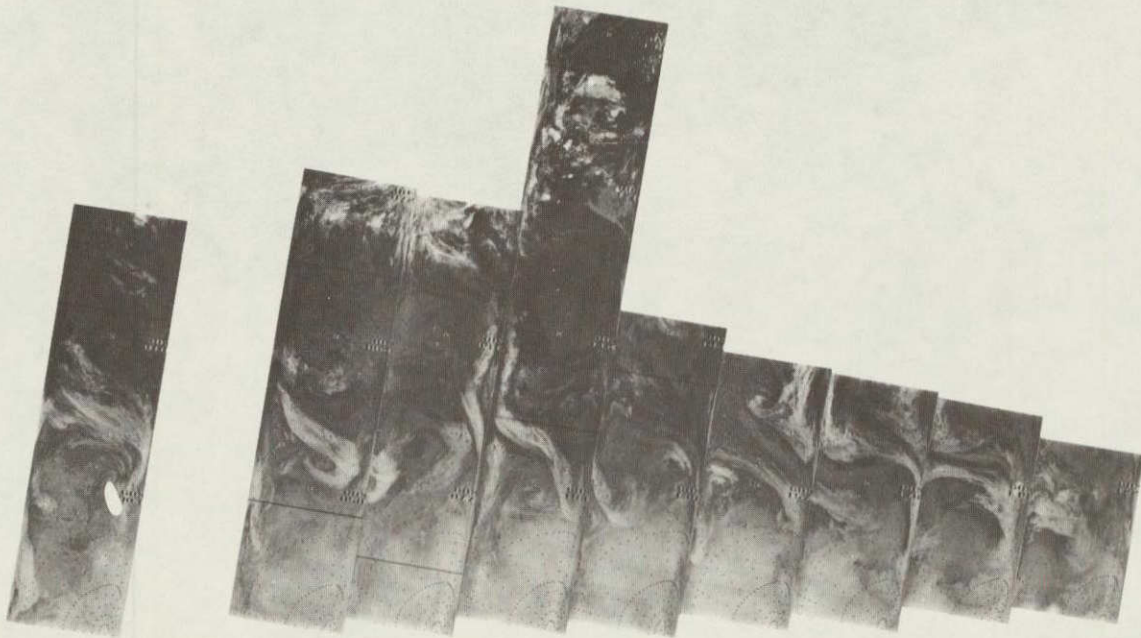
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5905 5904 5903 5902 5901 5900 5899 5898 5897 5896 5895 5894 5893 5892

25 AUG 76

6.7  $\mu\text{m}$



5905 5904 5903 5902 5901 5900 5899 5898 5897 5896 5895 5894 5893 5892

25 AUG 76

11.5  $\mu$ m

4-117

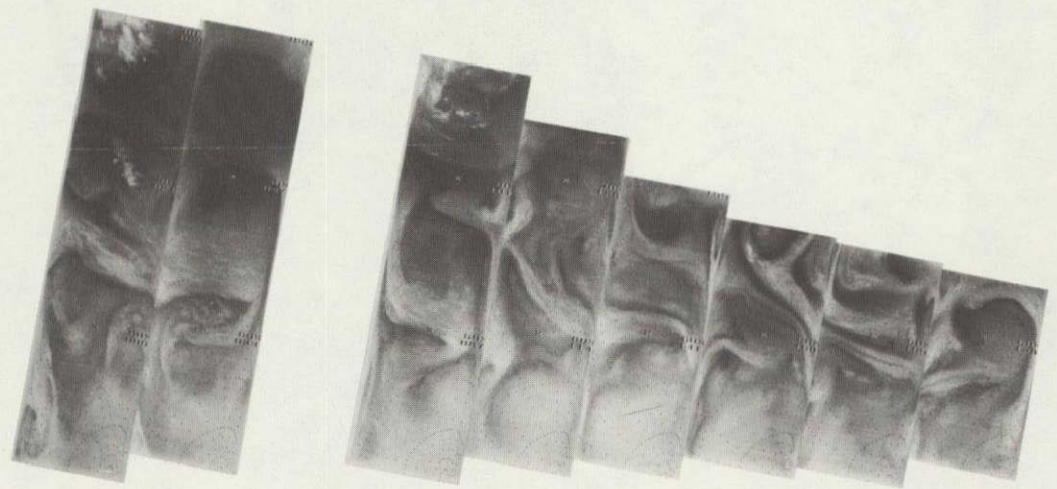
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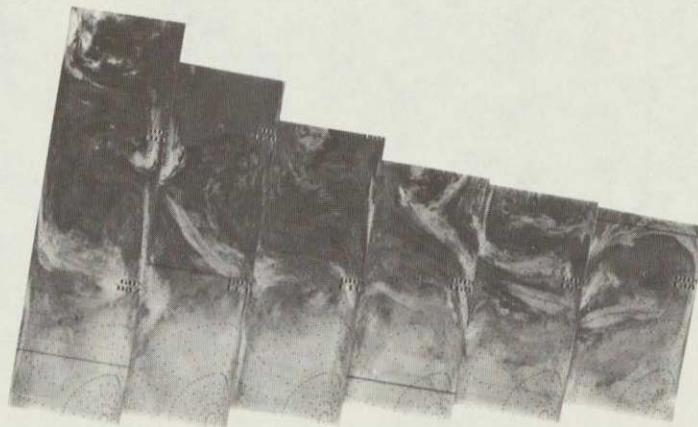


5918 5917 5916 5915 5914 5913 5912 5911 5910 5909 5908 5907 5906

26 AUG 76

6.7  $\mu$ m

4-119



5918 5917 5916 5915 5814 5913 5912 5911 5910 5909 5908 5907 5906

26 AUG 76

11.5  $\mu$ m

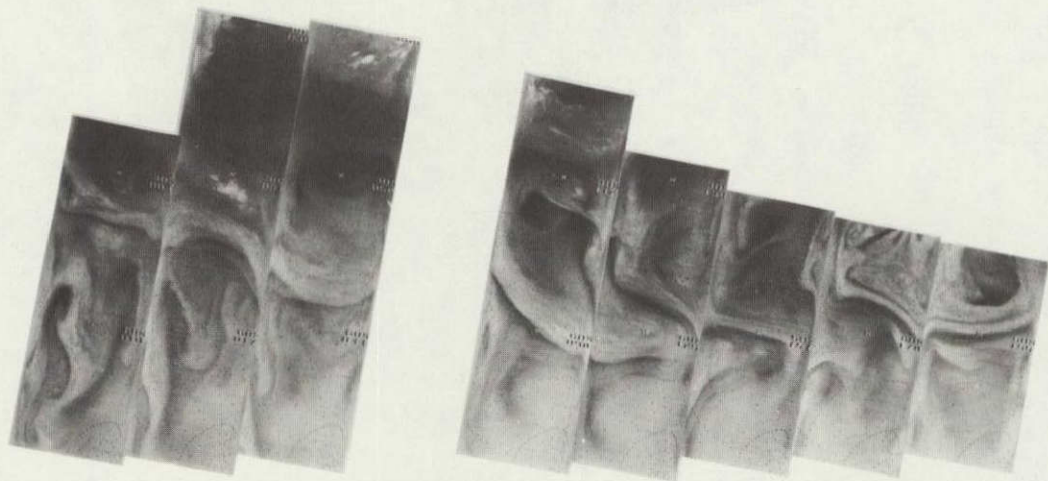
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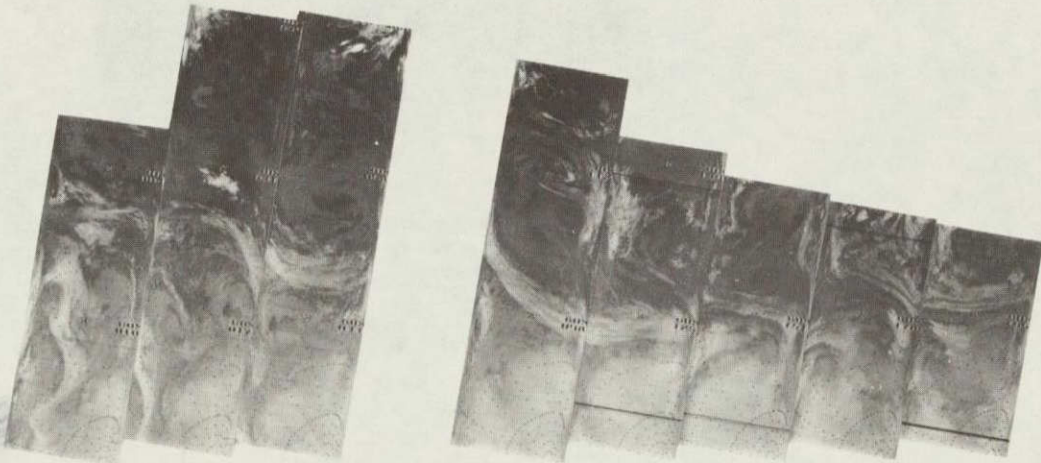


5932 5931 5930 5929 5928 5927 5926 5925 5924 5923 5922 5921 5920 5919

27 AUG 76

6.7  $\mu\text{m}$

4-121



5932 5931 5930 5929 5928 5927 5926 5925 5924 5923 5922 5921 5920 5919

27 AUG 76

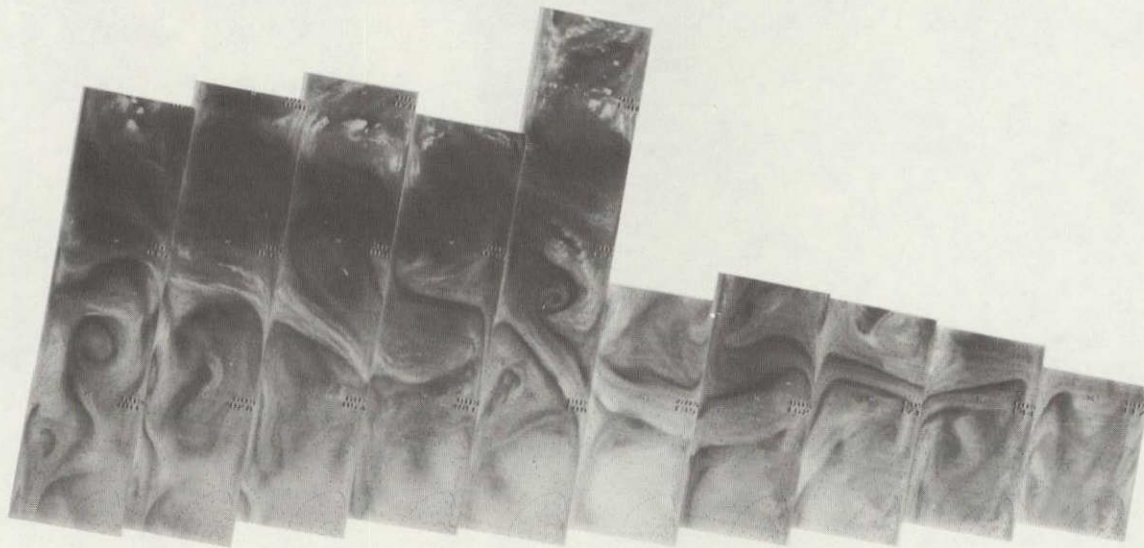
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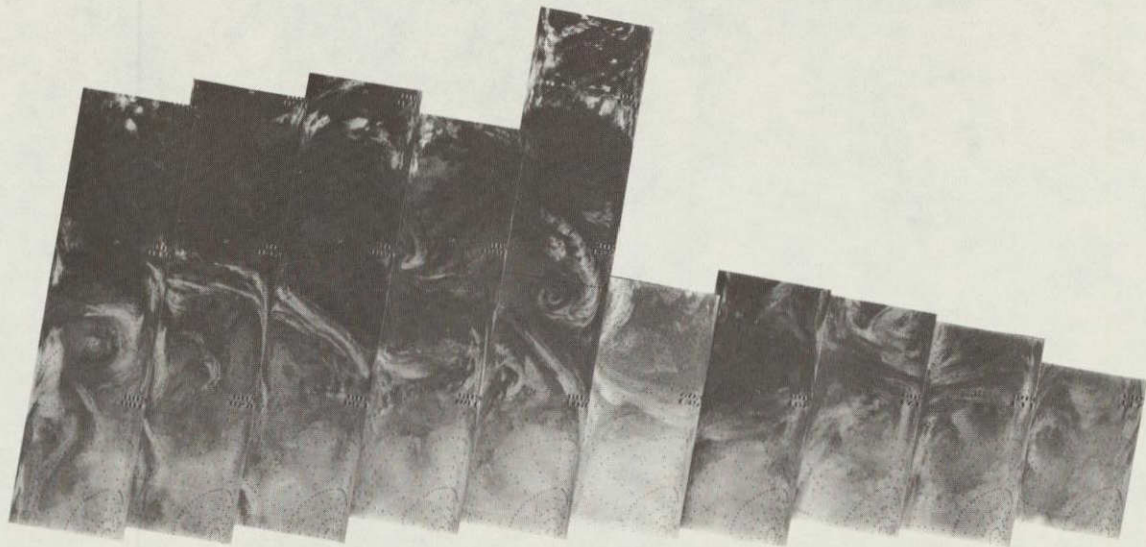


5945 5944 5943 5942 5941 5940 5939 5938 5937 5936 5935 5934 5933

28 AUG 76

6.7  $\mu$ m





5945 5944 5943 5942 5941 5940 5939 5938 5937 5936 5935 5934 5933

28 AUG 76

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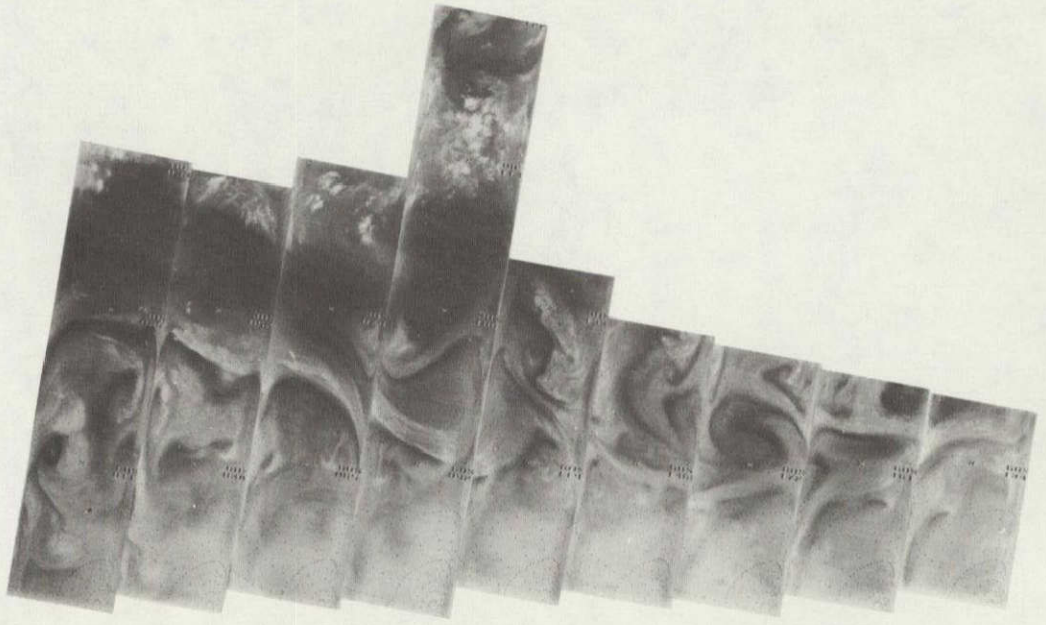
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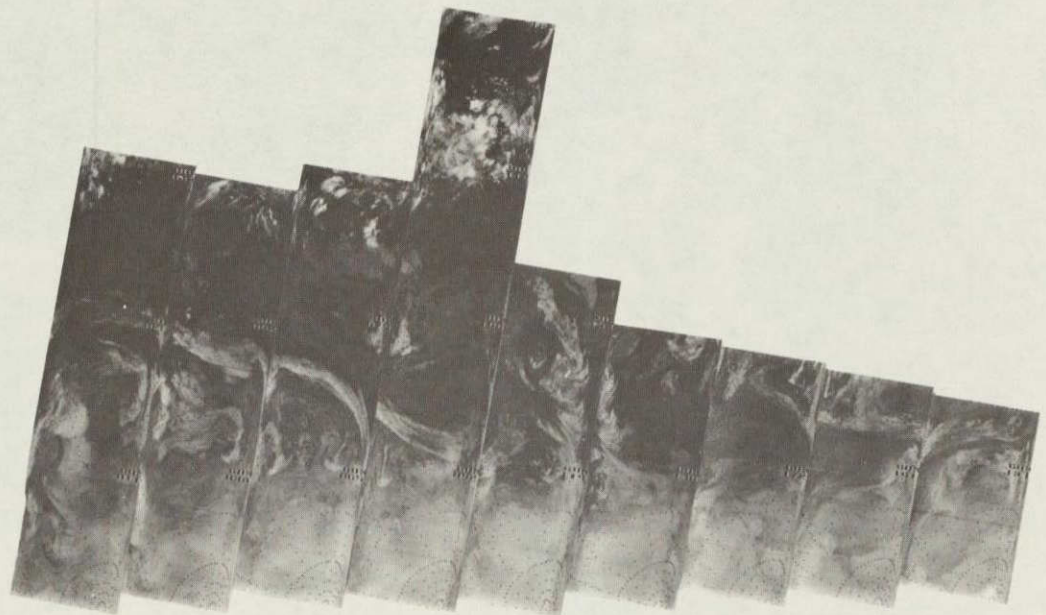
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5958 5957 5956 5955 5954 5953 5952 5951 5950 5949 5948 5947 5946

29 AUG 76  
6.7  $\mu$ m

4-125



5958 5957 5956 5955 5954 5953 5952 5951 5950 5949 5948 5947 5946

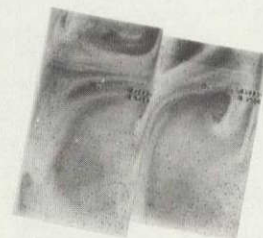
29 AUG 76

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5972 5971 5970 5969 5968 5967 5966 5965 5964 5963 5962 5961 5960 5959

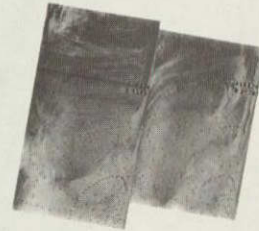
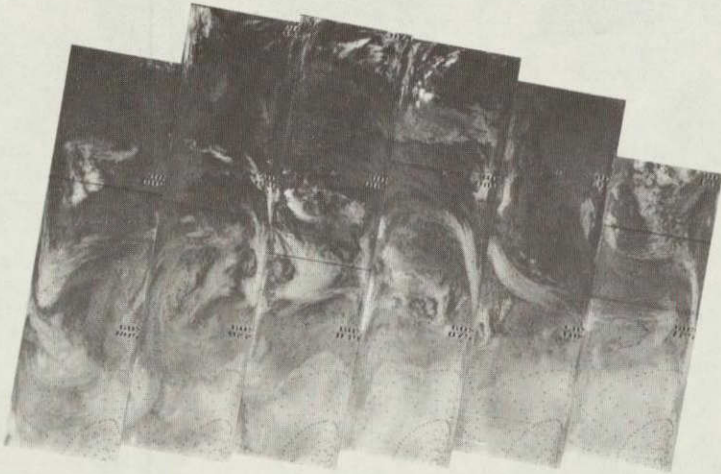
30 AUG 76

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5972 5971 5970 5969 5968 5967 5968 5965 5964 5963 5962 5961 5960 5959

30 AUG 76

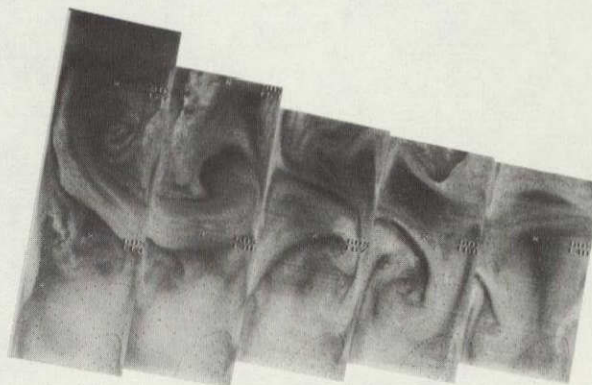
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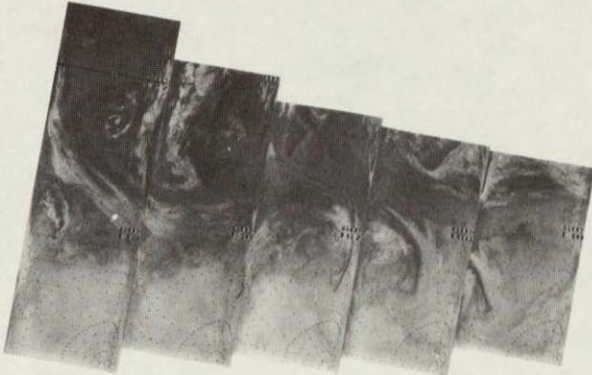
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5985 5984 5983 5982 5981 5980 5979 5978 5977 5976 5975 5974 5973

31 AUG 76

6.7  $\mu$ m



5985 5984 5983 5982 5981 5980 5979 5978 5977 5976 5975 5974 5973

31 AUG 76

11.5  $\mu$ m

4-129

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SECTION 4.2

TEMPERATURE HUMIDITY INFRARED RADIOMETER

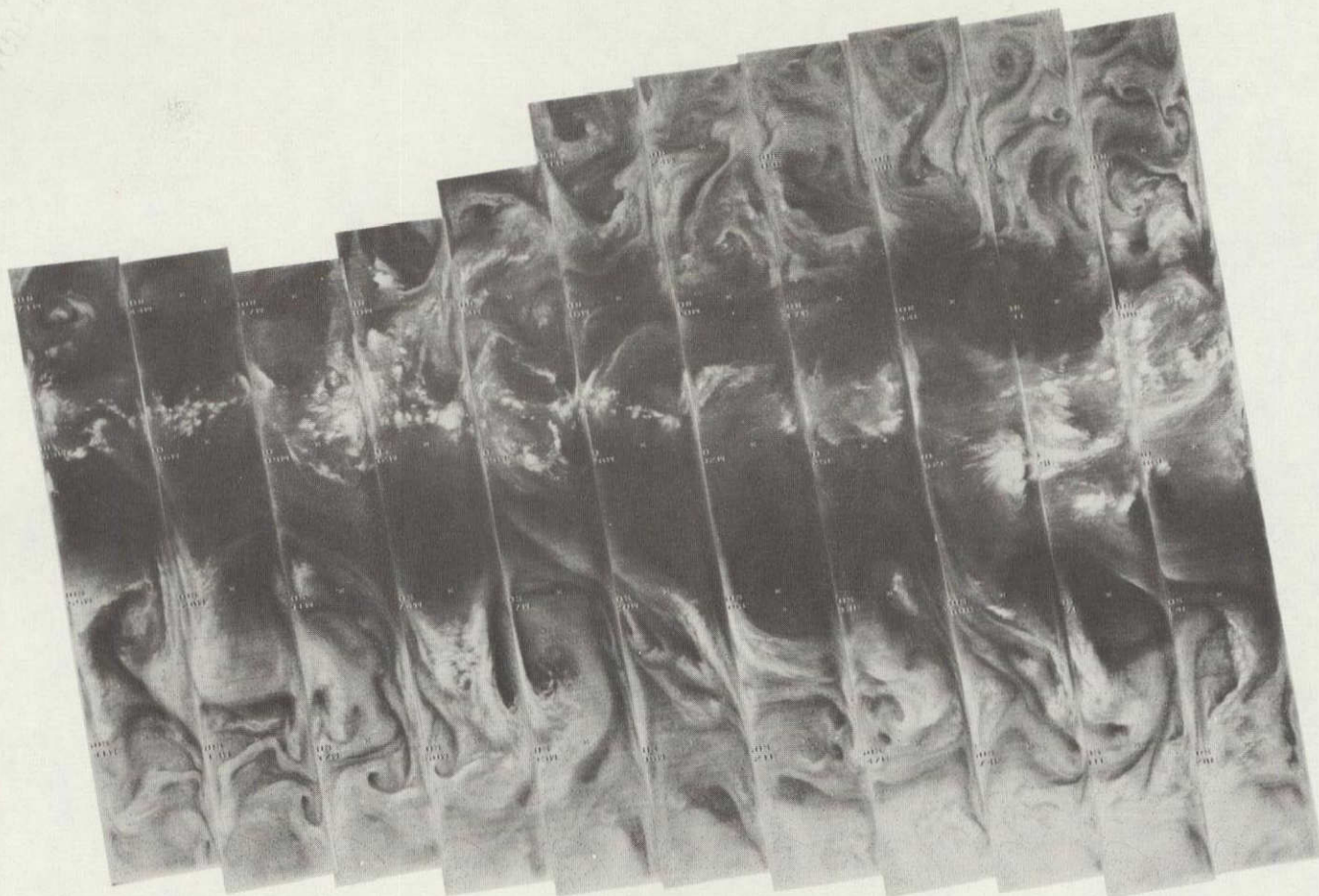
DAYTIME MONTAGES

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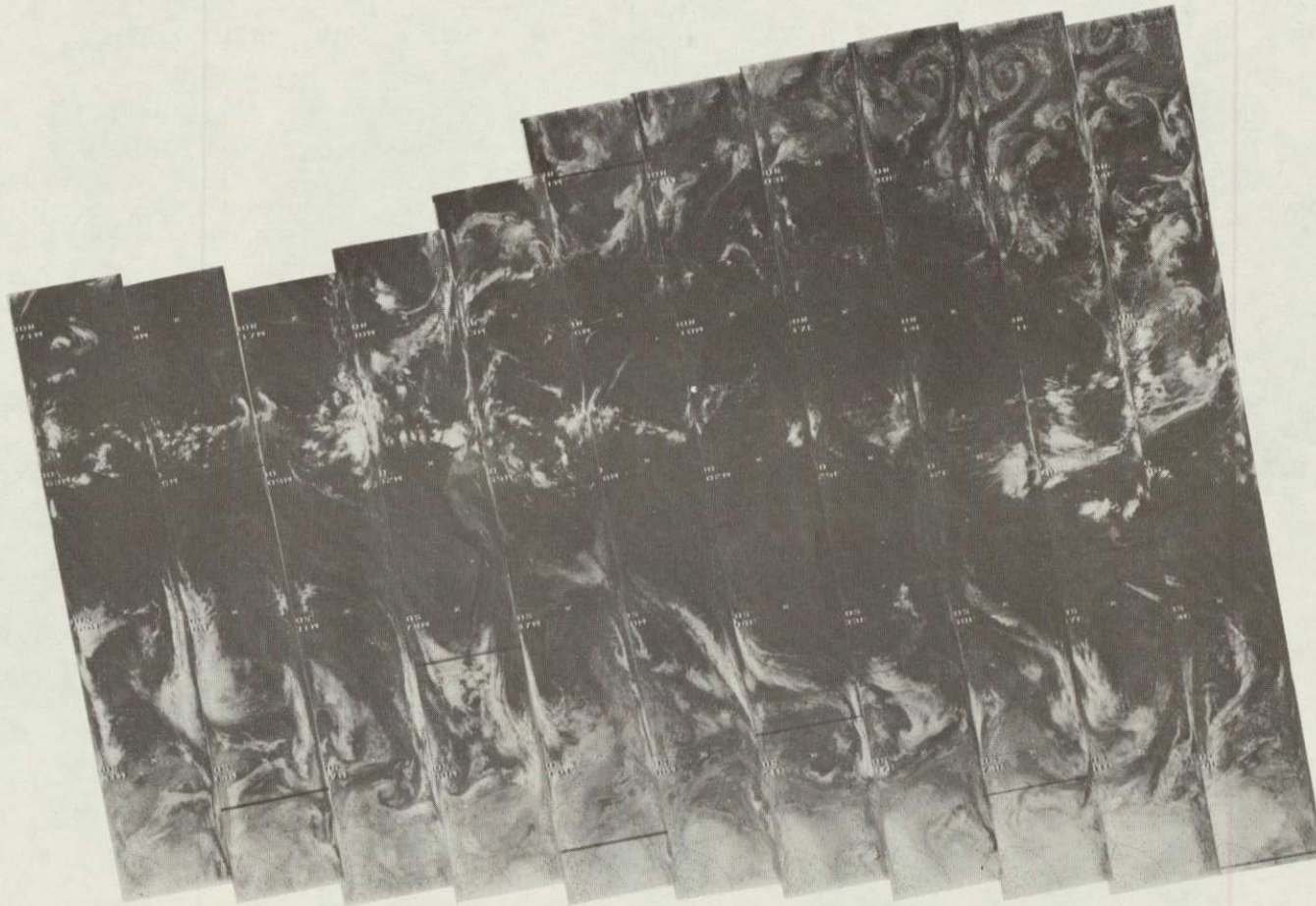
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1 JUL 76

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4-133



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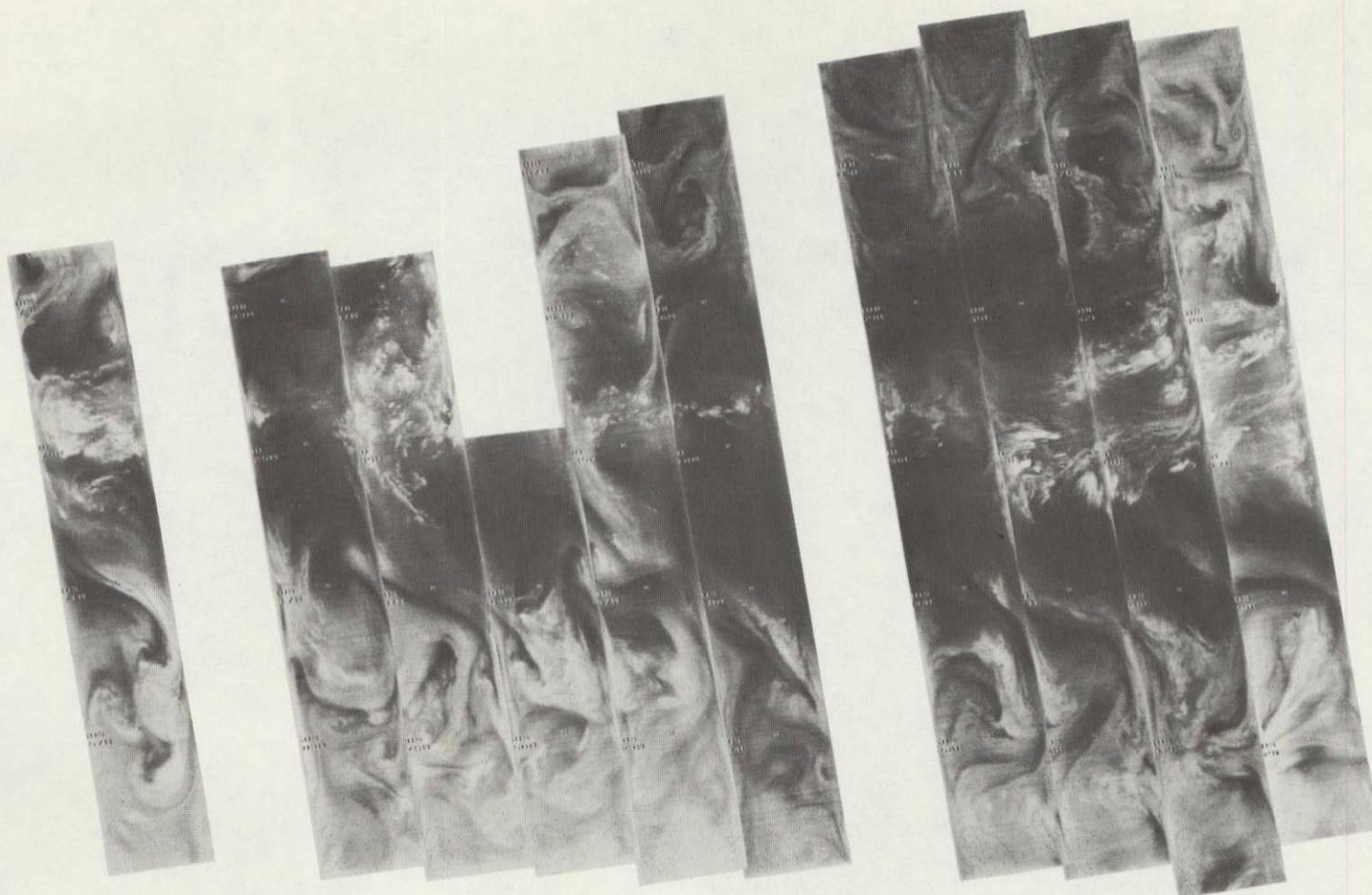
1 JUL 76

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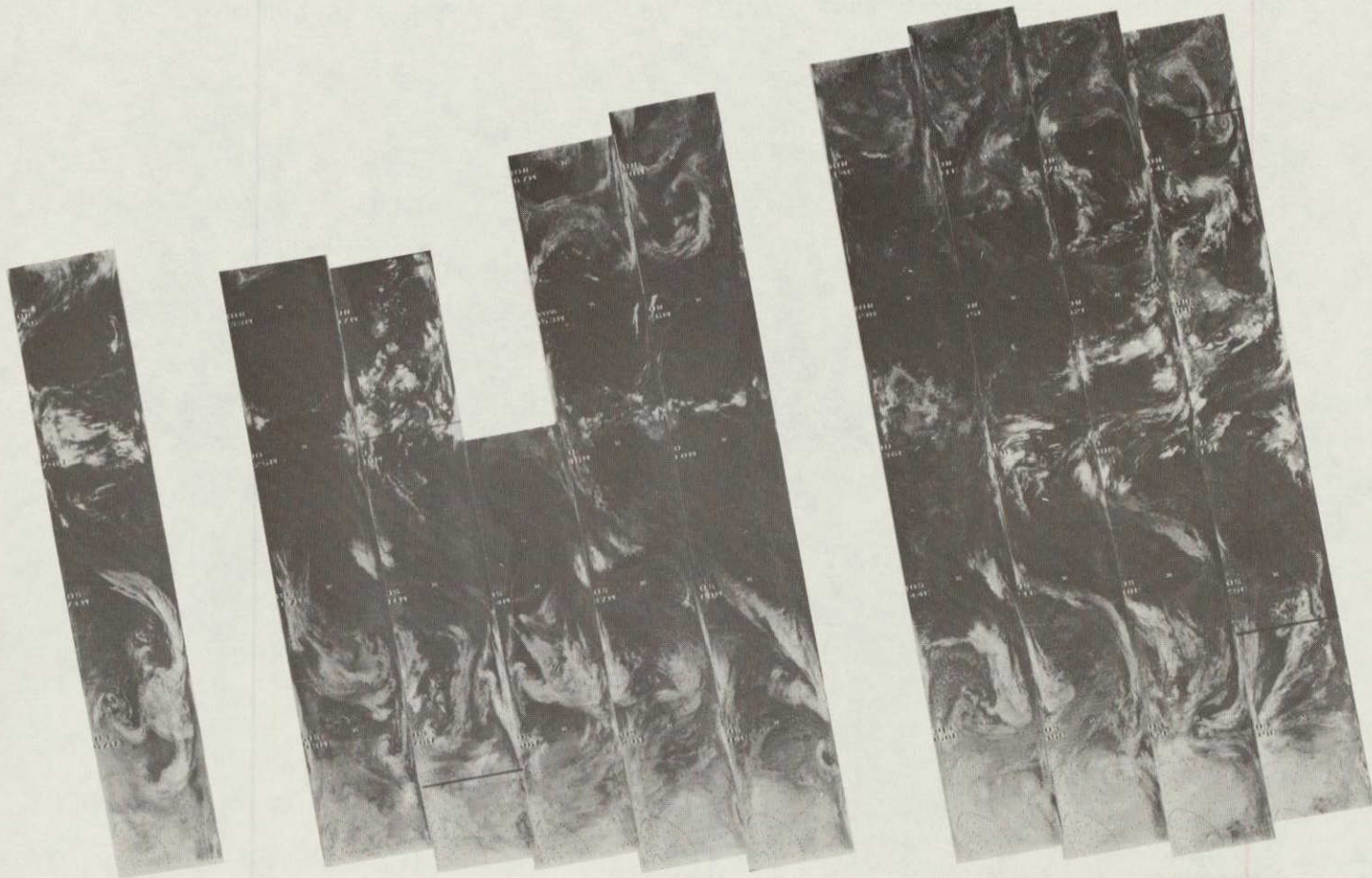
2 JUL 76

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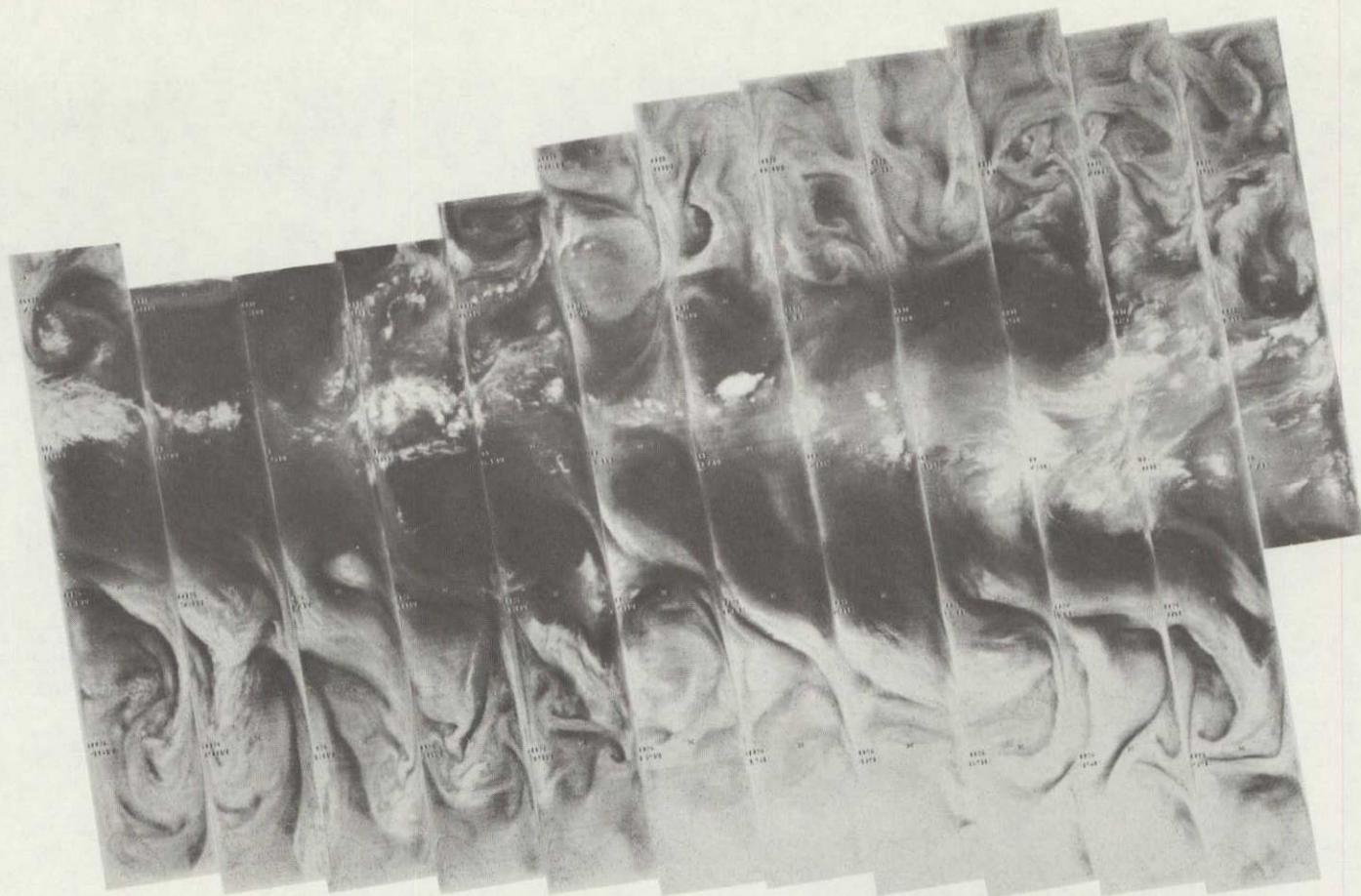
2 JUL 76

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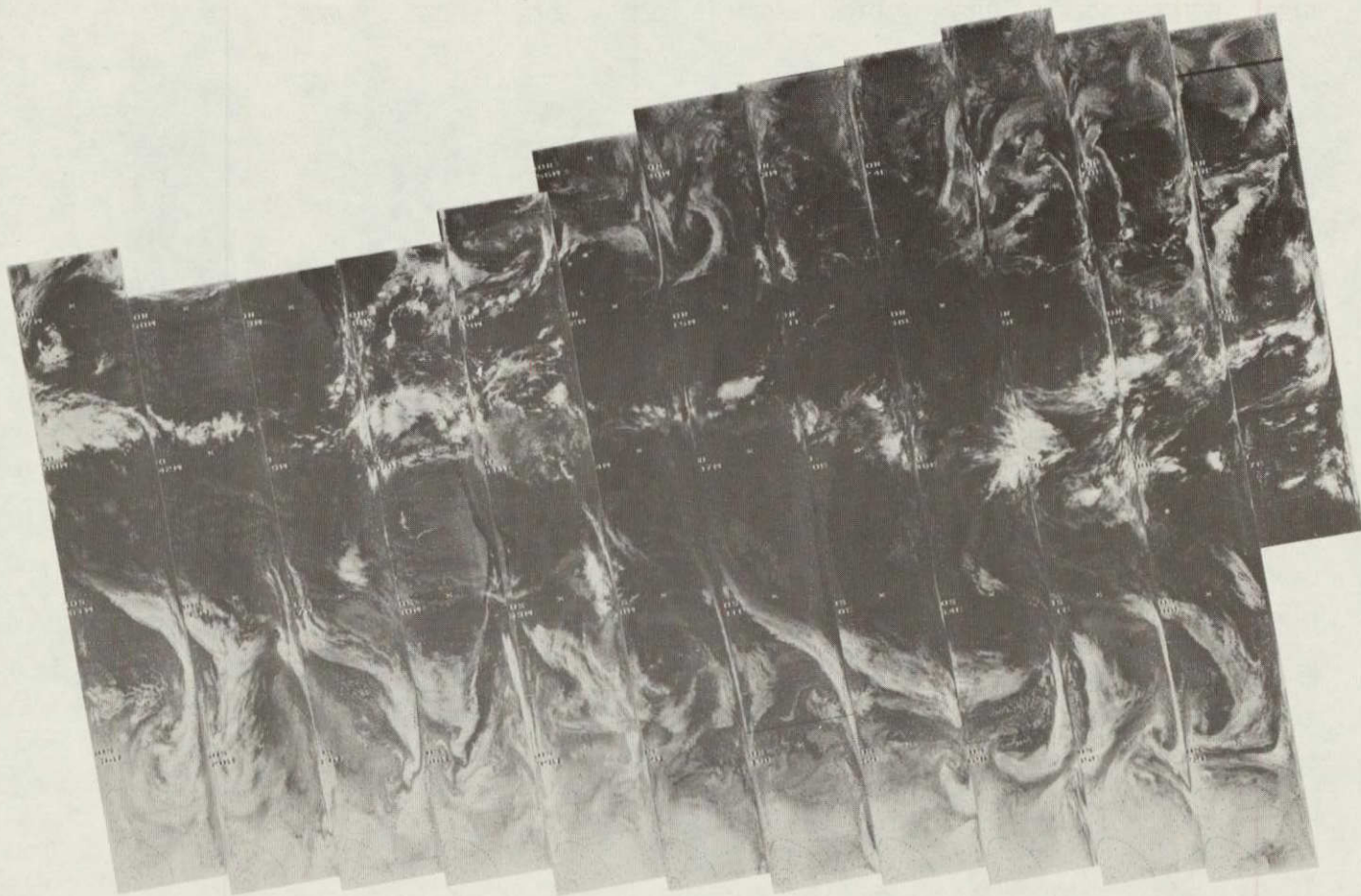
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3 JUL 76

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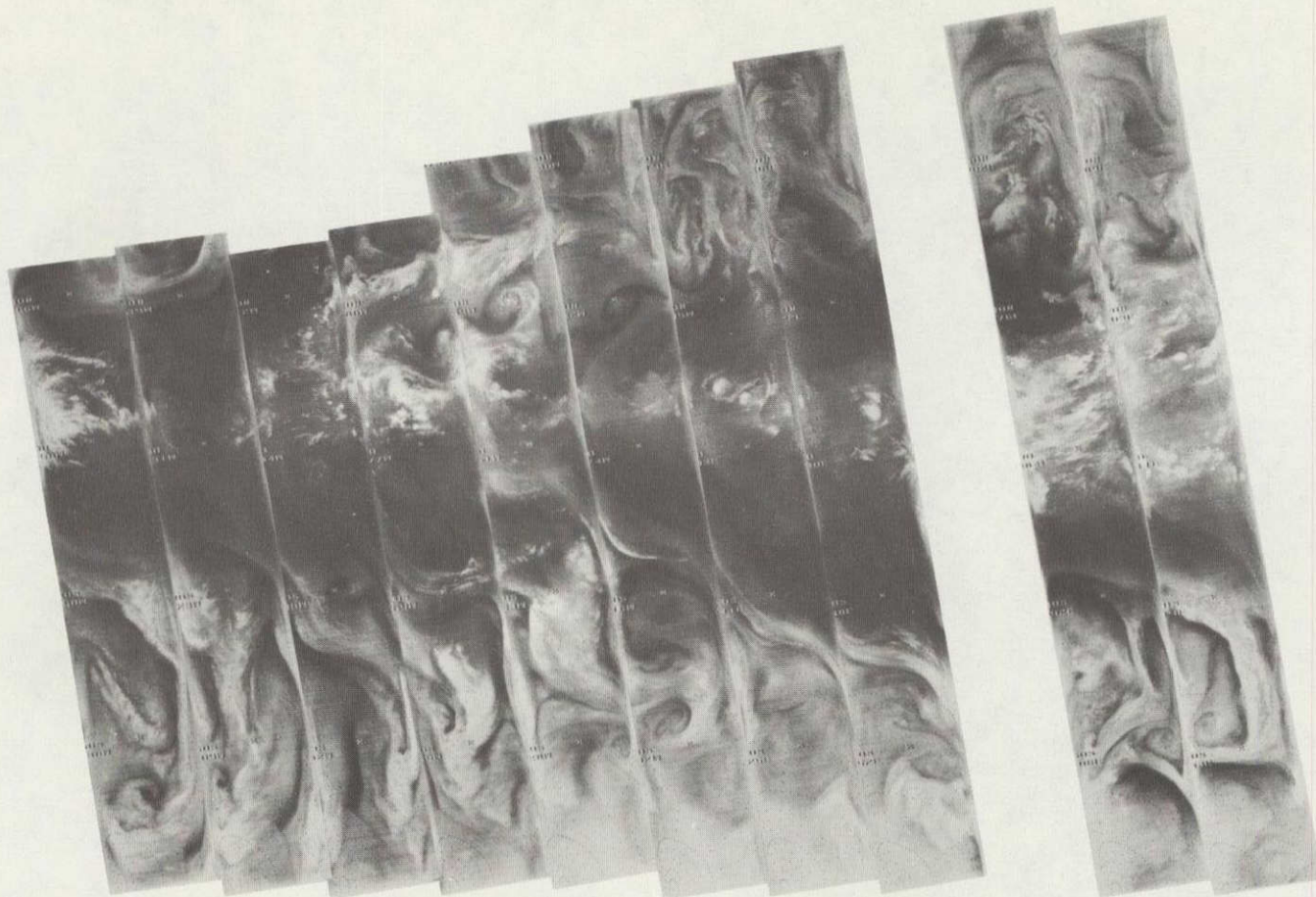
5195 5194 5193 5192 5191 5190 5189 5188 5187 5186 5185 5184 5183

3 JUL 76

11.5  $\mu\text{m}$

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5208 5207 5206 5205 5204 5203 5202 5201 5200 5199 5198 5197 5196

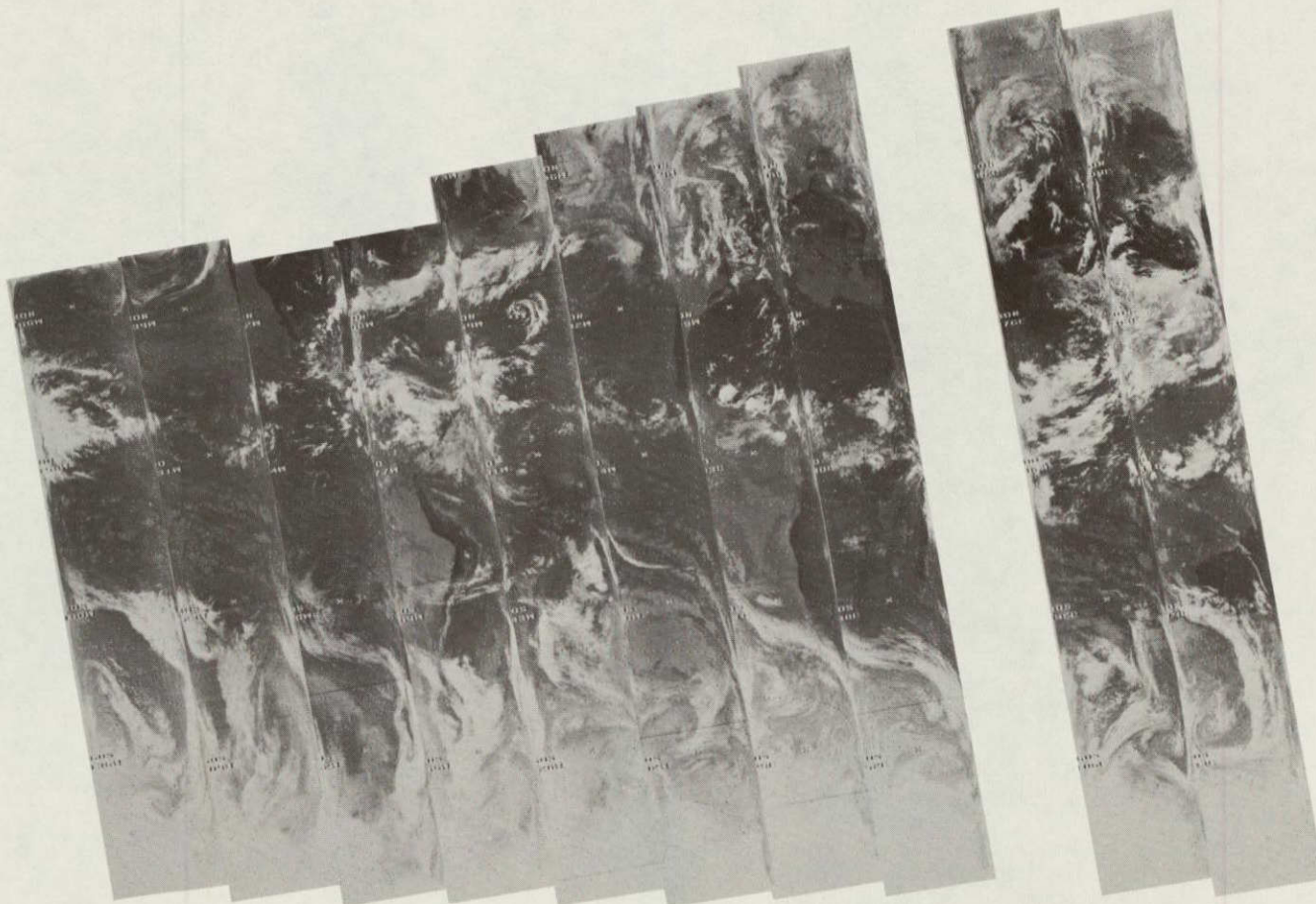
4 JUL 76

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5208 5207 5206 5205 5204 5203 5202 5201 5200 5199 5198 5197 5196

4 JUL 76

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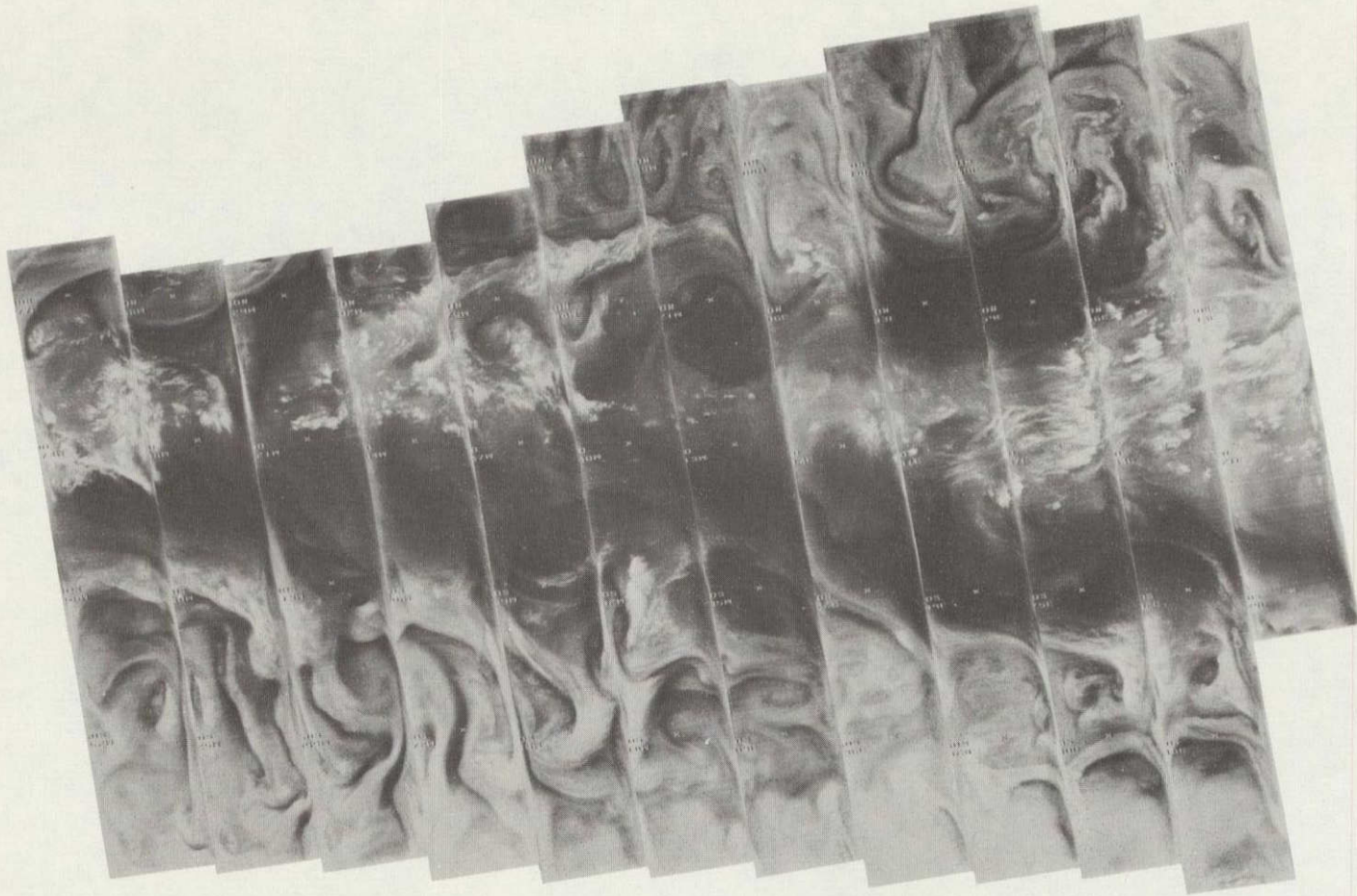
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DATE [illegible]

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5222 5221 5220 5219 5218 5217 5216 5215 5214 5213 5212 5211 5210 5209

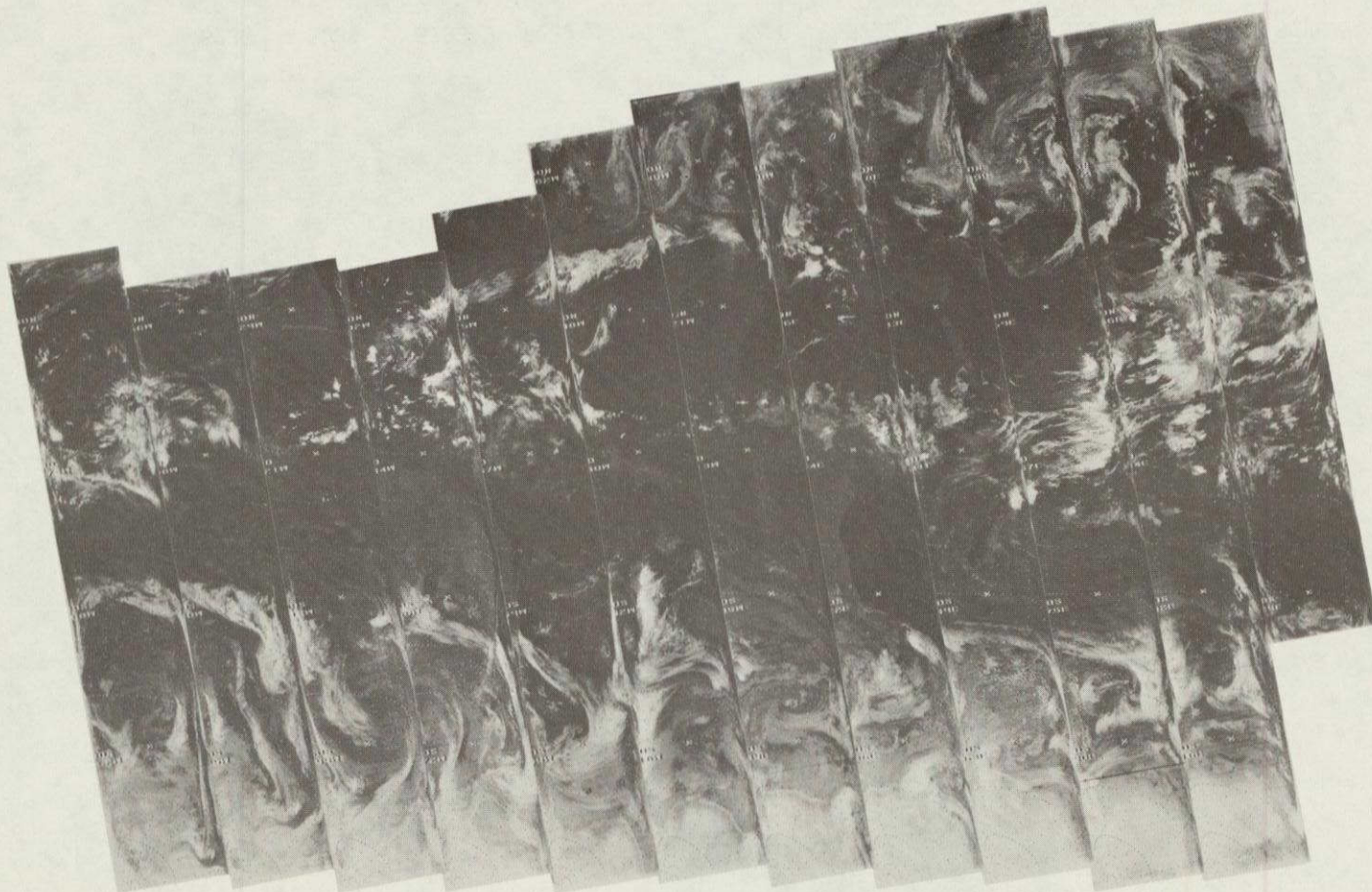
5 JUL 76

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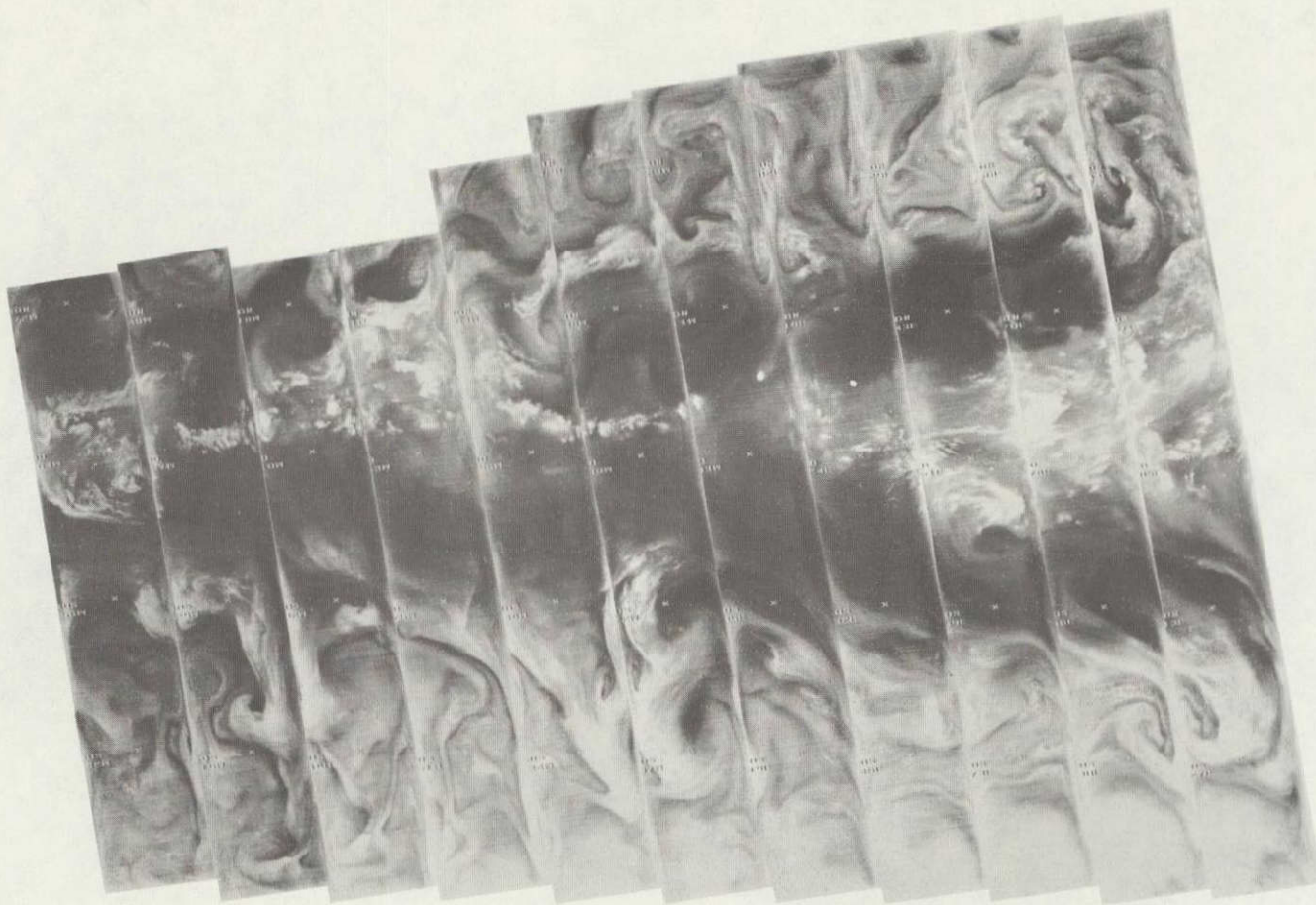
5 JUL 76

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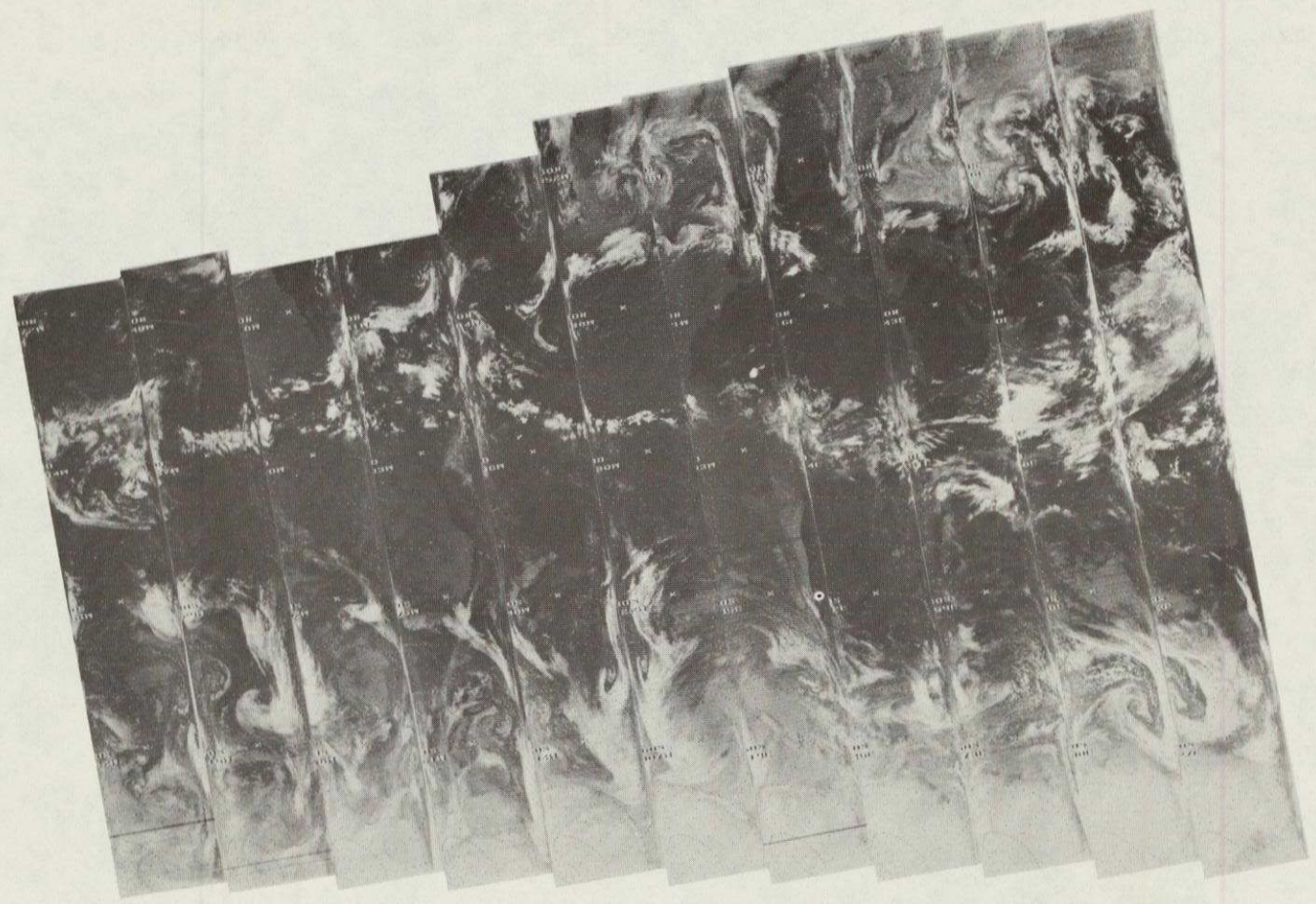
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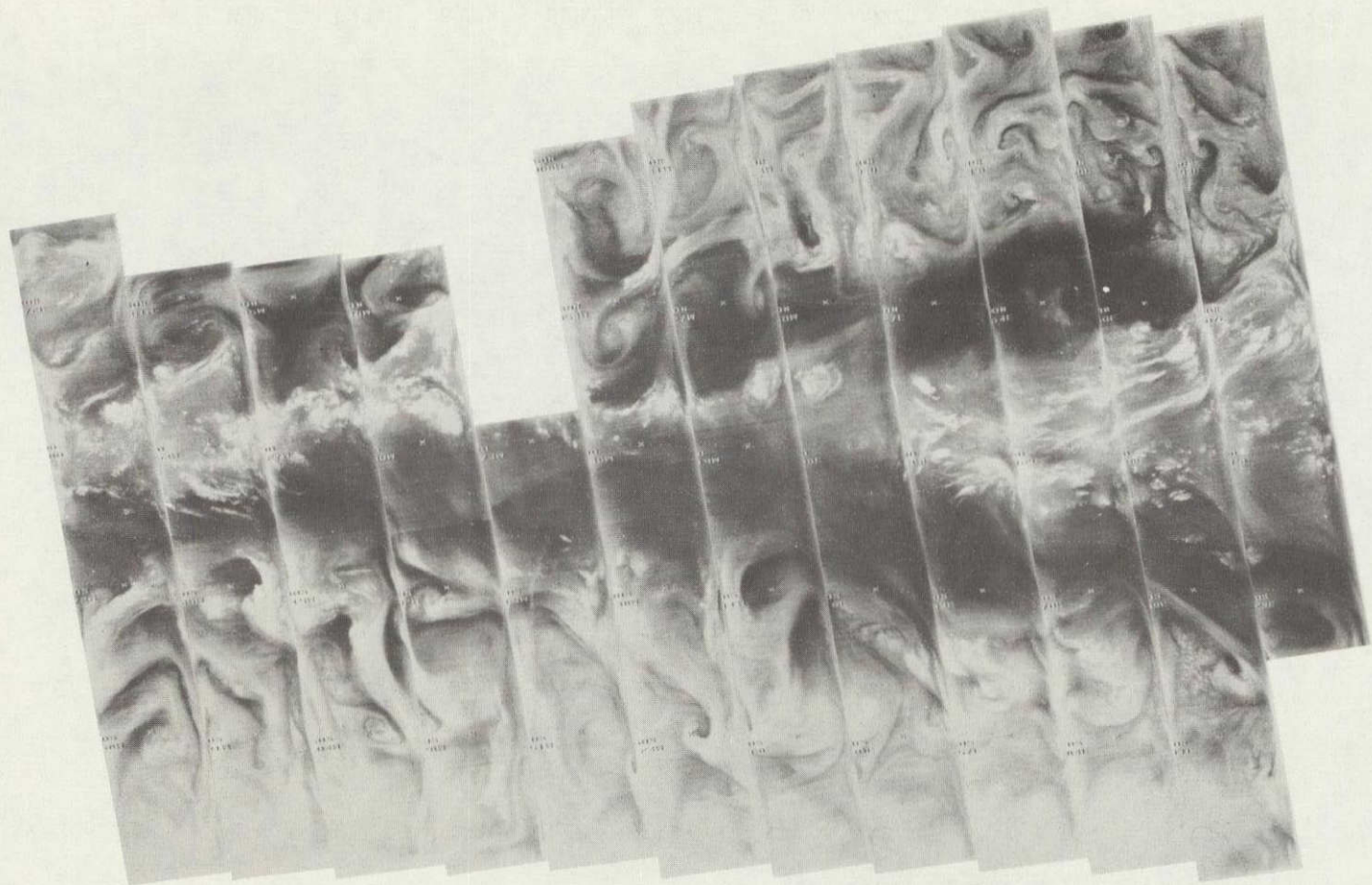
5235 5234 5233 5232 5231 5230 5229 5228 5227 5226 5225 5224 5223

6 JUL 76

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5249 5248 5247 5246 5245 5244 5243 5242 5241 5240 5239 5238 5237 5236

7 JUL 76

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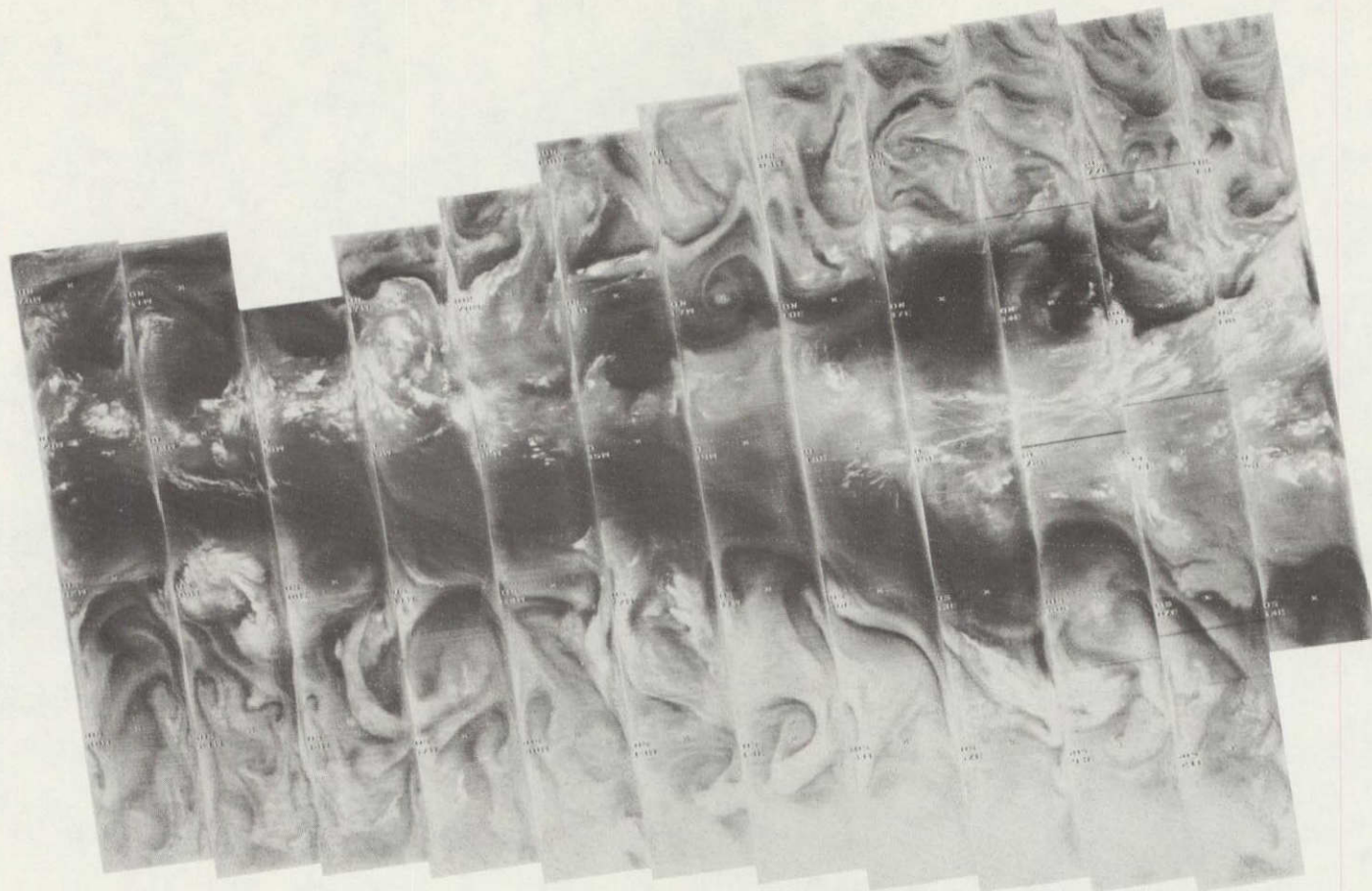
5249 5248 5247 5246 5245 5244 5243 5242 5241 5240 5239 5238 5237 5236

7 JUL 76

11.5  $\mu\text{m}$

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5262 5261 5260 5259 5258 5257 5256 5255 5254 5253 5252 5251 5250

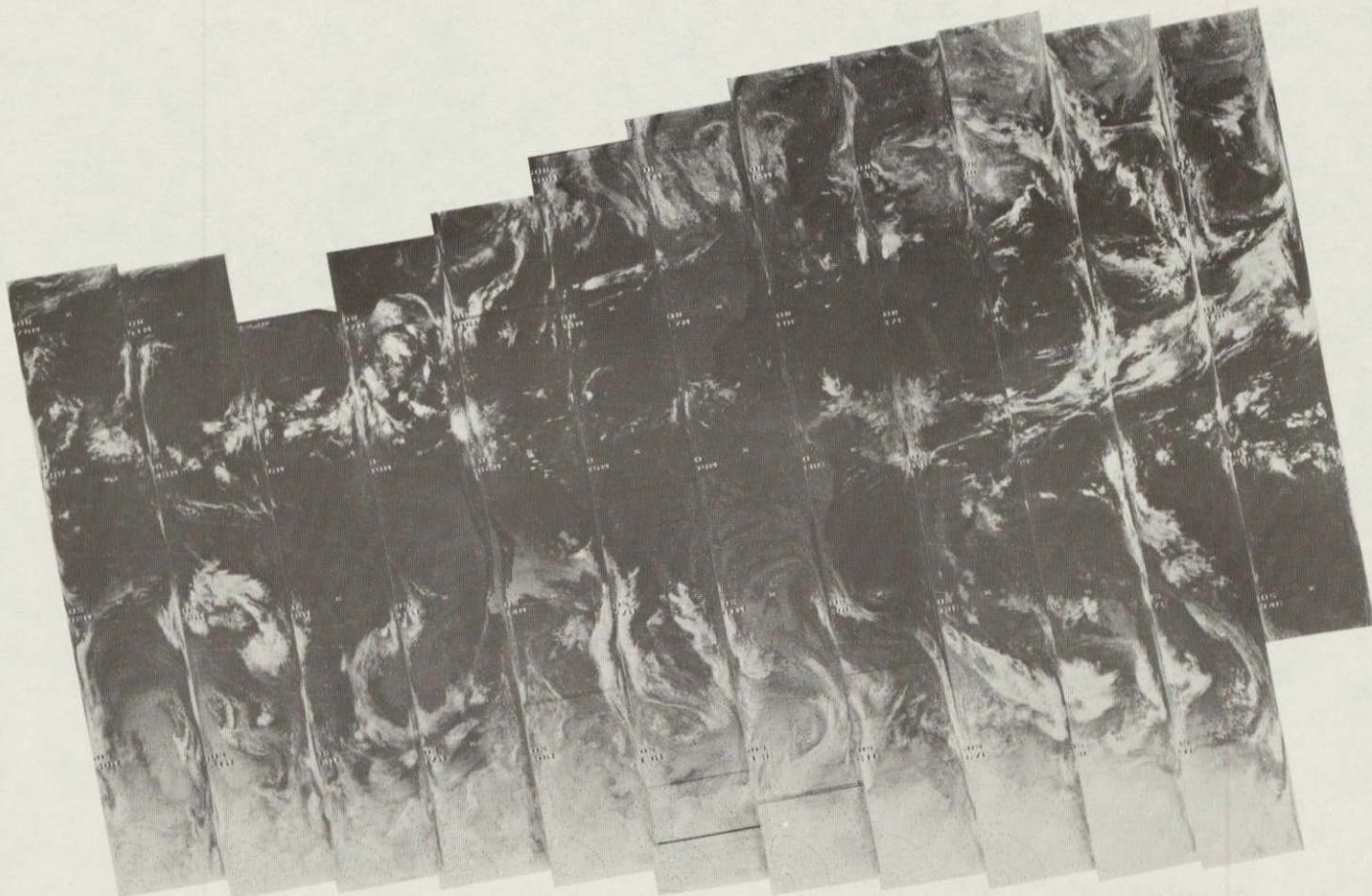
8 JUL 76

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5262 5261 5260 5259 5258 5257 5256 5255 5254 5253 5252 5251 5250

8 JUL 76

11.5  $\mu$ m

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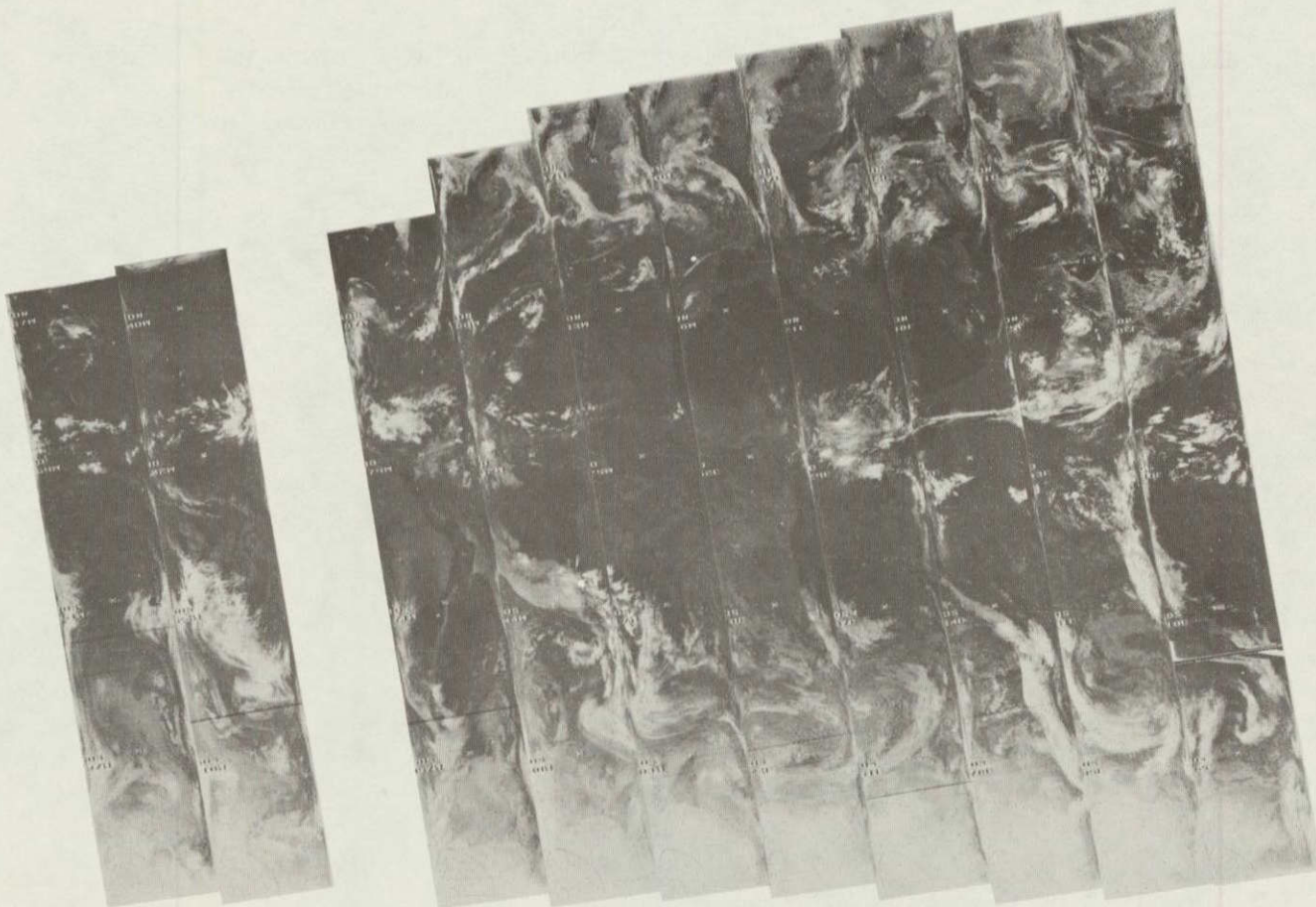
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9 JUL 76

6.7  $\mu$ m

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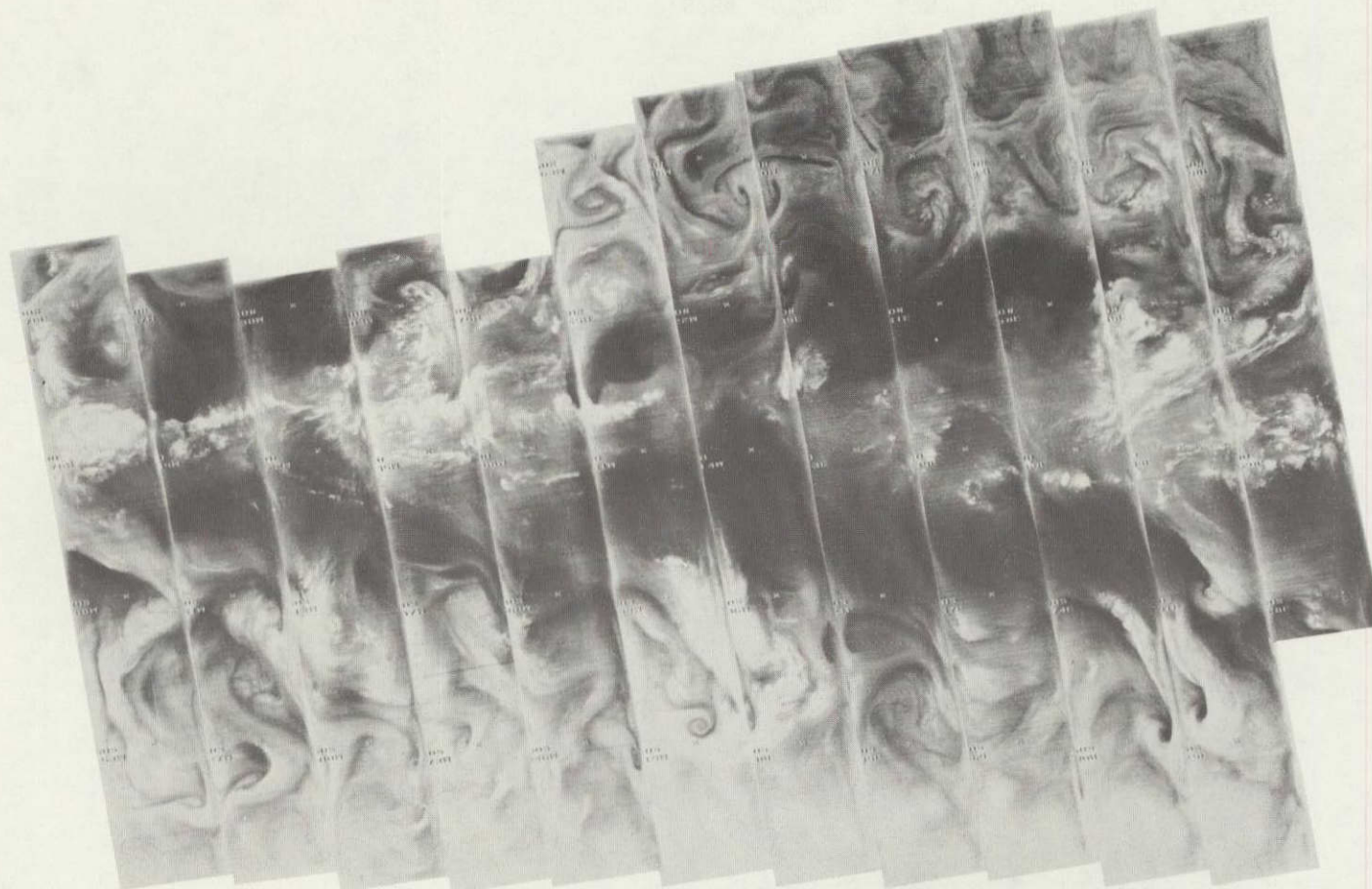
9 JUL 76

11.5  $\mu$ m

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4-150

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5289 5288 5287 5286 5285 5284 5283 5282 5281 5280 5279 5278 5277 5276

10 JUL 76

6.7  $\mu\text{m}$

4-151

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10 JUL 76

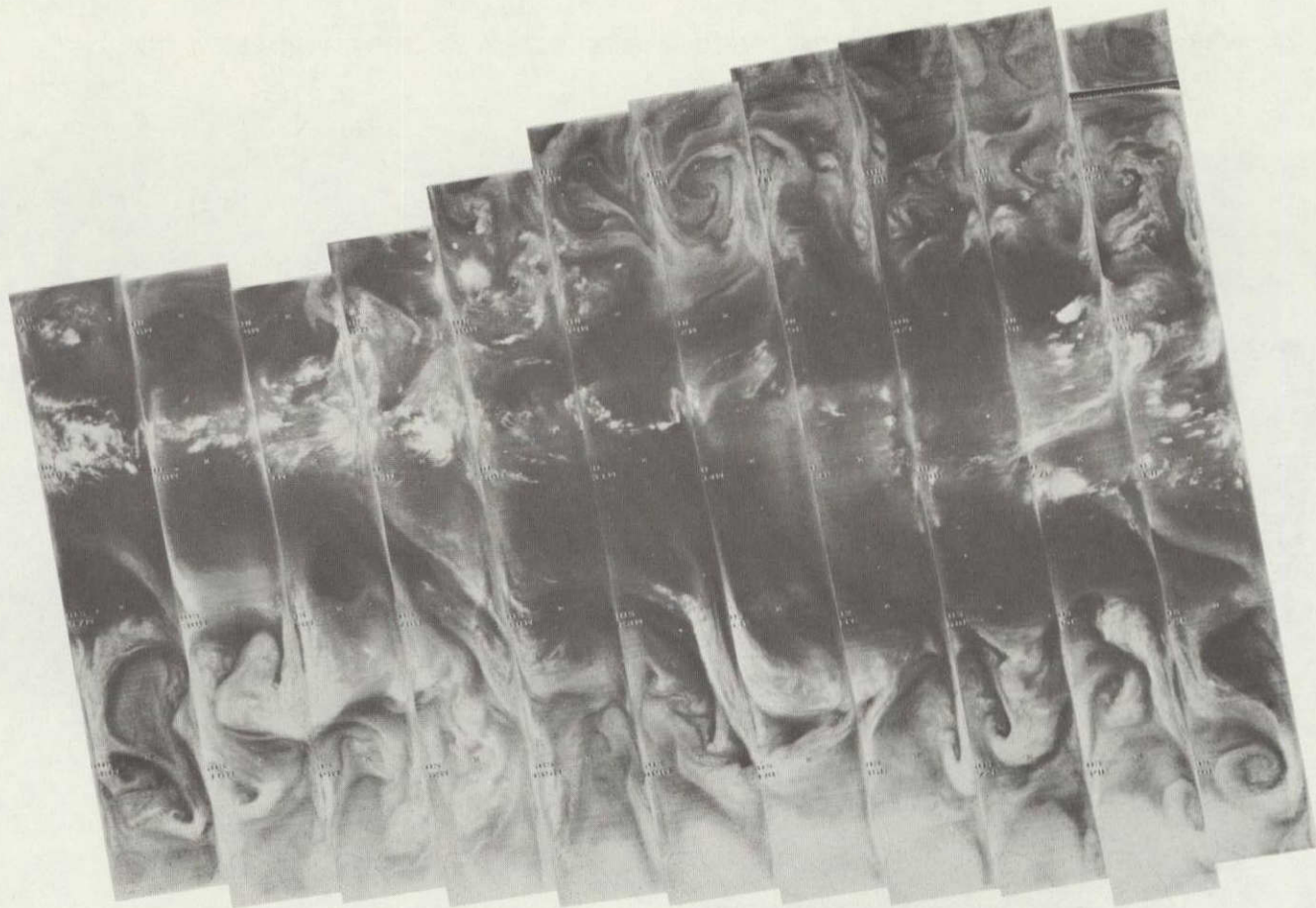
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11 JUL 76

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5302 5301 5300 5299 5298 5297 5296 5295 5294 5293 5292 5291 5290

11 JUL 76

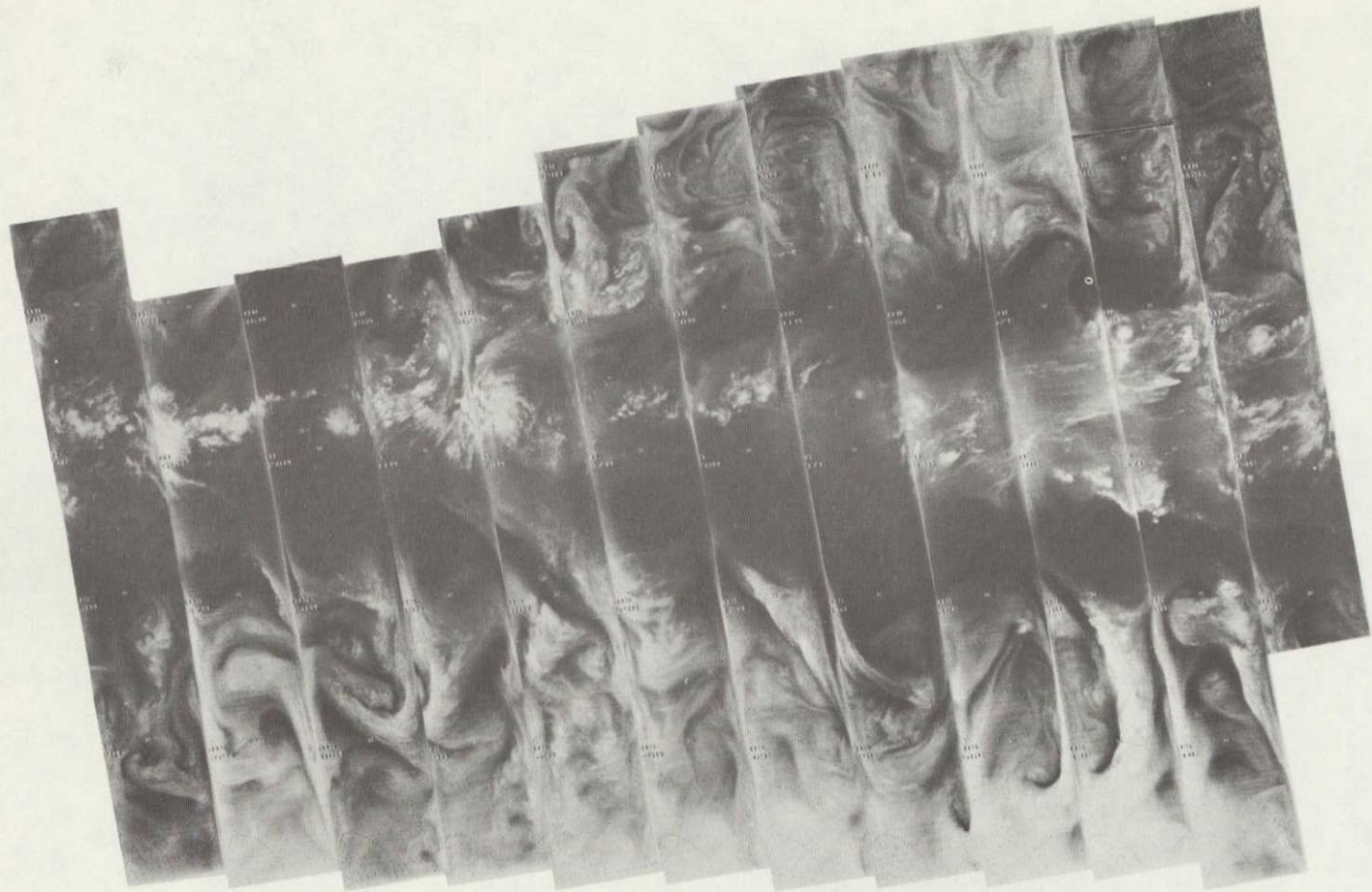
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4-154  
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12 JUL 76

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5316 5315 5314 5313 5312 5311 5310 5309 5308 5307 5306 5305 5304 5303

12 JUL 76

6.7  $\mu$ m

4-155

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5316 5315 5314 5313 5312 5311 5310 5309 5308 5307 5306 5305 5304 5303

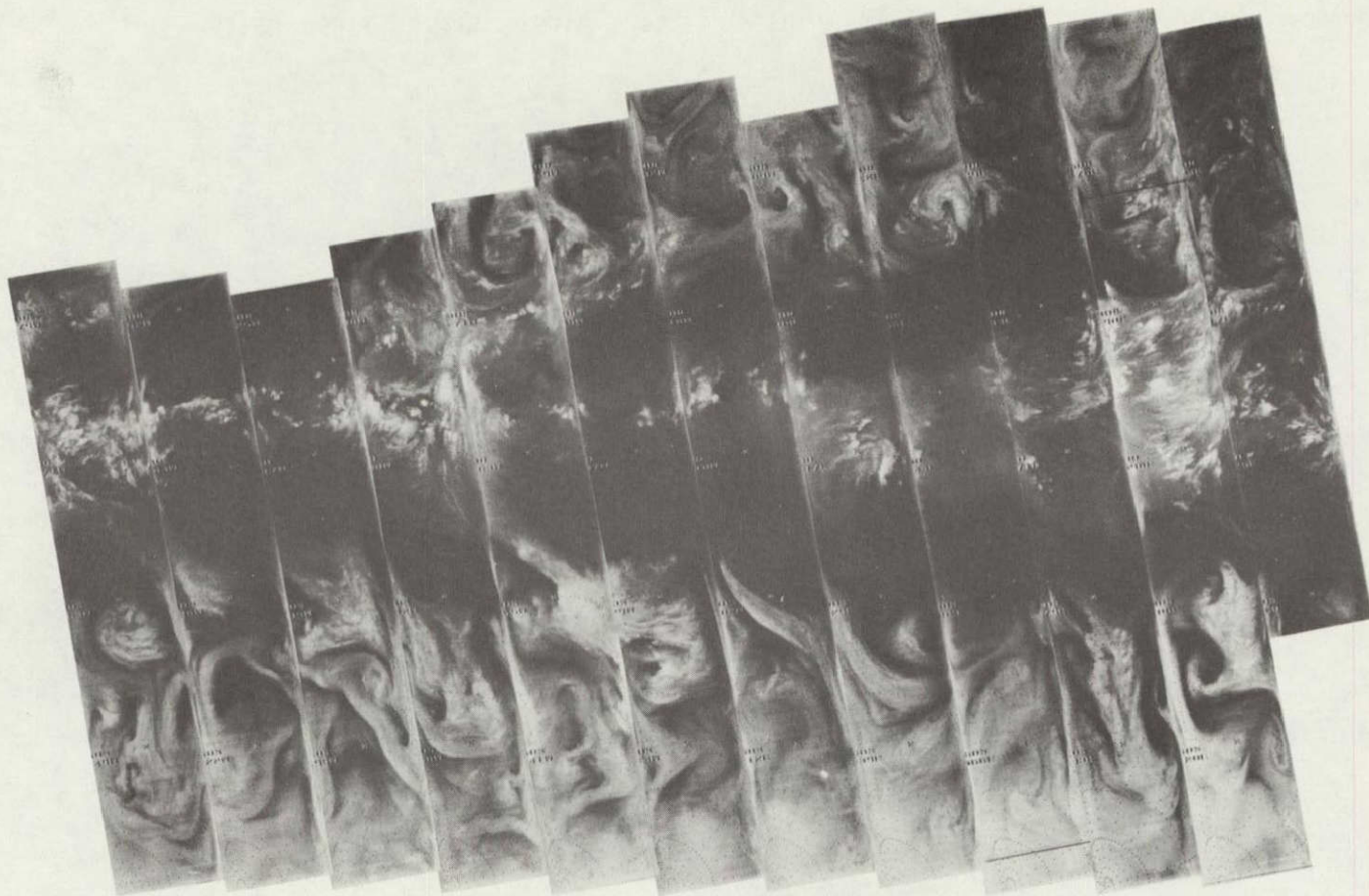
12 JUL 76

11.5  $\mu\text{m}$



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5329 5328 5327 5326 5325 5324 5323 5322 5321 5320 5319 5318 5317

13 JUL 76

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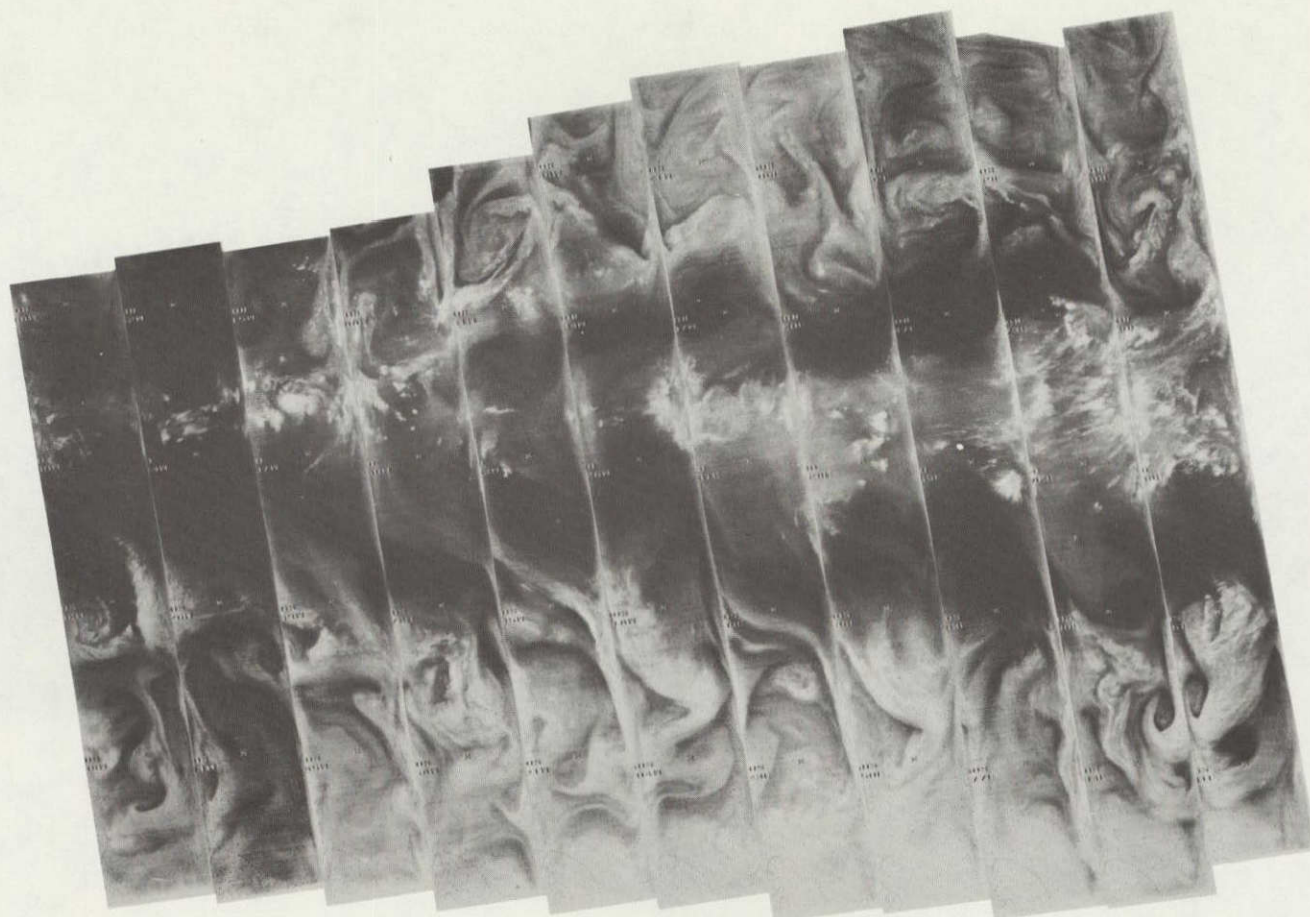
13 JUL 76

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14 JUL 76

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5342 5341 5340 5339 5338 5337 5336 5335 5334 5333 5332 5331 5330

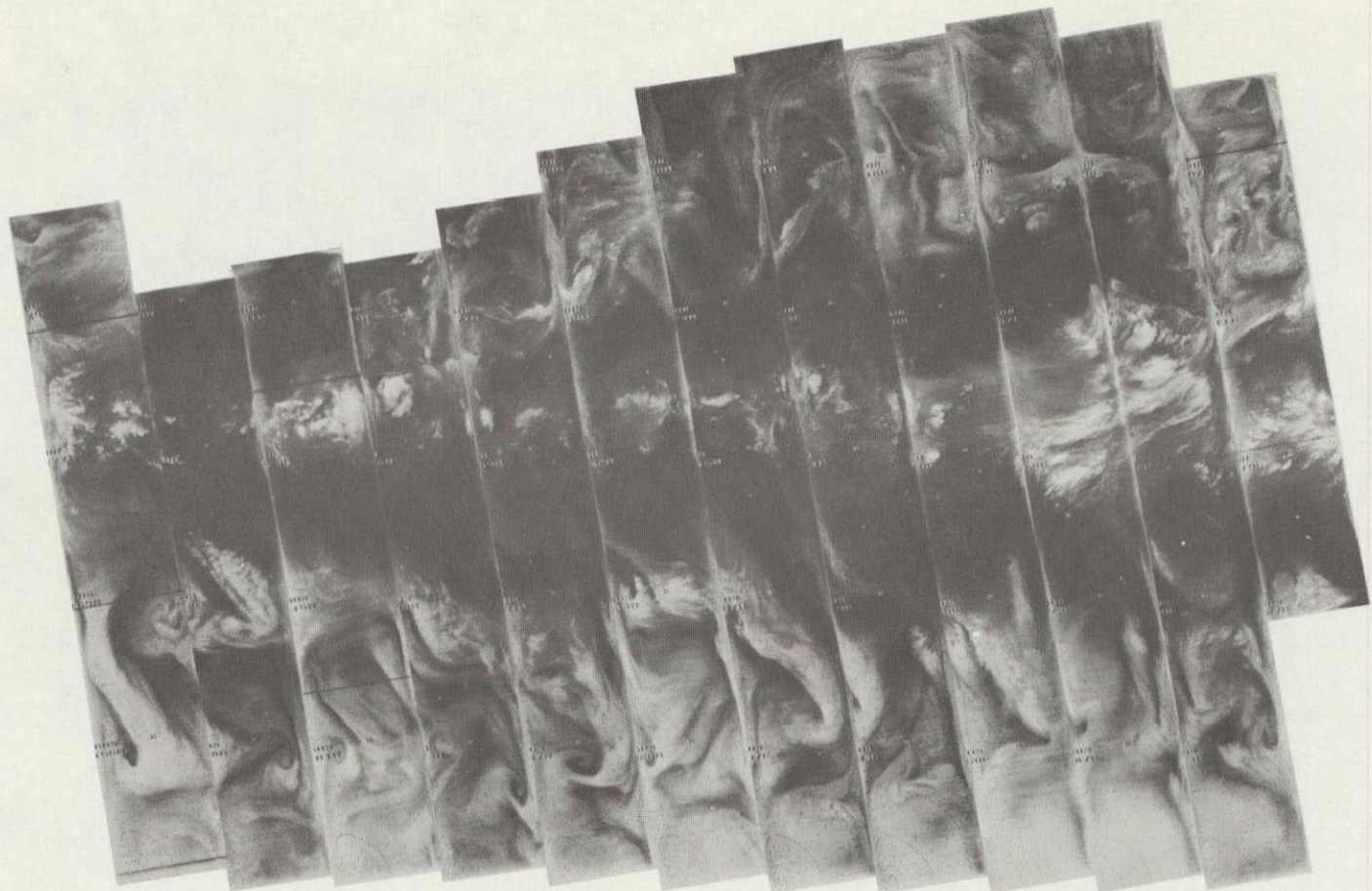
14 JUL 76

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5356 5355 5354 5353 5352 5351 5350 5349 5348 5347 5346 5345 5344 5343

15 JUL 76

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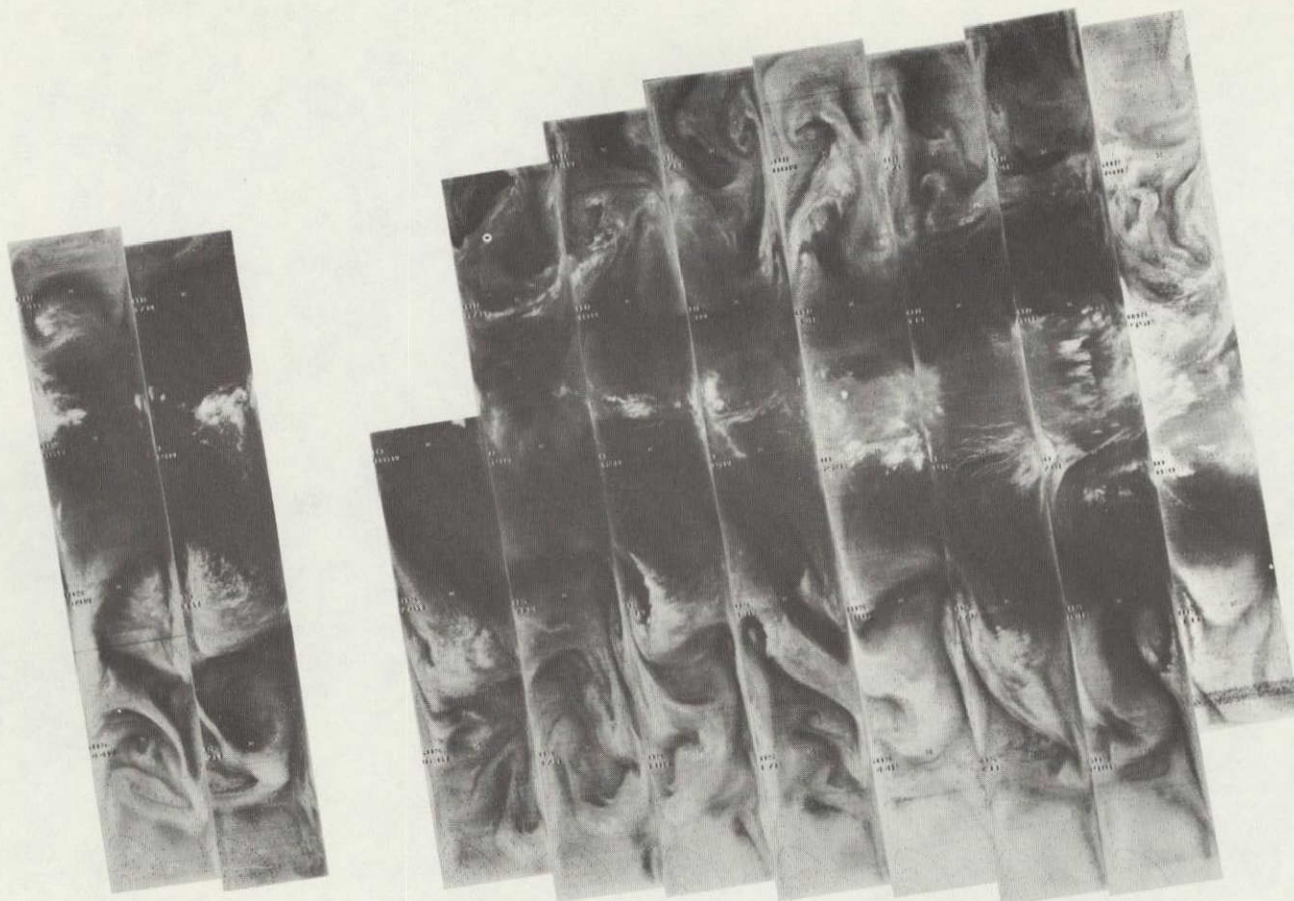
5356 5355 5354 5353 5352 5351 5350 5349 5348 5347 5346 5345 5344 5343

15 JUL 76

11.5  $\mu$ m

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5369 5368 5367 5366 5365 5364 5363 5362 5361 5360 5359 5358 5357

16 JUL 76

6.7  $\mu\text{m}$

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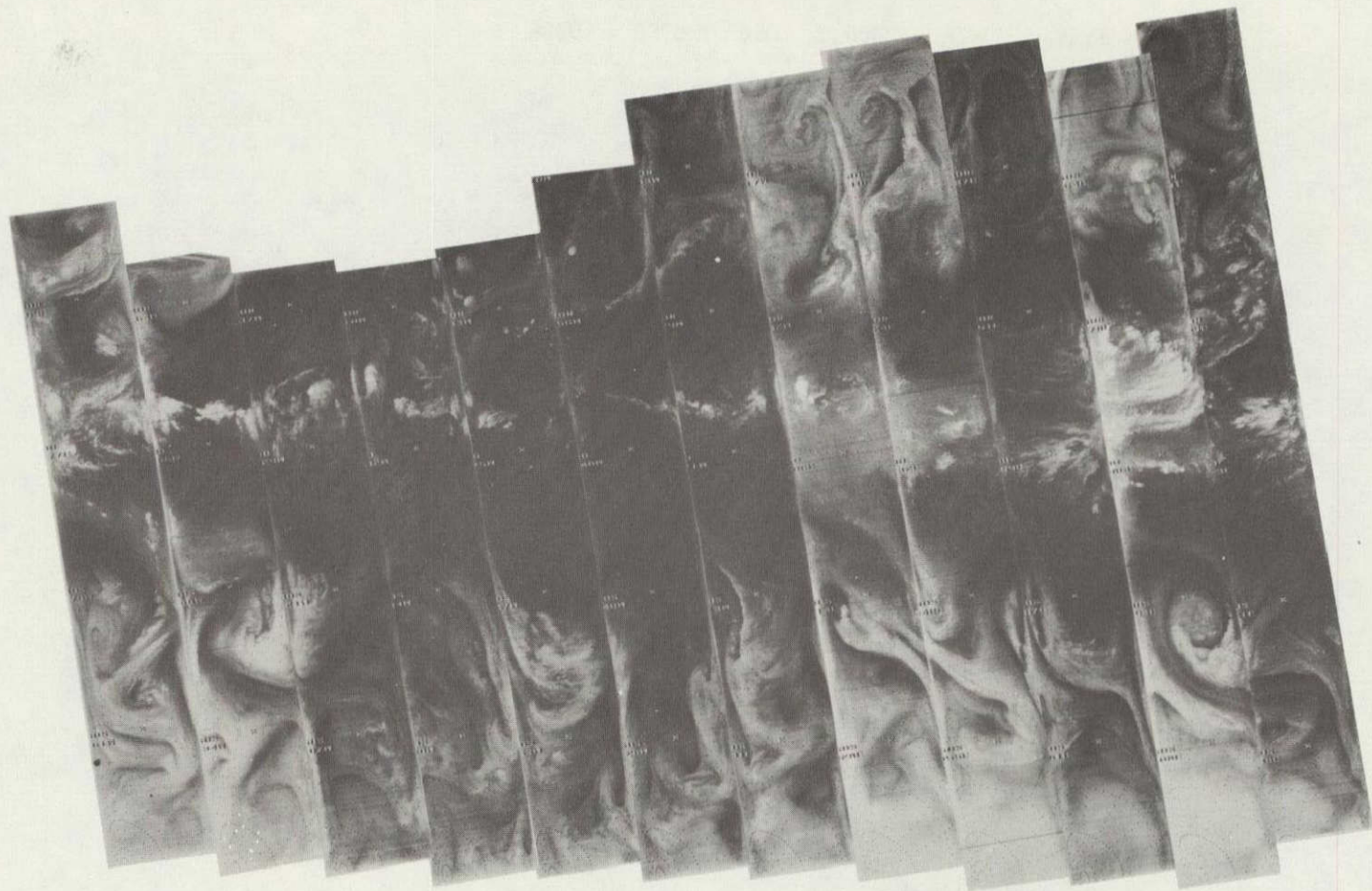
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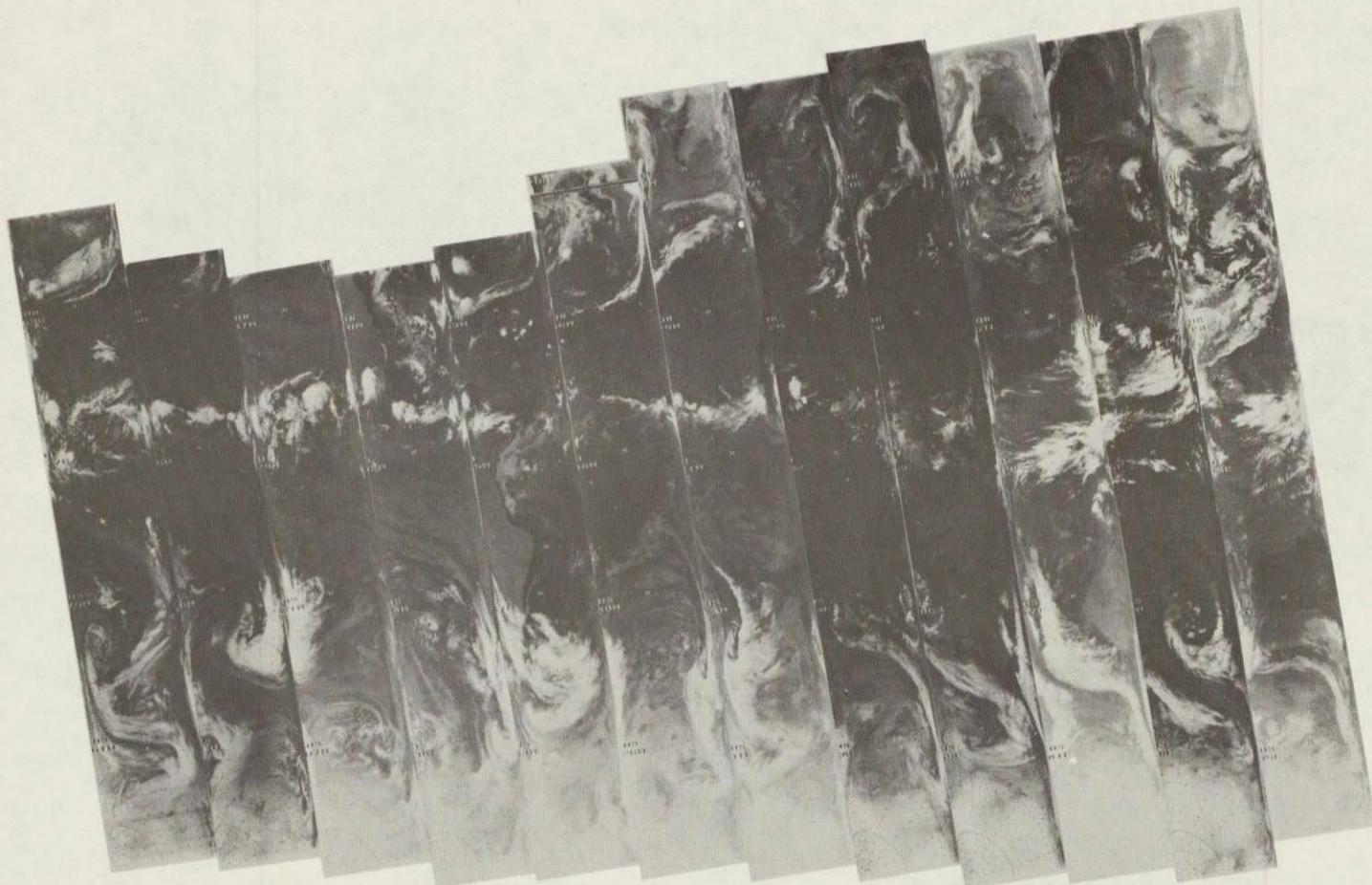


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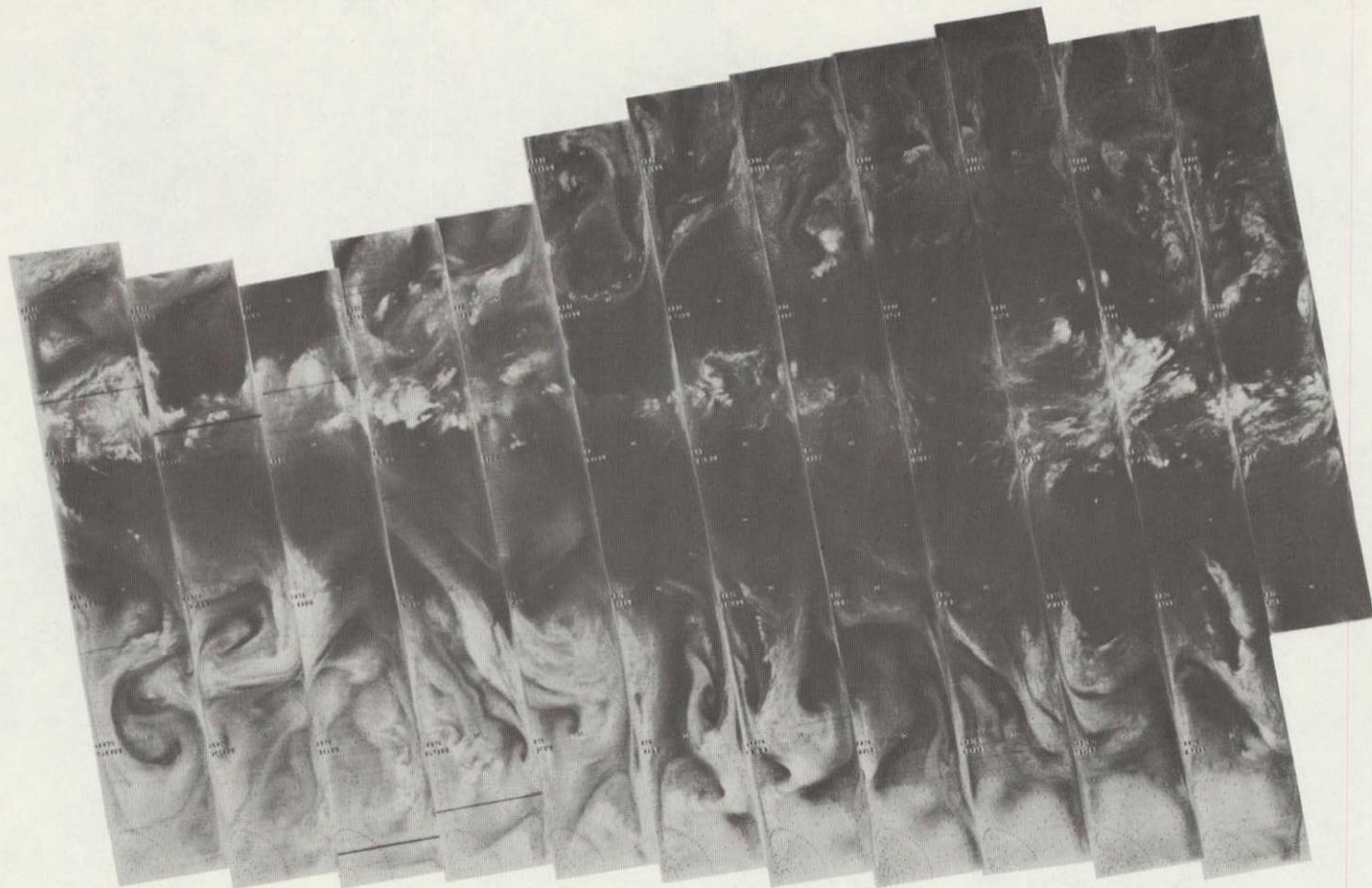
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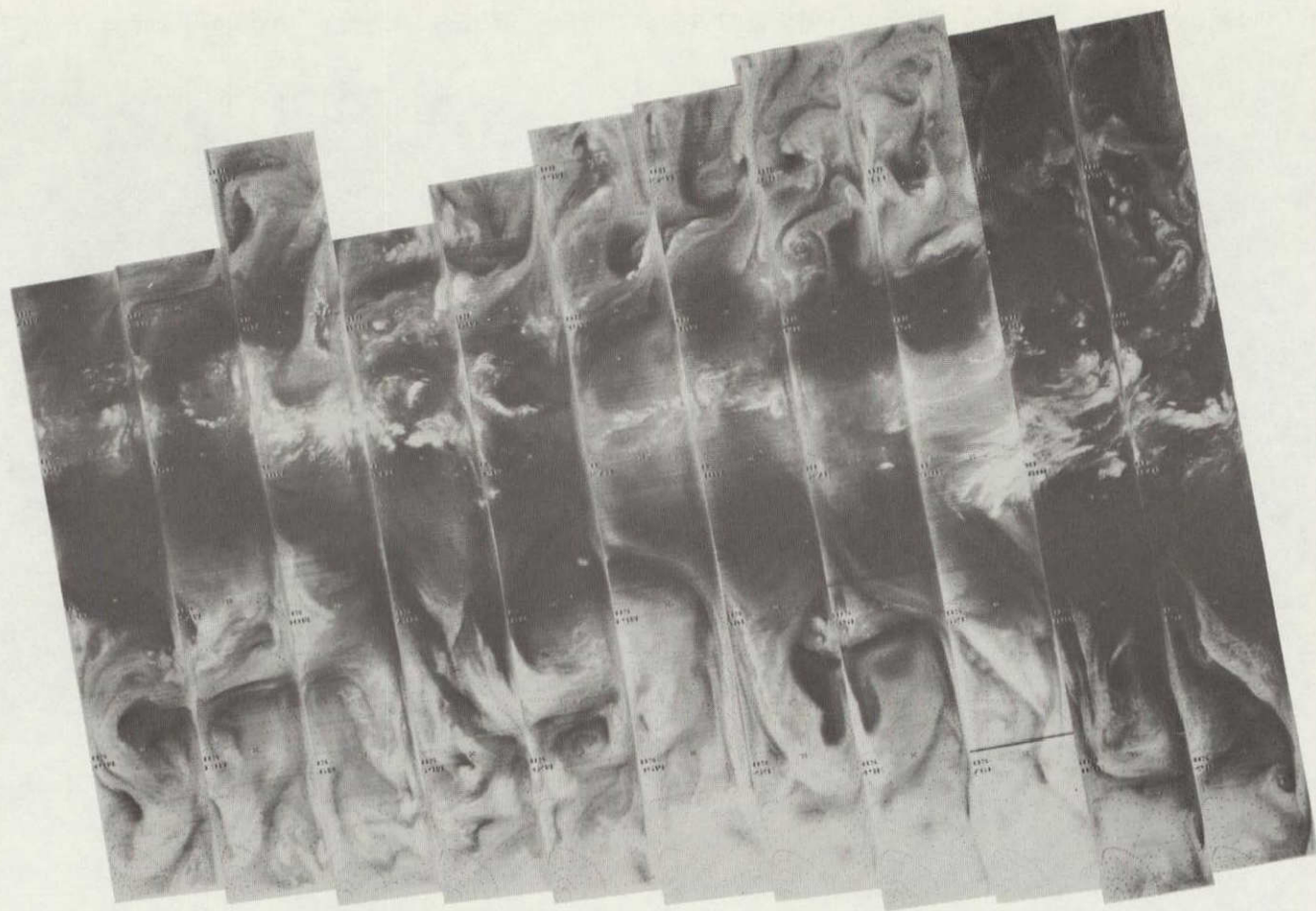
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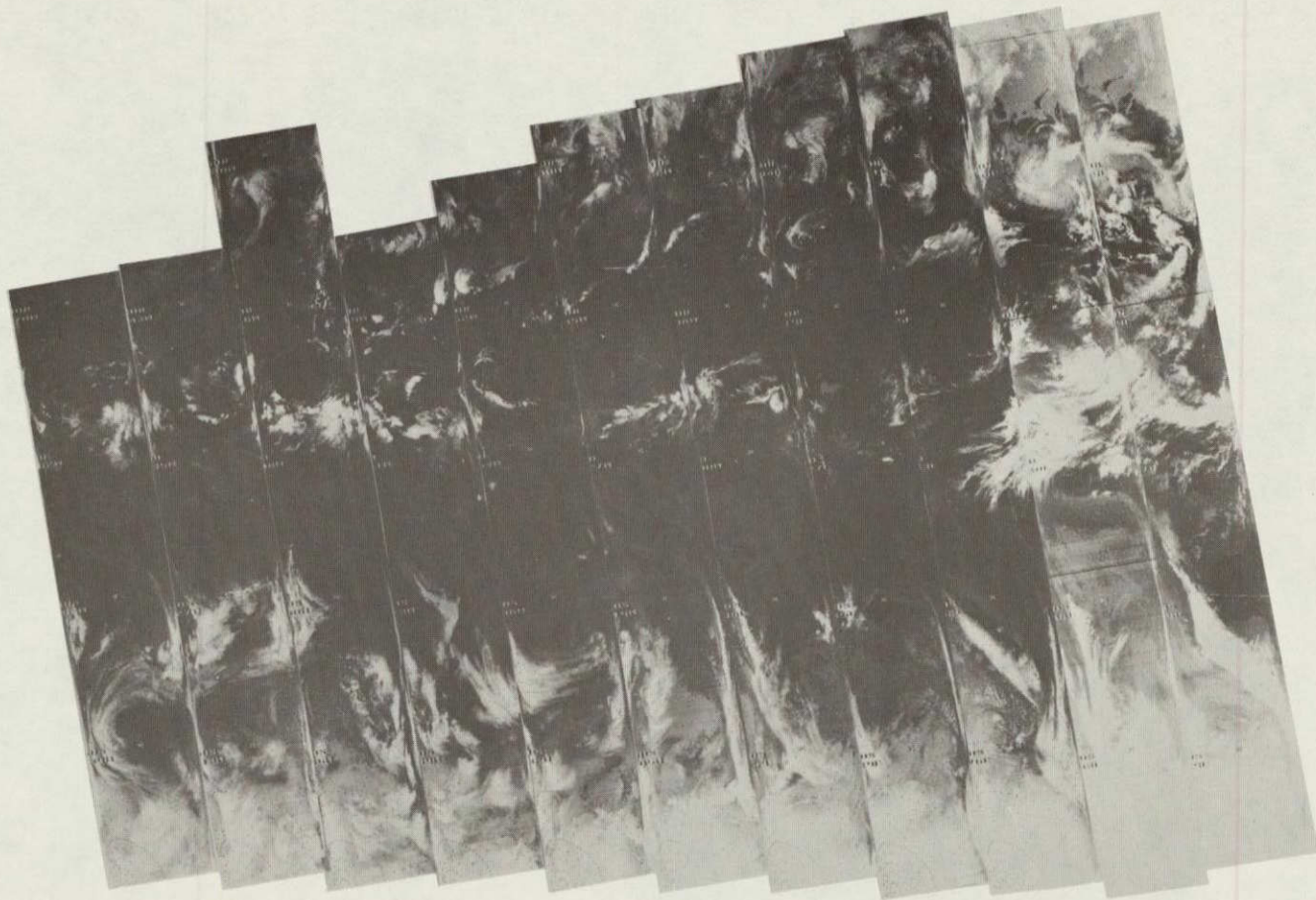
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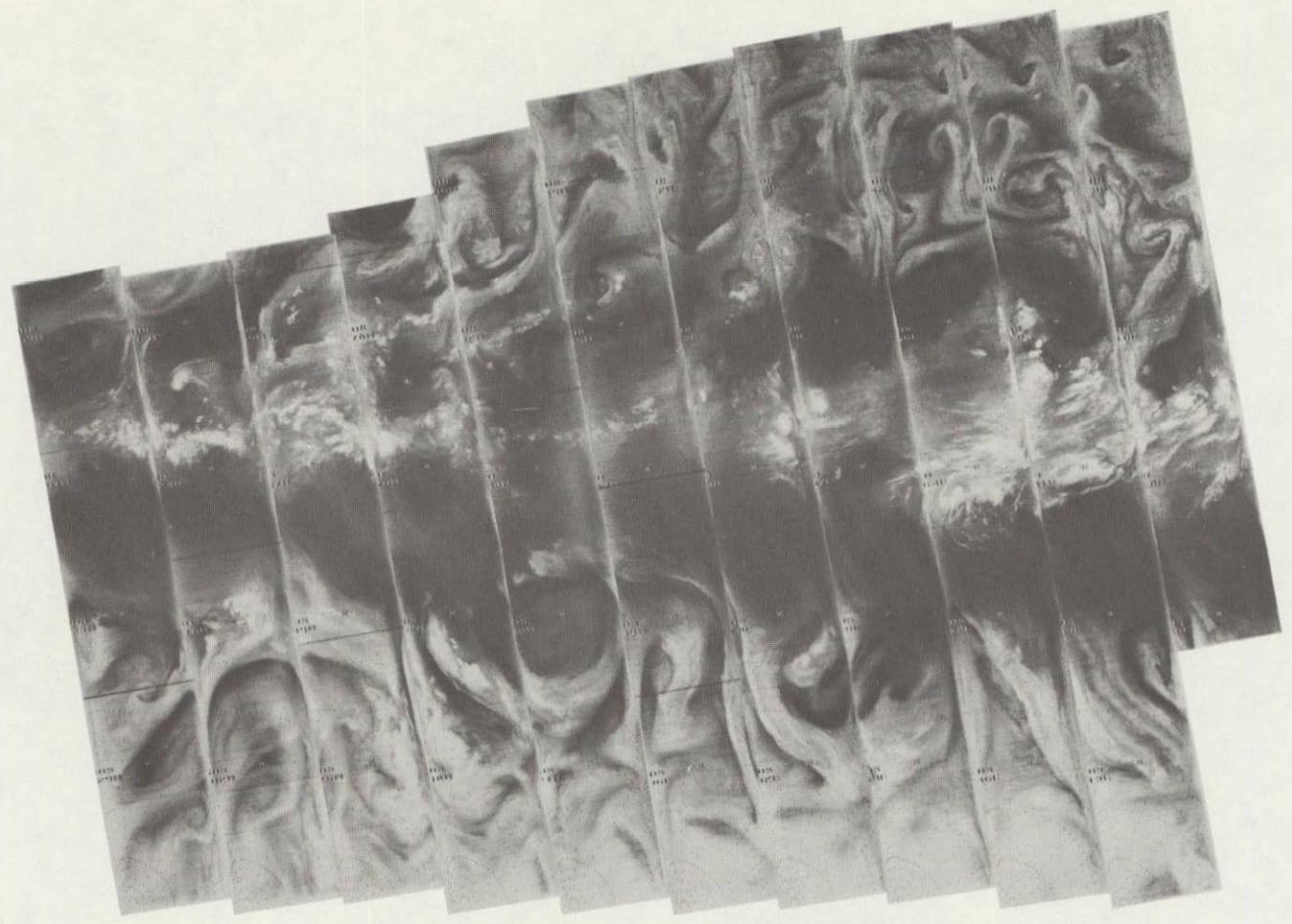
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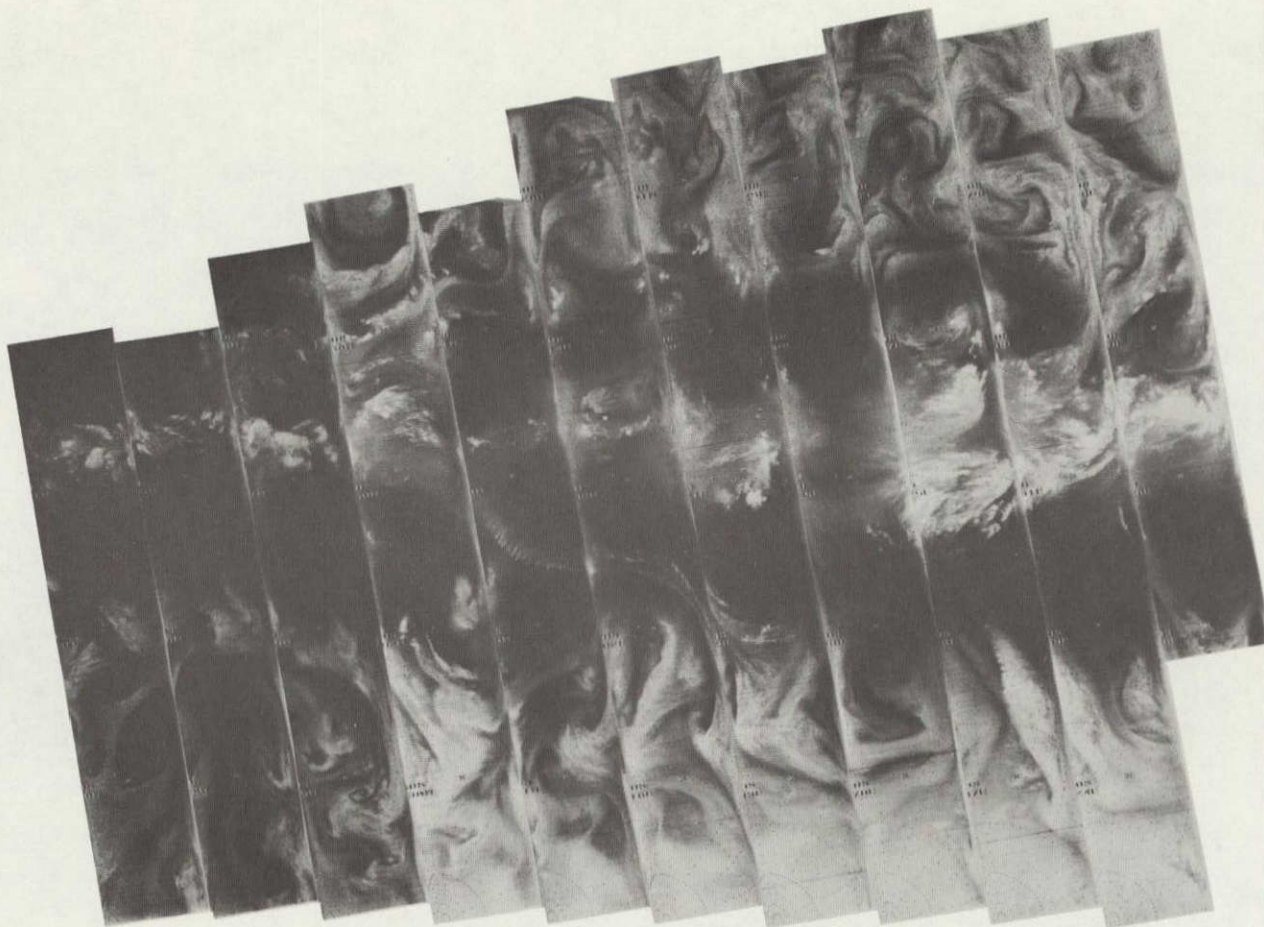
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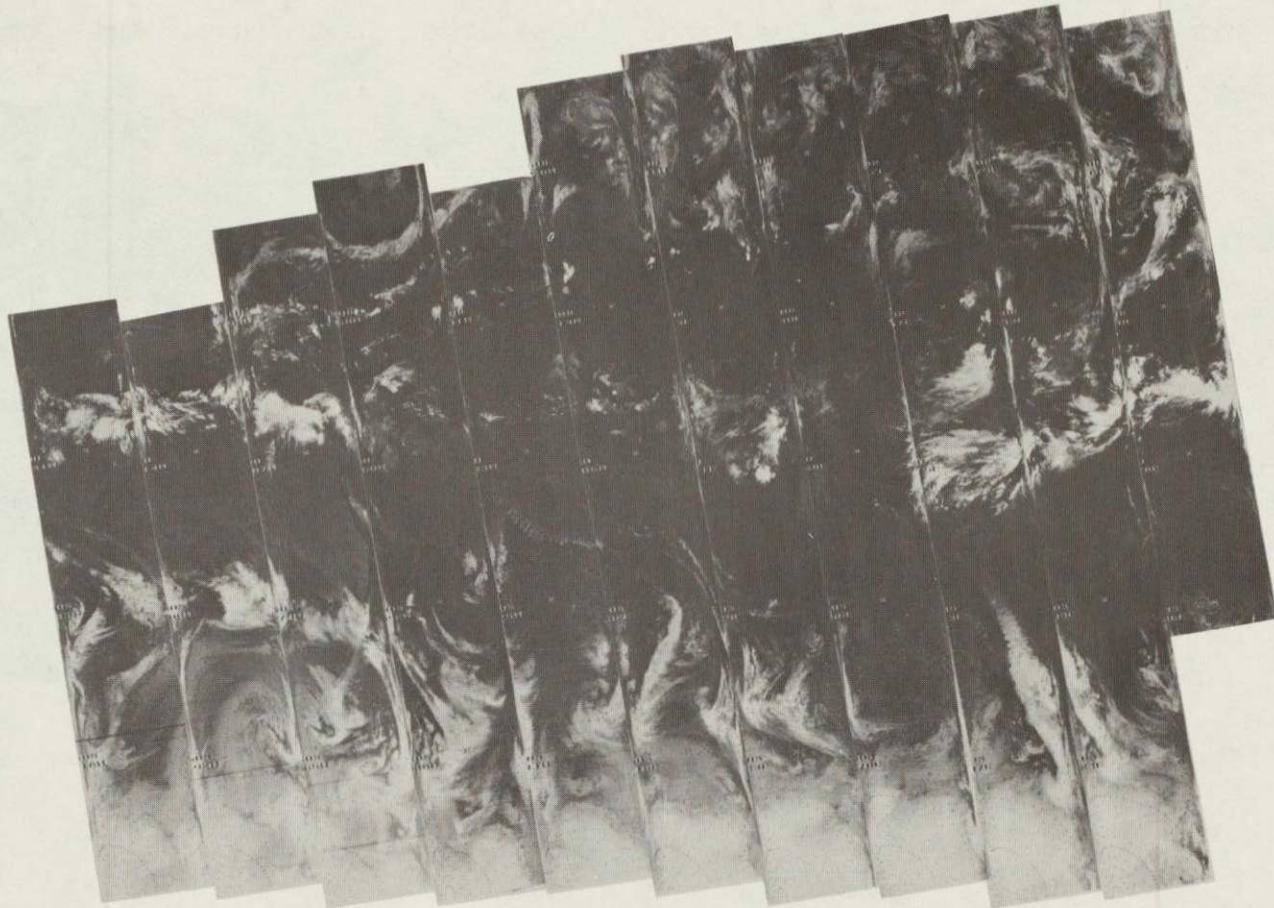
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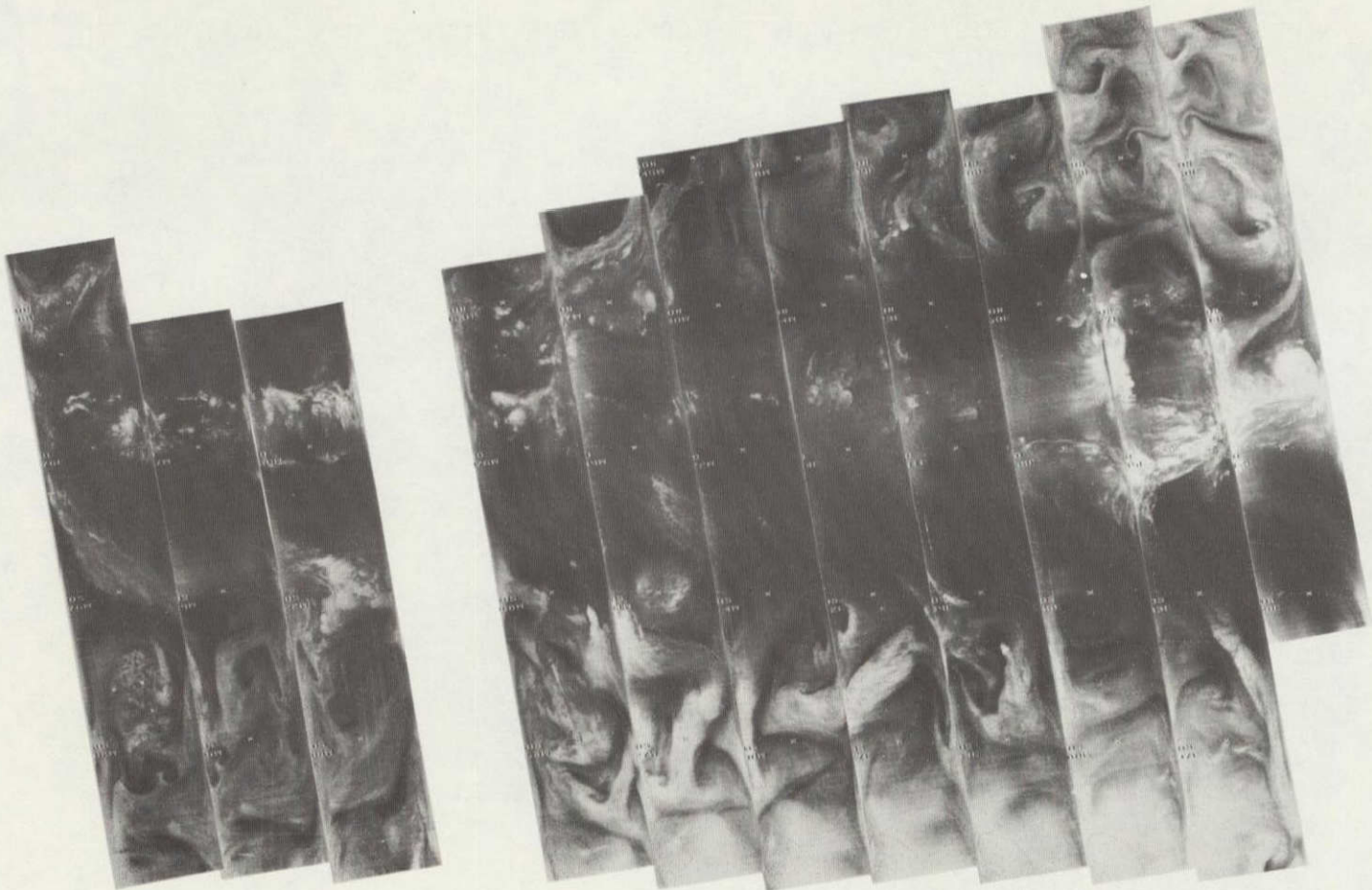
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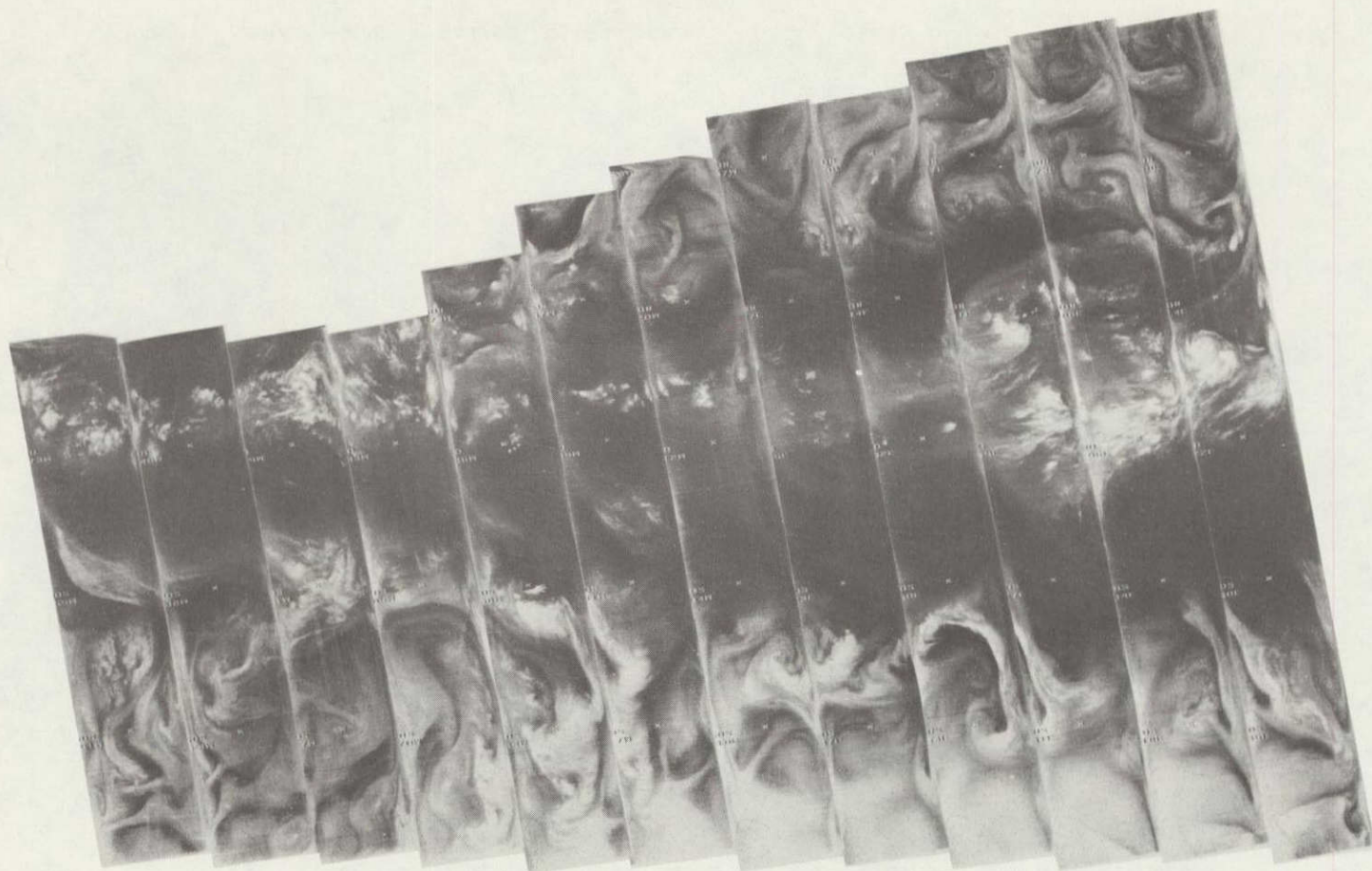
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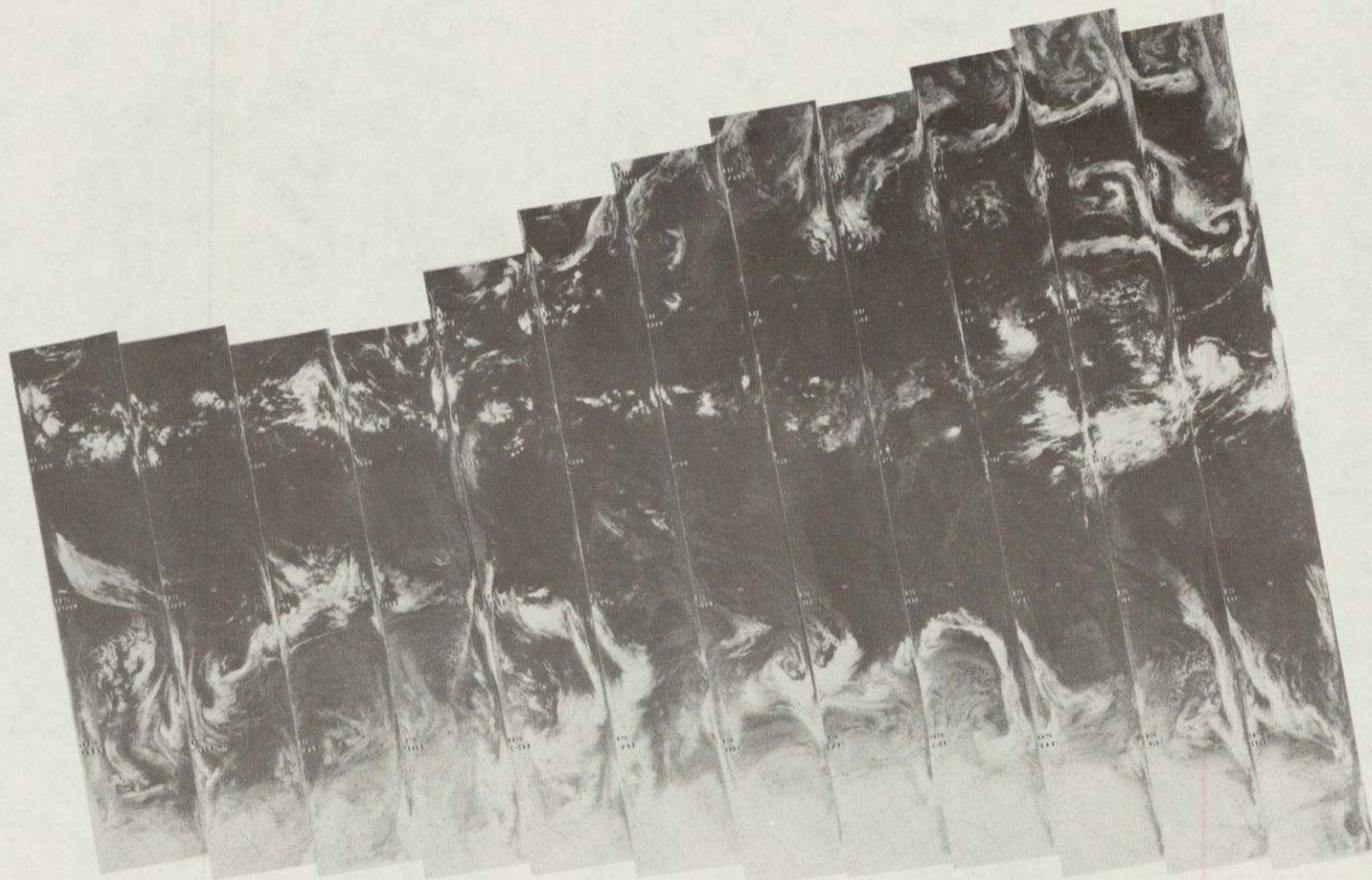
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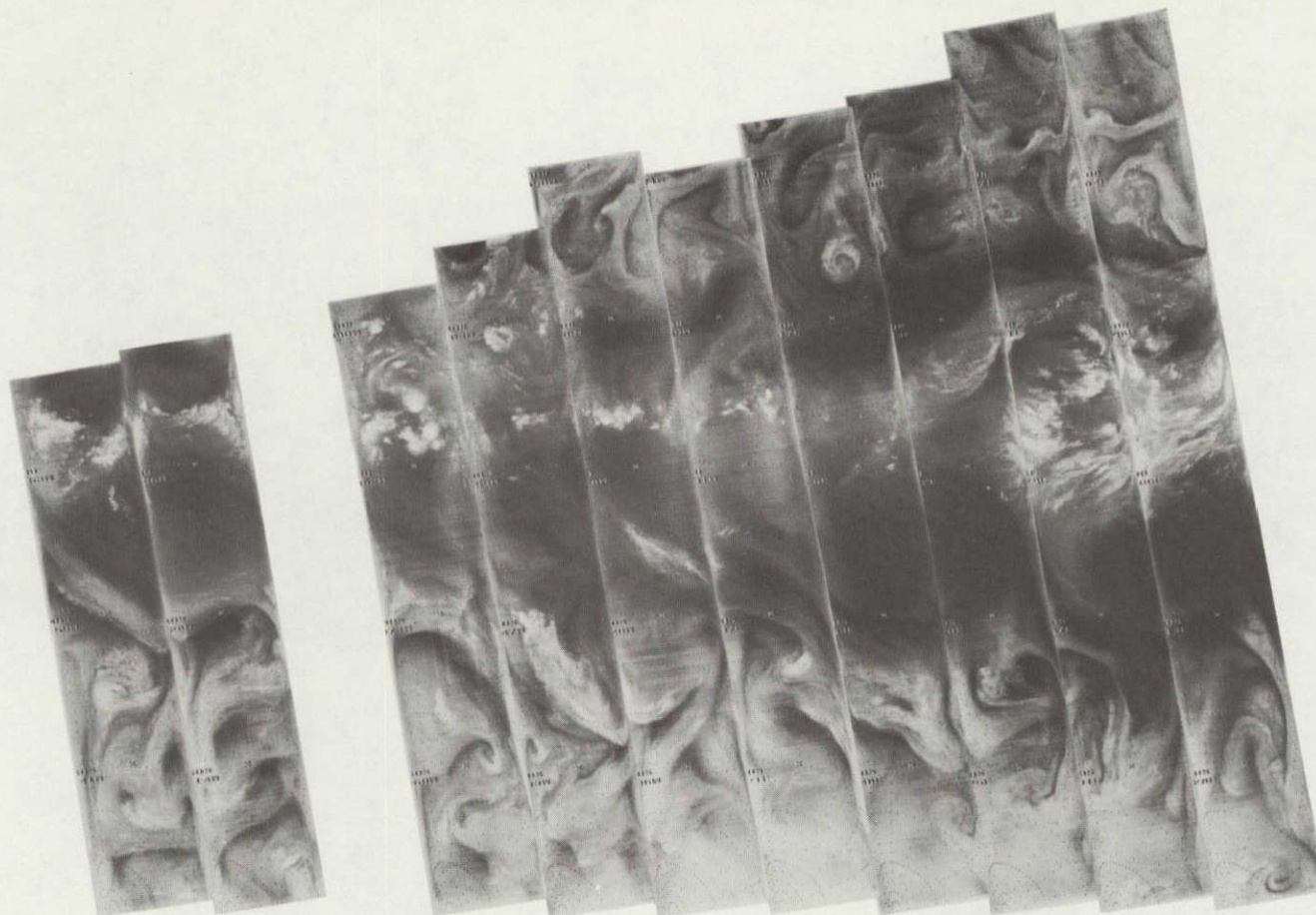
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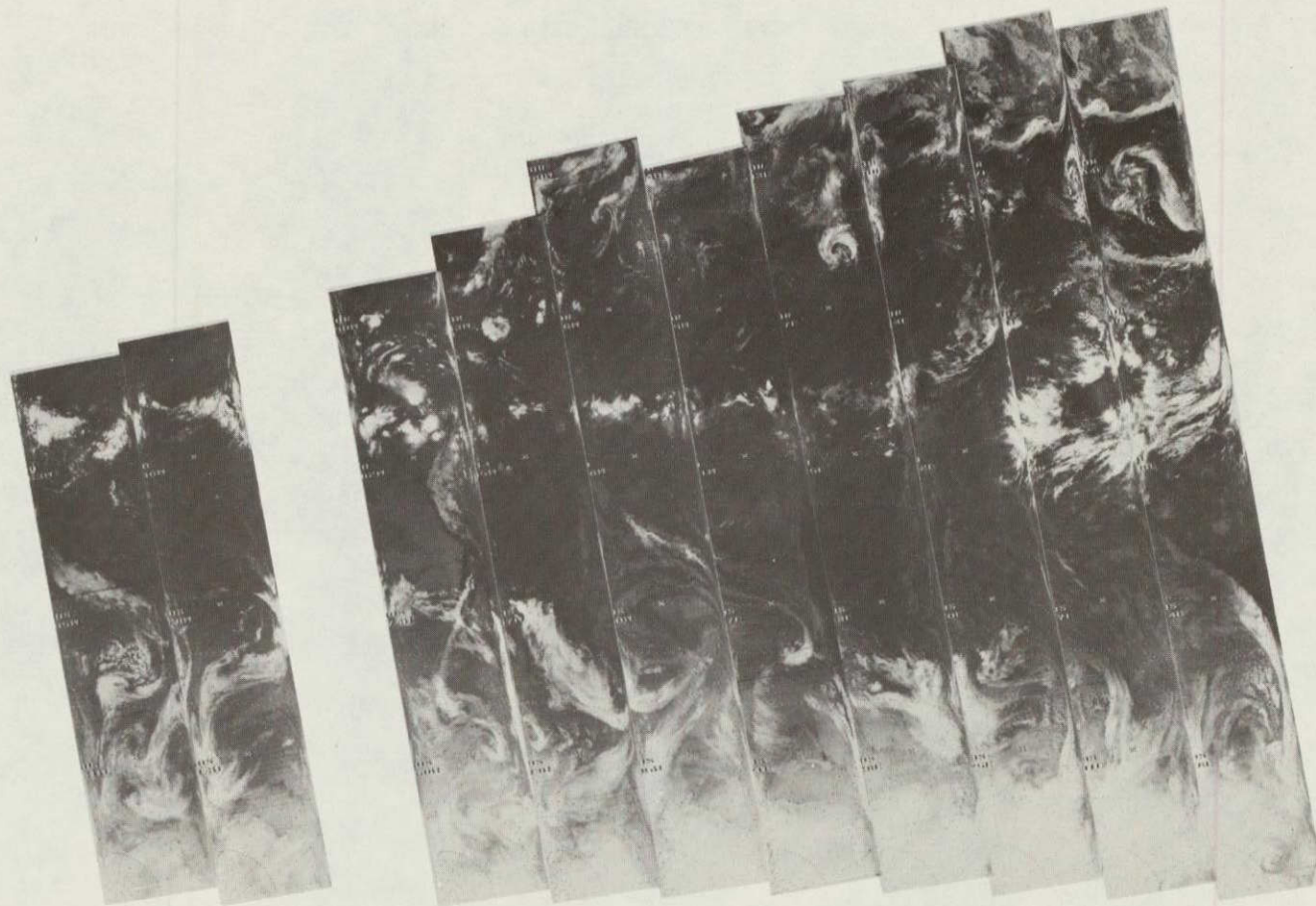
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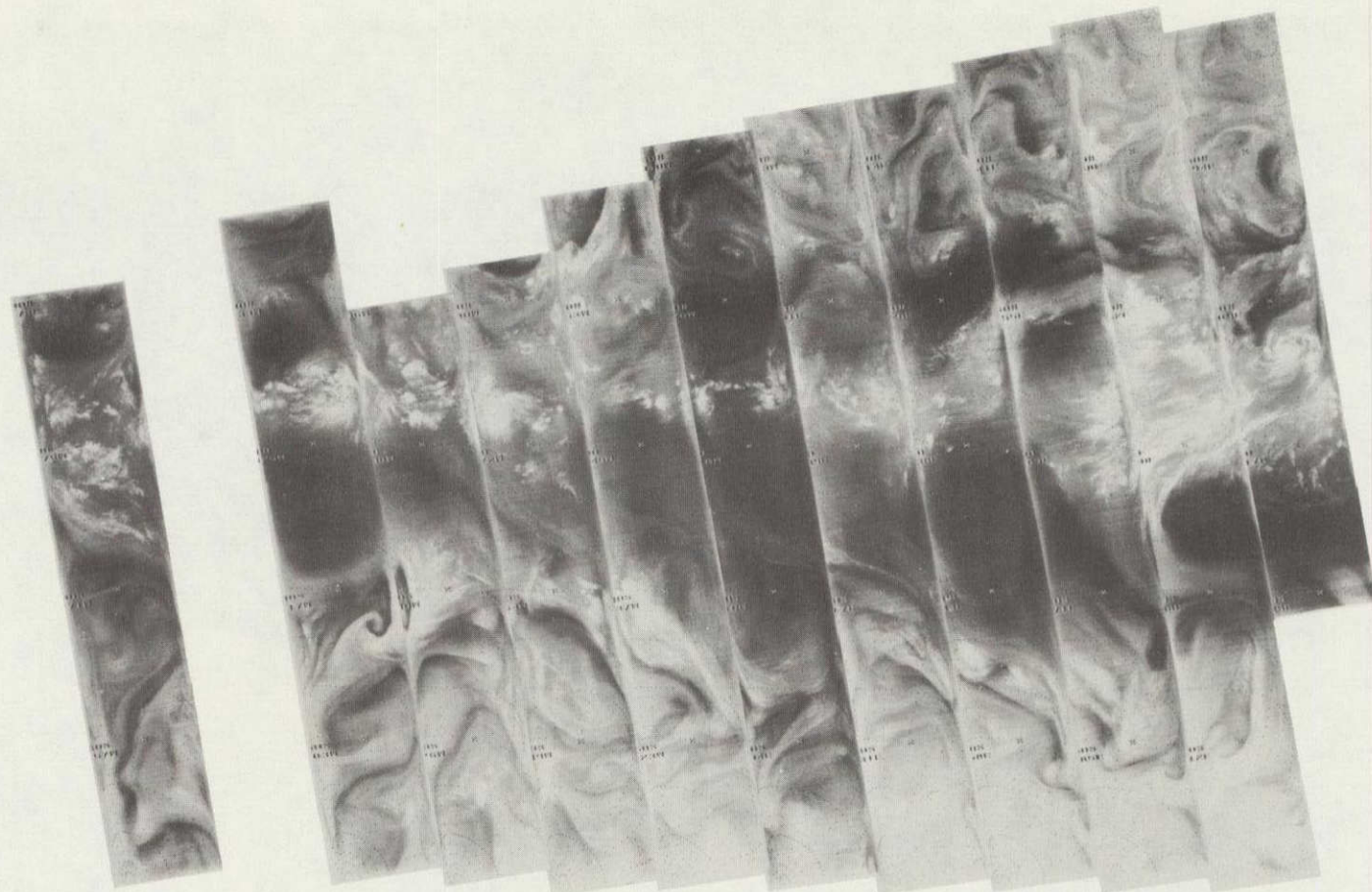
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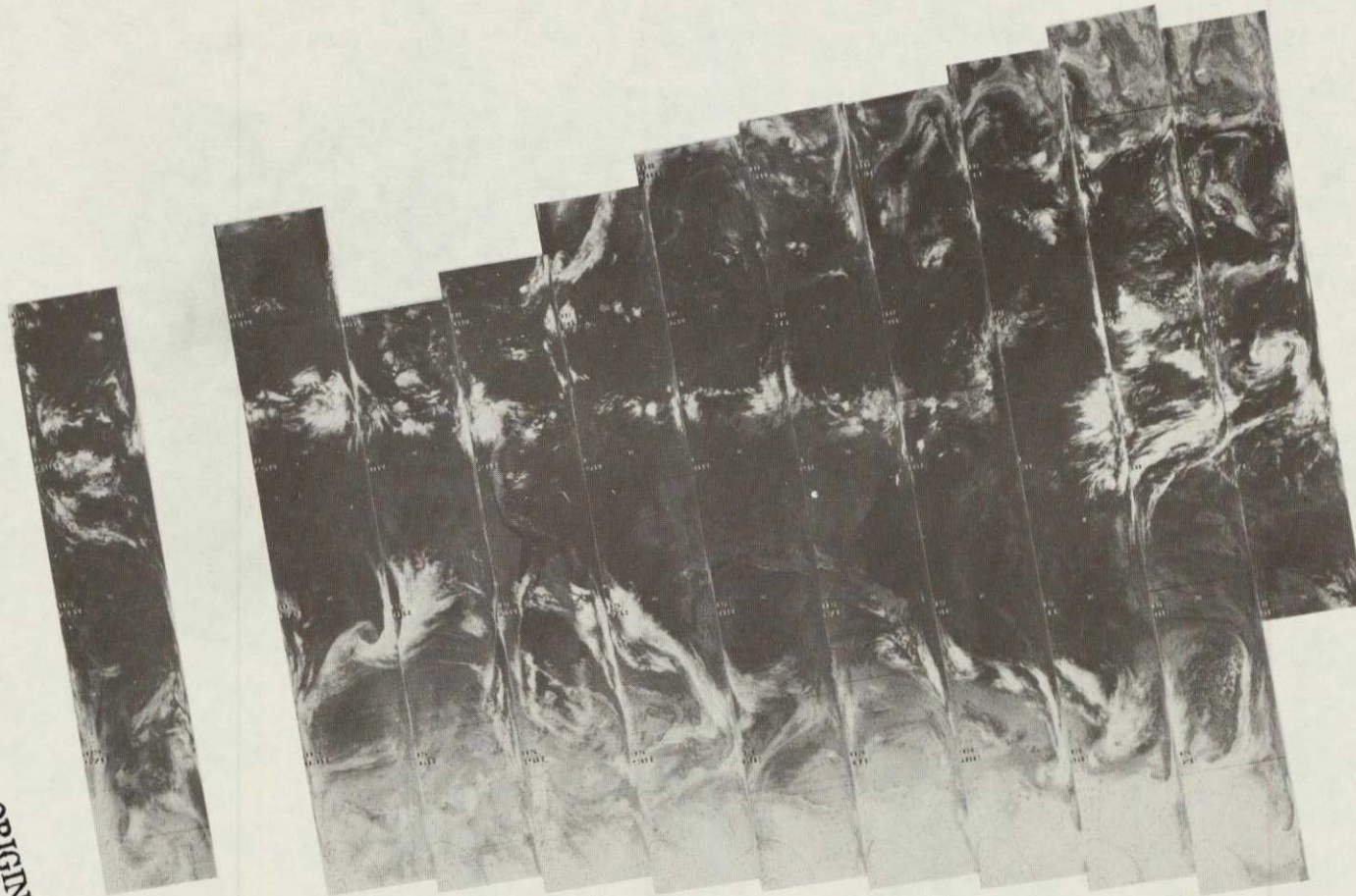
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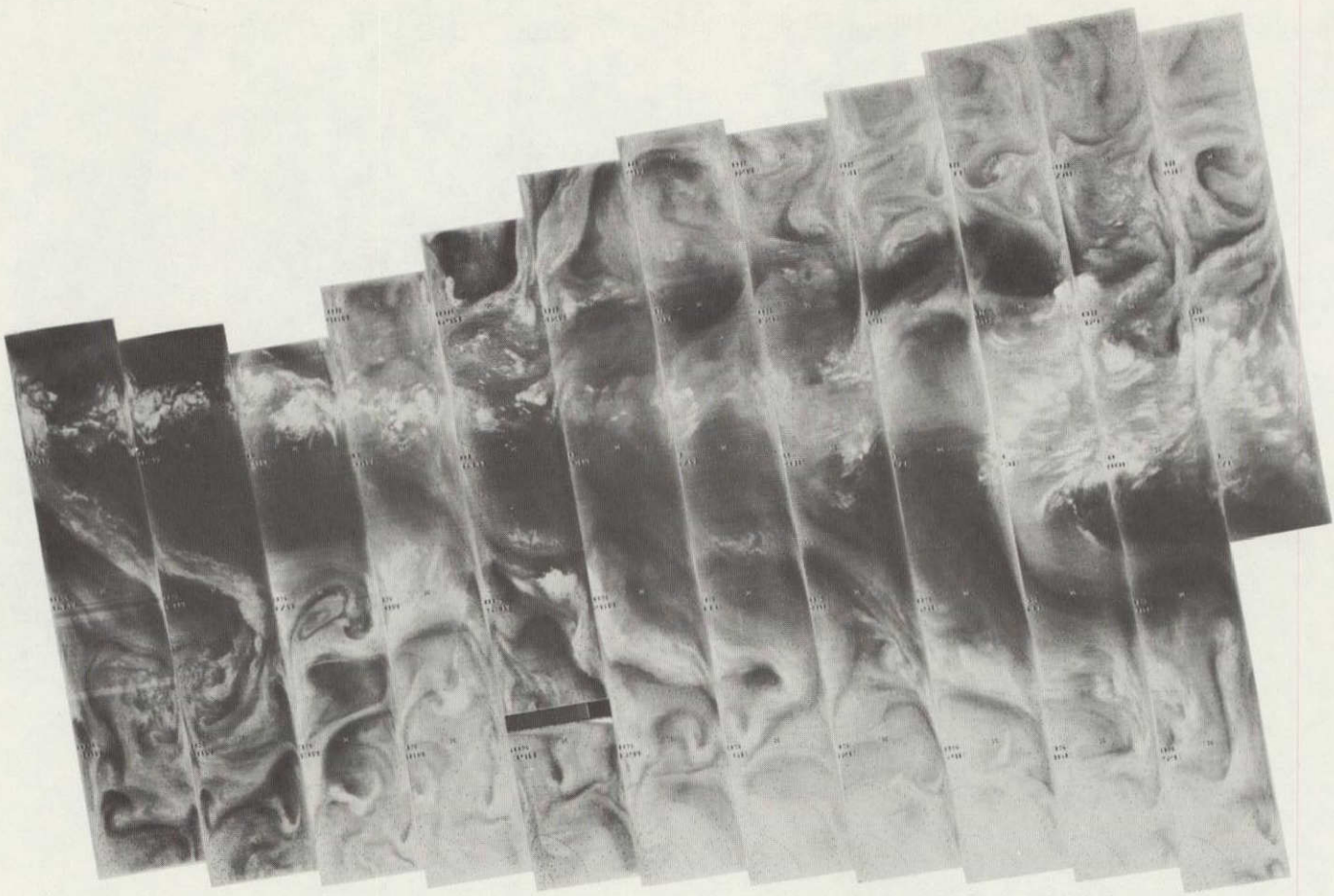
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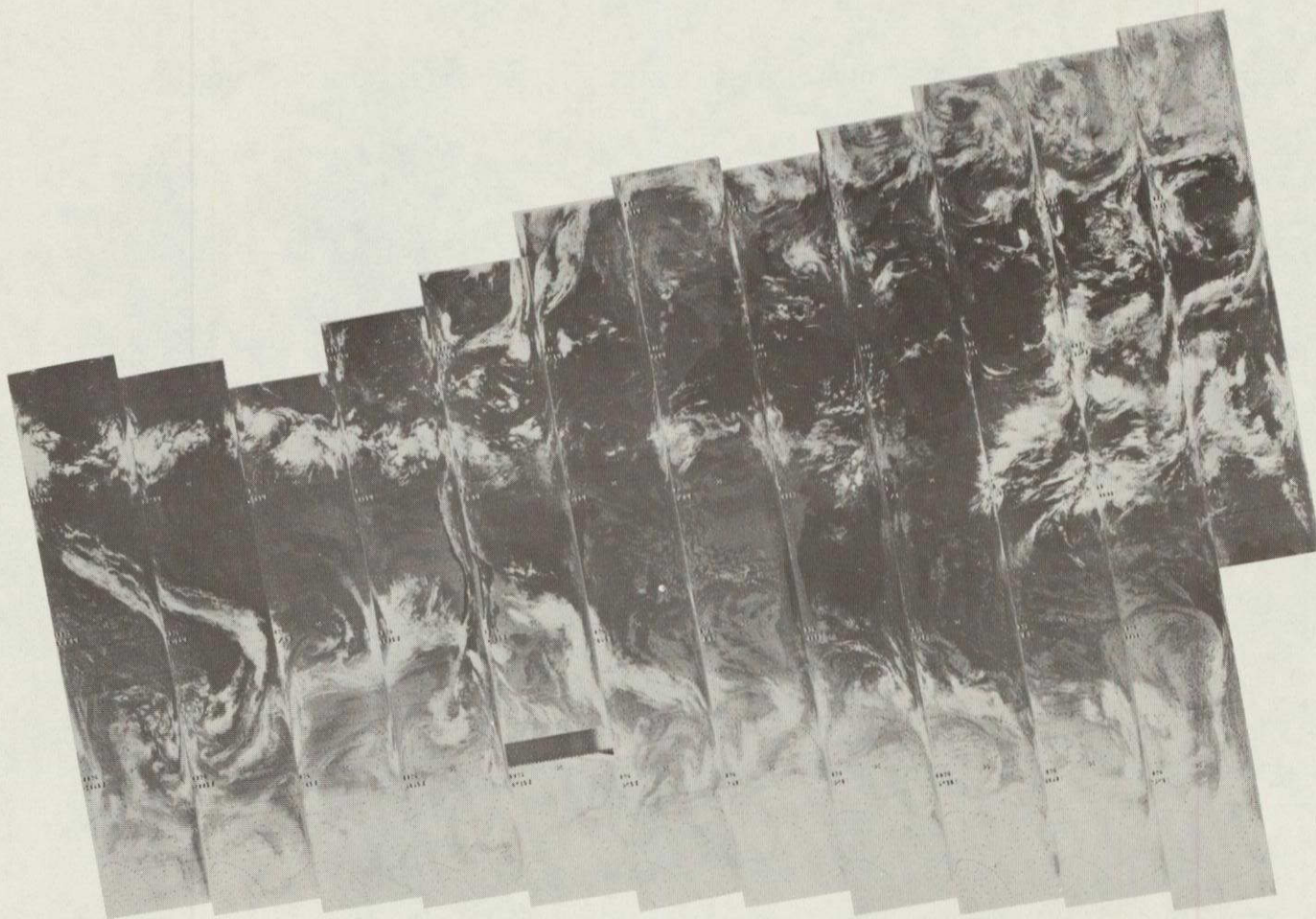


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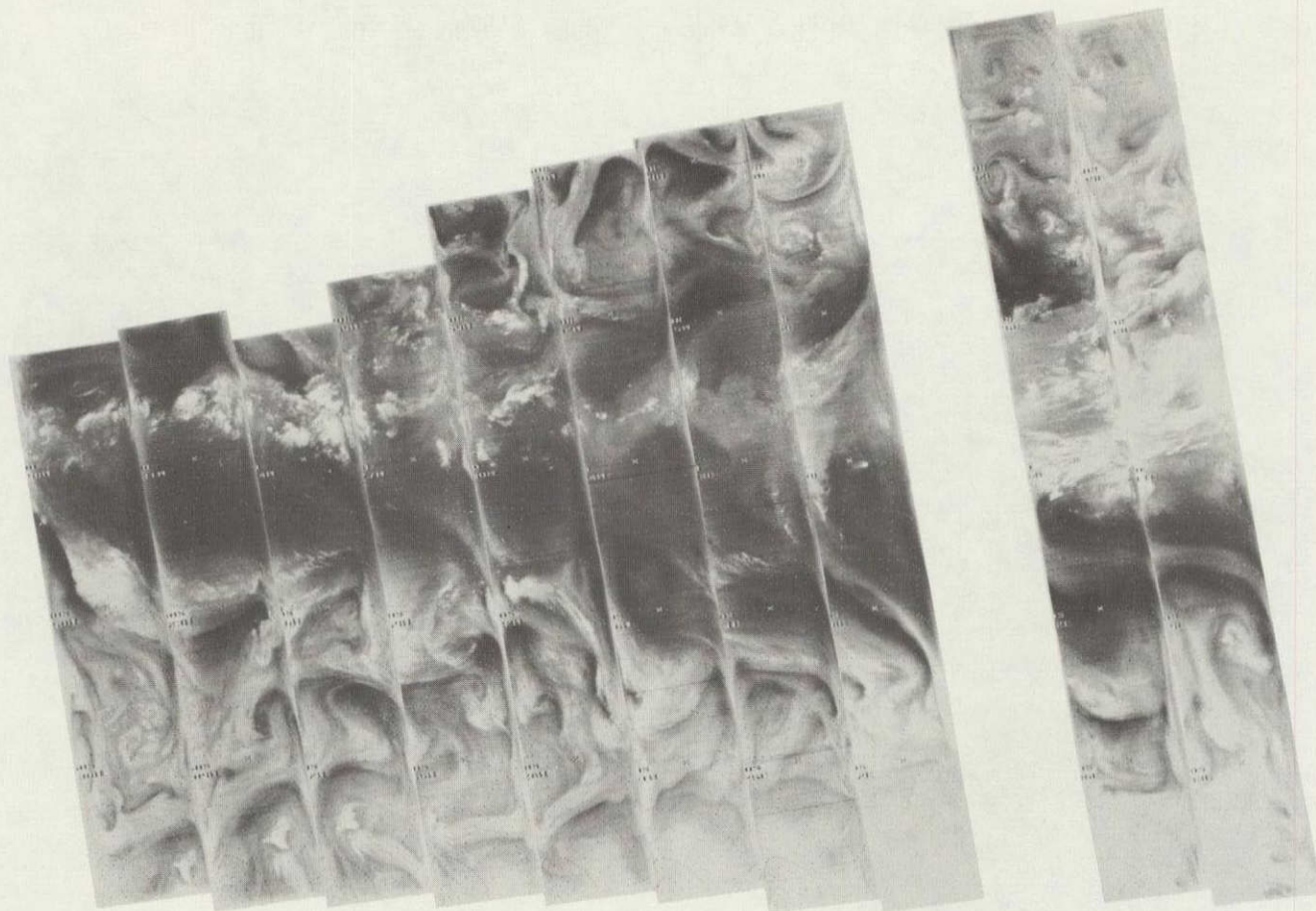
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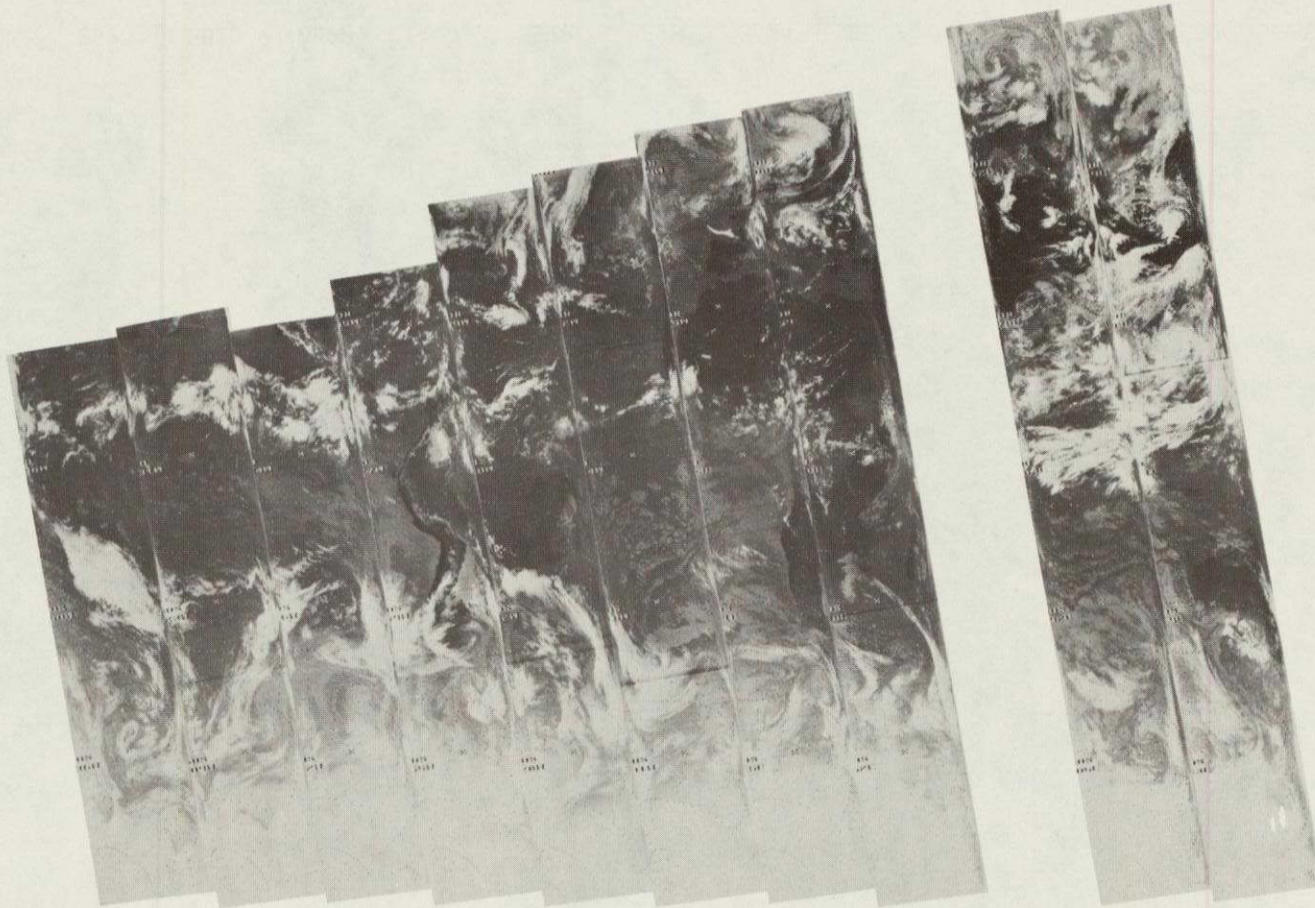
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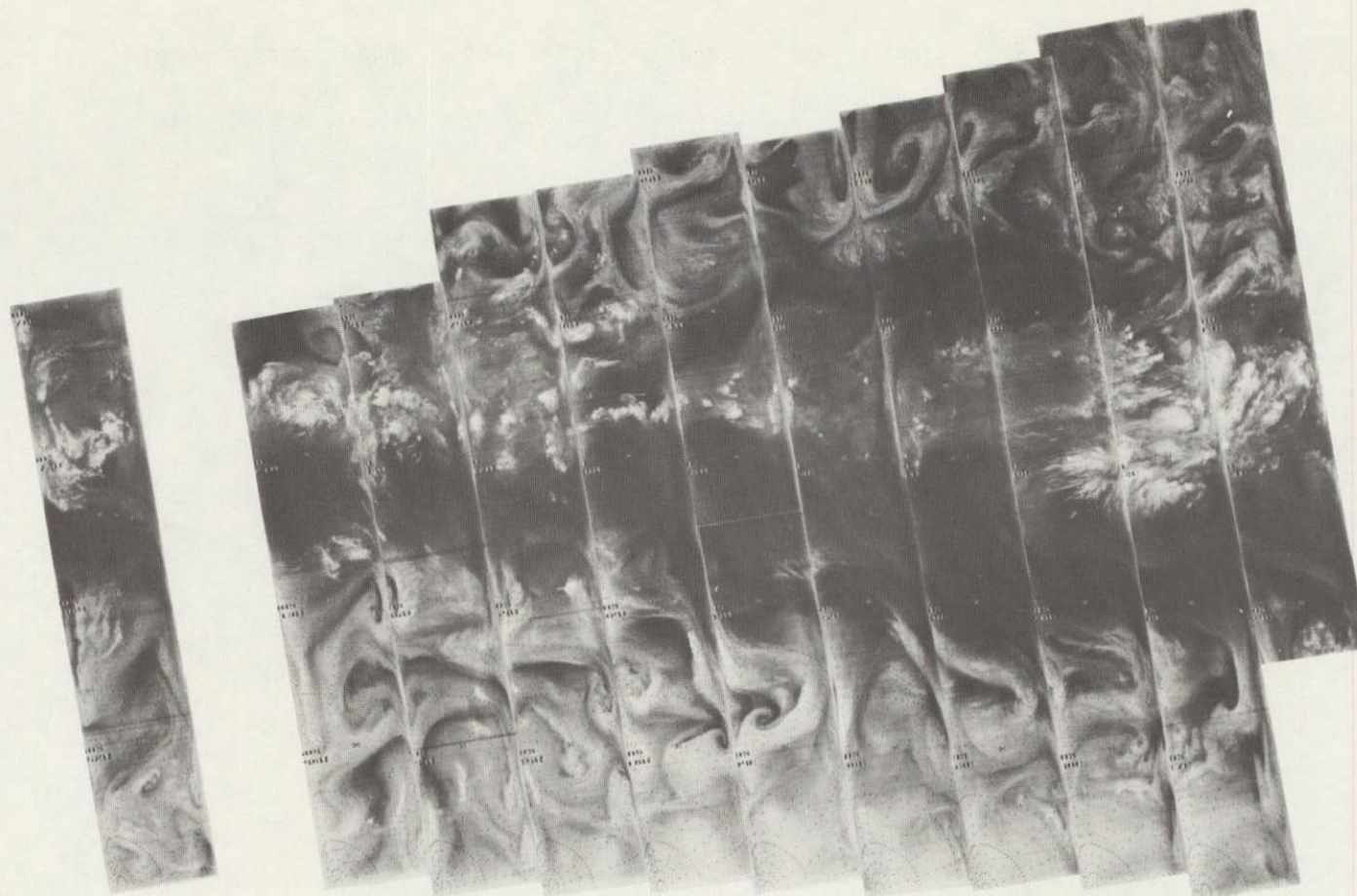
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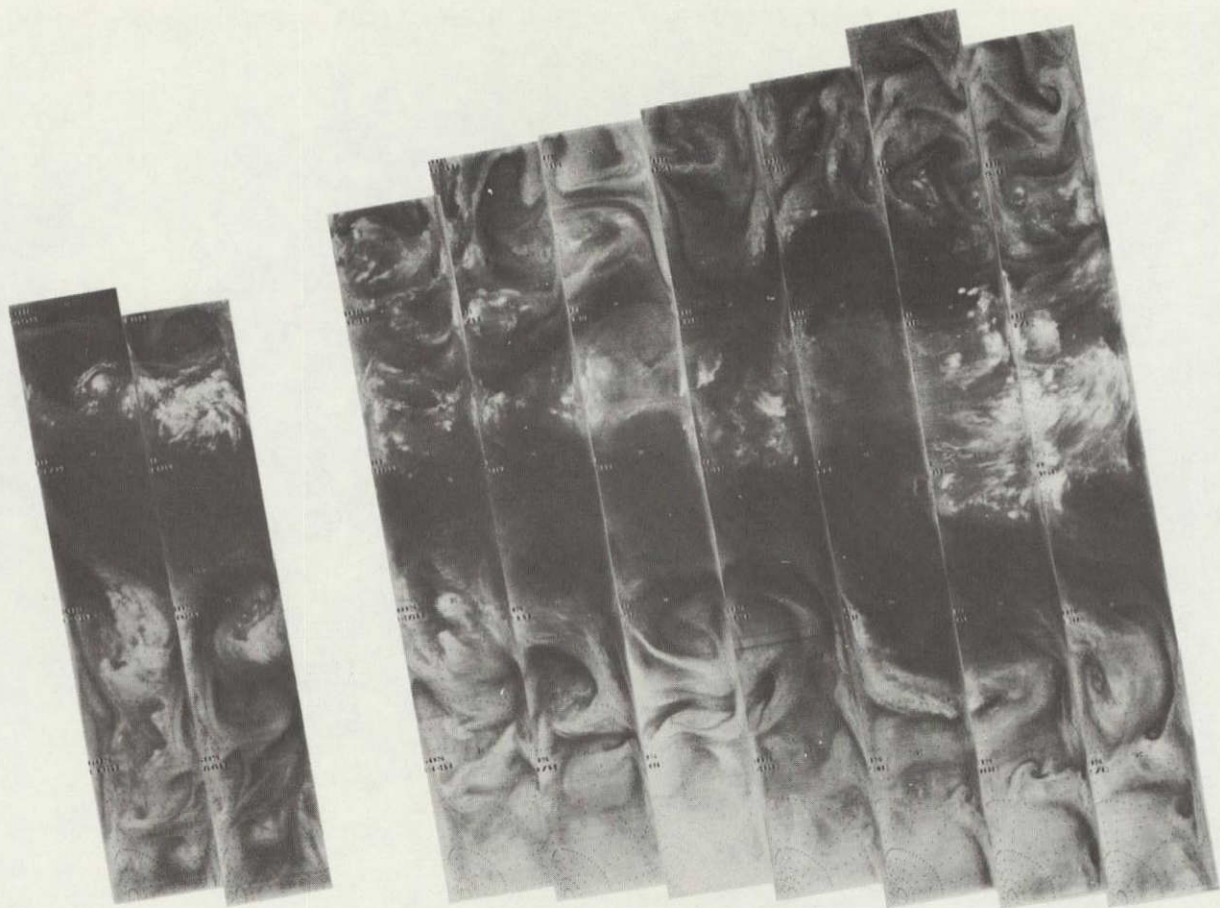
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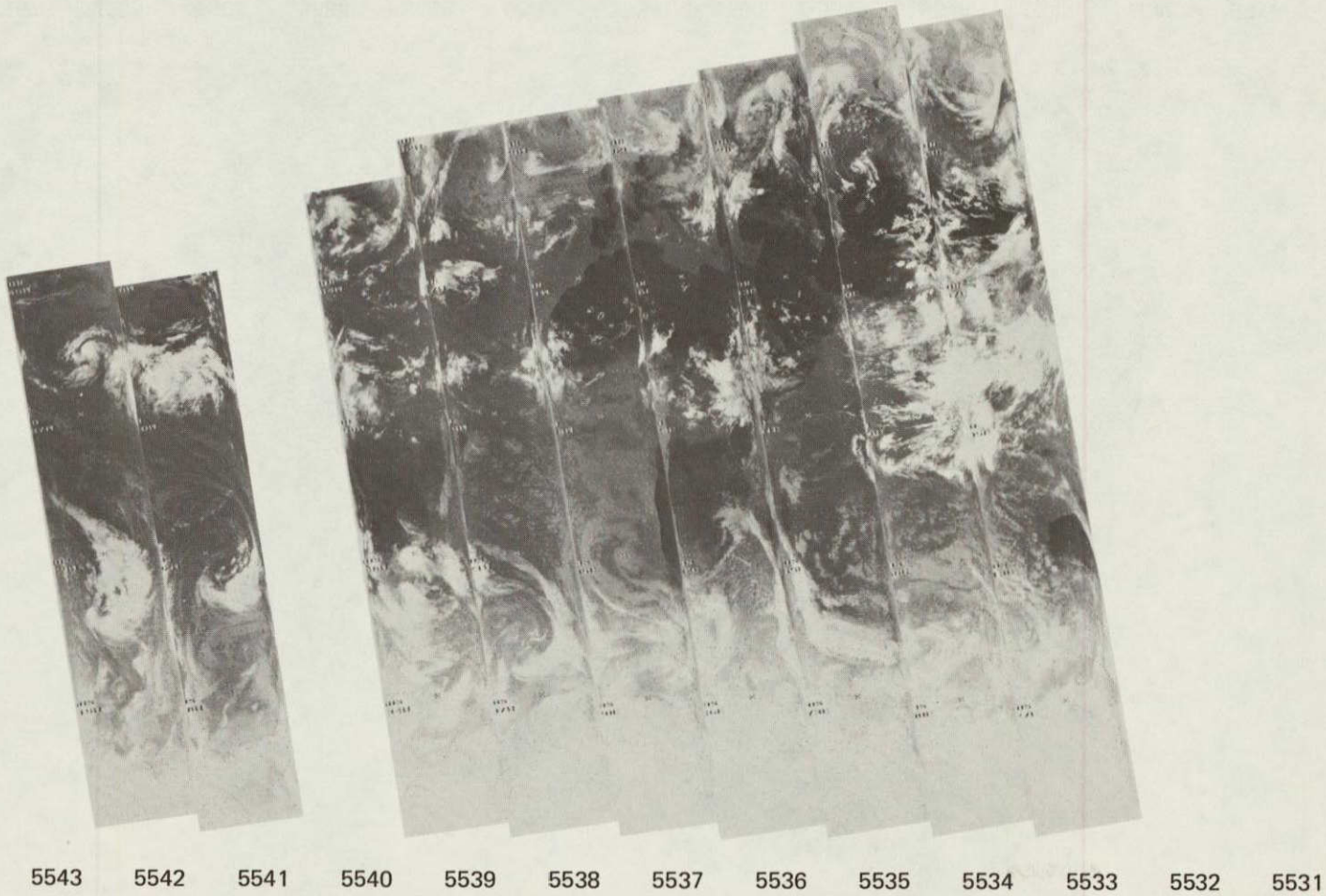
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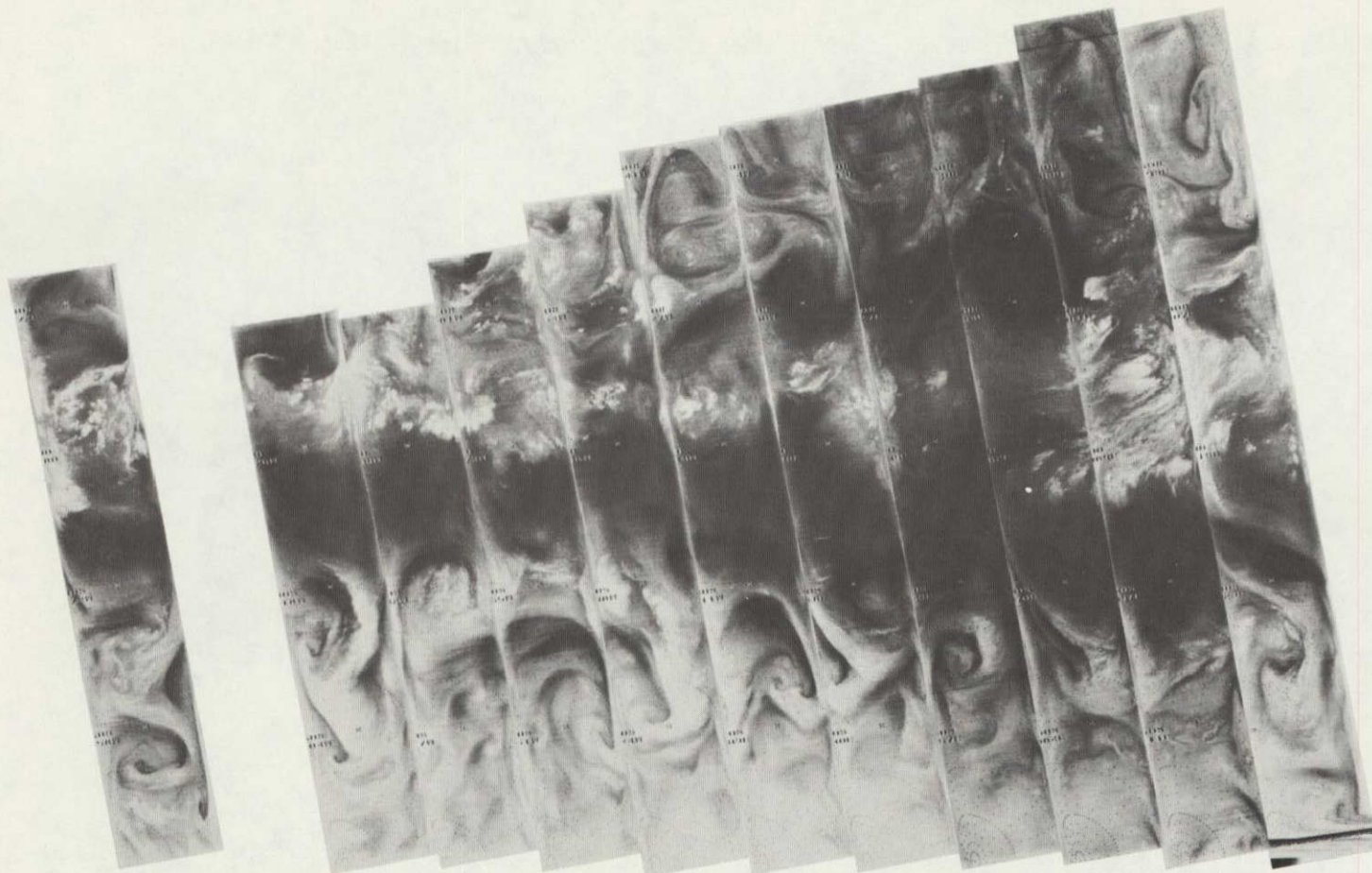
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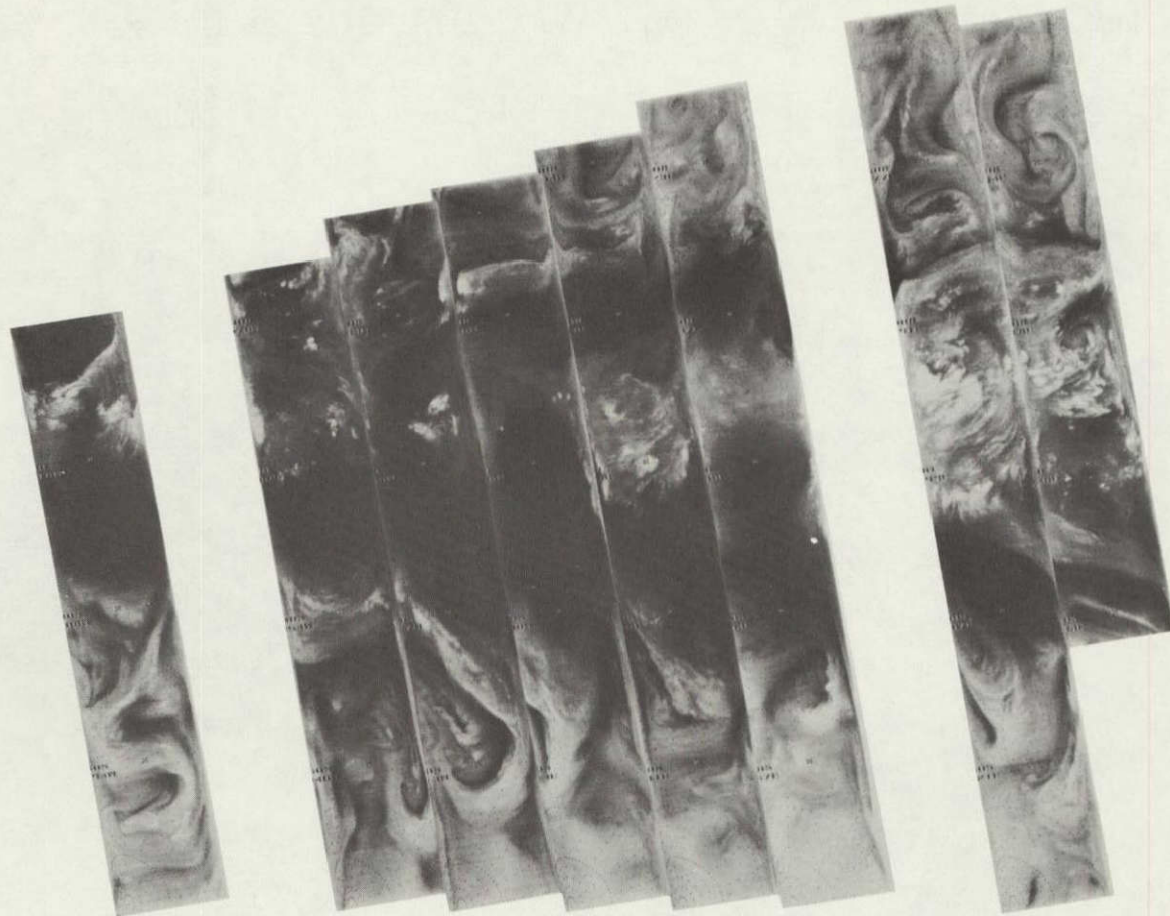
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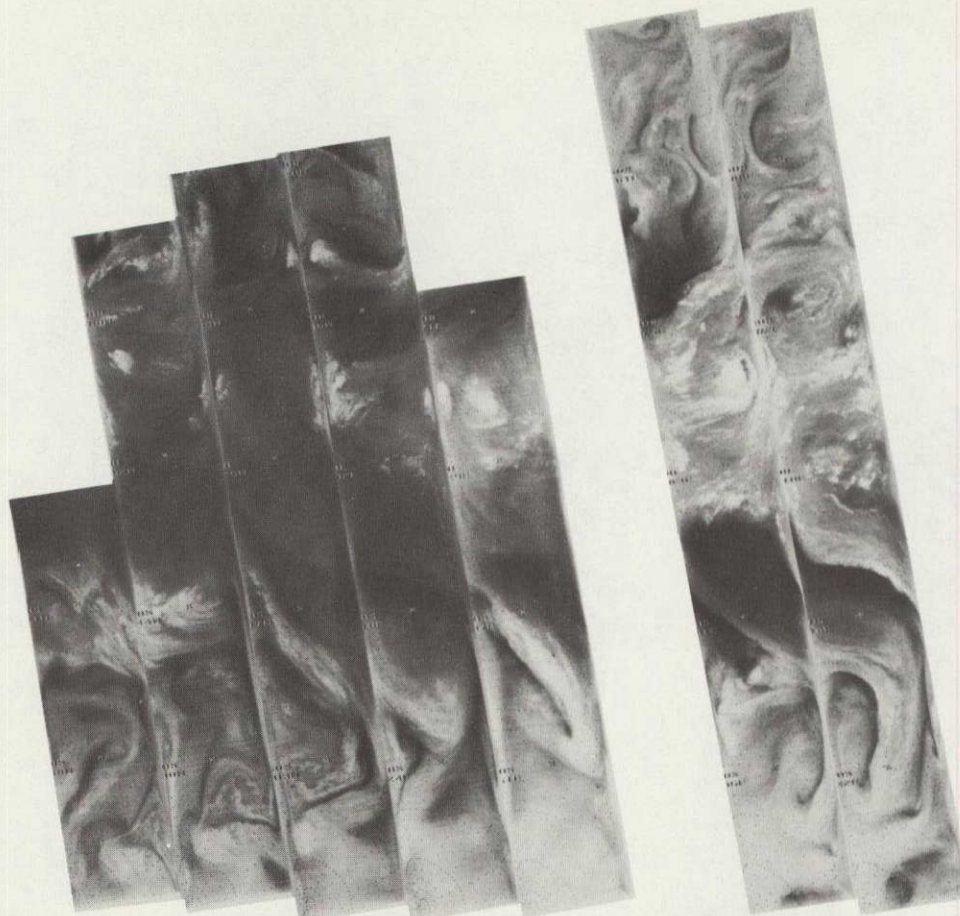
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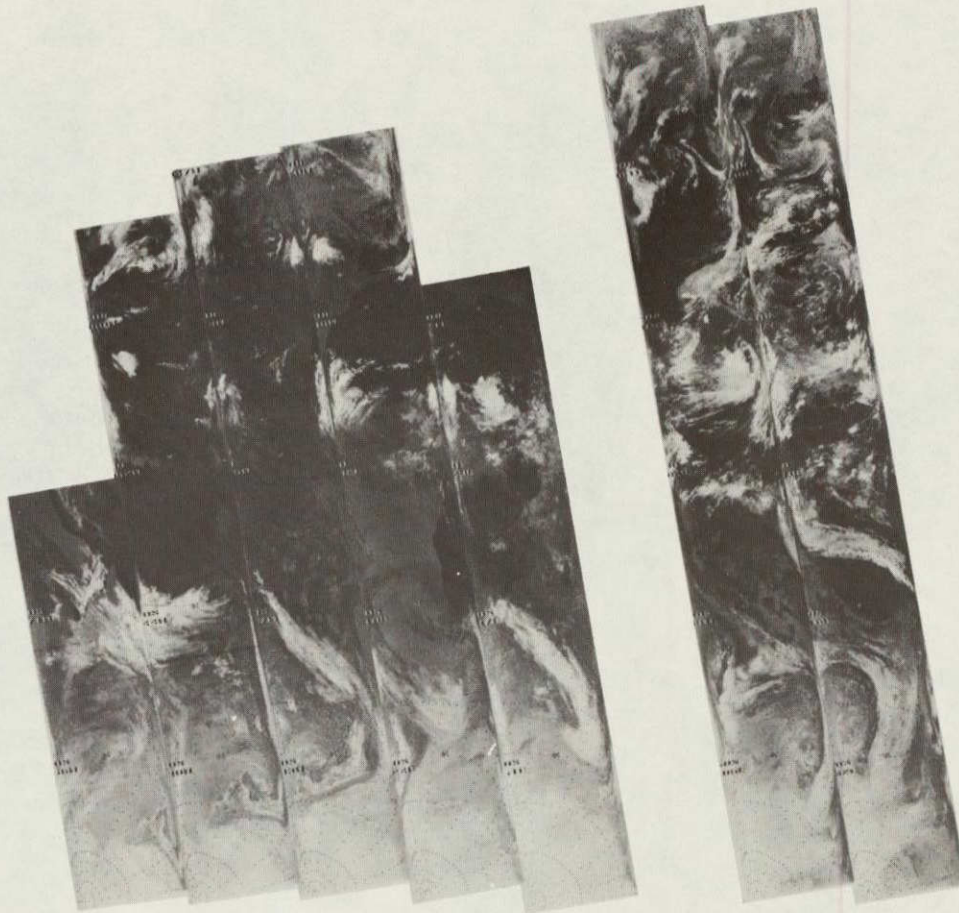
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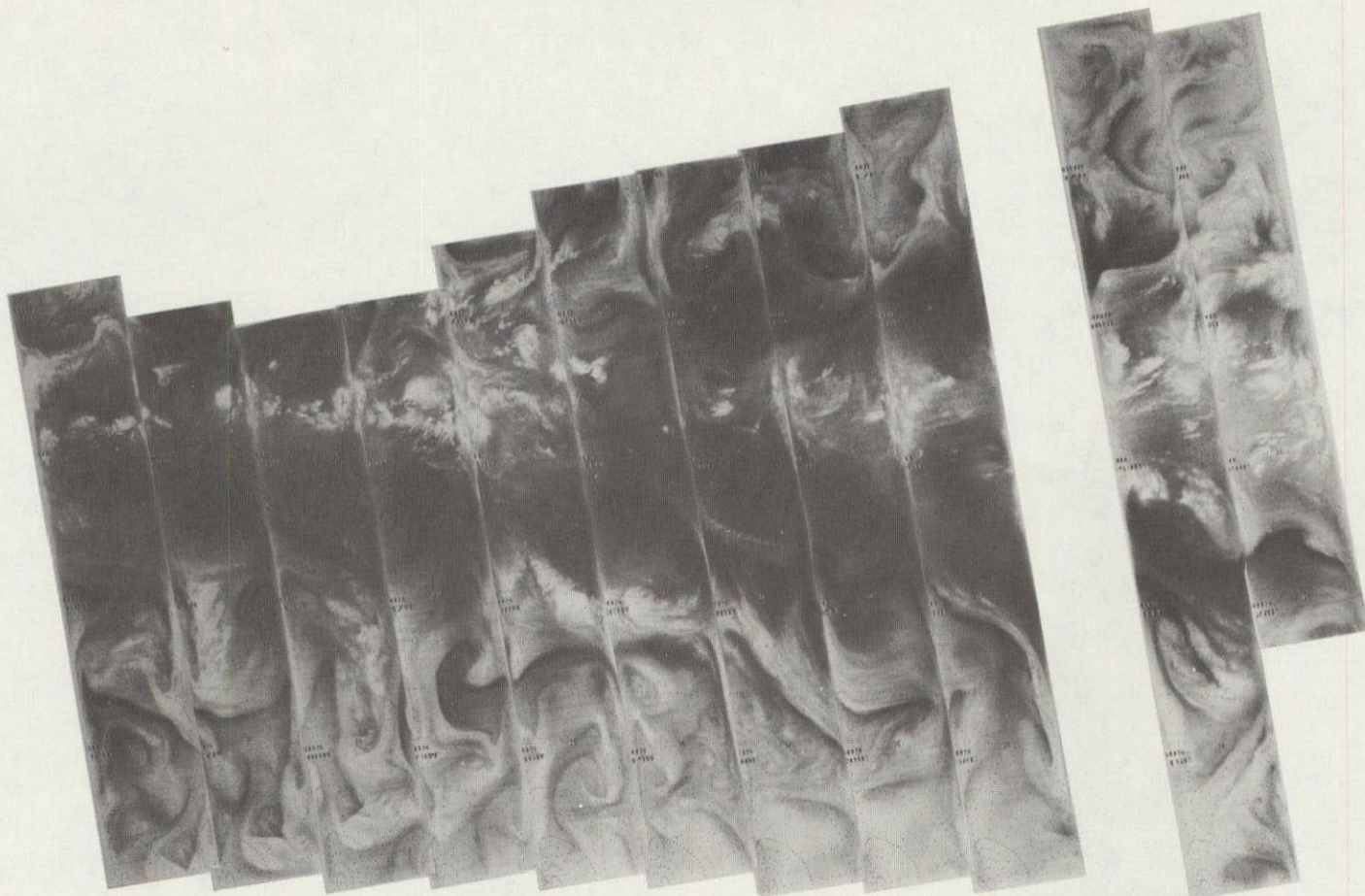
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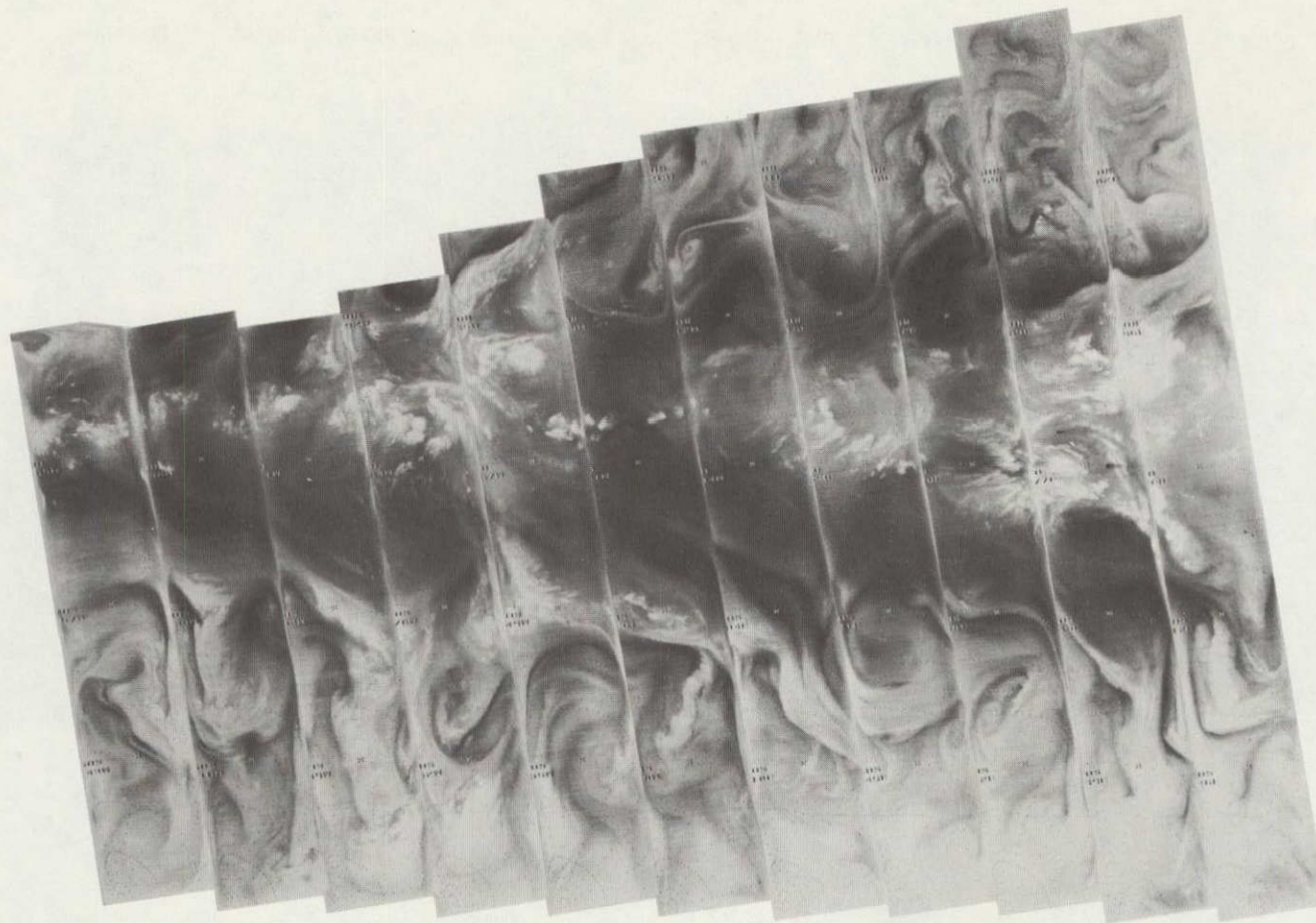
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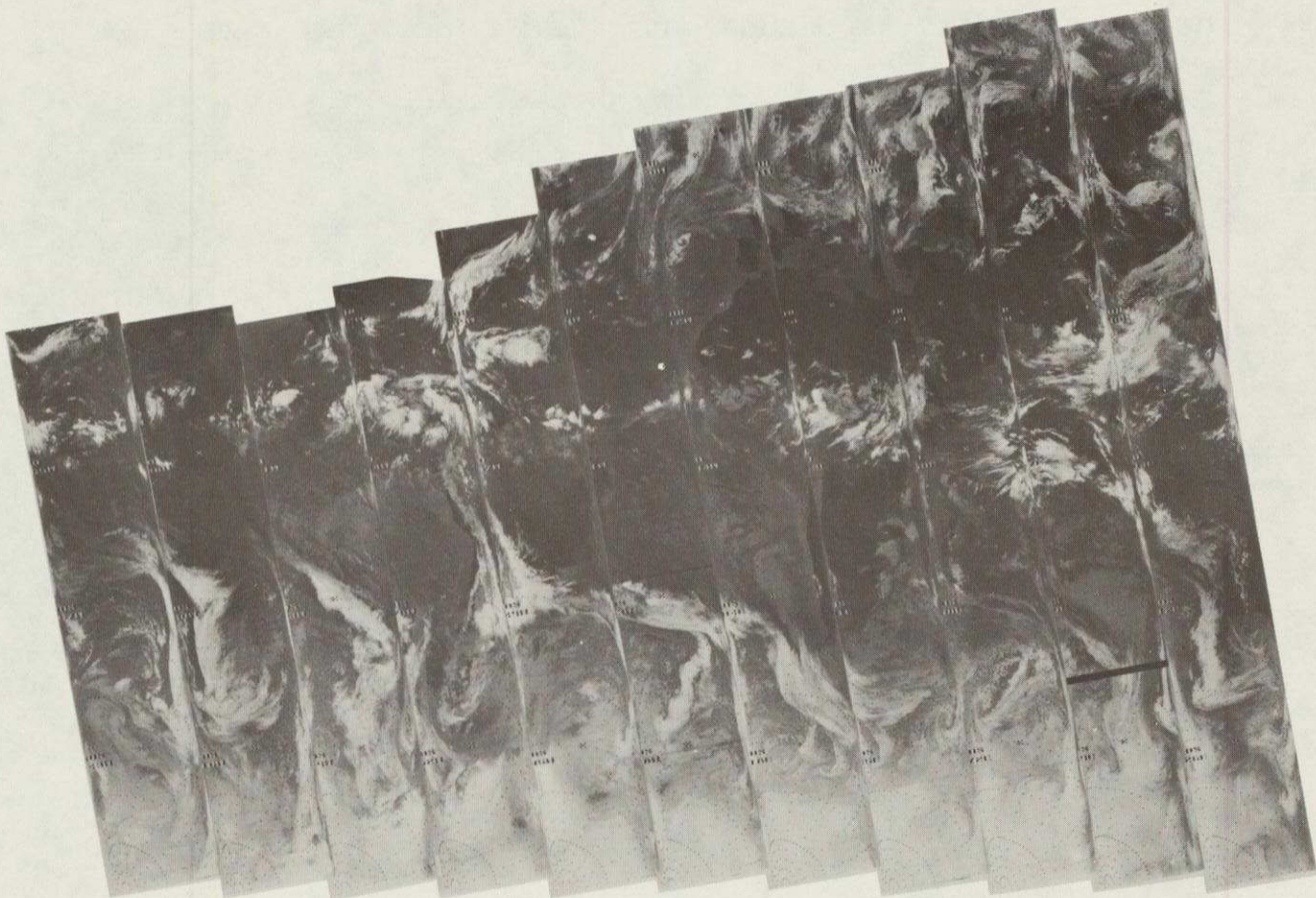
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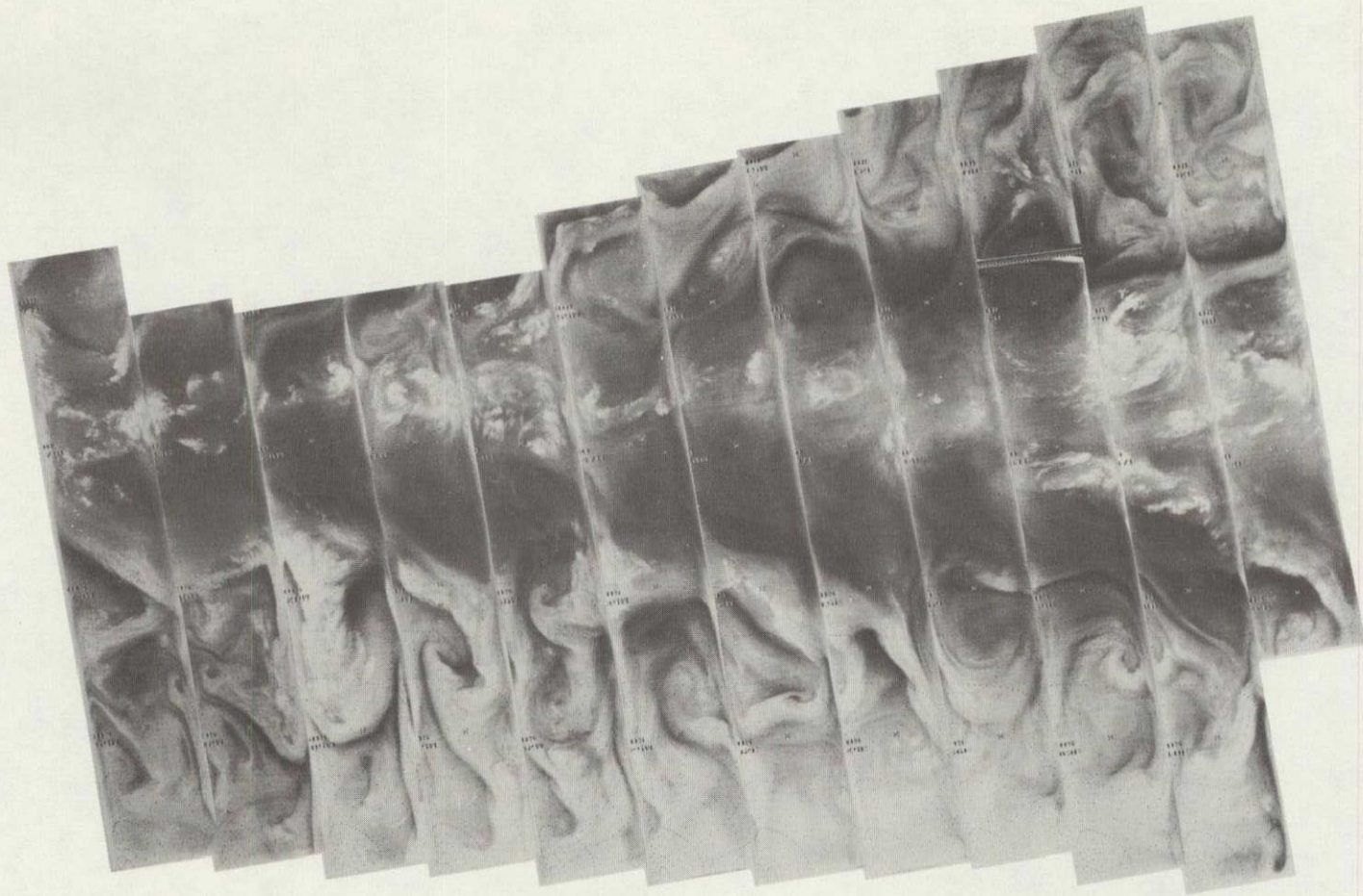
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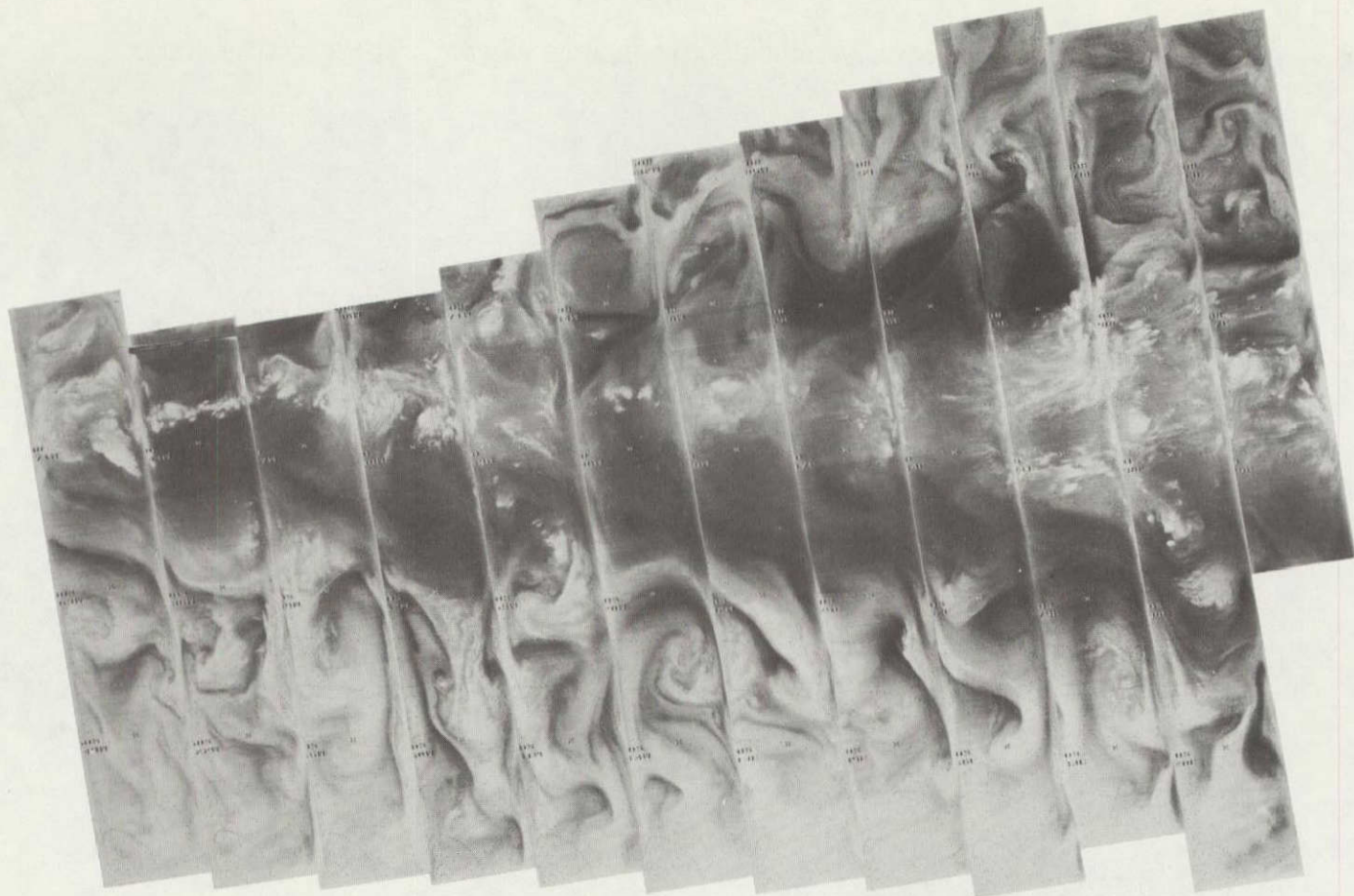
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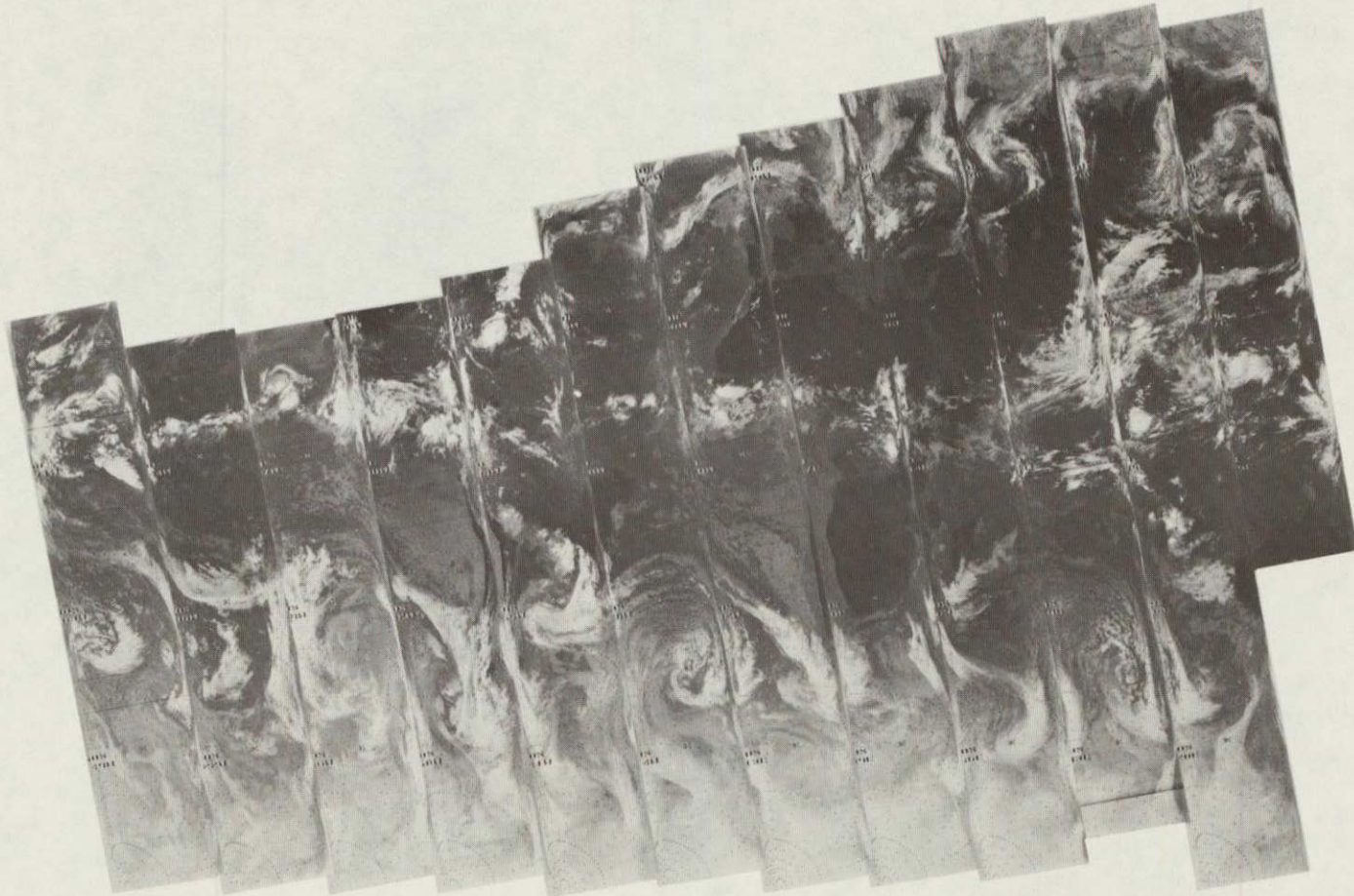
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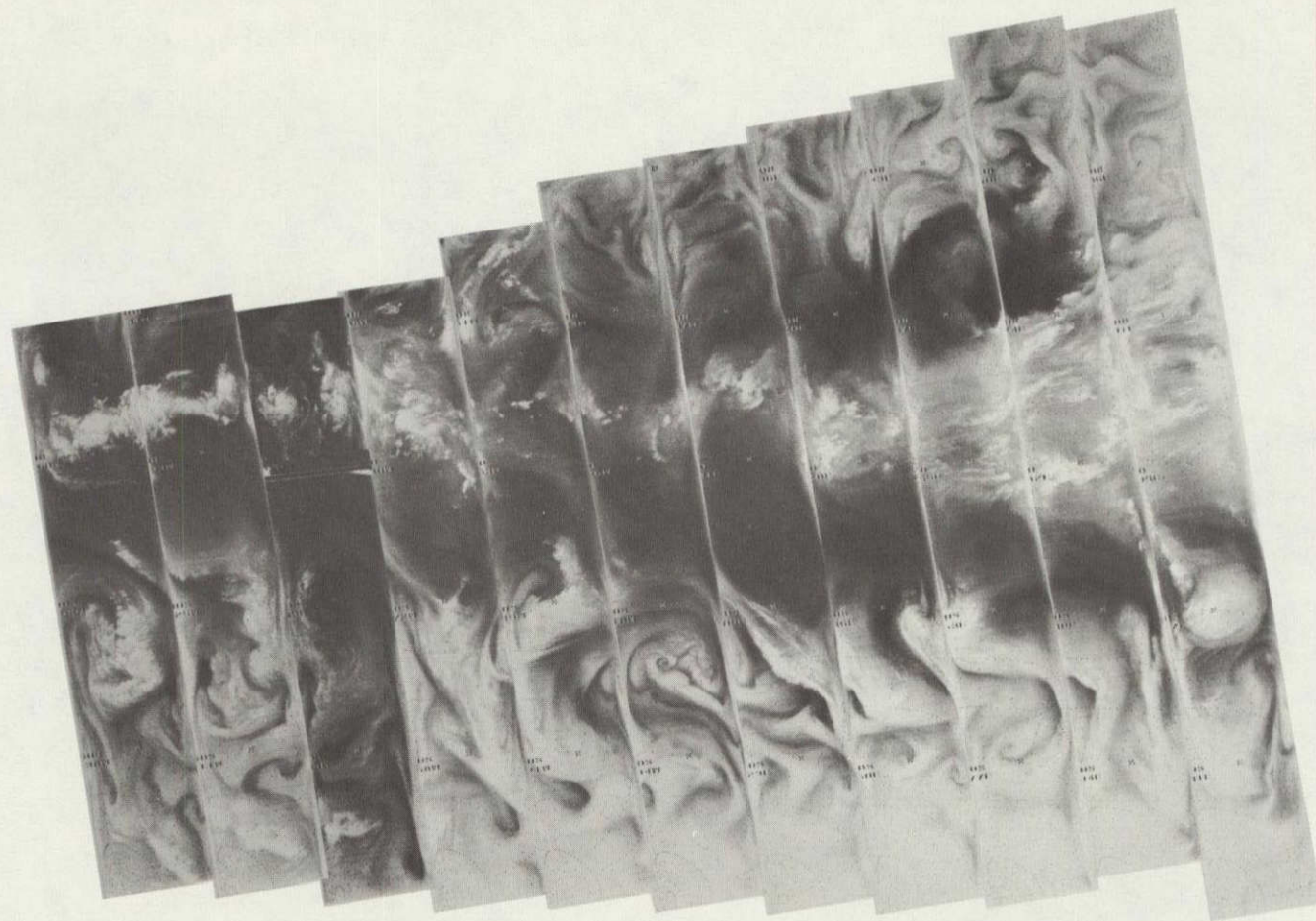
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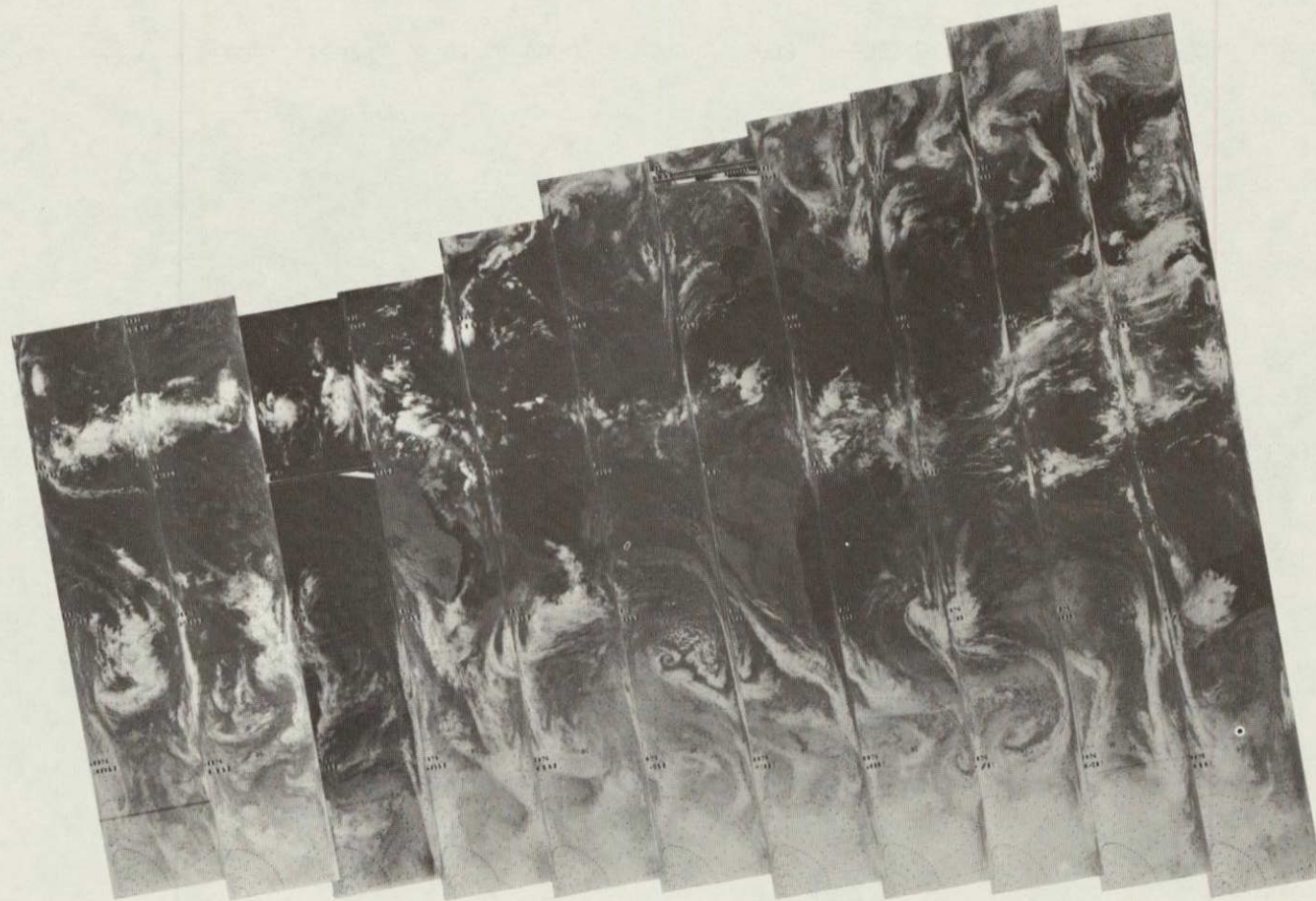
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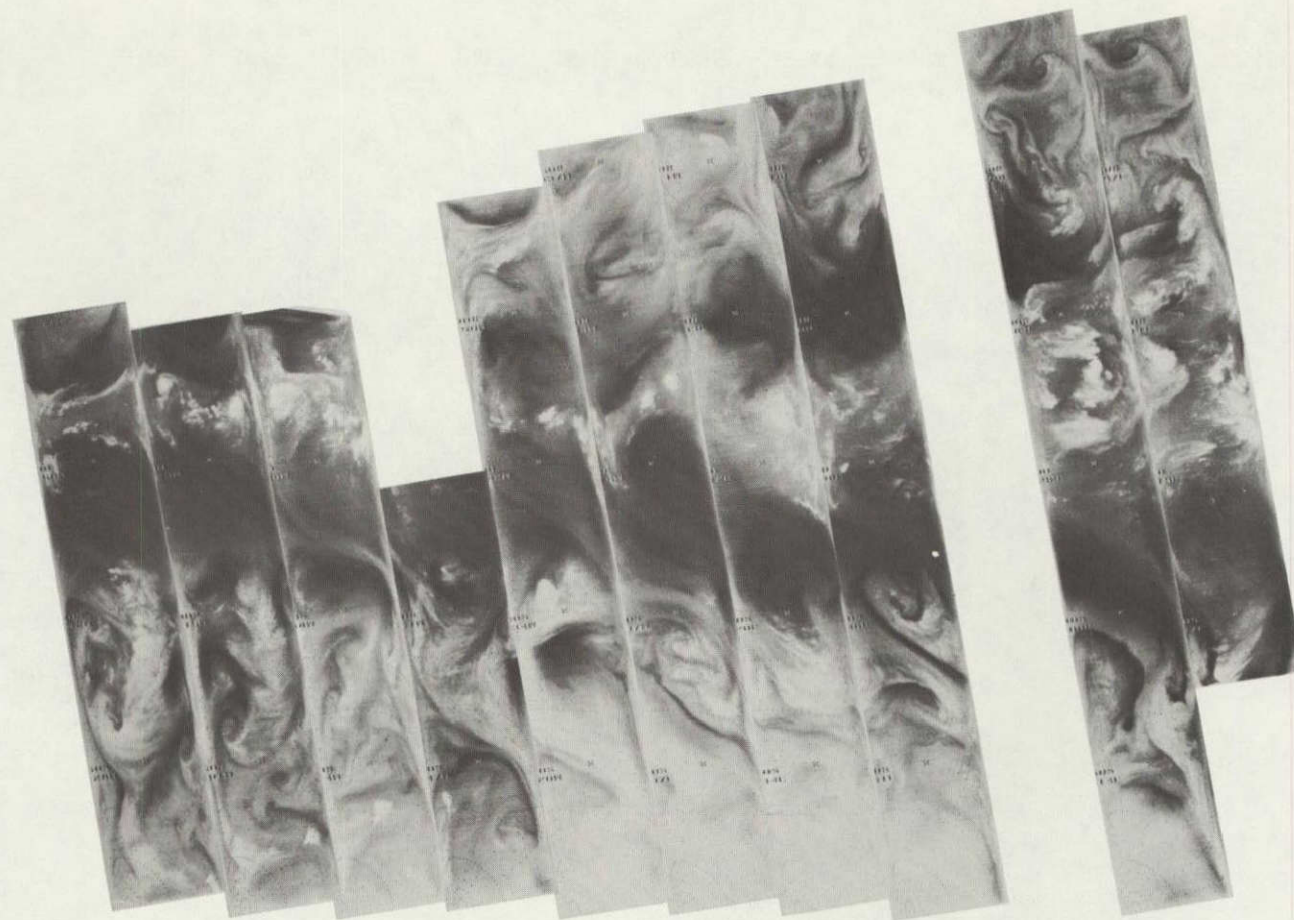
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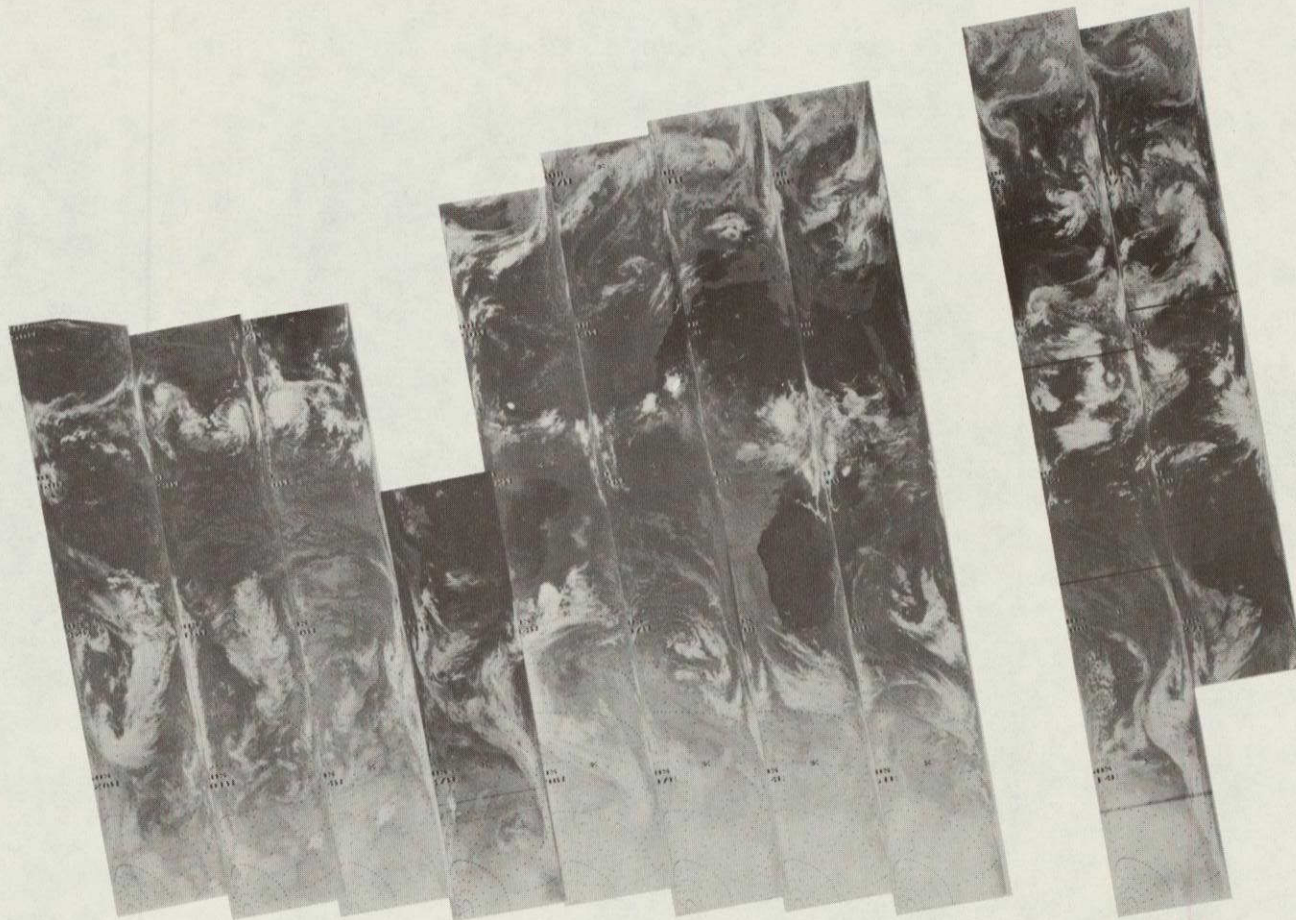
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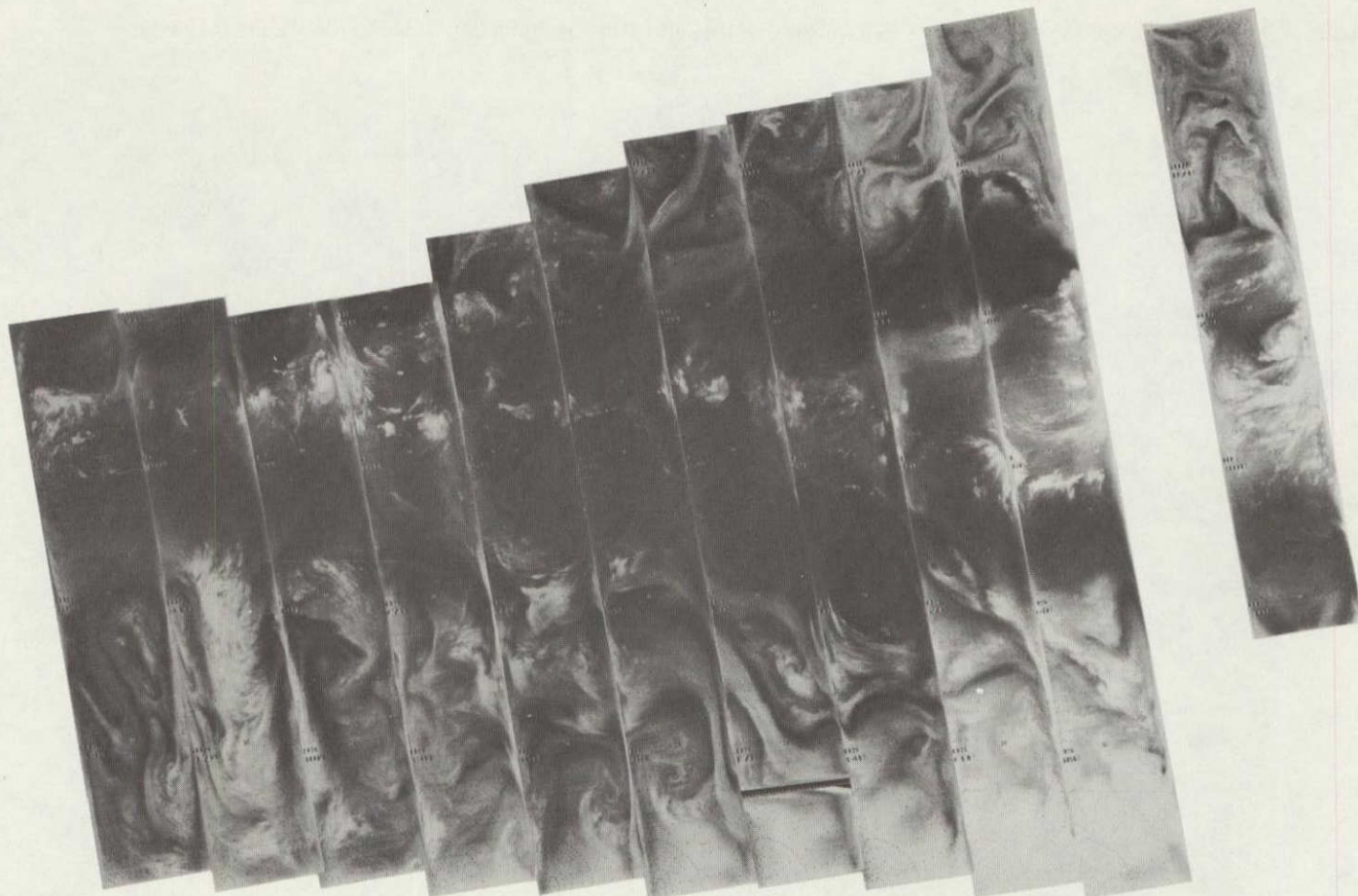
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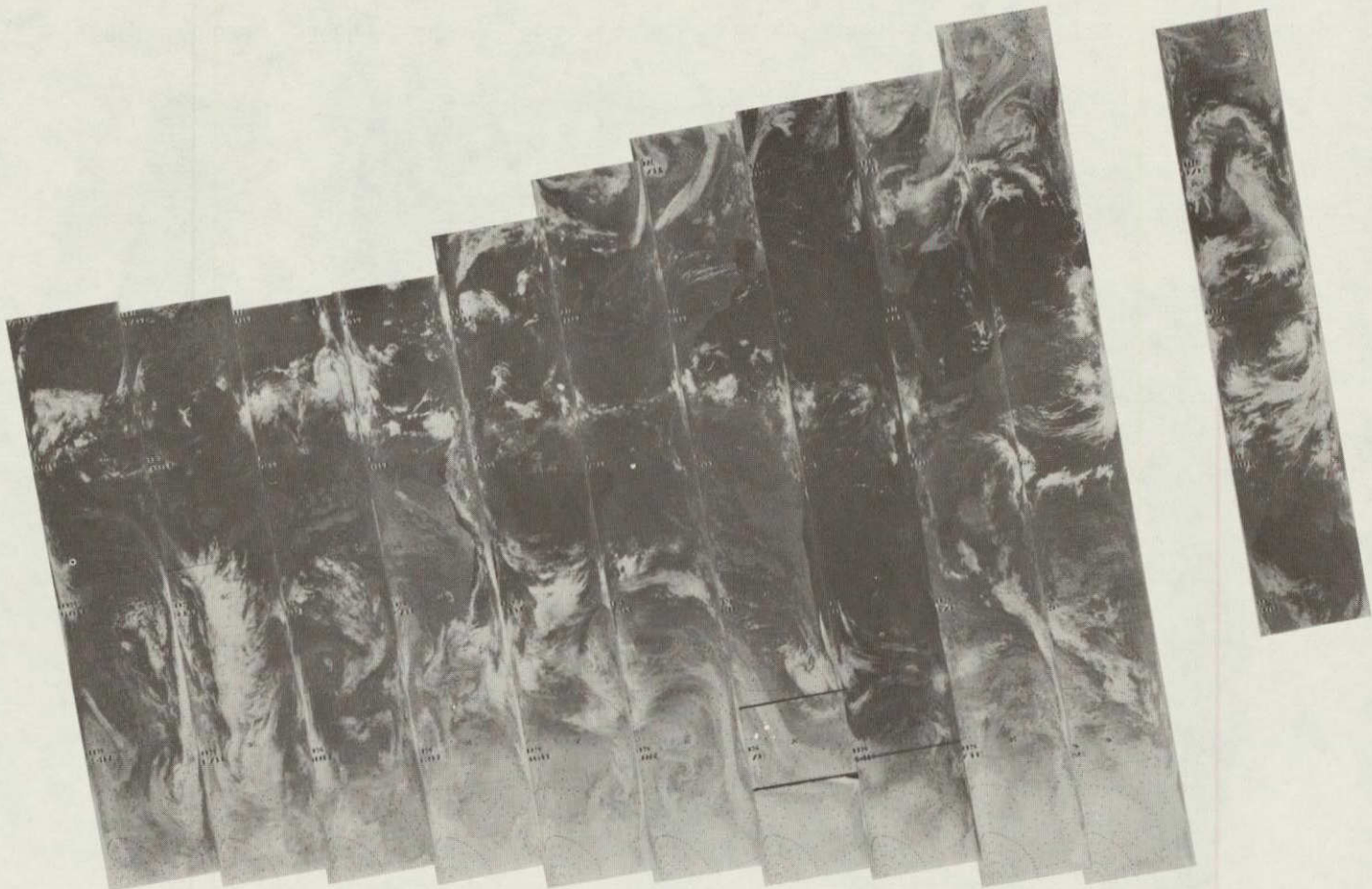
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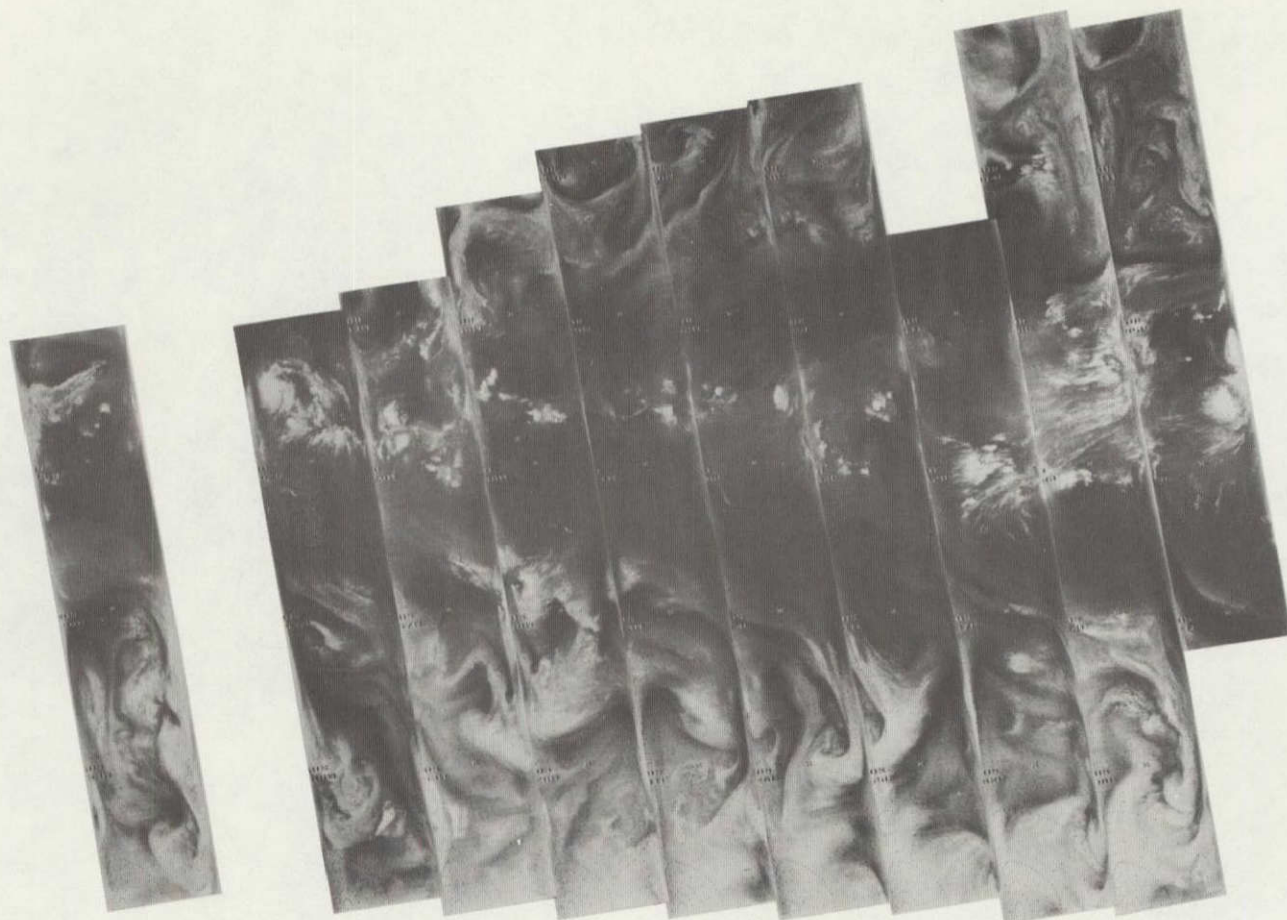
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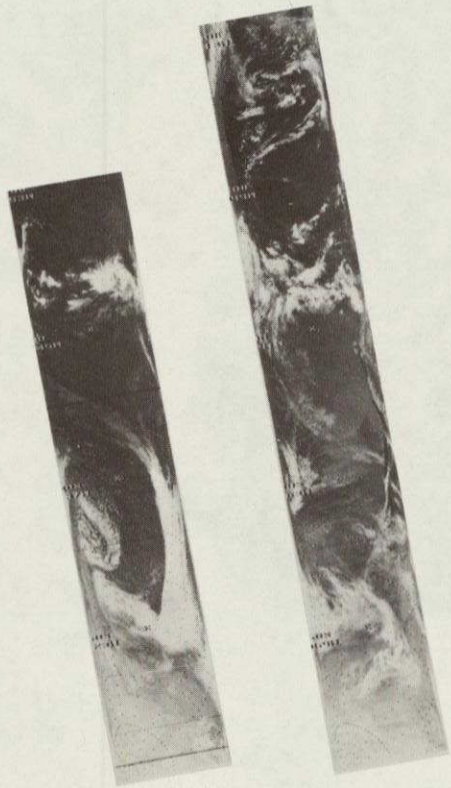




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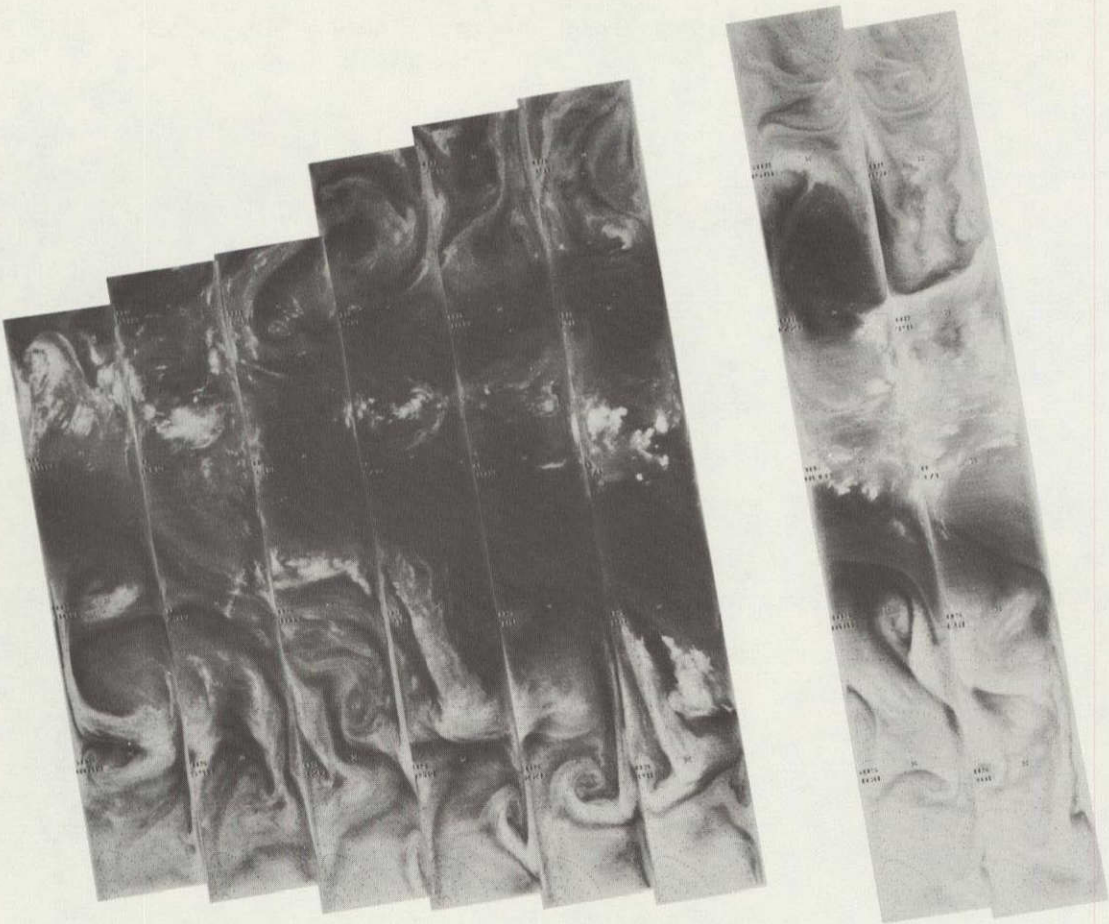
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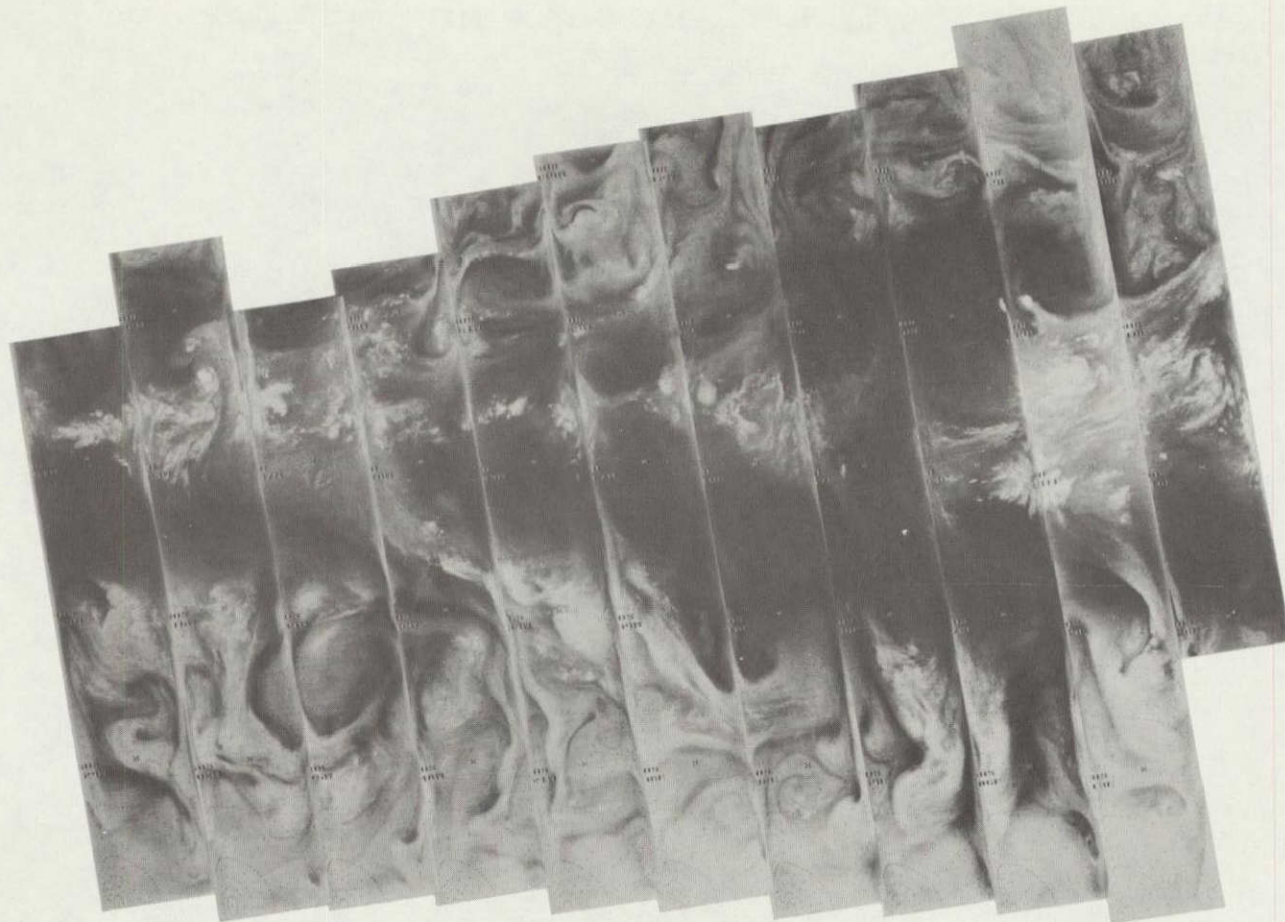
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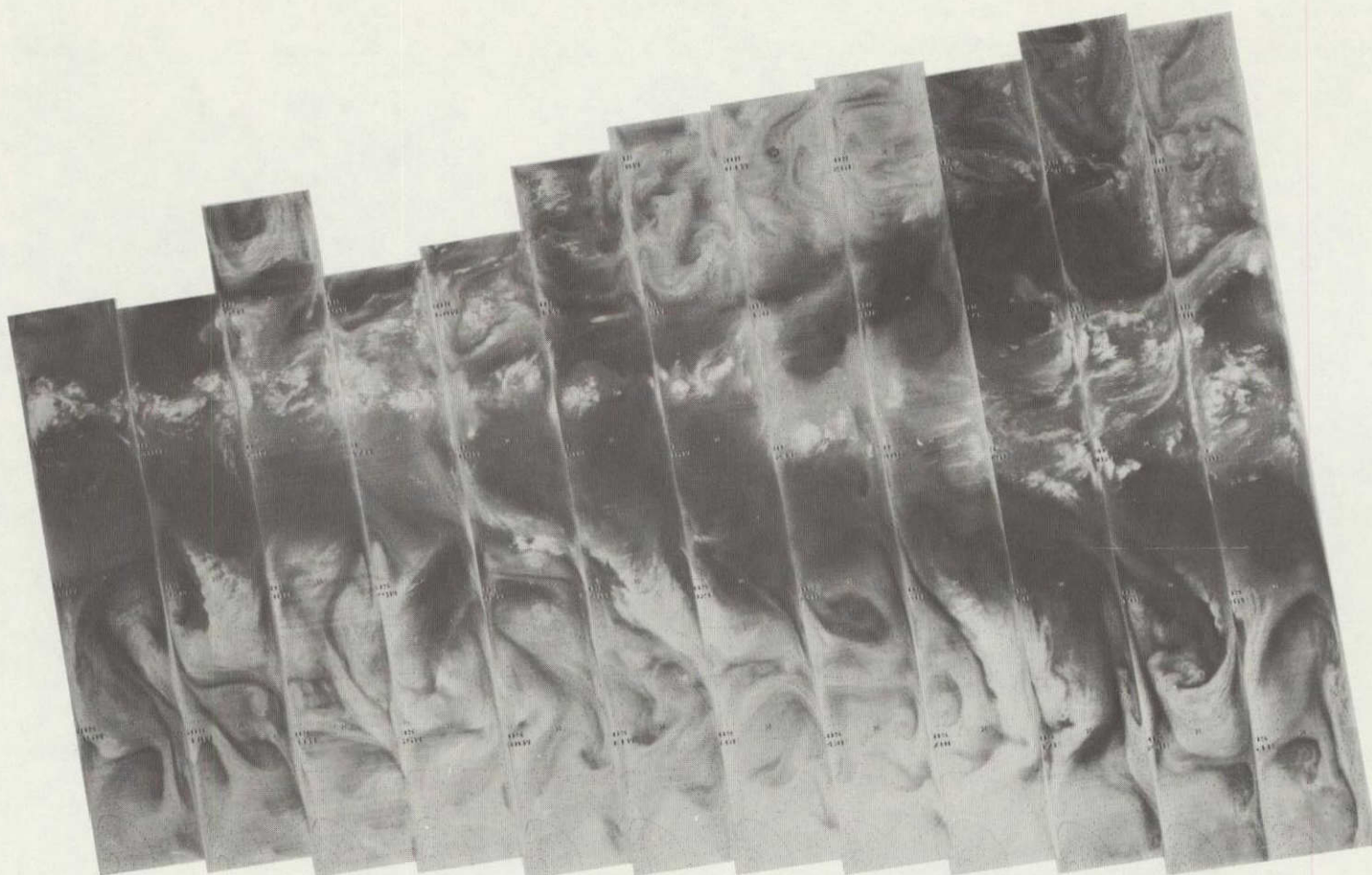
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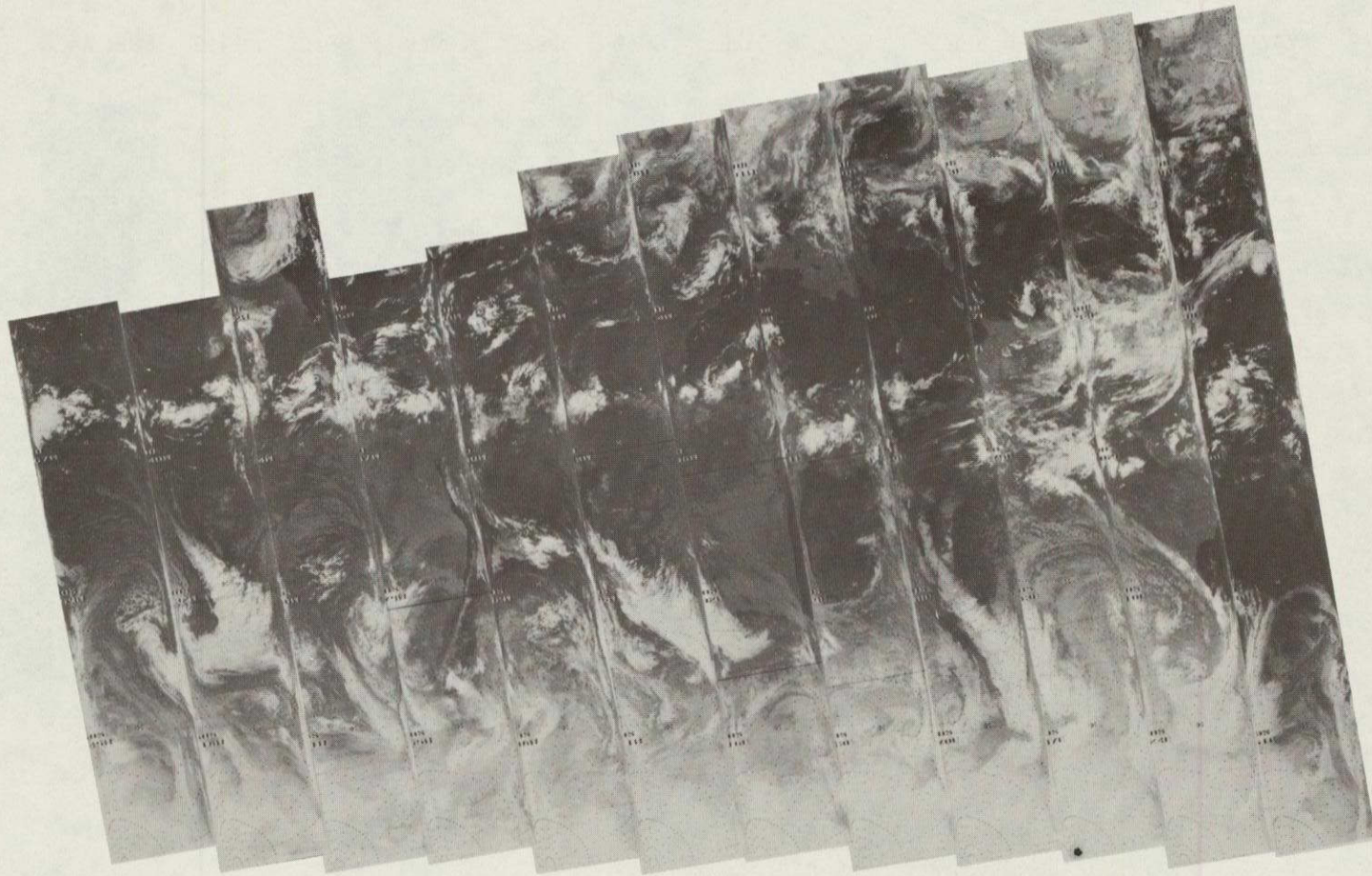
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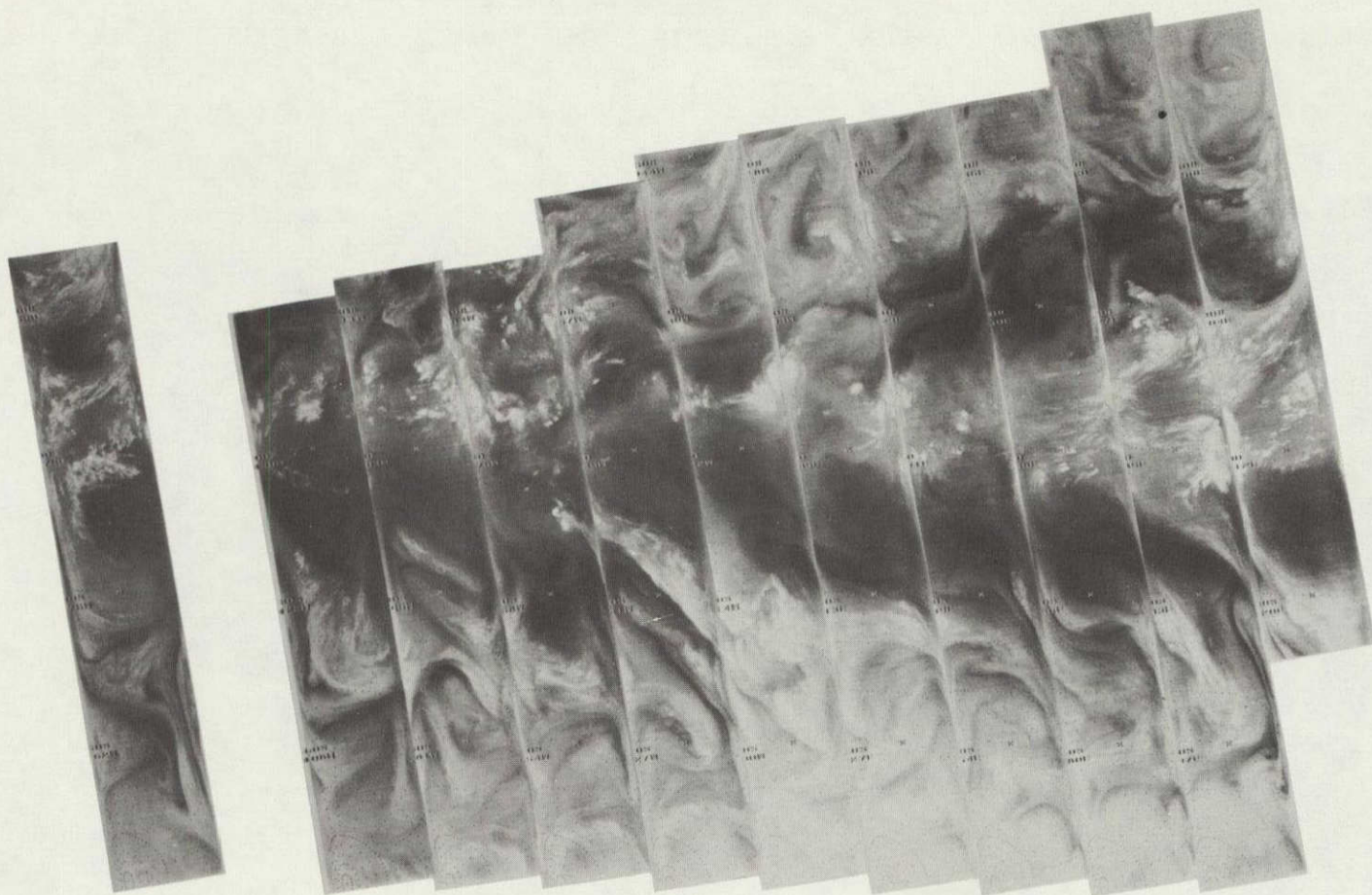


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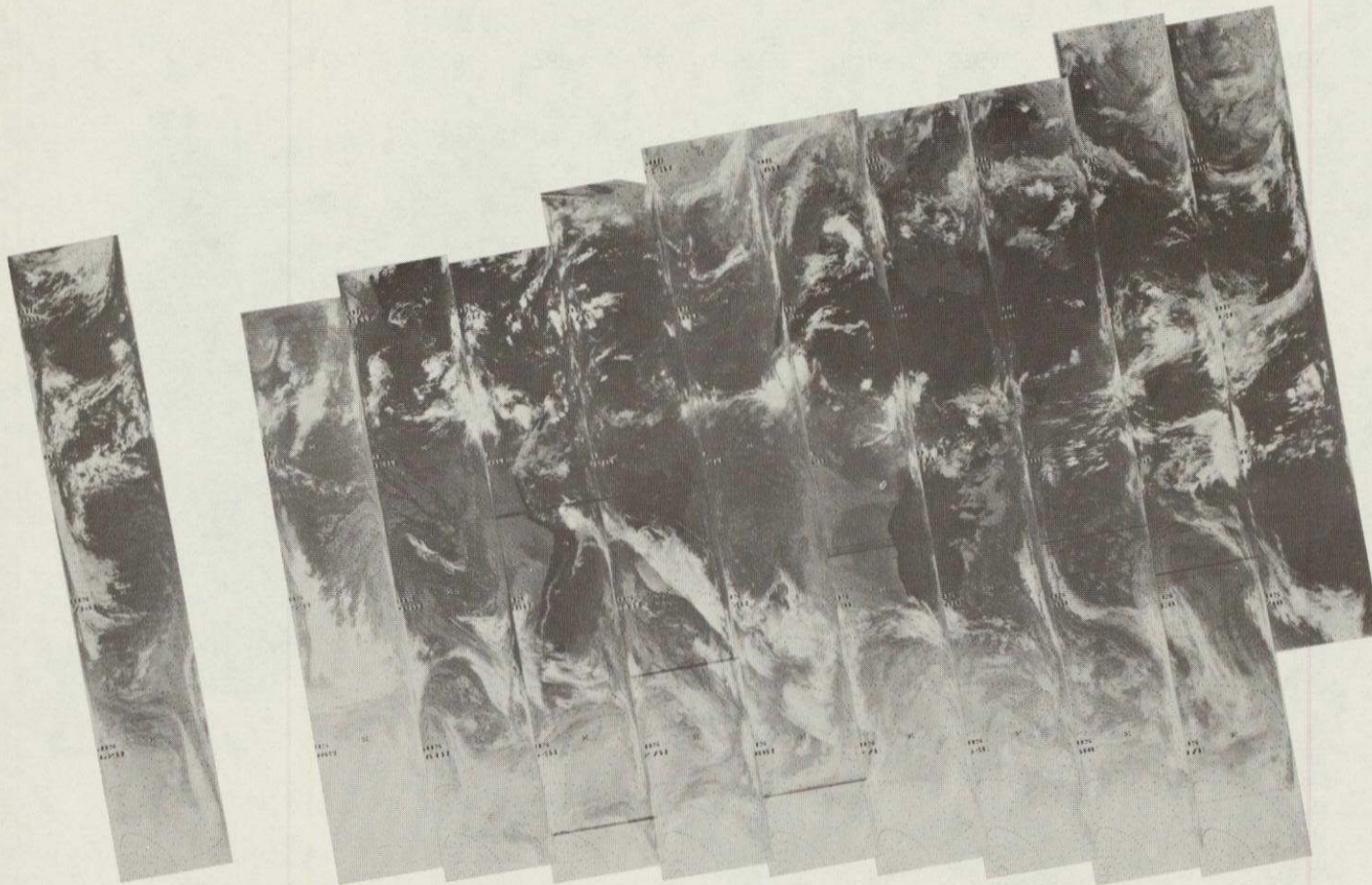
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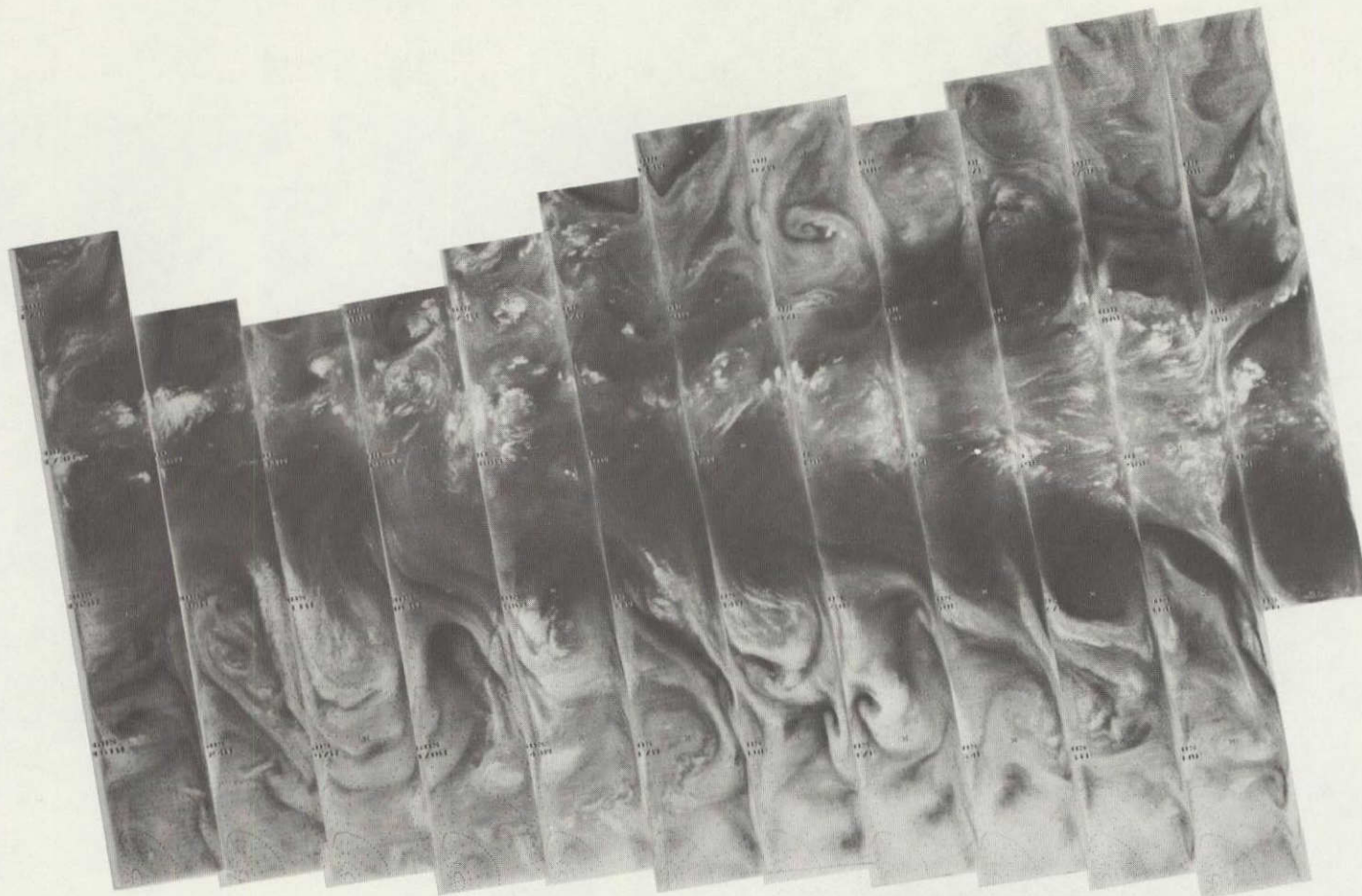
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14 AUG 76

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15 AUG 76

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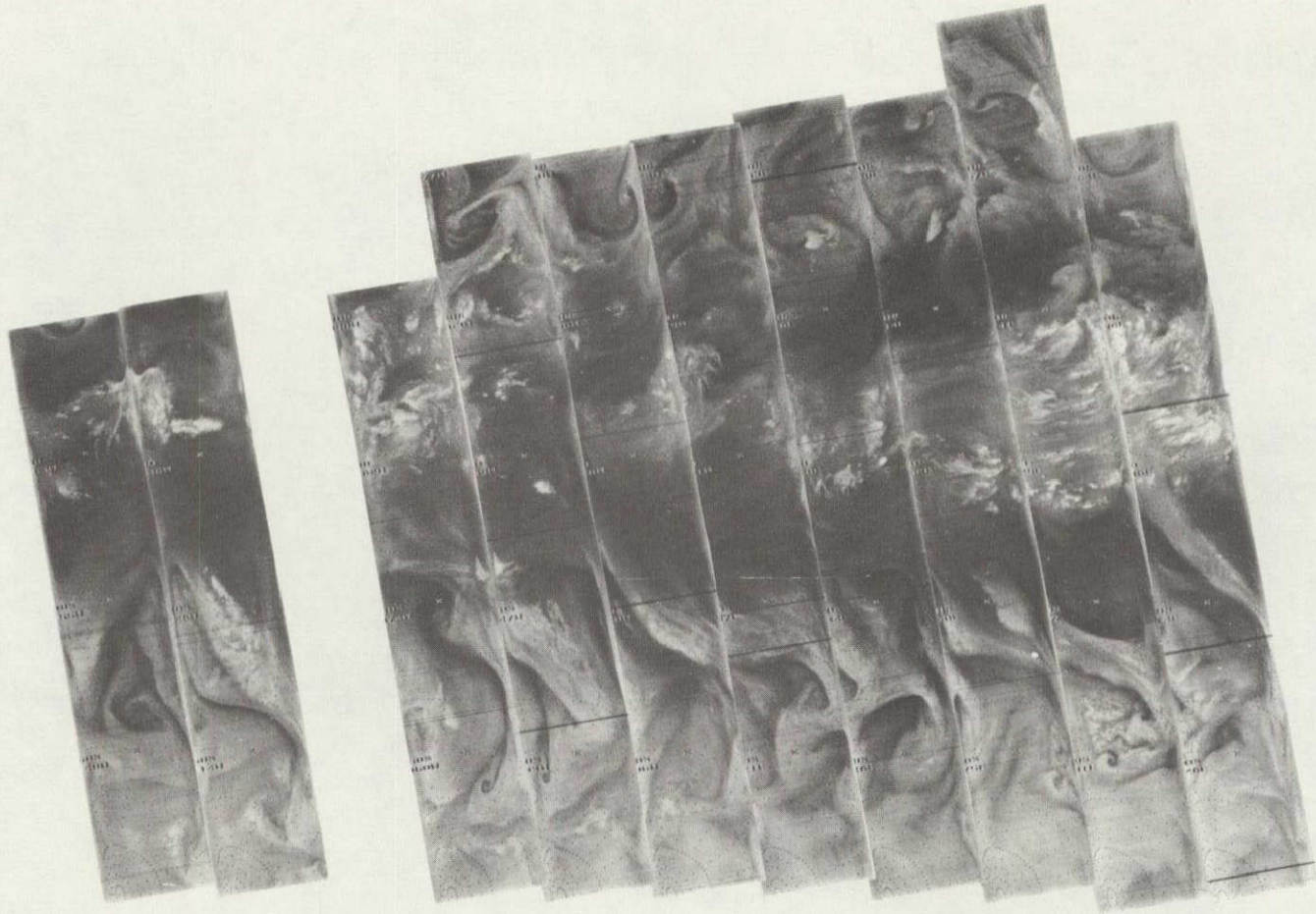
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DIRECTOR, NATIONAL AERONAUTICS  
AND SPACE ADMINISTRATION

4-224



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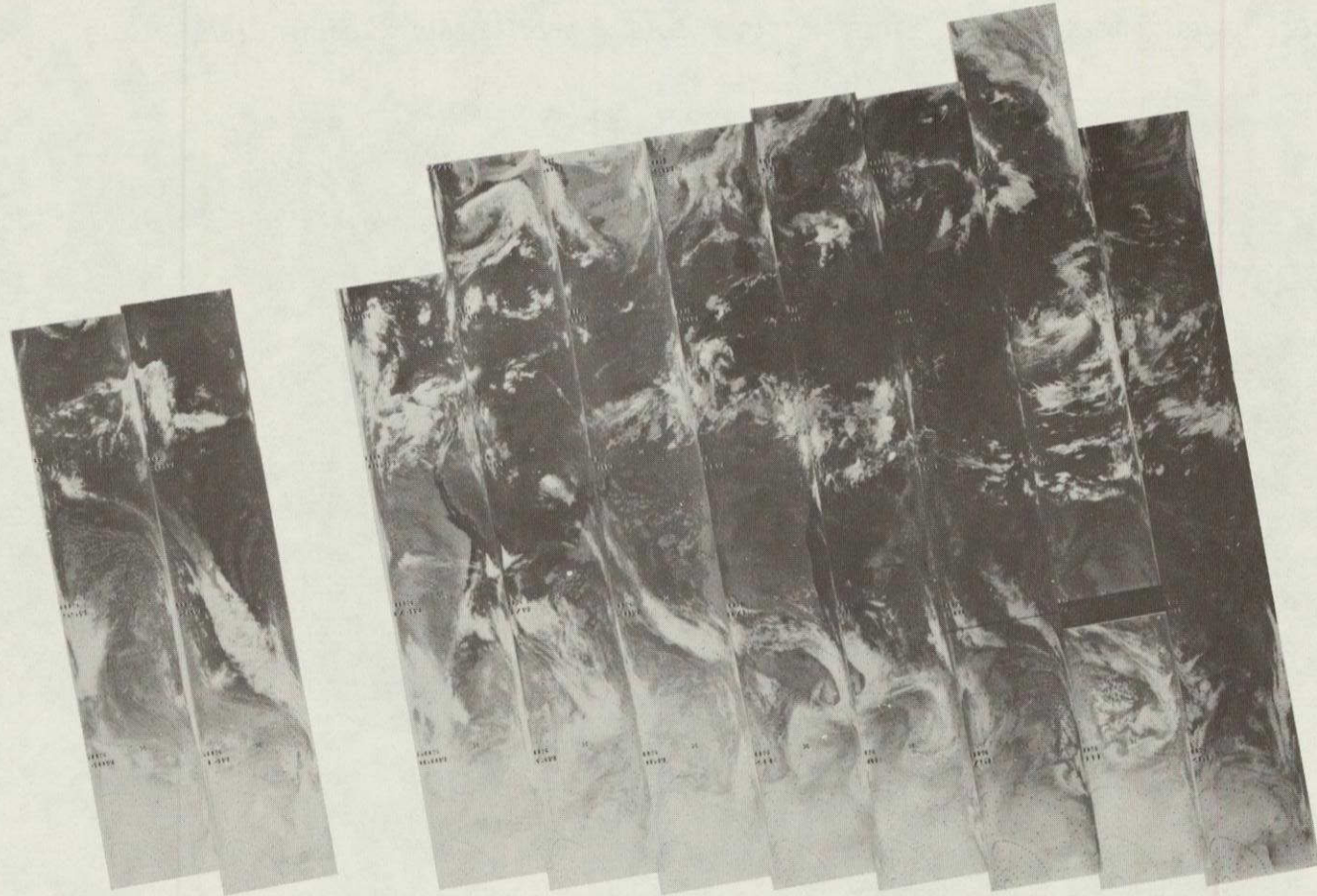
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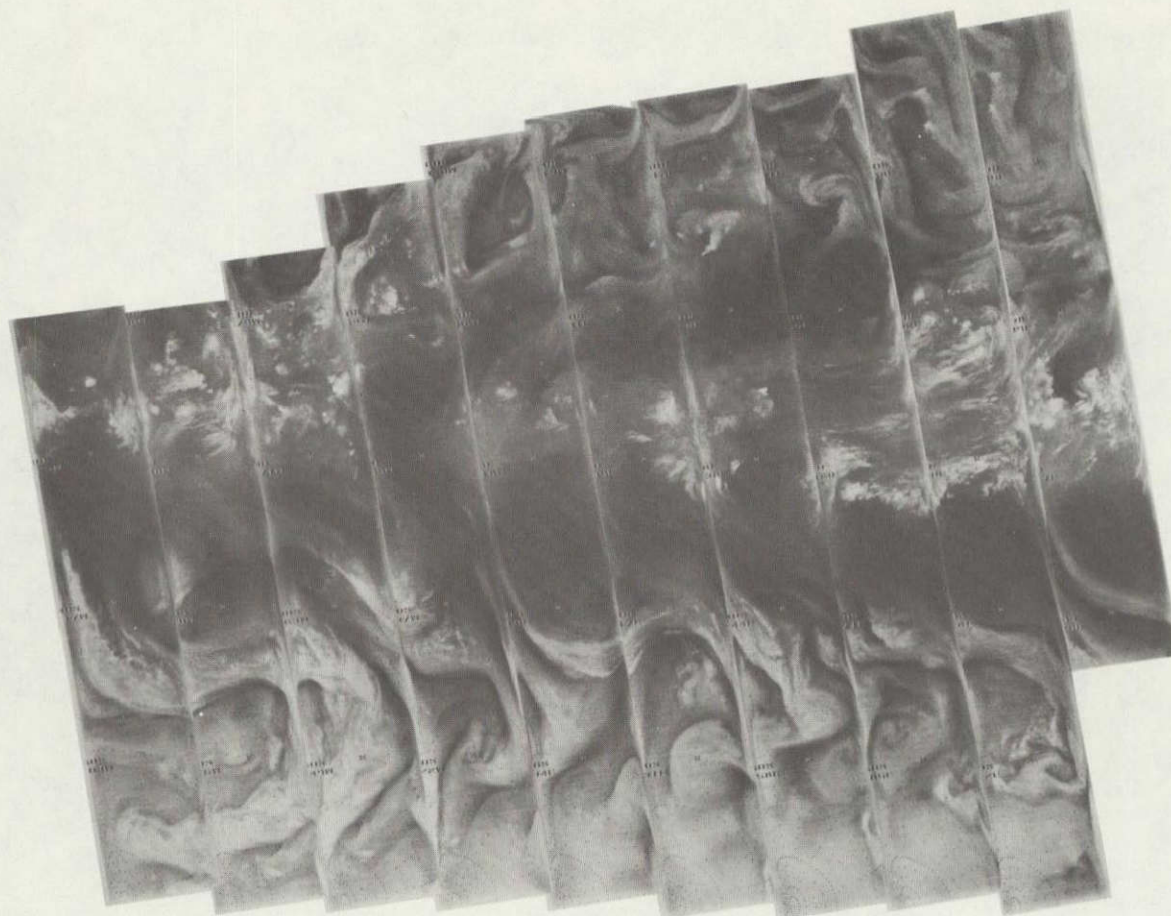
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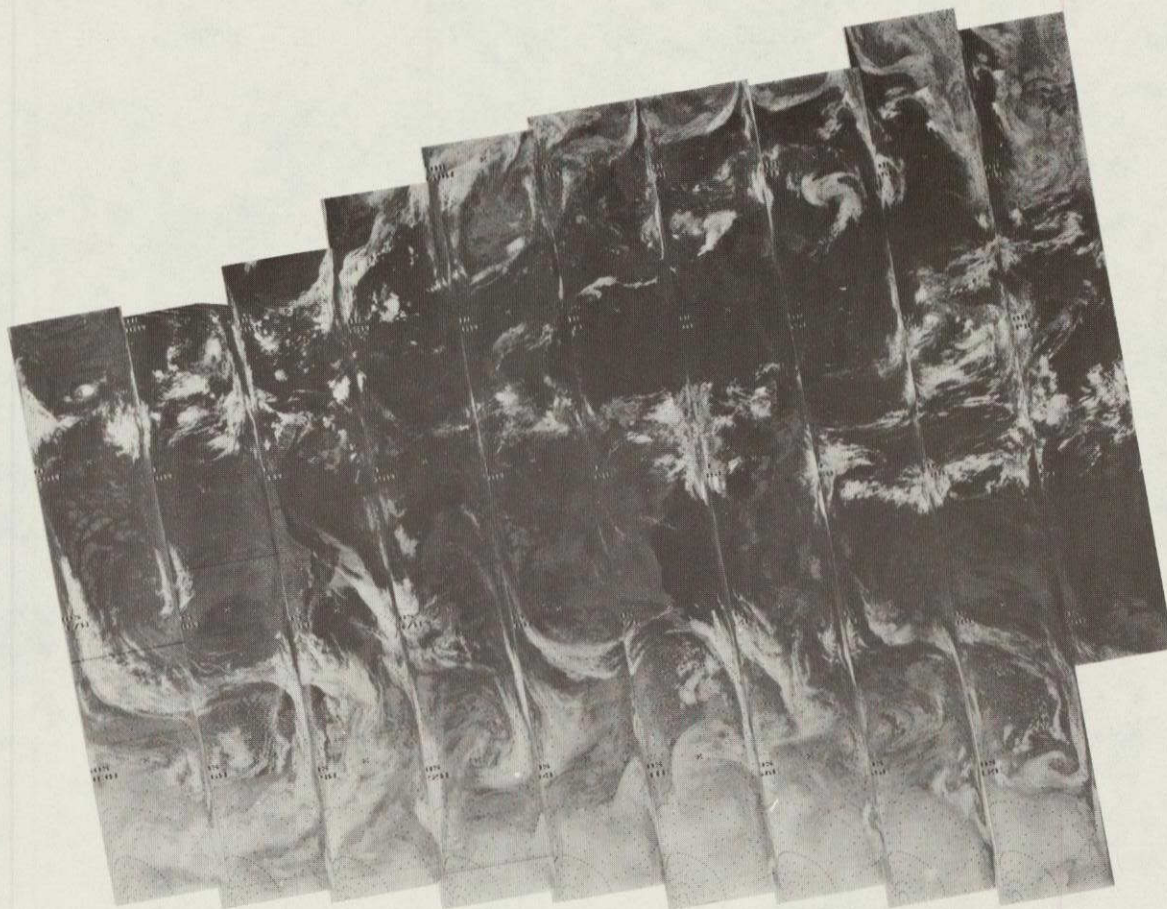


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17 AUG 76

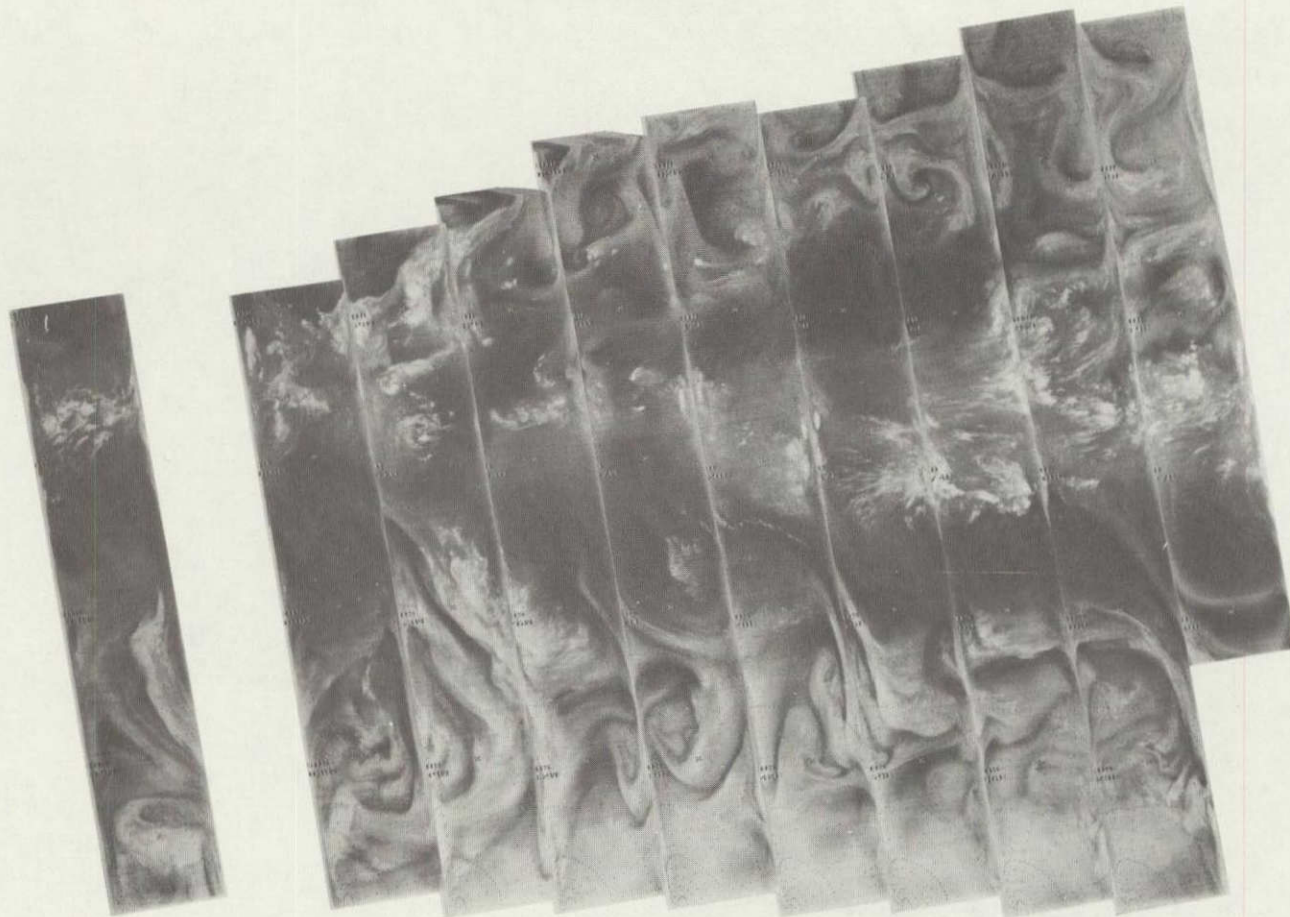
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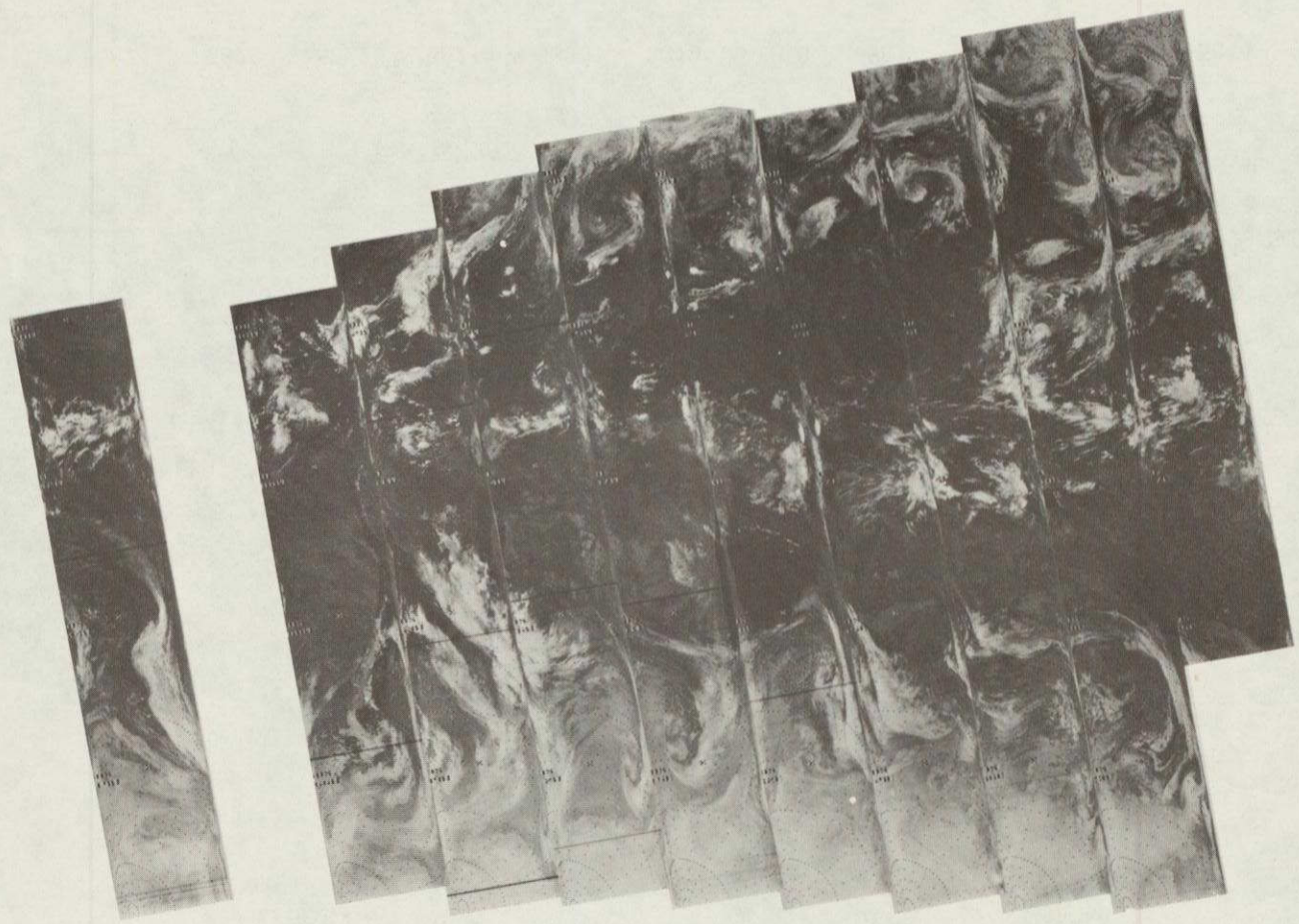
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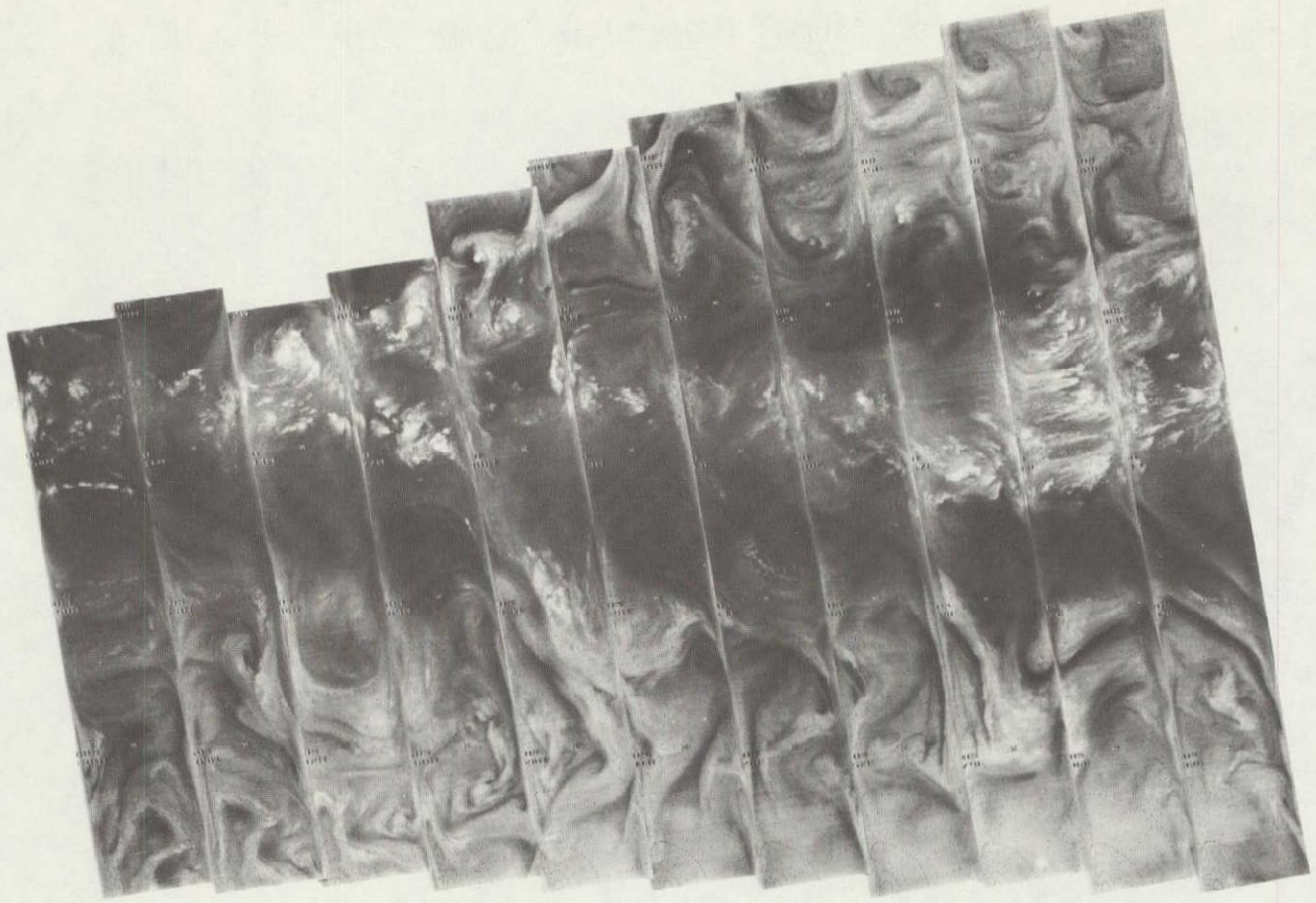
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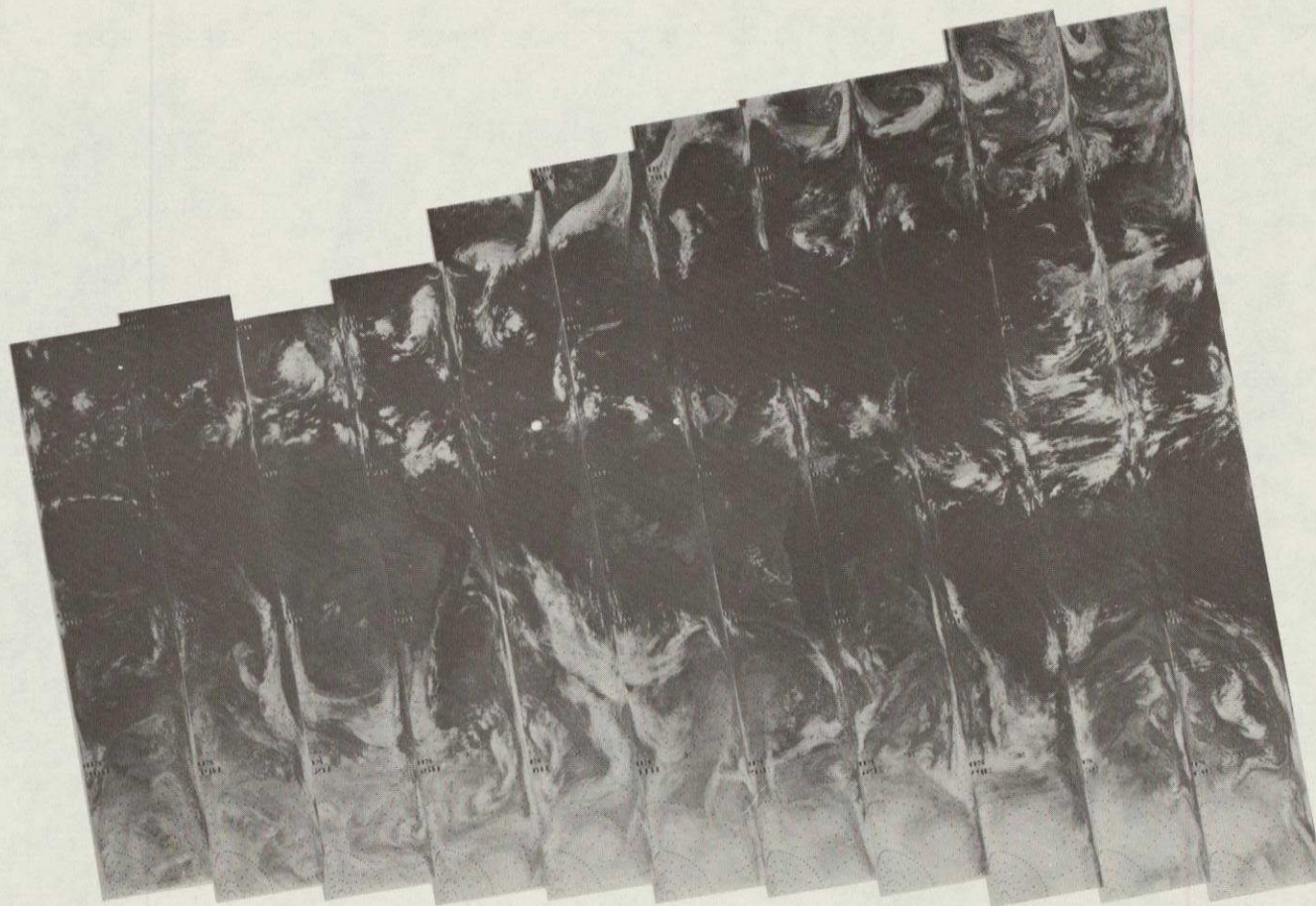


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19 AUG 76

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19 AUG 76

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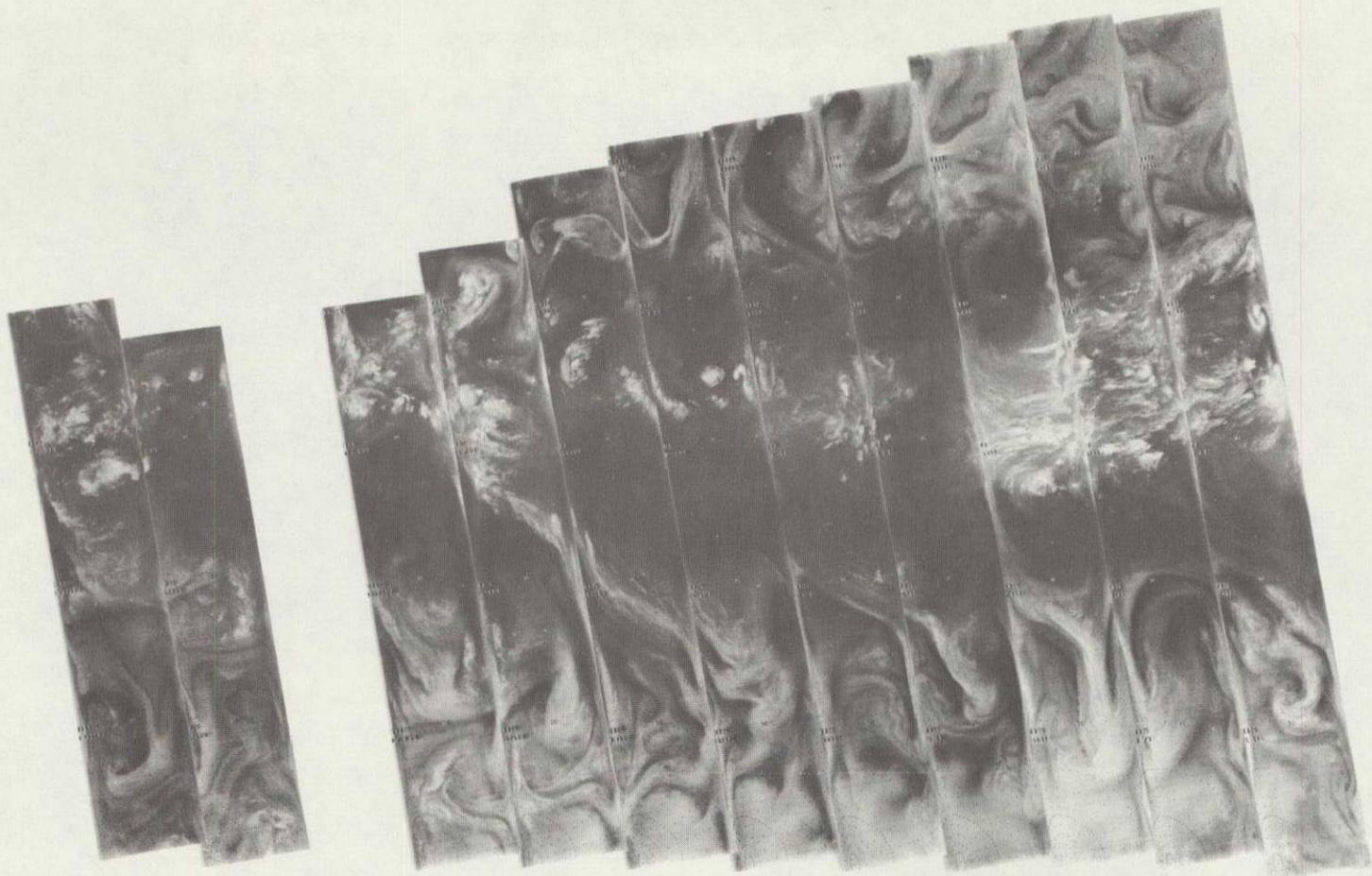
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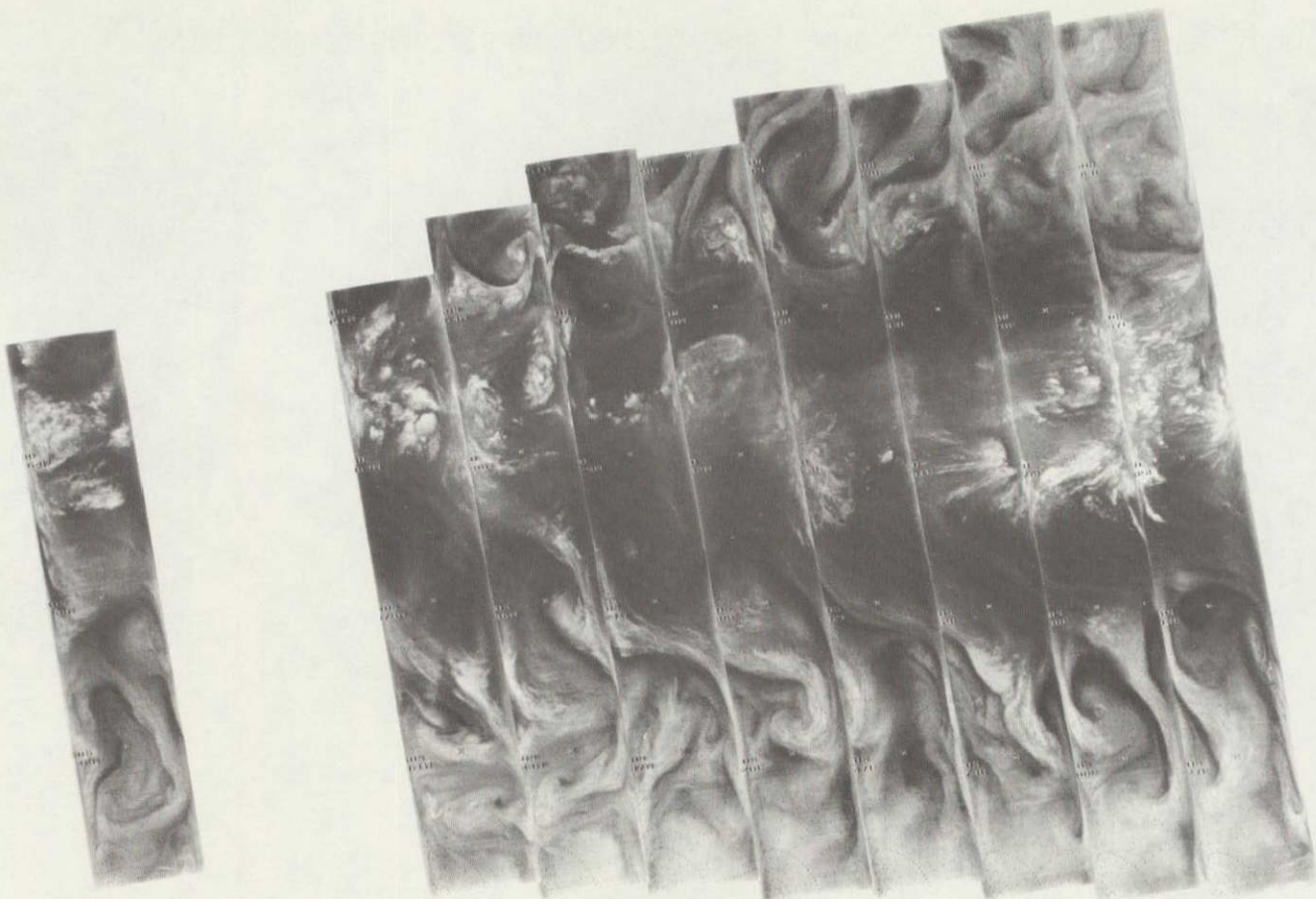
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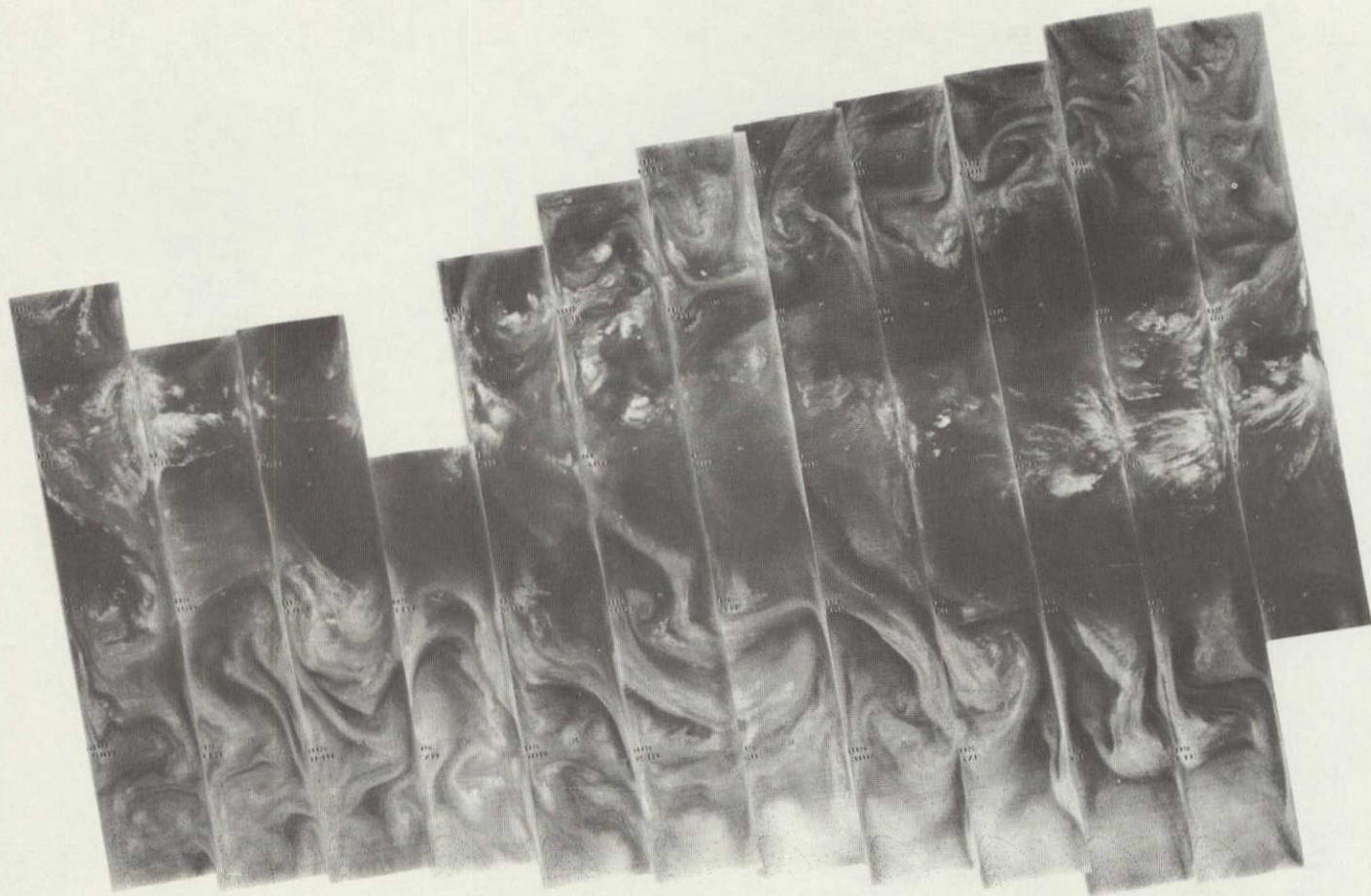
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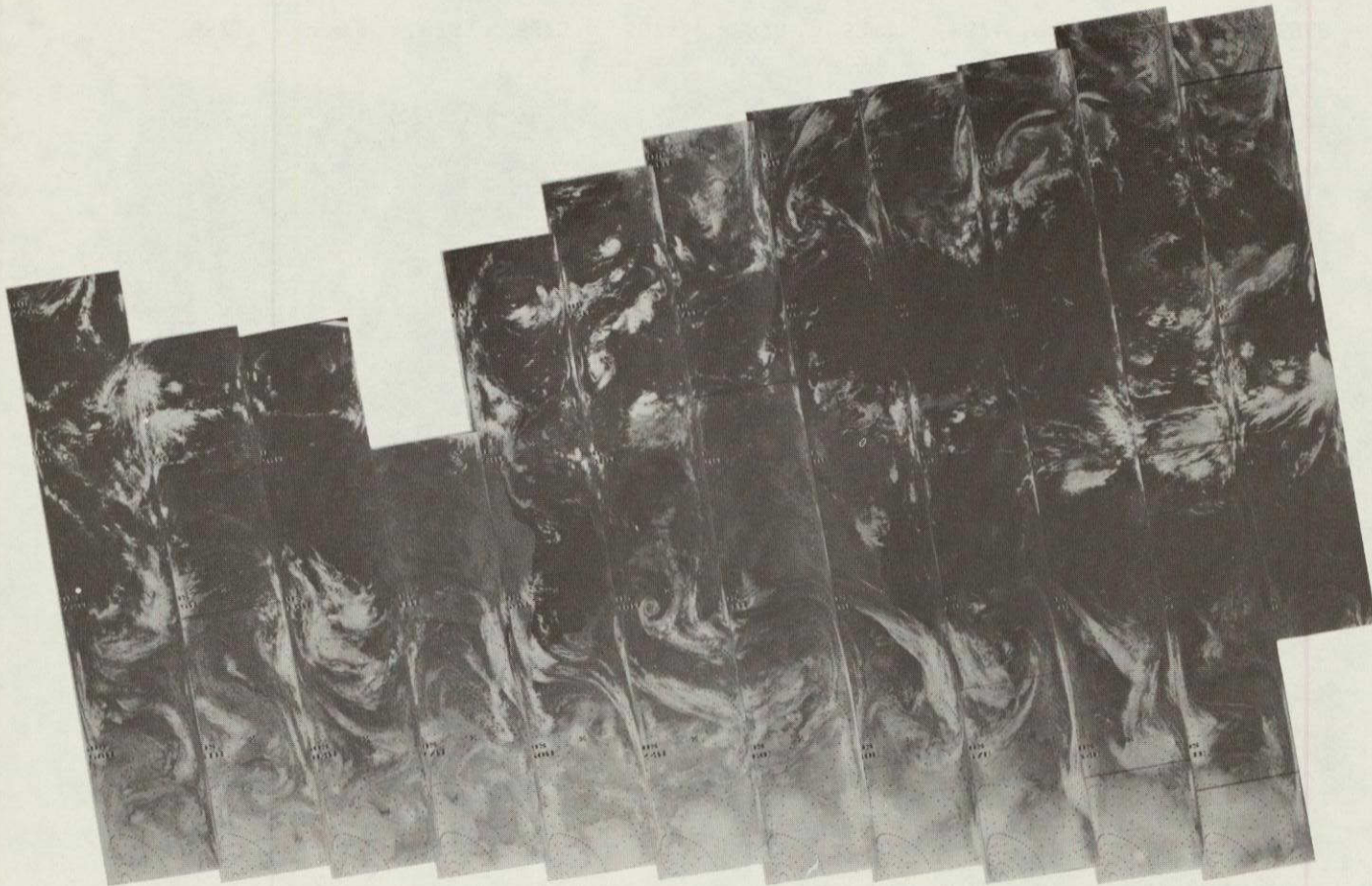


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5865 5864 5863 5862 5861 5860 5859 5858 5857 5856 5855 5854 5853 5852

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4-237

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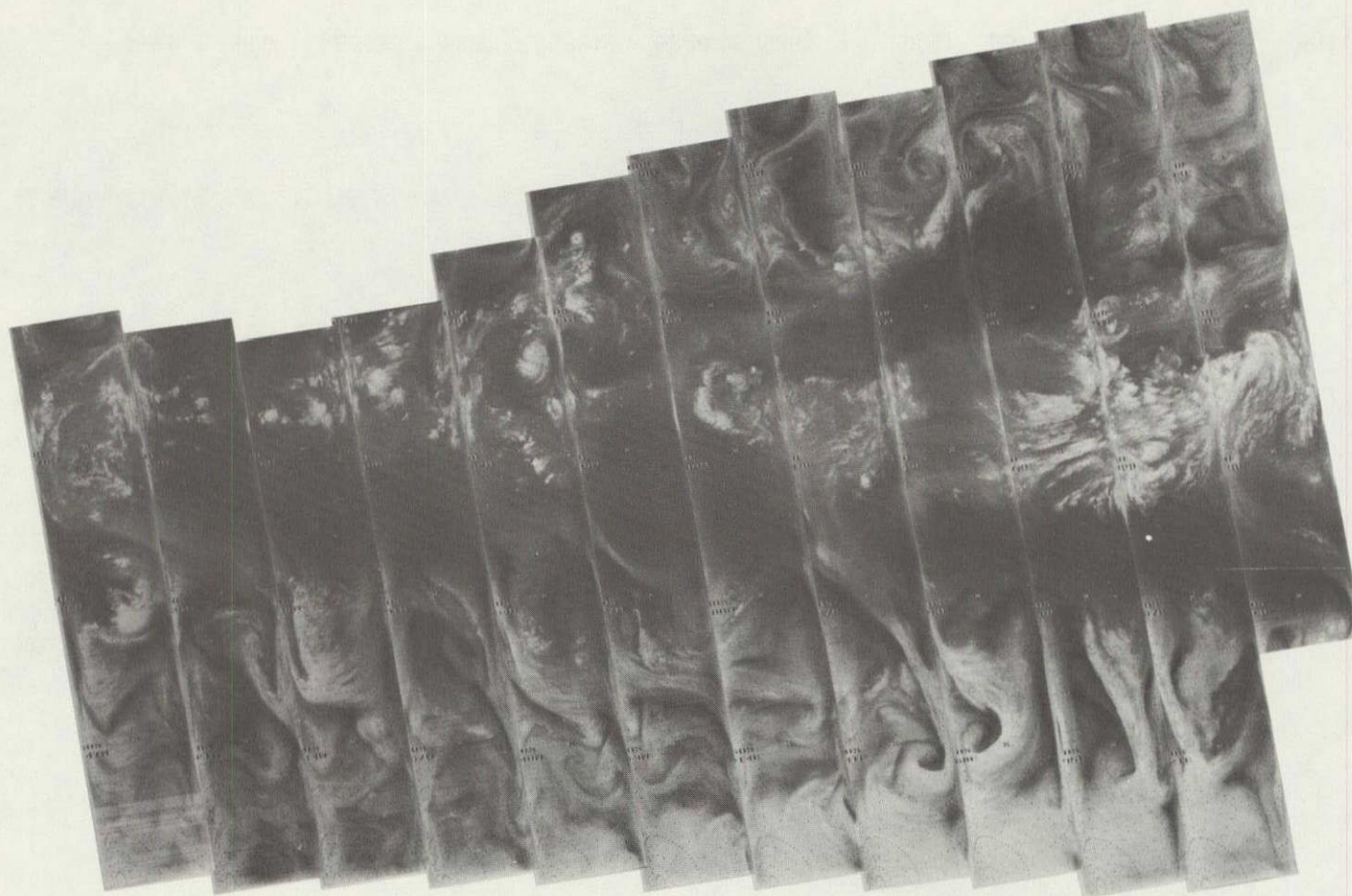
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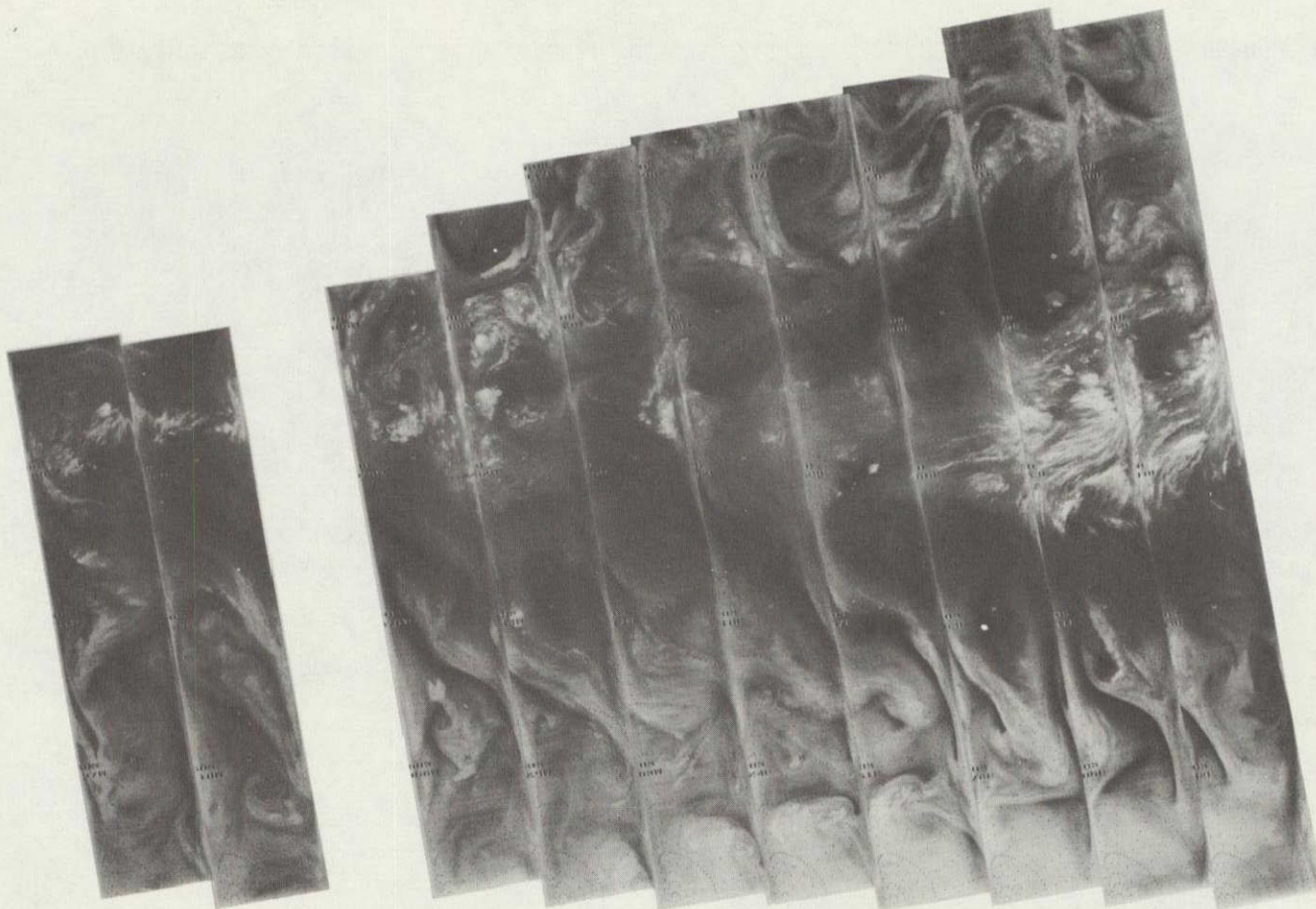
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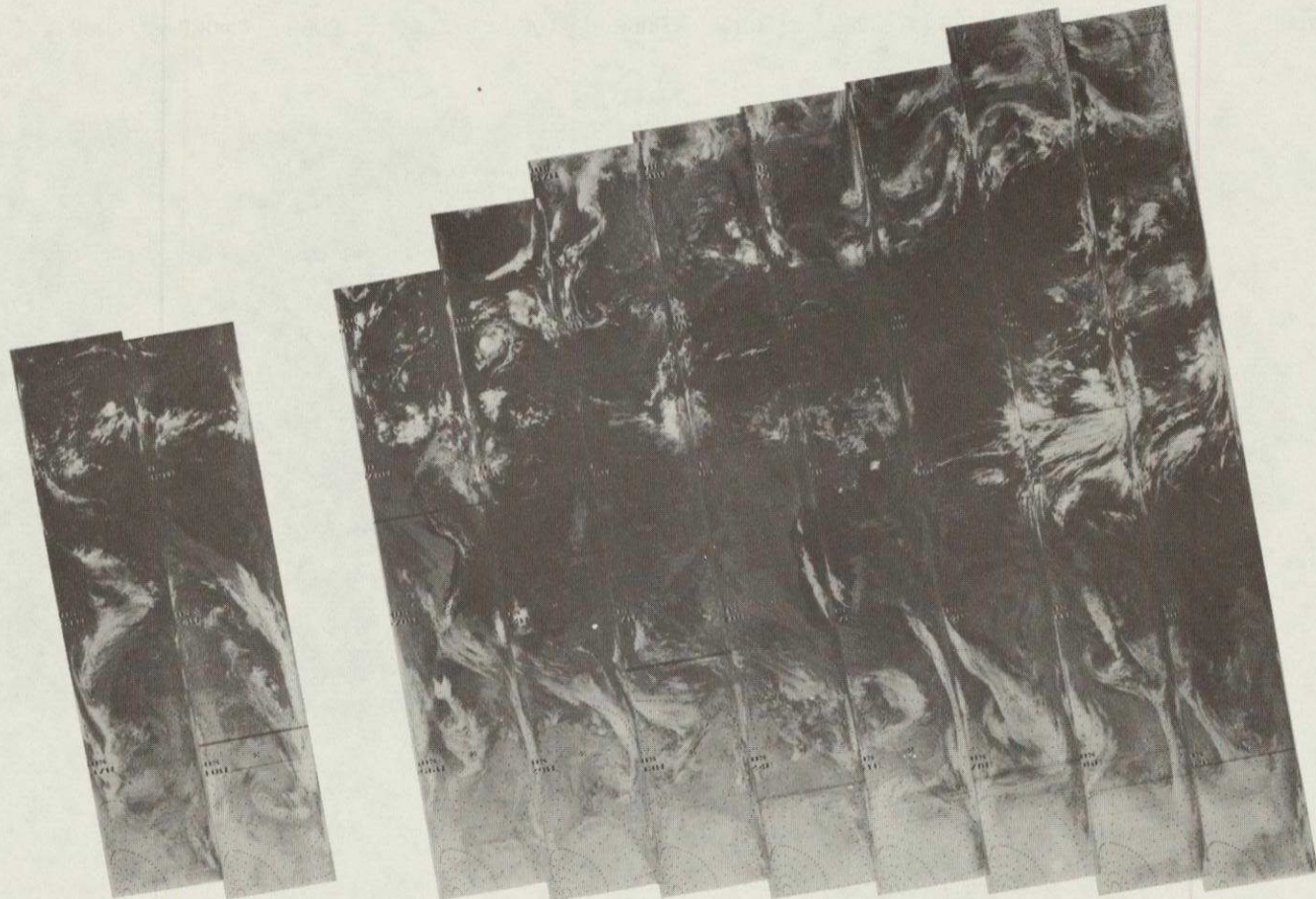
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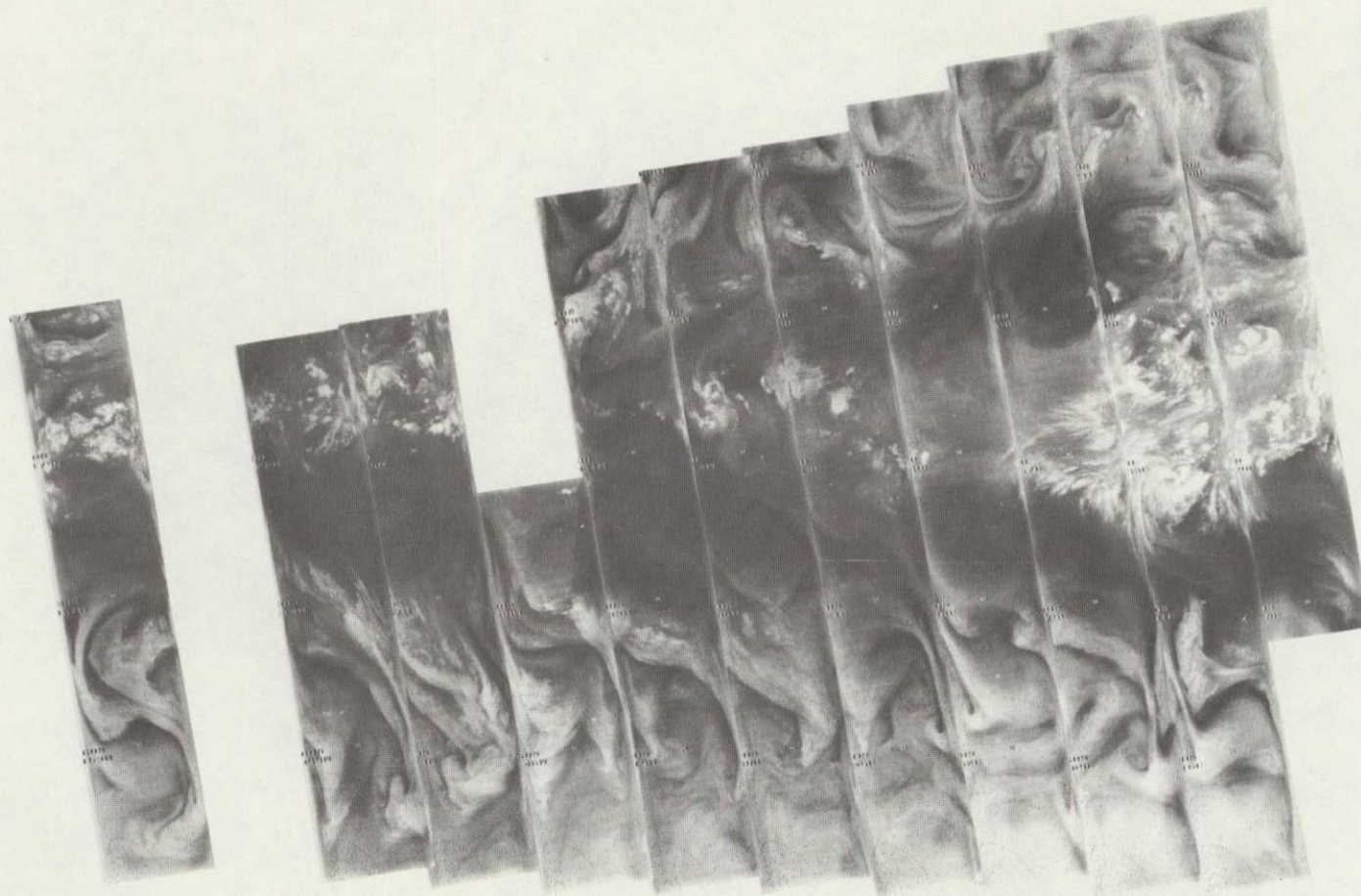
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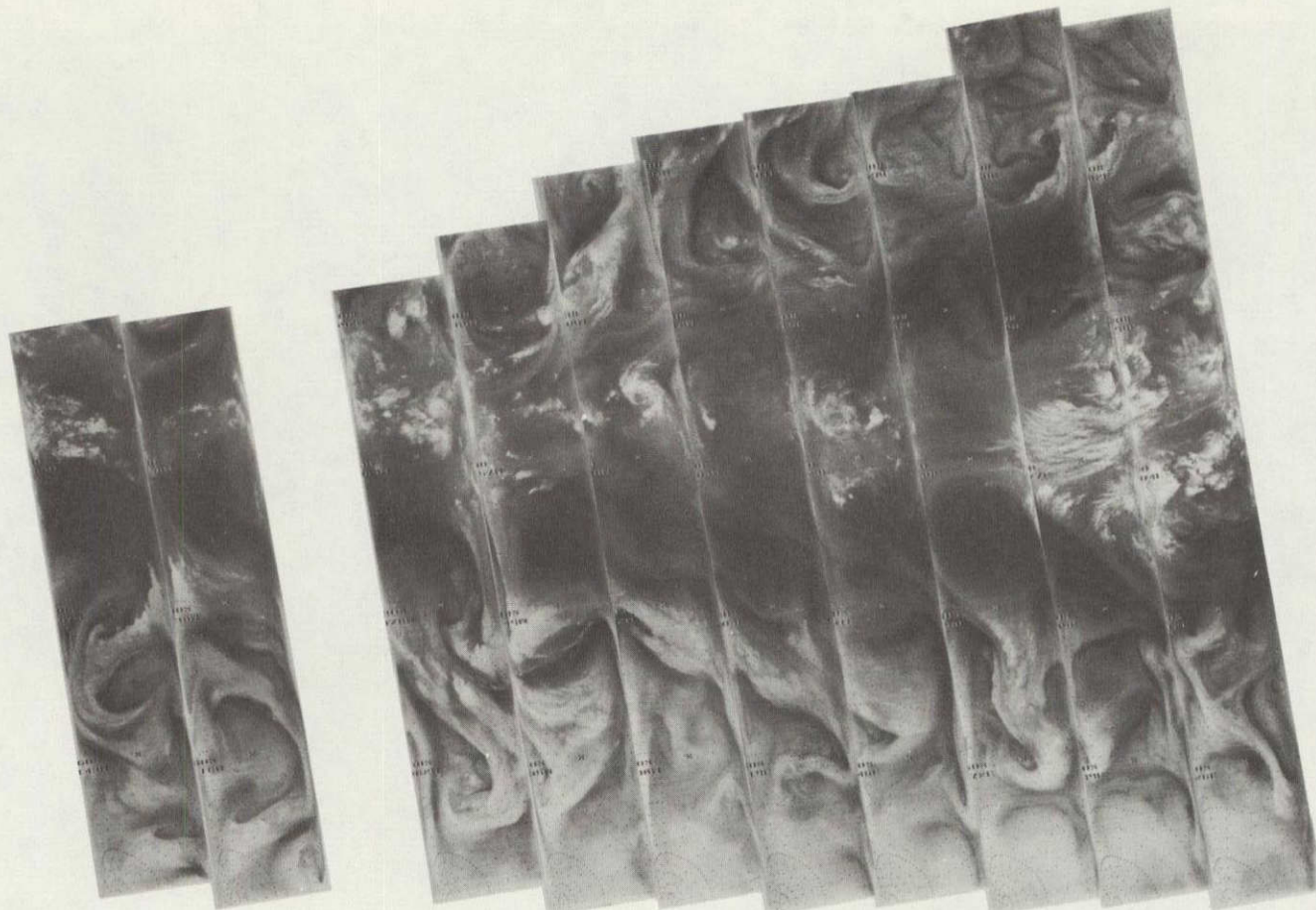
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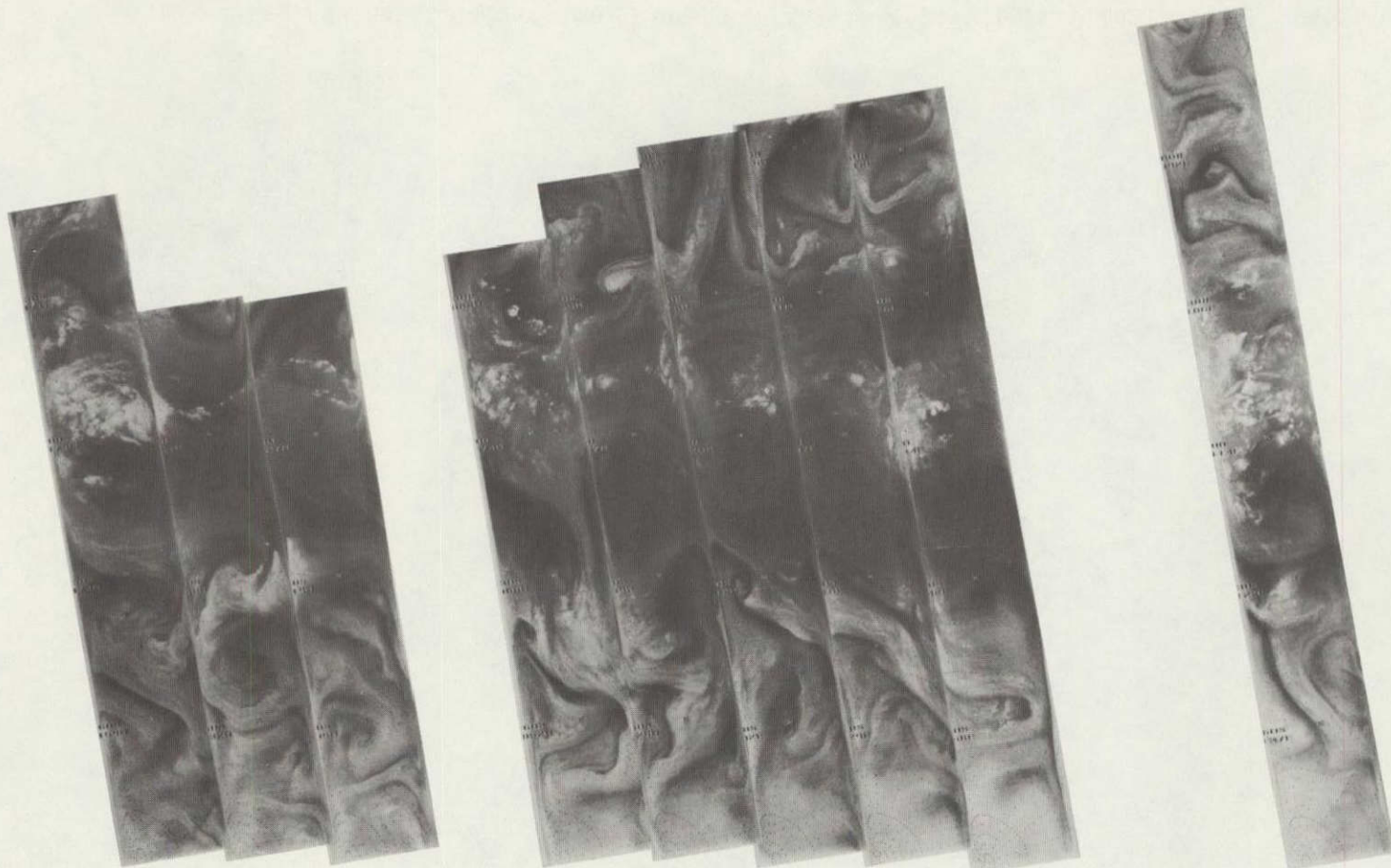
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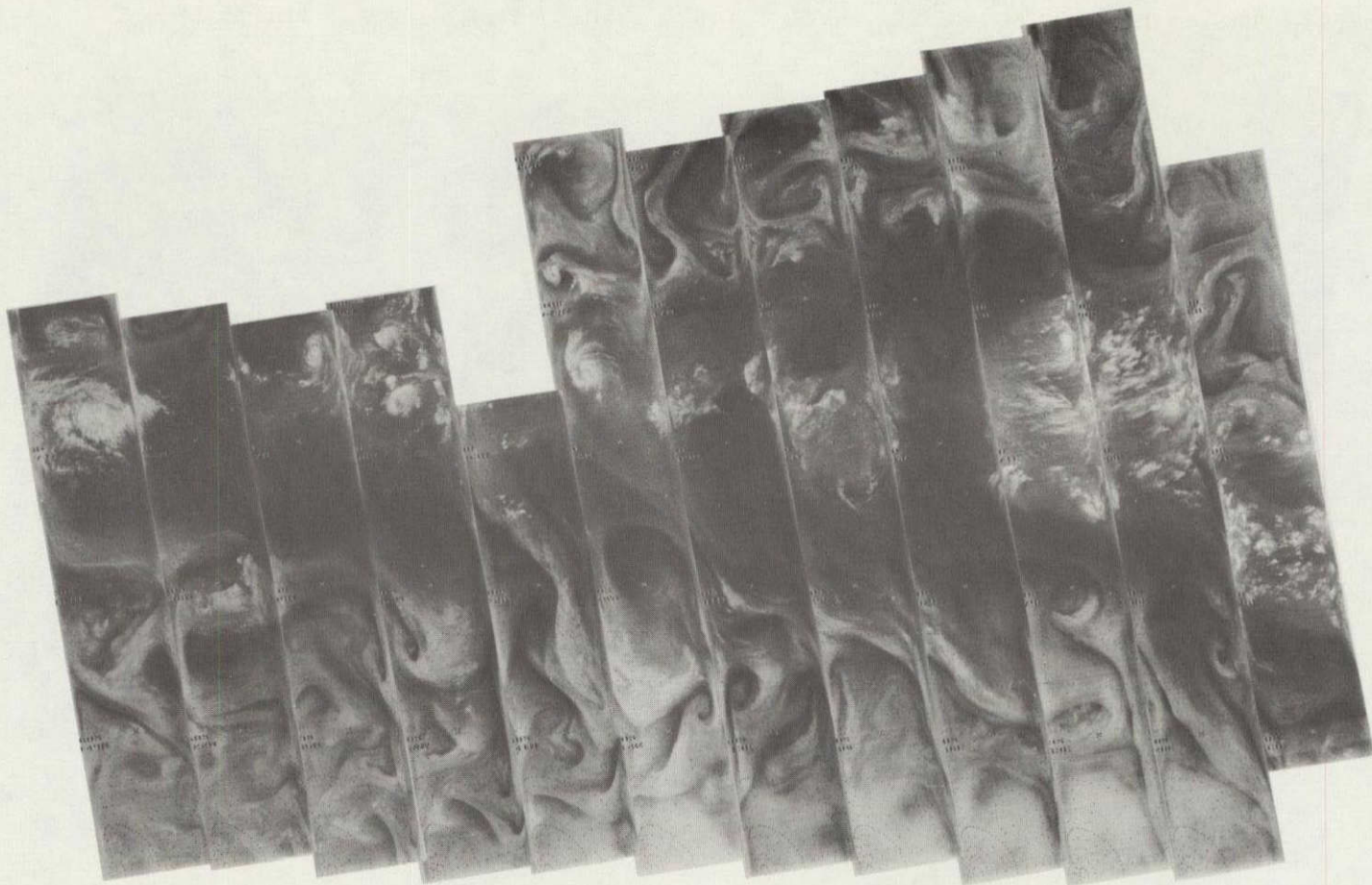
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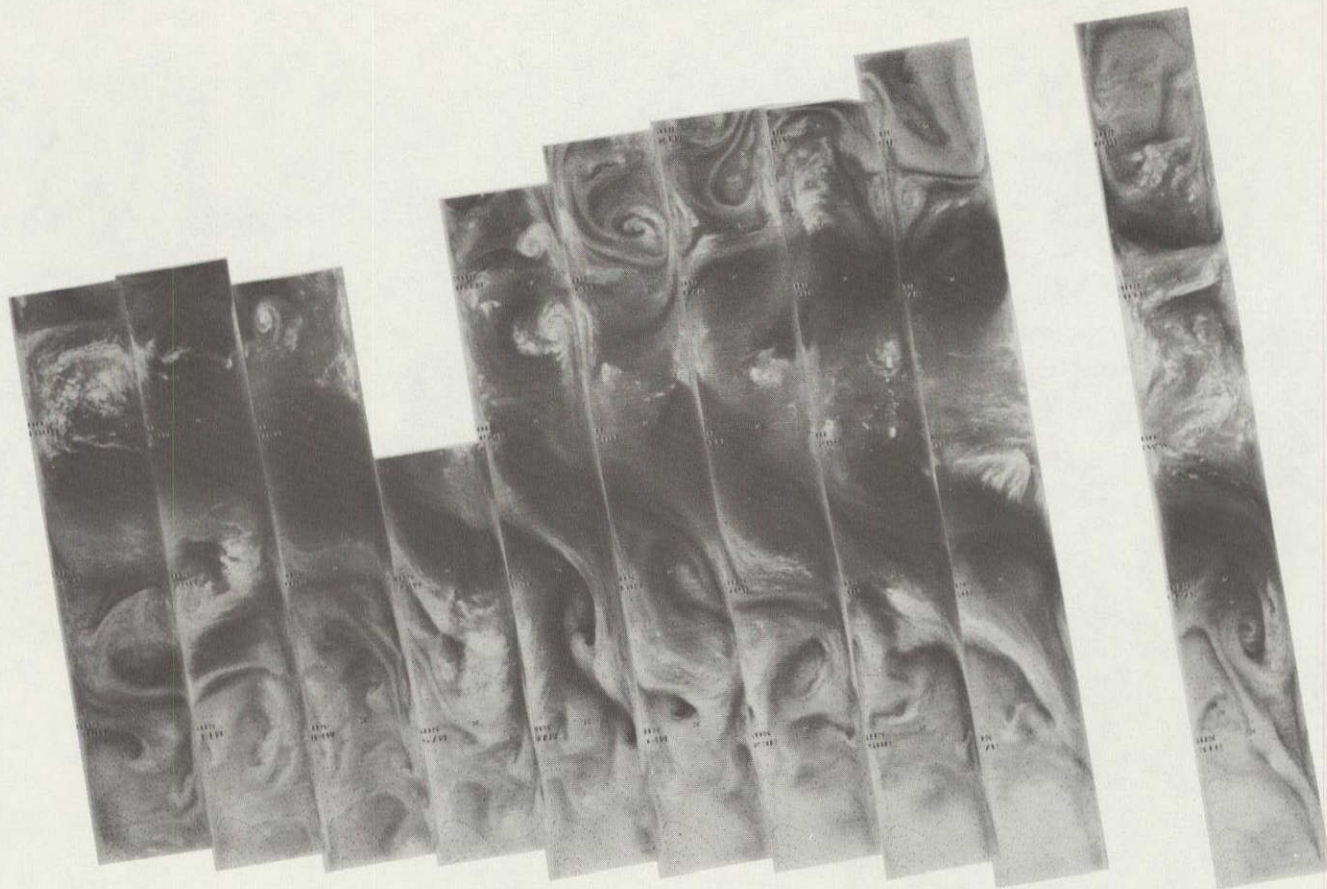
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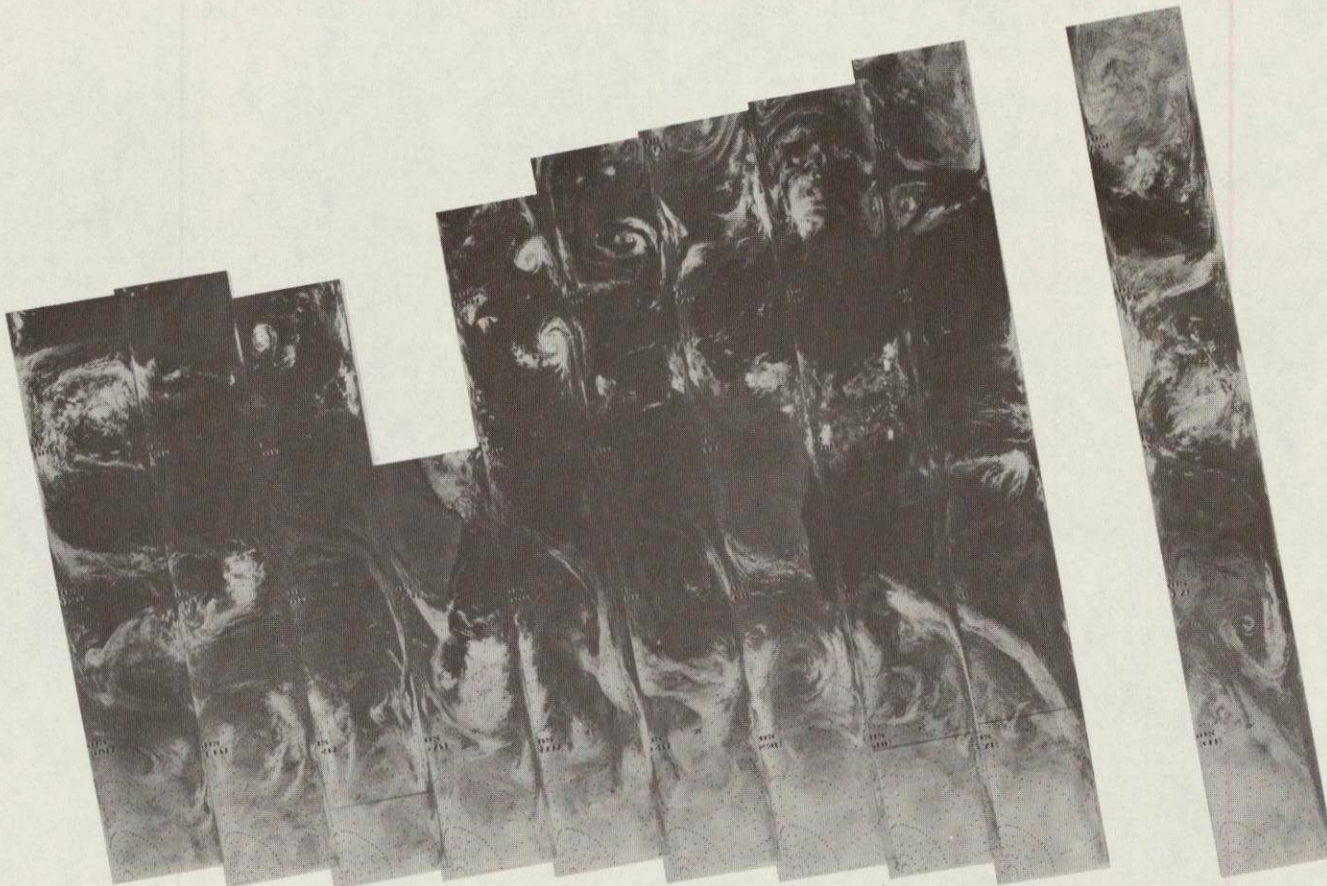
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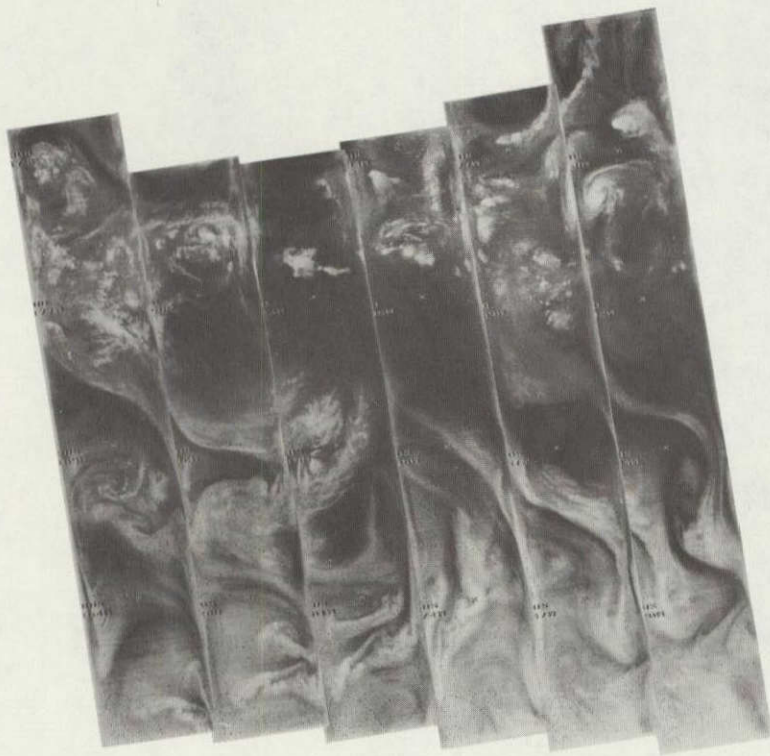
29 AUG 76

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30 AUG 76

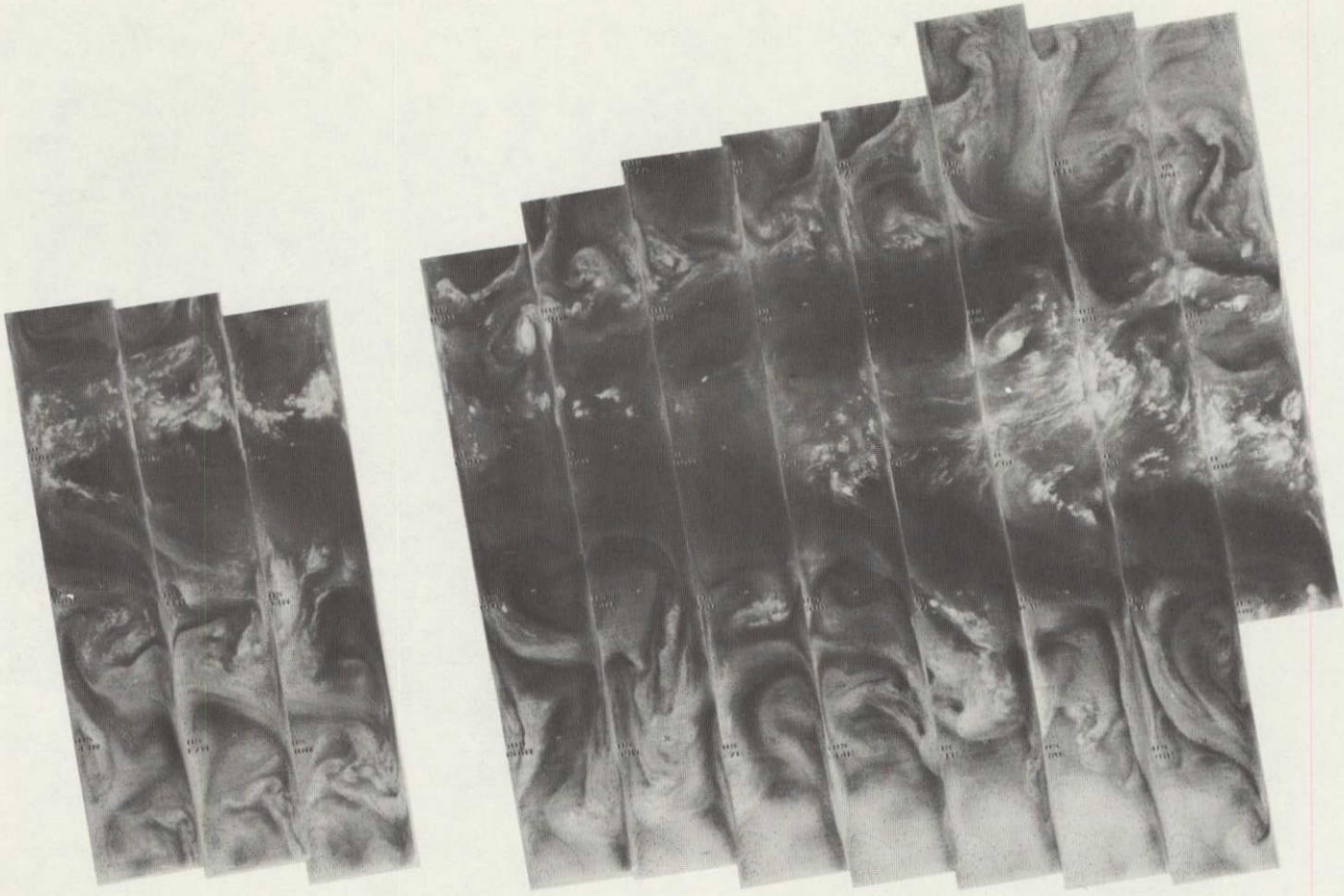
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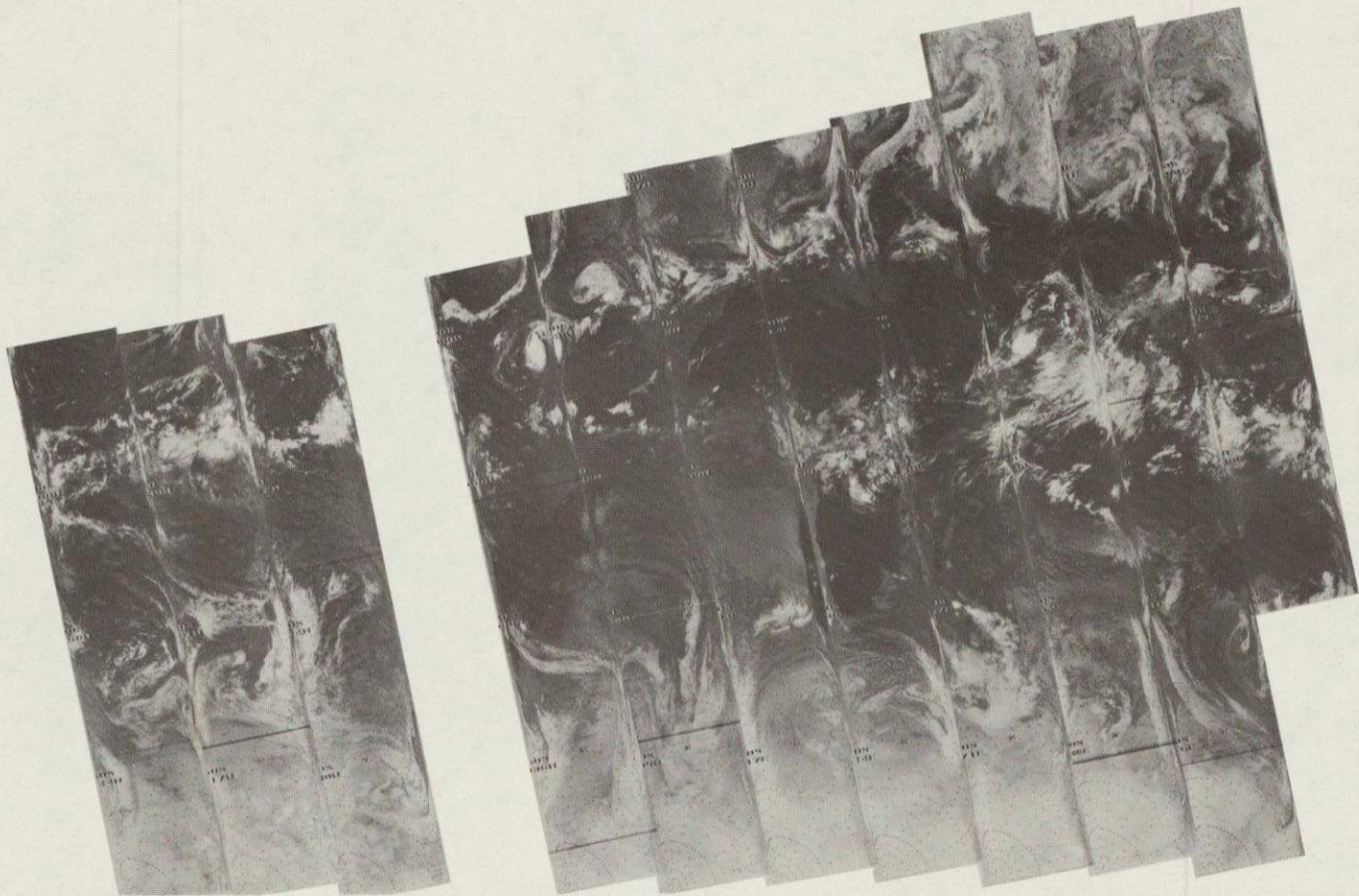
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31 AUG 76

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Table 5-1

This table replaces Table 3-5 on pages 54 and 55 in The Nimbus 6 User's Guide

Table 3-5

Temperature Range of Gray Scale, and Channel of HIRS Data for each Swath on each HIRS Image  
Display Between Orbit 426 and 4697 (14 July 1975 through 27 May 1976)

|  |   | SWATH NUMBER |         |         |         |         |         |         |         |         |         |
|--|---|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|  |   | 1            | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Coverage Period<br>14 July-20 July<br>Orbits<br>426-513  | HIRS Channel<br>Display<br>(channel-range) <sup>†</sup> | 08-08        | 09-09   | 10-10   | 16-16   | 17-17   | 18-18   | 12-12   | 14-14   | 03-03   | 15-15   |
|  | Temperature<br>Range (°K)<br>(black to white)           | 300-200      | 290-210 | 260-210 | 310-270 | 100-900 | 0-30    | 290-210 | 260-210 | 240-210 | 280-210 |
| Coverage Period<br>22 July-31 July<br>Orbits<br>538-545<br>548-549<br>600-613<br>615-647<br>651-657<br>659 | HIRS Channel<br>Display<br>(channel-range) <sup>*</sup> | 08-08        | 09-09   | 10-10   | 16-16   | 17-17   | 17-17   | 12-12   | 14-14   | 03-03   | 15-15   |
|  | Temperature<br>Range (°K)<br>(black-white)              | 300-200      | 290-210 | 260-230 | 310-270 | 100-900 | 100-900 | 280-200 | 280-200 | 280-200 | 280-200 |
| Coverage Period<br>23 July-6 Aug<br>Orbits<br>546-547<br>553-599<br>614<br>648-650<br>658<br>660-747       | HIRS Channel<br>Display<br>(channel-range) <sup>*</sup> | 08-08        | 16-16   | 16-21   | 18-18   | 17-17   | 10-10   | 12-12   | 14-14   | 03-03   | 15-15   |
|  | Temperature<br>Range (°K)<br>(black-white)              | 300-200      | 310-270 | 300-200 | 0-30    | 100-900 | 260-230 | 280-200 | 280-200 | 280-200 | 280-200 |

Table 3-5 (Continued)

|   |   | SWATH NUMBER |         |         |       |         |         |         |               |         |                |
|---|---|--------------|---------|---------|-------|---------|---------|---------|---------------|---------|----------------|
|   |   | 1            | 2       | 3       | 4     | 5       | 6       | 7       | 8             | 9       | 10             |
| Coverage Period<br>7 Aug - 27 May<br>Orbits<br>748-4697 | HIRS Channel<br>Display<br>(channel-range)* | 08-08        | 16-16   | 16-21   | 18-18 | 17-17   | 10-10   | 12-12   | 14-14         | 03-03   | 15-15          |
|   | Temperature<br>Range (°K)<br>(black-white)  | 310-230      | 310-230 | 310-270 | 0-50  | 100-900 | 280-210 | 300-210 | 300-210<br>** | 240-185 | 300-185<br>*** |

\*The HIRS channel number is number before the hyphen. The number after the hyphen is the computer program table used to display the data from each channel as temperatures (°K). The range of temperatures displayed in each swath is given beneath each "HIRS Channel Display". The 18 steps of the scale are used to represent the division of each temperature range into 18 approximately equal temperature intervals. The central wavelength (in  $\mu\text{m}$ ) of each channel on these displays is: channel 3 = 14.4, 8 = 11.0, 9 = 8.2, 10 = 6.7, 12 = 4.52, 14 = 4.40, 15 = 4.24, 16 = 3.71, 17 = 0.61, and 18 is the temperature difference between channel 16 and channel 8. The values of channel 17-17 are albedo, represented as "counts" between 100 (blackest) and 900 (whitest). The values for 16-21 represent a second temperature range for channel 16 data. Table 3-1 on page 39 of the User's Guide provides detailed spectral information and the purpose of each of the HIRS channels.

\*\* 14-14 temperature range changed to 270-210 on orbit 3166A (26 January 1976)

\*\*\* 15-15 temperature range changed to 275-210 on orbit 3166A (26 January 1976)

Table 5-2

This table replaces Tables 4-5 and 4-6 (on pages 79 through 81) in the Nimbus 6 User's Guide and Table 5-2 in the Nimbus 6 Data Catalog Volume 4

Table 4-5 and 6

Parameter Limits of the Gray Scale for Parameters 1, 2, 3, 5, 11, 12, and 16 on the SCAMS Image Displays between Orbits 426 and 4751 (14 July 1975 and 31 May 1976)

| Swath   |                  | 1     | 2         | 3         | 4         | 5                       |                          |
|---|------------------|-------|-----------|-----------|-----------|-------------------------|--------------------------|
| Orbits 426<br>thru 1425<br>14 July 75<br>thru<br>26 Sept. 75  | Parameter        |       | 3         | 2         | 16        | 11                      | 12                       |
|   | Gray Scale Value | black | 280<br>°K | 320<br>°K | 10<br>°K  | 60<br>g/mm <sup>2</sup> | 1.5<br>g/mm <sup>2</sup> |
|   |                  | white | 210       | 100       | -22       | 0.0                     | -0.1*                    |
| Orbits 1426<br>thru 3675<br>26 Sept. 75<br>thru<br>12 Mar. 76 | Parameter        |       | 3         | 2         | 16        | 11                      | 12                       |
|   | Gray Scale Value | black | 280<br>°K | 320<br>°K | 10<br>°K  | 60<br>g/mm <sup>2</sup> | 2.0<br>g/mm <sup>2</sup> |
|   |                  | white | 210       | 100       | -22       | 0.0                     | 0.0                      |
| Orbits 3676<br>thru 3899<br>12 Mar. 76<br>thru<br>29 Mar. 76  | Parameter        |       | 5         | 2         | 16        | 11                      | 12                       |
|   | Gray Scale Value | black | 240<br>°K | 320<br>°K | 10<br>°K  | 70<br>g/mm <sup>2</sup> | 2.0<br>g/mm <sup>2</sup> |
|   |                  | white | 200       | 100       | -22       | 0.0                     | 0.0                      |
| Orbits 3900<br>thru 3929<br>29 Mar. 76<br>thru<br>31 Mar. 76  | Parameter        |       | 1         | 1         | 1         | 5                       | 5                        |
|   | Gray Scale Value | black | 220<br>°K | 265<br>°K | 300<br>°K | 240<br>°K               | 280<br>°K                |
|   |                  | white | 130       | 210       | 260       | 200                     | 220                      |
| Orbits 3930<br>thru 4584<br>31 Mar. 76<br>thru<br>19 May 76   | Parameter        |       | 1         | 1         | 1         | 2                       | 3                        |
|   | Gray Scale Value | black | 220<br>°K | 265<br>°K | 300<br>°K | 320<br>°K               | 280<br>°K                |
|   |                  | white | 130       | 210       | 260       | 100                     | 220                      |
| Orbits 4585<br>thru 4751<br>19 May 76<br>thru<br>31 May 76    | Parameter        |       | 1         | 1         | 1         | 5                       | 3                        |
|   | Gray Scale Value | black | 220<br>°K | 260<br>°K | 290<br>°K | 240<br>°K               | 280<br>°K                |
|   |                  | white | 130       | 200       | 245       | 180                     | 220                      |

\*1.6 to 0.0 between orbit 426 and 477

Parameters 1, 2, 3, 5, and 16 represent uninverted antenna temperatures for channels 1 (22.24 GHz), 2 (31.65 GHz), 3 (52.85 GHz), and 5 (55.45 GHz). Parameter 16 is the temperature difference between channels 2 and 3. Parameters 11 and 12 represent inverted antenna temperatures of integrated atmospheric water vapor (channel 11) and integrated liquid water from clouds or precipitation.

Table 5-3

This table replaces Table 4-7 (on pages 82 and 83) in The Nimbus 6 User's Guide

Table 4-7

Contour Program Options used for Parameters 13, 14, and 15  
on the SCAMS Image Display

| Contour options   | Parameters  |   |  | Valid for orbits                       |
|-------------------|---|---|--|--|
|                   | 13<br>Mean temperature<br>between<br>1000 mb and 500 mb | 14<br>Mean temperature<br>between<br>500 mb and 250 mb. | 15<br>Mean temperature<br>between<br>250 mb and 100 mb |  |
| Contour interval  | 4°K   | 4°K   | 4°K  | 426-851<br>(14 July- 14 Aug. 1975)     |
| Contour thickness | 1°K   | 1°K   | 1°K  |  |
| Contour interval  | 4°K   | 4°K   | 4°K  | 852-4751<br>(14 Aug.-1975-31 May 1976) |
| Contour thickness | 2°K   | 2°K   | 2°K  |  |

Section 4.5.3 "Tape Format" on page 83 of the User's Guide states that each tape will have "five files, i.e., a short header file . . . and four data files, . . ." There will not be a header file on the archival tape. The sentence should be changed to read: "The tapes will be standard 9-track 1600 BPI tapes, each containing four data files, one for each of four days."

In Table 4-8 on page 80 the "Pitch error" and "Roll error" "Dimensional Units" should be changed to counts (from Deg) and the "Multiplier Used" should be changed to 1 (from 32). In the same table the "Playback orbit" should be followed by one "I\*2 Spare", and then by the "Reference orbit", which should be changed to I\*4 (rather than I\*2). (Reference orbit = year \* 100,00 + day \* 100 + finish hour.) The "Dimensional Units" for the "Geopotential thicknesses" on page 85 of the same table should be changed to "°K" (from DM).

The following SCAMS information has been edited by the experimenter and briefly outlines the current status of data availability, retrieval methods, and a current table of theoretical brightness temperature values.

The SCAMS instrument operated from June 15, 1975 to May 31, 1976. The data from this experiment has been processed and can be obtained from the National Space Science Data Center at GSFC. The digital data, including instrument output, calibrated antenna temperatures, deconvolved brightness temperatures, and retrieved atmospheric



parameters, are recorded on a set of 87 9-track tapes. With three exceptions, each tape contains four contiguous days of data. Channel 1 and 2 brightness temperatures and five atmospheric parameters from these tapes have been dumped in a condensed format on microfiche. A typical fiche contains somewhat less than two days of data. Photographic images for individual orbits are also available.

At this time, the archived data represent the "first cut" at retrievals, and can be improved with respect to calibration of the oxygen band channels and inversion of the H<sub>2</sub>O channels. Data prior to Jan. 2, 1976 was calibrated by assuming the radiometric temperatures of the calibration targets to be equal to their physical temperatures. Comparisons with radiosondes indicated that a more accurate calibration would be obtained with an offset of -1.2 K on the oxygen band target. The archived data starting with Jan. 2, 1976 incorporates this correction. Strictly speaking, the previous data should be recalibrated and reinverted, but for most purposes an adequate approximation can be obtained by simply subtracting 1° from the oxygen band antenna and brightness temperatures and the retrieved temperature profile. No correction was made to the H<sub>2</sub>O targets, for lack of evidence that any was necessary.

All of the archived water vapor and liquid water retrievals were obtained by a linear algorithm. Improved retrievals, particularly in humid regions, can be obtained by use of the following nonlinear equations:

$$\text{vapor (mm)} = 72 + 12 \alpha$$

$$\text{liquid (mm)} = 0.4 \beta$$

where

$$\alpha = \left[ 7.34 \ln \left( \frac{280 - T_{01}}{280 - T_{B1}} \right) - 3.75 \ln \left( \frac{280 - T_{02}}{280 - T_{B2}} \right) \right] \cos \theta$$

$$\beta = \left[ -3.34 \ln \left( \frac{280 - T_{01}}{280 - T_{B1}} \right) + 9.71 \ln \left( \frac{280 - T_{02}}{289 - T_{B2}} \right) \right] \cos \theta$$

T<sub>B1</sub> and T<sub>B2</sub> are the measured brightness temperatures at 22.23 and 31.65 GHz, and T<sub>01</sub> and T<sub>02</sub> are brightness temperatures computed for a tropical model atmosphere containing 72 mm precipitable water vapor; the latter are listed in Table 5-4 as a function of view angle  $\theta$ .

The following information, describing how the antenna temperatures are computed from the SCAMS instrument digital data, should be added after SCAMS Section 4.5 of the User's Guide.

Table 5-4  
Theoretical Brightness Temperatures for a Saturated Tropical  
Troposphere with no Clouds and a Smooth Ocean Surface  
(Valid for Period 2 January 1976-31 May 1976)

| $\theta$<br>View<br>Angle | $T_{01}$ | $T_{02}$ |
|---------------------------|----------|----------|
| 0                         | 225.6    | 178.2    |
| 8°                        | 225.9    | 177.9    |
| 17°                       | 226.9    | 177.3    |
| 26°                       | 229.2    | 177.5    |
| 34°                       | 233.9    | 180.1    |
| 44°                       | 242.0    | 187.4    |
| 53°                       | 254.5    | 203.0    |

#### 4.6 Post-Launch Calibration

Antenna temperatures are computed from the SCAMS Instrument digital data for each of the five channels by the equation:

$$T_A = T_{AS} + \frac{T_{AC} - T_{AS}}{d_{Tc} - d_s} (d - d_s)$$

where  $T_A$  is antenna temperature for the earth (positions 0-12),  $T_{AS}$  is the space antenna temperature (position 13),  $T_{AC}$  is the calibration target antenna temperature (position 14),  $d$  is earth data in counts,  $d_s$  is space data in counts, and  $d_c$  is calibration target data in counts. The digital data matrix is described in Table 4-2 of the Nimbus 6 User's Guide. The space calibration antenna temperature is assumed constant at 3°K for all five channels. The target antenna temperature is computed by

$$T_{AC} = T_C + T_{CO}$$

The constant offset  $T_{CO}$  is currently zero for channels 1 and 2. The target temperatures ( $T_C$ ) are given by

$$T_C = a_0 + a_1 (R - R_{25}) + a_2 (R - R_{25})^2$$

where the thermistor resistances ( $R$ ) are computed by

$$R = R_1 + \frac{R_2 - R_1}{d_{R2} - d_{R1}} (d_R - d_{R1})$$

and values of the other constants are listed in Table 4-9a. Note that channels 3, 4, and 5 share the same calibration target. Also listed in Table 4-9a are word numbers in the digital data matrix containing data values  $d_R$ ,  $d_{R1}$ ,  $d_{R2}$ , and the recent addition of the  $T_{CO}$  value for channels 3, 4, and 5.

Table 5-5

This table accompanies Section 4.6 "Post-launch Calibration", and should be added to the end of the SCAMS section of the User's Guide

Table 4-9

Thermistor Calibration Constants  
used to Calculate the SCAMS Target Temperatures

| channel<br>constant | 1                   | 2                   | 3,4,5               |
|---------------------|---------------------|---------------------|---------------------|
| $a_0$               | 298.16              |                     |                     |
| $a_1$               | .46485              | .46535              | .46814              |
| $a_2$               | $3.0 \cdot 10^{-5}$ | $2.9 \cdot 10^{-5}$ | $3.0 \cdot 10^{-5}$ |
| $R_{25}$            | 603.75              | 602.98              | 599.71              |
| $R_1$               | 495.6               |                     |                     |
| $R_2$               | 603.4               |                     |                     |
| $d_R$ (word no.)    | 1                   | 11                  | 2                   |
| $d_{R1}$ (word no.) | 61                  |                     | 62                  |
| $d_{R2}$ (word no.) | 71                  |                     | 72                  |

Table 5-6

This table replaces Table 4-9 in Section 4.6 "Post-launch Calibration" and should be added to the end of the SCAMS section of the User's Guide.

Table 4-9a

Thermistor Calibration Constants  
used to Calculate the SCAMS Target Temperatures

| channel \ constant  | 1                   | 2                   | 3,4,5               |
|---------------------|---------------------|---------------------|---------------------|
| $a_0$               | 298.16              |                     |                     |
| $a_1$               | .46485              | .46535              | .46814              |
| $a_2$               | $3.0 \cdot 10^{-5}$ | $2.9 \cdot 10^{-5}$ | $3.0 \cdot 10^{-5}$ |
| $R_{25}$            | 603.75              | 602.98              | 599.71              |
| $R_1$               | 495.6               |                     |                     |
| $R_2$               | 603.4               |                     |                     |
| $d_R$ (word no.)    | 1                   | 11                  | 2                   |
| $d_{R1}$ (word no.) | 61                  |                     | 62                  |
| $d_{R2}$ (word no.) | 71                  |                     | 72                  |
| $T_{CO}$            | 0                   |                     | -1.2°K              |

#### 5.4 ESMR Corrections to the User's Guide

The following are corrected equations for the ESMR Section of the User's Guide:

page 90

$$X \text{ (km)} = (636 + 10.8P - 0.32P^2) R_j$$

page 96

$$T_B = T_A - (T_A - T_C) \frac{(C - C_A)}{(C_C - C_A)}$$

page 101

$$T_{\text{Horizontal True}} = 1 + a T_{\text{Horizontal Nominal}} - T_{\text{Vertical Nominal}}$$

$$T_{\text{Vertical True}} = 1 + b T_{\text{Vertical Nominal}} - b T_{\text{Horizontal Nominal}}$$

page 106

$$N_1 = 256 (T_{H_1} - 100) + T_{V_1} - 100$$

The following information supplements Section 5.3.2 in the User's Guide.

The display format and temperature ranges of the images in the swath displays for ESMR has been changed since launch. The latest revision occurred after orbit 3932 in which each ESMR scan line is displayed once prior to orbit 3932 and twice after orbit 3933. Similarly, each of the 71 scan-spot elements is displayed once through orbit 3932 and twice after orbit 3933.

Through orbit 3932 (31 March) the ESMR displays contained 20 swaths of data, as shown in the ESMR image displays up to orbit 3932 in Section 3.3. The swaths are numbered (numbers not shown) from 1 on the left to 20 on the right. Each of the ten swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 5-5a. The right set of ten swaths has a similar format, and displays the earliest recorded data. If the right swaths were cut and placed above the group on the left, the new display would show the continuous coverage recorded for that orbit. Swaths 1 and 11 have the same polarization and temperature range. Similarly, swaths 2 and 12, 3 and 13, etc., are the same. The tables here labeled 5-8 and 5-9 replace Table 5-5 on page 105 of the User's Guide.

As stated above, the ESMR display format was modified at orbit 3933 (31 March 1976). After this orbit all displays will have the following new format.

The new displays contain ten swaths of data plus a geographic grid overlay for each swath, as shown in the ESMR image displays after orbit 3933 in Section 3.3, of the Nimbus 6, Data Catalog, Volume 5.

The swaths are numbered (numbers not displayed) from 1 on the left to 10 on the right. Each of the five swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 5-5b. The right set of five swaths has a similar format, and displays the latest recorded data. If the right swaths were cut and placed below the group on the left, the new display would show the continuous coverage of that display.

Swaths 1 and 6 display the same parameter. That is, the temperature range and polarization for swaths 1 and 6 are the same. Similarly, swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Table 5-5b is set up to show this duplication of parameter information.

Data time (GMT) references for the left set of five swaths are shown adjacent to the vertical line at the left. Time tick marks are every five minutes with hour and minute annotation every fifteen minutes. Data time references for the right set of five swaths are shown in a similar manner adjacent to the vertical line at the right.

The center portion of the display contains two swaths of grid overlay information: the left grid for overlay on each of the five swaths on the left, and the right grid for overlay on each of the five swaths on the right. The grid longitudes are generated at ten degree intervals between 55 degrees south and 55 degrees north, and at 20 degree intervals from 55 degrees to the Poles. Latitude grids are generated every five degrees. All grid lines consist of a series of dots at one degree intervals. Latitudes are labeled at 60°S, 30°S, EQ, 30°N, and 60°N. Longitude labels are normally placed next to each latitude label.

Table 5-7

This table replaces Table 5-5 on page 105 in the User's Guide

Table 5-5

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image  
Displays for Orbits 426 through 827 (14 July through 12 August 1975)

| Gray Scale Number | Swath Number and ESMR Display Parameter |                       |                                 |                       |                       |                                 |                       |                       |                                 |                            |
|-------------------|---|-----------------------|---------------------------------|-----------------------|-----------------------|---------------------------------|-----------------------|-----------------------|---------------------------------|----------------------------|
|                   | 1 and 11<br>( $T_H$ )                   | 2 and 12<br>( $T_V$ ) | 3 and 13<br>$\frac{T_H+T_V}{2}$ | 4 and 14<br>( $T_H$ ) | 5 and 15<br>( $T_V$ ) | 6 and 16<br>$\frac{T_H+T_V}{2}$ | 7 and 17<br>( $T_H$ ) | 8 and 18<br>( $T_V$ ) | 9 and 19<br>$\frac{T_H+T_V}{2}$ | 10 and 20<br>( $T_V-T_H$ ) |
| (black) 1         | > 200                                   |                       |                                 | > 250                 |                       |                                 | > 300                 |                       |                                 | > 50                       |
| 2                 | 196-200                                 | same                  | same                            | 246-250               | same                  | same                            | 296-300               | same                  | same                            | 46-50                      |
| 3                 | 193-196                                 | as                    | as                              | 243-246               | as                    | as                              | 293-296               | as                    | as                              | 43-46                      |
| 4                 | 190-193                                 | 1 and 11              | 1 and 11                        | 240-243               | 4 and 14              | 4 and 14                        | 290-293               | 7 and 17              | 7 and 17                        | 40-43                      |
| 5                 | 187-190                                 |                       |                                 | 237-240               |                       |                                 | 287-290               |                       |                                 | 37-40                      |
| 6                 | 184-187                                 |                       |                                 | 234-237               |                       |                                 | 284-287               |                       |                                 | 34-37                      |
| 7                 | 181-184                                 |                       |                                 | 231-234               |                       |                                 | 281-284               |                       |                                 | 31-34                      |
| 8                 | 178-181                                 |                       |                                 | 228-231               |                       |                                 | 278-281               |                       |                                 | 28-31                      |
| 9                 | 175-178                                 |                       |                                 | 225-228               |                       |                                 | 275-278               |                       |                                 | 25-28                      |
| 10                | 171-175                                 |                       |                                 | 221-225               |                       |                                 | 271-275               |                       |                                 | 21-25                      |
| 11                | 168-171                                 |                       |                                 | 218-221               |                       |                                 | 268-271               |                       |                                 | 18-21                      |
| 12                | 165-168                                 |                       |                                 | 215-218               |                       |                                 | 265-268               |                       |                                 | 15-18                      |
| 13                | 162-165                                 |                       |                                 | 212-215               |                       |                                 | 262-265               |                       |                                 | 12-15                      |
| 14                | 159-162                                 |                       |                                 | 209-212               |                       |                                 | 259-262               |                       |                                 | 09-12                      |
| 15                | 156-159                                 |                       |                                 | 206-209               |                       |                                 | 256-259               |                       |                                 | 06-09                      |
| 16                | 153-156                                 |                       |                                 | 203-206               |                       |                                 | 253-256               |                       |                                 | 03-06                      |
| 17                | 150-153                                 |                       |                                 | 200-203               |                       |                                 | 250-253               |                       |                                 | 00-03                      |
| (white) 18        | < 150                                   |                       |                                 | < 200                 |                       |                                 | < 250                 |                       |                                 | < 00                       |

$T_H$  = Brightness temperature derived from the ESMR horizontal polarization channel data

$T_V$  = Brightness temperature derived from the ESMR vertical polarization channel data

Table 5-8  
 This table follows the new Table 5-6 (above), which replaced  
 Table 5-5 on page 105 in the User's Guide

Table 5-5a

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays  
 for Orbits 828 through 3932 (13 August 1975 through 31 March 1976)  
 (Brightness Temperatures are in °K)

| Gray Scale Number | Swath Number and ESMR Display Parameter |                               |                                 |                               |                               |                                 |                               |                               |                                 |   |
|-------------------|---|-------------------------------|---------------------------------|-------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------------------|---------------------------------|---|
|                   | 1 and 11<br>(T <sub>H</sub> )           | 2 and 12<br>(T <sub>V</sub> ) | 3 and 13<br>$\frac{T_H+T_V}{2}$ | 4 and 14<br>(T <sub>H</sub> ) | 5 and 15<br>(T <sub>V</sub> ) | 6 and 16<br>$\frac{T_H+T_V}{2}$ | 7 and 17<br>(T <sub>H</sub> ) | 8 and 18<br>(T <sub>V</sub> ) | 9 and 19<br>$\frac{T_H+T_V}{2}$ | 10 and 20<br>(T <sub>V</sub> -0.6T <sub>H</sub> ) |
| (black) 1         | > 200                                   | > 230                         | > 210                           | > 250                         | > 270                         | > 250                           | > 290                         | > 300                         | > 280                           | > 140   |
| 2                 | 196-200                                 | 226-230                       | 206-210                         | 246-250                       | 267-270                       | 247-250                         | 287-290                       | 298-300                       | 278-280                         | 136-140   |
| 3                 | 191-196                                 | 223-226                       | 203-206                         | 243-246                       | 264-267                       | 244-247                         | 284-287                       | 295-298                       | 275-278                         | 133-136   |
| 4                 | 187-191                                 | 219-223                       | 199-203                         | 239-243                       | 261-264                       | 241-244                         | 281-284                       | 293-295                       | 273-275                         | 129-133   |
| 5                 | 183-187                                 | 215-219                       | 195-199                         | 235-239                       | 258-261                       | 238-241                         | 278-281                       | 290-293                       | 270-273                         | 125-129   |
| 6                 | 178-183                                 | 211-215                       | 191-195                         | 231-235                       | 254-258                       | 234-238                         | 274-278                       | 288-290                       | 268-270                         | 121-125   |
| 7                 | 174-178                                 | 208-211                       | 188-191                         | 228-231                       | 251-254                       | 231-234                         | 271-274                       | 285-288                       | 265-268                         | 118-121   |
| 8                 | 169-174                                 | 204-208                       | 184-188                         | 224-228                       | 248-251                       | 228-231                         | 268-271                       | 283-285                       | 263-265                         | 114-118   |
| 9                 | 165-169                                 | 200-204                       | 180-184                         | 220-224                       | 245-248                       | 225-228                         | 265-268                       | 280-283                       | 260-263                         | 110-114   |
| 10                | 161-165                                 | 196-200                       | 176-180                         | 216-220                       | 242-245                       | 222-225                         | 262-265                       | 278-280                       | 258-260                         | 106-110   |
| 11                | 156-161                                 | 193-196                       | 173-176                         | 213-216                       | 239-242                       | 219-222                         | 259-262                       | 275-278                       | 255-258                         | 103-106   |
| 12                | 152-156                                 | 189-193                       | 169-173                         | 209-213                       | 236-239                       | 216-219                         | 256-259                       | 273-275                       | 253-255                         | 99-103  |
| 13                | 148-152                                 | 185-189                       | 165-169                         | 205-209                       | 233-236                       | 213-216                         | 253-256                       | 270-273                       | 250-253                         | 95-99   |
| 14                | 143-148                                 | 181-185                       | 161-165                         | 201-205                       | 229-233                       | 209-213                         | 249-253                       | 268-270                       | 248-250                         | 91-95   |
| 15                | 139-143                                 | 178-181                       | 158-161                         | 198-201                       | 226-229                       | 206-209                         | 246-249                       | 265-268                       | 245-248                         | 88-91   |
| 16                | 134-139                                 | 174-175                       | 154-158                         | 194-198                       | 223-226                       | 203-206                         | 243-246                       | 263-265                       | 243-245                         | 84-88   |
| 17                | 130-134                                 | 170-174                       | 150-154                         | 190-194                       | 220-223                       | 200-203                         | 240-243                       | 260-263                       | 240-243                         | 80-84   |
| (white) 18        | < 130                                   | < 170                         | < 150                           | < 190                         | < 220                         | < 200                           | < 240                         | < 260                         | < 260                           | < 80  |

T<sub>H</sub> = Brightness temperature derived from the ESMR horizontal polarization data

T<sub>V</sub> = Brightness temperature derived from the ESMR vertical polarization data



Table 5-9

This table follows the new Table 5-5a (above), which replaced Table 5-5 on page 105 in the User's Guide

Table 5-5b

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 3933 through 5985 (31 March through 31 August 1976)

(Brightness Temperatures are in °K)

| Gray Scale Number | Swath Number and ESMR Display Parameter |                              |                              |                              |  |
|-------------------|---|------------------------------|------------------------------|------------------------------|--|
|                   | 1 and 6<br>(T <sub>H</sub> )            | 2 and 7<br>(T <sub>H</sub> ) | 3 and 8<br>(T <sub>H</sub> ) | 4 and 9<br>(T <sub>V</sub> ) | 5 and 10<br>$\left(\frac{T_H + T_V}{2}\right)$ |
| (black) 1         | >200                                    | >230                         | >210                         | >250                         | >270   |
| 2                 | 196-200                                 | 296-230                      | 206-210                      | 246-250                      | 267-270  |
| 3                 | 191-196                                 | 223-226                      | 203-206                      | 243-246                      | 264-267  |
| 4                 | 187-191                                 | 219-223                      | 199-203                      | 239-243                      | 261-264  |
| 5                 | 183-187                                 | 215-219                      | 195-199                      | 235-239                      | 258-261  |
| 6                 | 178-183                                 | 211-215                      | 191-195                      | 231-235                      | 254-258  |
| 7                 | 174-178                                 | 208-211                      | 188-191                      | 228-231                      | 251-254  |
| 8                 | 169-174                                 | 204-208                      | 184-188                      | 224-228                      | 248-251  |
| 9                 | 165-169                                 | 200-204                      | 180-184                      | 220-224                      | 245-248  |
| 10                | 161-165                                 | 196-200                      | 176-180                      | 216-220                      | 242-245  |
| 11                | 156-161                                 | 193-196                      | 173-176                      | 213-216                      | 239-242  |
| 12                | 152-156                                 | 189-193                      | 169-173                      | 209-213                      | 236-239  |
| 13                | 148-152                                 | 185-189                      | 165-169                      | 205-209                      | 233-236  |
| 14                | 143-148                                 | 181-185                      | 161-165                      | 201-205                      | 229-233  |
| 15                | 139-143                                 | 178-181                      | 158-161                      | 198-201                      | 226-229  |
| 16                | 134-139                                 | 174-178                      | 154-158                      | 194-198                      | 223-226  |
| 17                | 130-134                                 | 170-174                      | 150-154                      | 190-194                      | 220-223  |
| (white) 18        | <130                                    | <170                         | <150                         | <190                         | <220   |

T<sub>H</sub> = Brightness temperature derived from the ESMR horizontal polarization data

T<sub>V</sub> = Brightness temperature derived from the ESMR vertical polarization data

## 5.5 ERB Corrections to the User's Guide

Post-launch calibration procedures are described below. While some numbers are for the period of this catalog, the calibration procedure is valid for all data. This information can be added as Section 6.5a to the User's Guide and would fit on page 134.

### 6.5a Post-launch Calibration

The observations from the wide angle channels (11 and 12), which measure the total energy ( $<0.2 \mu\text{m}$  to  $>50 \mu\text{m}$ ) emitted and reflected by the earth, depend on the prelaunch calibration and pertinent instrument temperatures. Assuming unit emissivity for the target scene, the irradiance from the scene is given by,

$$H_T = [\Delta W - \epsilon_s F_s \sigma T_s^4 + \epsilon_d F_d \sigma (T_d + K v)^4]$$

where

$\Delta W$  = effective thermopile irradiance ( $\text{w m}^{-2}$ )

$\sigma$  =  $5.6697 \times 10^{-8} \text{ w m}^{-2} (\text{deg. K})^4$

$\epsilon_s$  = emissivity of FOV stop = 0.965

$F_s$  = view factor of the FOV stop = 0.18892

$T_s$  = temperature ( $^{\circ}\text{K}$ ) of the FOV stop

$\epsilon_d$  = emissivity of the thermopile = 0.977

$F_d$  = view factor of the thermopile = 0.80461

$T_d$  = temperature ( $^{\circ}\text{K}$ ) of the thermopile base

$K$  = factor relating thermopile base temperature to thermopile surface temperature =  $0.0031^{\circ}\text{K per count}$

$v$  = thermopile output in digital counts

The effective thermopile irradiance ( $\Delta W$ ) is obtained from the thermopile output ( $v$ ) as follows:

$$\Delta W = a_0 (T_m) + a_1 (T_m) \cdot v$$

where

$$a_0 = C_0 + C_1 T_m,$$

and

$$a_1 = d_0 + d_1 T_m$$

are derived from prelaunch calibrations and depend on the module temperature ( $T_m, ^\circ\text{C}$ ). The coefficients  $C_0, C_1, d_0, d_1$  are given below. In calibrating channel 11 and channel 12 (W) with the FOV stop out, the quantity  $F_s$  in the equation for  $H_T$  is set to zero.

|         | <u>Ch. 11</u>           | <u>Ch. 12 (W)</u>       | <u>Ch. 12 (N)</u>       |
|---------|-------------------------|-------------------------|-------------------------|
| $C_0$ : | 9.86                    | 10.4                    | 8.38                    |
| $C_1$ : | 0.18358                 | 0.23235                 | 0.18483                 |
| $d_0$ : | 0.6042                  | 0.6035                  | 0.6014                  |
| $d_1$ : | $-8.254 \times 10^{-4}$ | $-6.109 \times 10^{-4}$ | $-5.879 \times 10^{-4}$ |

The observations from the other two wide-angle channels (13 and 14), which measure the shortwave radiation ( $0.2 \mu\text{m}$  to  $4.0 \mu\text{m}$ ), and ( $0.7 \mu\text{m}$  to  $3.0 \mu\text{m}$ ), are transformed to irradiance (H) by,

$$H = \frac{(V - V_0)}{S_T}$$

where V is the digital counts,  $V_0$  is the offset (in counts) observed from dark FOV's, and  $S_T$  is the sensitivity ( $\text{w m}^{-2} \text{ count}^{-1}$ ) obtained from the equation:  $S_T + S_0 (1 + (0.01) \cdot (T - 25) \cdot \text{STC})$ , where  $S_0$  is the sensitivity at  $25^\circ\text{C}$ , T is the detector temperature ( $^\circ\text{C}$ ), and STC is the sensitivity temperature coefficient (percent per degree C). These constants are given below:

| <u>Ch</u> | <u><math>V_0</math></u> | <u>S</u> | <u>STC</u> |
|-----------|-------------------------|----------|------------|
| 13        | -41                     | 2.004    | 0.04       |
| 14        | -44                     | 3.989    | 0.03       |

The interpretation of digital counts (V) from the shortwave scanning channels (15-18) gives the radiance ( $\text{w m}^{-2} \text{ sr}^{-1}$ ) of the scene ( $N_s$ ) by,

$$N = \frac{(V - V_0)}{S_T}$$

where  $V_0$  is the offset (counts) obtained during views of the internal blackbody or space. The sensitivity  $S_T$  at temperature T( $^\circ\text{C}$ ) is obtained using the equation for  $S_T$  described above, and the constants given below.

| <u>Ch</u> | <u><math>V_0</math></u> | <u>S</u> | <u>STC</u> |
|-----------|-------------------------|----------|------------|
| 15        | -3                      | 3.155    | 0.0        |
| 16        | 0                       | 3.275    | 0.03       |
| 17        | -1                      | 3.116    | -0.01      |
| 18        | 15                      | 2.963    | -0.05      |

A series of checks on the sensitivity of these channels, using the on-board diffuse target, indicated no noticeable degradation over the July-August period of operation.

The longwave scanning channels (19-22) have had numerous inflight calibrations which have remained essentially unchanged since 3 July. The calibration coefficients,  $a_0$  and  $a_1$  relate digital counts (V) to the scene radiance  $N$  ( $w\ m^{-2}\ sr^{-1}$ ) as follows:

$$N_s = N_m + a_0 + a_1 \cdot V$$

where  $N_m$  is the radiance of the detector module. The radiance  $N_s$  is the actual radiance measured within the spectral limits of the filter ( $4.5\ \mu m$  to  $50\ \mu m$ ). The calibration coefficients, obtained from inflight calibrations on 3 July, are as follows:

| <u>Ch</u> | <u><math>a_0</math></u> | <u><math>a_1</math></u> |
|-----------|-------------------------|-------------------------|
| 19        | -0.82                   | 0.09583                 |
| 20        | -0.60                   | 0.10535                 |
| 21        | -1.26                   | 0.10168                 |
| 22        | -0.29                   | 0.10338                 |

The deviations of these calibration coefficients as derived from inflight calibrations from 29 July to 20 August are shown in Table 6-6a. The only change which indicates a need for updating the calibration coefficients is the change in the intercept of channel 20.

Periodic checks of the electronic gains of channels 1 through 14 have shown that the electronic gains have remained within 0.5 percent of the prelaunch values, with few exceptions. Table 6-6a shows the percentage of maximum deviation in the gain ratios (current/prelaunch) for the three steps in the calibration staircase voltage. The 6.5 percent change in the high-level gain of channel 2 and the gain changes in channels 6, 7, and 8 are believed to be caused by radio-frequency interference with the electronic calibration circuit and is neither a real change in the electronic gain nor nonlinearities of the channels.

Table 5-10

This table is part of the new Section 6.5a "Post-launch Calibration" to be added to the ERB section of the User's Guide

Table 6-6a

Stability of Calibration of the  
ERB Longwave Scanning Channels  
(between 29 July and 20 August 1975)

| Date | Channel 19   |              | Channel 20   |              | Channel 21   |              | Channel 22   |              |
|------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|      | $\Delta a_0$ | $\Delta a_1$ | $\Delta a_0$ | $\Delta a_1$ | $\Delta a_0$ | $\Delta a_1$ | $\Delta a_0$ | $\Delta a_1$ |
| 7/29 | -0.07        | -0.4         | 1.12         | 0.5          | -0.07        | -0.4         | 0.36         | -0.3         |
| 8/5  | 0.50         | -0.3         | 1.22         | 0.1          | 0.08         | -0.3         | 0.11         | -0.2         |
| 8/8  | 0.68         | -0.4         | 1.33         | 0.1          | 0.04         | -0.2         | -0.003       | -0.1         |
| 8/12 | -0.06        | -0.2         | 0.74         | -0.4         | -0.09        | -0.3         | 0.17         | -0.2         |
| 8/17 | 0.69         | -0.3         | 1.49         | 0.2          | 0.20         | -0.3         | 0.16         | -0.2         |
| 8/20 | -0.22        | -0.3         | 1.53         | 0.2          | 0.04         | -0.2         | 0.13         | -0.4         |

$\Delta a_0$  = change in intercept ( $w m^{-2} sr^{-1}$ )

$$= (a_0)_{\text{current}} - (a_0)_{7/3/75}$$

$\Delta a_1$  = change in slope ( $\% w m^{-2} sr^{-1} ct^{-1}$ )

$$= \frac{[(a_1)_{\text{current}} - (a_1)_{7/3/75}]}{(a_1)_{7/3/75}} \times 100$$

Table 5-11

This table is part of the new Section 6.5a "Post-launch Calibration" to be added to the ERB section of the User's Guide

Table 6-6b

Percentage Change of the Maximum Deviation in the Gain Ratio between Post-launch and Prelaunch Gain Values for ERB channels 1 through 14 (20 June and 17 August 1975)

| Ch | G <sub>0-39</sub> | G <sub>30-60</sub> | G <sub>60-90</sub> |
|----|-------------------|--------------------|--------------------|
| 1  | -0.2              | 0.2                | -0.1               |
| 2  | 0.1               | -0.3               | -6.5               |
| 3  | ±0.1              | -0.1               | -0.2               |
| 4  | ±0.1              | -0.2               | -0.1               |
| 5  | ±0.1              | -0.2               | 0.2                |
| 6  | 2.6               | 1.8                | -2.1               |
| 7  | 1.3               | 2.1                | -0.6               |
| 8  | 1.6               | 1.3                | -0.9               |
| 9  | 0.4               | -0.6               | ±0.1               |
| 10 | 0.7               | -0.5               | ±0.2               |
| 11 | -0.4              | 0.3                | 0.4                |
| 12 | 0.2               | -0.2               | 0.4                |
| 13 | -0.3              | 0.2                | 0.3                |
| 14 | +0.2              | -0.1               | 0.3                |



## 5.6 LRIR Corrections to the User's Guide

Table 5-12

Post-launch analysis of relative spectral response data and orbital data leads to the following corrected values for Table 7-2, on page 154 of the User's Guide

Table 7-2

Optical Characteristics of LRIR Channels

| Channel |                  | Band Pass<br>(50% Peak<br>Response)             | Field-of-view (km) |            | Random noise<br>in orbit*<br>$\pm 1\sigma$ (watts/m <sup>2</sup> -sr) |
|---------|------------------|---|--------------------|------------|---|
| No.     | Abbrev.          |   | Vertical           | Horizontal |   |
| 1       | NCO <sub>2</sub> | 649-672 cm <sup>-1</sup><br>(14.9-15.4 $\mu$ m) | 2.0                | 20         | 0.0023  |
| 2       | BCO <sub>2</sub> | 592-700 cm <sup>-1</sup><br>(14.3-16.9 $\mu$ m) | 2.0                | 20         | 0.0040  |
| 3       | O <sub>3</sub>   | 984-1169 cm <sup>-1</sup><br>(8.6-10.2 $\mu$ m) | 2.0                | 20         | 0.011   |
| 4       | H <sub>2</sub> O | 412-446 cm <sup>-1</sup><br>(22.4-24.3 $\mu$ m) | 2.5                | 25         | 0.008   |

\*Noise will gradually increase as the detector temperature increases during the useful life of the experiment.

## 5.7 PMR Corrections to the User's Guide

There are no PMR corrections to the User's Guide.



5.8 TWERLE Corrections to the User's Guide

Table 5-13

The following are address changes to Table 9-2  
on page 186 in the User's Guide --

Table 9-2

Nimbus RAMS Experiments - Address Changes

Address Changes

| <u>OLD</u>   | <u>NEW</u>   |
|--|--|
| Mr. G. R. Cresswell<br>Division of Fisheries &<br>Oceanography<br>Commonwealth Scientific &<br>Industrial Research<br>Organization<br>Melbourne, Australia | Mr. G. R. Cresswell<br>Division of Fisheries &<br>Oceanography<br>CSIRO<br>P. O. Box 21<br>Cronulla, N. S. W. 2230<br>Australia  |
| A. J. Dyer<br>CSIRO<br>P. O. Box 77<br>Mordialloc, Vic 3195<br>Australia   | Dr. A. J. Dyer<br>Division of Atmospheric Physics<br>CSIRO<br>Station Street<br>ASPENDALE 3195<br>Victoria, Australia  |
| Professor Pierre Lacombe,<br>Director<br>Laboratory d'Océanographie<br>Muséum<br>Histoire Naturelle de Paris<br>43 Rue Cuvier<br>Paris, France             | Professor Pierre Lacombe,<br>Director<br>Laboratoire d'Océanographie<br>Physique<br>Muséum National d'Histoire<br>Naturelle<br>43-45 Rue Cuvier<br>75005 Paris, France |
| Professor P. Tchernia<br>Muséum d'Histoire<br>Naturelle de Paris<br>43 Rue Cuvier<br>Paris, France   | Professor P. Tchernia<br>Laboratoire d'Océanographie<br>Physique<br>Muséum National d'Histoire<br>Naturelle<br>43-45 Rue Cuvier<br>75005 Paris, France                 |

Table 9-2 (Continued)

|   |   |
|---|---|
| <p>Dr. Norbert Untersteiner,<br/>Program Director<br/>Project AIDJEX<br/>4059 Roosevelt Wave, N. E.<br/>Seattle, WA 98105</p>                 | <p>Dr. Norbert Untersteiner<br/>AIDJEX Coordinator<br/>University of Washington<br/>4059 Roosevelt Way, N. E.<br/>Seattle, Washington 98105</p>                 |
| <p>Dr. Donald V. Hansen,<br/>Director<br/>Physical Oceanography<br/>AOWL<br/>NOAA<br/>U. S. Department of Commerce<br/>Miami, Florida</p>     | <p>Dr. Donald V. Hansen, Director<br/>Physical Oceanography Laboratory<br/>AOML/NOAA<br/>15 Rickenbacker Causeway<br/>Virginia Key<br/>Miami, Florida 33149</p> |
| <p>Vincent E. Lally<br/>National Center for<br/>Atmospheric Research<br/>P. O. Box 1470<br/>Boulder, Colorado 80302</p>                       | <p>Mr. Vincent E. Lally<br/>National Center for Atmospheric<br/>Research<br/>P. O. Box 3000<br/>Boulder, Colorado 80302</p>                                     |
| <p>J. Lentfer<br/>Wildlife Research<br/>U. S. Department of Interior<br/>813 D. Street<br/>Anchorage, Alaska</p>                              | <p>Mr. Jack W. Lentfer<br/>Fish and Wildlife Service<br/>Department of Interior<br/>4454 Business Park Blvd.<br/>Anchorage, Alaska 99503</p>                    |
| <p>H. Brann<br/>Bureau of Meteorology<br/>Melbourne, Victoria<br/>Australia</p>   | <p>Mr. H. N. Brann<br/>Bureau of Meteorology<br/>P. O. Box 1289K<br/>Melbourne, Victoria 3001<br/>Australia</p>   |
| <p>Robert Kee<br/>Development Engineering<br/>Division<br/>Code 6201<br/>U. S. Naval Oceanographic<br/>Office<br/>Washington, D. C. 20390</p> | <p>Mr. Robert Kee<br/>Code 6220<br/>U. S. Naval Oceanographic Office<br/>Washington, D. C. 20373</p>  |

Table 9-2 (Concluded)

|   |  |
|---|--|
| F. Anderson<br>South African Council<br>for Scientific & Industrial Research<br>Congella, Natal, South Africa   | Mr. Frank P. Anderson<br>CSIR, Institute for Technology<br>P. O. Box 17001<br>Congella 4013<br>South Africa  |
| H. Stommel<br>Professor of Oceanography<br>MIT<br>Cambridge, Massachusetts                                      | Professor Henry Stommel<br>Department of Meteorology<br>Room 54-1416<br>Massachusetts Institute of<br>Technology<br>Cambridge, Massachusetts 02139 |
| B. Buck<br>Polar Research Lab.<br>Santa Barbara<br>California 93101   | Mr. B. M. Buck, President<br>Polar Research Laboratory, Inc.<br>123 Santa Barbara Street<br>Santa Barbara, California 93101                        |
| John A. Knauss<br>Graduate School of Oceanography<br>University of Rhode Island<br>Kingston, Rhode Island 02881 | Dr. P. L. Richardson<br>Woods Hole Ocean Institute<br>Woods Hole, Massachusetts 02543  |

5.9 T&DRE Corrections to the User's Guide

There are no T&DRE corrections to the User's Guide.

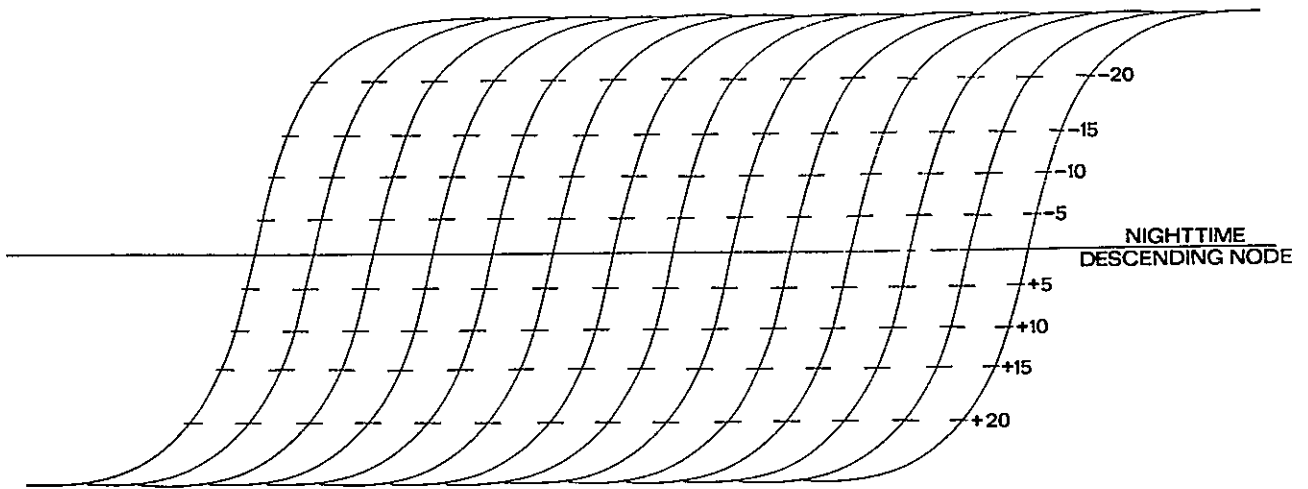
Table 5-14

The following are new TWERLE users, added since launch.  
 This information should be added to Table 9-2  
 (Nimbus RAMS Experiments) on page 186 in the User's Guide.

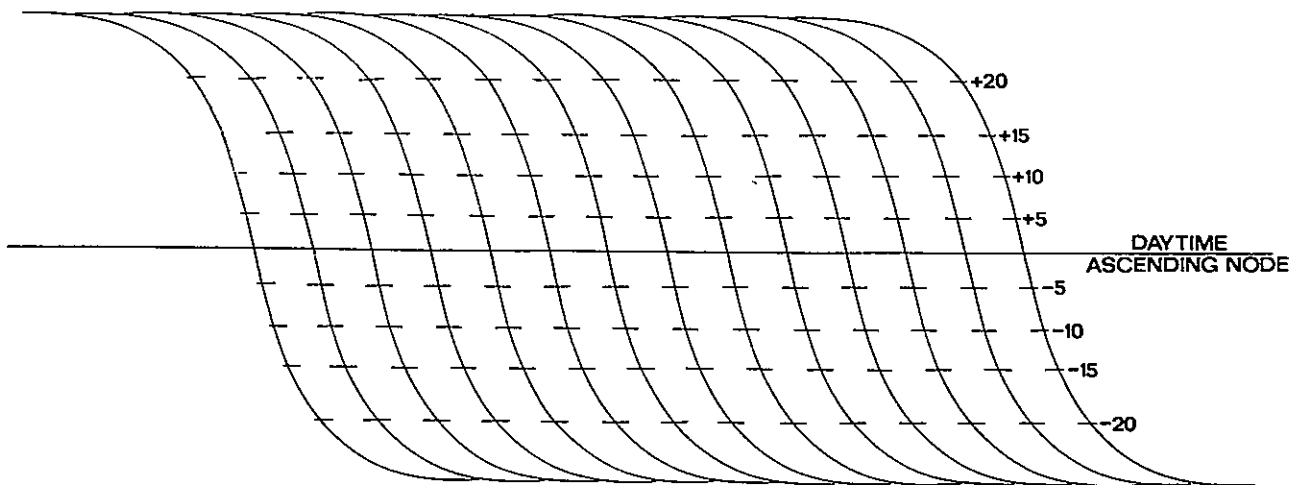
| Principal Investigator   | Experiment Title   | Platform |                         |   |
|--|--|----------|-------------------------|---|
|  |  | Number   | Type                    | Deployment Area                                       |
| Dr. A. D. Kirwan, Jr.<br>Department of Oceanography<br>College of Geosciences<br>Texas A & M University<br>College Station, Texas 77843              | Anomaly Dynamics Study (ADS)   | 32       | Drifting Buoys          | North Pacific   |
| Mr. David F. Thomas, Jr.<br>SATD-MEB-SDS, Mail Stop 322<br>NASA Langley Research Center<br>Hampton, Virginia 23665                                   | Air-droppable In Situ Platforms for Long Duration Measurements near Hurricanes | 10       | Ocean Platforms         | Western Atlantic near North America                   |
| Dr. P. Roger Williamson<br>Department of Applied Physics & Information Science<br>University of California - San Diego<br>La Jolla, California 92037 | Stratospheric Monitoring with Longterm Balloon Flights                         | 3        | Super-pressure Balloons | Southern Hemisphere                                   |
| Mr. J. C. O'Rourke<br>Canadian Marine Drilling Ltd.<br>P. O. Box 200<br>Calgary, Canada T2P 2H8  | Arctic Ice Dynamics  | 2-4      | Sea Ice Platforms       | Beaufort Sea  |
| Dr. J. Michael Hall<br>NOAA Data Buoy Office<br>National Space Tech Office<br>Bay St. Louis, Mississippi 39520                                       | East Coast Drifting Experiment   | 24       | Drifting Buoys          | Atlantic Ocean  |
|  | High Impact Detection and Determination on Large Buoys                         | 10       | Buoy                    | Atlantic Ocean, Gulf of Mexico, & North Pacific Ocean |
|  | Reliability Enhancement Experiment   | 3        | Buoy                    | Santa Barbara, California & Arctic Ocean              |
| Mr. Robert Oehlkers<br>University of Wisconsin<br>Space Science and Engineering Center<br>1225 W. Dayton St.<br>Madison, Wisconsin 53706             | Buoy Experiments in Lake Michigan  | 10       | Buoy                    | Lake Michigan   |

Table 5-14 (Continued)

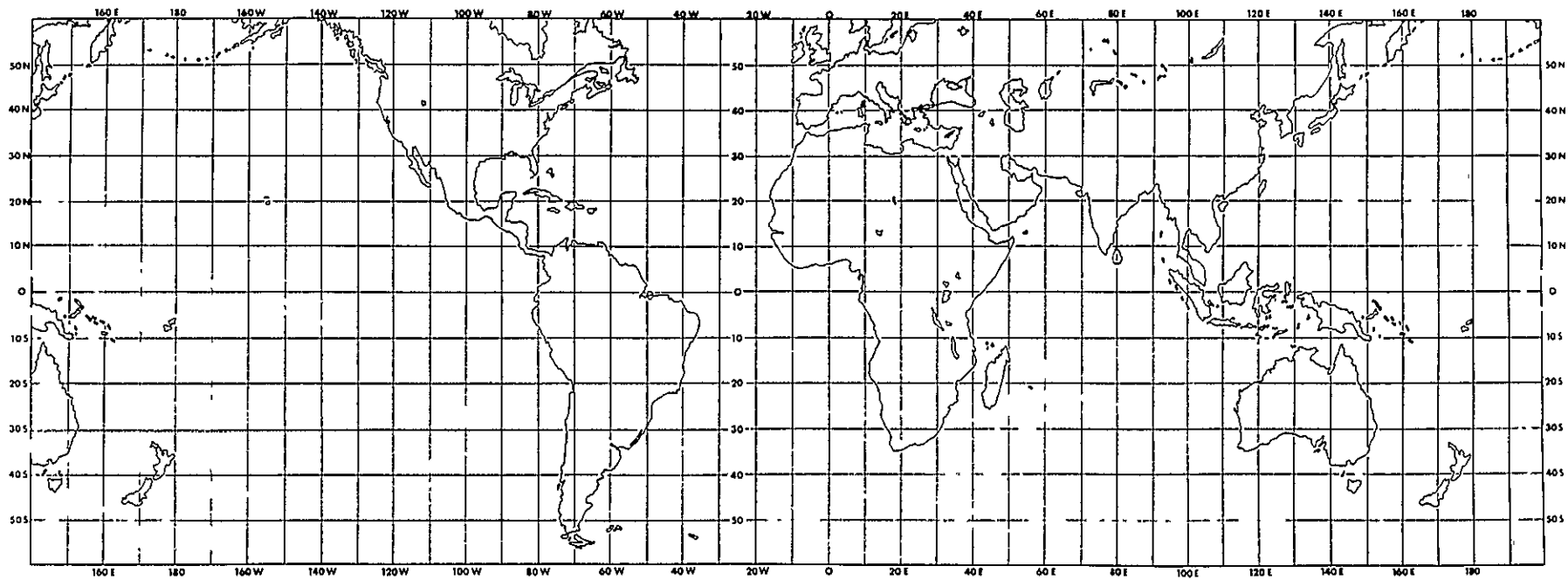
|  |  |          |   |   |
|--|--|----------|---|---|
| <p>Capt. E. A. Delaney<br/>USCG Oceanographic Unit<br/>Bldg. 159E Navy Yard<br/>Navy Yard-Annex<br/>Washington, D.C. 20590</p> | <p>North Atlantic<br/>and Labrador<br/>Current Studies</p>                     | <p>1</p> | <p>Drifting<br/>Buoys</p>                       | <p>North Atlantic,<br/>Labrador Coast</p> |
| <p>Dr. R. H. Goodman<br/>Innovative Ventures, Ltd.<br/>4632 11th St. Calgary<br/>Alberta, Canada T2E2W7</p>                    | <p>Ice Monitoring<br/>in the Canadian<br/>Arctic and<br/>Labrador Region</p>   | <p>2</p> | <p>Drifting<br/>Buoys</p>                       | <p>Canadian Arctic,<br/>Labrador</p>      |
| <p>Dr. D. Halpern<br/>NOAA Pacific Marine<br/>Env. Labs.<br/>Univ. Washington WB10<br/>Seattle, Washington 98195</p>           | <p>Ocean Circulation<br/>Studies and<br/>Pacific<br/>Equatorial<br/>Waters</p> | <p>3</p> | <p>Drifting<br/>Buoys,<br/>Moored<br/>Buoys</p> | <p>Mid-Pacific<br/>Equatorial</p>         |



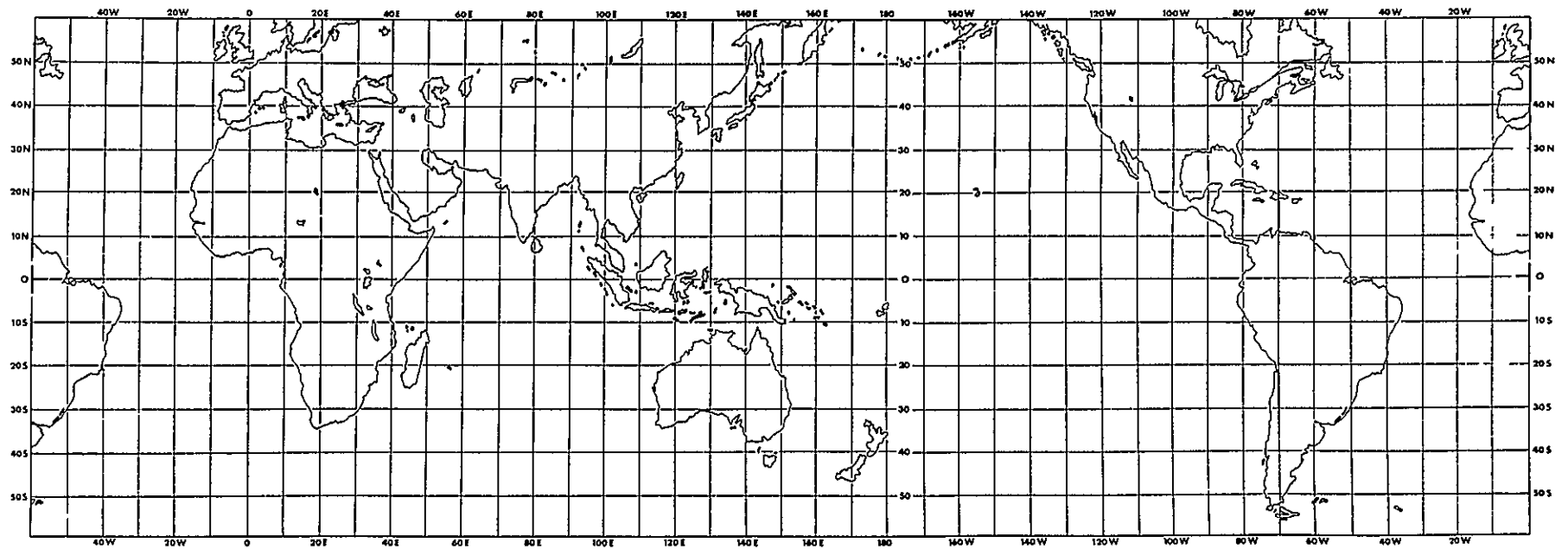
**NIMBUS SUBSATELLITE TRACKS OVERLAY**



**NIMBUS SUBSATELLITE TRACKS OVERLAY**



**Location Guide**  
**Average Scale for Nimbus**  
**THIR Daytime Montages**



**LOCATION GUIDE  
AVERAGE SCALE FOR NIMBUS  
THIS NIGHTTIME MONTAGES**