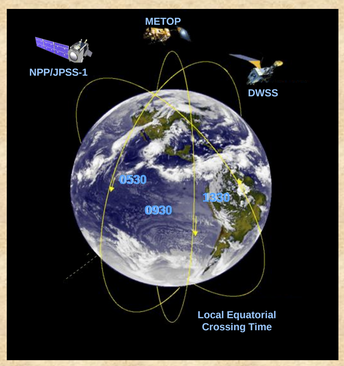
Joint Polar Satellite System (JPSS)

JPSS: Improving Operational Global Earth Observations from Space

Environmental Monitoring in Support of Civil and Defense Applications

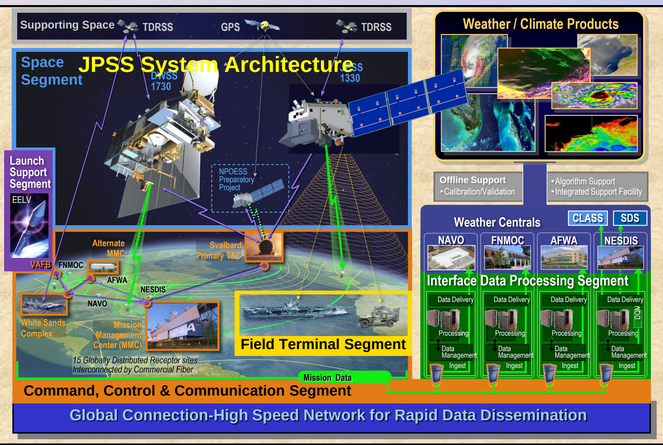
Features
- Rapid data delivery - 4 times faster than legacy systems (JPSS-2 and beyond)
- Quickly react to changing conditions
- 10 times the data
- More accurate data for better forecasts
- International collaboration

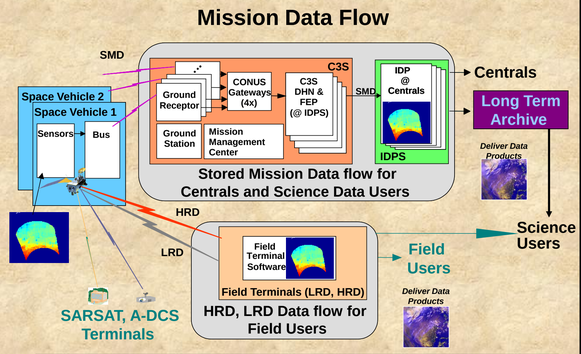
Benefits
- Critical inputs to weather forecast models
- Science quality data to users including research scientists
- Continuity of climate data records



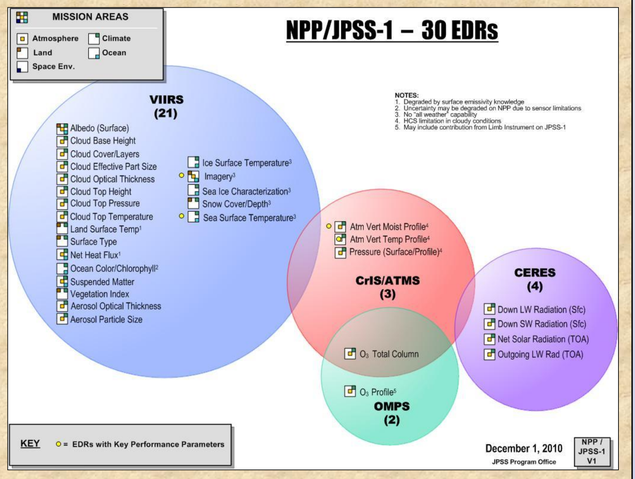
NOAA through NASA ,as its acquisition agent, will procure the afternoon orbit assets that support its civil weather and climate requirements and DoD will independently procure assets for the morning orbit military mission. Both agencies will continue to share environmental measurements made by the system and support the operations of a shared common ground system.

Our valuable international partnership with the Europeans will remain for support of the mid-morning orbit, and NOAA will continue to pursue additional partners for inclusion into the system. Some work remains to develop the most effective transition and alignment of responsibilities, as well as to refine the launch readiness dates.



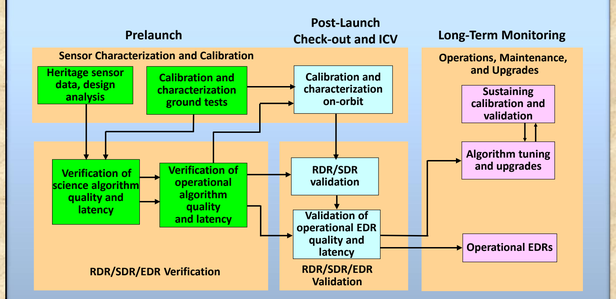


Environmental Data Records (EDRs)



JPSS Cal/Val Program

Characterization, Calibration, Validation and Long Term Monitoring



JPSS GRAVITE

(Government Resource for Algorithm Verification, Independent Testing, and Evaluation)

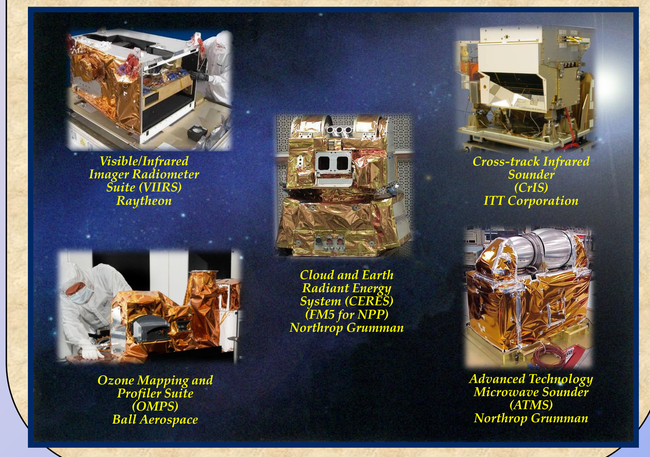
GRAVITE is a common facility and data repository for use by multiple Calibration/Validation (Cal/Val) Teams to assess and maintain data quality.

- **Purpose:**
  - Provide access to common technical resources used by the Cal/Val teams
  - Provide program data to satisfy agreements with other projects
  - Provide a common portal for technical interaction with the NPP data validation community
- **Functions:**
  - Data Access
  - Data Storage
  - Tools and Data Processing
  - Data distribution to Cal/Val Teams
- **Components:**
  - Central computing system
  - Technical Library of data, documentation, and software
  - Communication connectivity to the agencies participating in Cal/Val

Flight Segment

	NPP*	JPSS-1
VIIRS	X	X
CrIS	X	X
ATMS	X	X
OMPS	X	X
CERES	X	X

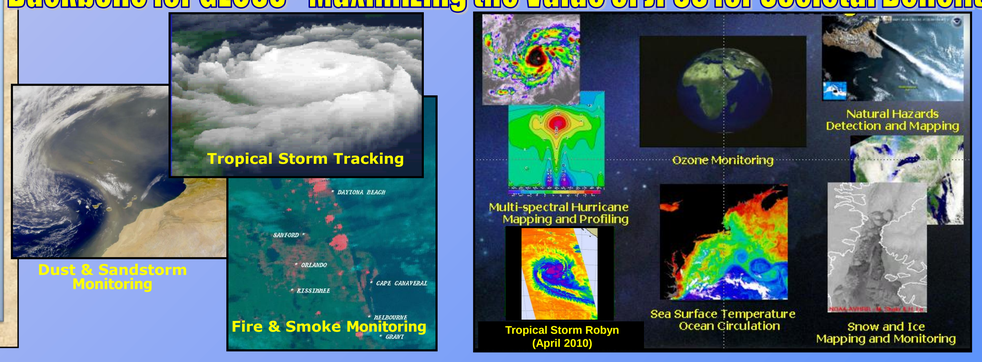
* PM = 1330 LTAN orbit



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 JPSS first launch
- **Ground System Risk Reduction**
  - Early delivery and test of a subset of JPSS-like ground system elements
  - Early User Evaluation of JPSS data products
  - Provides algorithms/instrument verification and opportunities for instrument calibration/validation prior to first JPSS launch
  - Allows for algorithm modification prior to first JPSS launch
- **Continuity of data for NASA's EOS Terra/Aqua/Aura missions**

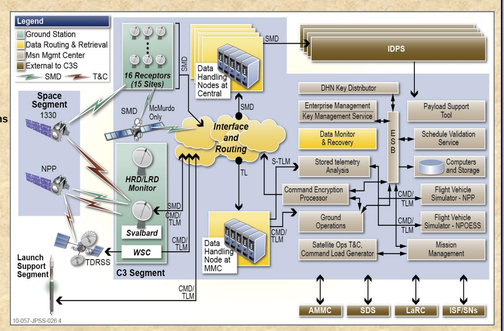
Backbone for GEOSS - Maximizing the Value of JPSS for Societal Benefits



Common Ground System

Command, Control and Communications (C³) Architecture

- Satellite Command and Control
- Global Mission Data Communications
- Enterprise Mission Management
- Heavily based upon IIS Reuse Products (CPR)
- IS HW based upon Intel / Windows environments

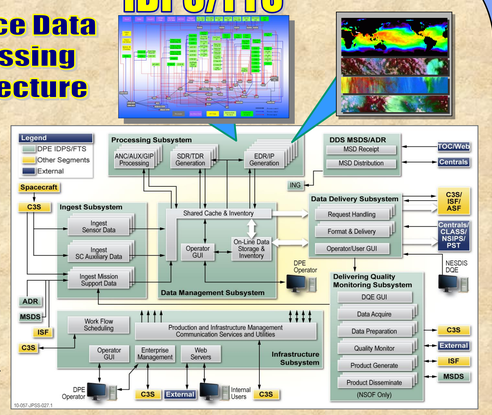


Low-cost, reliable, and timely data delivery with flexibility to accommodate system growth and technology insertion

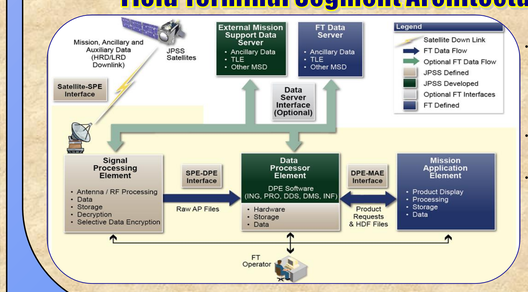
IDPS/FTS

Interface Data Processing Architecture

- Mission data processing, delivery, and quality monitoring
- Very Low Latency
  - 6 min for raw observation to final products
- High data volume throughput
  - Input: 80Mbps
  - Output: 8 Gbps
  - 8 TB per day
- Complex Algorithm workflow
- High Performance Computing solution
  - IBM Power 7 computing
  - AIX OS
  - Solid State and Fibre-Channel high performance disk arrays

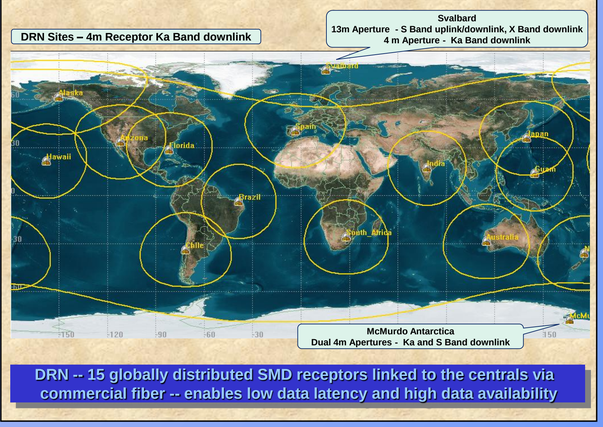


Field Terminal Segment Architecture



- Scope is:
  - Mission Data Processing SW
  - HW and SPE specifications
  - FTS ICD
- High reuse from and commonality with IDPS Software
- Provide software code base to FT sponsors in civil and DoD communities

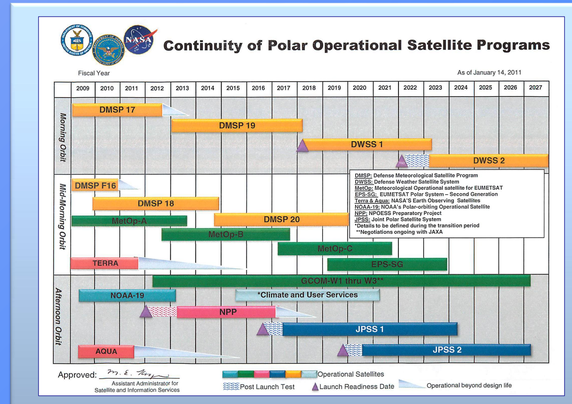
Command, Control and Communications (C³) Architecture



DRN -- 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

- ✓ Earlier, more accurate forecasts and warnings can mitigate the effects of major floods through longer lead planning and better response.
- ✓ Use of data from NASA's Earth Observation Satellite sensors, which are precursors of the improved sensors that will fly on JPSS, has demonstrated more accurate hurricane forecasts and extended forecast usefulness.



Improve Accuracy and Timeliness of Severe Weather Warnings