
DEPARTMENT OF COMMERCE
UNITED STATES OF AMERICA


NOAA
U.S. DEPARTMENT OF COMMERCE

Suom


CORP


JPSS
NOAA

Welcome

STAR JPSS 2017 Annual Science Team Meeting



"The Future with JPSS"

CY 2017 Milestones:

JPSS-1 Launch

6 Years of extremely successful S-NPP Operations

7 Years since JPSS Program began

NOAA Center for Weather and Climate Prediction

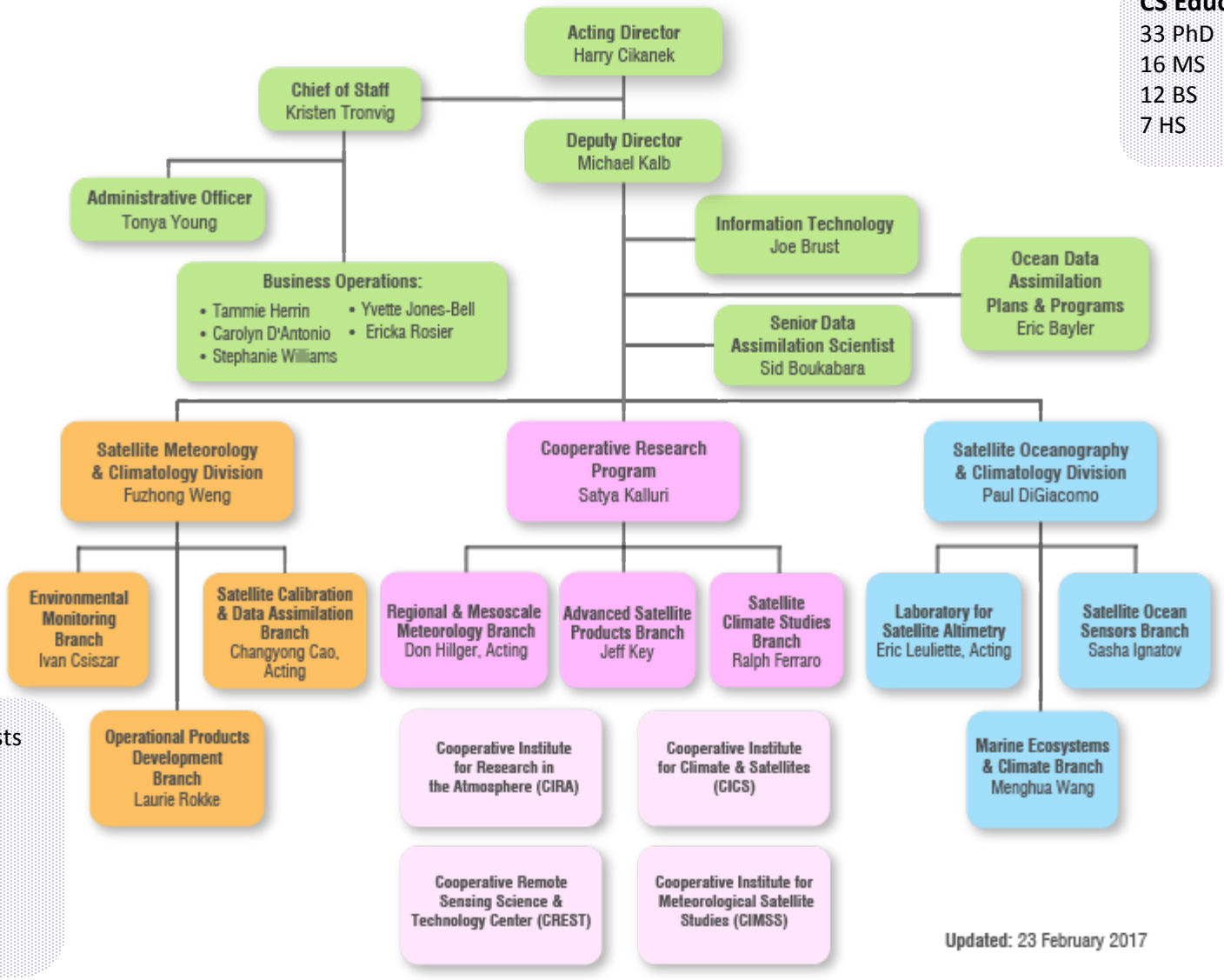
Selected STAR Strategic Objectives

- Support NESDIS mission and Strategic Plan:
  - Ensure continuity and success of GOES R, JPSS, Metop, Jason
  - Build a comprehensive, reliable, science-based enterprise that is agile, diverse and cost-effective, in support of NOAA users
  - Top-Quality, Cutting-edge & User-valued products, from core and emerging Obs. Systems, to maintain leadership and stewardship.
- Trust and Confidence with stakeholders
- Prioritize activities to
  - Address user requirements,
  - Optimize applications' effectiveness and
  - Maintain cutting-edge innovation to increase efficiency and effectiveness

STAR Organization

Staff Size
68 CS
190 SSC
200 CI

CS Education
33 PhD
16 MS
12 BS
7 HS



Expertise
35 Physical Scientists
9 Ocean Scientists
6 Meteorologists
2 Geophysists
1 Engineer
4 Information Systems
11 Other

Updated: 23 February 2017

Satellite-Related Cooperative Institutes and Educational Institutes

CICS (Cooperative Institute for Climate and Satellites)

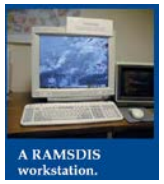


University of Maryland

North Carolina State University (Primary), Princeton University, Howard University, the University of California at Irvine, Columbia University, the City University of New York, Duke University, the University of Miami, Oregon State University, Colorado State University and Remote Sensing Systems

- Climate and Satellite Research and Applications
- Climate and Satellite Observations and Monitoring
- Climate Research and Modeling

CIRA (Cooperative Institute for Research in the Atmosphere)



Colorado State University

(Host NOAA Line Office is OAR)

- Satellite algorithm development, training and education
- Regional to Global Scale Modeling Systems
- Data Assimilation
- Climate-Weather Processes
- Data Distribution

CIMSS (Cooperative Institute for Meteorological Satellite Studies)



University of Wisconsin-Madison

- Environmental Models and Data Assimilation
- Satellite Meteorology Research and Applications
- Satellite Sensors and Techniques
- Education, training & outreach

CREST (Cooperative Remote Sensing Science & Technology)



City University of New York

Hampton University, University of Puerto Rico at Mayaguez, California State University, Los Angeles, **University of Maryland Baltimore County**, and Columbia University

- Climate
- Weather and Atmosphere
- Water Resources and Land Processes
- Coastal and Ocean Waters

STAR Cooperative Institutes

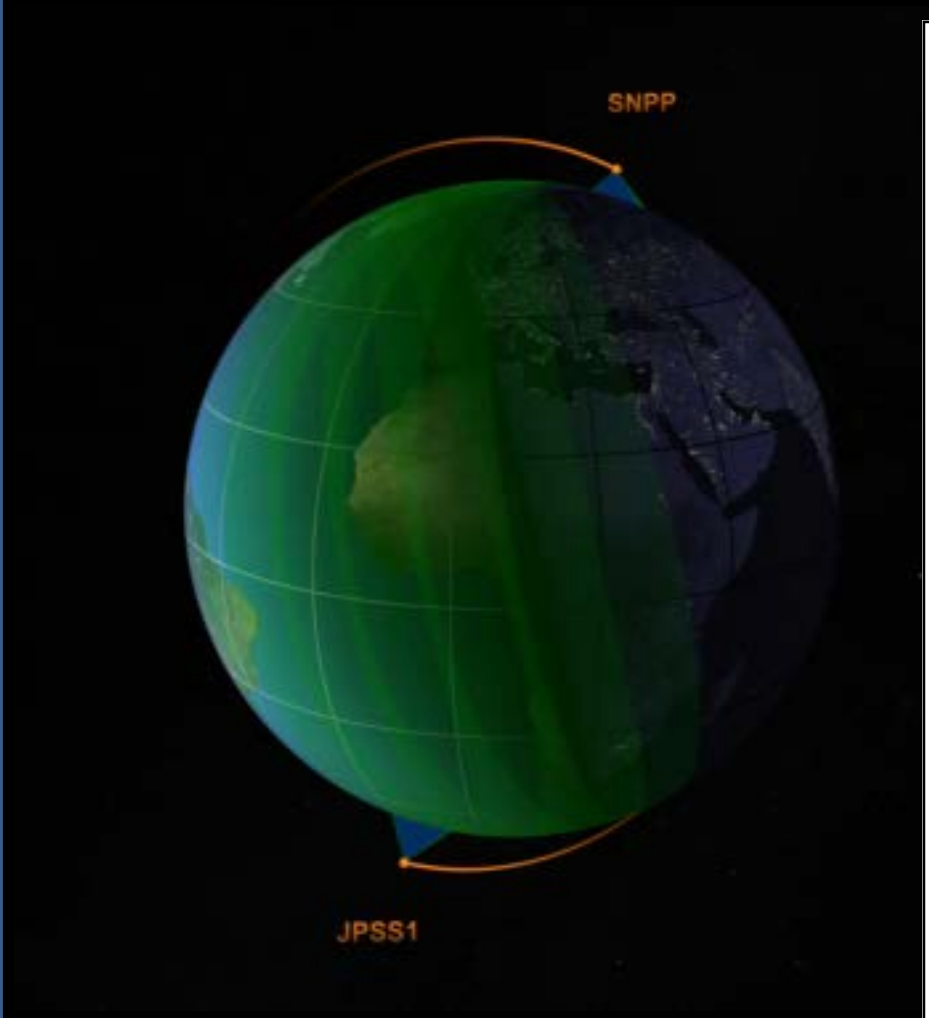


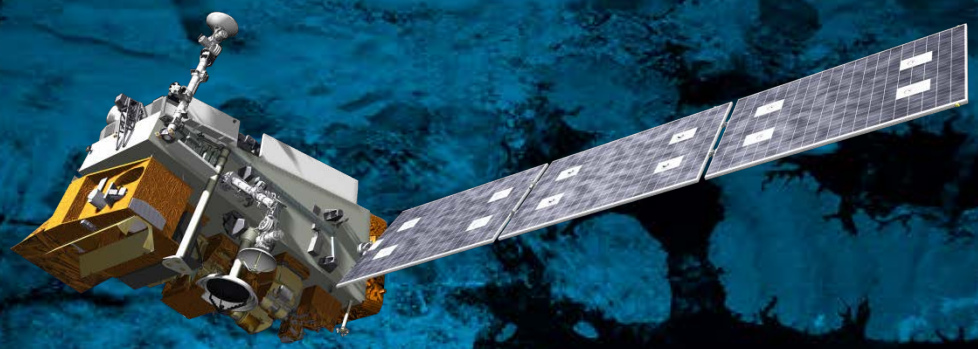
CREST

1. City College New York
2. Hampton University
3. UMBC
4. University of Puerto Rico
5. Cal State Univ. - Los Angeles

CICS Consortium Members

6. Princeton
7. Howard University
8. UC - Irvine
9. Columbia
10. CUNY
11. Duke
12. University of Miami
13. Oregon State
14. Remote Sensing Systems


SNPP
JPSS1



Joint Polar Satellite System

JPSS-STAR Annual Meeting

Greg Mandt, JPSS Director & Program Manager

GLOBAL DATA.
LOCAL WEATHER.

Program DESCRIPTION

Program of Record: SNPP, JPSS-1, JPSS-2 and Ground System Development and Maintenance

$11.3B over FY2010–FY2025

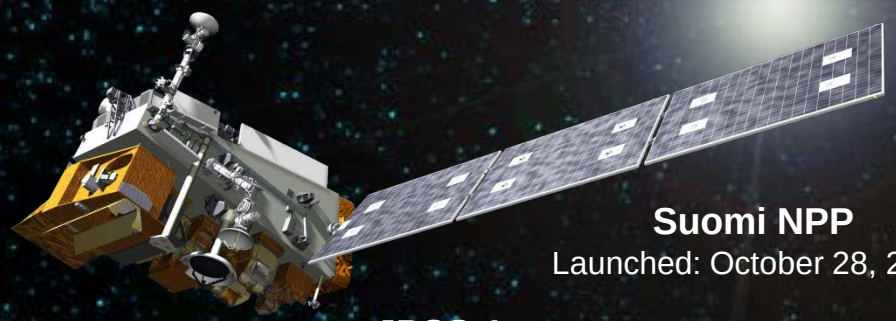
Polar Follow-on (PFO): JPSS-3, JPSS-4 and Mission Operations and Sustainment

$7.6B over FY2016–FY2038

Provides operational continuity of satellite-based observations and products

Supports all NOAA mission areas:

- Healthy Oceans
- Resilient Coastal Communities and Economies
- Climate Adaptation and Mitigation
- Weather Ready Nation



Suomi NPP
Launched: October 28, 2011

JPSS-1
Launch: 2017



JPSS-2
Launch: 2021

JPSS-3
Launch: 2026

JPSS-4
Launch: 2031

JPSS PROVIDES…

…

the most critical data for numerical weather prediction to enable accurate 3–7 day forecasts.

…

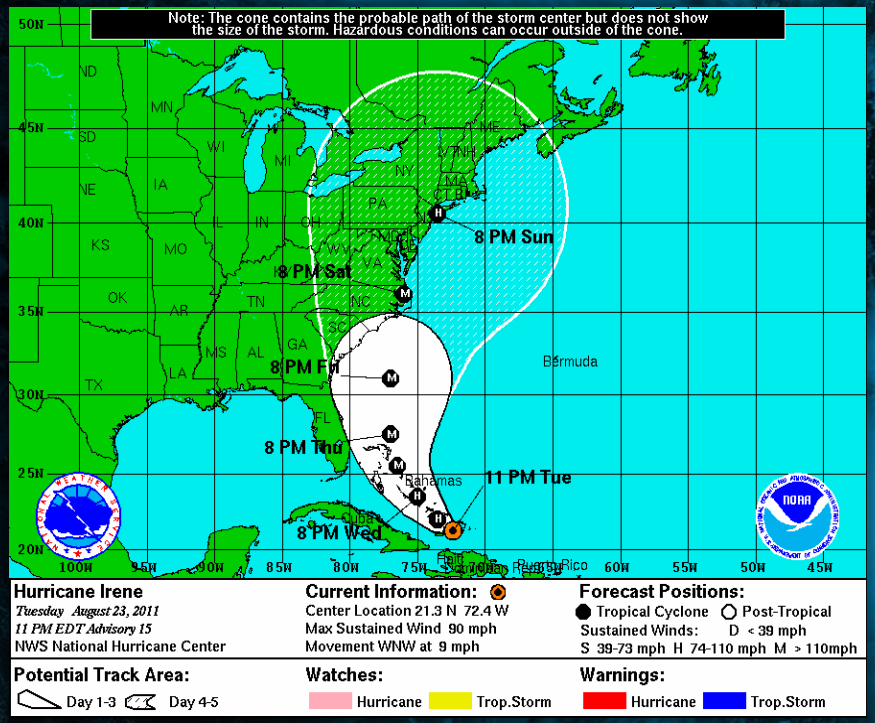
operational weather and environment satellite observations for Alaska and Polar regions operational forecasting.

…

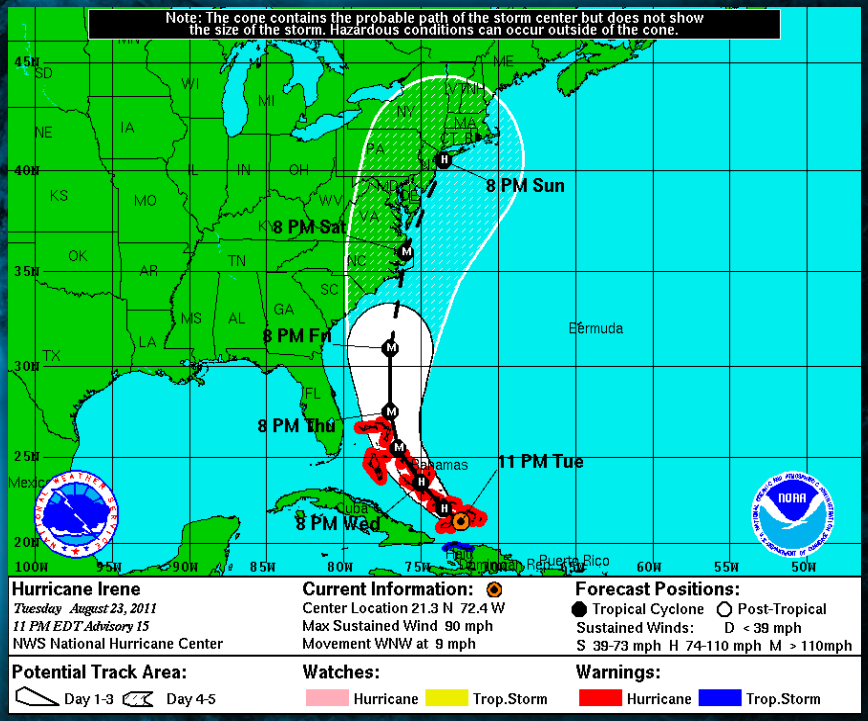
global coverage and unique day and night imaging capabilities in support of broad environmental monitoring and forecasting.

Supporting the ADVANCED FORECAST ENTERPRISE

“2001” Irene Forecast



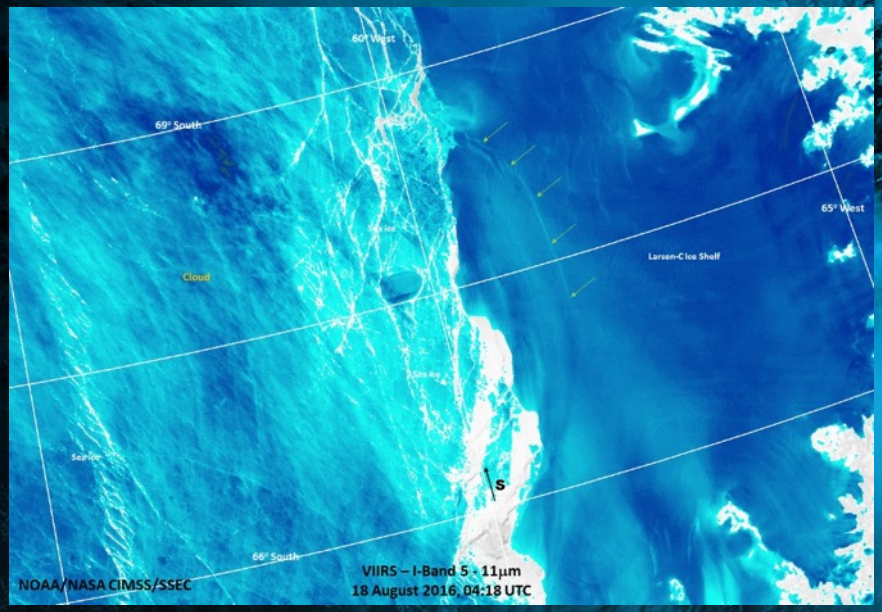
2011 Irene Forecast



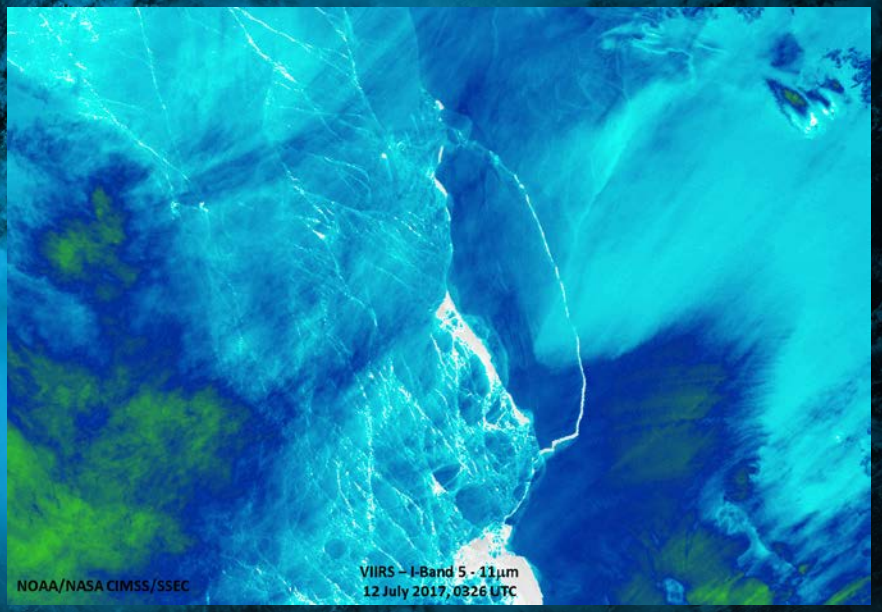
Without JPSS-like data, Hurricane Irene’s path would have been less accurately predicted, resulting in more evacuations and greater economic impact to coastal communities.

VIIRS Imagery:
Larsen-C Ice Shelf Break

August 18, 2016



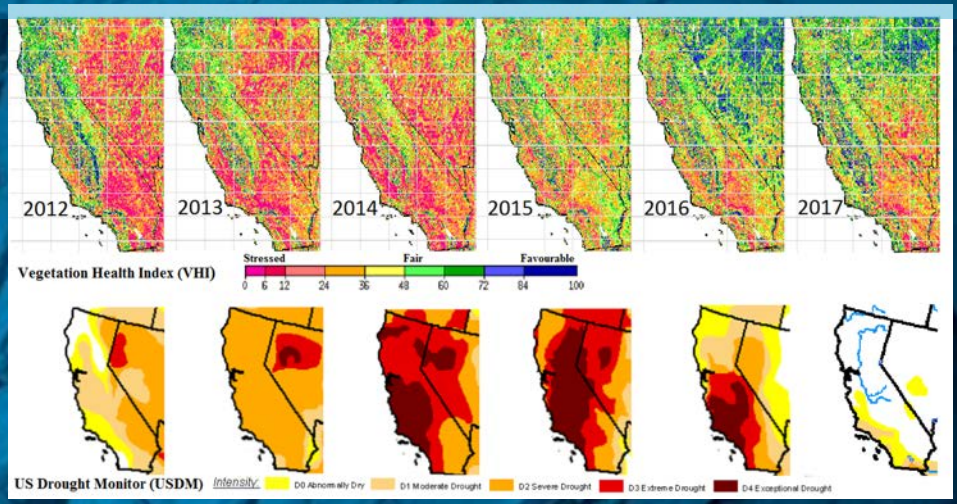
July 12-14, 2017

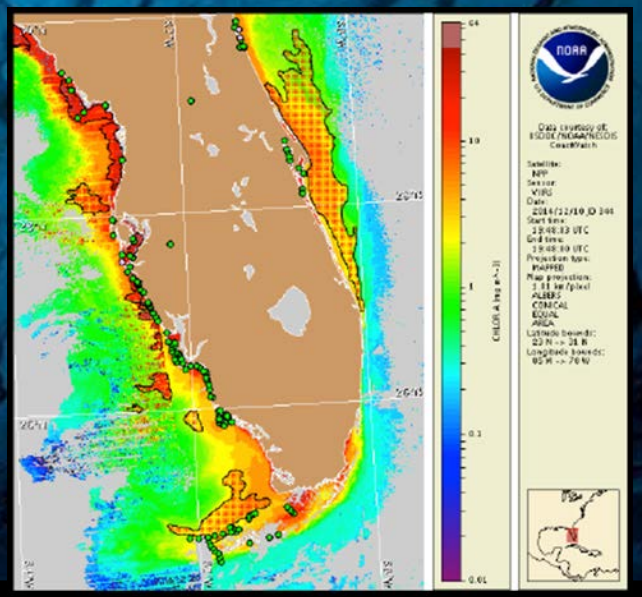


Iceberg as detected by VIIRS imager 11 micron band.

JPSS Applications:
More Than Weather & Ice

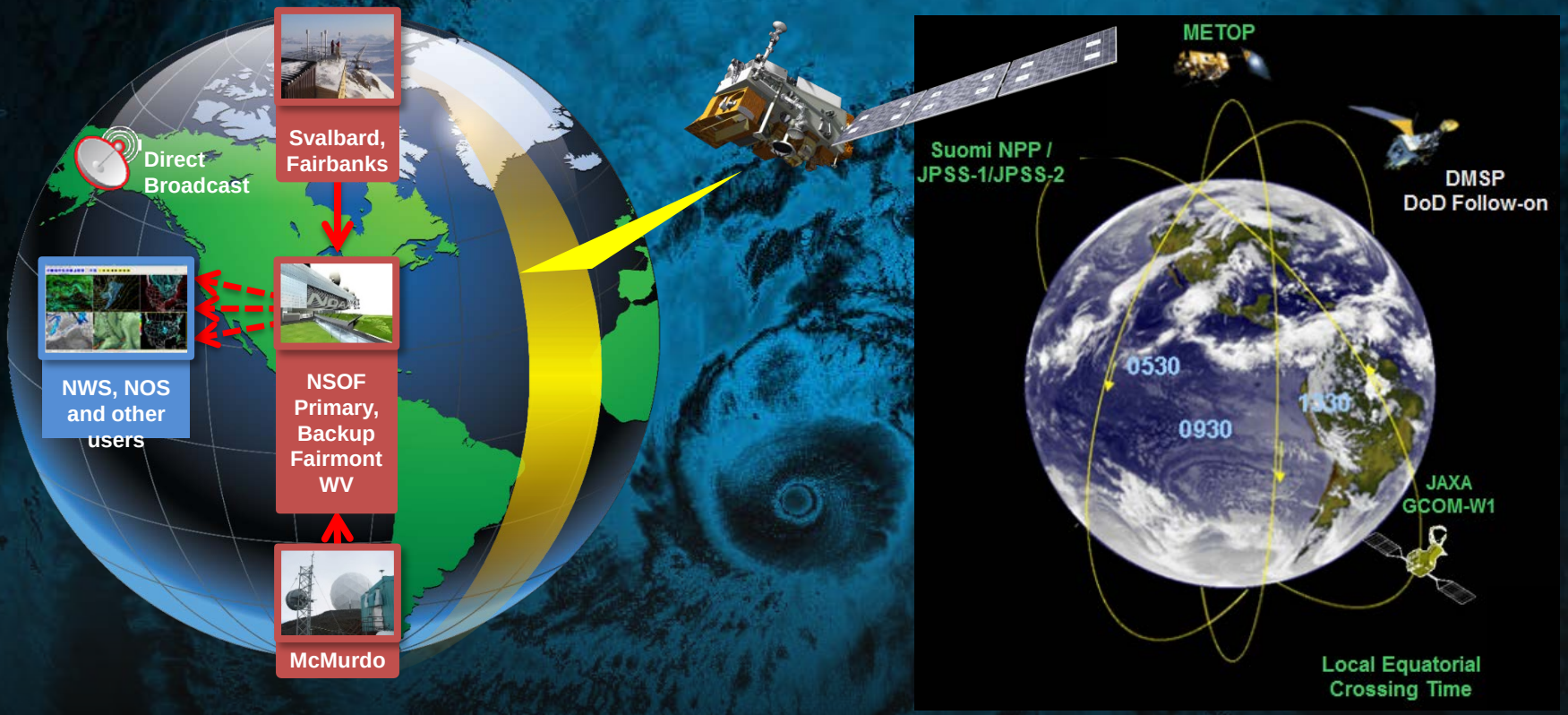
- Volcanic Ash and SO_2
- Marine Conditions
- Illegal Fishing
- Coral Bleaching
- Coastal Water Quality
- Land Conditions
- Agriculture
- Power Outages



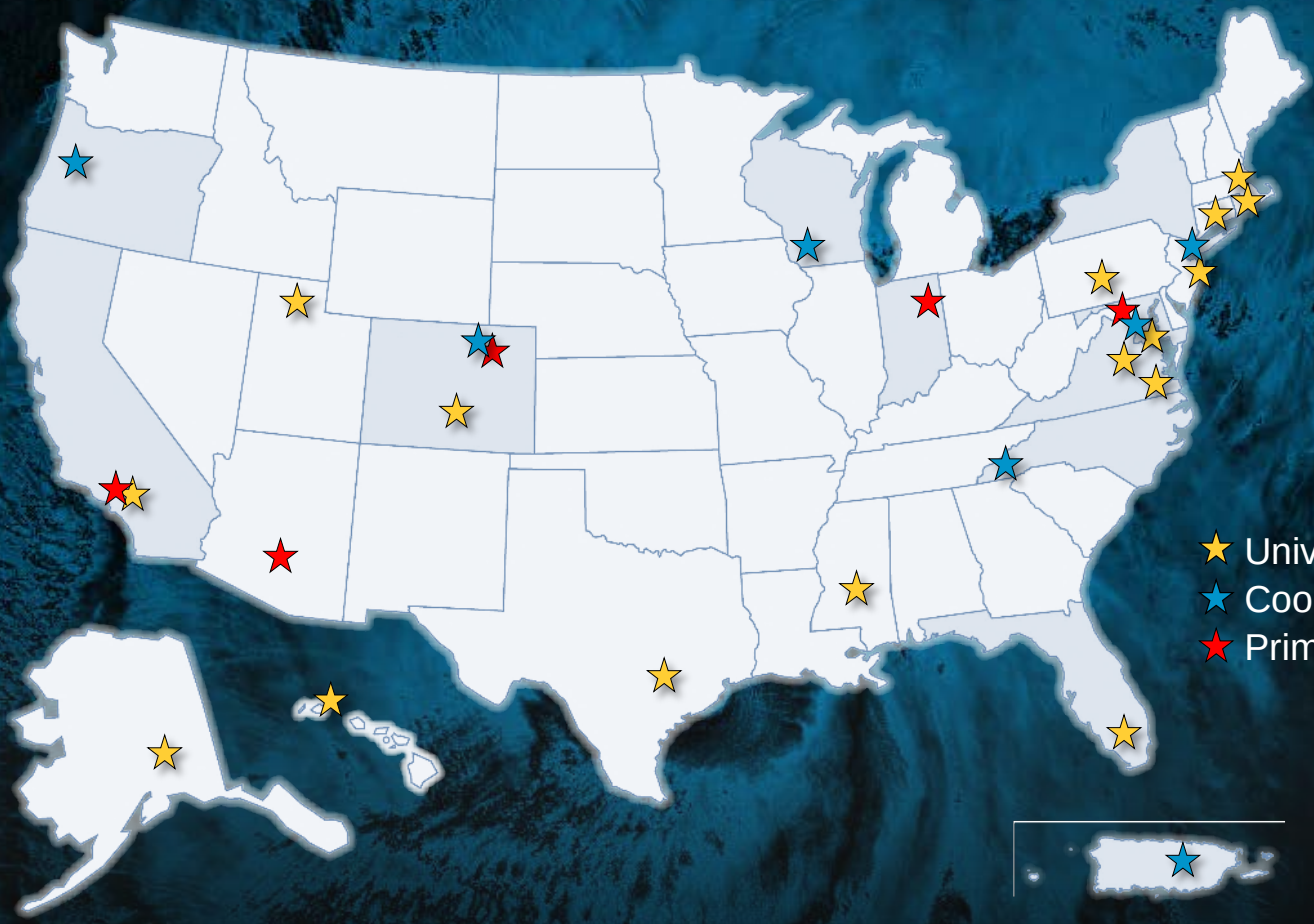


Global COOPERATIVE EFFORTS

Led by NOAA, implemented with NASA, and includes agreements with EUMETSAT, JAXA and DoD.



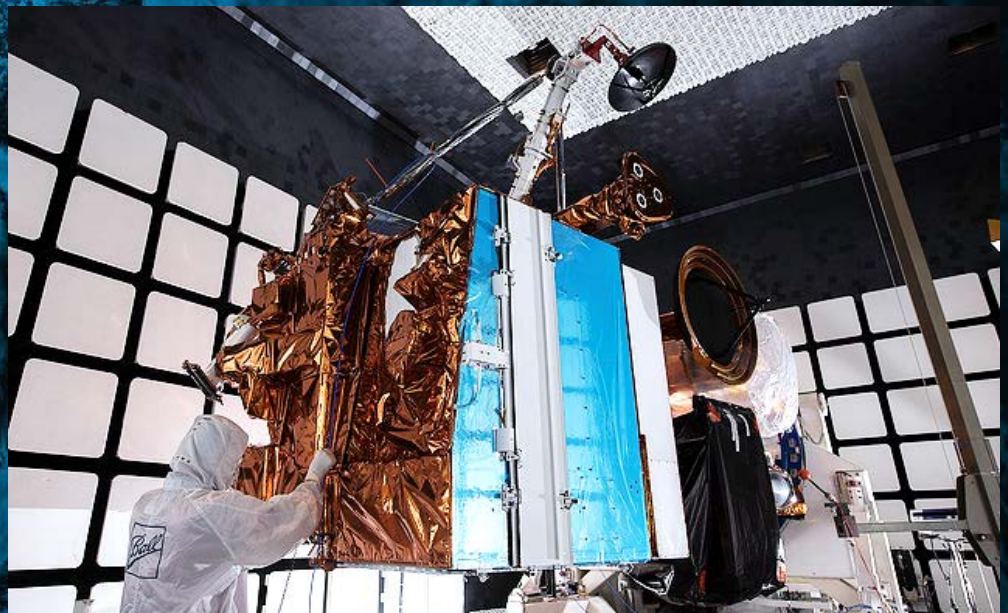
National
COOPERATIVE EFFORTS



Preparing for Launch
JPSS-1







Status
JPSS-1

Spacecraft

- Addressed anomalies discovered in Satellite Regression TVAC

Mission Operations Team (MOST)

- Continuing readiness activities and training on plan to support early September JPSS-1 ORR and launch campaign
- MR5b (last rehearsal before launch site) on track for last week in August

Launch Vehicle

- Working nominal flow to launch

Status JPSS-2

Spacecraft / Orbital ATK

- Preparations underway for Spacecraft Critical Design Review (CDR) week of October 16, 2017

ATMS / Northrop Grumman (NG)

- In subsystem assembly and testing; continued challenges finding good source for IF amplifiers

CrIS / Harris

- Return-to-paint remediation steps almost in work

VIIRS / Raytheon Space and Airborne Systems

- TVAC progressing well

OMPS/Ball Aerospace

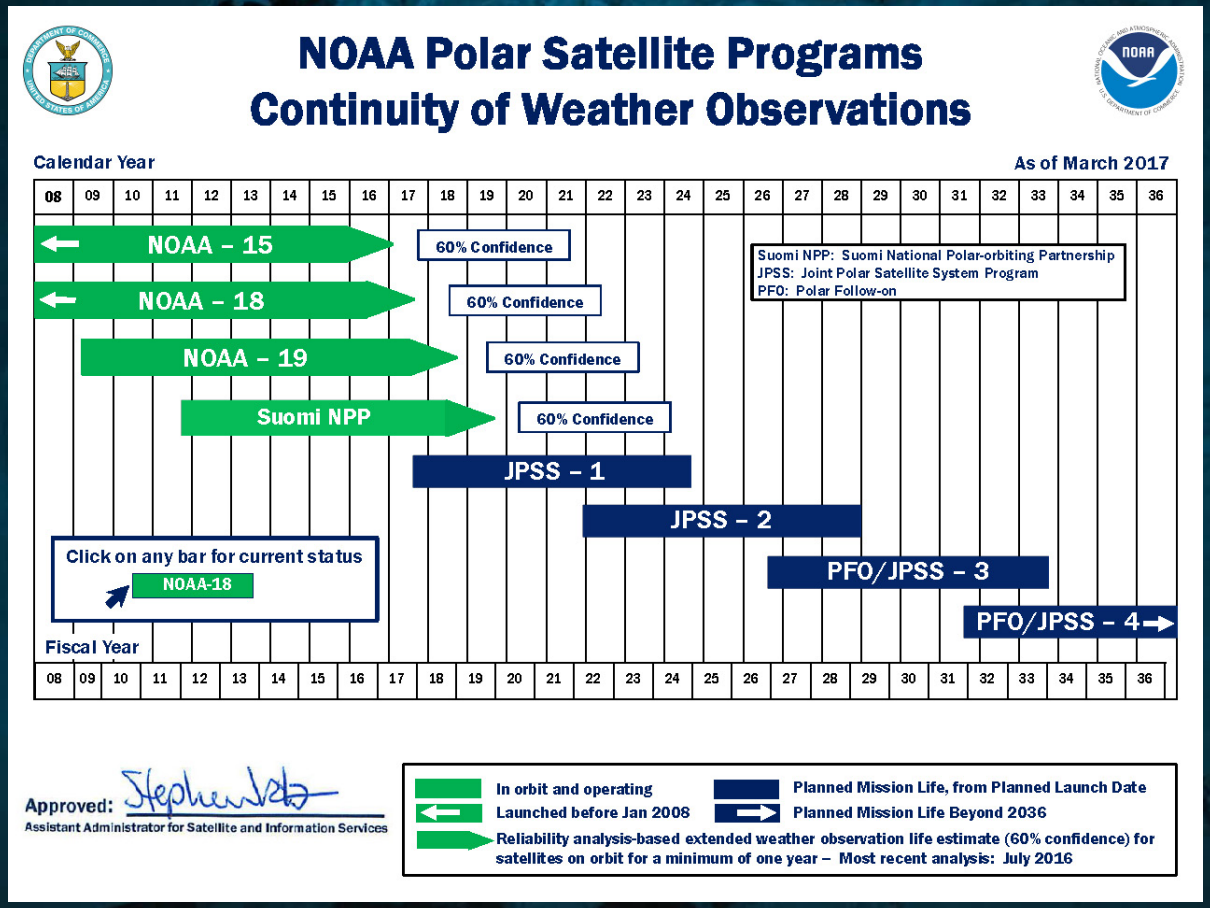
- Subsystem assembly ongoing
- Flight Focal Plane Assemblies (FPA) continue through assembly/test

The future of JPSS

JPSS will continue to provide high quality weather and environmental data and support the needs of the stakeholders and end users.

JPSS will continue the exploration of new scientific and societal applications for polar-orbiting data.

Continuity and Launch Schedule





THANK YOU!

For more information visit **www.jpss.noaa.gov**

CONNECT WITH US!


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@NOAASATELLITES


@NOAASATELLITES

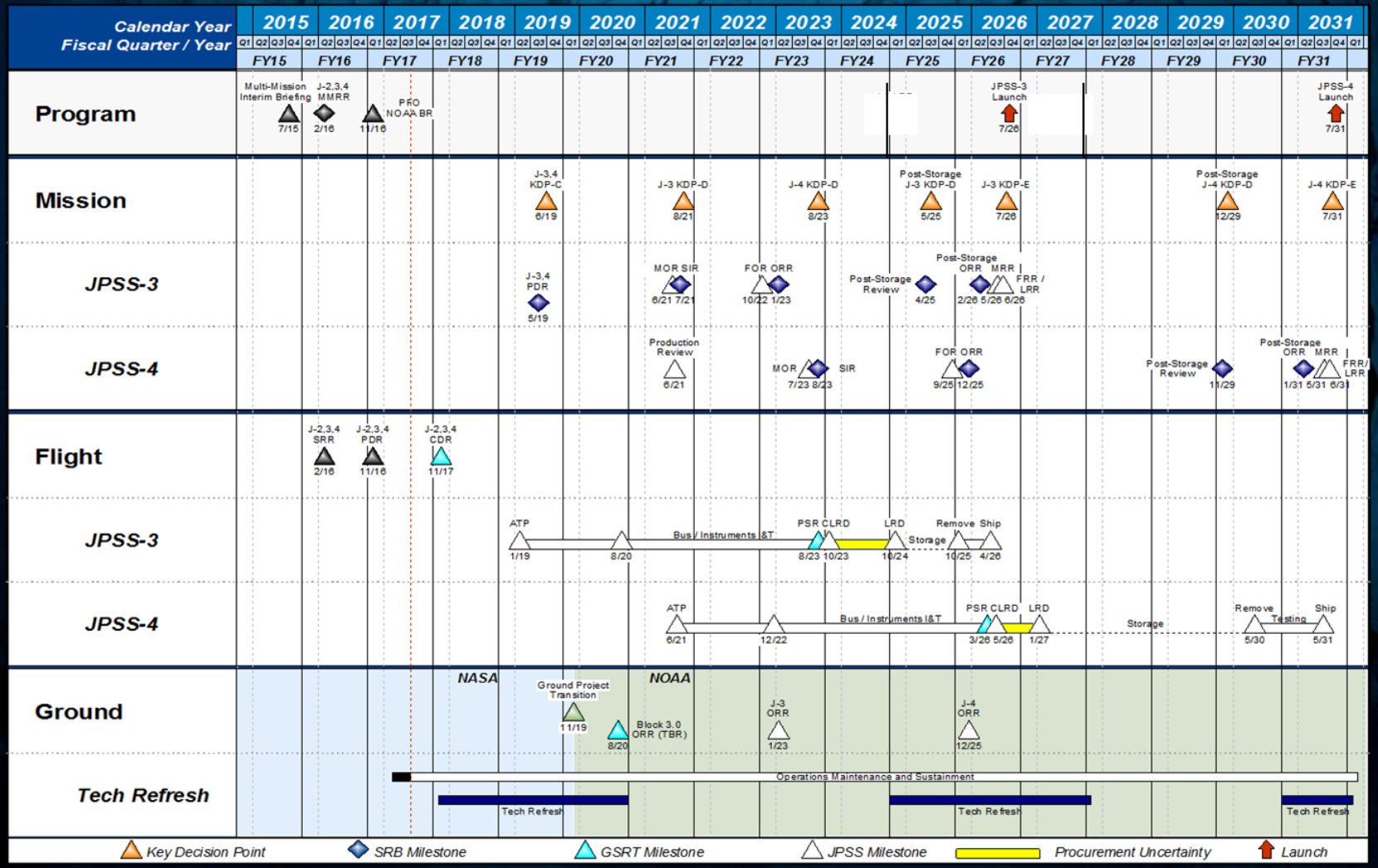

/NOAASATELLITES

Backup

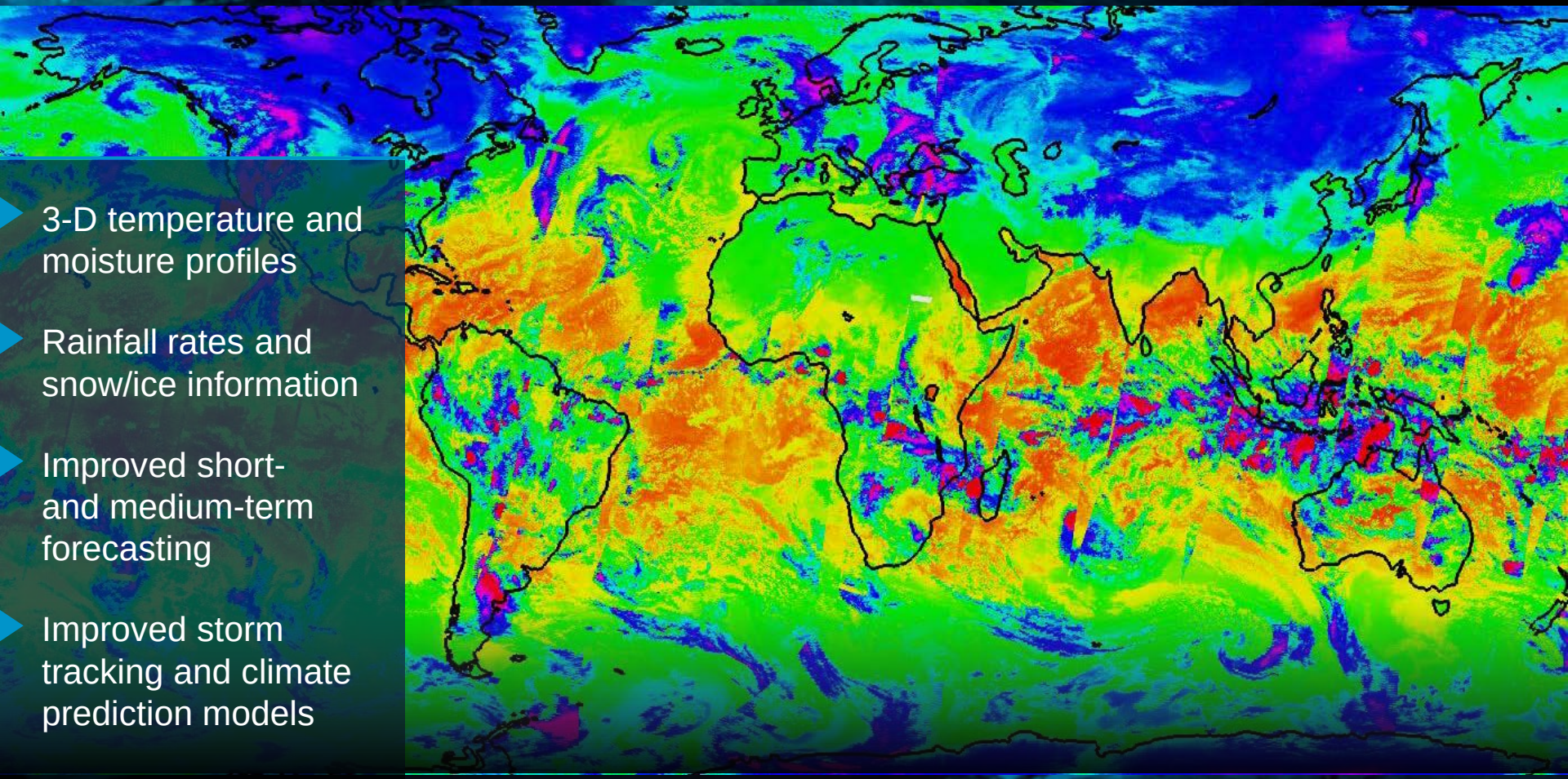
Status
JPSS-3, JPSS-4

Spacecraft Deliveries are Pre-Award Government Estimates

Status Date: 31 May, 2017



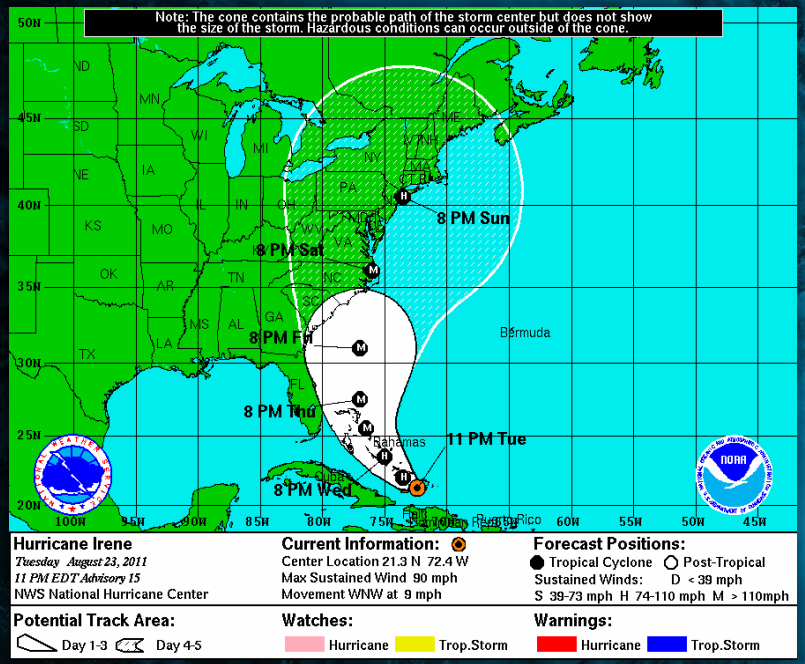
ADVANCED TECHNOLOGY MICROWAVE SOUNDER (ATMS) AND CROSS-TRACK INFRARED SOUNDER (CrIS)



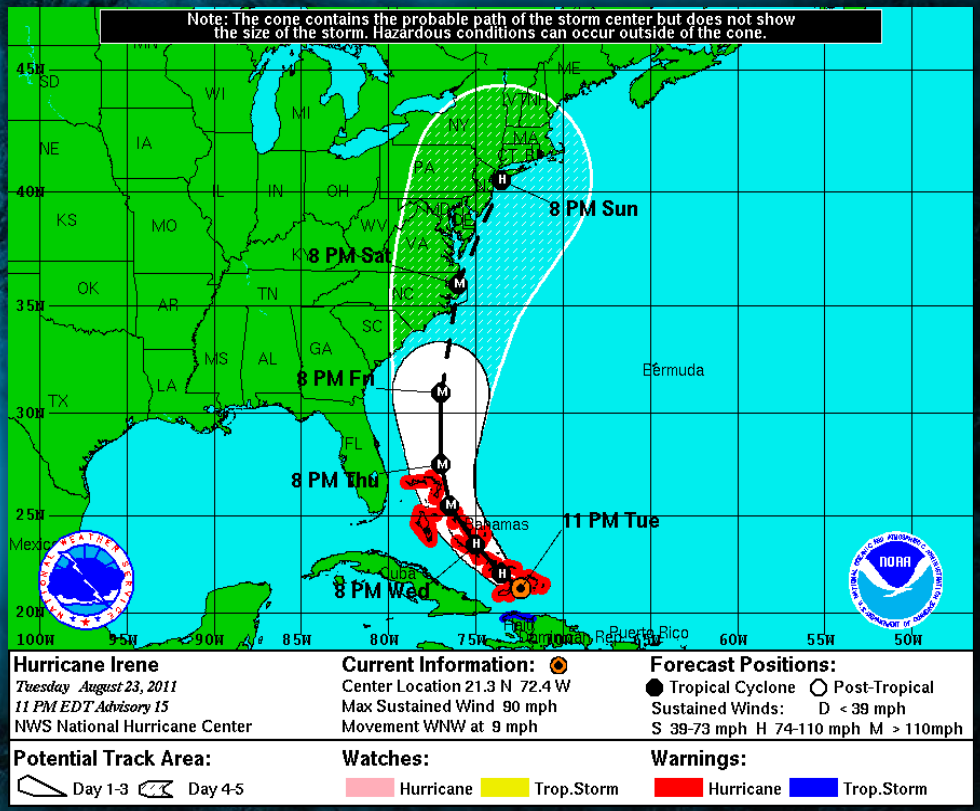
- 3-D temperature and moisture profiles
- Rainfall rates and snow/ice information
- Improved short- and medium-term forecasting
- Improved storm tracking and climate prediction models

Supporting the ADVANCED FORECAST ENTERPRISE

"2001" Irene Forecast



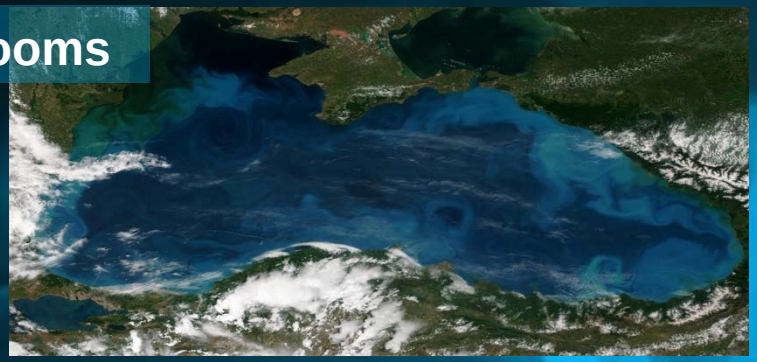
2011 Irene Forecast



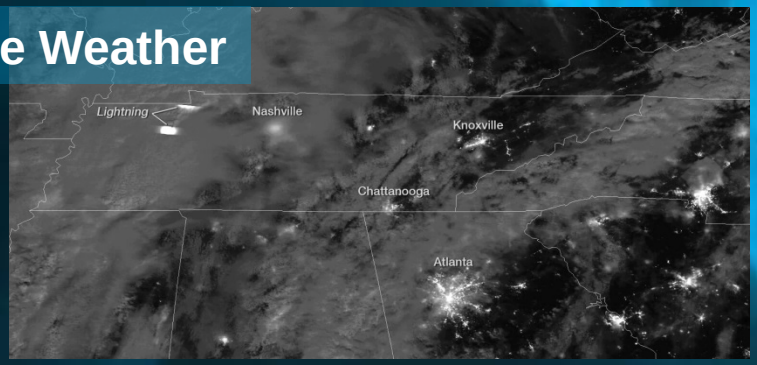
Without JPSS data, Hurricane Irene's path would have been less accurately predicted, resulting in more evacuations and greater economic impact to coastal communities.

VISIBLE INFRARED IMAGING RADIOMETER SUITE (VIIRS)

Algal Blooms

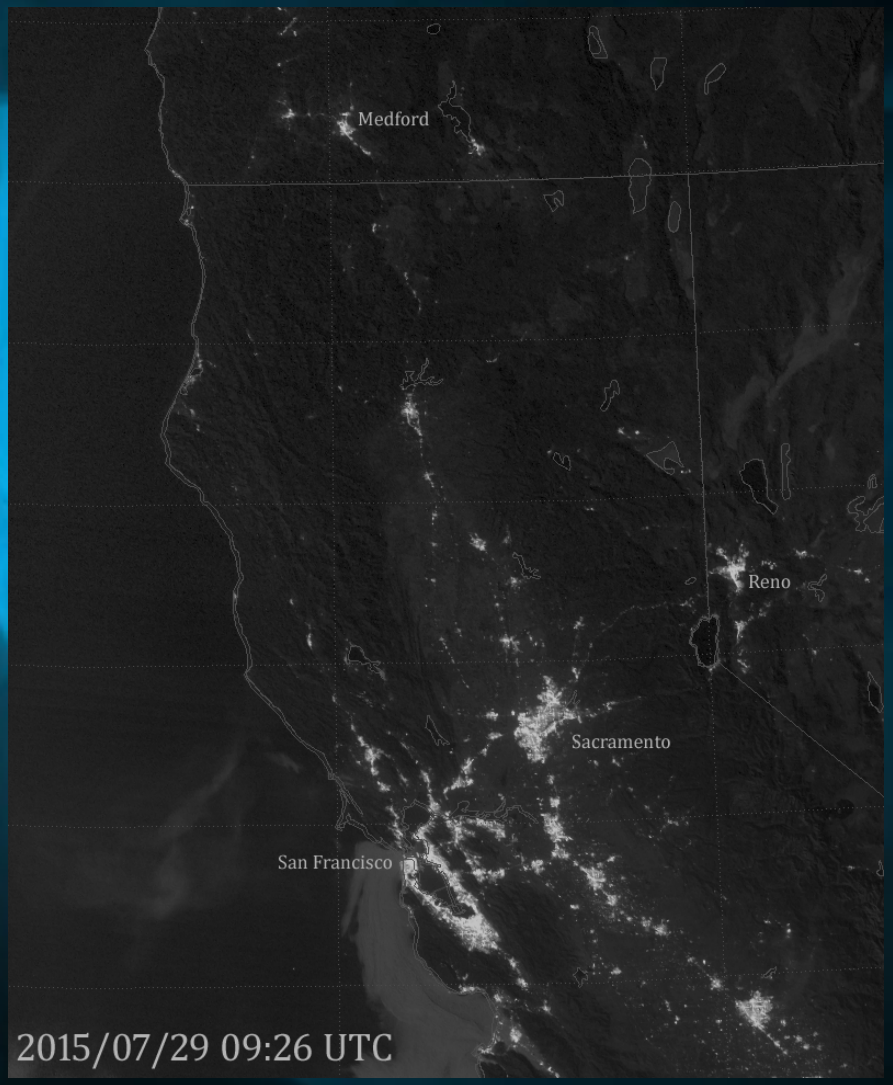


Nighttime Weather



Active Fires





OZONE MAPPING AND PROFILER SUITE (OMPS)



- Data measuring ozone health and concentration in atmosphere
- Continuity of 30-plus year record of ozone data

Proving Ground and Risk Reduction Program (PGRR)

The PGRR program develops and maintains engagement between JPSS experts and end users about data products and applications.



Project initiatives include:

- Hydrology
- Fire and Smoke
- Arctic
- Ocean and Coastal
- OCONUS and NCEP Service Centers–AWIPS
- River Ice and Flooding
- Sounding Applications
- Weather/Numerical Weather Prediction/Data Assimilation

JPSS-1 INSTRUMENTS

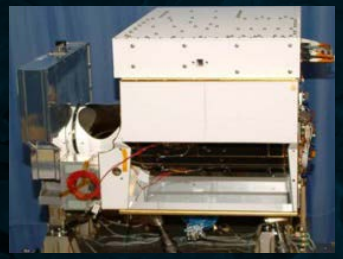
ATMS
Advanced Technology Microwave Sounder



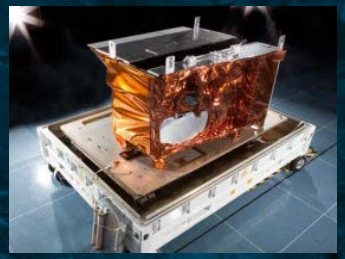
ATMS and CrIS together provide high vertical resolution temperature and water vapor information needed to maintain and improve forecast skill out to 5 to 7 days in advance for extreme weather events, including hurricanes and severe weather outbreaks.

NORTHROP GRUMMAN HARRIS

CrIS
Cross-track Infrared Sounder



VIIRS
Visible Infrared Imaging Radiometer Suite



VIIRS provides many critical imagery products including snow/ice cover, clouds, fog, aerosols, fire, smoke plumes, vegetation health, phytoplankton and chlorophyll abundance.

Raytheon

OMPS
Ozone Mapping and Profiler Suite



Ozone spectrometers for monitoring ozone hole and recovery of stratospheric ozone and for UV index forecasts.

Ball

CERES
Clouds and the Earth's Radiant Energy System



Scanning radiometer which supports studies of the Earth Radiation Budget (ERB).

NORTHROP GRUMMAN

NOAA NASA

Data PRODUCTS



KEY

AP – Application Packet
ASD – Application Process Identifier Sorted Data
RDR – Raw Data Record
SDR – Sensor Data Record
TDR – Temperature Data Record
EDR – Environmental Data Record
ESPC – Environmental Satellite Processing Center
– Products with Key Performance Parameters
– Mission Unique Data Products



Joint Polar Satellite System (JPSS)

JPSS PROVING GROUND AND RISK REDUCTION UPDATE

Mitch Goldberg
JPSS Program Scientist

National Environmental Satellite, Data, and Information Service
U.S. National Oceanic and Atmospheric Administration
U.S. Department of Commerce

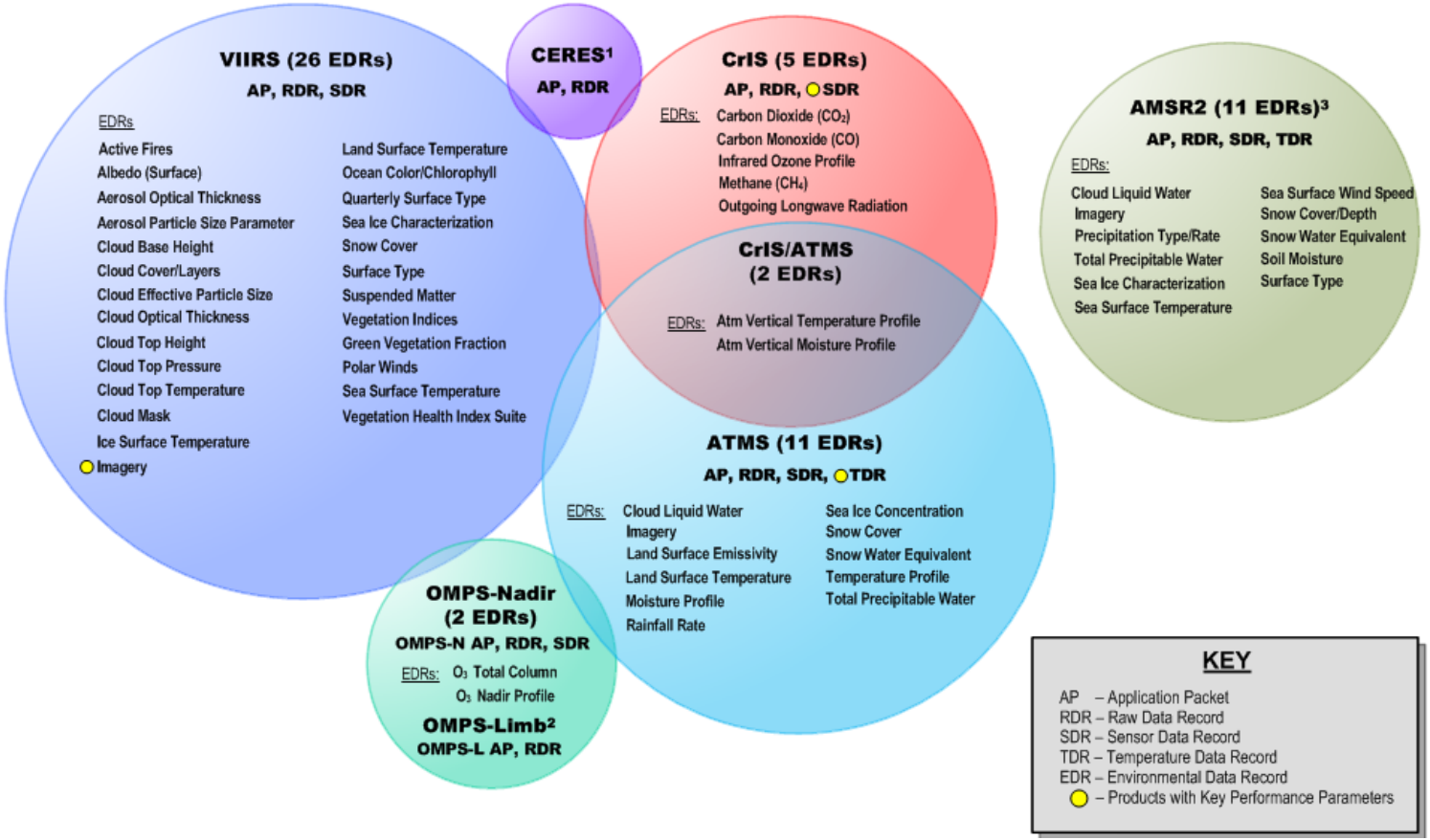
JPSS PGRR Management Team

Arron Layns, Bill Sjoberg, Sreela Nandi,
Ralph Ferraro, Bonnie Reed, Nazmi Chowdhury,
Laura Dunlap, Gary McWilliams, Christie Best,
Jorel Torres, Julie Price, Veronica Lance, Lihang Zhou
Jordan Gerth, Michael Folmer, Andy Heidinger

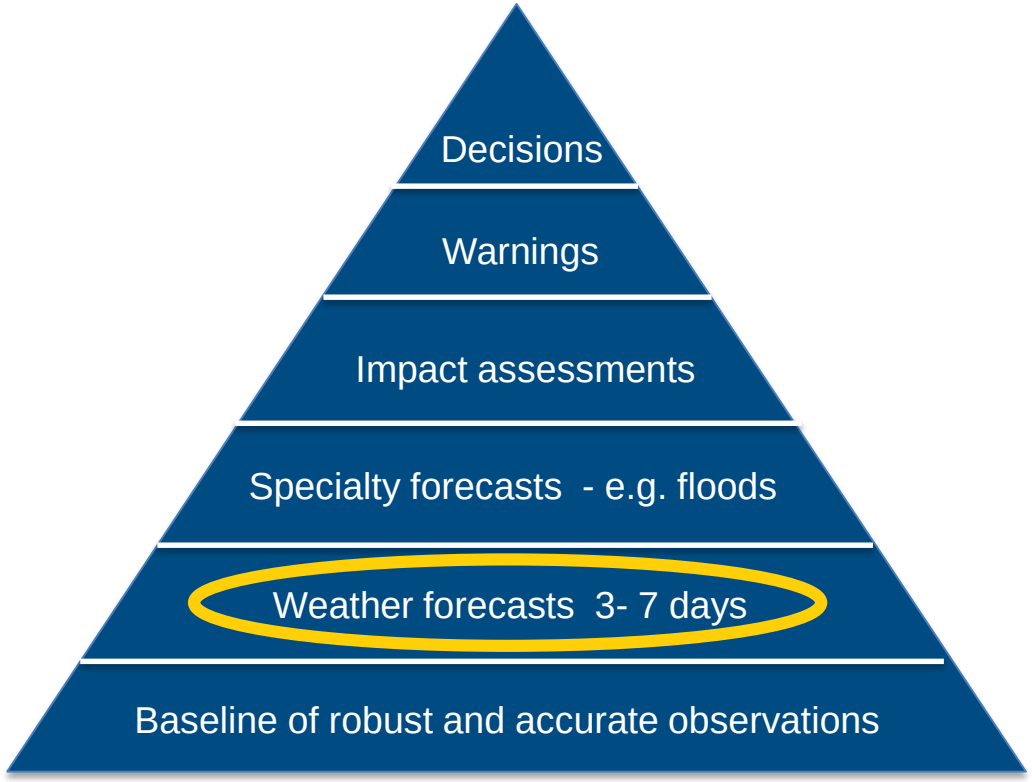
Topics

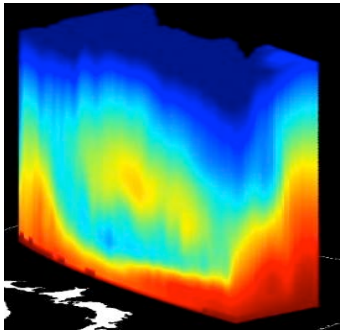
- **Overview and Challenge of PGRR**
- **PGRR Initiatives and their Status**
- **Scorecard**

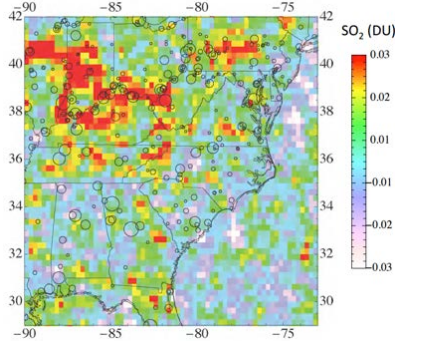
JPSS Program Data Products

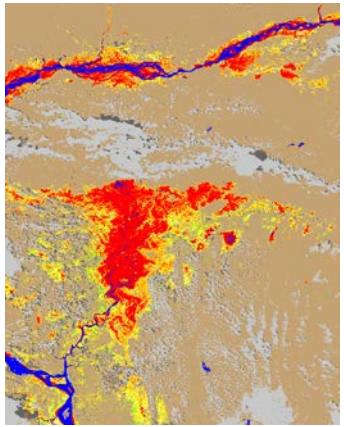


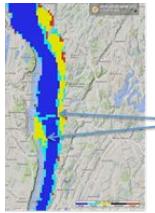
NESDIS Science User Engagement Proving Ground Program focuses on Applications and Decision Support for NOAA Service Areas and Partners















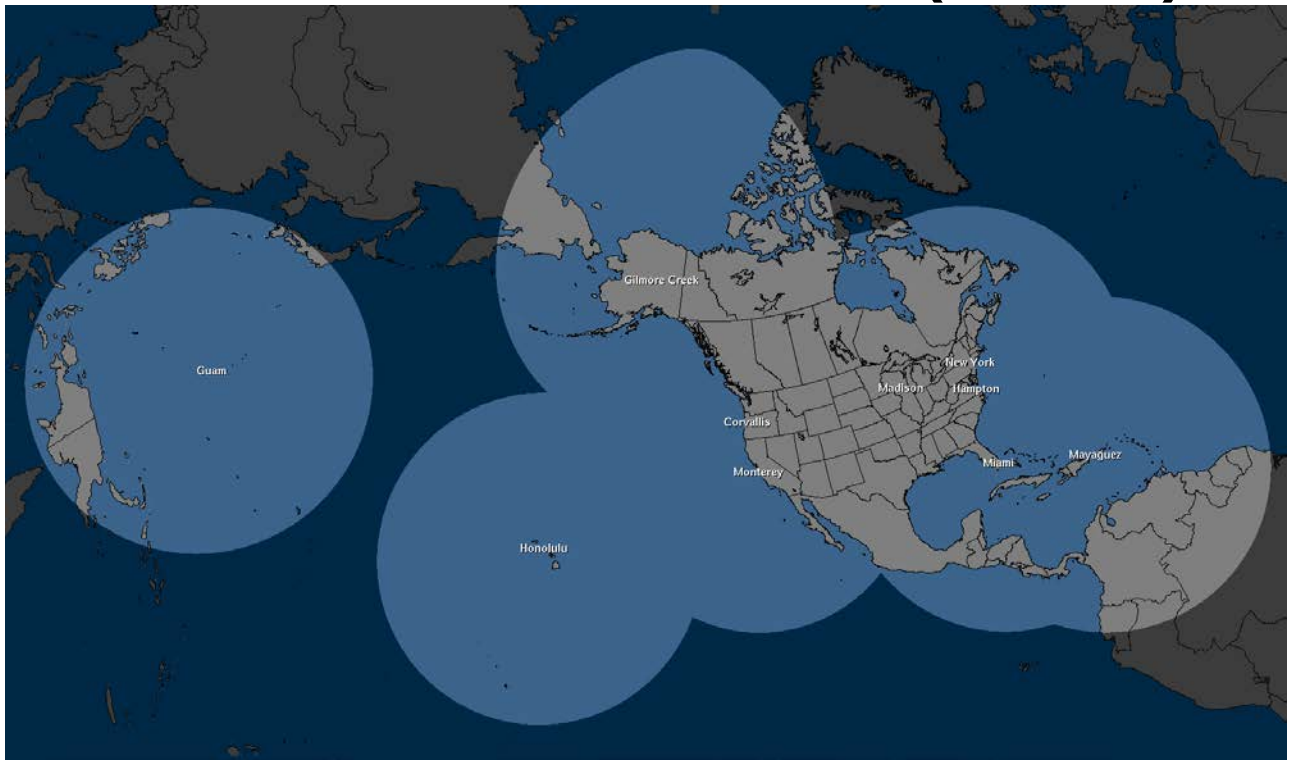


JPSS PGRR Scope

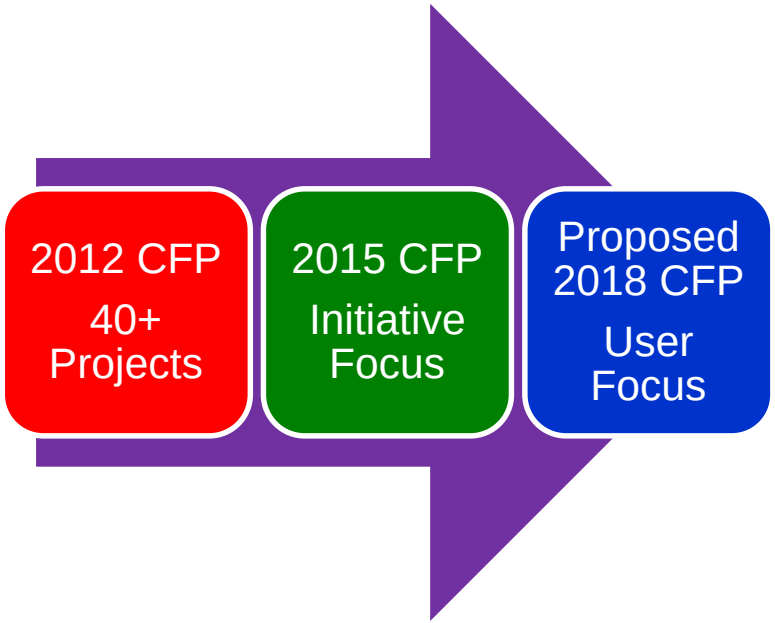
- **Proving Ground**
  - Demonstration and utilization of data products by the end-user operational unit, such as at NWS, NOS, NMFS
  - Promote outreach and coordination of new products with the end users, incorporating their feedback for product improvements
- **Risk Reduction**
  - Development of new research and applications to maximize the benefits of JPSS satellite data
    - Example - enhancing the HRRR model to incorporate VIIRS FRP to improve smoke forecasts
  - Encourages fusion of data/information from multiple satellite, models and in-situ data
  - Address potential risk in algorithms and data products/processing by testing alternative algorithms and approaches.

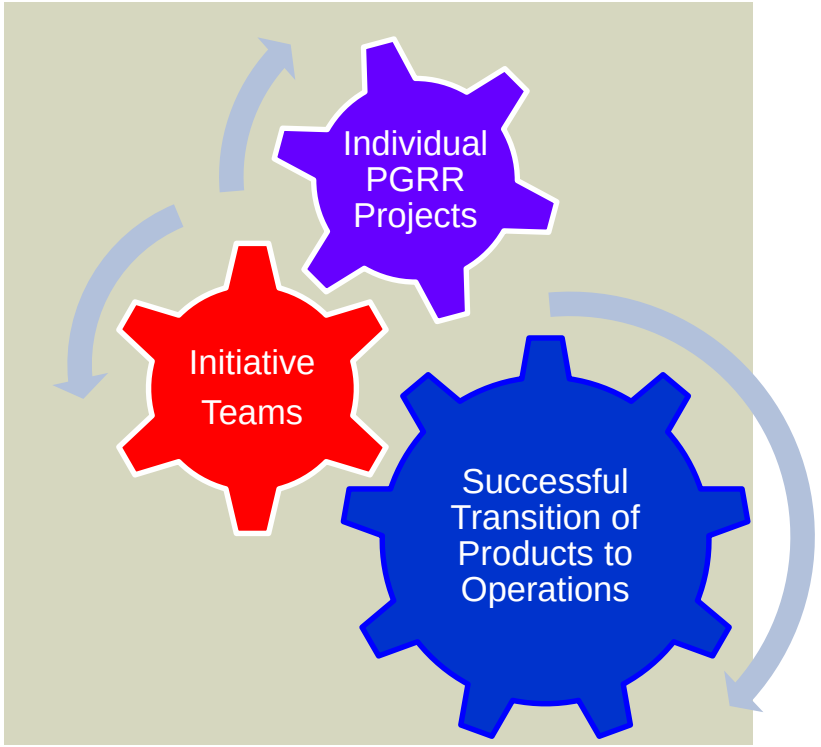
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PGRR - Direct Broadcast Real-Time Network (DBRTN) Antenna Sites



JPSS PGRR EVOLUTION





Proving Ground Initiatives

- What is an initiative? An interagency group of developers, service area providers, and stakeholders that frequently interact in a structured forum to address challenges in NOAA and partner service areas.

- Initiative activities
  - Products/capabilities are evaluated to ensure their optimal use in these focus areas.
  - Based on user feedback, changes to these capabilities are considered to increase their effectiveness
  - Actions to transition these capabilities to user operations are identified and implemented

- Why are initiatives successful?
  - Well defined objectives established and specific actions worked
  - Stakeholders are actively participating with engagement of the user advocate.
  - Products and capabilities are evaluated in operational environments
  - Monthly and bi-monthly meetings ensure proposed improvements can be worked on and then implemented quickly

User Engagement: PGRR

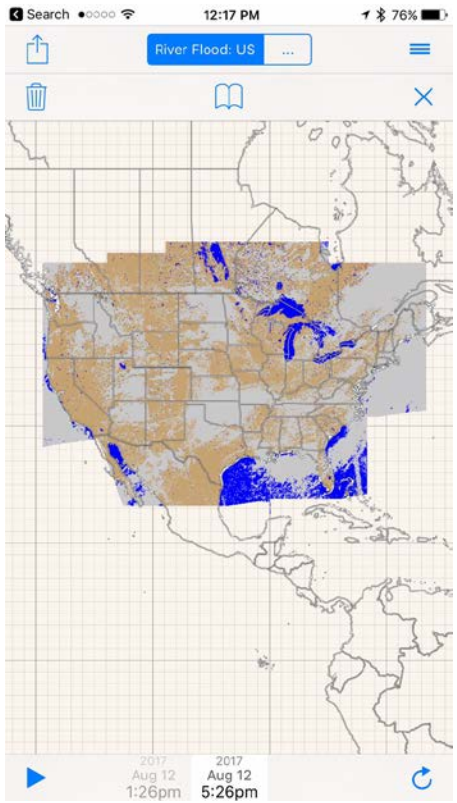
The Proving Ground and Risk Reduction program enhances user applications of JPSS data, algorithms and products by stimulating interactions between technical experts and key user stakeholders.

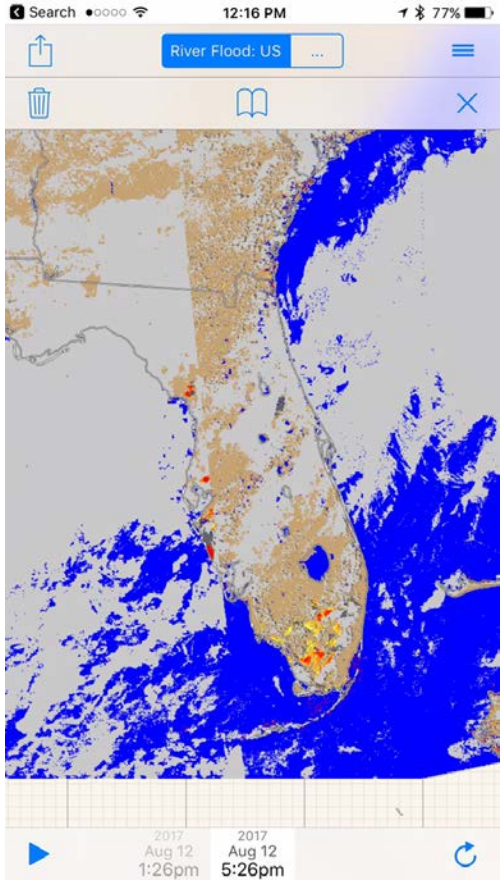
Current Initiatives include:

- River Ice and Flooding (Sjoberg)
- Fire and Smoke (Sjoberg)
- Sounding Applications /NUCAPS (Barnet)
- Hydrology (Ferraro)
- Ocean and Coastal (Lance)
- Severe Weather/NWP/Data Assimilation (Dunlap/Chowdhury)
- Innovation
- Training (UCAR – Stevermer NWS – Torres, WMO VLAB – Connell)
- OCONUS and NCEP Service Centers—AWIPS (Satellite Liaisons)

River Ice and Flooding Successes

- Generated routinely using Direct Broadcast at CIMSS
- Provided on RealEarth Application
  - Iphone/Android
- Provided to AWIPS using Local Data Manager (LDM)
- Used routinely by NWS River Forecast Centers
- Used by FEMA
- Experimental Global Processing for International Charter on Disasters
- Developing capabilities for GOES-R series.
- Next step - operational development





River Ice and Flooding Team – (April 2017 telecon)

Name	Organization	Name	Organization
Paul Alabi	CCNY	Paul McKee	WGRFC
Aaron Bisig	NIC	Julie Price	JPSS
Ed Capone	NERFC	Fernado Salas	NWC
Jessica Cherry	APRFC	Bill Sjoberg	JPSS
Reggina Cabrera	SERFC	Donglian Sun	GMU
Gene Derner	MBRFC	Tim Szeliga	NWC
Mitch Goldberg	JPSS	Marouane Temimi	CCNY
Andy Heidinger	STAR	Jonathan Thornburg	NCRFC
Jay Hoffman	CIMSS	Jorel Torres	CIRA
Eric Holloway	APRFC	David Vallee	NERFC
Sanmei Li	GMU	John Walker	NOAA UAS
Yinghui Liu	SSEC		

VIIRS Flood Maps in Response to International Charter Activation from Venezuela

International Charter
SPACE & MAJOR DISASTERS

About the Charter | Activations | Media Gallery | News

You are here Home › Activations

Need Help? | Contac

- Latest Activation

Flood in Venezuela

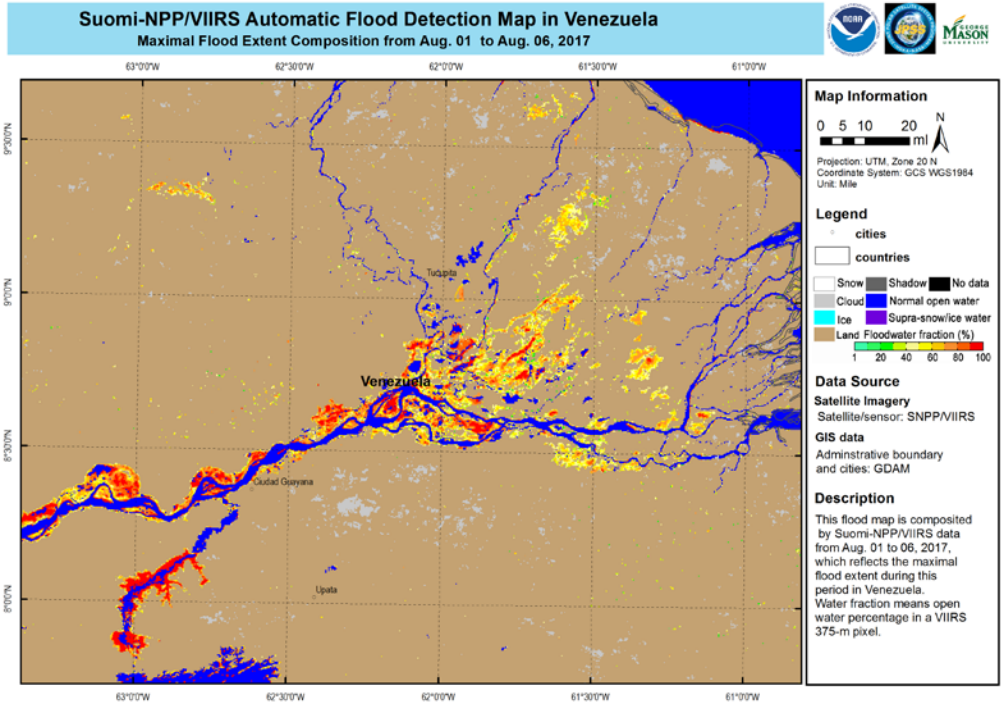
Sunday, 06 August 2017



Location of Event:	Venezuela
Date of Charter Activation:	6 August 2017
Time of Charter Activation:	22:04:00
Time zone of Charter Activation:	UTC-04:00
Charter Requestor:	ABAE on behalf of Civil Protection of Venezuela
Activation ID:	541

Description of the event

Heavy rains fell for several days across eastern parts of Venezuela causing widespread flooding.
Largely affected areas are the states of Delta Amacuro, Bolivar and Merida.
The Civil Protection Agency of Venezuela raised alert levels to the highest level and provided support to people in the worst affected areas.



Quick Guides and Training

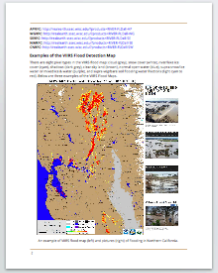
VIIRSFloodDetectionMapQuickGuide-FinalForm-.pdf (page 1 of 5)

viirsflood

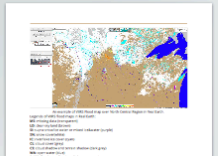
VIIRSFloodDetectionMapQuickGuide-Fina...



1



2



JPSS Products

VIIRS Flood Detection Map
Quick Guide

What is the VIIRS Flood Detection Map?

The VIIRS Flood Detection Map, which is called VIIRS NOAA&GMU Flood Version 1.0 (VNG Flood V1.0), is a satellite-based flood extent product derived from daytime Suomi-NPP/VIIRS imagery with solar zenith angles less than 85 degrees. Its spatial resolution is 375 meters. Flood extent is represented in floodwater fractions (water fraction means percentage of water extent in a VIIRS 375-m pixel).

What is the VIIRS Flood Detection Map algorithm?

VIIRS Flood Detection includes a series of algorithms: a water detection algorithm based on decision-tree approach, a geometry-based cloud shadow removal algorithm, an object-based terrain shadow removal algorithm, a minor flood detection based on change detection algorithm and a water fraction retrieval algorithm with dynamic nearest neighboring searching method. Floodwater is determined by comparing the detected water against a water reference map derived from MODIS global 250-m water mask (MOD44W) and water layer in the 30-m National Land Cover Dataset.

Which spectral bands make up the algorithm?

The spectral bands used in the algorithms are Suomi-NPP/VIIRS Imager bands 1 (600~680 nm), 2 (850~880 nm), 3 (1580~1640 nm) and 5 (1050~1240 nm) with 375-m nominal resolution and I-band terrain-corrected geolocation data (i.e. GITCO) including longitude, latitude, solar zenith angles, solar azimuth angles, sensor zenith angles and sensor azimuth angles.

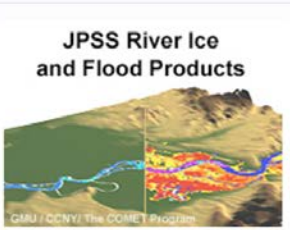
Data latency of VIIRS Flood Detection Map data?

The VIIRS flood detection system is running routinely at SSEC/UW-Madison and GINA/UAF using direct broadcasting VIIRS data. VIIRS near real-time flood maps have about a 1-hour latency after VIIRS daytime overpasses are received. Generally, VIIRS flood maps are available around 13:30pm local time in the lower 48 states - more frequent coverage is achieved in Alaska.

Available in AWIPS-II for National Weather Service Forecasters

Near real-time flood maps are distributed via the Unidata Local Data Manager (LDM) in AWIPS-II. The instruction document is here:
https://drive.google.com/open?id=1mEDFEXzIXCTEGXfb_coLGm2fkONdsPI9G0hj7xS2AYM
Please contact Jay Hoffman (jay.hoffman@ssec.wisc.edu) for any questions related to AWIPS-II.
Additionally, the latest 30-day flood maps are also available in SSEC's Real Earth:
CONUS: http://realearth.ssec.wisc.edu/?products=RIVER-FLDall-US
NERFC: http://realearth.ssec.wisc.edu/?products=RIVER-FLDall-NE
NCRFC: http://realearth.ssec.wisc.edu/?products=RIVER-FLDall-NC
MBRFC: http://realearth.ssec.wisc.edu/?products=RIVER-FLDall-MB

JPSS River Ice and Flood Products



Languages: English
Publish Date: 2016-03-16
Skill Level: 2
Completion Time: .75 - 1.00 h
Includes Audio: no
Required Plugins: none
Topics:
Hydrology/Flooding, Satellite Meteorology
Included in Courses:
JPSS Satellites: Capabilities and Applications Course

BEGIN LESSON

Add to Queue Your Queue»

Take the quiz?
Begin Quiz

Share this resource:
33

Sounding - NUCAPS

Appeal of NUCAPS

Forecasters need to analyze the pre-convective thermodynamic environment

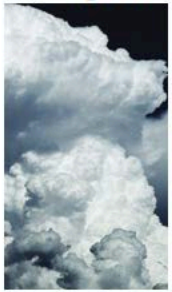
7 hour gap between 7 am and 2 pm!

Most stable time of the day to the most unstable time of the day

~7 am



~2 pm

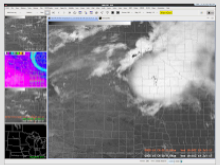


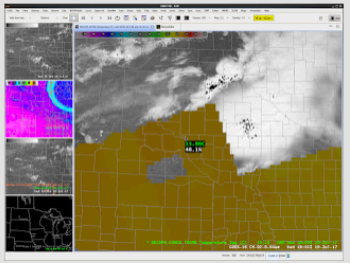
~4 pm



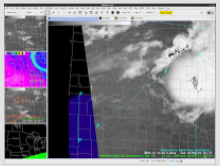
Tornado moving west of Manitou, OK, on November 7, 2011.

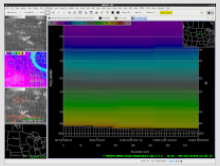
NUCAPS grids arrived about 1945Z, and we were able to determine what kind of cap existed. We knew there was warm air, but we did not know how warm. We have been seeing a slight increase in towering Cu, but our hopes and dreams were dashed after seeing NUCAPS grids, which reported temps >13C at 700 mb behind the anvil shield of the departing MCS. Not sure what the convective temperature is, but it must be really high.





But when NUCAPS sounding came in it told a scary story, producing SBCAPES >5000 in south central SD. I did a cross section of temperatures in NUCAPS grid. Drew a line A across a thin line of towering Cu. In the middle of the cross section, I could see a thermal boundary right were the line of Cu had developed. (I was unable to use the drawing tool, but the gradient is seen a the bottom of the screen about halfway between the bottom left and bottom right edge of the image.





Convection quickly popped up along that boundary, and so did ProbSevere product, with 80% ProbHail. The object appeared immediately next to the SFD METAR plot, which was 103/65. Immediately to the SW, the measurement at VTN (Valentine, NE) was 109/52.

NUCAPS Initiative Team (Mar 24, 2017 telecon)

Name	Organization	Name	Organization
Chris Barnet	STC	Dan Neitfeld	NWS
Emily Berndt	SPORT	Tony Reale	STAR
Jack Dostalek	CIRA	AK Sharma	OSPO
Jim Heil	NWS	Bill Sjoberg	JPSS
Dan Lindsey	CIRA	Nadia Smith	STC
Scott Lindstrom	CIMSS	Eric Stevens	GINA
Bill Line	NWS	Brad Zavodsky	SPoRT
Nick Nalli	STAR	Antonia Gambcorta	STC

Fire and Smoke Successes

- Providing easy access for fire and smoke imagery use eIDEA website
- Boots on the ground efforts – working with NWS IMETS and US Forest Service on providing real-time products using direct broadcast - both I-band and M-band fire products - Applications for Fire Management
- Inclusion of VIIRS FRP into the HRRR model for smoke forecasts
- Use of CrIS CO products to better characterize vertical height of smoke.
- Case Studies, Training and Educations
- Research on the use of the DNB for fire detection



F&S Team (May 17 2017 telecon)

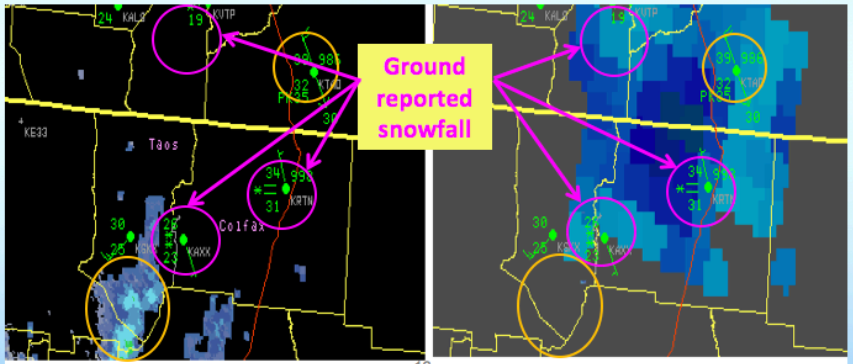
Name	Organization	Name	Organization
Ravan Ahmadov	CIRES	Jan Mandel	Univ of CO-Denver
Tianfeng Chai	CICS	Jeff McQueen	NCEP
Ivan Csiszar	STAR	Brian Motta	NWS
Russ Dengel	CIMSS	Li Pan	ARL
Andy Edman	NWS	Julie Price	JPSS
Evan Ellicott	U of MD	Brad Pierce	STAR
Greg Frost	STAR	Katherine Rowden	NWS
Robyn Heffernan	NWS	Scott Rudlosky	CICS
Amy Huff	PSU	Curtis Seaman	CIRA
Eric James	ESRL/GSD	Bill Sjoberg	JPSS
Hyun Kim	ARL(?)	Eric Stevens	GINA
Adam Kochanski	Univ of UT	Jebb Stewart	ESRL
Scott Lindstrom	CIMSS	Jorel Torres	JPSS Training Liaison
Mark Loeffelbein	NWS		

Hydrology Successes

Establish a Hydrology Initiative Working Group and create a forum for PGRR Hydrology-related project teams to interact on a periodic basis. This interaction will allow teams to optimize their activities and leverage other team activities to meet their project commitments.

- Evolving connections with the National Water Center
- Need for seasonal stream flow forecasting at NWC.
- Focus on snow, moisture and precipitation
- Multi-sensor /fusion approach for better temporal coverage

Albuquerque, NM WFO (ABQ): The product (SFR) did validate that we will be able to complement radar void coverage areas in an operational forecast environment using polar-orbiting satellite imagery.

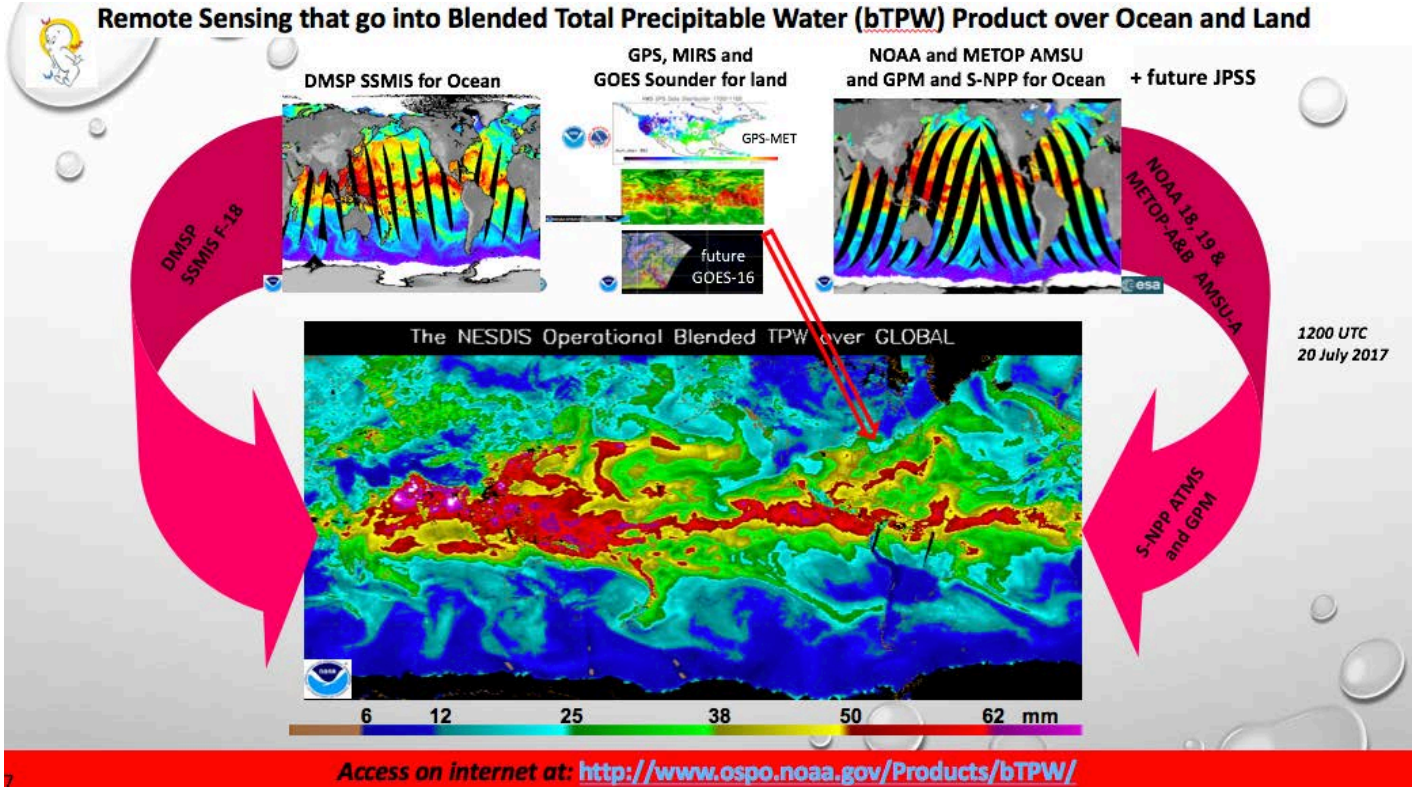


Hydrology Initiative Projects

Project PI	Project Title
John Forsythe (CSU/CIRA)	**Using JPSS retrievals to implement a multisensor, synoptic, layered water vapor product for forecasters**
Dave Gochis (NCAR)	**Applying snow products from S-NPSS JPSS and SNODAS to seasonal stremflow forecasting at the NWS National Water Center**
Tarendra Lakhankar (CUNY/CREST)	**Validation and application of JPSS/GCOM-W soil moisture data product for operational flood monitoring in Puerto Rico**
Huan Meng (NESDIS/STAR)	**Continued expansion, enhancement and evolution of the NESDIS snowfall rate product to support weather forecasting**
Andi Walther (UW/CIMSS)	**Further development of the VIIRS nightime lunar reflectance-derived cloud properties and demonstration for their use for precipitation & icing applications**
Tony Wimmers (UW/CIMSS)	**Strengthening TPW visualization in the OCONUS domain with JPSS data products**
Pingping Xie (NWS/NCEP/CPC)	**Reprocessing of JPSS OLR and CMORPH products for improved operational climate applications**
Jerry Zhan (NESDIS/STAR)	**Enhance agricultural drought monitoring using NPP/JPSS land EDR's for NIDIS**

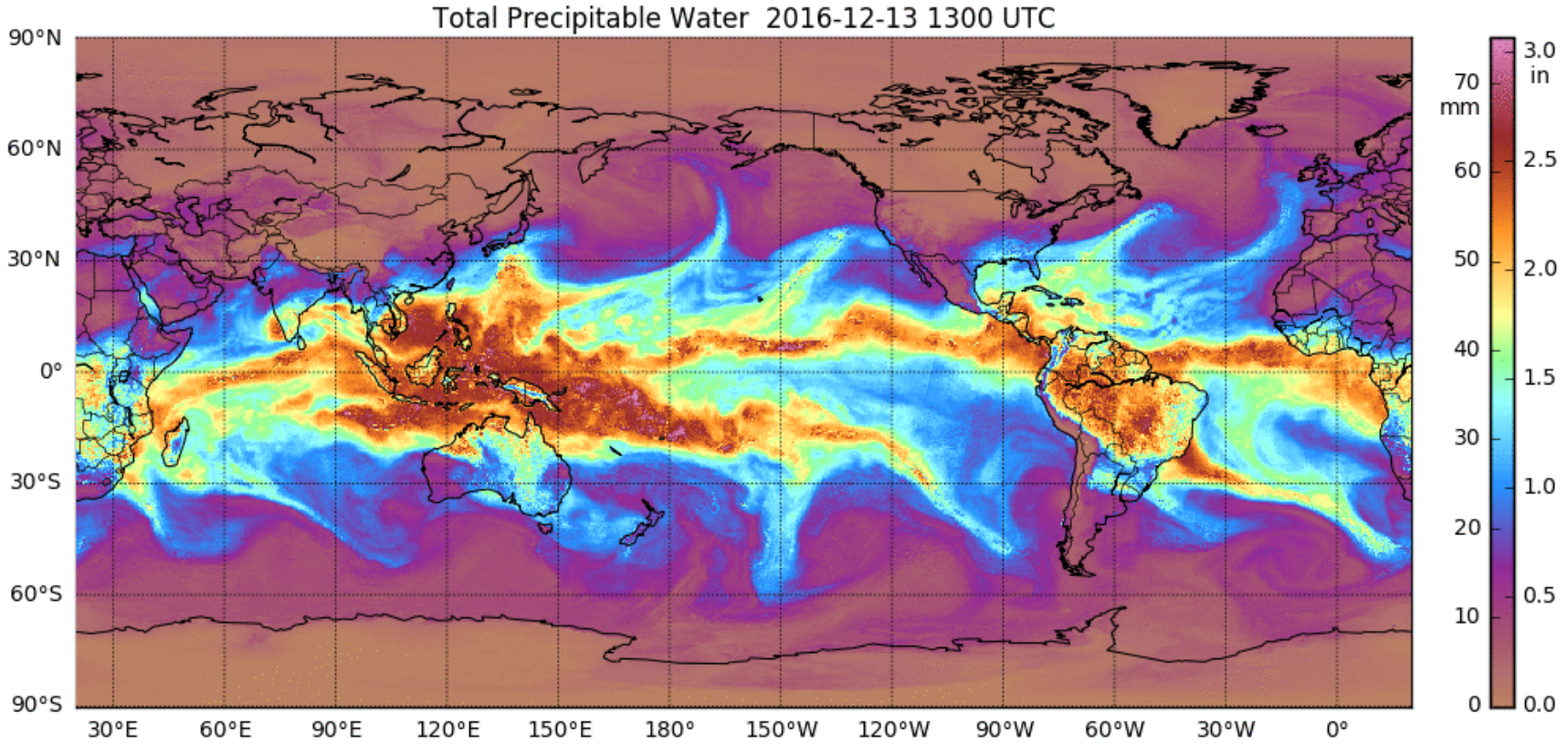
Gray – part of activity but unfunded project

A key goal is to improve upon NESDIS operational blended TPW products



From Sheldon Kusselson

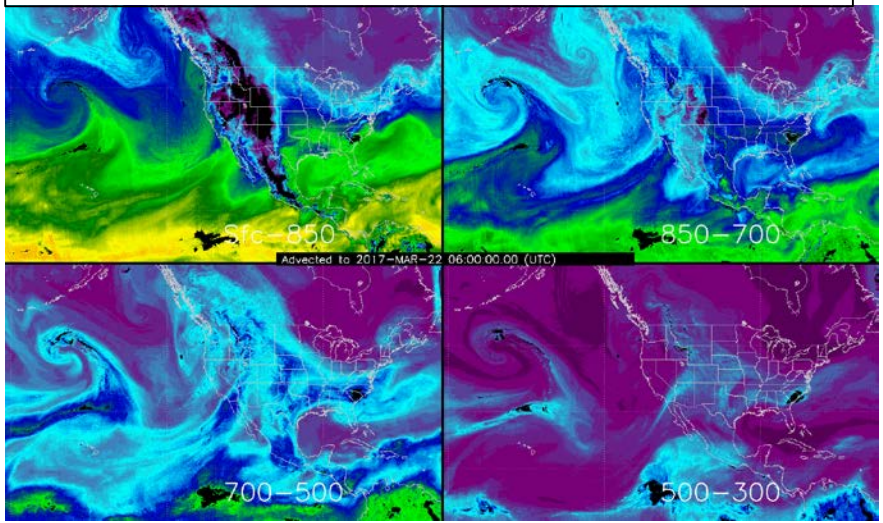
Morphing MIRS TPW from 5 satellites with forecasts



Credit: Tony Wimmers, CIMSS

Success: Multi-Layer moisture fields

First ever multisensor and multilayer microwave (4 AMSUs, 1 ATMS, 2 SSMIS) using the operational MiRS Version 11 products. (credit: John Forsythe, CIRA)



Four Layers of integrated precipitable water - Surface to 850 mb, 850 – 700 mb, 700 – 500 mb, and 500 – 300 mb.
Excellent feedback from operational users - now working to replace the operational static blended product to this "advective blending" product

"A pretty amazing lake-effect/lake-enhanced event is unfolding for western/central NY tonight. **LPW data shines again, as the 700-500 mb panels show a lengthening moisture inflow**, … Mid-level moisture is normally the achilles heel of many otherwise good lake-effect events, but not so this time."
-- Michael Jurewicz, NWS Binghamton NY, 11/20/16

NWS National Hurricane Center Miami FL
616 AM EDT SUN JUL 10 2016

...TROPICAL WAVES... The wave is embedded in **a mainly low moist environment from surface to 850 mb as indicated by CIRA LPW imagery.** … A tropical wave is in the central Caribbean with axis near 75W, moving west at 15 knots within the last 24 hours. **CIRA LPW imagery show the wave is embedded in shallow moisture whereas water vapor imagery show strong subsidence aloft.**

Critical Weather, Numerical Weather Prediction, Data Assimilation (Wx/NWP/DA) Initiative

- The main purpose of this initiative is to further the scientific advancement of the use of JPSS satellite data to support critical weather forecasting and numerical modeling efforts in NOAA and beyond.
- Projects range from improvement of tropical cyclone forecast capabilities, satellite based hurricane intensity estimation , data assimilation improvements, and CrIS radiance assimilation in GSI for better forecasts of high impact weather events etc.
- Goals for the initiative:
  - **Collaboration!**
    - Grouping projects in similar areas serves as an effective forum for the initiative project teams to interact
  - **Research to Operations (R2O)!**
    - Focused on application of research to a pointed user community at NOAA and beyond
  - **User engagement!**
    - As with our other initiatives, heavy user engagement to clearly direct the R2O process but also to provide feedback and support for your development efforts.

Initiative Projects

Principal Investigator	Project Title	Summary
Stan Benjamin	Direct readout enhancement of short-range forecast impact for global and regional models	Leverage CSPP latency to assimilate ATMS and CrIS data into hourly RAP/HRRR forecasts and transition this to NCEP
Galina Chirokova	Improving Tropical Cyclone Forecast Capabilities Using the JPSS Data Suite	Leverage ATMS and VIIRS data to obtain quantitative inputs for the Rapid Intensification Index (RII) to improve its performance.
James Jung	Support of NPP and JPSS Data Assimilation Experiments	Demonstrate and quantify the impacts of ATMS and CrIS satellite data on NWP models
Eugenia Kalnay	Ensemble Forecast Sensitivity to Observations (EFSO) and Proactive Quality Control (PQC)	Created groundbreaking method to test and flag the impact of each assimilated observation type then to eliminate the flawed observations from the assimilation cycle before they negatively impact a forecast
Jun Li	Enhance the utilization of real time JPSS sounder data in SDAT for tropical cyclone forecast application	Use ATMS and CrIS data from CSPP in the CIMSS Satellite Data Assimilation for Tropical storm forecasting (SDAT) and prepare for transition to NCEP
Zhanqing Li	Retrieving cloud base height and updraft speed for shallow convective clouds and boundary-layer moisture from VIIRS for improving the NCEP-GFS	Developed a groundbreaking cloud base updraft speed product from VIIRS retrievals and transition this to be assimilated at NCEP
Benjamin Ruston	NRL/JPSS Extending CrIS/ATMS Assimilation and Calibration/ Validation through correlated error, over clouds and to the surface	Test the impact of ATMS and CrIS sensors on the Navy's NAVGEM model to demonstrate the value of JPSS data
Chris Velden	Satellite-Based Hurricane Intensity Estimation in the JPSS/GOES-R Era	Integrate LEO and GEO satellite tropical cyclone intensity methodologies and demonstrate a satellite-based consensus approach for enhanced intensity estimate
Fuzhong Weng	Improved CrIS Radiance Assimilation in GSI for Better Forecasts of High-Impact Weather Events	Investigate the quality control of CrIS data in the GSI then create and implement a cloud detection algorithm from CO2 bands

Satellite Data Assimilation for Tropical storms (SDAT)

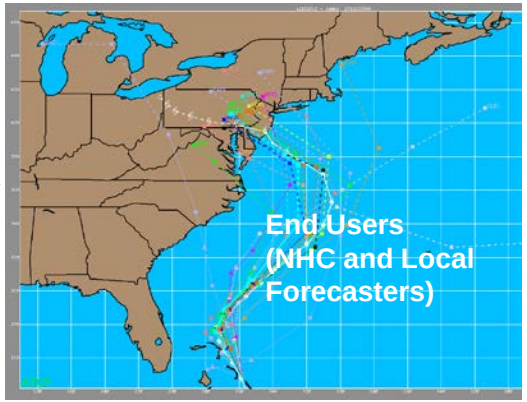
(http://cimss.ssec.wisc.edu/sdat) (Jun Li, CIMSS)

SDAT
(http://cimss.ssec.wisc.edu/sdat)

Research Path

WRF/GSI at CIMSS

Using JPSS sounder Radiances
GOES-R series TPW and AMVs



TC Forecast Improvement

Research testbed for improving the utilization of GOES-R/JPSS data (Sounder, ABI, radiances, TPW, AMVs, Clouds, etc.)

R2O Research

Refining the Operational Path

Operational NWP models:

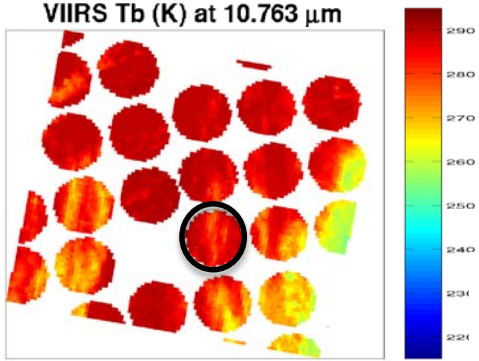
EMC GFS

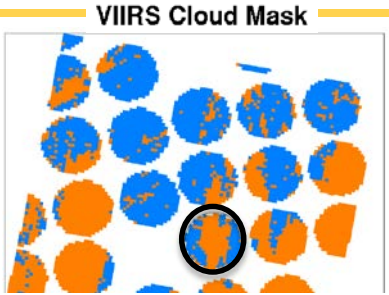
EMC HWRF

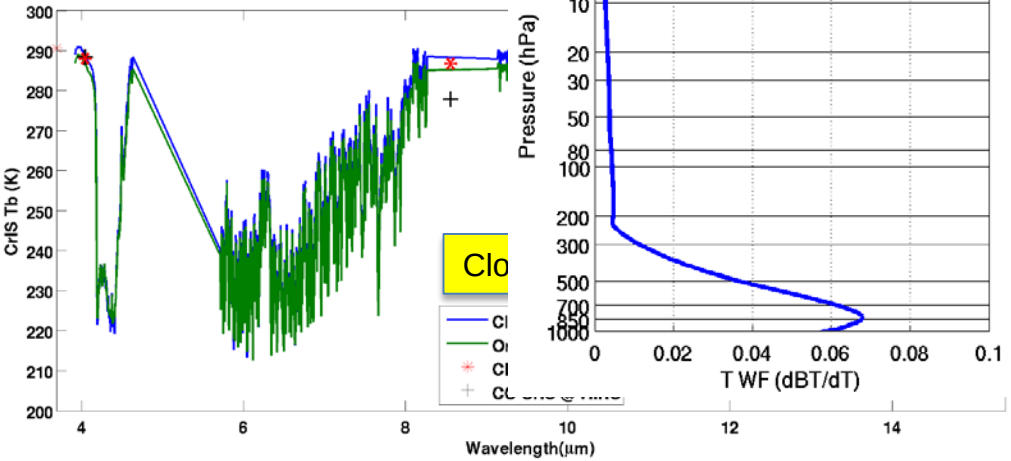
ESRL RAP

CrIS/VIIRS cloud clearing for CrIS radiance assimilation

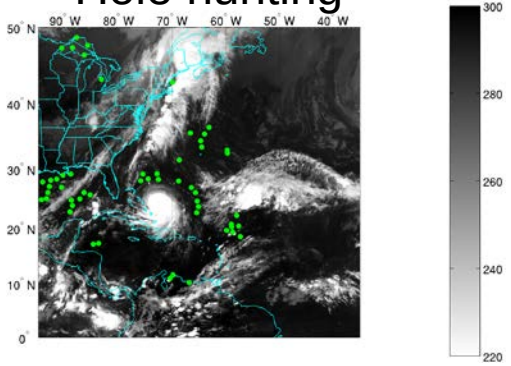
- The N* method (Li et al., 2005)
- VIIRS cloud mask identifies partially cloudy FOVs **(black circle)**
- VIIRS radiances help quality control cloud cleared CrIS radiances
- Only three VIIRS bands (4.05, 10.763, and 12.013 um) used (overlapped with CrIS)
- Cloud cleared radiances very close to VIIRS clear sky radiances
- 12.5 % of partially cloudy FOVs are successfully cloud cleared for Hurricane Sandy case



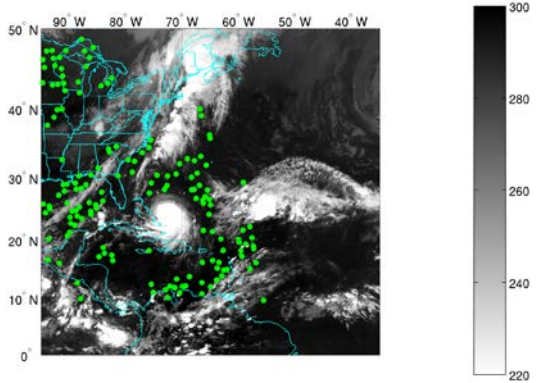




Hole hunting

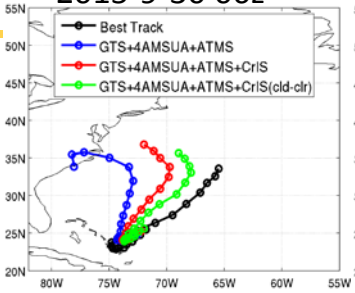


V/C Cloud Clearing

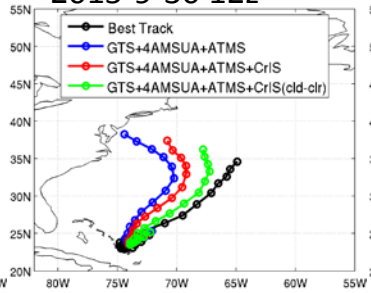


Hurricane Joaquin (2015) track forecasts

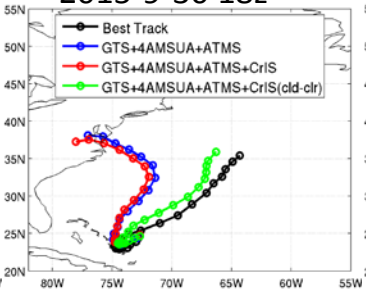
2015-9-30 06z



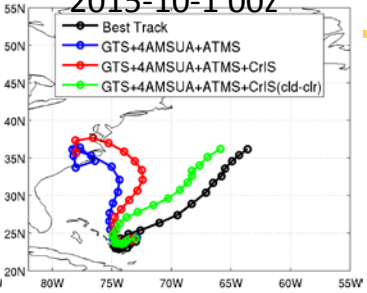
2015-9-30 12z



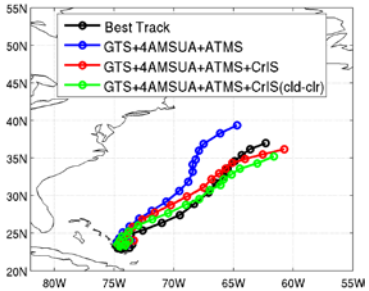
2015-9-30 18z



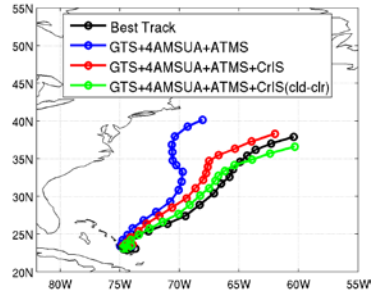
2015-10-1 00z



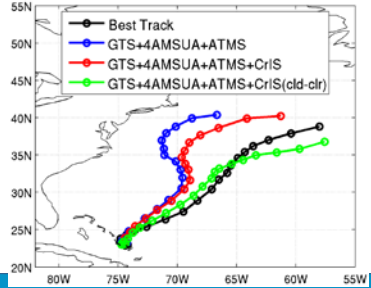
2015-10-01 06z



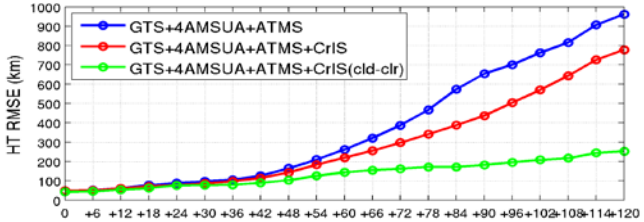
2015-10-01 12z



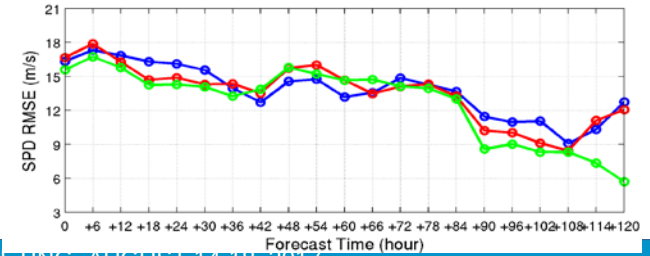
2015-10-01 18z



Track RMSE



SPD RMSE



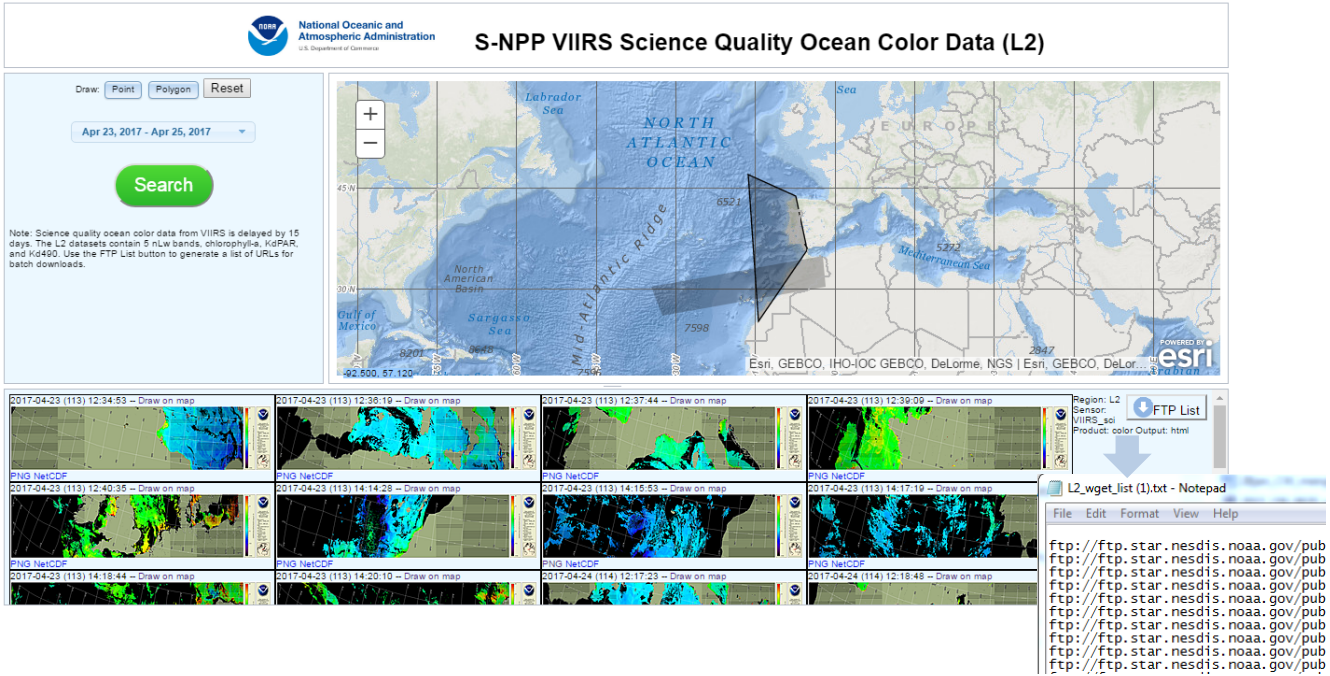
Oceans and Coasts

- Facilitate the use of VIIRS ocean data products
  - within each NOAA Line Office for their operational forecasts or research needs.
  - outside of NOAA by other US agencies, academic researchers, resources managers, commercial sector users, international partners and the general public who use satellite data products or downstream products and/or knowledge derived from satellite data (e.g., forecasts)

Projects
Ahmed, CCNY: A new technique for VIIRS detection and delineation of *Karenia brevis* HABS in the West Florida Shelf without the need for a fluorescence channel
Bayler, STAR: Using Neural Networks for gap-filling and preliminary short-range (1-2 weeks) to medium-range (3-4 weeks) predictions of satellite-derived ocean color fields (Chl-a, Kd490, KdPAR)
DiGiacomo, STAR: Enhancing use and access to near-real-time VIIRS ocean color data: Support for harmful algal bloom operational forecast system
Elvidge, NCEI: VIIRS illegal boat detection service
Mehra,, NCEP: Initial biogeochemical modeling at NOAA/NCEP: Using VIIRS ocean color data for validation and data assimilation
Tong, ARL: Development, validation, and implementations of three marine isoprene products (isoprene) using multiple JPSS ocean products

NOAA CoastWatch/OceanWatch: L2 VIIRS OC Space and Time Search

Example of science quality with data thumbnails



https://coastwatch.star.nesdis.noaa.gov/cw_html/cw_polygon_search.html#searchbox

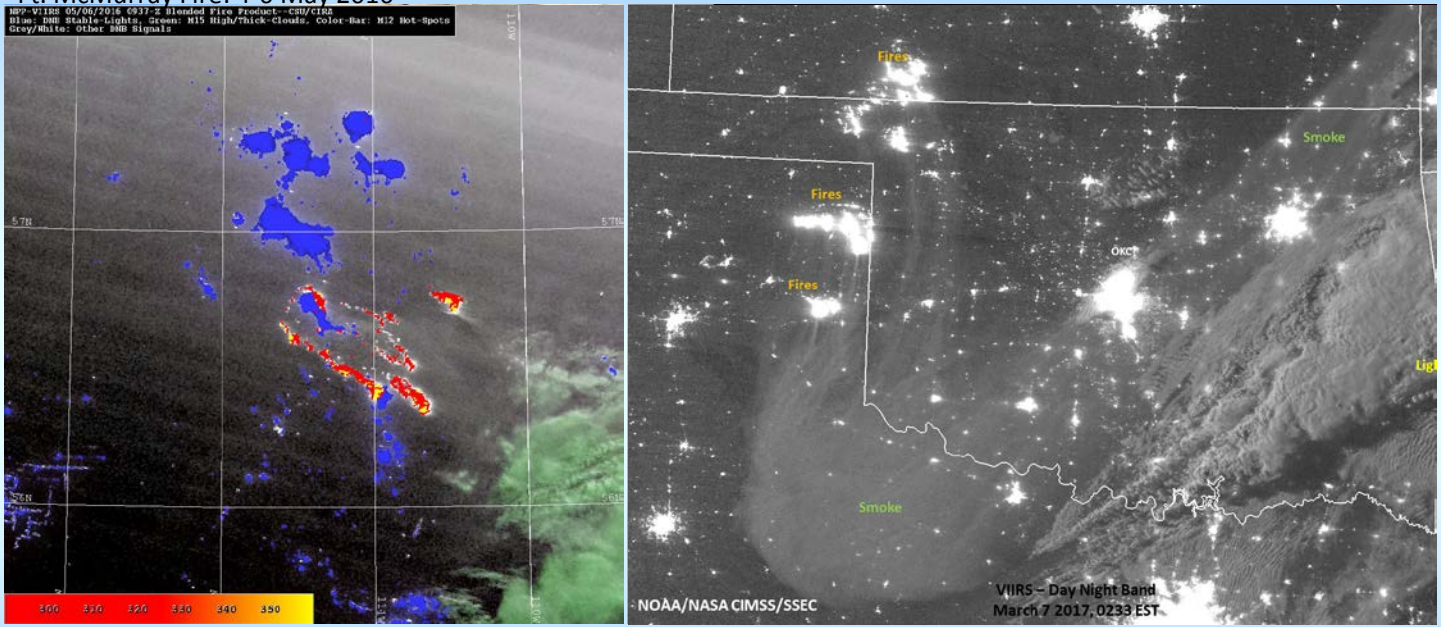
Innovation

NOAA missions are very broad, comprehensive and evolving as society increases their demand on information. **Innovation is critical to keep NOAA science fresh and cutting edge.** The JPSS PGRR is designed to capture these innovations and apply them toward societal benefits. The information content from the JPSS sensors holds the potential to develop new applications that were not envisioned as part of the original scope of any particular sensor. The innovation initiative is for “out-of-the-box” ideas and concepts to keep NOAA science fresh. New algorithms and products to reduce risk in the current products from not being used effectively in downstream user applications can also be considered.

Nocturnal Fire and Smoke Detection

Steve Miller, CIRA

Ft. McMurray Fire: 4-6 May 2016

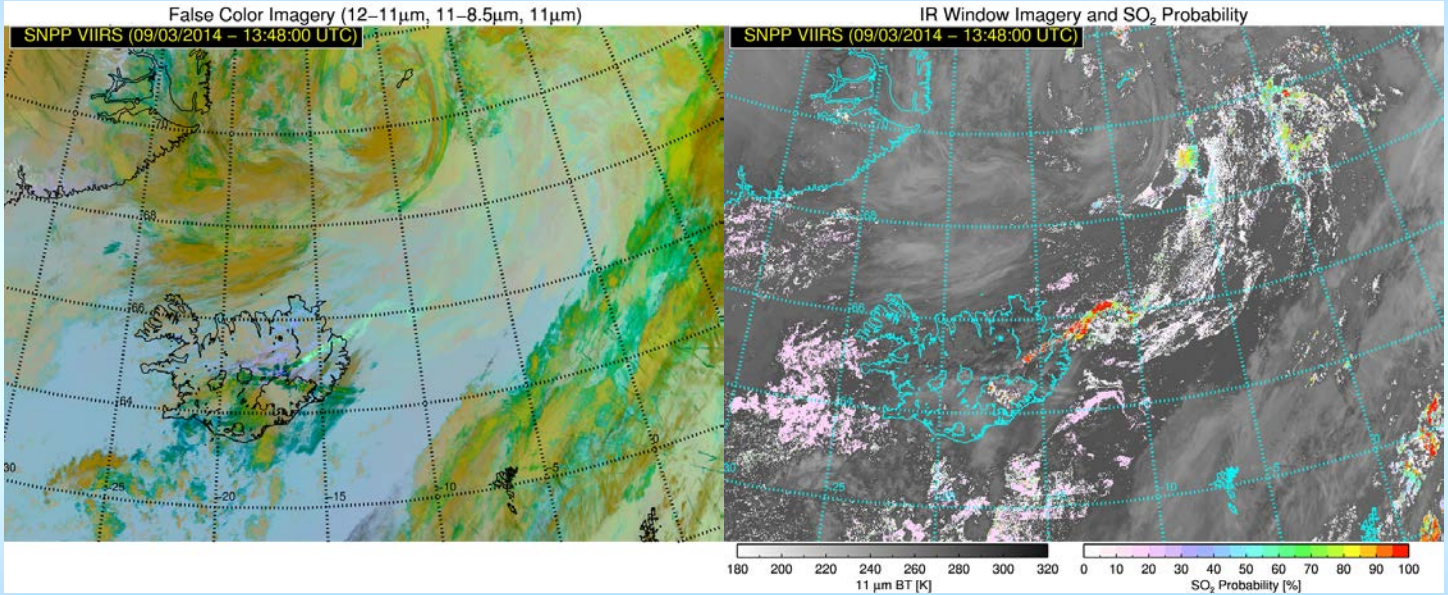


Discussions with Ivan Csiszar (NOAA) on detection of hot spots by the IDPS algorithm for cases of small sources and cirrus-covered pixels.

The ability to detect (and when coupled with J1, track) smoke plumes at night via moonlight is a capability that is entirely unique to the DNB.

Improving SO2 probability detection (Pavalonis, STAR)

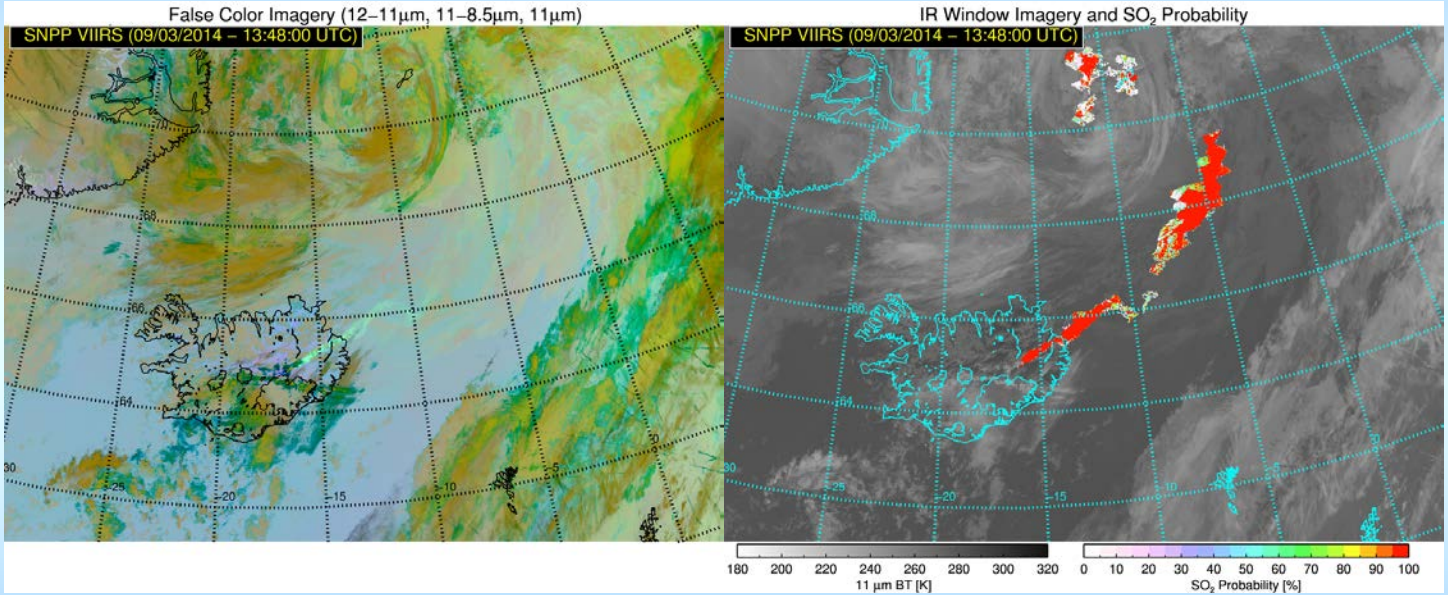
Application of Bayesian Classifier to VIIRS



The VIIRS SO_2 probability exceeds 50% over much of the SO_2 cloud that is visible in multi-spectral VIIRS imagery. However, distinguishing between SO_2 and other features with VIIRS alone is often difficult.

Now with CrIS …

Integration of CrIS and SO_2 Feature Selection



When CrIS "offline" minus "online" SO_2 BTD is used to improve the VIIRS *a priori* probability and a cloud object screening procedure is applied (e.g. Pavolonis et al., 2015b), very high quality SO_2 detection results are achieved.

New Initiatives

- Arctic (Layns/Reed)
  1. Provide a forum for JPSS data and product providers, developers, and users to determine the how JPSS Products can best be used to support Arctic missions.
  2. Leverage existing Arctic working groups to identify key data and how it can be most effectively accessed and visualized.
  3. Increase use of JPSS/NPP products for Arctic applications
  4. Explore experimental products as necessary to meet the needs of the Arctic users.

- Volcanic Ash/SO2 (Pavolonis)

  Objective 1: Full Utilization of JPSS Measurements

  Improve operational tracking and characterization of volcanic SO_2 through the development of a multi-sensor JPSS SO_2 analysis

  Objective 2: Improved Environmental Intelligence through Data Integration

  Integrate the JPSS volcanic SO_2 products with volcanic ash and SO_2 products derived from all relevant LEO and GEO satellites via the VOLcanic Cloud Analysis Toolkit (VOLCAT)

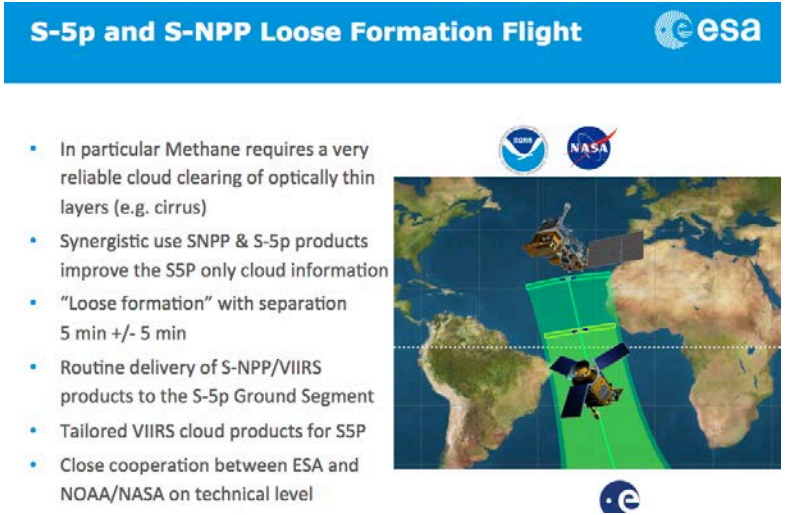
Arctic Initiative Team

Name	Affiliation
Broderson, Dayne	Geographic Information Network of Alaska (GINA)
Dierking, Carl	GINA Science Liaison and Meteorologist
Goldberg, Mitch	JPSS Program Scientist
Gumley, Liam	CIMSS, University of Wisconsin-Madison
Heim, Rebecca (Becki)	Regional Program Manager - NOAA/NWS Alaska Region
Helfrich, Sean	NOAA/NESDIS/OSPO, Snow and Ice Product Area Lead
Heinrichs, Tom	GINA
Key, Jeff	Branch Chief of the Advanced Satellite Products Branch, STAR
Kreller, Melissa	National Weather Service Fairbanks WFO - SOO
Layns, Arron	JPSS Algorithm Management Project Lead
Mikles, Valerie	STAR/JPSS
Petrescu, Eugene	Acting Alaska ESSD Chief and in charge of the Arctic Testbed
Reed, Bonnie	JPSS Product Systems Engineer
Schreck, Mary-Beth	Sea Ice Analyst, NWS Alaska Sea Ice Program (ASIP)
Scott, Carven	National Weather Service Alaska Region Director
Seaman, Curtis	Research Scientist, CIRA
Sjoberg, Bill	JPSS Program Office
Stevens, Eric	GINA Science Liaison and Meteorologist
Tatusko, Renee	International and Arctic Policy Coordinator, NOAA/NWS Alaska Region HQ
Torres, Jorel	Research Scientist, CIRA

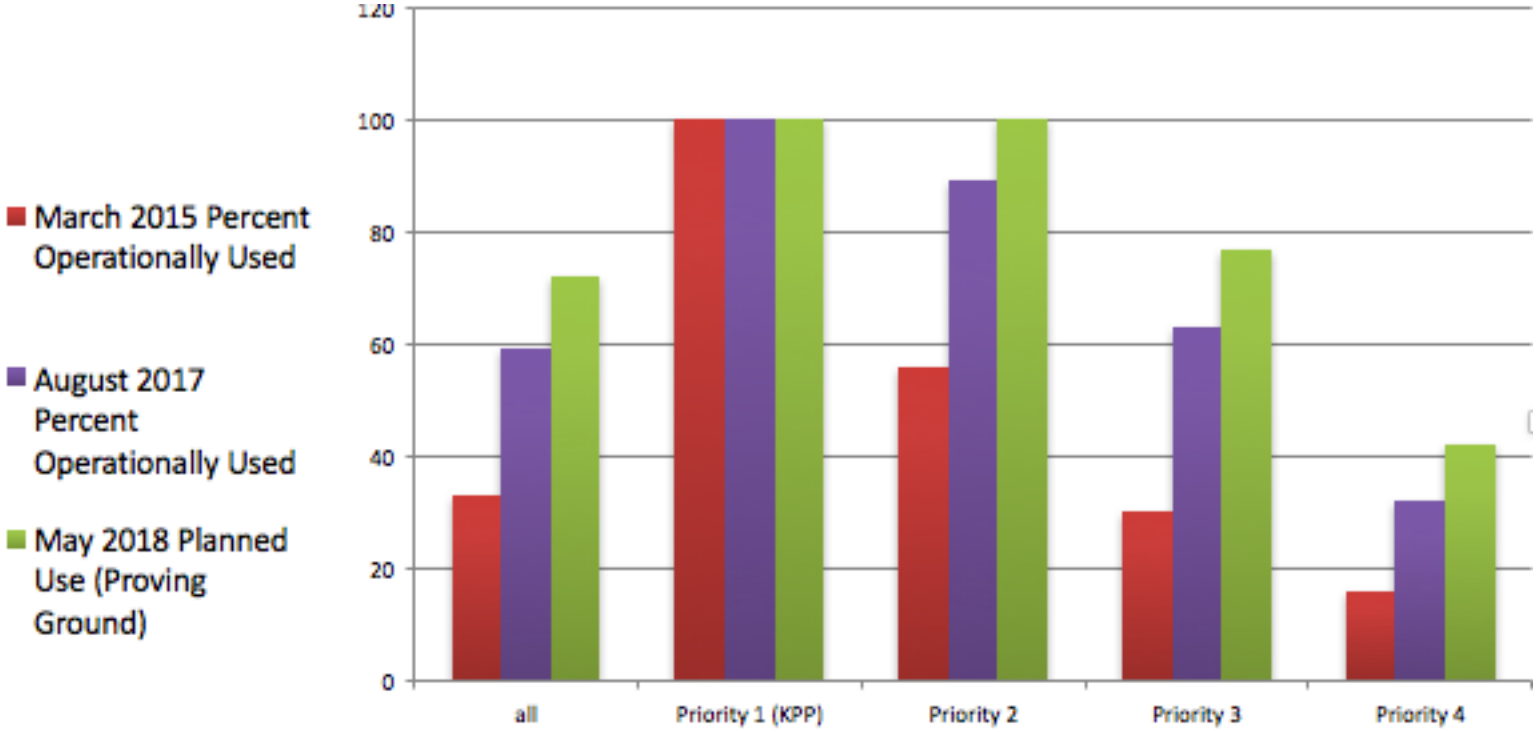
New Initiatives

Atmospheric Composition (Frost, Pierce, Kondragunta)

- Expand user community for JPSS trace gas and aerosol products
- Demonstrate improvements to model forecasts of atmospheric composition using JPSS data products
- Carry out deep-dive validation of JPSS products with research observations and models
- Collaborate with ESA on Sentinel 5P (Kondragunta)



Score Card

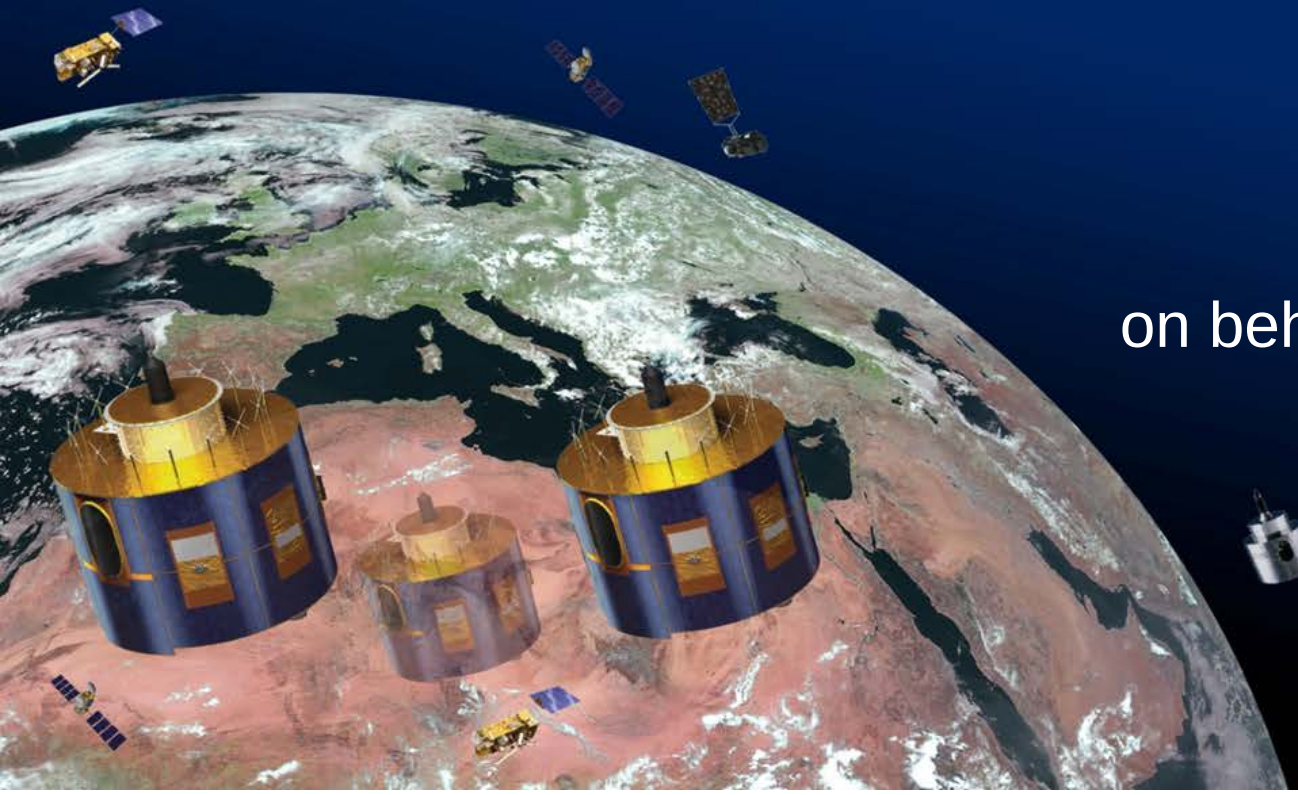

March 2015 Percent Operationally Used
August 2017 Percent Operationally Used
May 2018 Planned Use (Proving Ground)
120
100
80
60
40
20
0
all
Priority 1 (KPP)
Priority 2
Priority 3
Priority 4

Thank You!



www.jpss.noaa.gov

EUMETSAT Updates and Collaboration with NOAA



Bojan R. Bojkov

on behalf of EUMETSAT teams

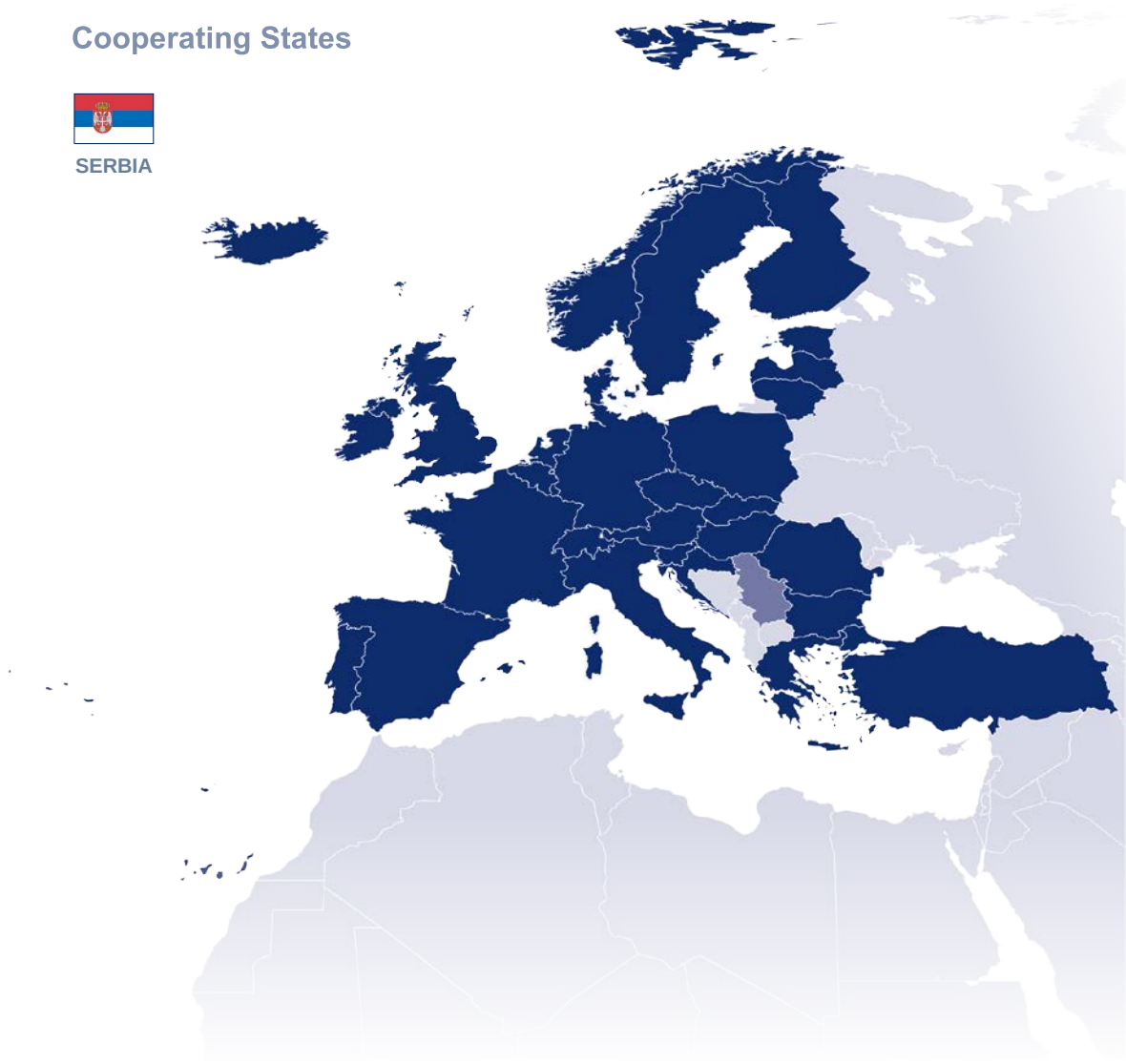
EUMETSAT is an intergovernmental organisation with 30 Member States and 1 Cooperating State

Member States

AUSTRIA
BELGIUM
BULGARIA
CROATIA
CZECH REPUBLIC
DENMARK
ESTONIA
FINLAND
FRANCE
GERMANY
GREECE
HUNGARY
ICELAND
IRELAND
ITALY
LATVIA
LITHUANIA
LUXEMBOURG
THE NETHERLANDS
NORWAY
POLAND
PORTUGAL
ROMANIA
SLOVAK REPUBLIC
SLOVENIA
SPAIN
SWEDEN
SWITZERLAND
TURKEY
UNITED KINGDOM

Cooperating States

SERBIA



EUMETSAT

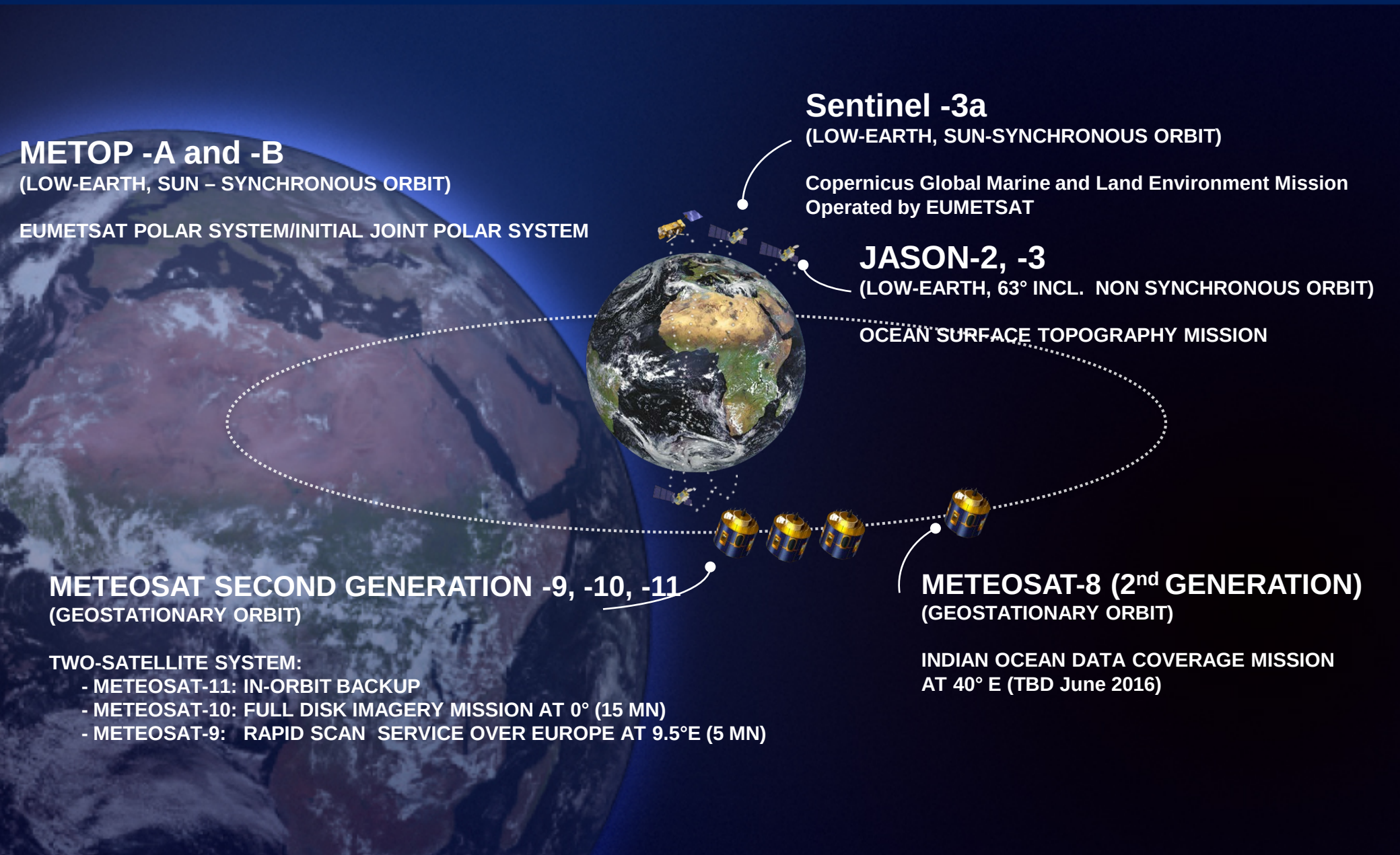
EUMETSAT's mission

To **establish, maintain** and **exploit** European **operational** meteorological satellite systems, while considering the recommendations of **WMO** as much as possible

A further objective is to contribute to **operational climate monitoring** and detection of **global climatic changes**

By fulfilling these objectives, contribute to **environmental monitoring**, where **interactions** with the **ocean** and the **atmosphere** are involved

The Current EUMETSAT satellite fleet



METOP -A and -B
(LOW-EARTH, SUN – SYNCHRONOUS ORBIT)

EUMETSAT POLAR SYSTEM/INITIAL JOINT POLAR SYSTEM

Sentinel -3a
(LOW-EARTH, SUN-SYNCHRONOUS ORBIT)

Copernicus Global Marine and Land Environment Mission
Operated by EUMETSAT

JASON-2, -3
(LOW-EARTH, 63° INCL. NON SYNCHRONOUS ORBIT)

OCEAN SURFACE TOPOGRAPHY MISSION

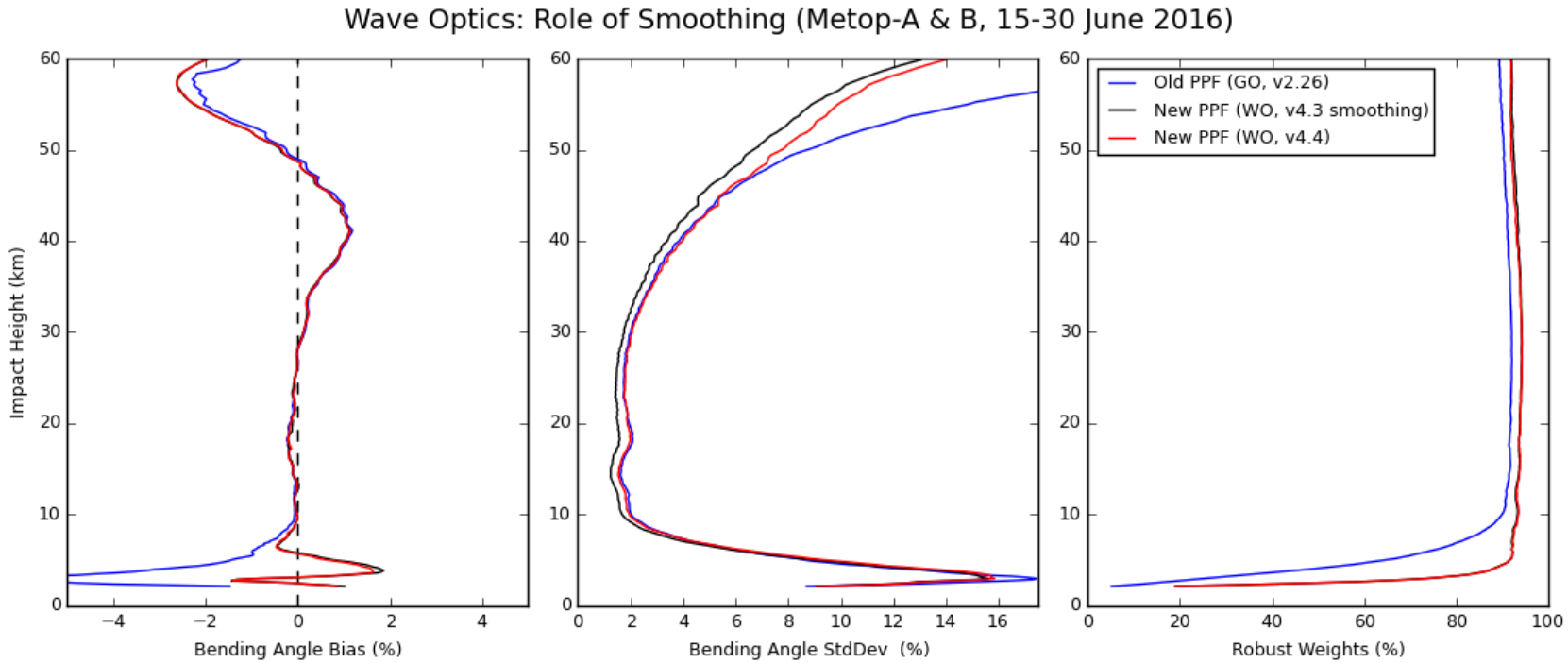
METEOSAT SECOND GENERATION -9, -10, -11
(GEOSTATIONARY ORBIT)

TWO-SATELLITE SYSTEM:
- METEOSAT-11: IN-ORBIT BACKUP
- METEOSAT-10: FULL DISK IMAGERY MISSION AT 0° (15 MN)
- METEOSAT-9: RAPID SCAN SERVICE OVER EUROPE AT 9.5°E (5 MN)

METEOSAT-8 (2nd GENERATION)
(GEOSTATIONARY ORBIT)

INDIAN OCEAN DATA COVERAGE MISSION
AT 40° E (TBD June 2016)

Metop: RO Wave Optics

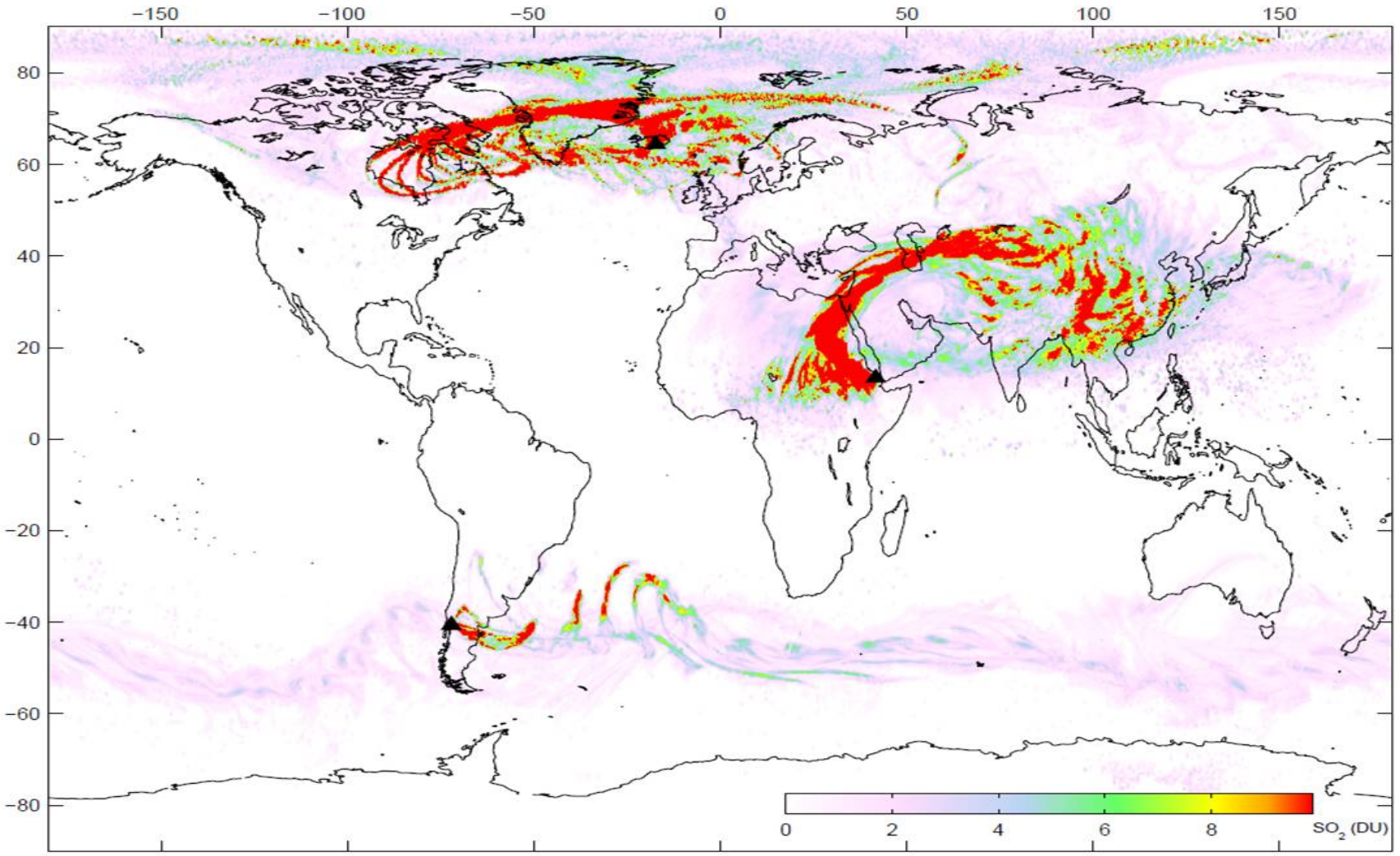


Wave Optics PPF since Q3/2016

- Stratospheric bias structure as before; tropospheric biases improved; deeper penetration into the lower troposphere
- Upon extensive consultation/data evaluation with NWP users, preference for low correlations over smoothing
- The ECMWF and the UK MetOffice use the complete profile down to the lowest level → *positive impact.*

Note: Low stratospheric standard deviations (as in v4.3) are possible, but come with larger vertical correlations

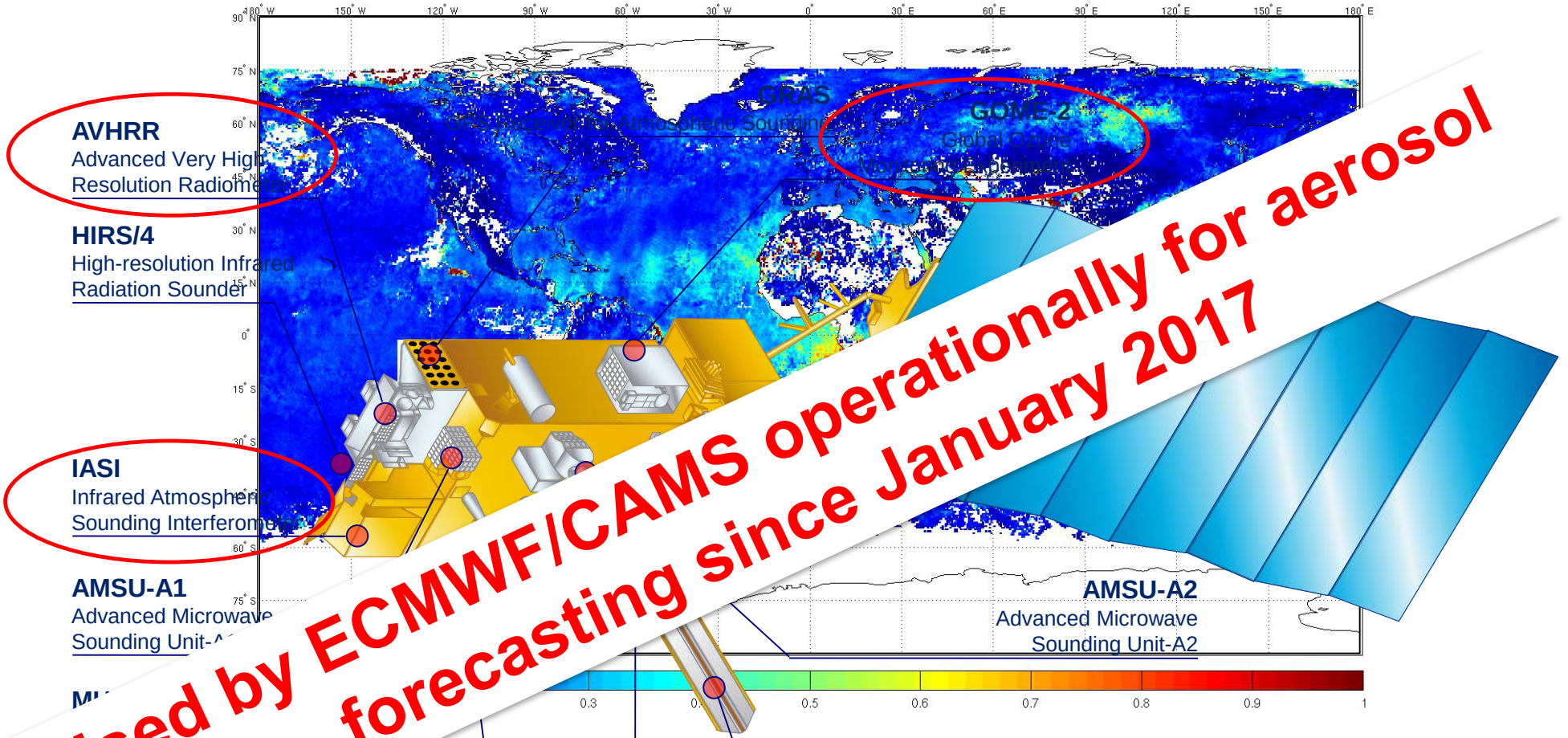
Metop: IASI v6.3 - SO_2 from infrared sounding



Cumulative SO_2 from volcanic eruptions (20 May and 30 June 2011)

Courtesy: Clarisse, et al., doi: 10.5194/amt-5-581-2012

Polar Multi-Sensor Aerosol Optical Properties - PMAp (August 2013 average)



Used by ECMWF/CAMS operationally for aerosol forecasting since January 2017

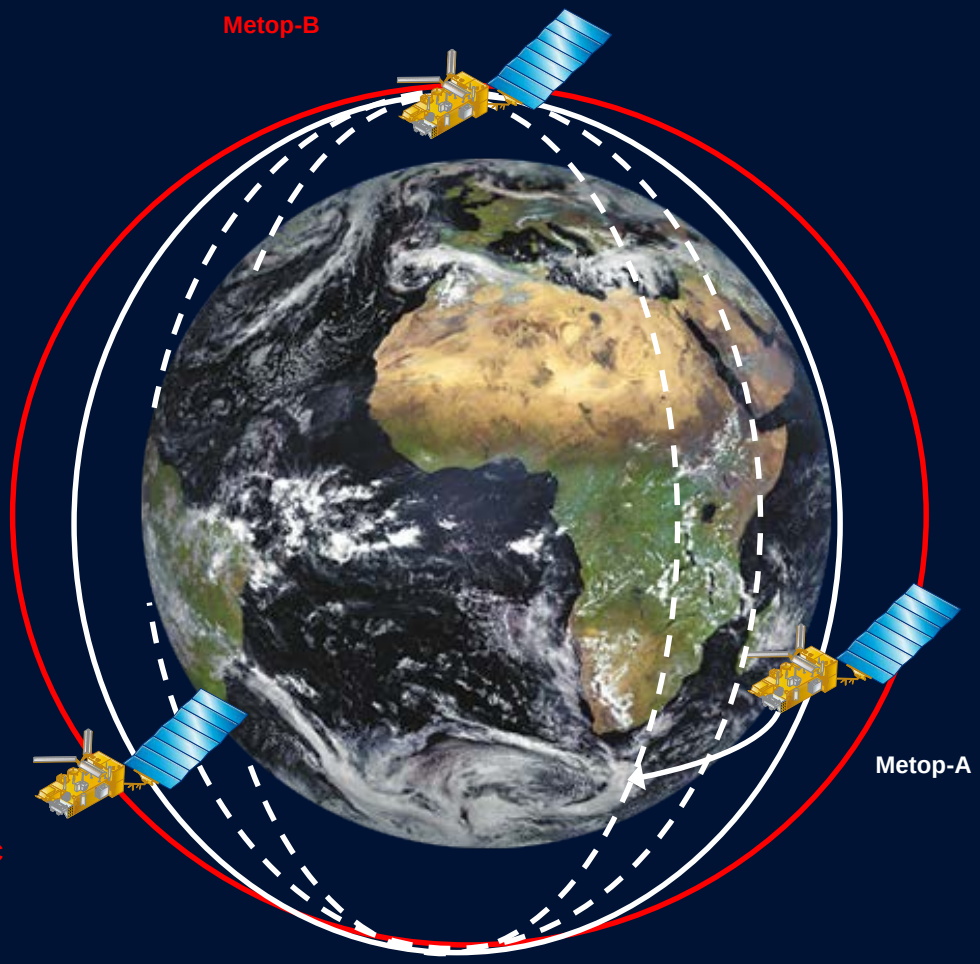
...sed on February 23, 2017:

1. **...ed land surface albedo characterisation (using updated LER KNMI database)**
2. **...proved cloud/thick dust separation and screening**
3. **Improved characterisation of Rayleigh-scattering contribution (better elevation/pressure profile)**
4. **Addition of IASI volcanic ash/SO_2 detection scheme**

EUMETSAT

There will be three Metops in orbit 2018 – 2021

- Metop-A in drifting orbit; last OOP manoeuvre in August 2016 (EOL end 2021/early 2022)
- Metop-B prime satellite LTDN 9:30 LST
- Metop-C launch planned for late 2018 LTDN 09:30 LST

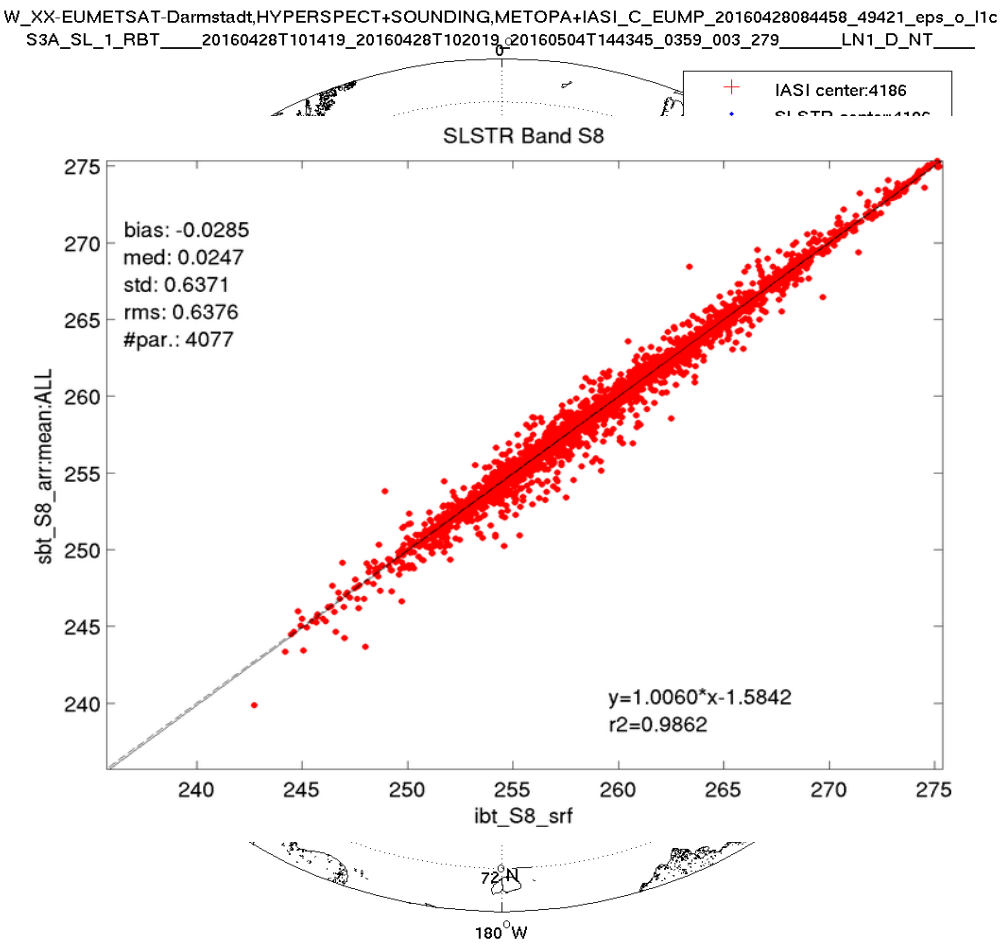


Sentinel-3/SLSTR first calibration check (20160428)

- **Apply GSICS Simultaneous Nadir Observations (SNO) methodology to intercompare the Sentinel-3/SLSTR with Metop-IASI instruments as a first check:**
  - ***10 min. satellite co-location, pixel aggregation without stray-light correction***

- **Extremely challenging process because of the data volumes involved and the complexity of the matching of the instrument fields of views**

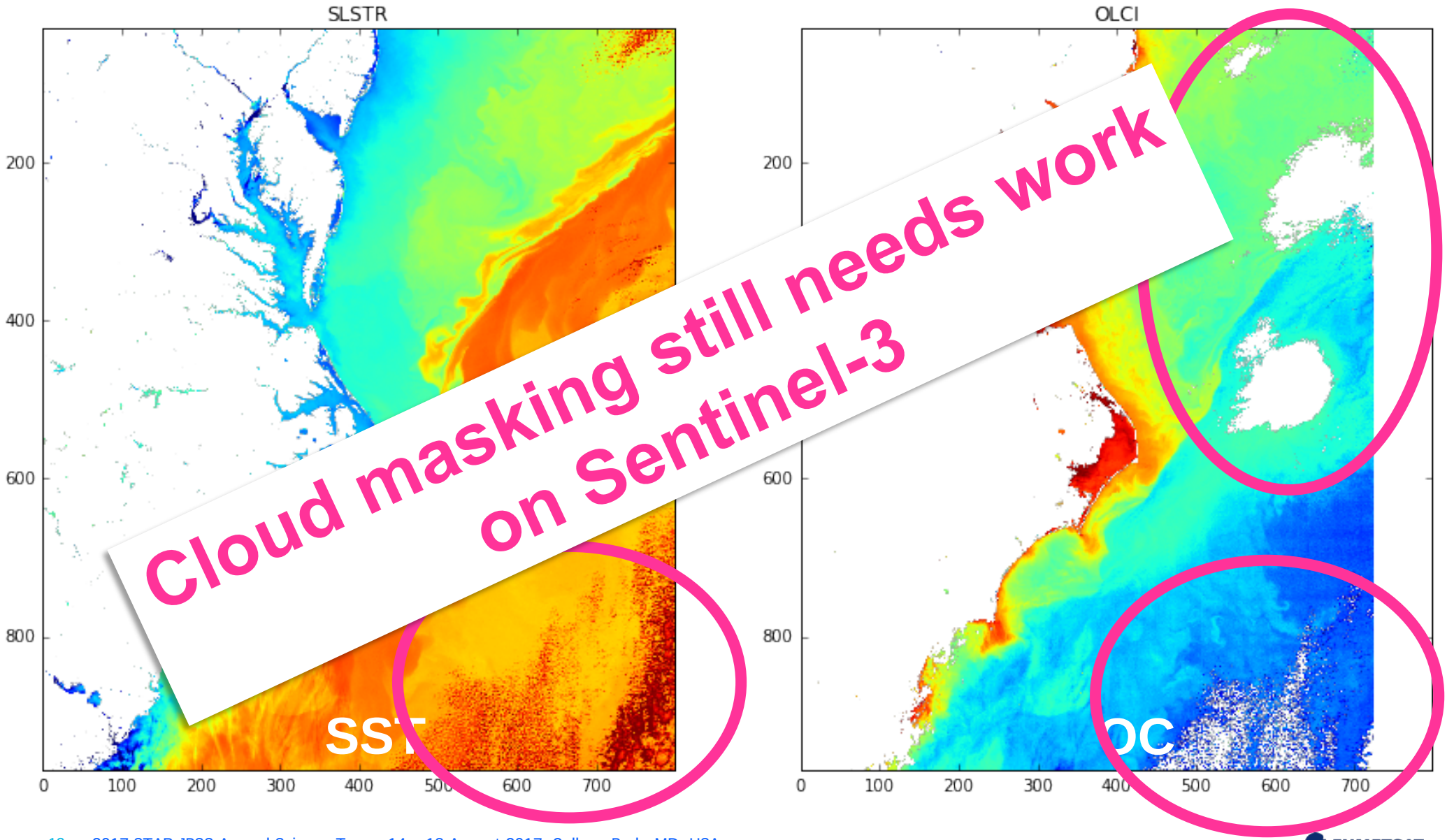
→ this pragmatic approach to monitor the performance of the Sentinel-3/SLSTR using accepted international best practices to be implemented into the operational chain – especially in light of the launch of Sentinel-3b



I.Tomazic, Marine Applications

EUMETSAT

Sentinel-3 SLSTR and OLCI L2 operational as of July



Future Programmes and Programmes under Development



MTG: Approved, under development
Sentinel-4 on board MTG-S Satellites



Jason-CS/ *Sentinel-6*
Approved in December 2015



EPS-SG: Approved, under development
Metop-SG programme approved at ESA-CMIN12
Sentinel-5 on board Metop-SG-A Satellites

EPS-SG A: sounding and imagery mission



Metop-SG A

1. **IASI-NG**
   Infrared Atmospheric Sounding
2. **MWS**
   Microwave Sounding
3. **METImage**
   Visible-Infrared Imaging
4. **RO**
   Radio Occultation
5. **3MI**
   Multi-viewing, -channel, -polarisation Imaging
6. **Copernicus Sentinel-5**
   UN/VIS/NIR/SWIR Sounding

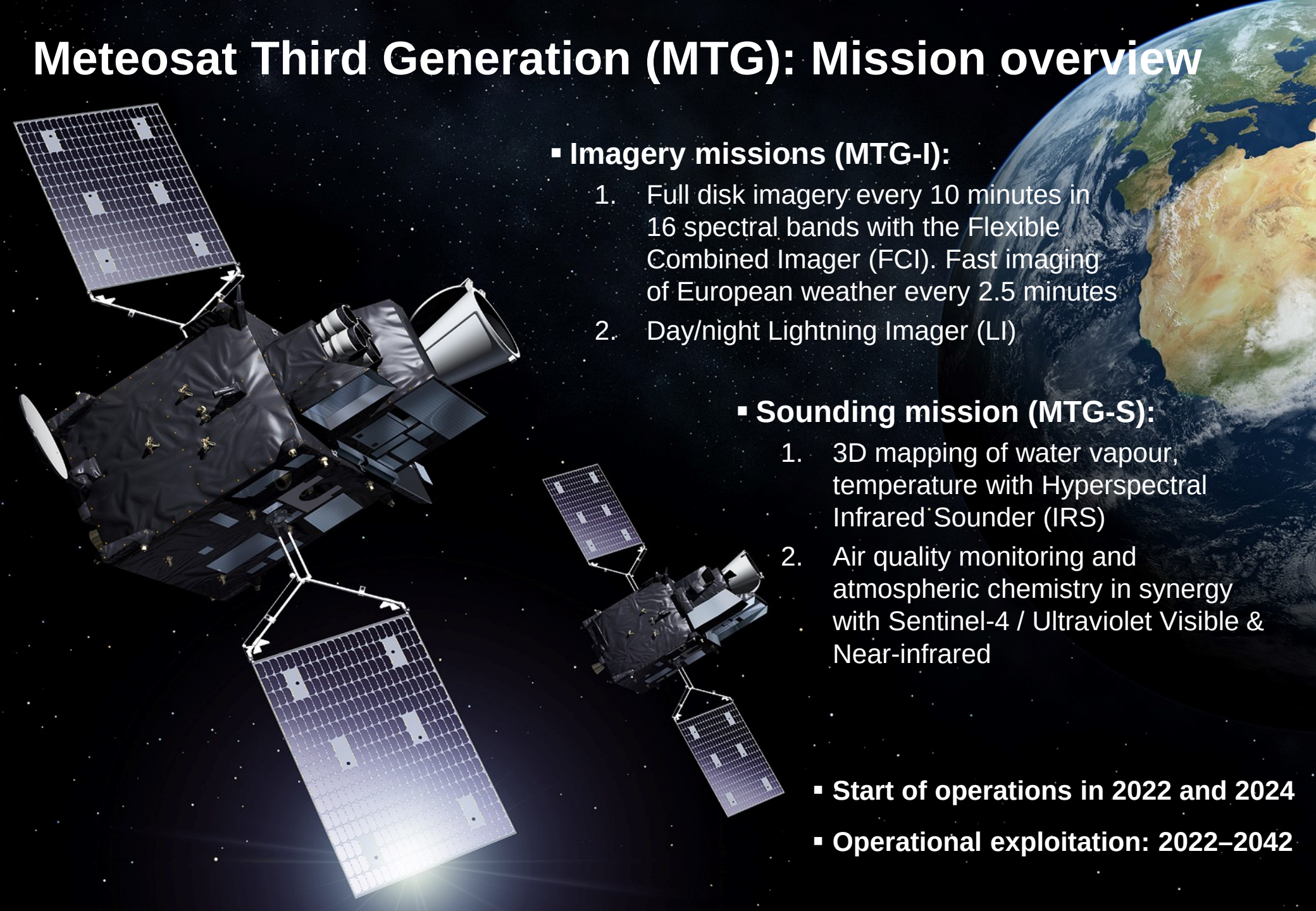
EPS-SG B: microwave imagery mission



Metop-SG B

1. **SCA**
   Scatterometer
2. **RO**
   Radio Occultation
3. **MWI**
   Microwave Imaging for Precipitation
4. **ICI**
   Ice Cloud Imager
5. **ARGOS-4**
   Advanced Data Collection System

Meteosat Third Generation (MTG): Mission overview



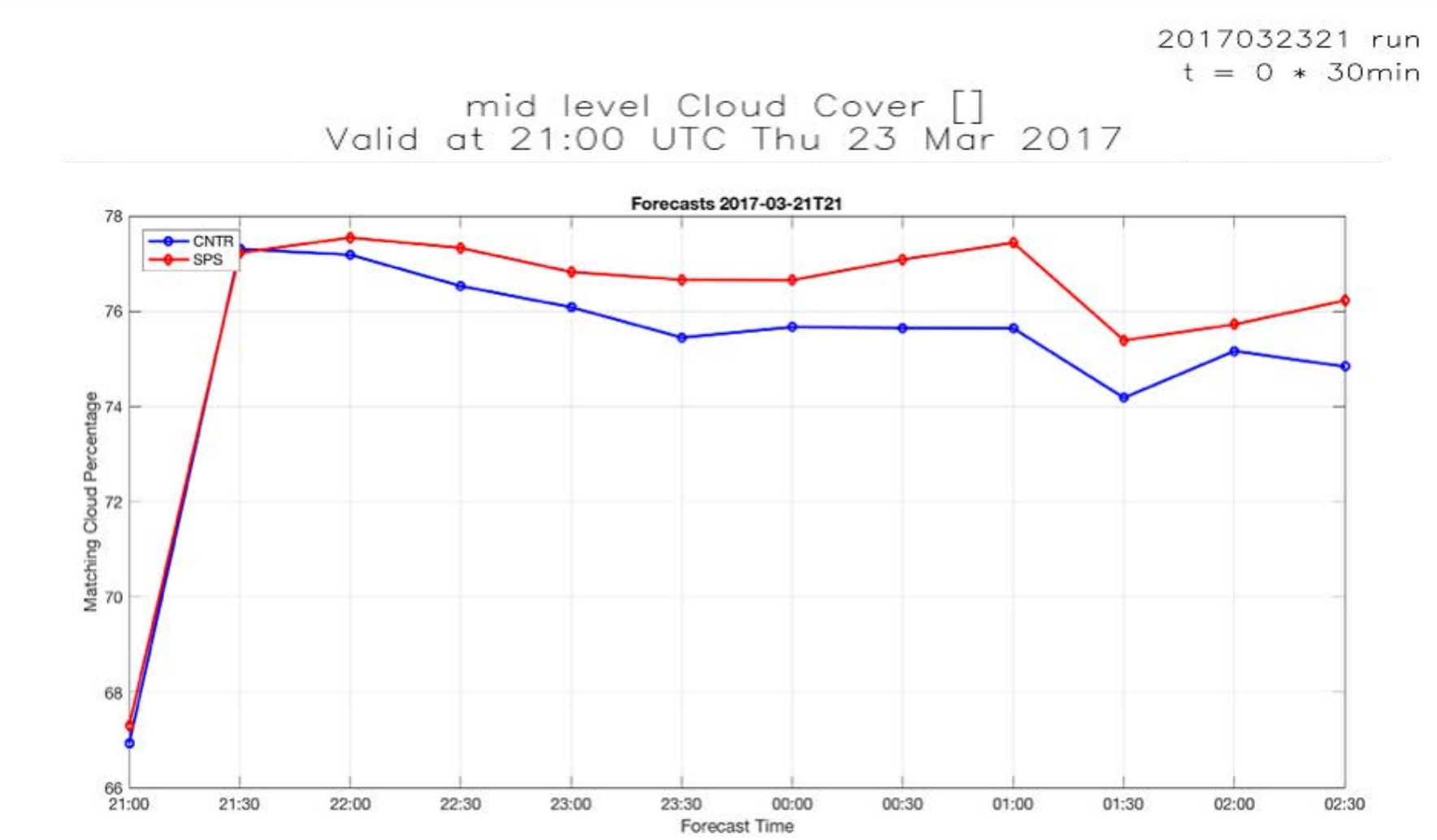
- **Imagery missions (MTG-I):**
  1. Full disk imagery every 10 minutes in 16 spectral bands with the Flexible Combined Imager (FCI). Fast imaging of European weather every 2.5 minutes
  2. Day/night Lightning Imager (LI)

- **Sounding mission (MTG-S):**
  1. 3D mapping of water vapour, temperature with Hyperspectral Infrared Sounder (IRS)
  2. Air quality monitoring and atmospheric chemistry in synergy with Sentinel-4 / Ultraviolet Visible & Near-infrared

- **Start of operations in 2022 and 2024**
- **Operational exploitation: 2022–2042**

MTG IRS preparations using IASI-L2VDP prototype

- Testing of Scaled Projected States (SPS) transformation of Migliorini (2012) using the CETEMPS (L'Aquila, IT) severe weather regional model (coop. P. Antonelli, SSEC)



EUMETSAT-NOAA areas of collaboration

- EUMETSAT and NOAA have long standing cooperation at many levels:
  - IJPS and JPS operations and data sharing
  - Instrument hosting (e.g. AVHRR on Metops)
  - System interoperability (data flows)
  - Short- to long-term staff exchanges

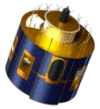
- The Intention, as of the 2016 EUM-NOAA hi-level bilateral meeting, is to extend the operational exchanges to scientific areas, with the goal of product interoperability for the end-user communities through common algorithms, applications and tools developments, Fiduceal Reference Measurements (FRM) developments, Cal/Val data sharing, etc.

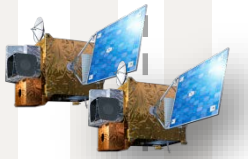
EUMETSAT-NOAA areas of collaboration (ii)

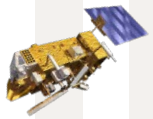
- As of today, more than a dozen face-2-face meetings, and telecons haven take place, including a dedicated marine workshop last March
- Current activities under discussion with the NESDIS/STAR teams:
  - Joint Sentinel-3 Ocean Colour and SST product validation (protocols/tools)
  - Development of a joint NOAA-EUM Ocean Colour algorithm (under the auspice of IOCCG)
  - Development of FRM instruments and the related data collection protocols, for example the design of a European “MOBY-type” buoy
  - Joint development of the RADS altimetry QA tool for Jason(s)/Sentinel-3
  - Staff exchanges/reviews for hyperspectral IR L1 processing/intercalibration
  - Initiate the development of a joint hyperspectral IR “full physics” retrievals → *with the goal of interoperability for the forecasters*
  - Include NOAA experts in EUMETSAT Mission Advisory Groups such as for IASI/IASI-NG and IRS, MWI/ICI, etc.

More to be formalised in the next days and months

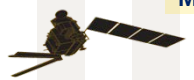
EUMETSAT future programmes overview – Thank you!















YEAR... 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

METEOSAT FIRST GENERATION

METEOSAT-7

METEOSAT SECOND GENERATION

METEOSAT-8 …Extended lifetime .....

METEOSAT-9 …Extended lifetime .....

METEOSAT-10 …Extended lifetime ...

MSG-4/METEOSAT-11 ……..

METEOSAT THIRD GENERATION

MTG-I-1 : IMAGERY

MTG-S-1: SOUNDING

MTG-I-2: IMAGERY

MTG-I-3: IMAGERY

MTG-S-2: SOUNDING

MTG-I-4: IMAGERY

Mandatory Programmes

EUMETSAT POLAR SYSTEM (EPS)

METOP-A …Extended lifetime .....

METOP-B …Extended lifetime .....

METOP-C …Extended lifetime .....

METOP SECOND GENERATION

METOP-SG-A1

METOP-SG-B1

METOP-SG-A2

METOP-SG-B2

METOP-SG-A3

METOP-SG-B3

Operational Development

JASON

JASON-2

JASON-3

JASON CONTINUITY OF SERVICE (JASON-CS)

Optional and Third Party Programmes

COPERNICUS

SENTINEL-3a/Sentinel-3b (Q2/2018)

SENTINEL-4 ON MTG-S

SENTINEL-5 ON EPS-SG

YEAR... 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40



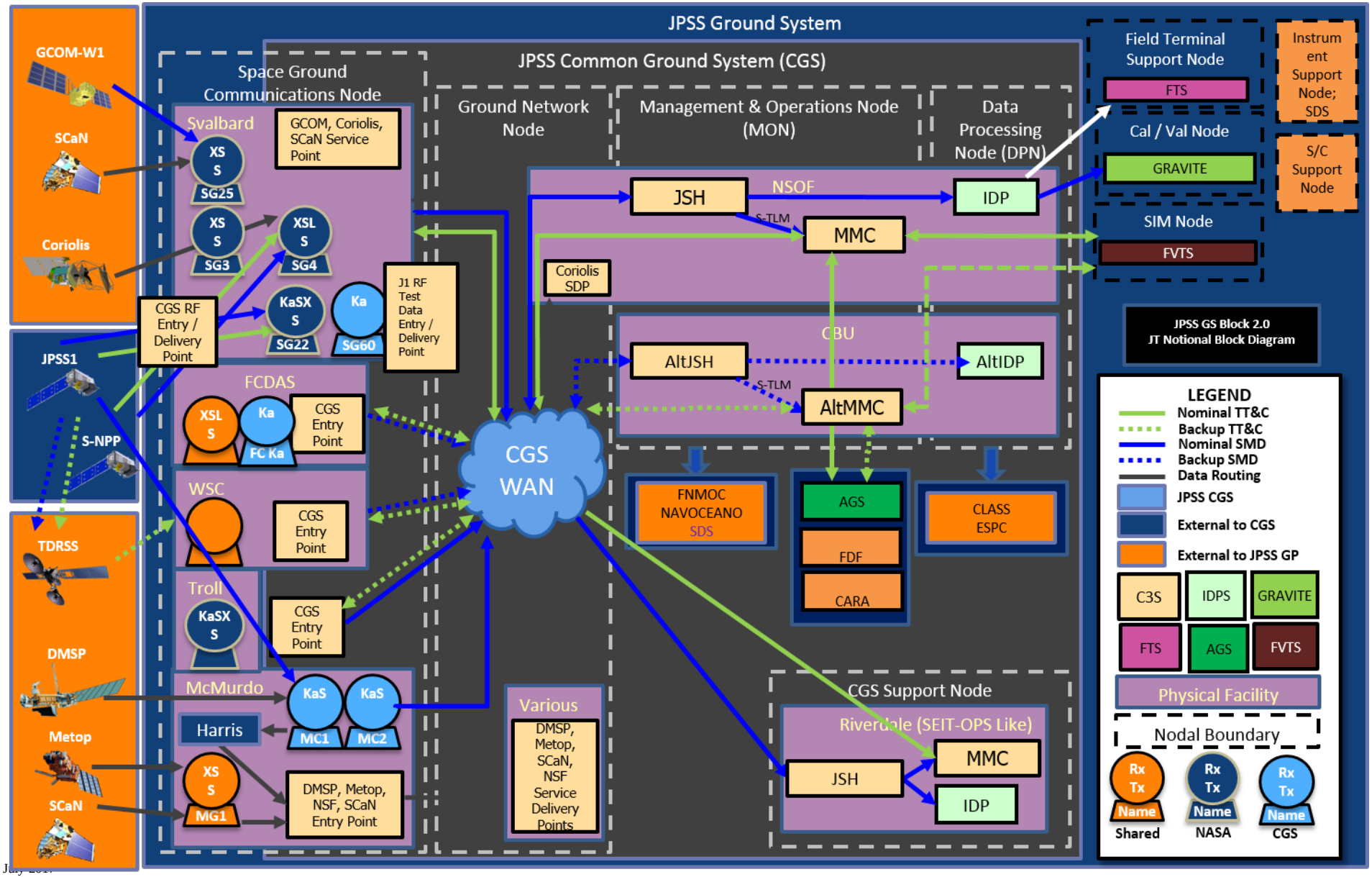


Ground Segment Status

JOINT POLAR SATELLITE SYSTEM

Heather Kilcoyne
Deputy Ground Project Manager for the
Block 2.0 Deployed System

JPSS B2.0 System Architecture
Minimum Essential Criteria (12/5/16)



JPSS Ground Project Summary

July 31, 2017

LEGEND
G GOOD SHAPE
Y MINOR PROBLEM
R MAJOR PROBLEM

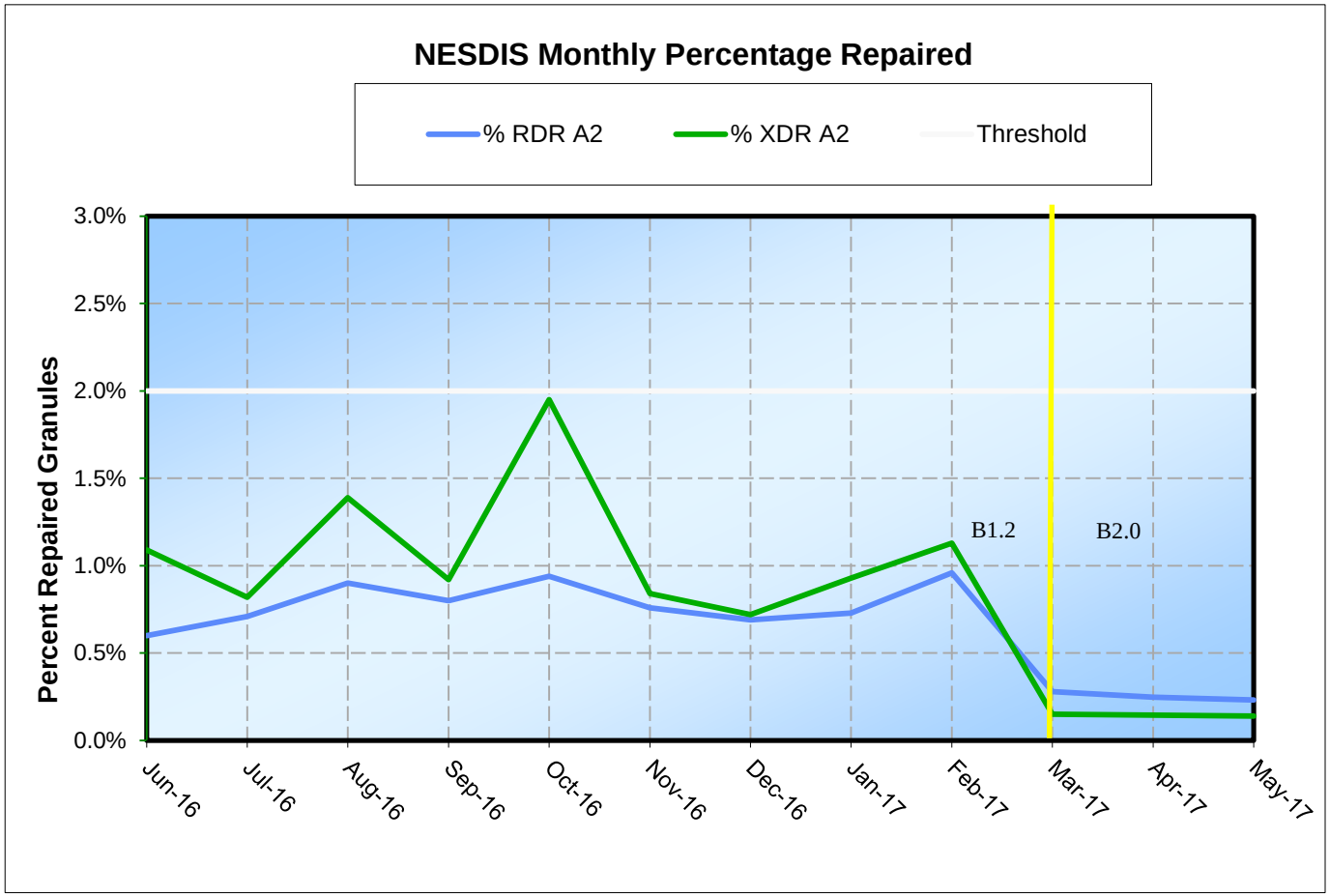
	May	June	July	
J-1 Mission Readiness	G	G	G	Ops Readiness Exercise 1 (ORE 1) successfully conducted July 6-8.
Command, Control, & Comm (C3S)	Y	Y	G	Build AE.2.4 software deployed to all operating environments
Interface Data Process. Sys. (IDPS)	G	G	G	Maintenance release Mx.3 deployed to all operating environments
Field Terminal Segment (FTS)	G	G	G	No Issues
Flight Vehic. Test Suite / Flight Veh. Sim	G	G	G	No issues
GRAVITE	G	G	G	No issues
Business (Staffing & Facilities)	G	G	G	No issues
Cross-Cutting Functions (Algo./Cal-Val; Ops; SMA; Security)	G	G	G	No issues; S-NPP Annual Operations Status Review (OSR) conducted July 12
Missions	G	G	G	Metop/DMSP – Nominal Support; DMSP transitioned to Block 2 on July 19 S-NPP/GCOM-W – Nominal support
Cost	G	G	G	No issues
Schedule	Y	Y	G	S-NPP Flight Operations ORR conducted July 13 with TTO on August 4; JPSS-1 ORR moved to September 6-8 to accommodate JPSS-1 PSR August 23-24
Technical	Y	Y	G	Block 2 now supporting all on-orbit missions; Block 2.2 PDR conducted August 8-10
Overall	Y	Y	G	

Differences from B1.2 to B2.0

Category	B1.2	B2.0
A/B Side	A / I&T Strings (NSOF MMC & IDP)	A / **B** / I&T Strings (NSOF MMC & IDP)
COOP	SGMMC (Aurora, CO)	**CBU** MMC & IDPS A String (Fairmont, WV)
J1/J2 Delta & FVTS	S-NPP plus 'Support' Missions: X SMD, Caribou Encryption, TDRSS T&C	S-NPP plus 'Support' Missions **minus POES routing*** plus **JPSS-1** (B2.0) and **JPSS-2** (B3.0) and associated simulator: S-NPP capabilities plus **Ka SMD, AES Encryption, TDRSS SMD via WSC**
Performance	Latency: S-NPP North Pole, contacts once/orbit, 140min	Latency: S-NPP North Pole, contacts once/orbit, **JPSS-1,2 Dual Pole contacts twice/orbit**, S-NPP 140min, **JPSS-1,2 80 min, GCOM 15 min (from RF receipt)**
Security	Security: Boundary Protection	Security: **Defense in Depth**
C3S Re-Arch	PGM Multicast Data Transport to Distributed IDPs	**TCP/IP** protocol Data Transport to JSH (JPSS SMD Hub) Centralized **'Bow Tie'** (with CBU backup); Space Link Extension (**SLE**) T&C/SMD (**including GCOM**)
IDPS Re-Arch	NESDIS / AFWA Baseline IDP functionality; **AFWA IDP removed in B1.2.3***	**Modularized IDP** functionality (part of SO#2 prototyping; includes 'fast' algorithm incorporation, flexible configuration, and event driven delivery)
Site & Site Capability	Svalbard (S,X), Fairbanks IOC (S,X), WSC (S), McMurdo (S)	Svalbard (S,X,**Ka**), Fairbanks FOC (S,X,**Ka**), WSC (S,**Ka**), McMurdo (S,**Ka**), **Troll (S,Ka)**

Block 2.0 Performing Well

A2+ Product Production Percentage has improved significantly with Block 2.0



Data Availability to ESPC/NWS greatly improved with Block 2.0!

Recent Accomplishments (1/2)

- **Transition to Block 2.0**
  - B2.0 Data Ops ORR held 2/8/17 with TTO on 3/8/17
    - Data Ops has been running successfully in operations with improved performance over Block1.2
    - Three maintenance releases successfully deployed into operations
  - B2.0 Flight Ops ORR held 7/13/17 with TTO on 8/4/17
    - Workarounds for requirements not yet achieved are being performed by Raytheon assistance to operations
- **8-day data Flow 8/4-12/17 - Full loading of S-NPP, GCOM-W1, and JPSS-1 simulated data through system end-to-end**
- **Common Ground System Software Releases**
  - IDPS
    - MX3 (J1 Launch Build) deployed to Operations
    - MX4 will be combined with Block 2.1 release and deployed post JPSS-1 Launch
  - C3S
    - AE.2.4 deployed to all strings, resolved critical issues for B2.0 Flight Ops
    - AE.2.5 currently in work to update Orbit Operations and incorporate JPSS-1 specific parameters
  - First maintenance release post J1 Launch will be deployed to I&T at L+60days for transition to operations after handover to OSPO

Recent Accomplishments (2/2)

- **Simulators are ready to support JPSS-1 launch**
  - Simulators are currently being managed in a sustainment type operating mode.
  - OPS Sims have been available to users since November 2014.
  - On going resolution of open DRs and database updates as needed to support the MR and JCT events.
- **GRAVITE is ready to support JPSS-1 launch**
  - Successfully receiving Block 2.0 S-NPP and simulated J01 Data, making it available to users and running data quality monitoring tools on the data
  - Data Quality Assurance (DQA) offline tool suite successfully integrated
- **Field Terminal Segment (FTS) is ready to support JPSS-1 launch**
  - FTS Web Portal has been operational with S-NPP since Mar 8, 2017
  - OSPO has provided a Landing Page for FTS within their NOAASIS Homepage: http://noaasis.noaa.gov/NOAASIS/ml/jpss-fts.html

IT Security Status

- **JPSS Director issued a letter signed December 5, 2016 establishing Minimum Essential Criteria (MEC)**
  - ✓ Requires JPSS systems maintain ATO
- **3 Year ATO achieved on 7/10/2017 with the following conditions to be met prior to JPSS-1 launch:**
  - System's inventory deficiencies must be resolved
  - Block 2.0 scans must show 95% scan-to-inventory ratio and based on those results the Critical and High-severity vulnerabilities must be resolved
  - Remediate any penetration test findings from the FY2017 External JPSS Penetration Test
  - Ensure all applicable devices contain current McAfee antivirus and spam definitions
  - Configure the Tripwire monitoring tool on all applicable Windows Server 2008 R2 and Linux devices
  - Ensure an independent internal penetration test is conducted

Path Forward

- **Path to JPSS-1 Launch**
  - Complete and deploy C3S Build AE.2.5 to all strings
  - Manage Launch Freezes
    - Soft Freeze begins 8/24/17
    - Hard Freeze begins 9/23/17
  - Successfully complete JPSS-1 Operations Readiness Review 9/6-8/17
  - Execute remaining Mission Rehearsals and Operations Readiness Exercises
- **Decommission Block 1.2 after Block 2.0 fully proven in operations**
- **Resolve non-MEC issues through maintenance releases post-launch**
- **Develop Blocks 2.2 and 3.0 in preparation for JPSS-2**

JPSS-STAR (JSTAR) Program Updates



PRESENTED BY LIHANG ZHOU
JPSS AMP DEPUTY FOR SCIENCE & JPSS STAR PROGRAM MANAGER
NOAA/NESDIS/CENTER FOR SATELLITE APPLICATIONS AND RESEARCH (STAR)

CONTRIBUTIONS FROM MURTY DIVAKARLA, XINGPIN LIU, TOM ATKINS, TESS VALENZUELA
MEMBERS OF JPSS STAR SCIENCE TEAMS
JPSS PROGRAM SCIENCE
JPSS ALGORITHM MANAGEMENT PROJECT (AMP)
ARE THANKFULLY ACKNOWLEDGED



Highlights of JSTAR FY17 Accomplishments

JPSS-1 Readiness:

- **Updated/Delivered of JPSS-1 Cal/Val Plan for all SDR/EDR products**: Dec-16
- **Developed, tested, and delivered J1 algorithms/LUTs for ATMS, CrIS, VIIRS, OMPS SDRs, and BUFR toolkit**
- **Critical Design Review (CDR) for updates to NDE/ESPC EDR algorithms for JPSS-1**: Oct-16
- **Support JPSS Ground Project Block 2.0 Testing/Build Deploy checkout**
  - » SDRs, ICVS, Imagery, JPSS-EPS, NUCAPS, MiRS, VPW, etc.
  - » Post-LG2, NDE 2.0 Science Product Evaluation, Block 1 vs Block 2 Comparison, JCT5, 8-day data flow

- **S-NPP Maintenance/Updates/Operational Cal Val Support/User support:**
  - **VIIRS Global Surface Type** (GST) Annual update: GST-2015 available on STAR web: Sep-16
  - **BUFR toolkit update (V8Pro, V8TOz, CrIS-2211, CrIS-431, ACSPO SST)**: Apr-17
  - **OMPS TC/NP weekly Dark & NP bi-weekly wavelength & solar flux LUT update; VIIRS monthly straylight and DNB LUT updates**
  - **S-NPP and GCOM-W1 Maintenance Delivered Algorithm Packages (DAPs) Deliveries (NUCAPS, GAAPS, etc.)**
  - **Imagery of the month delivered by the Imagery EDR team to the program**

- **Cal/Val Maturity & SDR/EDR Reprocessing:**
  - **Validated Maturity Review for NUP products (VPW, GVF, VH, NUCAPS, MiRS, GCOM)**: Oct-16, Apr-17
  - **Cal/Val Maturity ReadMe update for all JPSS products**: Dec-16
  - **Completed SDR Reprocessing (ATMS, CrIS, OMPS):** Dec-16
  - **Completed OMPS EDR reprocessing (V8Pro & V8TOz, for 2012-01-26 to 2017-05-31):** Jul-17

- **Integrated Calibration/Validation System (ICVS) Long Term Monitoring:**
  - **ICVS**: Updated package to GRAVITE to support operation; Upgraded for J1
  - **EDR Long Term Monitoring** Phase II: requirements comparison

- **Work with Program Science and coordinate reviews of requirements; waivers; and future improvements for users' applications**

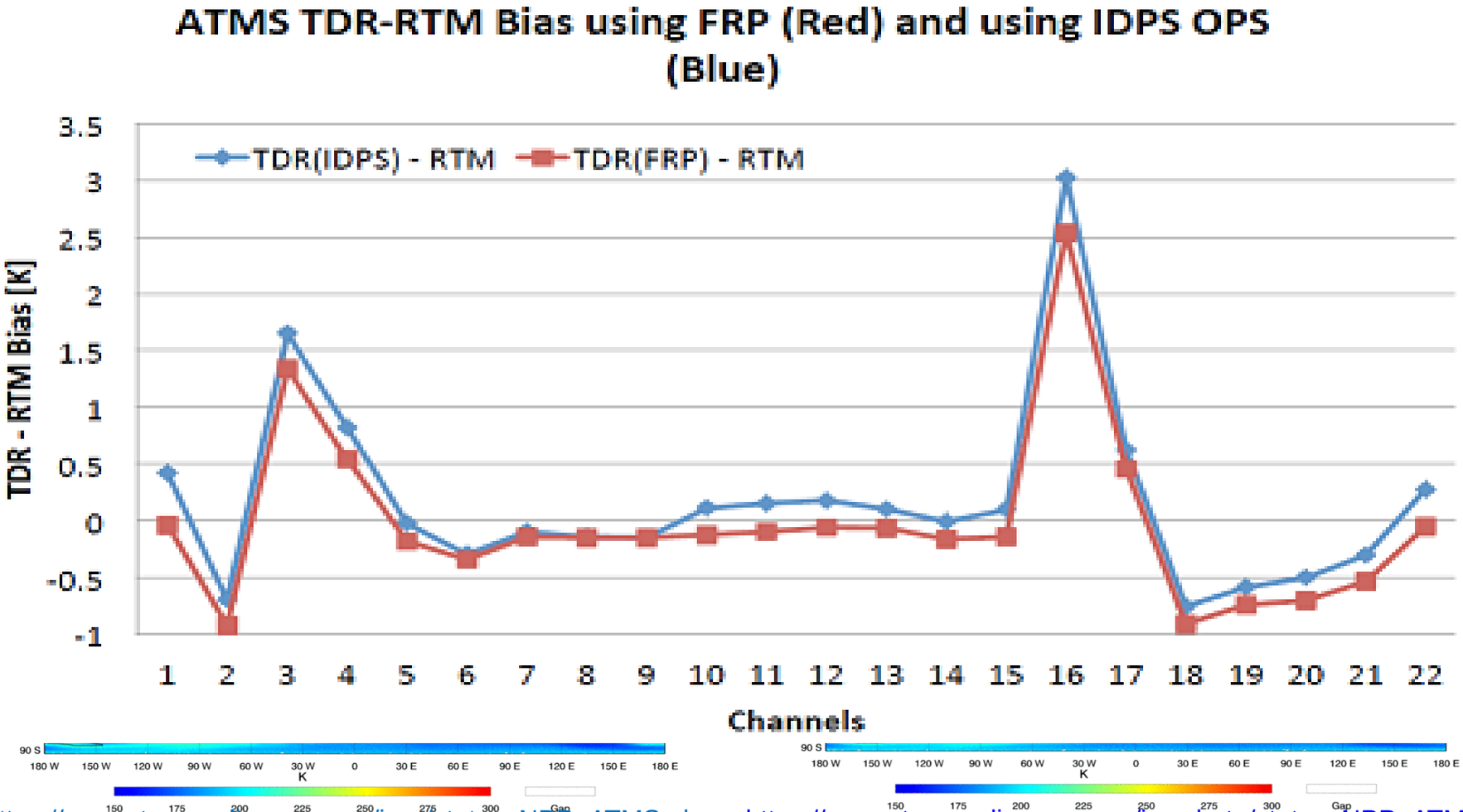
JPSS-1 Readiness: Codes/LUTs Deliveries

Milestone	Delivery Date
Re-delivery of ATMS PCT (using PSAT 26)	02/16/17
Delivery of ATMS PCT update (ADR8456)	08/07/17
CrIS engineering packet update (v37, ADR8397/CCR3425), uploaded on 06/07/17	
CrIS DAP (ADR8444 - CrIS full spectral resolution PCT & XML update to use all the CrIS extended interferogram data points; for S-NPP & JPSS-1)	06/29/17
Re-delivery of CrIS PCT update DAP (ADR8444, using Mx3 ADL)	07/06/17
Delivery of CrIS DAPs (ADR8361 - Control generation frequency of CrIS-<FS>-SDR-ENGPKT-BACKUP-AUX using checksum field from ENG PKT APID 1290; ADR8445 - CrIS Full spectral resolution SDR longwave band radiance anomaly in IDPS Block2.0)	08/09/17
CrIS DAP (ADR8013 - CrIS Interferogram spikes not detected) to ASSISTT	07/27/17
J1 VIIRS prelaunch LUTs update DAP (ADR8417, 4 LUTs: VIIRS-SDR-DNB-DN0-LUT, VIIRS-SDR-RELATIVE-SPECTRAL-RESPONSE-LUT, VIIRS-RSBAUTOCAL-BRDF-SCREEN-TRANSMISSION-PRODUCT-RTA-VIEW-LUT, VIIRS-SDR-RADIOMETRIC-PARAM-V3)	05/31/17
VIIRS DAP (ADR8393 – VIIRS SDR code update (checkLimits.cpp) to fix incorrect assignment of M6 reflectance values for pixels with the "out-of-range" radiance)	06/15/17
VIIRS DAP (ADR8281 – code update to fix offset & scaling factor applying order in RSBautocal)	07/12/2017
OMPS DAP (ADR 8283 - Bias correction for 17 km xtrack TC data)	02/23/17
Re-delivery of ADR8283 DAP (using Mx 2.0 ADL)	06/15/17
OMPS SDR J1 Launch-ready LUTs (version 3, for both NP & TC)	03/09/17
Re-delivery of OMPS SDR J1 Launch-ready LUTs (version 3, with updated documentation/name change)	03/28/17
OMPS NP SDR Wavelength & Solar Flux LUTs DAP (wavelength Annual Pattern Correction, 1st delivery, then bi-weekly update)	03/29/17
OMPS LUT update (ADR8419 - J1 OMPS-NP-OSOL-LUT Update; ADR8396 - J1 OMPS NP CALCONST LUT Update)	07/10/17

JPSS-1 Readiness: Block 2.0 Testing

STAR ICVS Support on S-NPP Block2.0 Data, Report

Block 1.2 S-NPP	Block 2.0 S-NPP



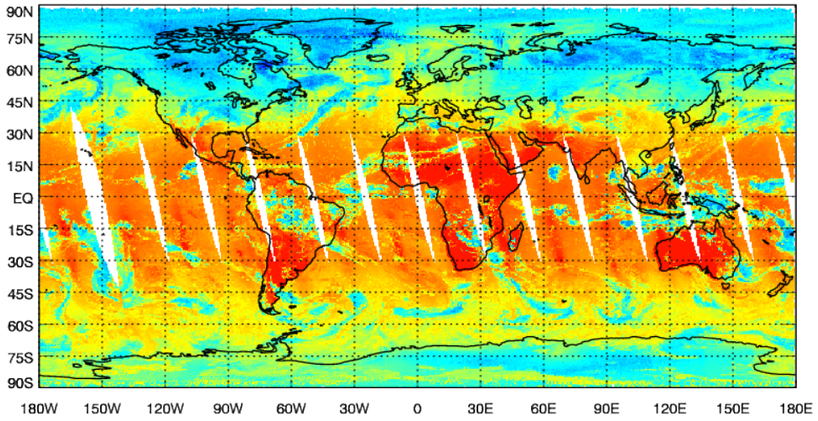
https://www.star.nesdis.noaa.gov/icvs/status_NPP_ATMS.php https://www.star.nesdis.noaa.gov/icvs-beta/status_NPP_ATMS.php

ATMS SDR: Full Radiance Calibration in Operation Since March 8th 2017

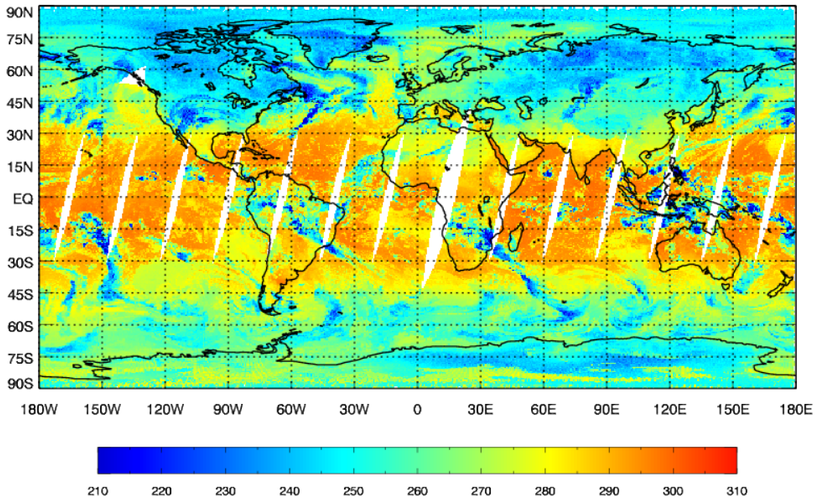
CrIS SDR Updates: Full Spectral Resolution

STAR ICVS Support on S-NPP Block2.0 Data, Report

S-NPP – FSR B1.2

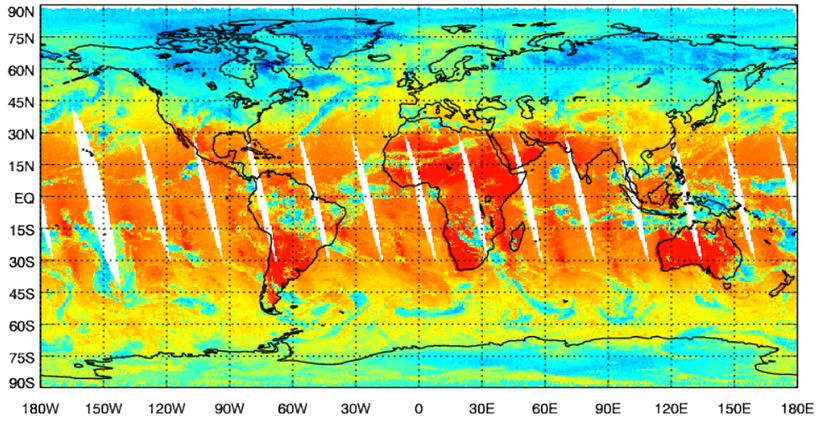


NPP CrIS FSR BT, 4 μm (2500 cm^{-1}), Mapped, Descending, 12/16/2016

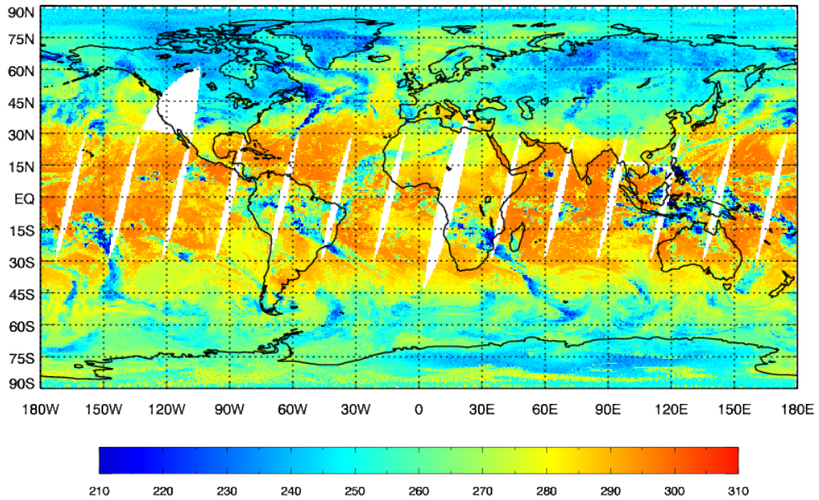


https://www.star.nesdis.noaa.gov/icvs/status_NPP_CrIS.php

S-NPP – FSR B2.0



NPP CrIS FSR BT, 4 μm (2500 cm^{-1}), Mapped, Descending, 12/16/2016

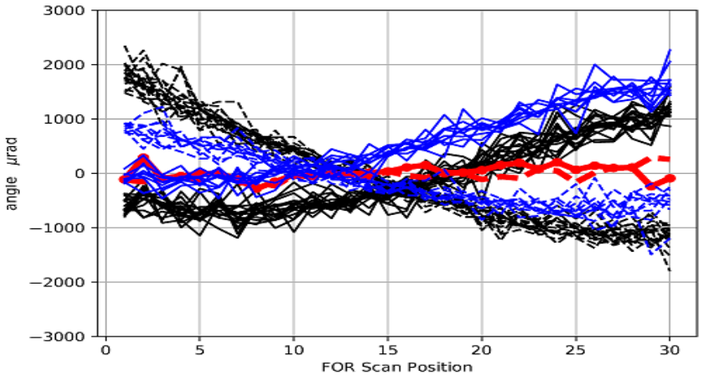


https://www.star.nesdis.noaa.gov/icvs_beta/status_NPP_CrIS.php

- CrIS Full Spectral Resolution SDR: 1305 ->2211ch; Operational March 8, 2017
- CrIS Algorithm Updates (FCE/DQI, A4, and Geo): Operational on April 10, 2017
- CrIS engineering packet update (v37): June 7, 2017
- CrIS PCT Updates: 06/29/17 use all the CrIS extended interferogram data points (for both S-NPP & JPSS-1)

Geolocation performance relative to VIIRS

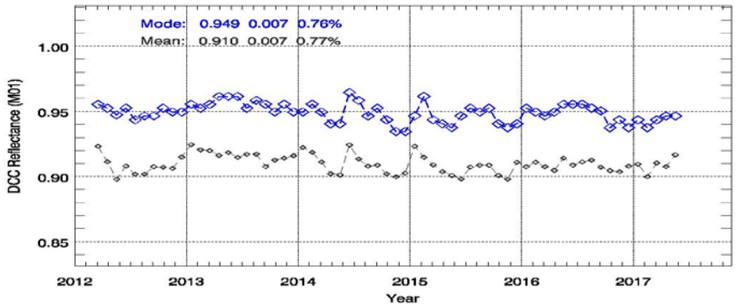
Blue: Before April 10, 2017; **Black: Before ENG v37 uploaded**; **Red: After ENG v37 uploaded**



Higher spectral resolution; Improved calibration; More accurate geo-location

JPSS-1 VIIRS SDR: Cal/Val Readiness

VIIRS SDR are independently validated with the world-wide validation site radiometric time series



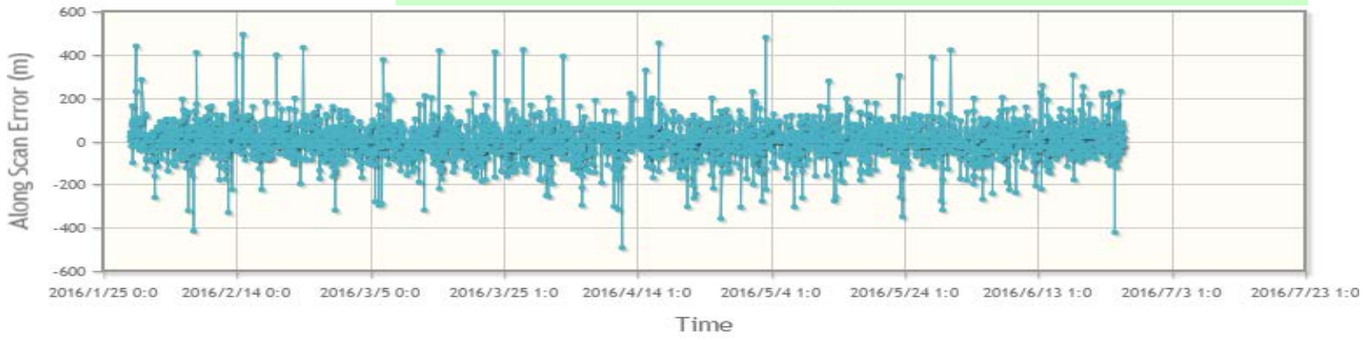
Oct-17
JPSS-1 Launch

Dec-17
Beta Maturity (L+60D)
Verify: Geo Accuracy, Cal/Earth View Data, Detector Operability, DNB Aggregation Mode

Jan-17
Provisional Maturity (L+90D)
Instrument Checkout
Adjust Instrument Setting
LUTs/Coefficients Update

April-18
Validation Maturity (L+6M)
Cross-comparison
Verification
Improve the Calibration
Establish Long-term Monitoring
Algorithm Refinements

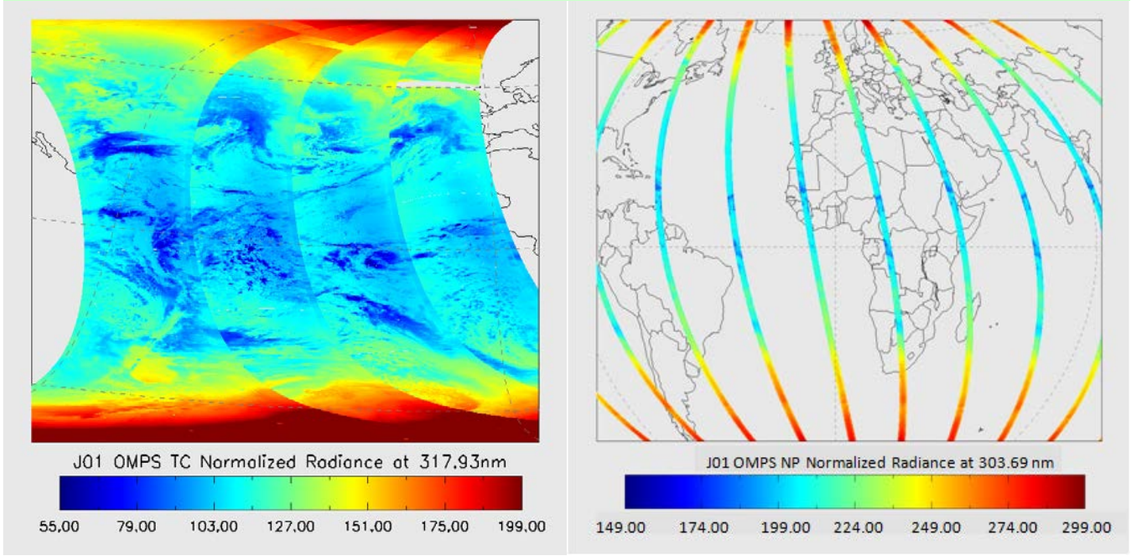
VIIRS SDR Geolocation Accuracy Monitoring Tool: Error Assessments automatically generated



VIIRS SDR has implemented Geo code change to accommodate JPSS-1 DNB aggregation mode change

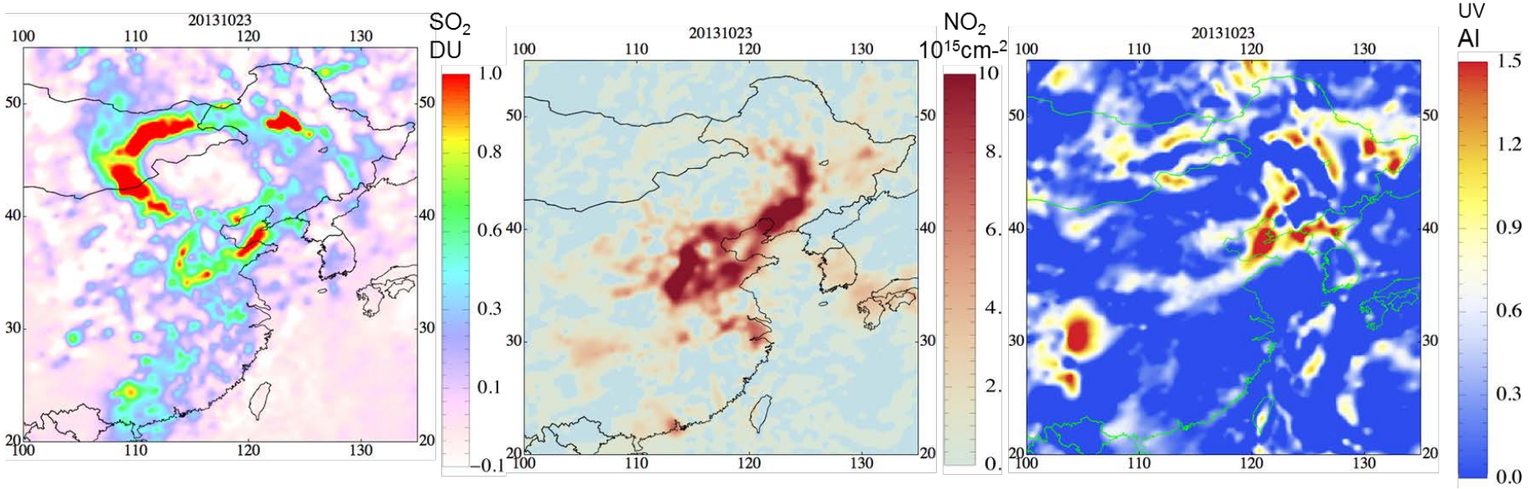
OMPS Updates (S-NPP), JPSS-1, JPSS-2

Example of Proxy SDR products from JPSS-1 Algorithm



17x50 km resolution for NM

50x50 km resolution for NP



- Total Column Ozone, UV Absorbing Aerosol Index, Total Column SO_2
  - (50x50) 17x17 km^2 resolution at Nadir
  - Full coverage of the sunlit Earth once per day.
- Nadir Ozone Profile
  - Nadir orbital track at (250x250) 50x250 km^2 resolution
  - Vertical resolution from 7 to 10 km in the middle and upper stratosphere
- Limb Ozone Profile (Only on S-NPP and JPSS-2)
  - Nadir orbital track with 150 km reporting
  - Vertical resolution of 3 km in the stratosphere
- Future Capabilities
  - OMPS Nadir Mapper total column and tropospheric NO2
  - OMPS Nadir Profiler daily Mg II Index
  - OMPS Limb Profiler stratospheric aerosol profile

OMPS code update for JPSS-1: Extend spectral range, reduce horizontal cell size

SNPP Data Products Cal Val Maturity Status

JPSS Product Cal Val Maturity Reviews:

JPSS STAR (JSTAR) validates all Sensor and Environmental Data Records and conducts products validation maturity reviews.

Review Panel is comprised of JPSS Program and Project Scientists, key NOAA users (NWS, NOS, NMFS, OAR), external users, Low-earth Orbiting Working Group (LORWG) advisors, product development managers (NDE and IDPS), the algorithm science manager (STAR).

JPSS Program Scientist is the chair of the review panel.

During the review process we assess **how well the products are meeting specification** and make an overall assessment of each algorithm.

Most **SNPP** Data Products reached **validated**; expect all validated by 2018.



Lessons Learned from S-NPP Cal Val

- Need for enterprise algorithms and cost effective solutions for Science Mission Life-Cycle support
  - Optimal and reliable data products from a fusion of GEO/LEO satellite constellation.

- Consistent, Long-term product quality performance, achieved through reprocessing are crucial to setup a baseline for further advancement of observational data records.
  - Optimize the algorithms and processing systems to achieve the lowest JPSS data uncertainties; Meet the NWP reanalysis users' needs.

- Common standards & practices for Cal/Val processes and Maturity Definition of products derived from a variety of satellite platforms.
  - Best Practice and Traceability.

Enterprise EDR Algorithms Progress

- **Enterprise Clouds, Cryosphere, and Aerosol** algorithms updated delivery: 04/14/17
- **ACSPO SST V2.41** delivery: 03/01/17
- **VIIRS Ocean Color MSL12** Operational Readiness Review (ORR) 11/9/2016
- **VIIRS Polar Winds update (using ECM instead of VCM):** 05/16/17
- **MiRS patch deliveries:**
  - Radiometric bias corrections based on ATMS full radiance SDR: 03/06/17
  - Metadata update (add orbit numbers, production_site and production_environment): 06/07/17
  - Update to fix the file creation time: 06/23/17
- **GCOM patch deliveries:**
  - GCOM Day-2 algorithms update: 02/17/17
  - Update to handle the compressed OISST ancillary data files: 04/18/17
  - Ocean code bug fix; pre-processing the L1B and L1R files separately to help reduce latency: 06/30/17
- **Active Fires** update deliveries:
  - Remove ADL dependence; update quality flags; new metadata for product monitoring: 05/11/17
  - Internal NetCDF file compression: 08/09/17

The Enterprise Processing System (EPS) products became operational in NESDIS on July 5, 2017. The products include **Ice** Concentration and Cover, Ice Surface Temperature, Ice Thickness/Age, Snow Cover, and Fractional Snow Cover; Aerosol Detection, Aerosol Optical Depth, Aerosol Particle Size, Volcanic Ash Mass Loading, Volcanic Ash Height; Cloud Mask, Cloud Top Phase, Cloud Type, Cloud Top Height, Cloud Top Temperature, Cloud Top Pressure, Cloud Optical Depth, Cloud Particle Size Distribution, Cloud Liquid Water, and Cloud Ice Water Path.

In addition to the science improvement gained by the development of the Enterprise (NOAA-unique) products, they also demonstrate NOAA's goal of enterprise solutions by employing same algorithms for POES and GOES satellite systems.

VIIRS Sea Surface Temperature EDR

SST EDR Lead: Alex Ignatov

Algorithm Highlights:

- **Advanced Clear-Sky Processor for Oceans (ACSPO) –NOAA Enterprise SST Algorithm**
  - Day: M15 & M16 (10.8 & 12 μm); M5 & M7 for cloud detection
  - Night : M12 (3.7 μm), M15 & M16
  - Regression trained on global matchups
  - Applies to AVHRR, MODIS, VIIRS, ABI
- Output format: netcdf4. 10 min granule
- Spatial Resolution: 0.74 km at Nadir

Product	Reproc Algorithm Version	Reprocessed Data Availability		Reprocessing Status
		Start Date	End Date	
VIIRS SST	ACSPO 2.40 RAN1	2/1/2012	12/6/2015	✓ FTP Site
	ACSPO 2.41 RAN2	TBD	TBD	
Data Location	ftp://ftp.star.nesdis.noaa.gov/pub/socd2/coastwatch/sst/ran/viirs/snpp			

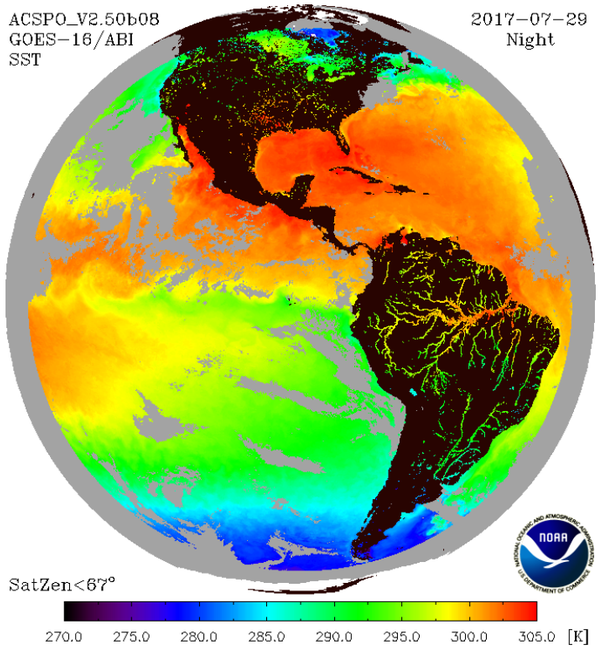
Cal Val Maturity:

Beta	Provisional	Validated
Feb-2013	Jan-2014	Sep-2014

Performance:

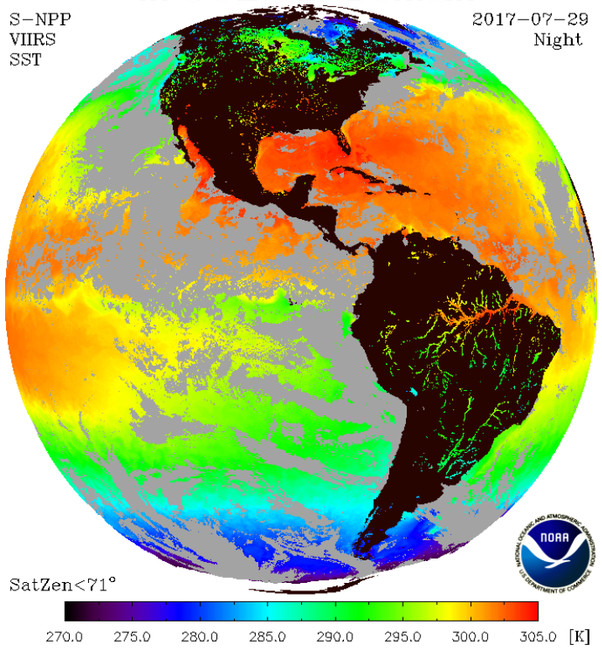
Attribute	Requirement	Day[2]	Night[2]
Accuracy[1]	0.2 K	0.06	0.02
Precision[1]	0.6 K	0.48	0.38

GOES-16 Night SST Composite



- Enterprise ACSPO algorithm applied to G16
- ABI composite covers larger domain, due to 15 min refresh rate

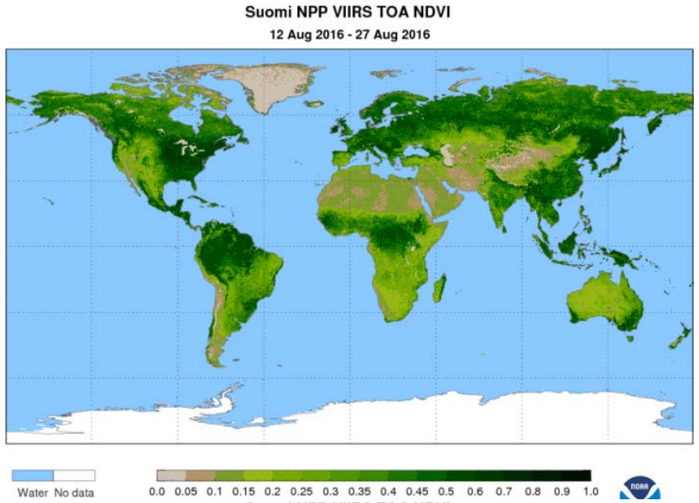
VIIRS Night SST Composite In GOES-16 Domain

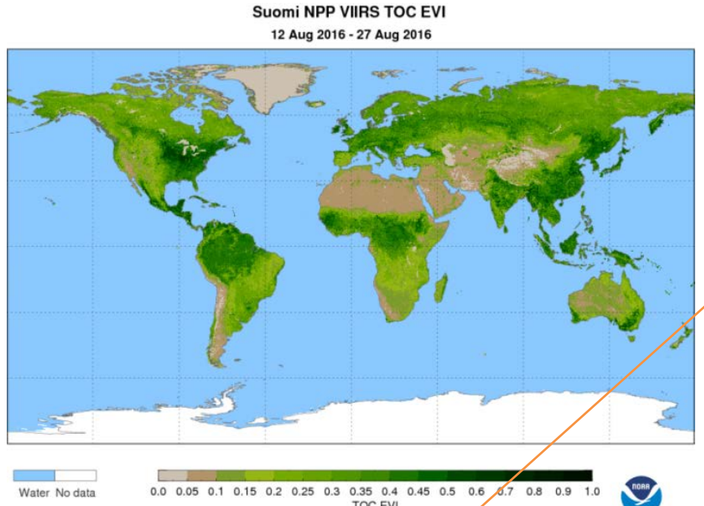


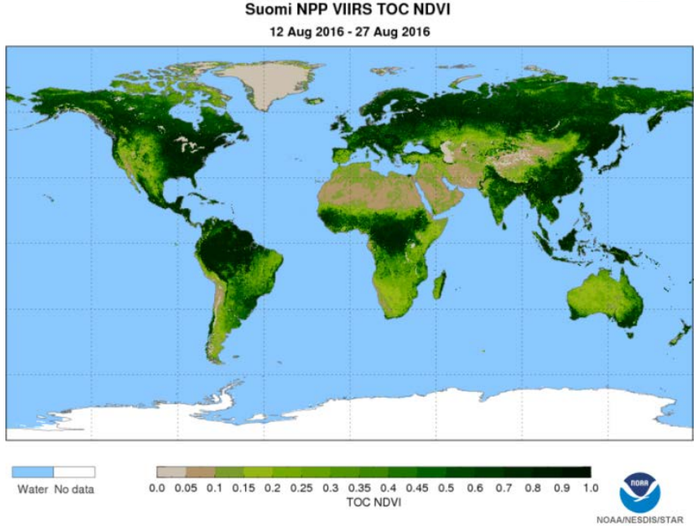
- VIIRS SST composite in G16 domain
- Large areas are cloudy during S-NPP overpass @ 1:30 am

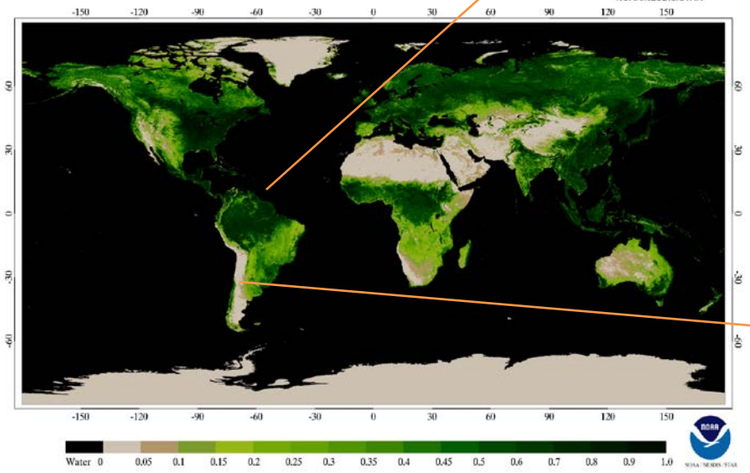
Enterprise Algorithm for Vegetation Products (EAVP)

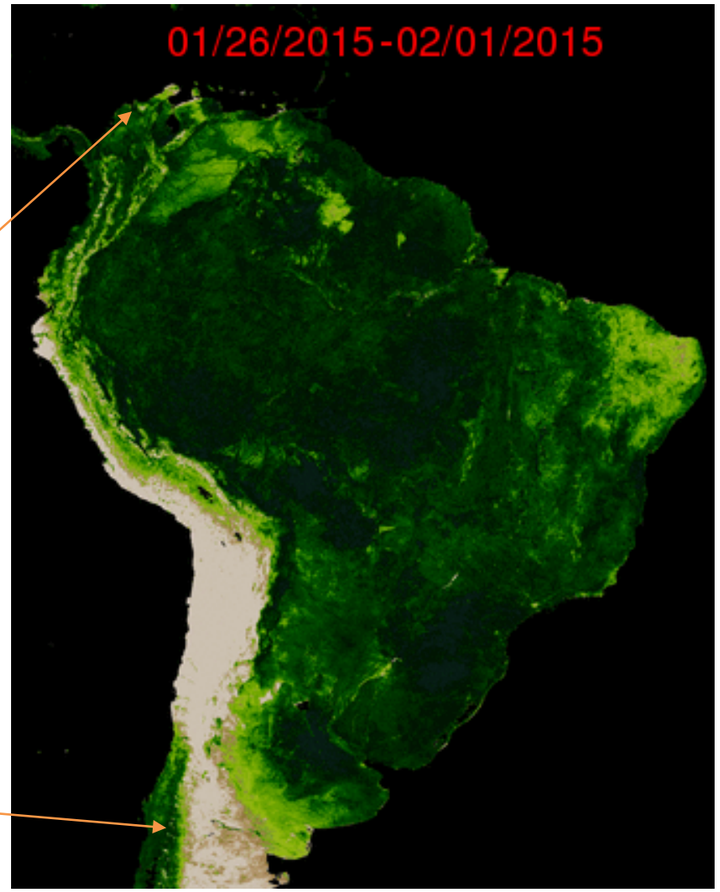
Global gridded products in Lat/Lon projection; Spatial resolution: 1 km (0.009 degree); Temporal resolution: daily, weekly, and bi-weekly; Output File Format: NetCDF4; Ingest the enterprise versions of the VIIRS SDR, CM, SR, and AOT datasets











Plot made by Dr. Zhengyan Jiang

S-NPP Enterprise Data Products (EDRs Only)

Note: Does not include VIIRS Imagery EDRs because they will be processed in IDPS

Enterprise		
Aerosol Detection (VIIRS)	Global Surface Type (VIIRS)*	Rainfall Rate (ATMS)
Active Fires (VIIRS)	Green Vegetation Fraction (VIIRS)	Sea Ice Characterization (AMSR-2)
Aerosol Optical Depth(VIIRS)	Ice Age/Thickness (VIIRS)	Sea Surface Temperature (AMSR-2)
Aerosol Particle Size (VIIRS)	Ice Concentration (VIIRS)	Sea Surface Temperature (VIIRS)
Albedo (Surface) (VIIRS)	Ice Concentration (ATMS)	Sea Surface Wind Speed (AMSR-2)
AMSR Calibrated Sensor Data (AMSR-2)	Ice Surface Temperature (VIIRS)	Snow Cover/Depth (AMSR-2)
Atmospheric Vertical Moisture Profile (CrIS/ATMS)	Imagery (AMSR-2)	Snow Cover (ATMS)
Atmospheric Vertical Temperature Profile (CrIS/ATMS)	Imagery (ATMS)	Snow Cover (VIIRS)
Carbon Dioxide (CO) (CrIS)**	Infrared Ozone Profile (CrIS)	Snow Water Equivalent (ATMS)
Carbon Monoxide (CO2) (CrIS)**	Land Surface Emissivity (ATMS)	Snow Water Equivalent (AMSR-2)
Cloud Cover/Layers (VIIRS)	Land Surface Temperature (VIIRS)	Soil Moisture (AMSR-2)
Cloud Height (Top and Base) (VIIRS)	Land Surface Temperature (ATMS)	Surface Reflectance (VIIRS)
Cloud Liquid Water (AMSR-2)	Methane (CH4) (CrIS)**	Surface Type (AMSR-2)
Cloud Liquid Water (ATMS)	Moisture Profile (ATMS)	Temperature Profile (ATMS)
Cloud Mask (VIIRS)	Ocean Color/Chlorophyll (VIIRS)	Total Precipitable Water (AMSR-2)
Cloud Optical Depth (VIIRS)	Outgoing Longwave Radiation (CrIS)	Total Precipitable Water (ATMS)
Cloud Particle Size Distribution (VIIRS)	Ozone Nadir Profile (OMPS-N)	Vegetation Indices (VIIRS)
Cloud Phase (VIIRS)	Ozone Total Column (OMPS-N)	Vegetation Health Index Suite (VIIRS)
Cloud Top Pressure (VIIRS)	Polar Winds (VIIRS)	Volcanic Ash Detection And Height (VIIRS)
Cloud Top Temperature (VIIRS)	Precipitation (Type/Rate)(AMSR-2)	

Already available in ESPC	Implementation in NDE planned in 2017

*Global (annual) Surface Type is generated by STAR

S-NPP SDR Reprocessing Status

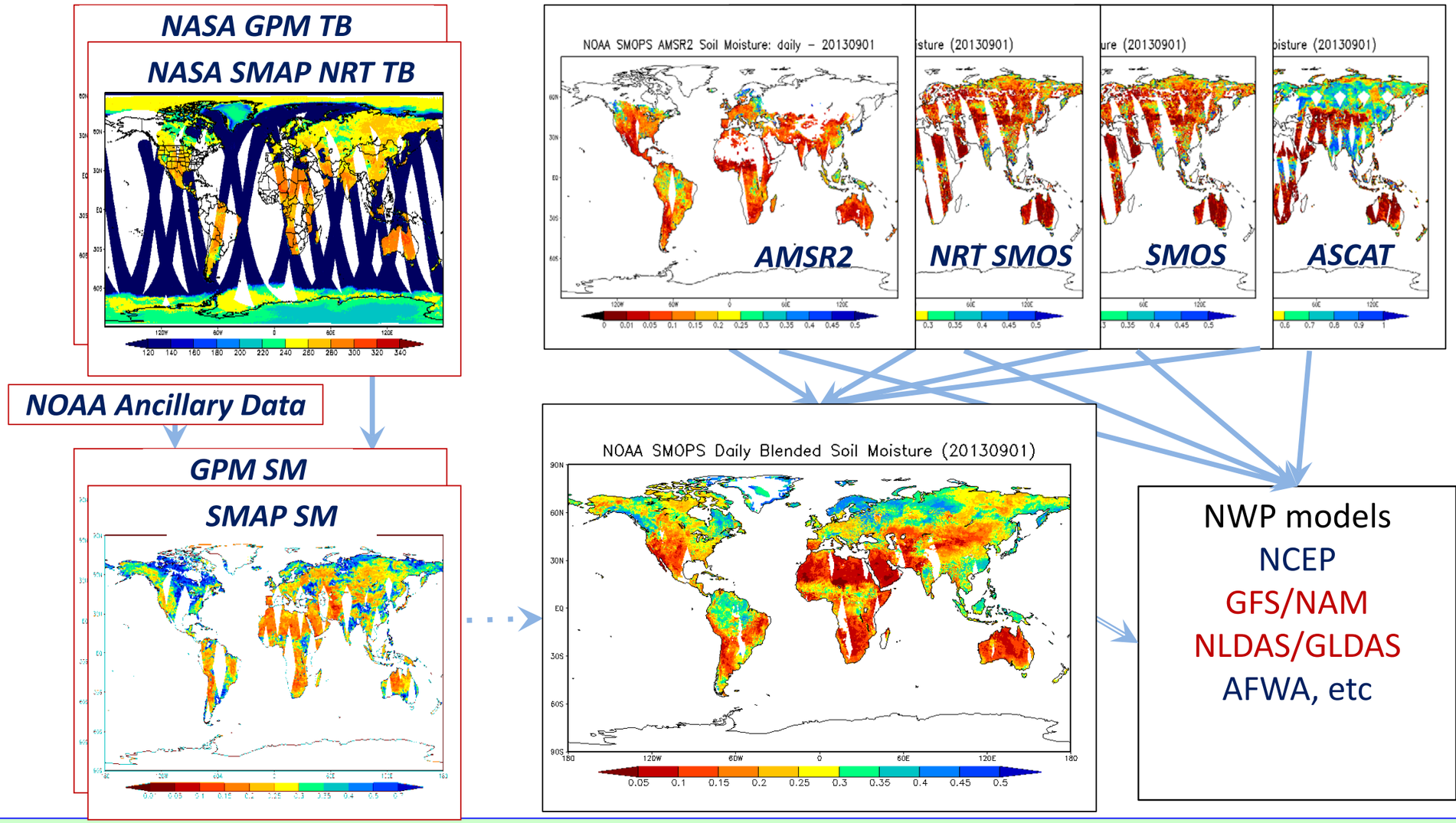
Product	POC	Reproc Algorithm Version	Data Volume	Processing Speed	Reprocessed Data Availability		Reprocessing Status
					Start Date	End Date	
ATMS SDR	Mark Liu	ATMS/V1.0 ADL 4.2_Mx8.11 with updates	500 GB/year	5 hours/year	11/8/2011	8/31/2016	✓ Ready for MLP
CrIS SDR	Yong Chen	CrIS-TSR/V1.0	16 TB/year	1 day/year	2/20/2012	8/31/2016	✓ Ready for MLP
		CrIS-FSR/V1.0	TBD	TBD	TBD	TBD	✓ Ready /TBD
VIIRS SDR	Changyong Cao	VIIRS/V1.0	200 TB/year	10 days/year	1/1/2012	7/31/2016	✓ Ready /TBD
OMPS SDR	Trevor Beck	OMPS-TC	1 TB/year	1 day/year	1/26/2012	9/9/2015	✓ Ready for MLP
		OMPS-NM	86 GB/year	2.8 hours/year	1/26/2012	9/9/2015	✓ Ready for MLP

Reprocessing Readiness					
Ready for reprocessing/Reprocessed	Ready for reprocessing/Decision pending	Closely ready for reprocessing with a version. DAP delivered, review process on or IDPS MX Build with fixes	Reprocessing version yet to go through review process	Reprocessing plans to be defined.	N/A

EDR Re-processing Brown-bag Session: Tuesday 12:30-1:30pm, Aug 15 2017, Conference Center, POC: Dr. Murty Divakarla

Blended Products

NESDIS Soil Moisture Operational Product System (SMOPS)



*NESDIS SMOPS ingests operationally soil moisture product from **JPSS/GCOM-W1** and **blend** them with soil moisture retrievals from SMOS, SMAP, GPM, & ASCAT; provides inputs to NWP models*

Priorities Moving Forward

- **Ensure Cal/Val Team Readiness for JPSS-1**
  - Ensure the SDR/EDR algorithms and cal val tools are fully tested and characterized with JPSS-1 testing data
  - Proactively preparing for sensor waivers' mitigation
  - Implement code adjustments to meet JPSS-1 requirements
  - Refine and update JPSS-1 Cal Val plans

- **Continue Support for Suomi NPP Mission Objectives**
  - Provide Suomi NPP data products to support NOAA's operational missions.
  - Develop plans for reprocessing mission long data records with validated enterprise algorithms
  - Continue to work with users to optimize the use of JPSS products

Summary

- ✓ Most of the S-NPP data products have reached the Validated maturity level and are in general with accuracy similar (or superior) to existing products.
- ✓ Great progress has been made for replacement and upgrade of current S-NPP algorithms with NOAA enterprise algorithms and planning reprocessing SDRs/EDRs with matured algorithms.
- ✓ Demonstrated pre-operational evaluation of JPSS-1 science data products algorithms mitigating J1 instrument waivers, and new algorithms for JPSS-1 instrument upgrades.
- ✓ Closely engaged with the JPSS-1 launch readiness testing activities, JPSS-1 test data through the SDR and EDR algorithms, as well as ICVS and long term monitoring systems.
- ✓ With improved knowledge of the pre-launch characterization of the J1 instruments and by leveraging the S-NPP Cal/Val experience, the Cal/Val activities for JPSS-1 are expected to be much more accelerated.

https://www.star.nesdis.noaa.gov/star/meeting_2017JPSSAnnual_agenda.php

	Monday 14 August	Tuesday 15 August	Wednesday 16 August				Thursday 17 August				Friday 18 August
830 - 900		Innovative Science	Innovative Science				Innovative Science				
0915 - 1015	Keynotes + Program Overviews	ATMS	NUCAPS	Ocean Color	Ozone	Clouds	Trace Gases	SST	Land	Aerosols	Transition to Operations
1015 - 1030	Break	Break	Break				Break				Break
1030 - 1200	SDR / EDR Overviews	CrIS	NUCAPS	Ocean Color	Ozone	Clouds	Trace Gases	SST	Land	Aerosols	Blended Products
1200 - 1315	Lunch	Lunch	Lunch				Lunch				
1315 - 1445	Advanced Applications	OMPS	MIRS	Ocean Color		Imagery	Trace Gases	SST	Land	Cryo	
1445 - 1530	Break	Break	Break				Break				
1530 - 1700	VIIRS	Cloud Mask	GCOM	Ocean Color		Imagery	Trace Gases	SST	Land	Cryo	
1700 - 1930		Poster Session / Reception at ESSIC									

Session Locations:

- NCWCP Auditorium
- NCWCP Conference Center
- ESSIC 4102
- NCWCP Conference Room 2552-53
- ESSIC 3rd Floor

ESSIC is located across the street from NCWCP in the MSquare Bldg., 5825 University Research Court

Thank You and Hope you Enjoy the Meeting!