

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

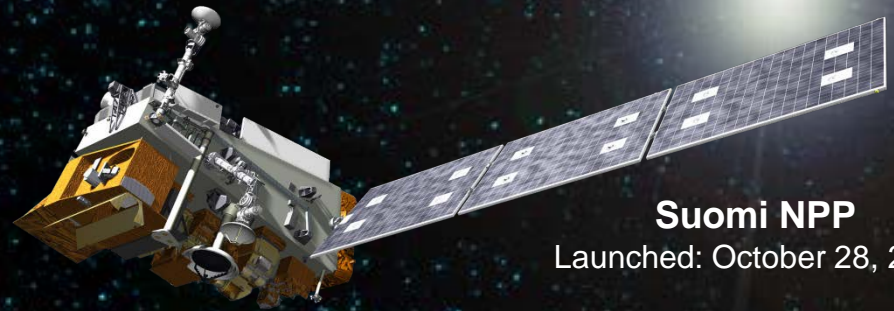
Polar Follow-on (PFO): JPSS-3, JPSS-4
and Mission Operations and Sustainment

\$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.

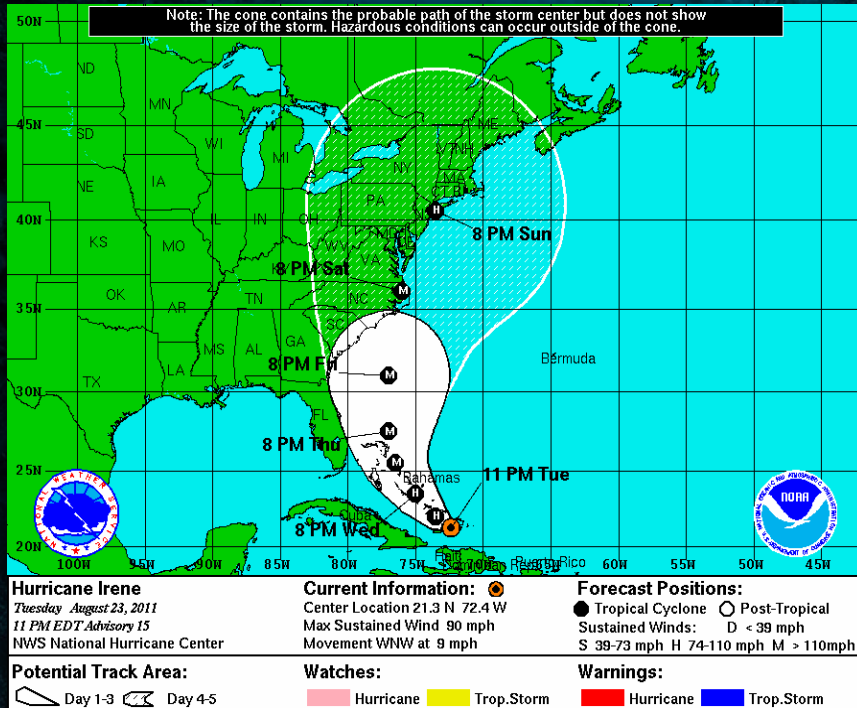
...

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

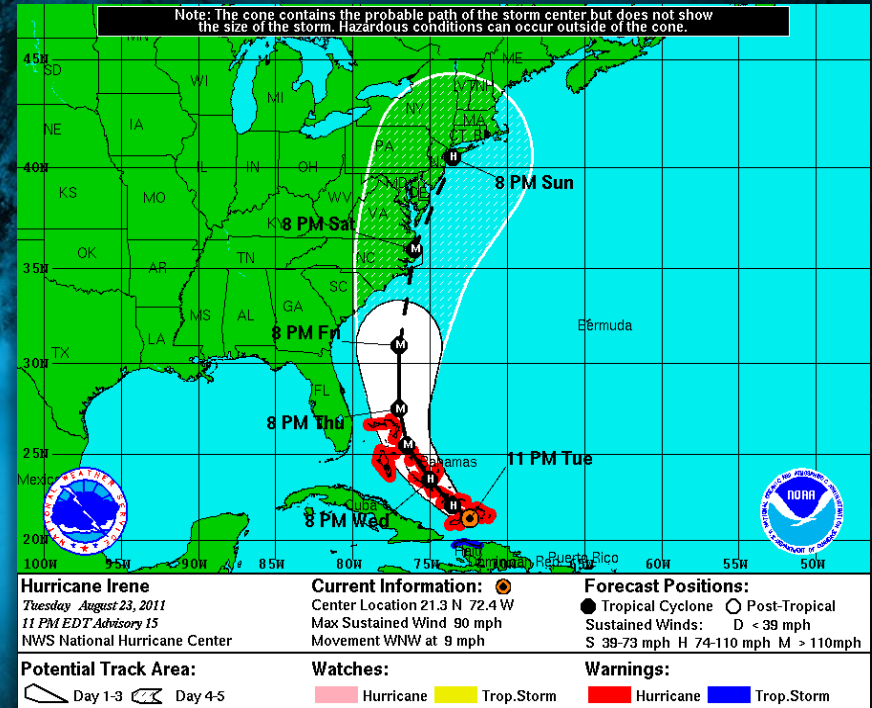


Supporting the ADVANCED FORECAST ENTERPRISE

"2001" Irene Forecast



2011 Irene Forecast

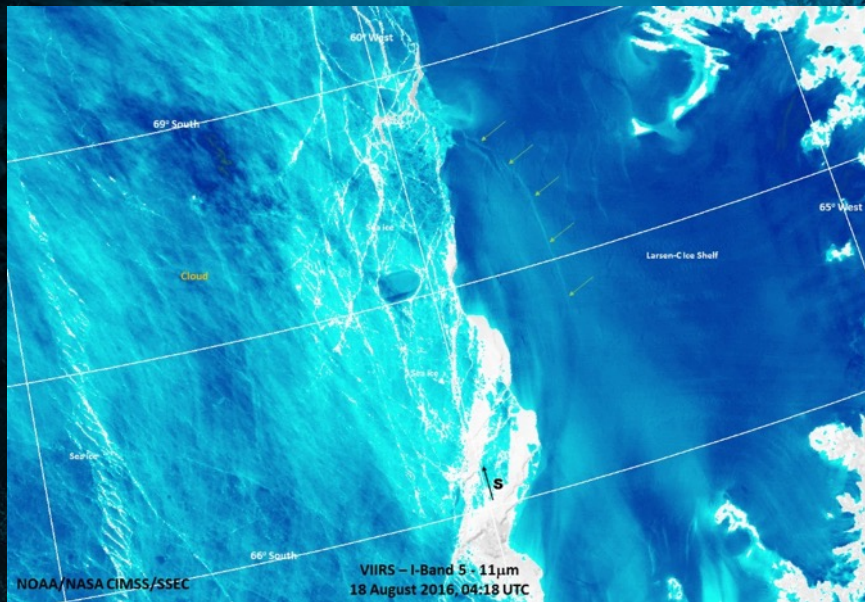


Without JPSS-like data, Hurricane Irene's path would have been less accurately predicted, resulting in more evacuations and greater economic impact to coastal communities.

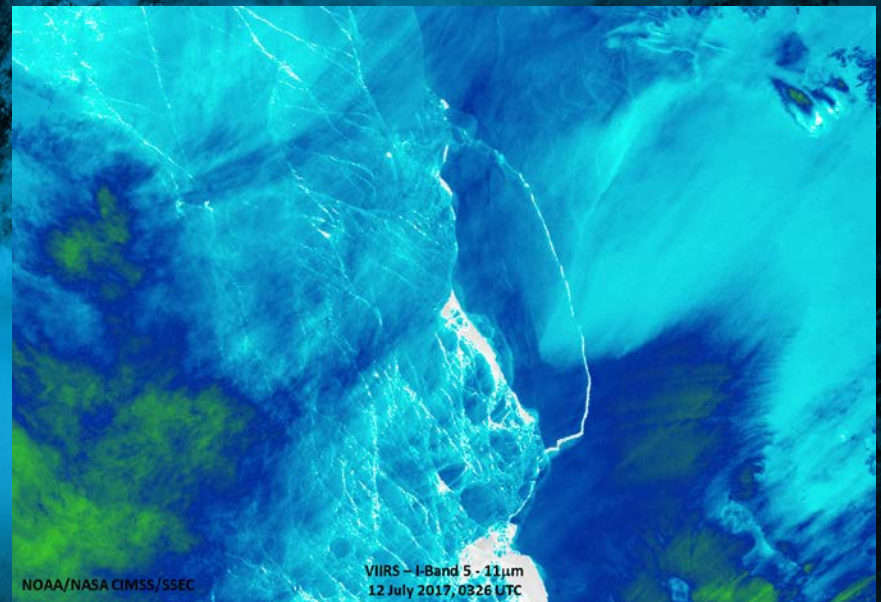


VIIRS Imagery: Larsen-C Ice Shelf Break

August 18, 2016



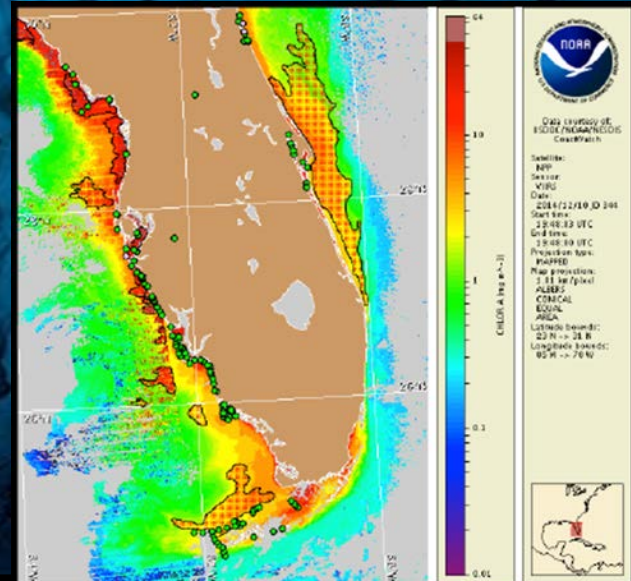
July 12-14, 2017



Iceberg as detected by VIIRS imager 11 micron band.



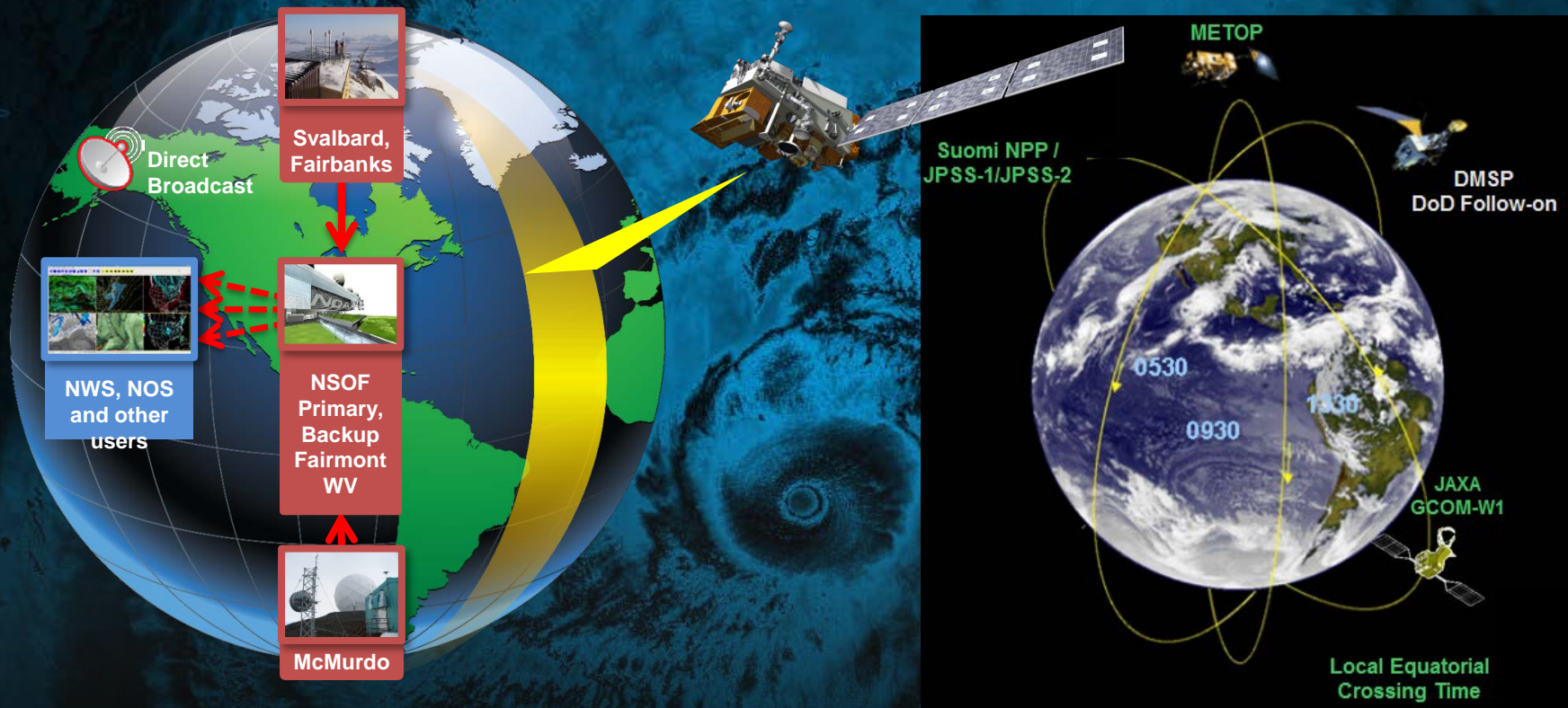
- Volcanic Ash and SO₂
- Marine Conditions
- Illegal Fishing
- Coral Bleaching
- Coastal Water Quality
- Land Conditions
- Agriculture
- Power Outages





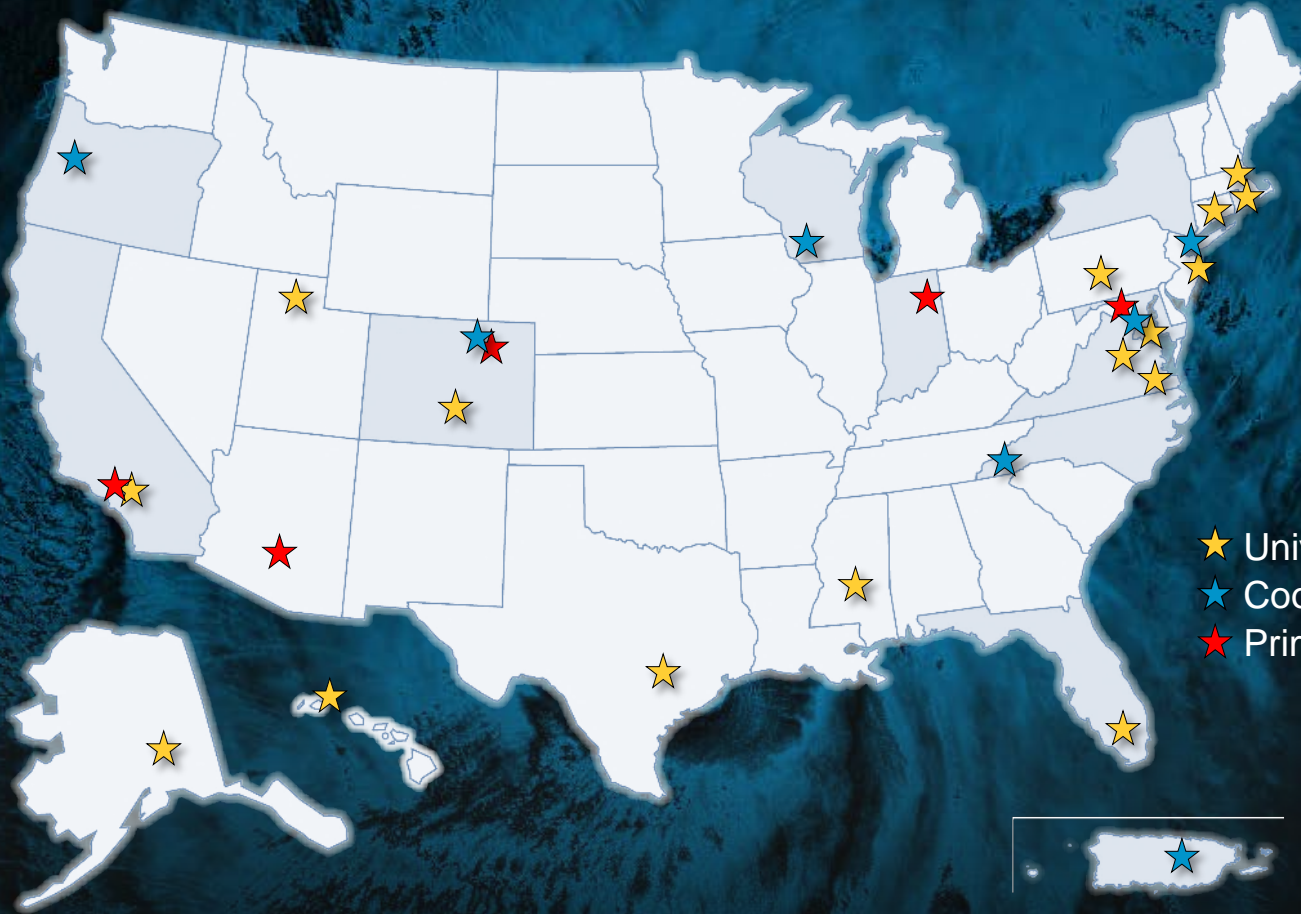
Global COOPERATIVE EFFORTS

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





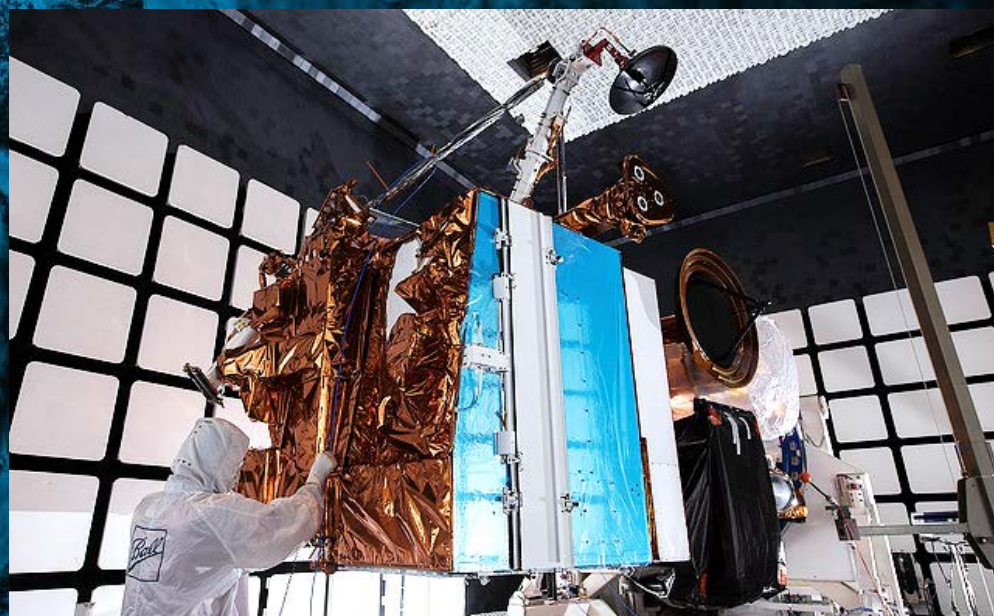
National COOPERATIVE EFFORTS



- ★ University Partner
- ★ Cooperative Institute
- ★ Prime Contractor



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

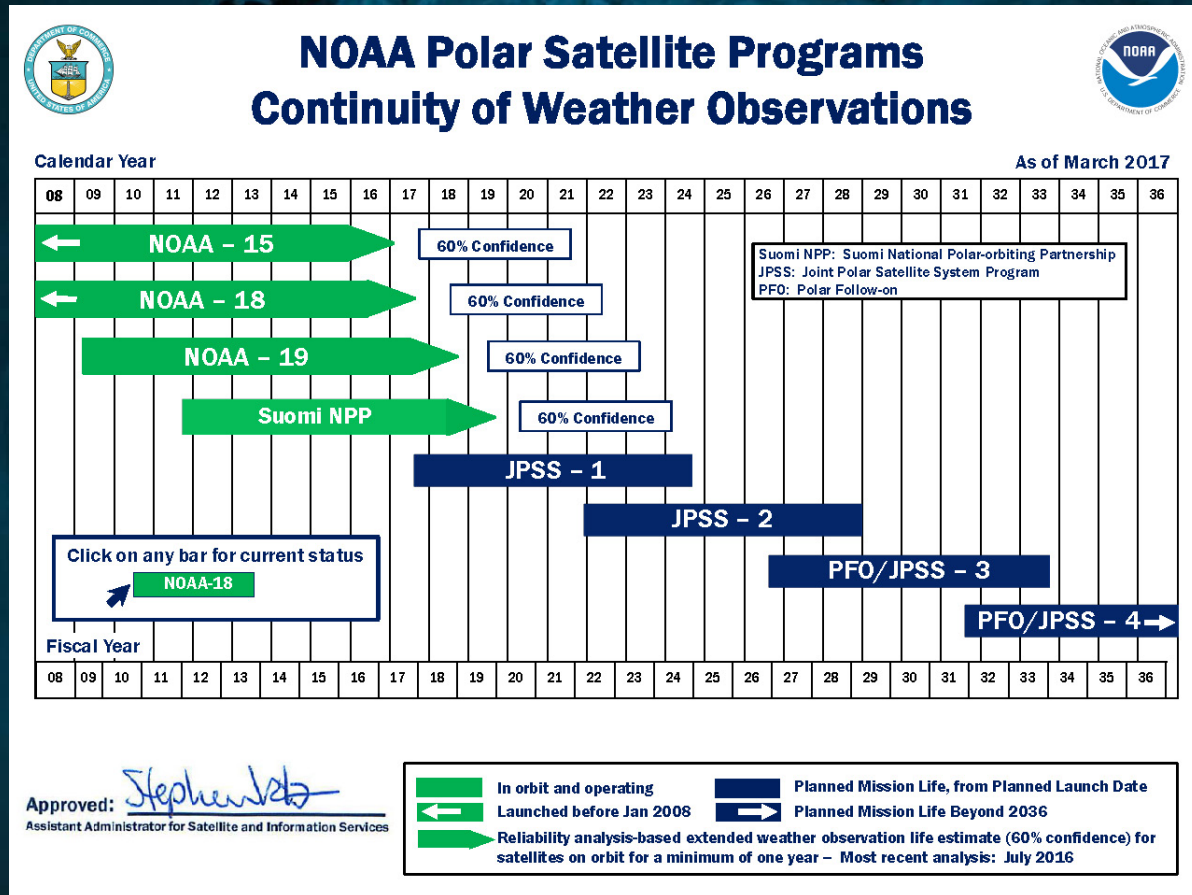


The future of JPSS

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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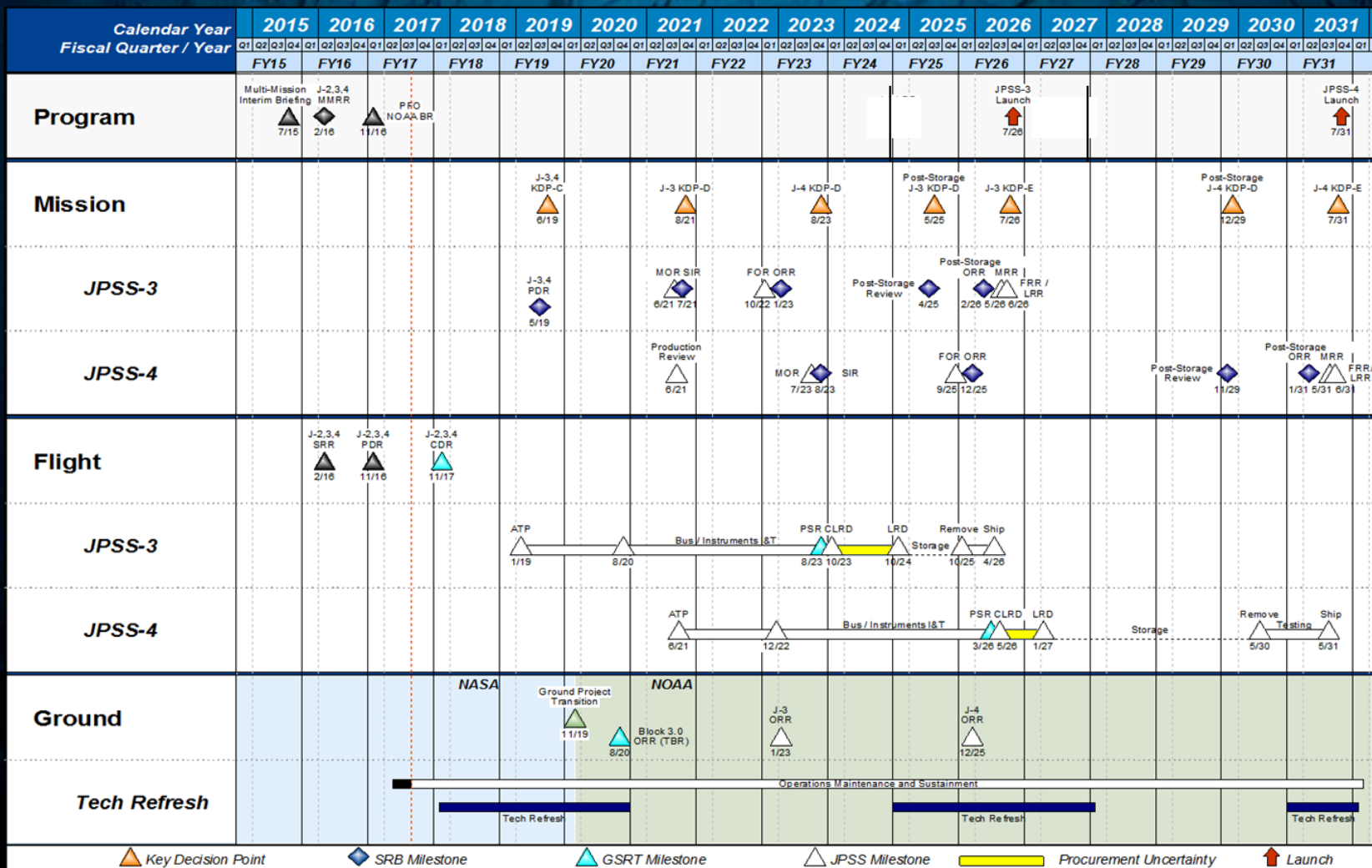
Backup



Status JPSS-3, JPSS-4

Spacecraft Deliveries are Pre-Award Government Estimates

Status Date: 31 May, 2017





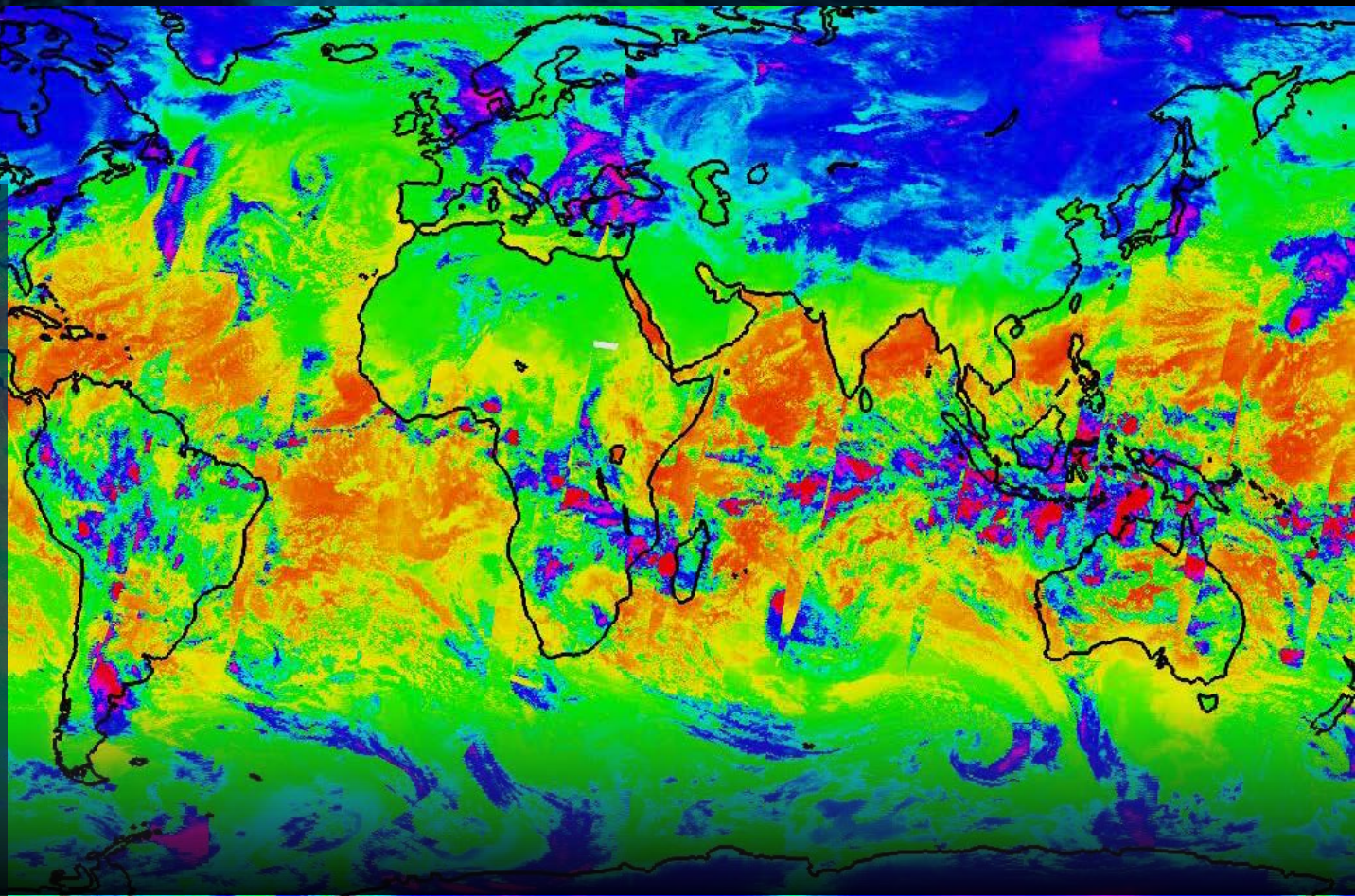
ADVANCED TECHNOLOGY MICROWAVE SOUNDER (ATMS) AND CROSS-TRACK INFRARED SOUNDER (CrIS)

▶ 3-D temperature and
moisture profiles

▶ Rainfall rates and
snow/ice information

▶ Improved short-
and medium-term
forecasting

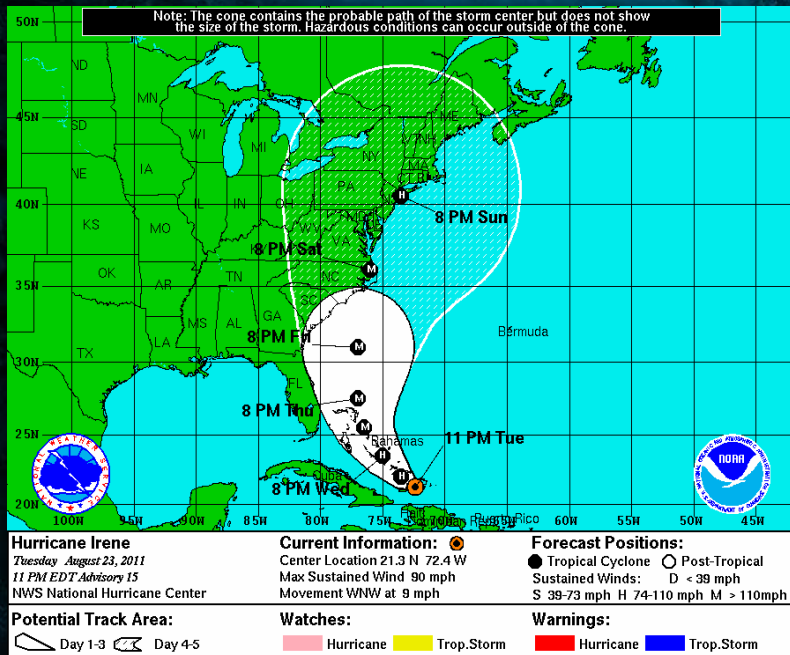
▶ Improved storm
tracking and climate
prediction models



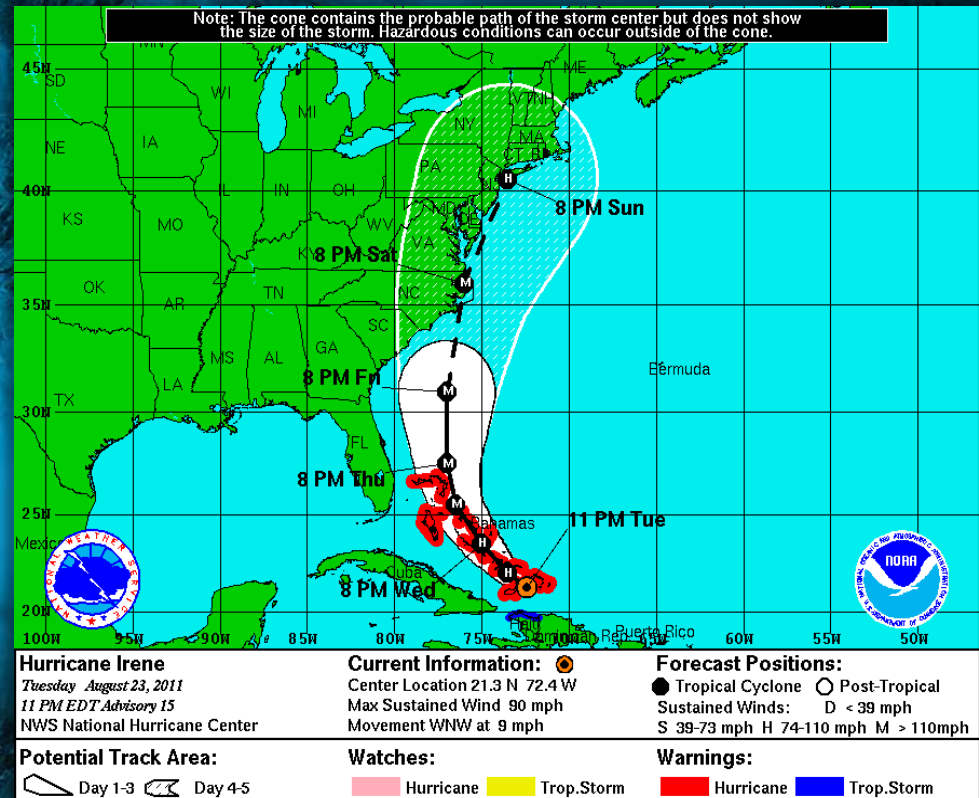


Supporting the ADVANCED FORECAST ENTERPRISE

"2001" Irene Forecast



2011 Irene Forecast



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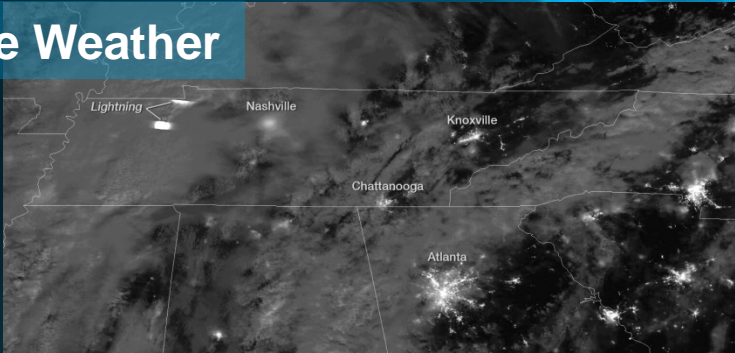


VISIBLE INFRARED IMAGING RADIOMETER SUITE (VIIRS)

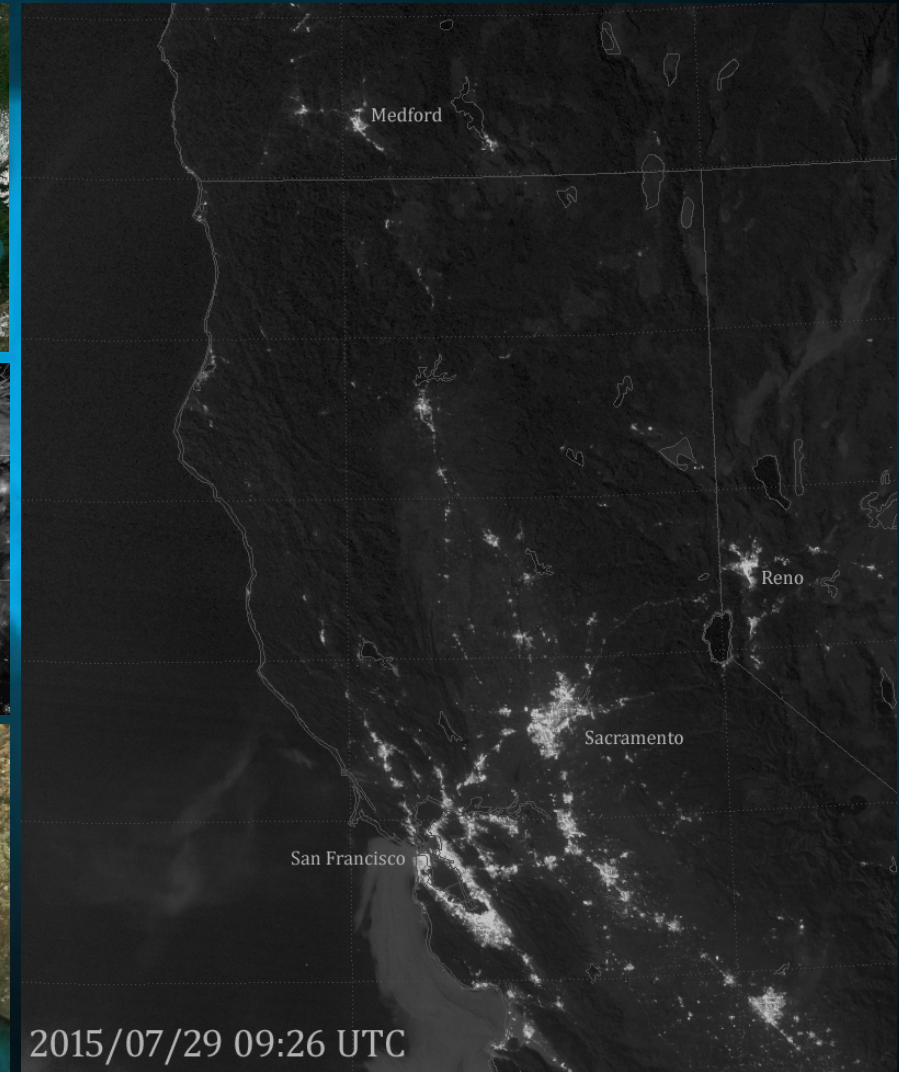
Algal Blooms



Nighttime Weather

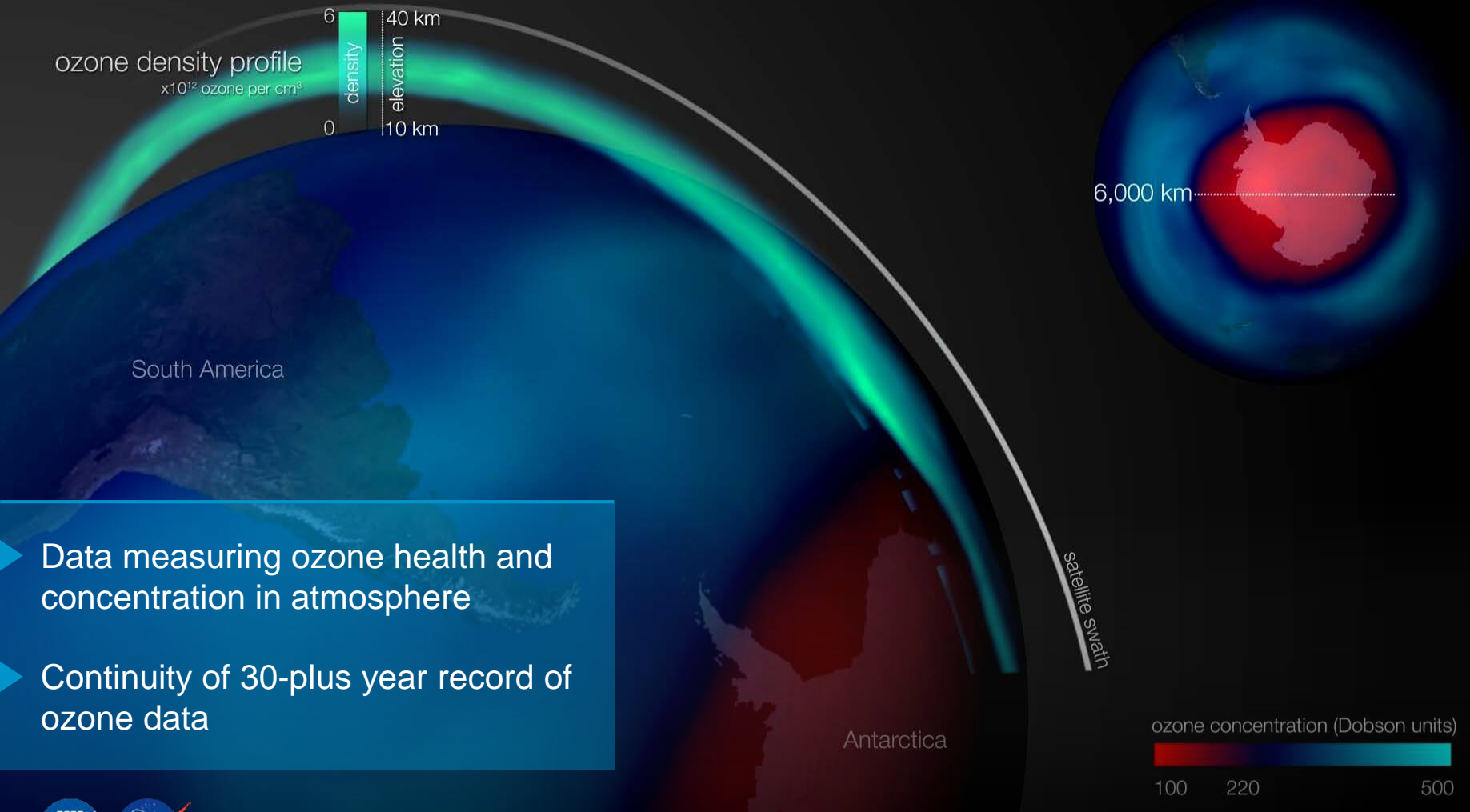


Active Fires





OZONE MAPPING AND PROFILER SUITE (OMPS)

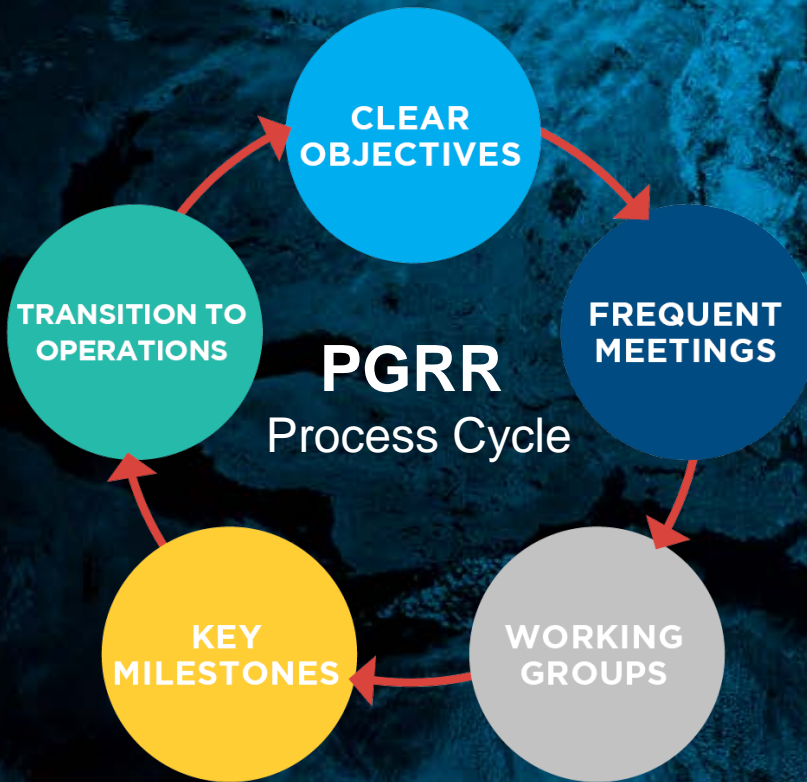


- ▶ Data measuring ozone health and concentration in atmosphere
- ▶ Continuity of 30-plus year record of ozone data



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

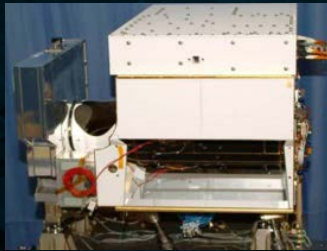
ATMS

Advanced Technology
Microwave Sounder



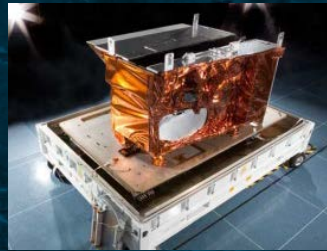
CrIS

Cross-track
Infrared Sounder



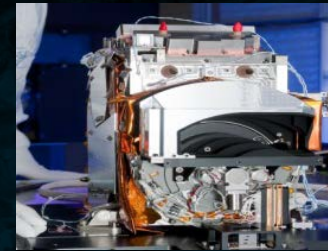
VIIRS

Visible Infrared Imaging
Radiometer Suite



OMPS

Ozone Mapping and
Profiler Suite



CERES

Clouds and the Earth's
Radiant Energy System



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.

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

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

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

NORTHROP GRUMMAN

HARRIS

Raytheon



NORTHROP GRUMMAN





Data PRODUCTS

VIIRS (28 EDRs)

● AP, ● RDR, ● SDR

EDRs

Active Fires	Green Vegetation Fraction
Aerosol Detection	Ice Age/Thickness
Aerosol Optical Depth	Ice Concentration
Aerosol Particle Size	Ice Surface Temperature
Albedo (Surface)	● Imagery
Annual Surface Type ^s	Land Surface Temperature
Cloud Height (Top and Base)	Ocean Color/Chlorophyll
Cloud Cover/Layers	Polar Winds
Cloud Mask	Sea Surface Temperature
Cloud Optical Depth	Snow Cover
Cloud Particle Size Distribution	Surface Reflectance
Cloud Phase	Vegetation Health Index Suite
Cloud Top Pressure	Vegetation Indices
Cloud Top Temperature	Volcanic Ash Detection & Height

CrIS (5 EDRs)

● AP, ● RDR, ● SDR

EDRs:

Carbon Dioxide (CO₂)
Carbon Monoxide (CO)
Infrared Ozone Profile
Methane (CH₄)
Outgoing Long Wave Radiation

CrIS/ATMS (2 EDRs)

EDRs: Atm Vertical Temperature Profile
Atm Vertical Moisture Profile

ATMS (11 EDRs)

● AP, ● RDR, ● SDR, ● TDR

EDRs:

Cloud Liquid Water	Rainfall Rate
Ice Concentration	Snow Cover
Imagery	Snow Water Equivalent
Land Surface Emissivity	Temperature Profile
Land Surface Temperature	Total Precipitable Water
Moisture Profile	

OMPS-Nadir (2 EDRs)

OMPS-N ● AP, ● RDR, ● SDR

EDRs:

Ozone Total Column
Ozone Nadir Profile

OMPS-Limb² OMPS-L ● AP, ● RDR

CERES/RB1¹

● AP

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

