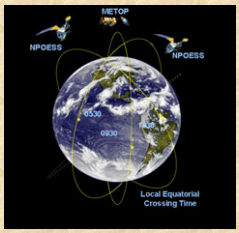
National Polar-orbiting Operational Environmental Satellite System (NPOESS)

NPOESS System Overview

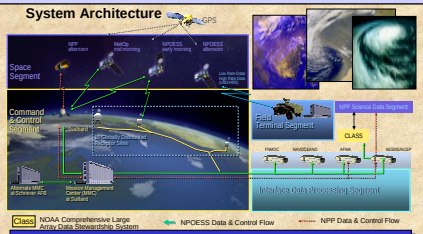
Tri-agency Effort to Leverage and Combine Environmental Satellite Activities

Mission

- Provide a national, operational, polar-orbiting remote-sensing capability
- Converge DoD and NOAA satellite programs
- Incorporate new technologies from NASA
- Enhance international cooperation

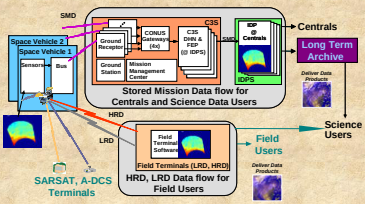


System Architecture



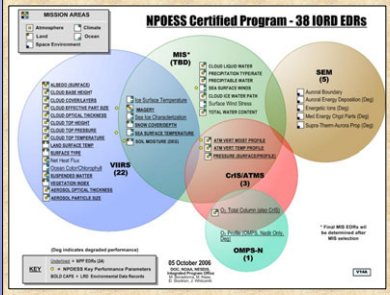
Global Connection-High Speed Network for Rapid Data Dissemination

Mission Data Flow



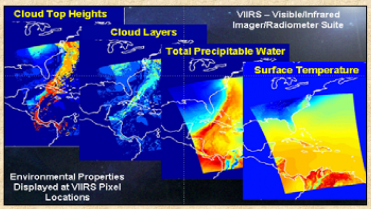
Timely, Accurate, Reliable Data from Sensors to Users

Environmental Data Records (EDRs)



NPOESS Products

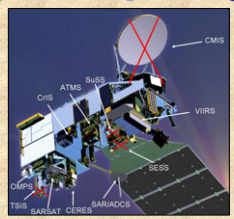
Environmental Data Records



NPOESS Preparatory Project (NPP)

- Instrument Risk Reduction – 2009 Launch
  - Early delivery / instrument-level test/system-level integration & test
    - VIIRS - Vis/IR Imager Radiometer Suite
    - CrIS - Cross-track IR Sounder
    - ATMS - Advanced Technology Microwave Sounder
    - OMPS – Ozone Mapping and Profile Suite Nadir
  - 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

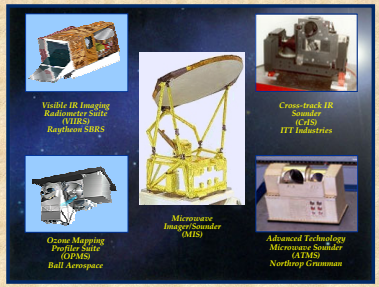
Space Segment



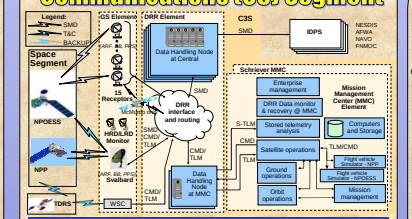
	PM	AM	NPP
VIIRS	X	X	X
CMIS	O	O	
MIS (Rep)	C-3	X	
CrIS	X	O	X
ATMS	X	O	X
OMPS	N		N
SESS	O	O	
SEM (Rep)	X		
ADCS	X	X	
SARSAT	X	X	
CERES	C-1		
ERBS	O		
TSIS		O	
ALT		O	
SuSS	O	O	

O = demanifested by Nunn McCurdy
N = Nadir sensor only
REP = Replaces

- VIIRS — Visible / Infrared Imager / Radiometer Suite
- CrIS — Cross-track Infrared Sounder
- ATMS — Advanced Technology Microwave Sounder
- OMPS — Ozone Mapping and Profiler Suite Nadir
- MIS — Microwave Imager Sounder
- A-DCS — Advanced Data Collection System
- SARSAT — Search and Rescue Satellite-Aided Tracking Tracking
- CERES — Cloud and Earth's Radiant Energy System
- SEM — Space Environment Monitor



Command, Control and Communications (C3) Segment



Low-cost, reliable, and timely data delivery with flexibility to accommodate system growth and technology insertion

SafetyNet -- 15 globally distributed SMD receptors linked to the centrals via commercial fiber -- enables low data latency and high data availability

Protect Safety of Life and Property

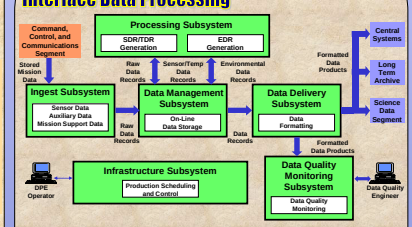
Improve prediction of wind speed and direction.

Increase in hurricane landfall forecast skill will save an estimated $1 million per mile of coastline that does not have to be evacuated.

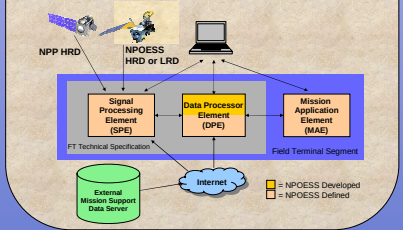
Improved early warnings mitigate the devastating effects of floods through disaster planning and response.

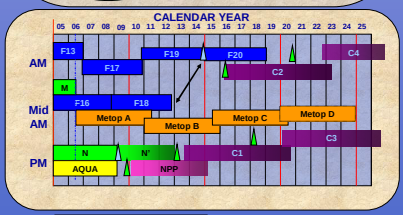
IDPS/FTS

Interface Data Processing

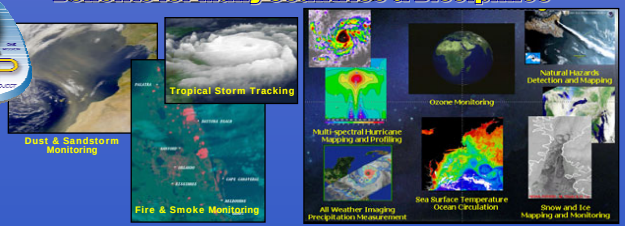


Field Terminal Segment

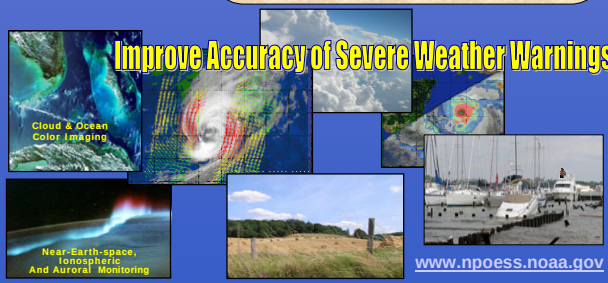




Benefits for Many Countries & Disciplines



Improve Accuracy of Severe Weather Warnings



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