

National Polar-orbiting Operational Environmental Satellite System (NPOESS)

NPOESS: Improving Operational Global Earth Observations from Space

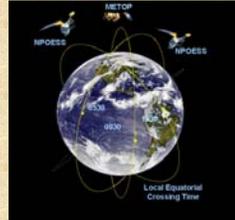
Environmental Monitoring in Support of Civil and Defense Applications

Features

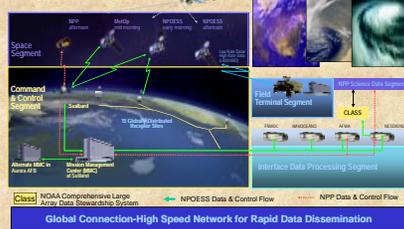
- Rapid data delivery - 4 times faster than legacy systems
- Quickly react to changing conditions
- 10 times the data
- More accurate data for better forecasts
- International collaboration

Benefits

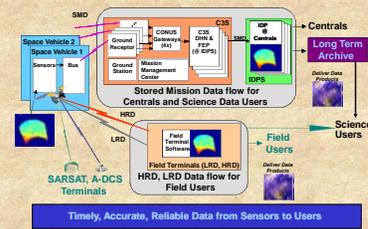
- Critical inputs to weather forecast models
- Science quality data to users including research scientists
- Continuity of climate data records



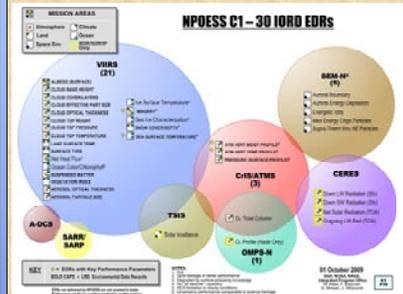
System Architecture



Mission Data Flow

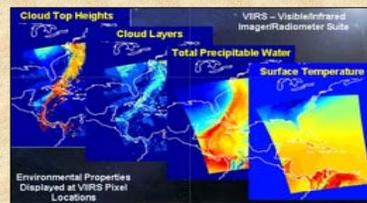


Environmental Data Records (EDRs)



EDRs are dependent on satellite (C-1 to C-4) and orbit (1330 LTAN and 1730 LTAN)

NPOESS Products



NPOESS Preparatory Project (NPP)

- Instrument Risk Reduction
 - Early delivery/instrument-level test/system-level integration & test
 - VIIRS - Visible/Infrared Imager/Radiometer Suite
 - CRIS - Cross-track Infrared Sounder
 - ATMS - Advanced Technology Microwave Sounder
 - OMPS - Ozone Mapping and Profiler Suite
 - CERES - Clouds and Earth's Radiant Energy System
- Provides lessons learned and allows time for any required modifications before NPOESS first launch
- Ground System Risk Reduction
 - Early delivery and test of a subset of NPOESS-like ground system elements
 - Early User Evaluation of NPOESS data products
 - Provides algorithms/instrument verification and opportunities for instrument calibration/validation prior to first NPOESS launch
 - Allows for algorithm modification prior to first NPOESS launch
- Continuity of data for NASA's EOS Terra/Aqua/Aura missions

Space Segment



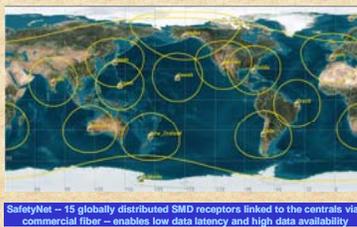
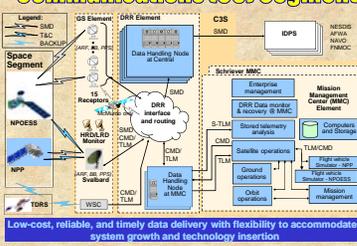
	PM	AM	NPP
VIIRS	X	X	X
CRIS	X	X	X
ATMS	X	X	X
MIS	C-3	X	X
OMPS	N	X	X
SEM-N	X	X	X
CERES	C-1	X	X
TSIS	C-1	X	X
SRSAT	X	X	X
A-DCS	X	X	X

N = Nadir sensor only
PM = 1330 LTAN orbit
AM = 1730 LTAN orbit
NPP = 1330 LTAN orbit

- VIIRS Visible/Infrared Imager Radiometer Suite
- CRIS Cross-track Infrared Sounder
- ATMS Advanced Technology Microwave Sounder
- OMPS Ozone Mapping and Profiler Suite
- SEM-N Space Environment Monitor-NPOESS
- CERES Cloud and Earth's Radiant Energy System
- TSIS Total Solar Irradiance Sensor
- SRSAT Search and Rescue Satellite Aided Tracking
- A-DCS Advanced Data Collection System

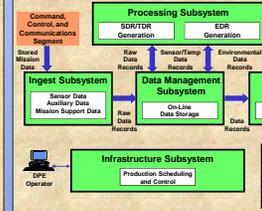


Command, Control and Communications (C3) Segment

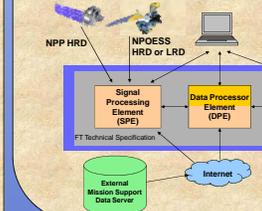


IDPS/FTS

Interface Data Processing



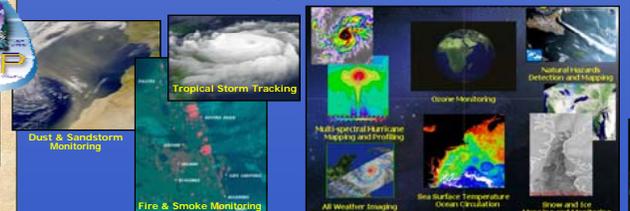
Field Terminal Segment



Protect Safety of Life and Property

- Improve prediction of ocean surface wind speed and direction.
- Increase in hurricane landfall forecast skill will save an estimated \$1 million per mile of coastline that does not have to be evacuated.
- Improved early warnings mitigate the devastating effects of floods through disaster planning and response.

Backbone for GEOSS - Maximizing the Value of NPOESS for Societal Benefits



Improve Accuracy and Timeliness of Severe Weather Warnings

