

# 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

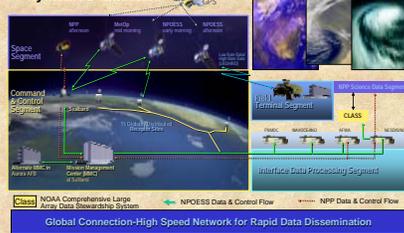
- Rapid data delivery - 4 times faster than legacy systems
- Quickly react to changing conditions
- 10 times the data
- More accurate data for better forecasts
- International collaboration

#### Benefits

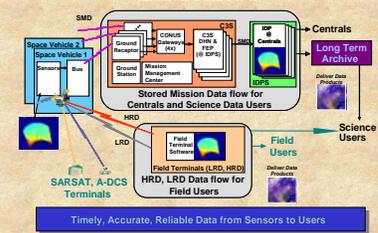
- Critical inputs to weather forecast models
- Science quality data to users including research scientists
- Continuity of climate data records



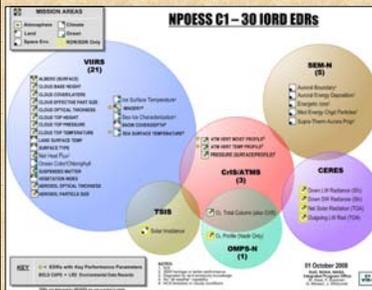
### System Architecture



### Mission Data Flow

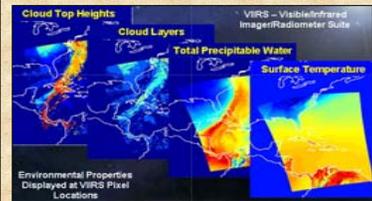


## Environmental Data Records (EDRs)



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

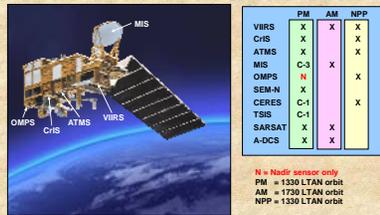
## NPOESS Products Environmental Data Records



## NPOESS Preparatory Project (NPP)

- Instrument Risk Reduction - 2010 Launch
  - 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
  - OMPSS - 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 algorithm/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

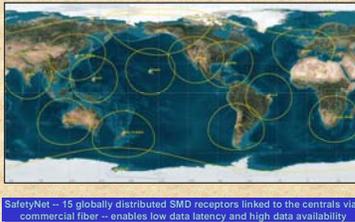
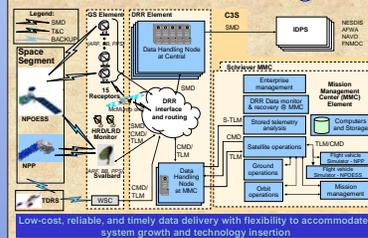
## Space Segment



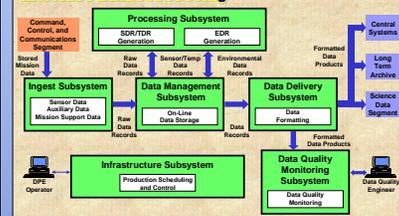
- VIIRS Visible/Infrared Imager Radiometer Suite
- CrIS Cross-track Infrared Sounder
- ATMS Advanced Technology Microwave Sounder
- MIS Microwave Imager Sounder
- OMPSS Ozone Mapping and Profiler Suite
- SEM-N Space Environment Monitor-NPOESS
- CERES Cloud and Earth's Radiant Energy System
- TSIS Total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



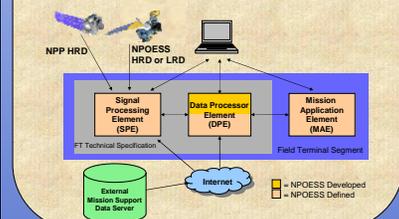
## Command, Control and Communications (C3) Segment



## IDPS/FTS Interface Data Processing



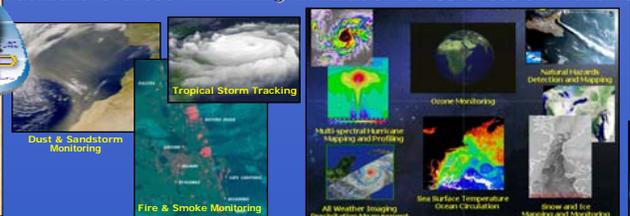
## Field Terminal Segment



## 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

