NOAA Satellite Conference

Dr. Stephen Volz, Assistant Administrator

NOAA

Satellite & Information Services

July 17, 2017

Conference Goals and Objectives

1. Enable enhanced interaction, coordination and communication between and among environmental satellite programs and their users.

2. Improve user access, reception and readiness for data, technology and applications from current and future polar-orbiting and geostationary environmental satellite constellations.

3. Improve use of environmental satellite data by leveraging science advances, data fusion, blended products, decision aids, advanced visualization, training, instrument and product calibration and validation, and new data assimilation techniques

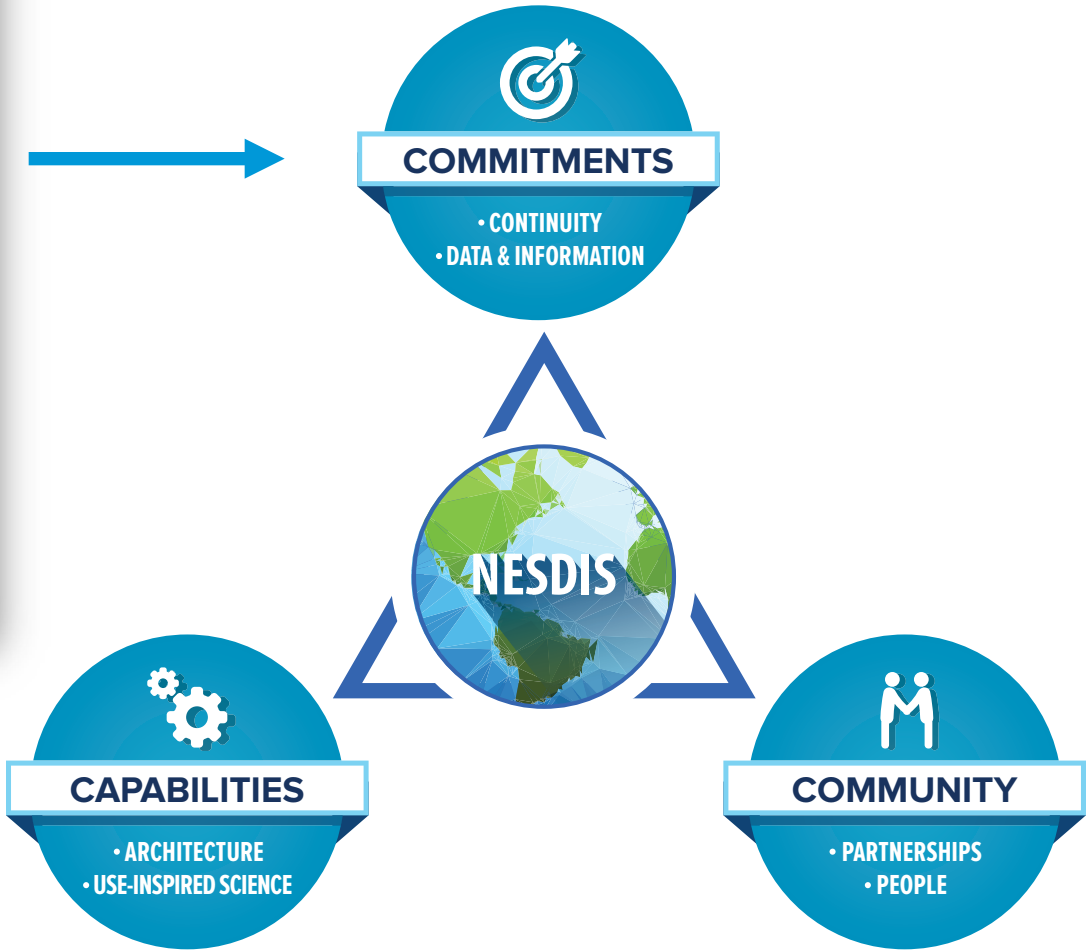
NESDIS Supports NOAA's Mission

NOAA's Top Four Priorities:

1. To provide information and services to make communities more resilient
2. To evolve the National Weather Service
3. To invest in observational infrastructure
4. To achieve organizational excellence

The NESDIS Strategic Plan

Released September 2016

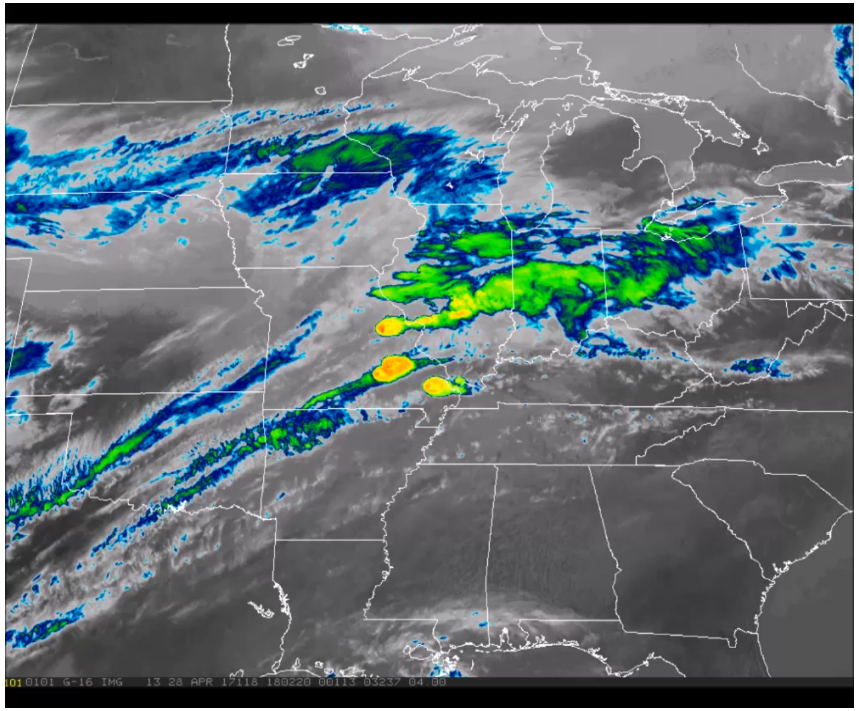


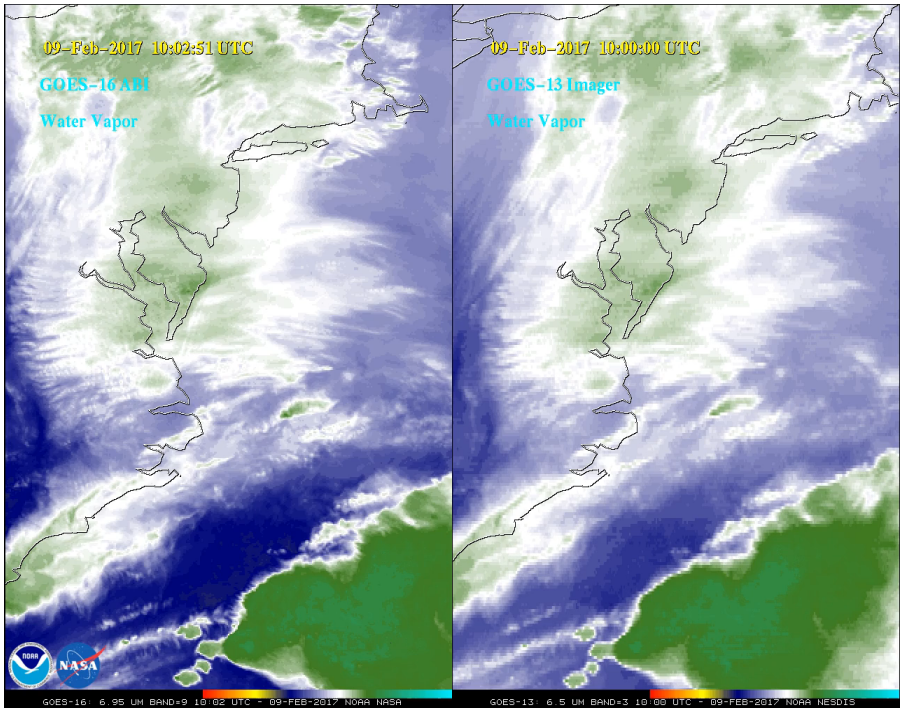

COMMITMENTS
• CONTINUITY
• DATA & INFORMATION

NOAA Observing System

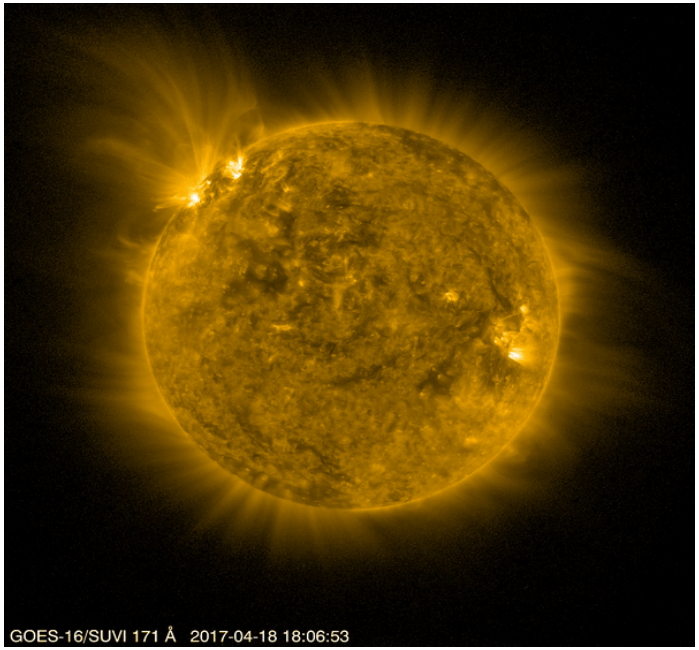

DSCOVR
JASON-3
OPERATIONAL JULY 27, 2016
COSMIC-2
OPERATIONAL JULY 1, 2016
COSMIC-2A - 2018
COSMIC-2B - TBD
GOES-R SERIES
GOES-16 - LAUNCHED NOVEMBER 19, 2016
GOES-S - 2018
GOES-T - 2019
GOES-U - 2025
JPSS SERIES
JPSS-1 - 2017
JPSS-2 - 2021
JPSS-3 - 2026
JPSS-4 - 2031
Planned NOAA Missions

GOES-16 Early Images

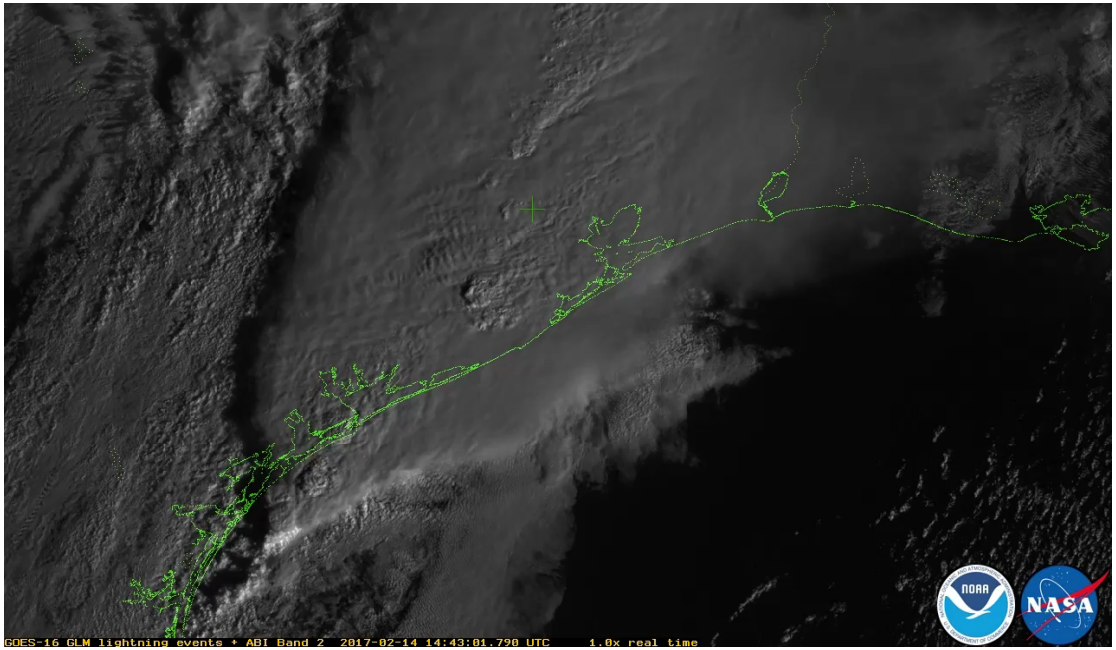




GOES-16 Early Images



Solar eruption observed by SUVI on GOES-16.

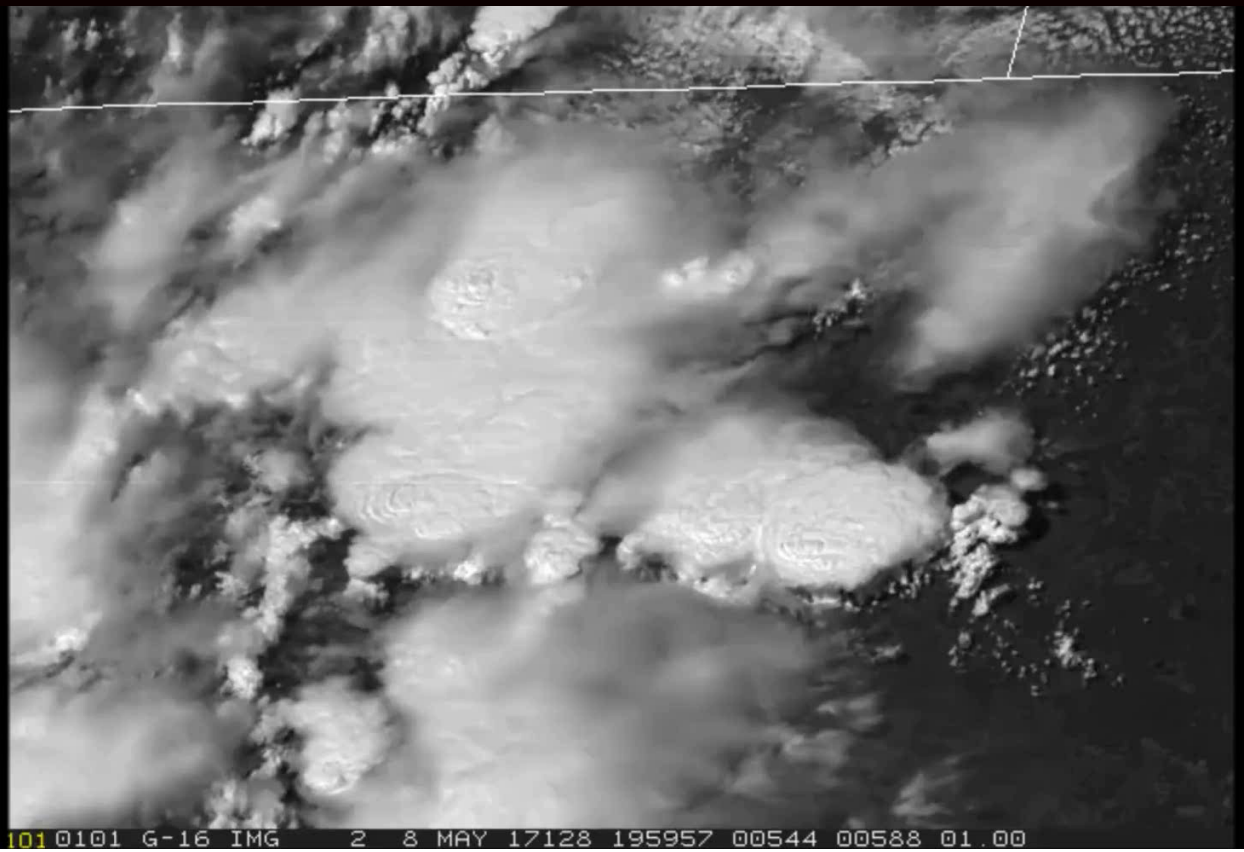


First recordings from GLM on GOES-16.

Proving Ground Experiences (GOES-R)

Super rapid-scan 1-minute mesoscale imagery: *Following storm initiation, forecasters find the high-resolution data allows for careful analysis of overshooting and collapsing tops, the character of the storm anvils (i.e., health of the storm) and the identification of convectively generated outflows.*

Denver Hailstorm caused an estimated $1B damage on May 8, 2017



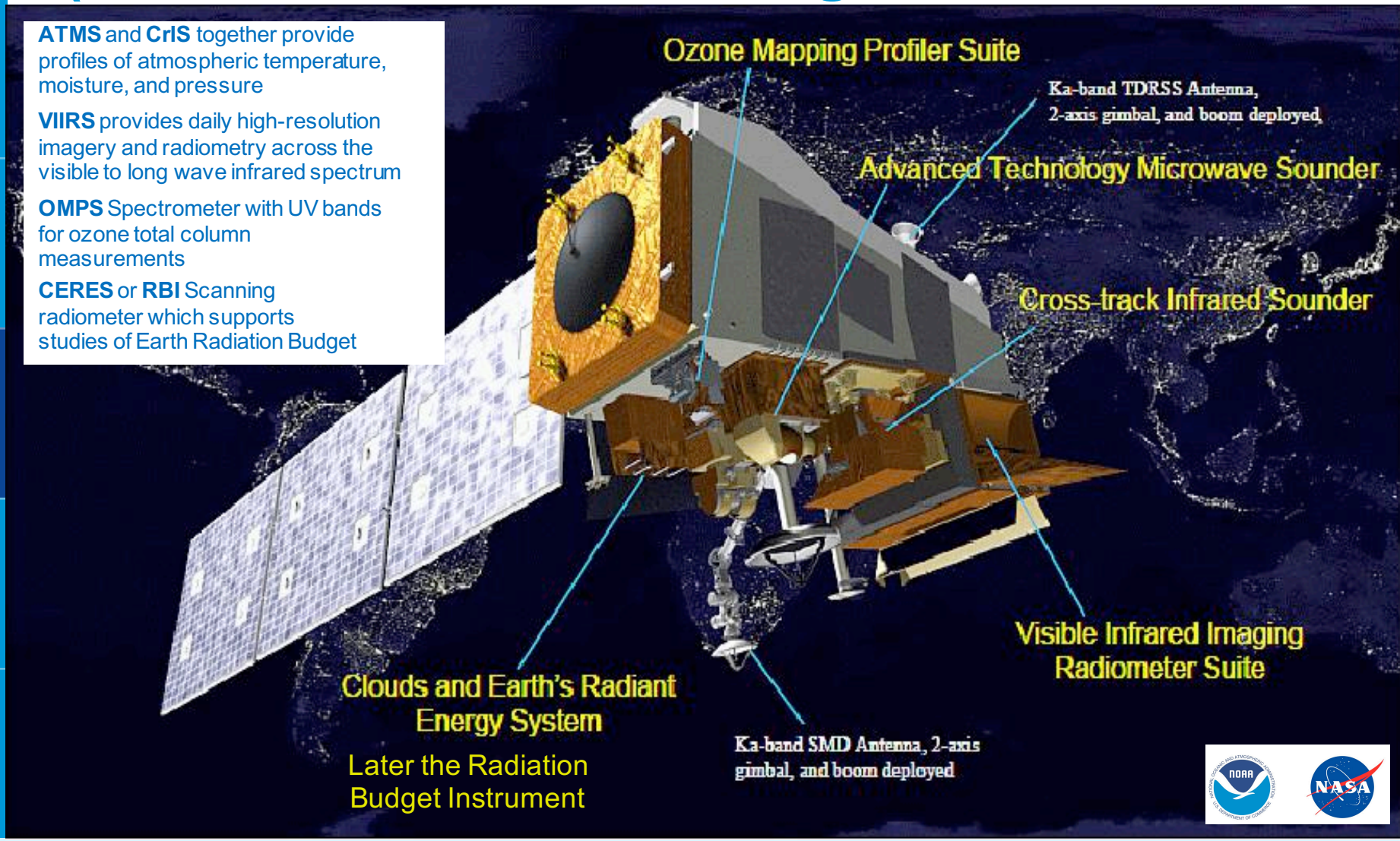
JPSS-1: Coming Soon
(Series will extend through ~2038

ATMS and **CrIS** together provide profiles of atmospheric temperature, moisture, and pressure

VIIRS provides daily high-resolution imagery and radiometry across the visible to long wave infrared spectrum

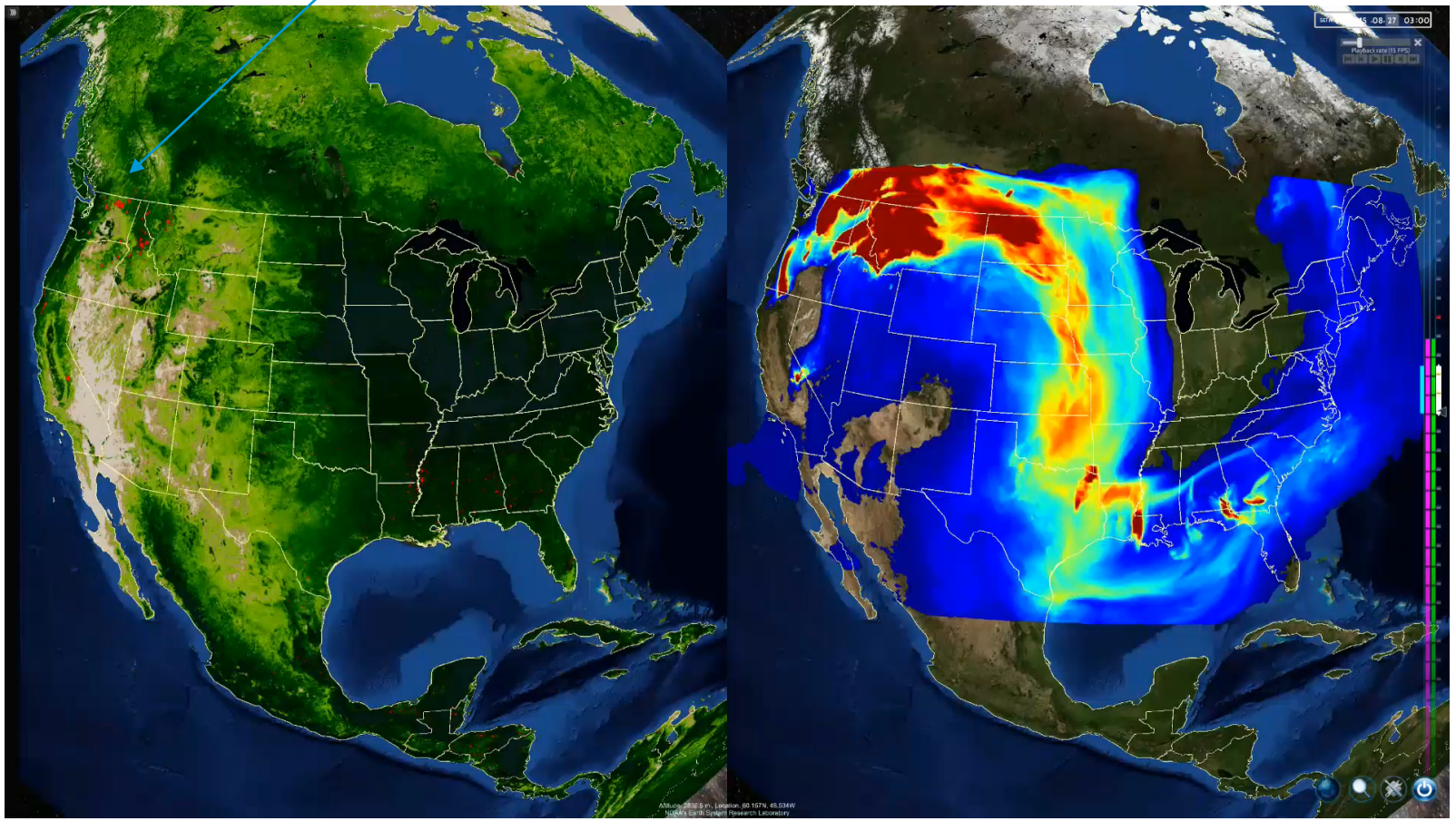
OMPS Spectrometer with UV bands for ozone total column measurements

CERES or **RBI** Scanning radiometer which supports studies of Earth Radiation Budget

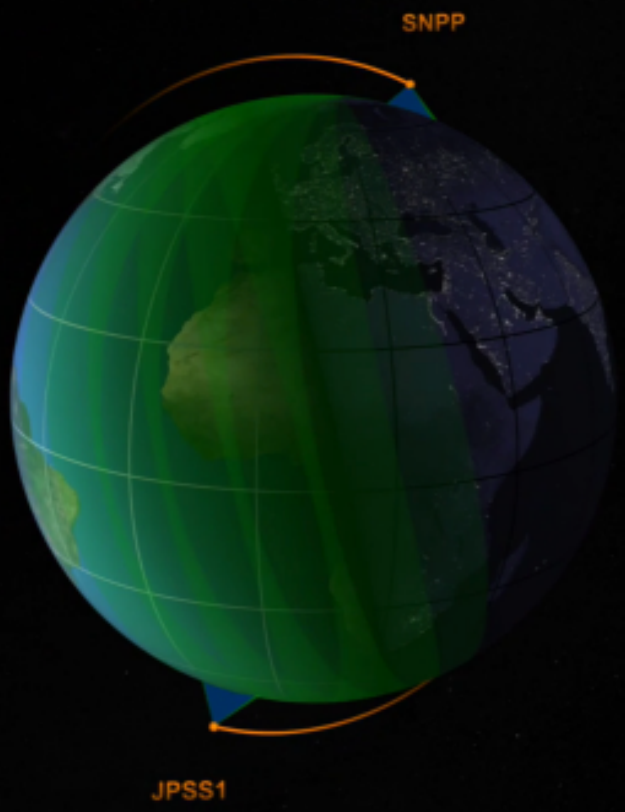


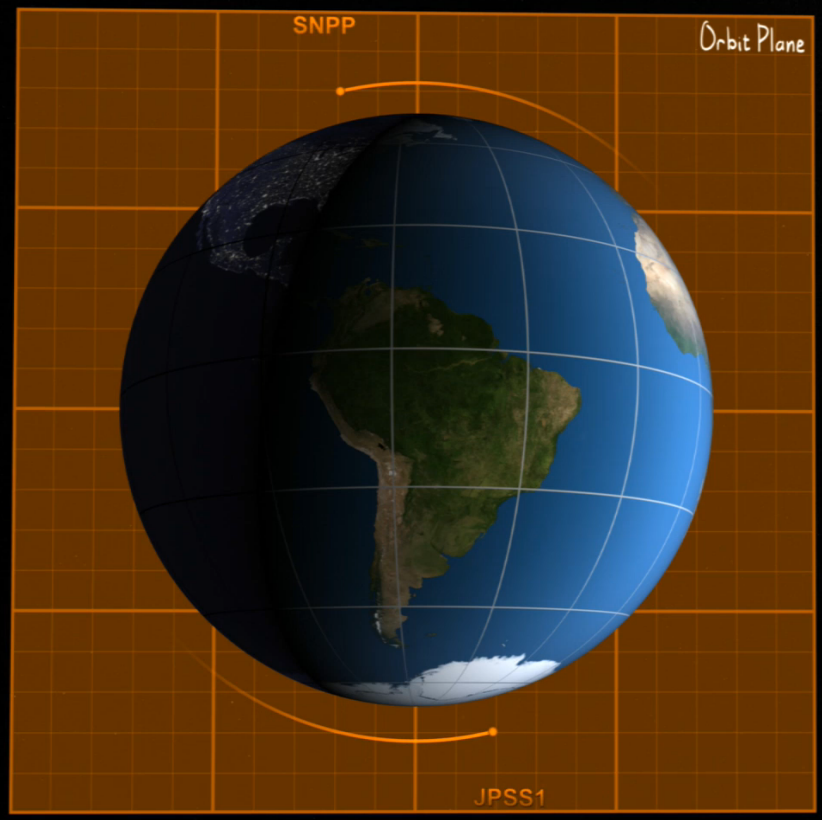
Proving Ground Experiences (JPSS)

Applying VIIRS fire radiative power to improve smoke forecast to protect public from harmful smoke inhalation and reduced visibility

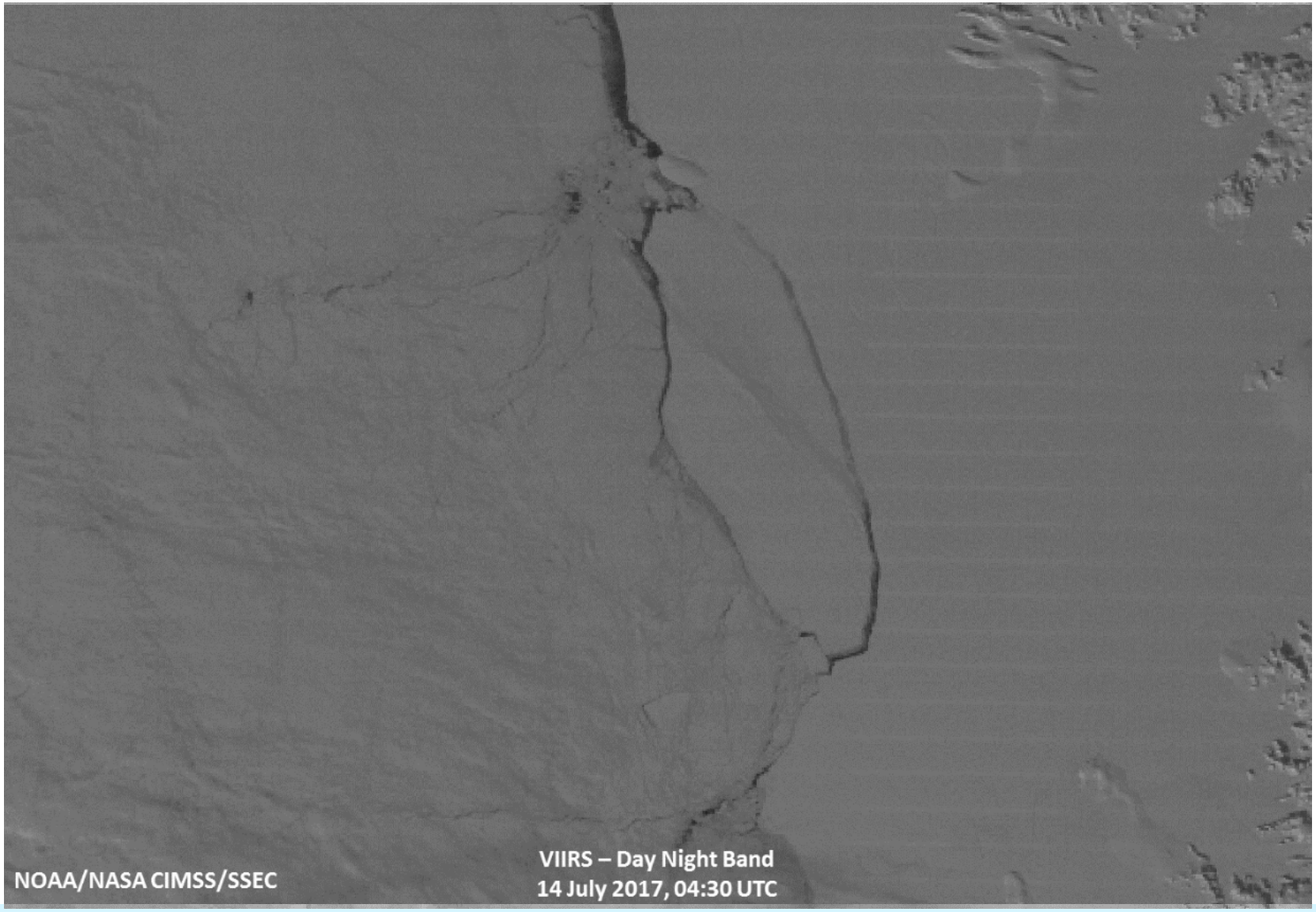


JPSS-1 and Suomi-NPP will Fly Together





Recent Antarctic Ice Shelf Separation



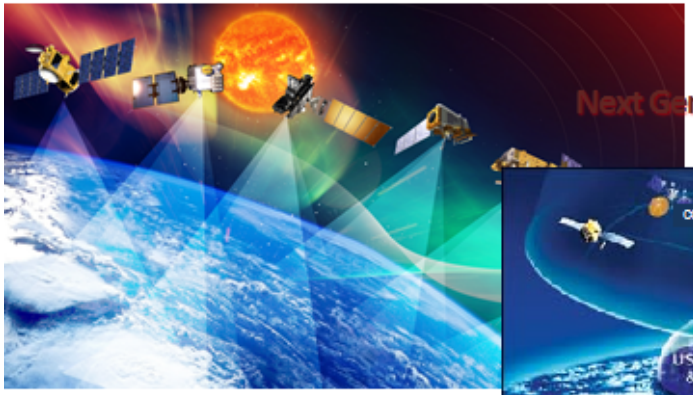
CAPABILITIES

- ARCHITECTURE
- USE-INSPIRED SCIENCE

Architecture of the Future

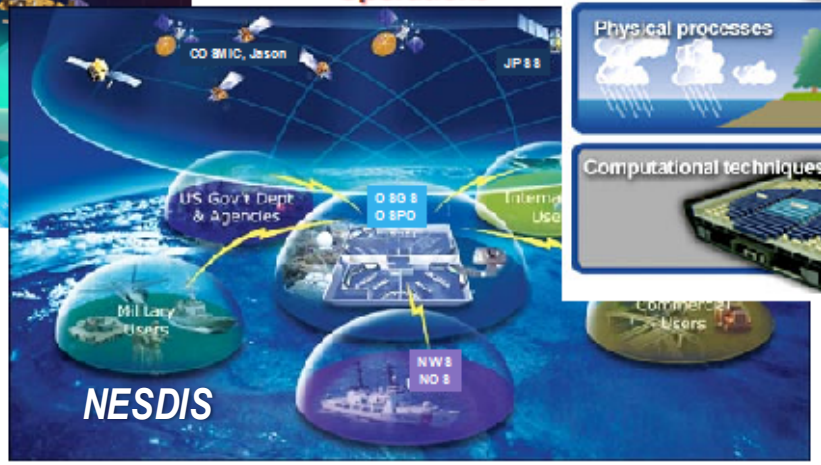
Develop a space-based observing enterprise that is flexible, responsive to evolving technologies, and economically sustainable.
--FY15 NOAA Annual Guidance

Global Earth Observing Satellite System

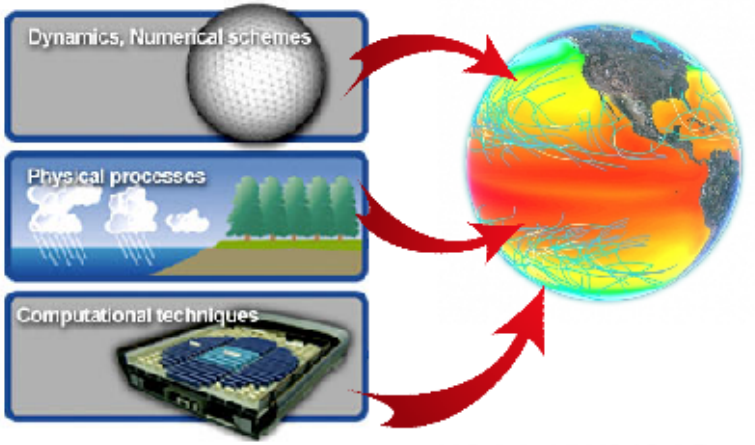


NESDIS & Satellite Partners

Next Generation Integrated & Adap Operations



Integrated & Assimilated Operational Data Flow

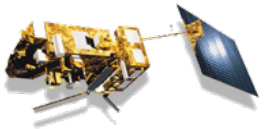


NOAA NWS/OAR & NESDIS & Partners

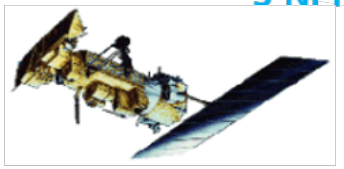
Algorithm and Product Development

S-NPP& JPSS ATMS/CrIS

Megha-Tropiques
SAPHIR

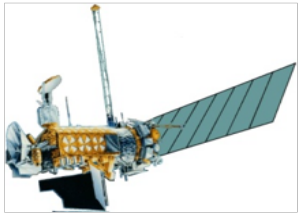


MetOp-A AMSU/MHS/IASI
MetOp-B AMSU/MHS/IASI



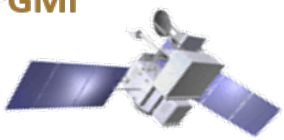
NOAA-18 AMSU/MHS/AVHRR
NOAA-19 AMSU/MHS/AVHRR

Enterprise Algorithms



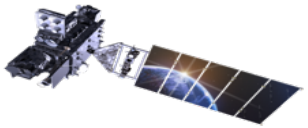
DMSP F16 SSMI/S
DMSP F17 SSMI/S
DMSP F18 SSMI/S

TRMM TMI & GPM GMI



NASA Satellites (MODIS, AIRS..)

GCOM-W1 AMSR2

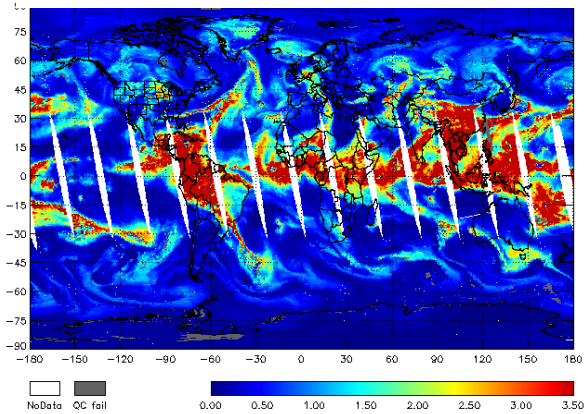


GOES- Series
EUMETSAT Geo Satellites
Himawari-8/9

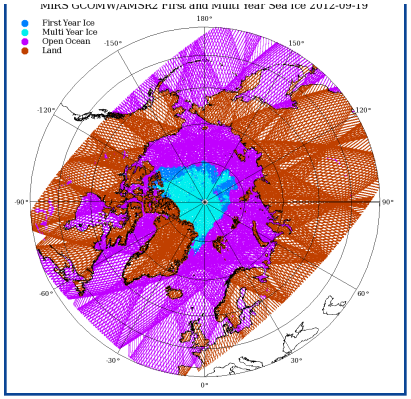
Enterprise Algorithms Apply to a Multitude of Satellites, generating a Variety of Products

Algorithm and Product Development

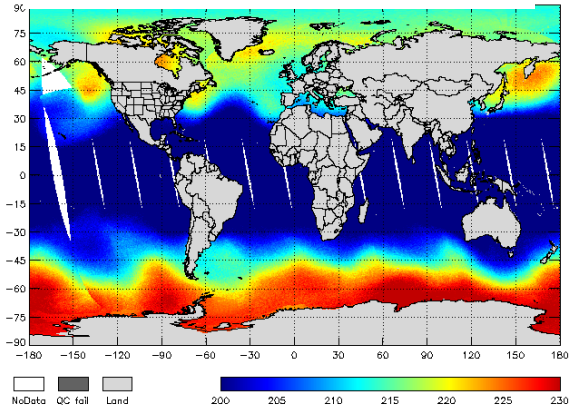
Moisture @ 500 mb From NOAA-18 AMSU/MHS



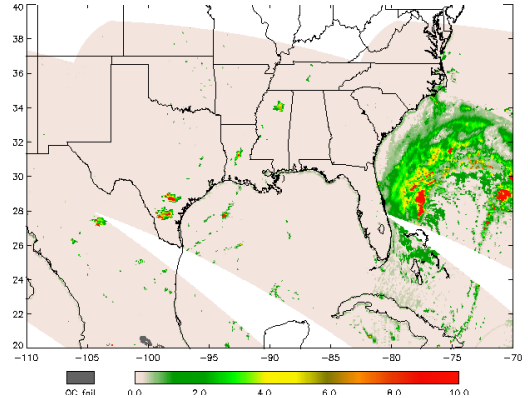
Sea Ice Concentration from GCOM-W AMSR2



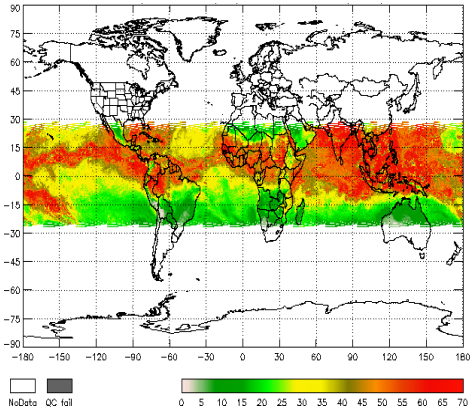
Temperature @ 100 mb From SNPP/ATMS



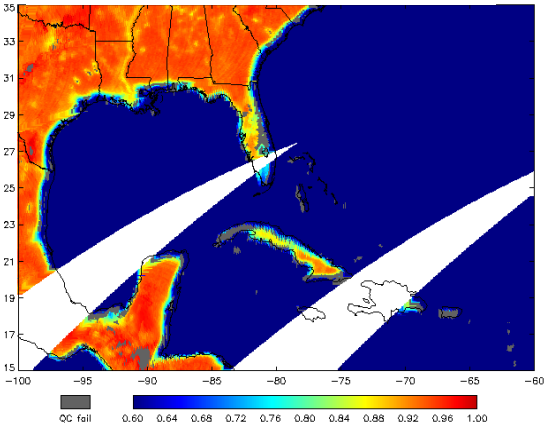
Rainfall rate from TRMM/TMI



TPW from Megha-Tropiques/SAPHIR



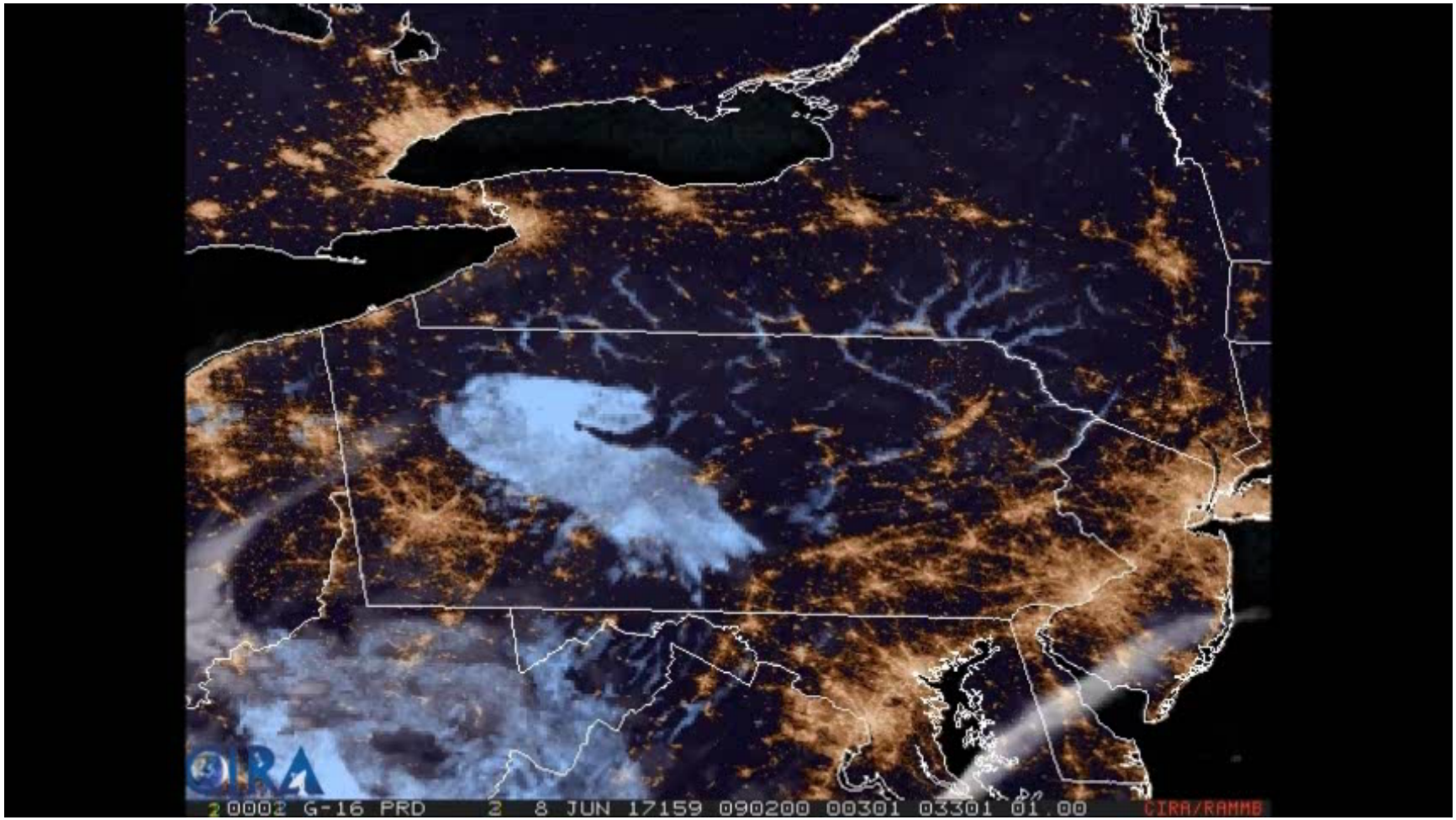
Surface Emissivity from GPM/GMI



Mosaic of geophysical products generated from microwave sensors including AMSU, MHS, ATMS, SAPHIR, TRMM, GPM, GCOM-W using a single enterprise algorithm

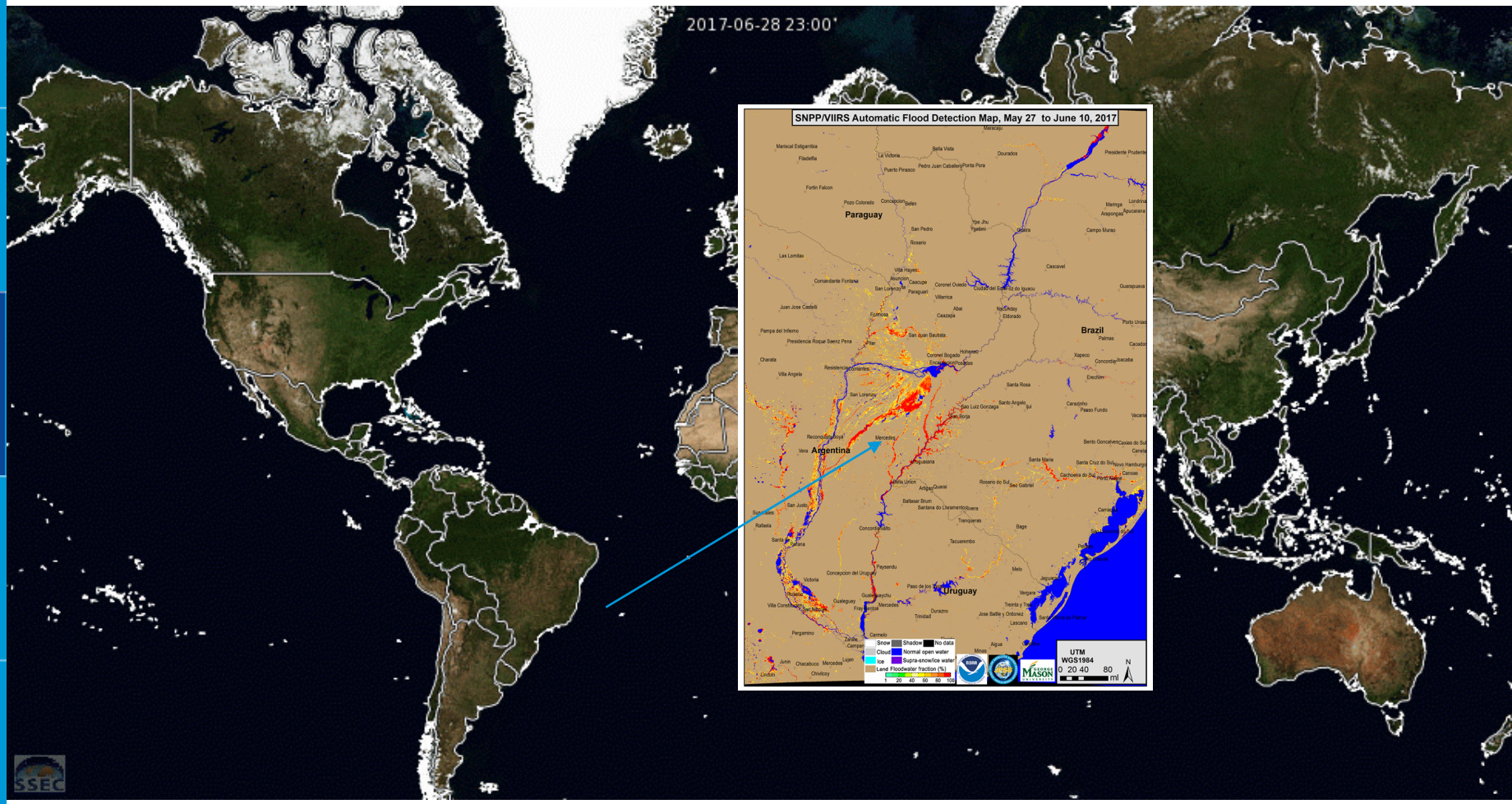
Research Applications Development By Academic Partners (GOES-R)

GeoColor of valley fog dissipation, from CIRA and Colorado State Univ.

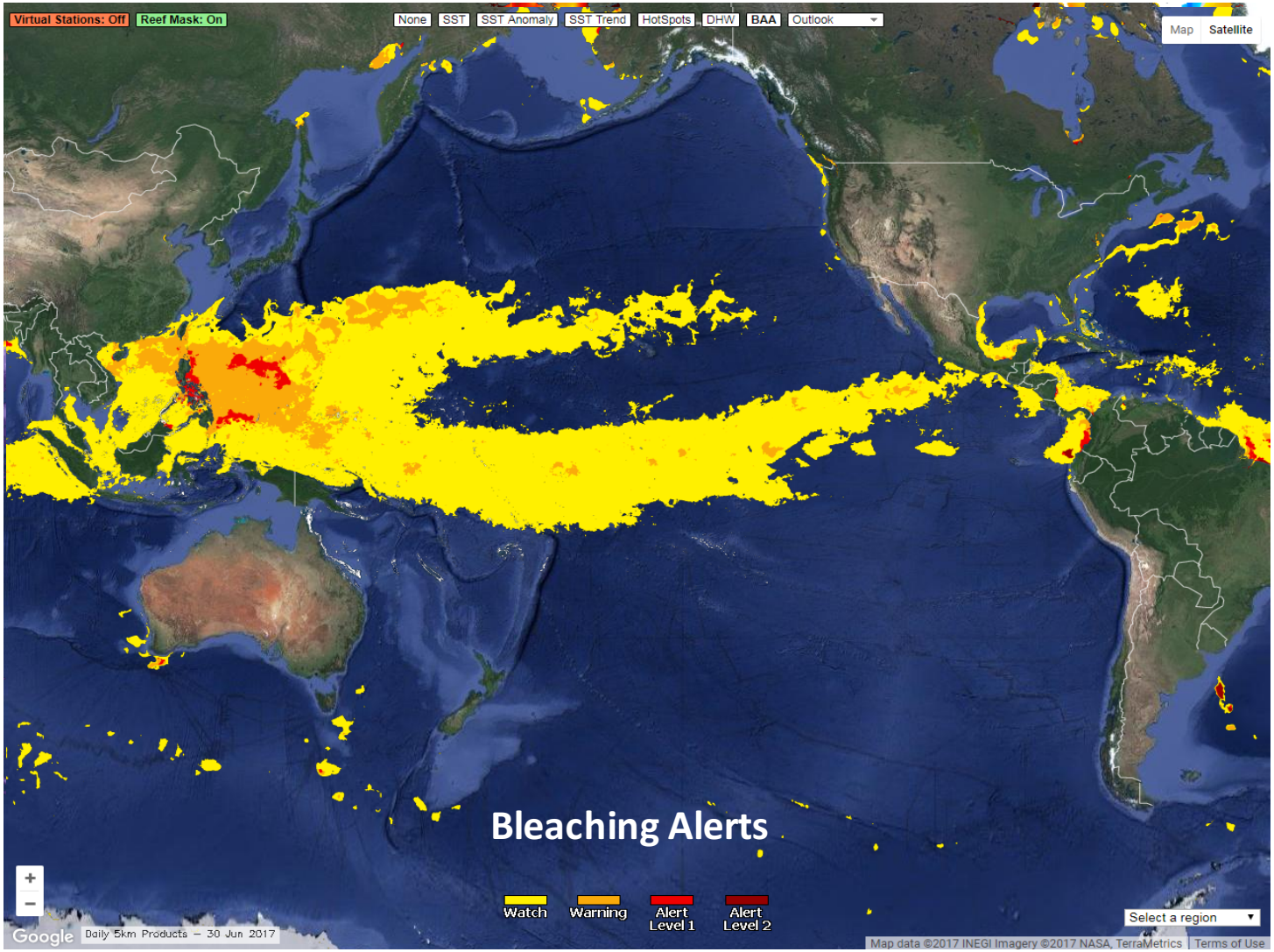


Research Applications Development By Academic Partners (JPSS)

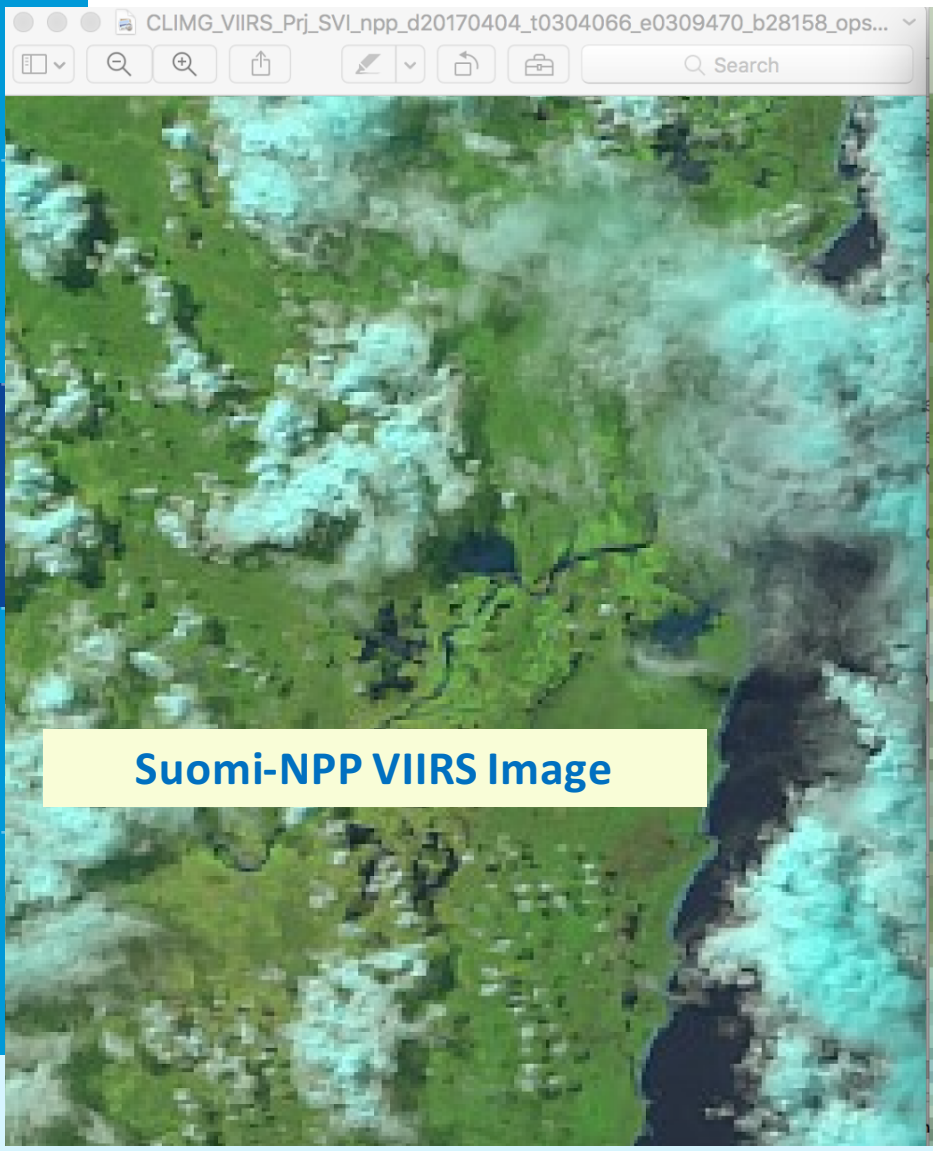
VIIRS Global Flood Maps from GMU and UW

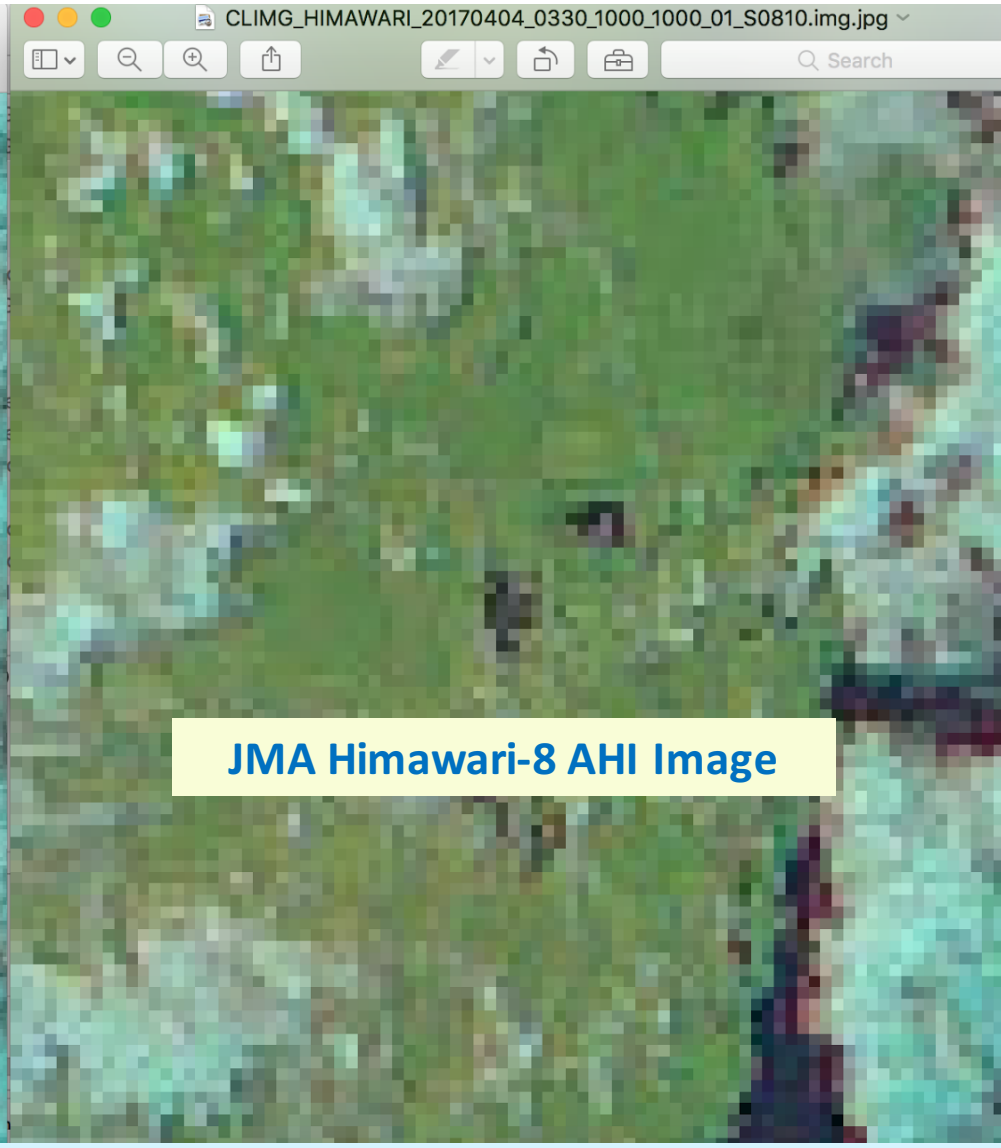


NOAA Coral Reef Watch – Blending Satellite Products



Intregrating LEO and GEO Observations

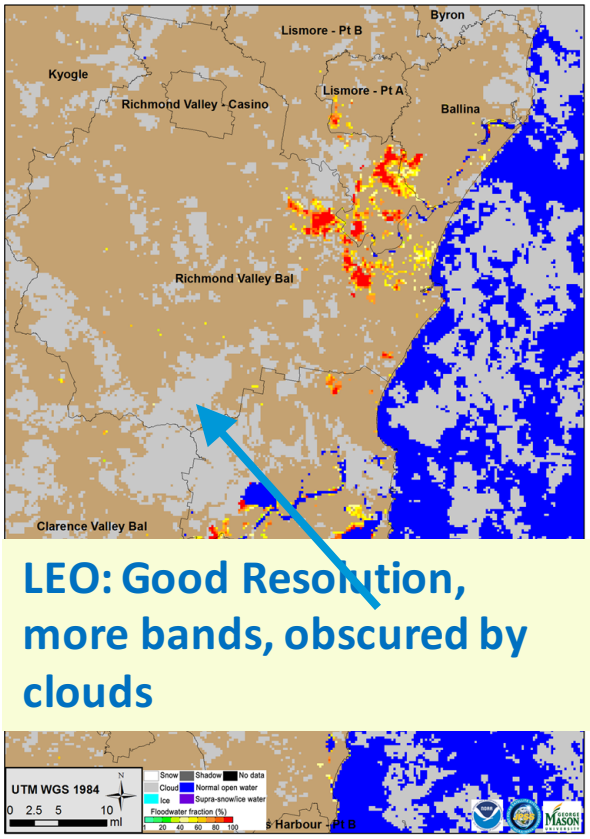




Objective: Integration of Hi-Res LEO observations with constant viewing GEO Imagery

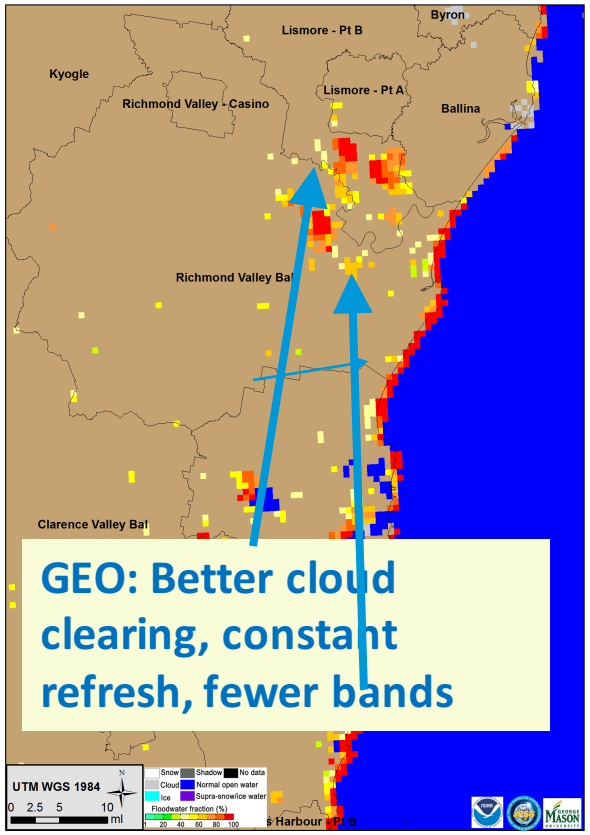
The project aims to develop a GOES-R/ABI 1-km flood product and a blended 30-m flood product from GOES-R/ABI and SNPP/VIIRS imagery. These products will be distributed to assist National Weather Service's River Forecast Centers and National Water Center, and other agencies such as FEMA in flood forecasting, monitoring and mitigation activities.

SNPP/VIIRS Automatic Flood Detection Map in Australia April 02-04 2017



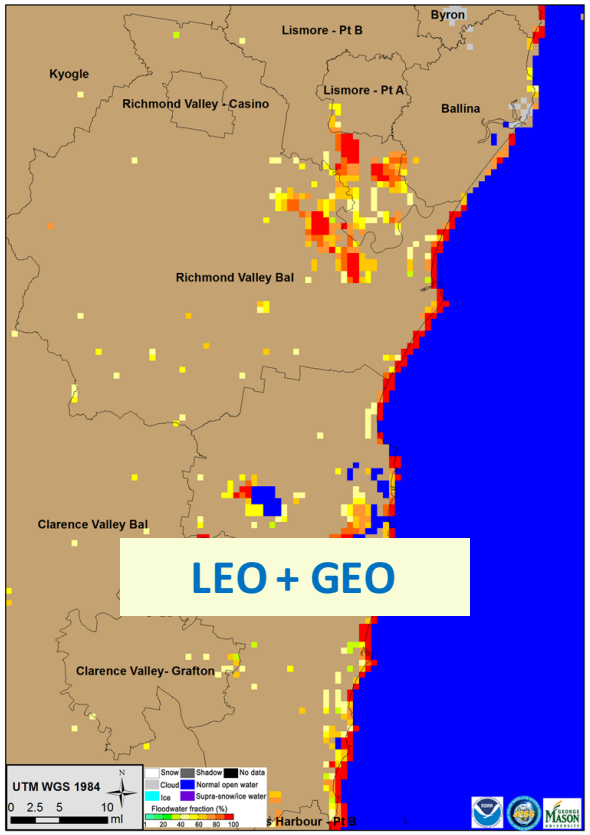
LEO: Good Resolution, more bands, obscured by clouds

Himawari-8 Automatic Flood Detection Map in Australia April 01-04 2017



GEO: Better cloud clearing, constant refresh, fewer bands

Himawari-8 Automatic Flood Detection Map in Australia April 01-04 2017



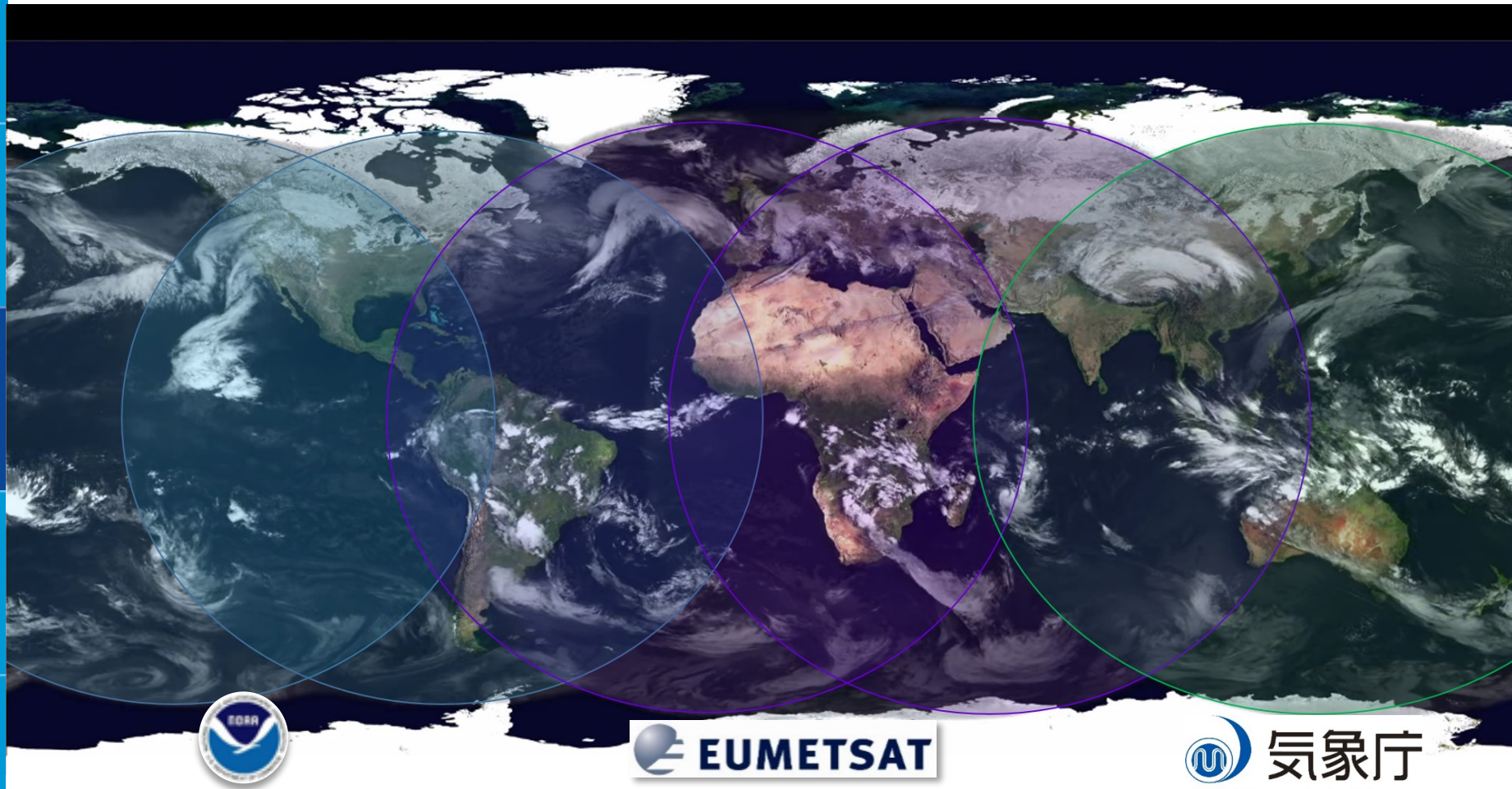
LEO + GEO

Flood initiative is now focusing on the challenges of integrating the strengths of LEO and GEO satellites. The AHI correction to VIIRS was made possible through the efforts of GSICS and the JPSS cal/val team.


COMMUNITY
• PARTNERSHIPS
• PEOPLE

Global Observing System

Observations from Geostationary Orbits



GOES-West (135°W)
GOES-East (75°W)

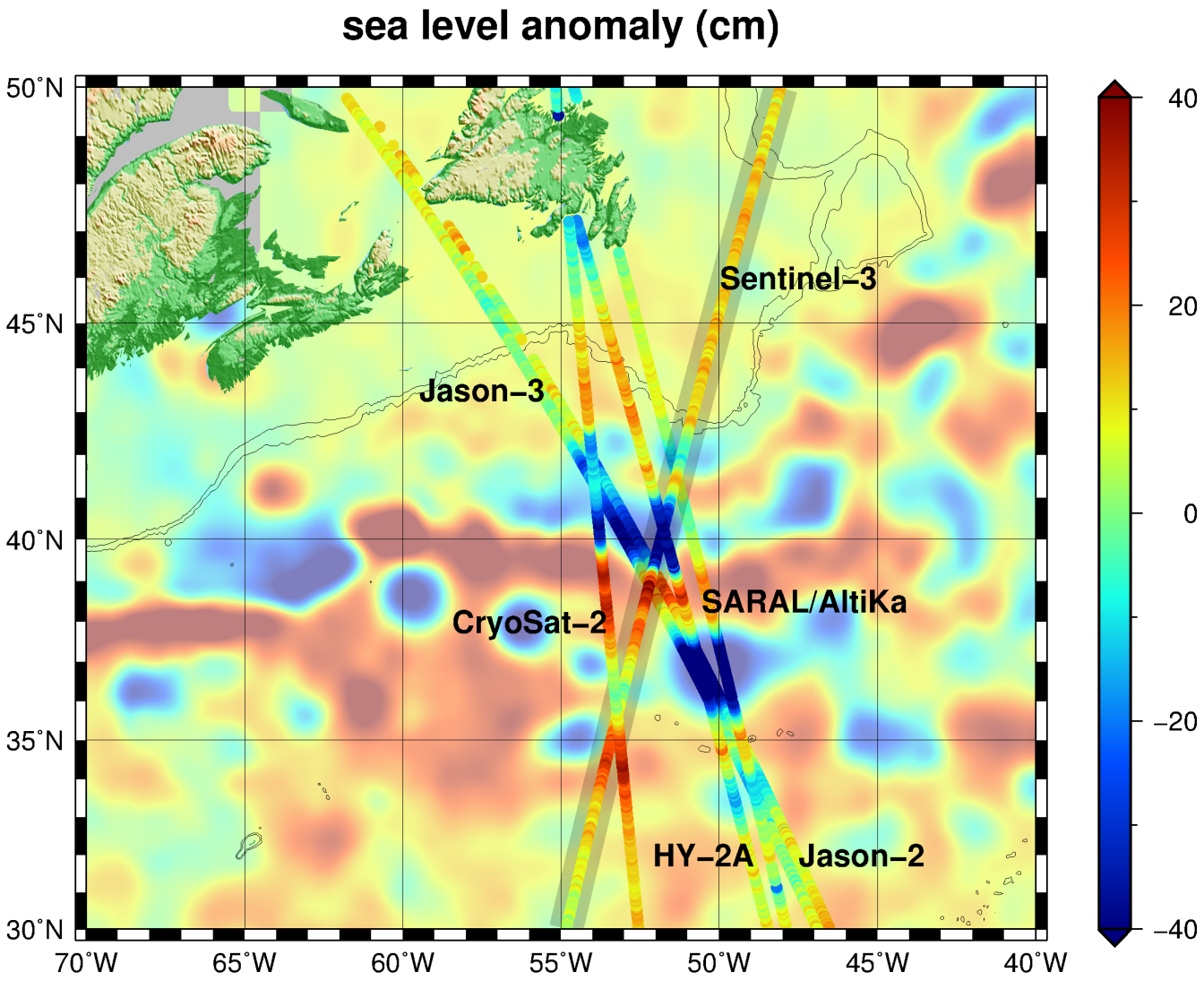
EUMETSAT

Meteosat-10 (0°)
Meteosat-8(41.5 °E)

気象庁
Japan Meteorological Agency

Himawari-8 (140°E)

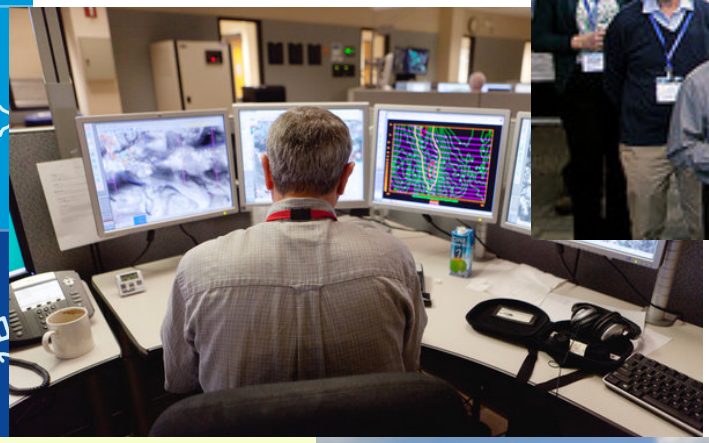
Ocean Altimetry – Global Missions



GEONETCast Americas (GNC-A)

- GNC-A is a regional broadcast serving much of North, Central and South America, and the Caribbean.
- It is a C-Band, DVB-S commercial satellite based broadcast system.
- GNC-A bandwidth is 12 Megabits per Second (Mbps).
- User provided receive systems utilize primarily commercially available off-the-shelf hardware.
- Requires either a 1.8 meter or 2.4 meter antenna in most of the Americas depending on location and sight lines.

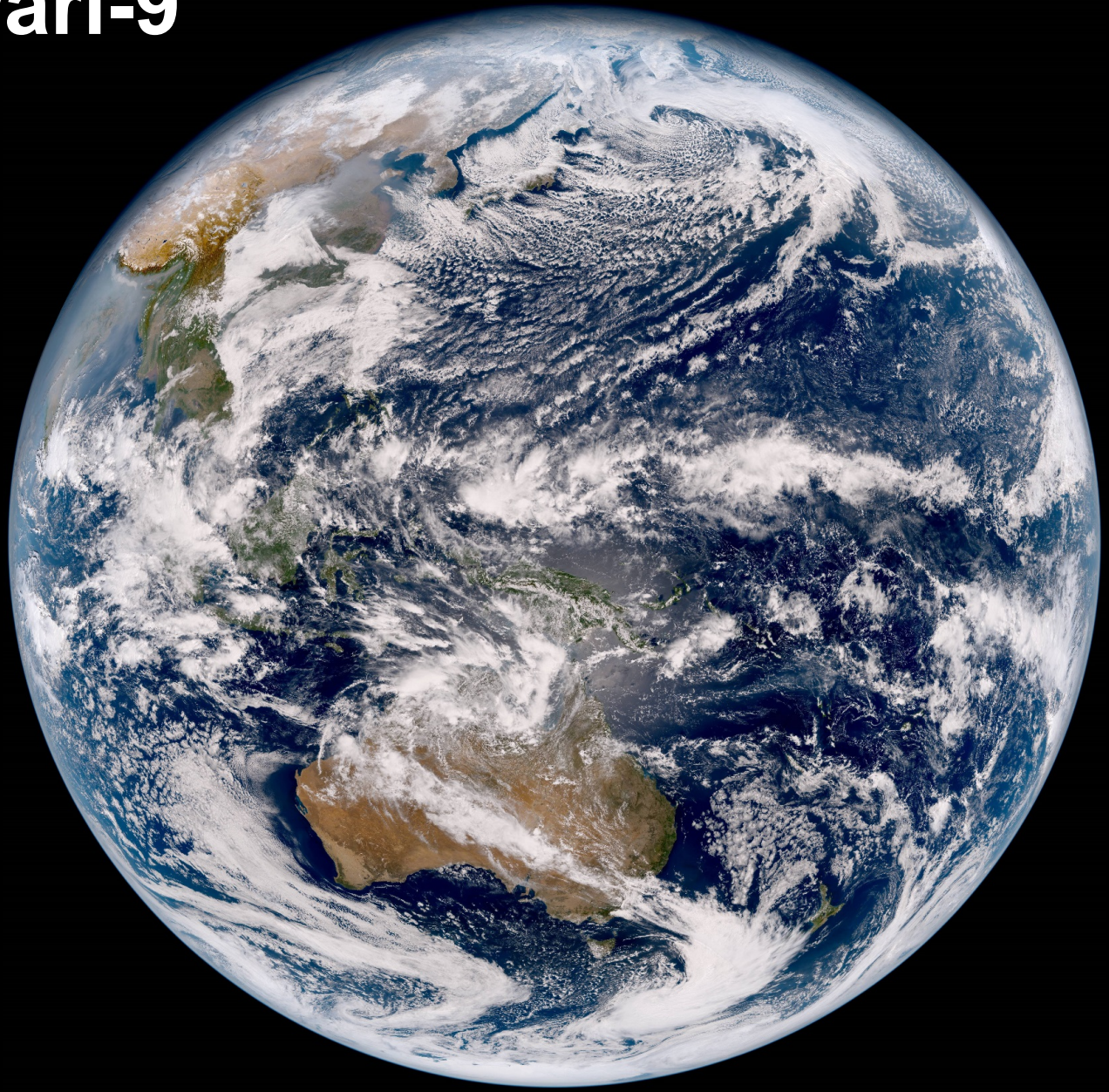
People



NOAA CREST - CCNY

Joint Center for Satellite Data Assimilation

Himawari-9



Thank you!