

NPOESS Data Exploitation Contributions to Global Precipitation Measurement

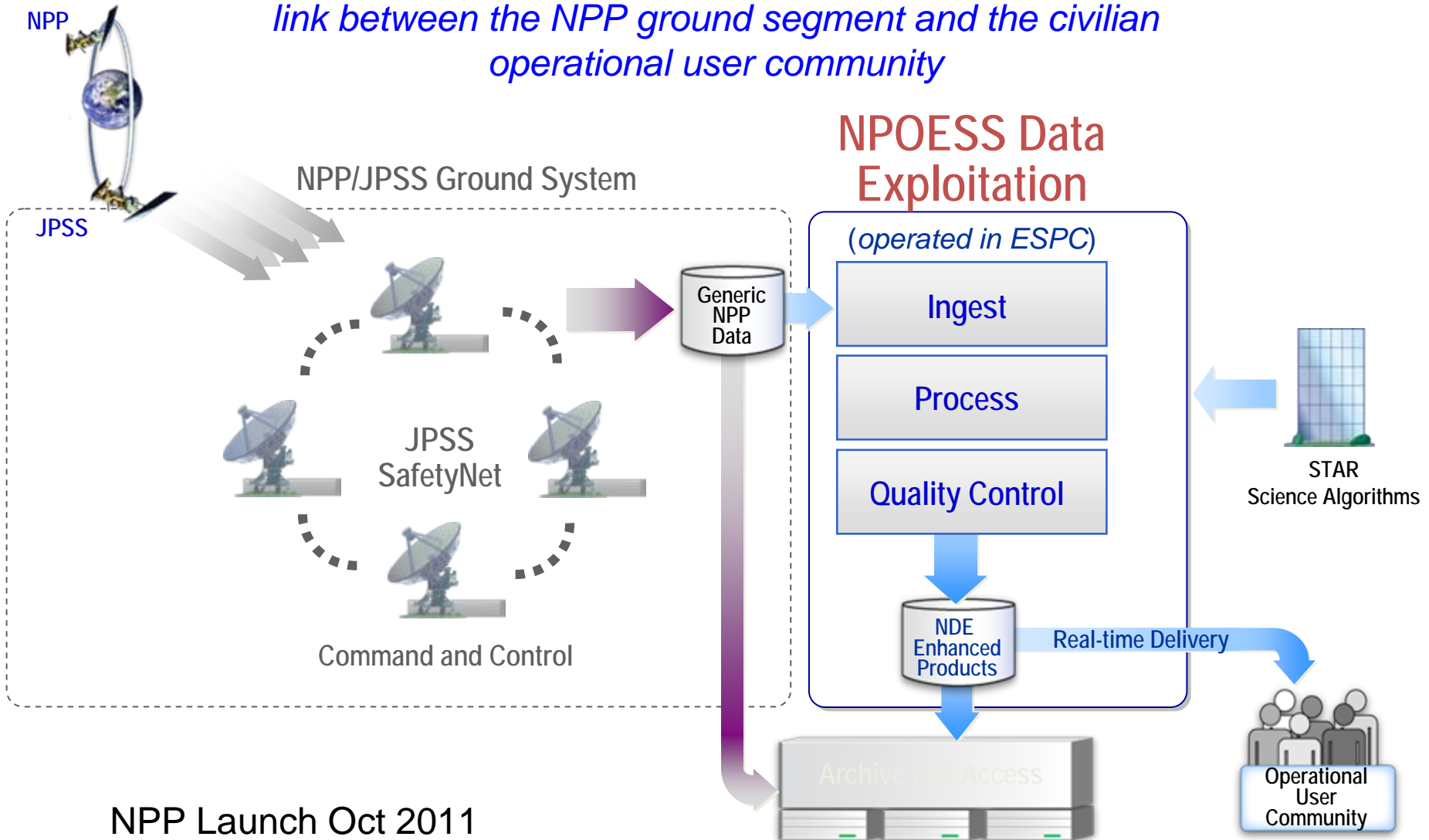
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Introduction

NDE is a data processing system providing the critical link between the NPP ground segment and the civilian operational user community



NPP Launch Oct 2011

JPSS-1 NET FY 2015

Sample of NPP Products

- NOAA Unique Products (NUPs)
 - Pre-operational: 1 – 30 months after launch of NPP
 - Operational: 12 - 30 months after launch of NPP

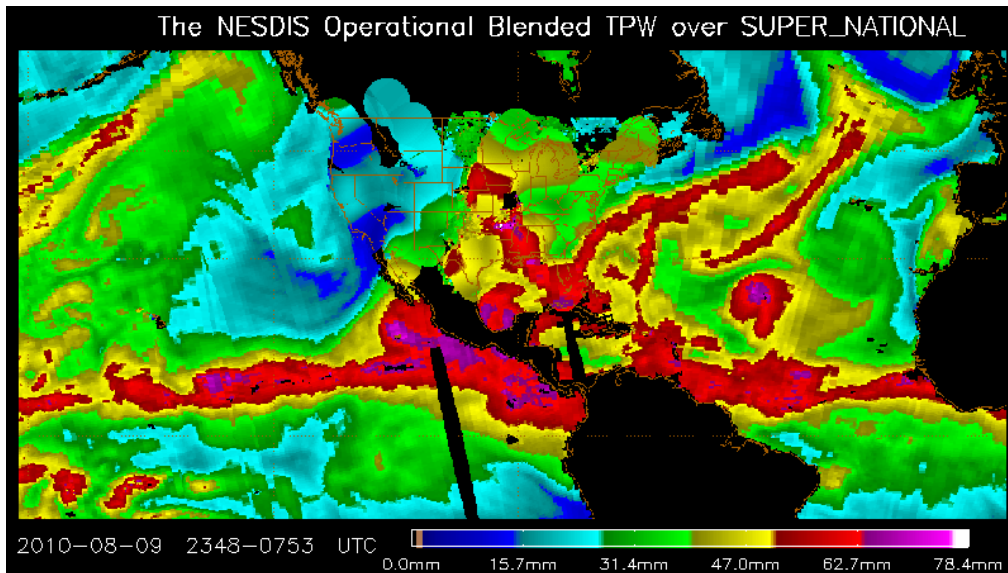
CrIS Thinned Radiances	Land Surface Temperature (ATMS)	Trace Gases (Carbon)
CrIS Cloud Cleared Radiances	Temperature Profiles (ATMS)	SST (AVHRR-like)
Total Precipitable Water (ATMS)	Moisture Profiles (ATMS)	Aerosol (AVHRR-like)
Snow Cover (ATMS)	Rain Water Path (ATMS)	Cloud Top Fraction (CrIS)
Precipitation 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)	

	NOAA Unique Products (NUPs)
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NPOESS Data Exploitation

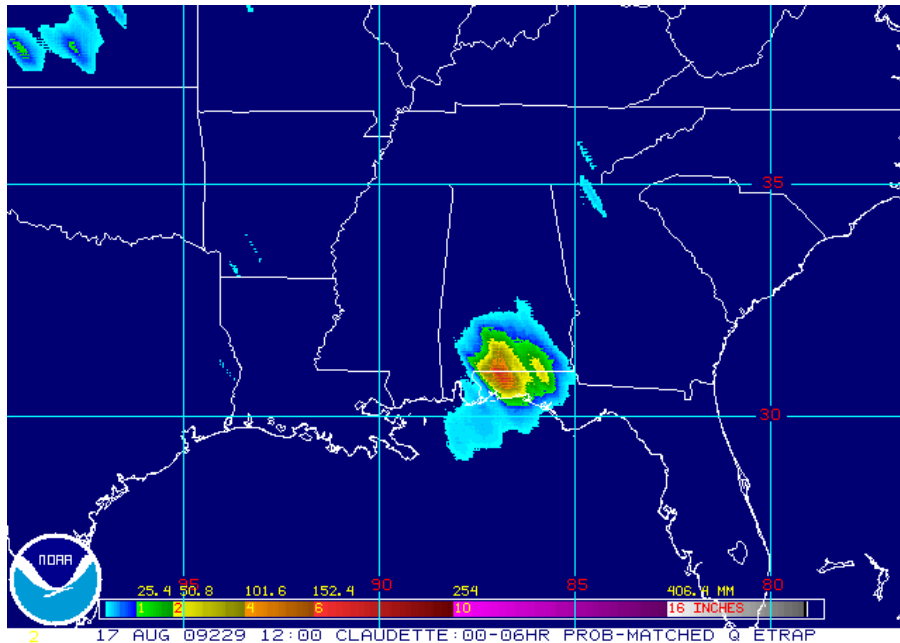
- NDE will provide NOAA users with NPP data for the continuity of POES precipitation products
 - AMSU-Based
 - Total Precipitable Water
 - Precipitation Rate
 - Rain Water Path
 - Blended TPW
 - Tropical Rainfall Potential
 - Rainfall Prediction (Satellite Precipitation Estimates)
 - Cloud Liquid Water
 - Ice Water Path
 - AVHRR-Based (CLAVR)
 - Cloud Liquid Water Path
 - Cloud Ice Water Path

NPOESS Data Exploitation



- Example Product: Blended TPW
 - Uses information from POES, Metop, DMSP, GPS, and GOES
 - Product development efforts will add NPP ATMS data to the blended product
 - Used by NWS forecasters to forecast heavy rain and flooding

NPOESS Data Exploitation



- Example Product:
Ensemble Tropical Rainfall Potential
 - Uses information from POES, Metop, DMSP, TRMM, and Aqua
 - NPP ATMS data will be added to the ensemble product in the 2012 timeframe
 - Used to predict rainfall from tropical systems

Gaps in current satellite product suite

- Spatial (coverage) gaps: AMSU and MHS gaps should be eliminated with NPP ATMS
- Temporal gaps: 2 observations per day per satellite
- Accuracy shortcomings: 3mm for TPW, 2mm for rain rate
- How NDE products might help
 - There should be improvements in NDE's blended products
 - NDE to generate NOAA Unique Hydrological products from ATMS sensor
 - NDE to ensure AMSR-2 data from G-COM-W meets NOAA hydrological needs

Next Steps

- GPM's data would improve NDE's ensemble tropical rainfall potential product and blended TPW product
- New blended products can be generated using NPP data and the snowfall information for improved precipitation rate and type products
- The ATMS from NPP will help fill in the temporal gaps to achieve 3 hour or less global precipitation monitoring