Satellite Observations and Products

Joint Polar Satellite System (JPSS)
Transition from NPP/NPOESS

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Joint Polar Satellite System (JPSS)

Restructuring the National Polar-orbiting Operational Environmental Satellite System

- The three agencies (DOD, NOAA and NASA) have and will continue to partner to ensure a successful way forward for the respective programs, while utilizing international partnerships to sustain and enhance weather and climate observation from space.

- NOAA and NASA will take primary responsibility for the afternoon orbit, and DOD will take primary responsibility for the morning orbit. The agencies will continue to partner in those areas that have been successful in the past, such as a shared ground system. The restructured programs will also eliminate the NPOESS tri-agency structure that that has made management and oversight difficult, contributing to the poor performance of the program.

- NOAA and the Air Force will continue a successful relationship that that they have developed for their polar and geostationary satellite programs to date. NOAA's portion will notionally be named the "Joint Polar Satellite System" (JPSS) and will consist of platforms based on the NPP satellite.

Joint Polar Satellite System (JPSS)

Restructuring the National Polar-orbiting Operational Environmental Satellite System

- NASA's role in the restructured program will be modeled after the procurement structure of the successful POES and GOES programs, where NASA and NOAA have a long and effective partnership. Work is proceeding rapidly with NOAA to establish a JPSS program at NASA's Goddard Space Flight Center (GSFC).
  - The NASA developed and operating Earth Observing System (EOS) Aqua satellite and ground system are very similar in scope and magnitude to the proposed JPSS program.
  - NOAA and NASA will strive to ensure that all current NPOESS requirements are met on the most rapid practicable schedule without reducing system capabilities.
  - NASA program and project management practices have been refined over decades of experience developing and acquiring space systems and NASA anticipates applying its current practices to JPSS.

NOAA's Near-Real-time Data Products from NPP and NPOESS

(derived from presentation at AMS 2010

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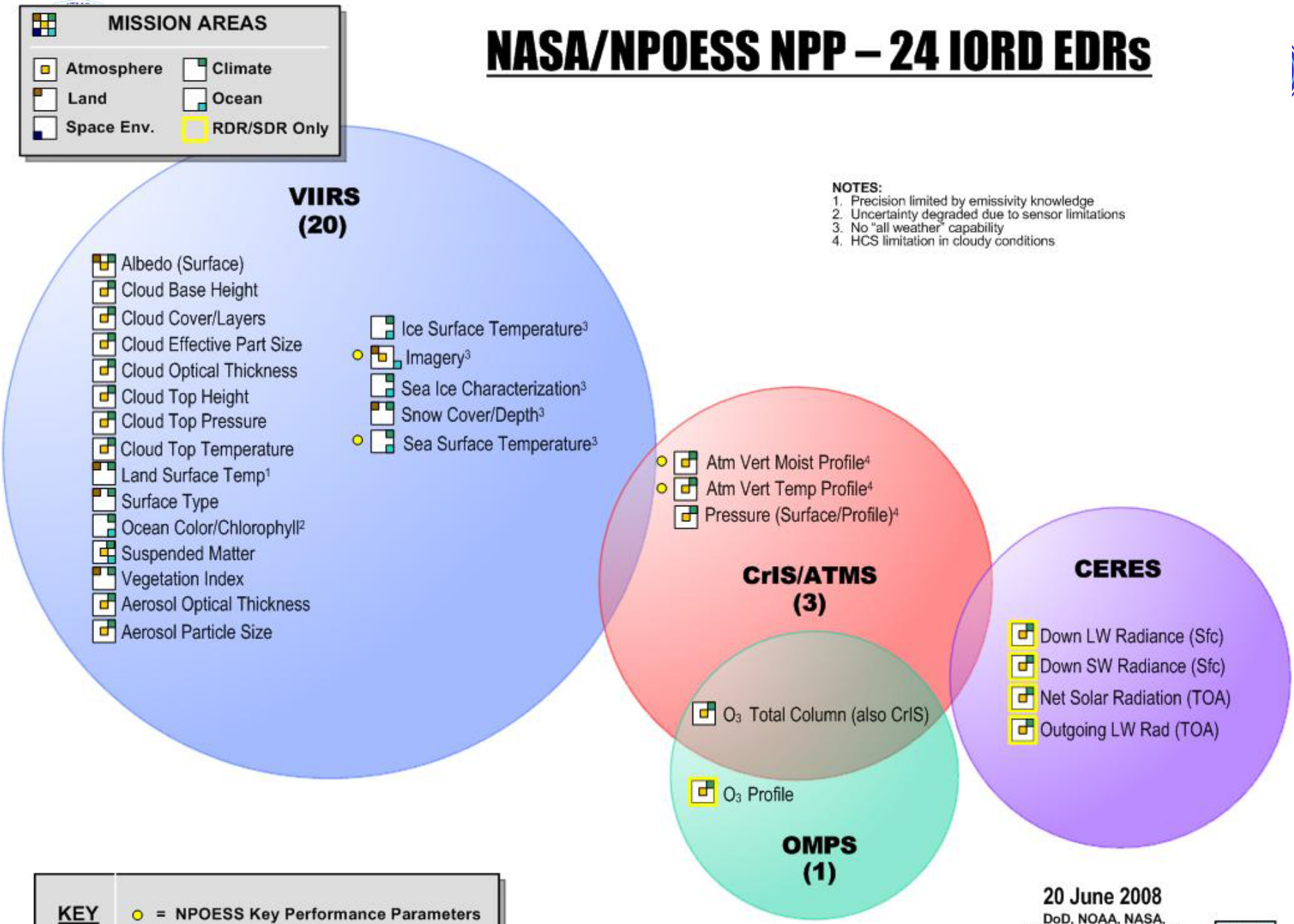
NPOESS Data Exploitation

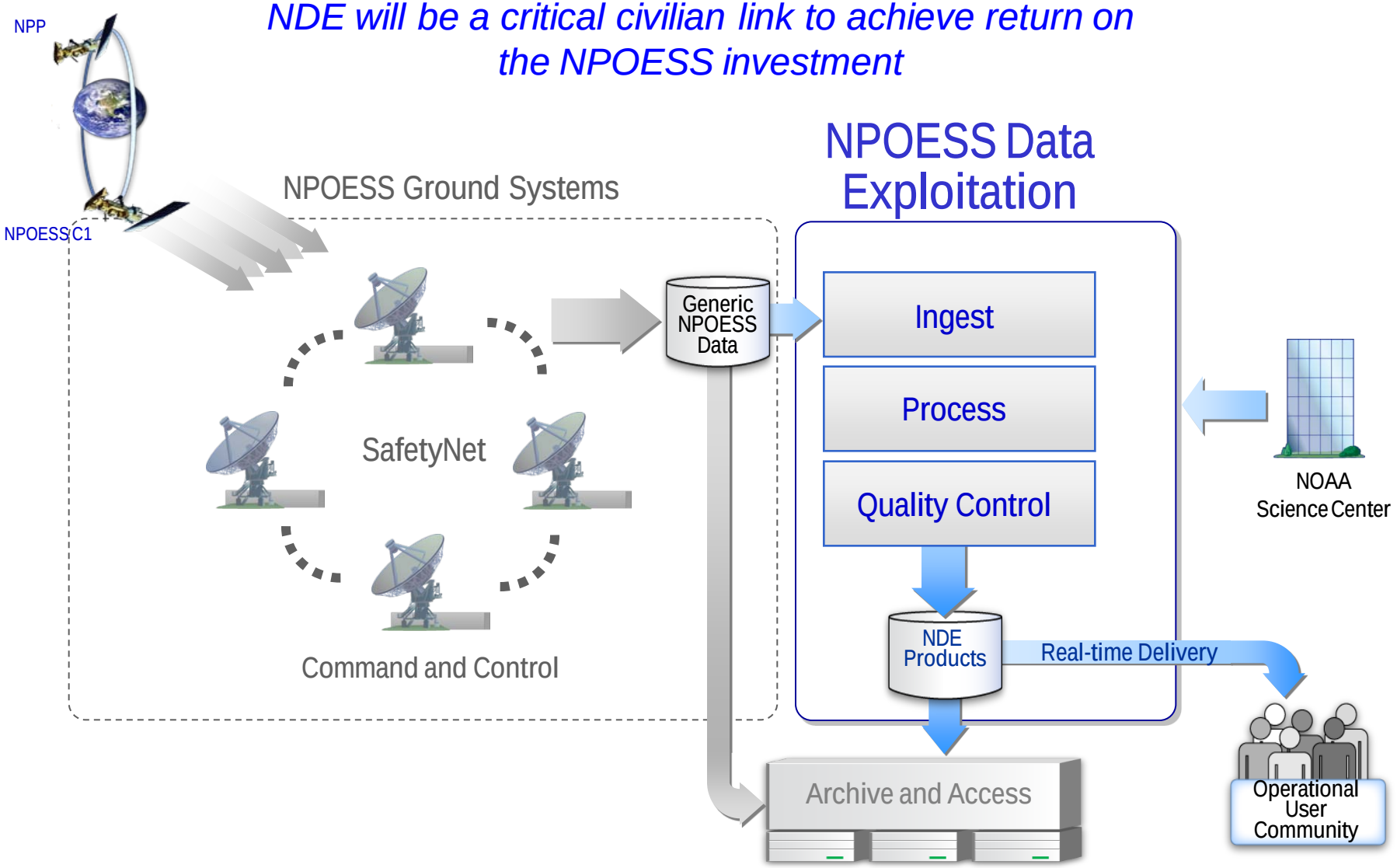
- NDE will tailor NPP and NPOESS products for NOAA's user community
- NDE is developing capabilities to provide users with continuity of data from current POES, DMSP, and EOS missions
- NDE will develop and implement additional products from NPP and NPOESS as new user requirements are defined and validated

NASA/NPOESS NPP – 24 IORD EDRs



NPOESS & NDE

NDE will be a critical civilian link to achieve return on the NPOESS investment



NPP Phase 1

- NPOESS contractor delivered products

ATMS Radiances	Vegetation Index	Cloud Effective Particle Size
CrIS Radiances	Active Fires	Cloud Optical Thickness
VIIRS Radiances	Atmospheric Temperature Profile	Cloud Top Height (VIIRS)
OMPS Radiances	Atmospheric Moisture Profile	Suspended Matter [New to NOAA]
Cloud Mask	Aerosol Optical Thickness	Land Surface Temperature (VIIRS) [New to NOAA]
Sea Surface Temperature (SST)	Land Surface Type	Cloud Base Height [New to NOAA]
Nadir Profile Ozone	Surface Albedo	Ice Surface Temperature [New to NOAA]
Ozone Total Column	Cloud Cover/Layers	Sea Ice Characterization (VIIRS) [New to NOAA]
Snow Cover and Depth	Aerosol Particle Size	Atmospheric Pressure Profile [New to NOAA]
Imagery	Cloud Top Temperature	Quarterly Surface Type Gridded [New to NOAA]
Ocean Color/Chlorophyll	Cloud Top Pressure	

B	NPOESS Delivered xDRs (SDR, TDR, EDR, ARP, IP)

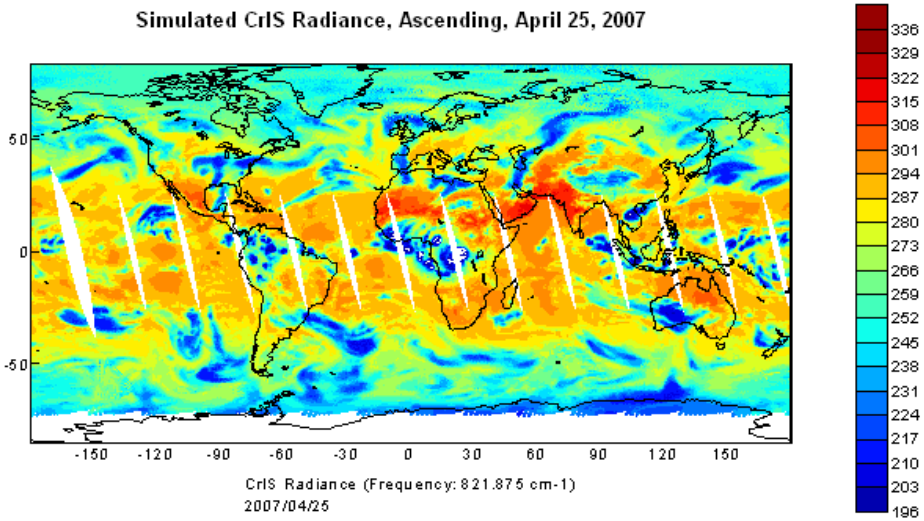
NPP Phase 1

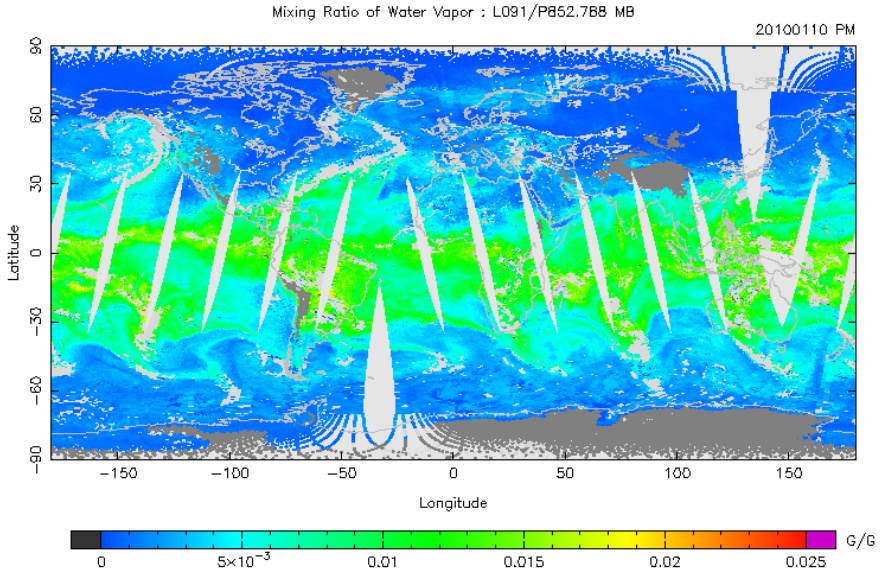
- NOAA Unique Product (NUP) development to transition capabilities from research to operations

CrIS Thinned Radiances	Land Surface Temperature (ATMS)	Trace Gases (Carbon)
CrIS Cloud Cleared Radiances	Temperature Profiles (ATMS)	SST (AVHRR-like)
Total Precipitable Water (ATMS)	Moisture Profiles (ATMS)	Aerosol (AVHRR-like)
Snow Cover (ATMS)	Rain Water Path (ATMS)	Cloud Top Fraction (CrIS)
Precipitation Rate (ATMS)	Blended SST	Cloud Top Pressure (CrIS)
Land Surface Emissivity (ATMS)	SST Anomalies	Stability Products (CrIS)
Cloud Liquid Water (ATMS)	SST Degree Heating Weeks	Polar Winds (VIIRS)
Sea Ice Concentration (ATMS)	SST Hot Spots	Green Vegetation Fraction
Snow Water Equivalent (ATMS)	Coral Reef Bleaching Indices/Alerts	Blended Total Precipitable Water
Ice Water Path (ATMS)	Total Ozone (CrIS)	

Y	NOAA Unique Products (NUPs)

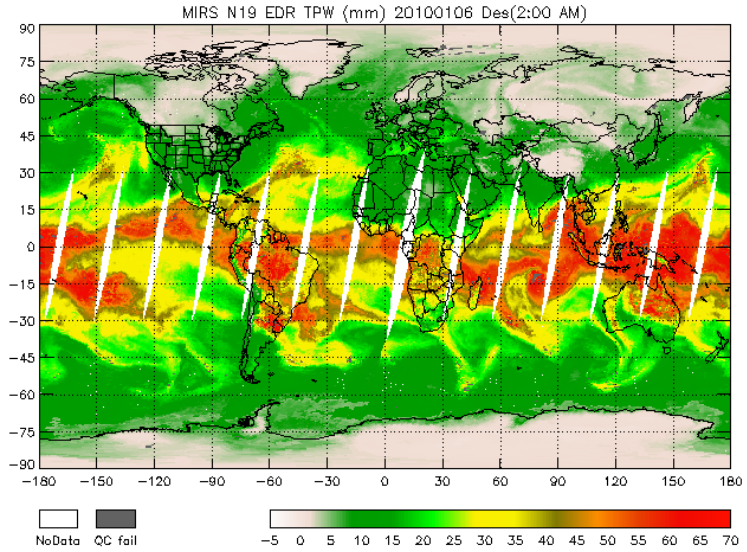
CrIS/ATMS Product System

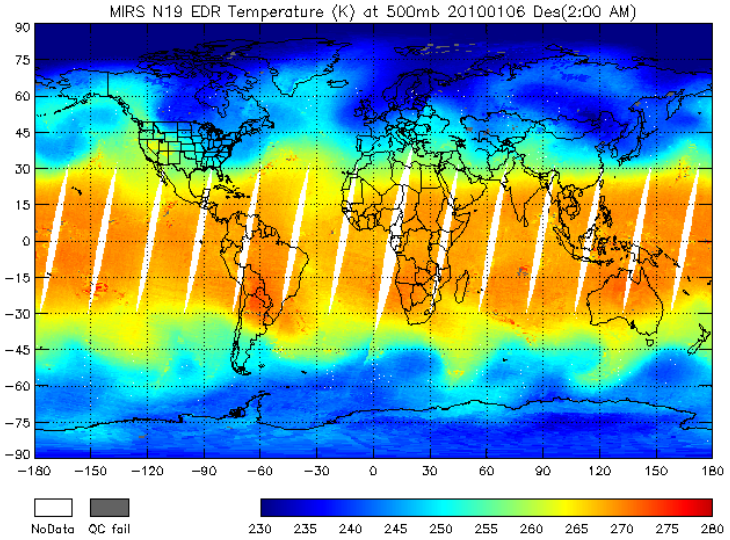




- Continuity from: Aqua AIRS and Metop IASI
- CrIS based products
  - Cloud cleared radiances
  - Principal components
  - Ozone
  - Trace gas retrievals (carbon dioxide, carbon monoxide, methane, and nitric acid)
  - Cloud top pressure
  - Cloud top fraction
  - Atmospheric stability products

Microwave Integrated Retrieval System

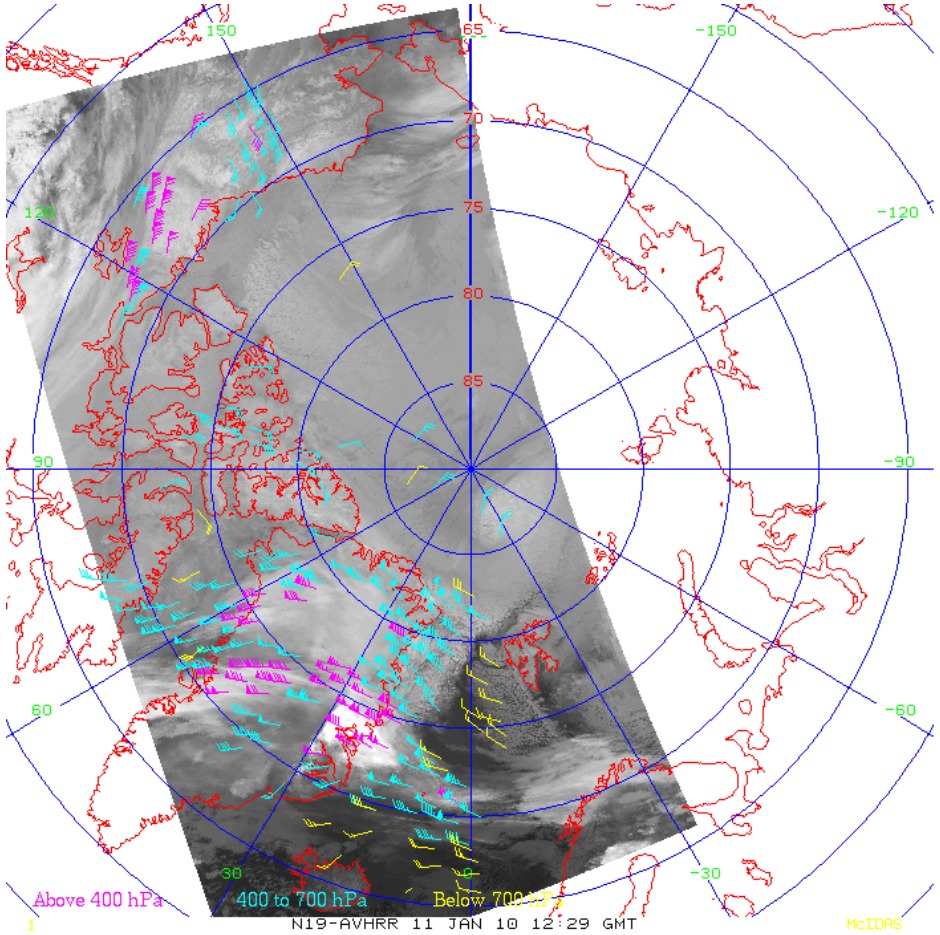




- Continuity from: POES/Metop AMSU-A and MHS, and DMSP SSMIS

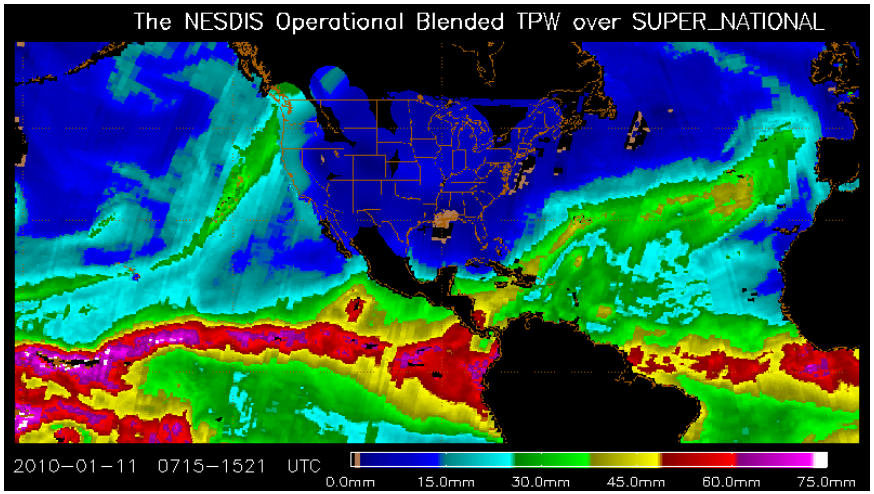
- ATMS based products
  - Total precipitable water
  - Precipitation rate
  - Cloud liquid water
  - Snow water equivalent
  - Snow cover
  - Sea ice concentration
  - Land surface temperature
  - Land surface emissivity
  - Temperature and moisture profiles

Polar Winds



- Continuity from: Terra and Aqua MODIS and POES AVHRR
- VIIRS based products
  - Wind speed, direction, and height at high latitudes

Blended Total Precipitable Water



- Continuity from: TPW products from POES, DMSP, GPS-Met, GOES, TMI, Aqua
- ATMS based products
  - Total precipitable water
  - Total precipitable water anomaly

NPP Phase 2 Products

- Future NUP development candidates

Limb Profile Ozone	Integrated xDRs at CrIS Resolution	Emiliania Huxleyi Blooms
Blended Snow Cover	Cloud Liquid Water Path (VIIRS)	Rainfall Prediction (ATMS)
Tropical Rainfall Potential	Cloud Ice Water Path (VIIRS)	Tropical Cyclone Intensity (ATMS)
Blended Ozone	Cloud Top Temperature (VIIRS)	Volcanic Ash (VIIRS)
Vegetation Health	Net Solar Radiation at TOA (CERES)	Hazard Support (Tropical) (VIIRS)
Vegetation Moisture	Outgoing Longwave Radiation at TOA (CERES)	Fire Burn Scars (VIIRS)
Drought Indices	Downward Longwave Radiation at TOA (CERES)	Cloud Types (AVHRR-like)
Vegetation Thermal Conditions	Downward Shortwave Radiation at TOA (CERES)	Inversion Strength and Height (CrIS)
Leaf Area Index	Cloud Products (CERES)	CO2 Slicing Derived Cloud Top Pressure (CrIS)
Fire Potential/Risk	Outgoing Longwave Radiation TOA (VIIRS)	Cloud Amount
Fire & Smoke Analysis	Outgoing Longwave Radiation (CrIS)	Cloud Ice Water Path
Near Coast Ocean Color	Downward Shortwave Radiation TOA (VIIRS)	Cloud Liquid Water Path
Harmful Algal Blooms (VIIRS)	Ocean Optimized Cloud Mask	Cloud Type
Clear Sky Radiances (VIIRS)	Chesapeake Bay Ocean Color	Cloud Fraction
		Cloud Emissivity

Y	NOAA Unique Products (NUPs)