

National Aeronautics and
Space Administration



NASA World Wind

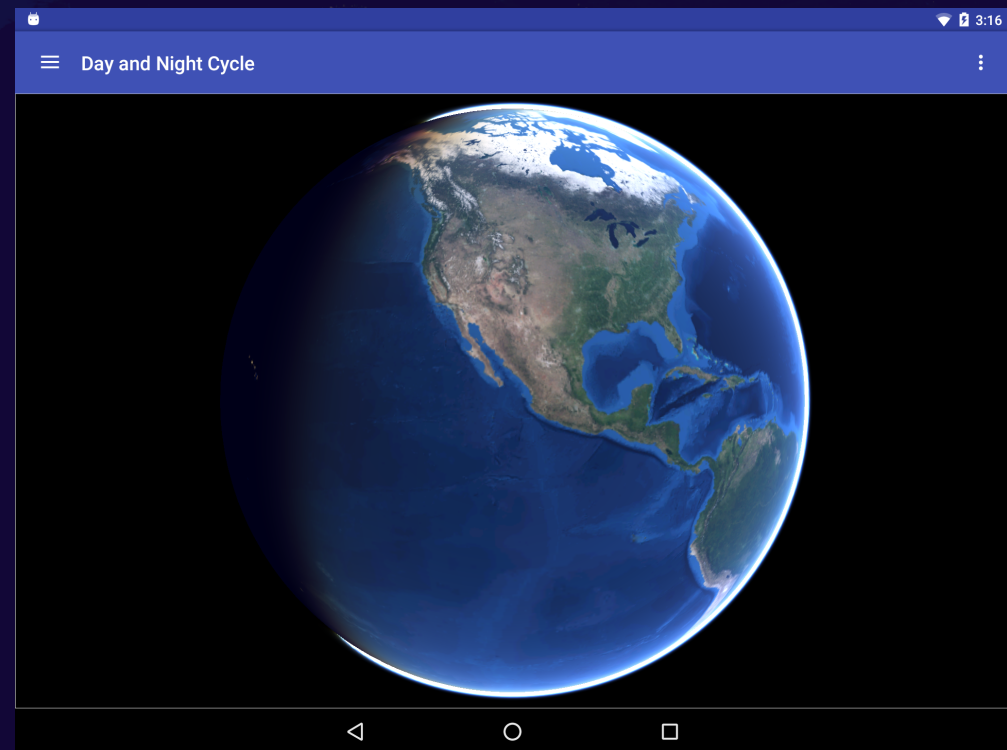
Virtual Globe Visualization Technology

NASA World Wind
nasaworldwind.github.io



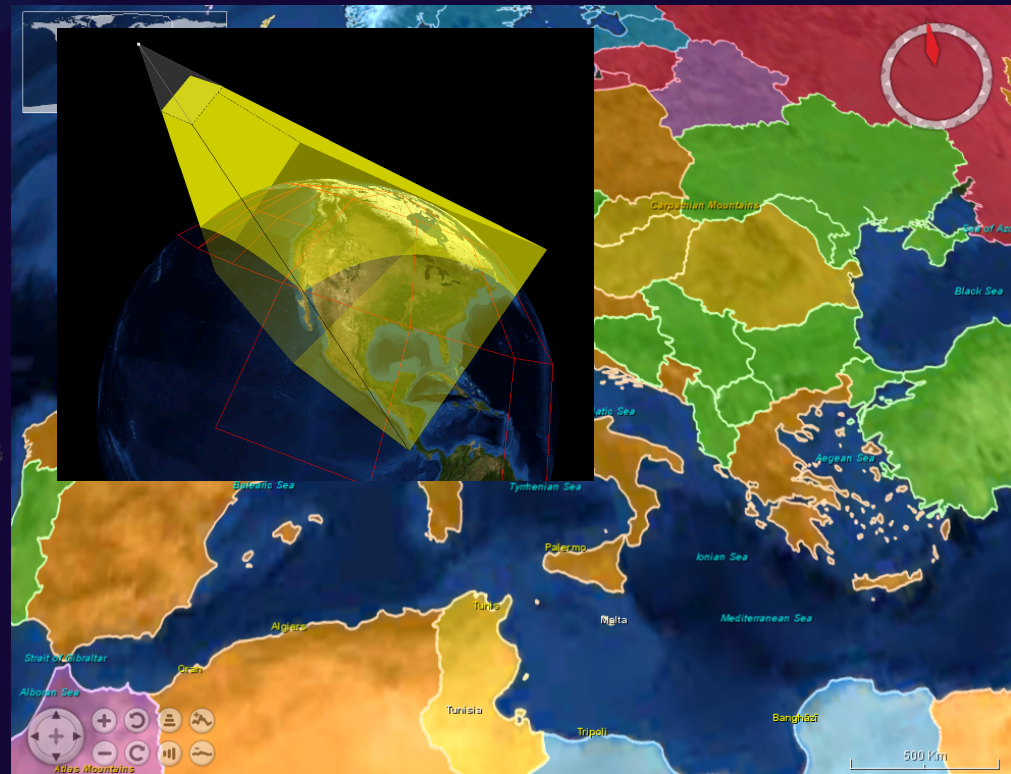


- Open Source
- Open Standards
- Virtual Globe





- Software Development Kit (SDK)





Java (2006)



HTML 5 (2014)



Android (2016)



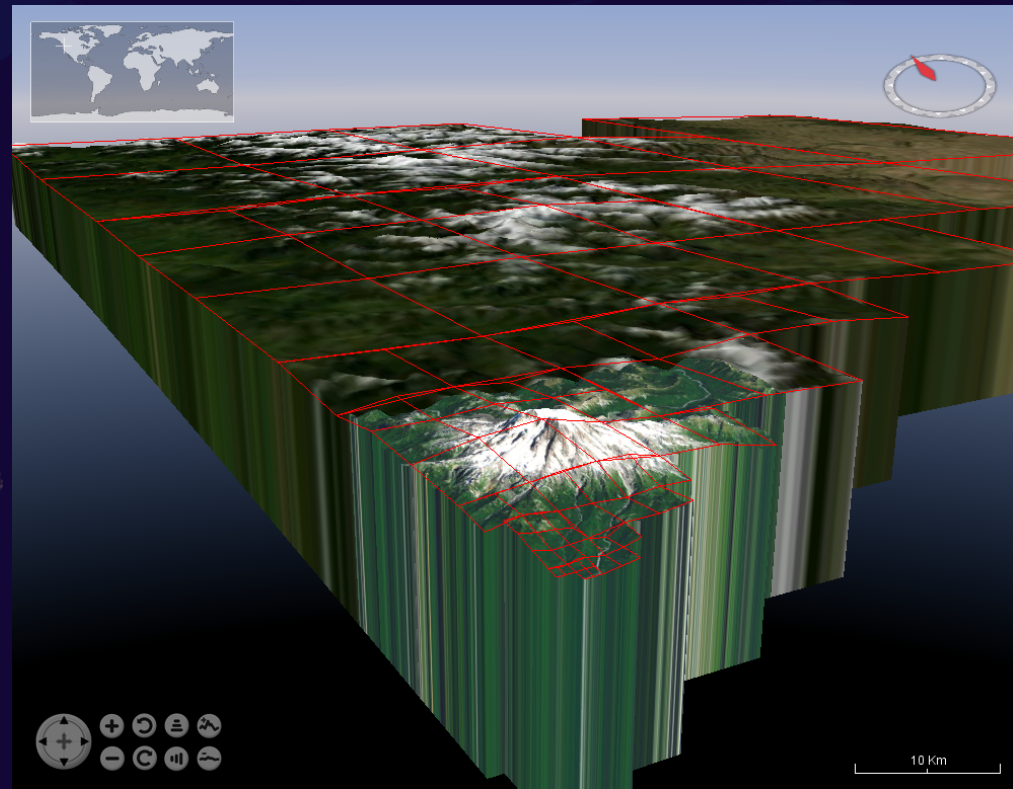


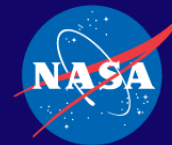
- Source code on GitHub
<https://github.com/NASAWorldWind>





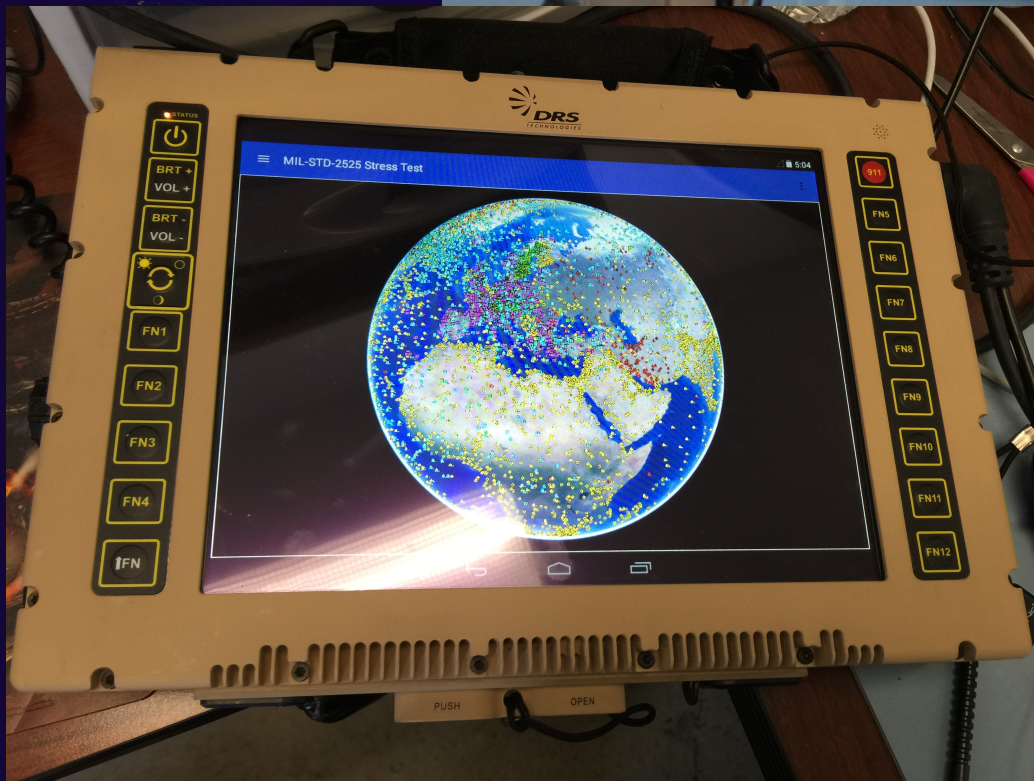
- Visualize large volumes of data
- Open Standards





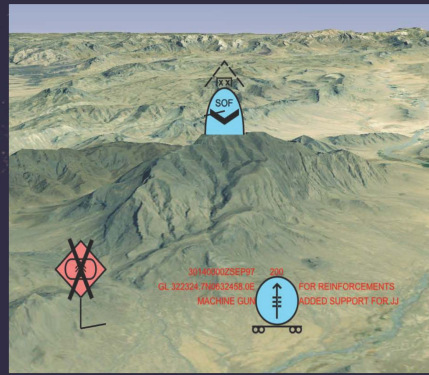
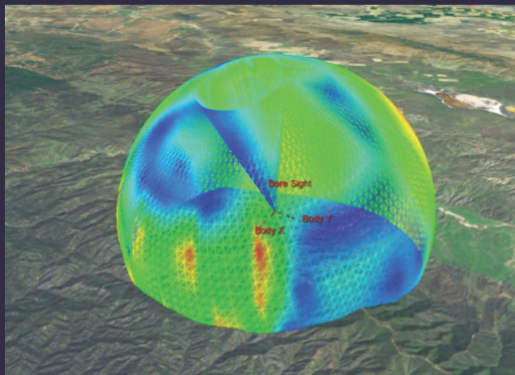
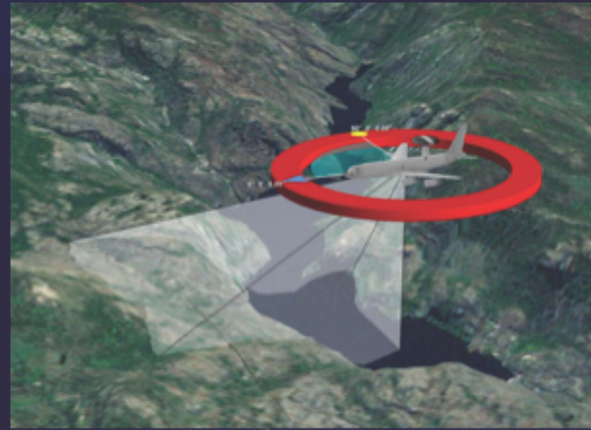
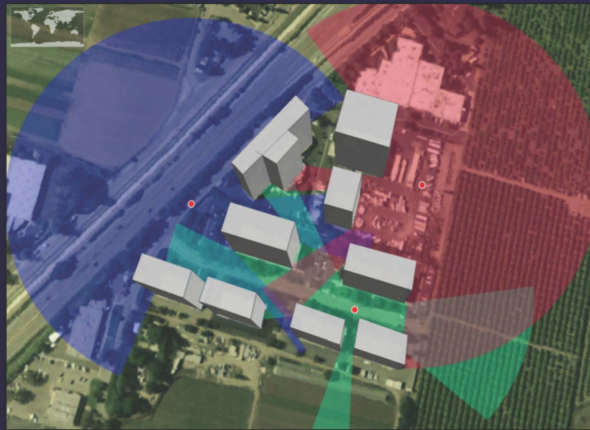
- Defense and Government user communities





Army MFOCS 100k vehicles







FAA next generation NAS, National Airspace system





The screenshot displays the JSatTrak software interface. The main window shows a 2D Earth map with satellite orbits and ground stations. The 'AURA' satellite data is highlighted in the left panel:

Property	Value
TLE Age [days]	0.9978371215984225
Latitude [deg]	-11.296602968223622
Longitude [deg]	81.50832996989672
Altitude [m]	707755.7803755393
Position: J2000	
x [m]	6873754.353686401
y [m]	1010064.48018664
z [m]	-1389098.6635943877
Velocity: J2000	
dx/dt [m/s]	-1274.146560472907
dy/dt [m/s]	-1287.1154188845017
dz/dt [m/s]	-7279.276943485461
Keplerian Elem. (Osc / J...)	
Semimajor axis (a) [m]	7086190.836970952
Eccentricity (e)	0.00101686175972369...
Inclination (i) [deg]	98.17833532275806
RAAN [deg]	-169.99389095640146
Cartesian Coord. Sys:	J2000.0

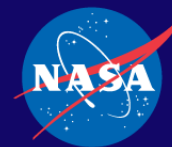
The 'Tracking Tool' window shows a polar plot and a table of pass predictions:

#	Rise Time	Rise Az.	Set Time	Set Az.	Duratio...	
1	04 Sep...	E	04 Sep...	N	407.553	R
2	04 Sep...	SSE	04 Sep...	NNW	574.124	R
3	04 Sep...	SW	04 Sep...	NW	420.155	R
4	05 Sep...	ENE	05 Sep...	ESE	245.183	V
5	05 Sep...	NNE	05 Sep...	S	569.649	V
6	05 Sep...	N	05 Sep...	WSW	485.170	V
7	05 Sep...	SE	05 Sep...	N	516.475	R
8	05 Sep...	S	05 Sep...	NNW	556.256	R
9	06 Sep...	NE	06 Sep...	SSE	475.592	V
...	06 Sep...	NNE	06 Sep...	SSW	567.030	V
...	06 Sep...	N	06 Sep...	W	351.113	V
...	06 Sep...	E	06 Sep...	N	362.867	R
...	06 Sep...	SSE	06 Sep...	NNW	568.791	R

JSatTrack

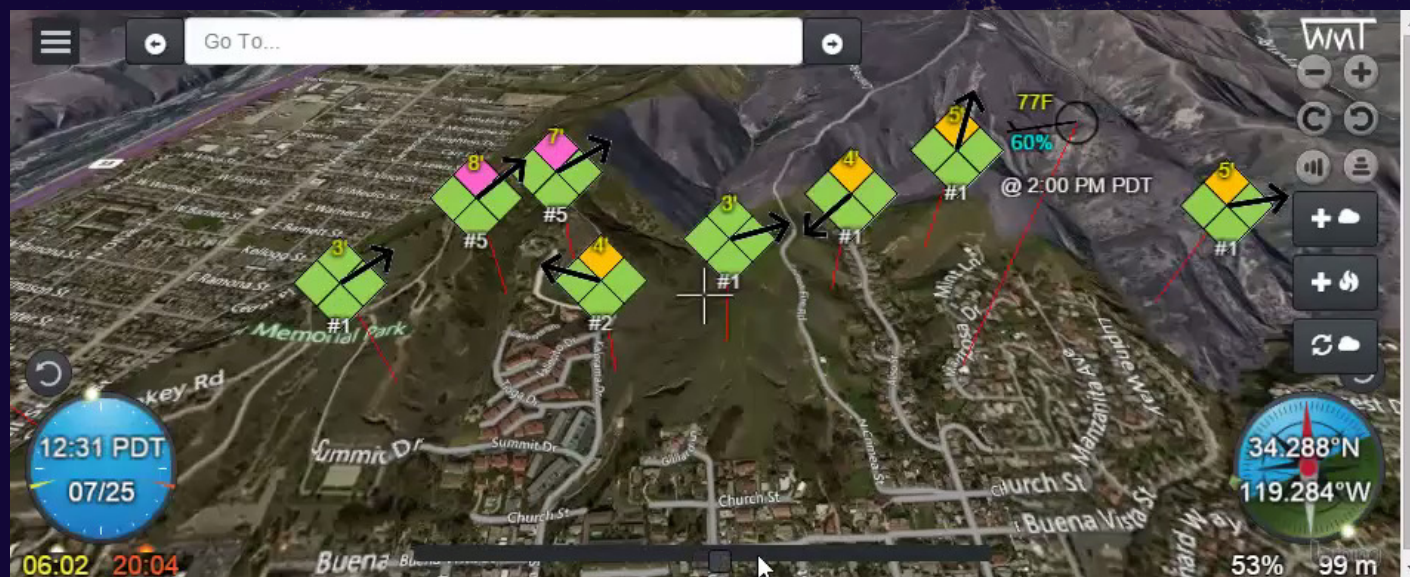
- Satellite Tracking
- SGP4/SDP4
- Shawn Gano
- www.gano.name/shawn/JSatTrak/

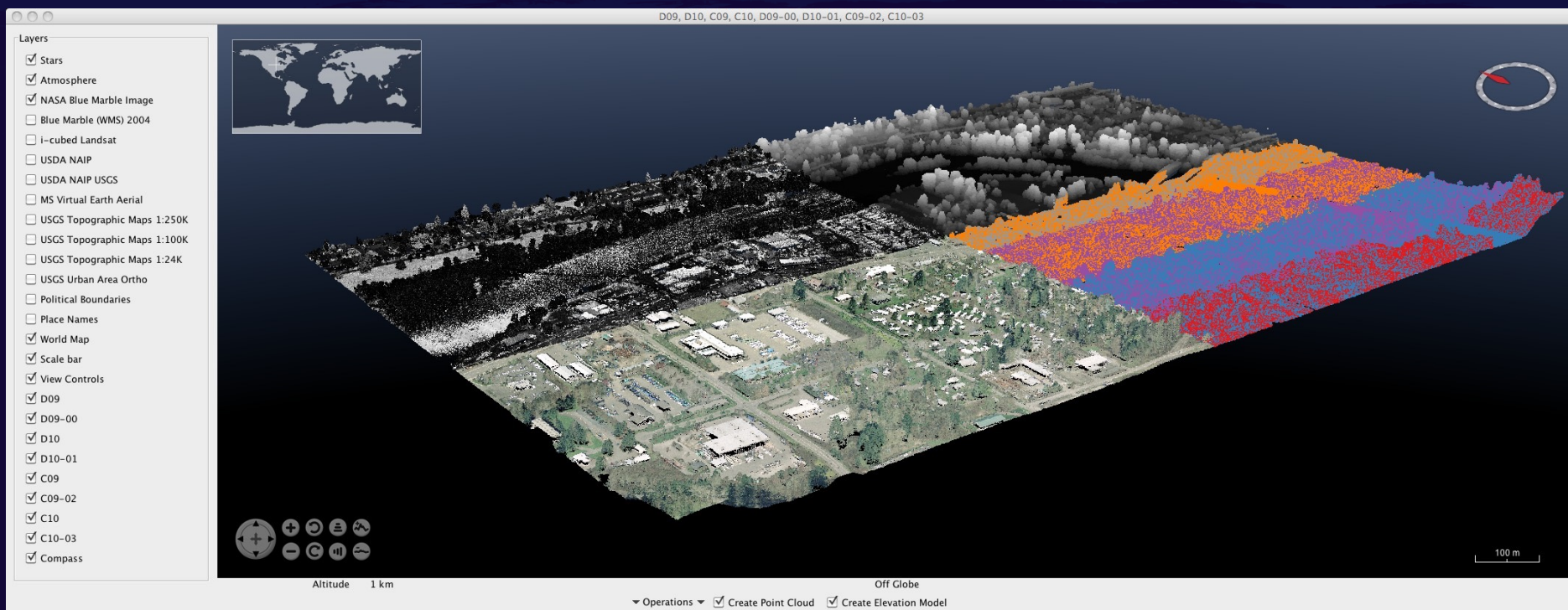
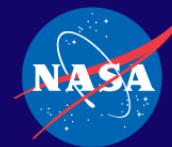




Wildfire Management Tool

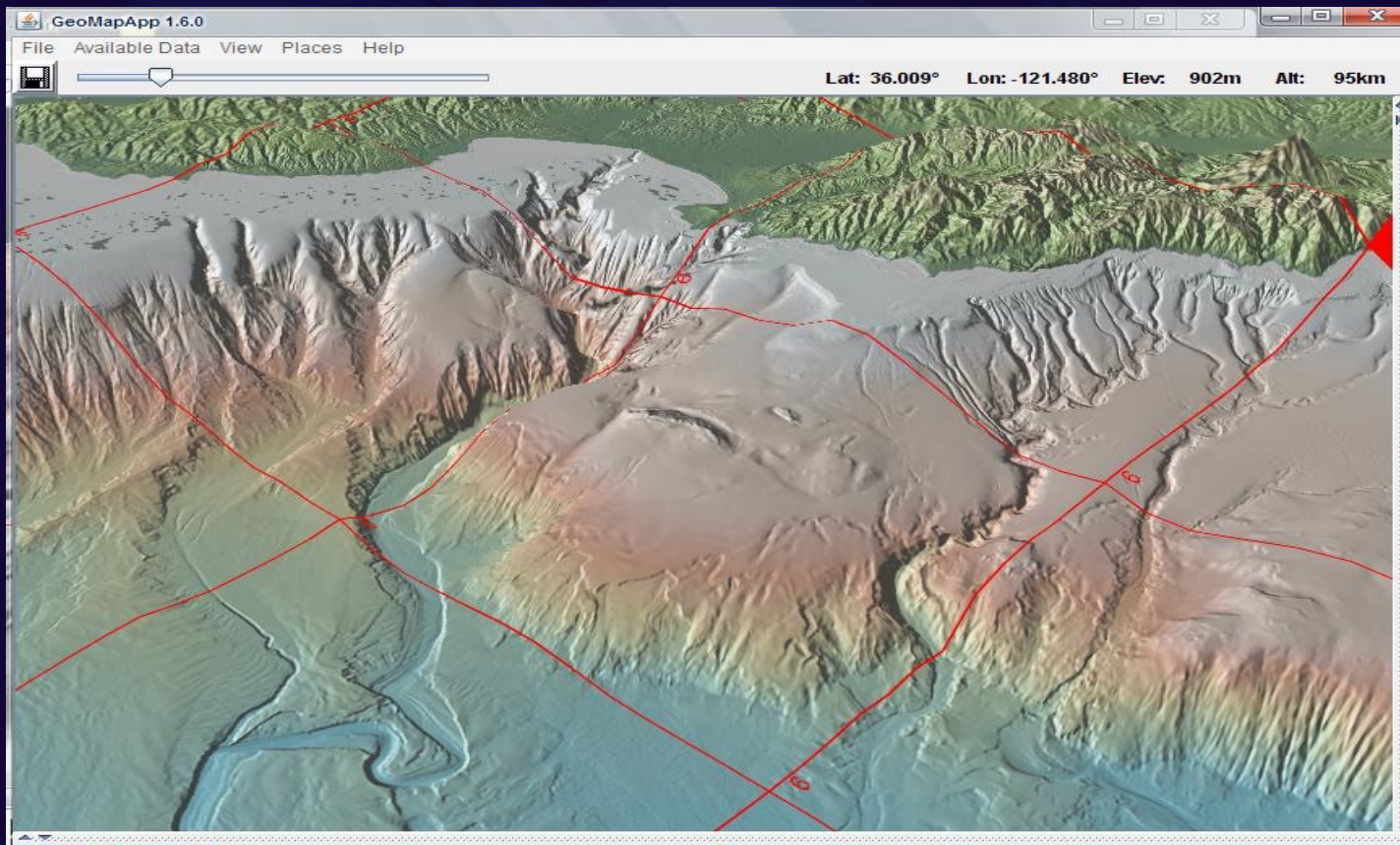
- Bruce Schubert
- EMXSYS.com
- Dynamic prediction
 - Vegetation
 - Slope
 - Wind
 - Humidity
 - Sun





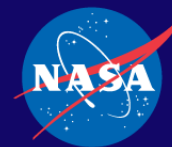
LiDAR Point Cloud - University of Kansas



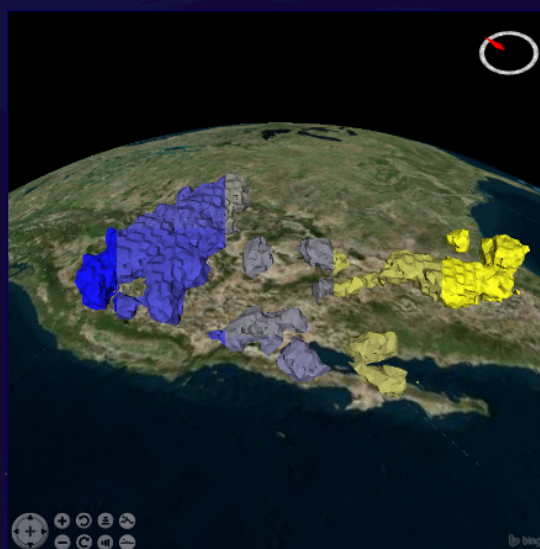


- Virtual Ocean
 - Lamont-Doherty Earth Observatory
 - Columbia University
 - GMRT

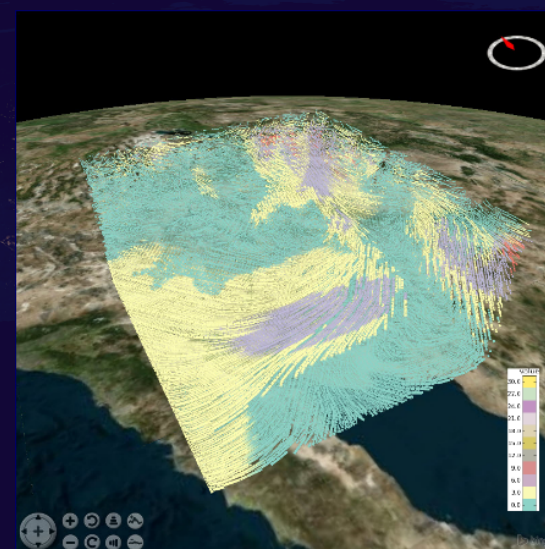




Ray casting to show the
movement of dust particles



Iso-volume creation to
identify the spatial
concentration dust density



Streamflow for wind speed

NetCDF/HDF - Denver University

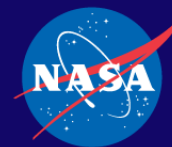




Features

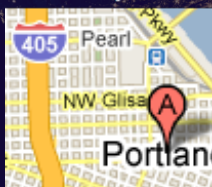
- 3D Virtual Globe
- 2D Map with Projection Choices
- Imagery & Elevation Import
- Picking
- Extensible
- Data Retrieval via REST, WMS, WCS, WFS, Bing, User Defined
- Placenames
- KML Import
- Shapefile Import
- Decluttering
- Measurement
- Line-of-Sight
- Subsurface Visualization





Data categories and formats

Maps



Geometry



Imagery



Structures



Terrain



Shapes



Video



GeoTIFF	KML	Collada	NITF
PNG	Shapefile	GeoRSS	RPF
JPEG (+2k)	GML	DWG	VPF
GeoJSON	DTED	NMEA	...





Videos & highlights

- 2016 internship projects
- Tech demos
- more





For more information

nasaworldwind.github.io

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