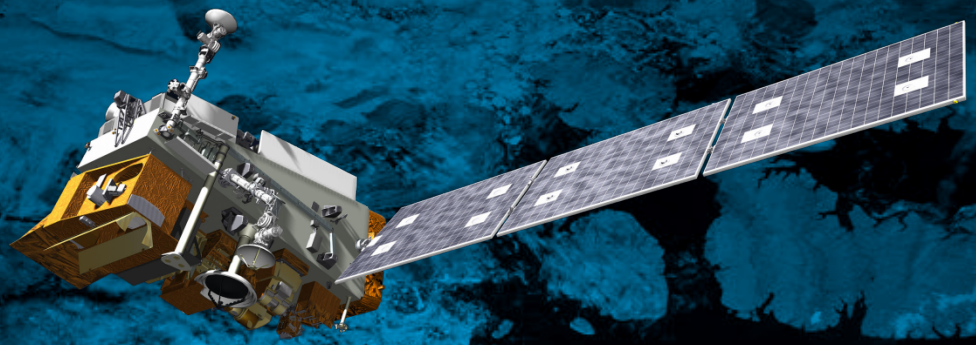


Joint Polar Satellite System

NOAA Satellite Conference

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

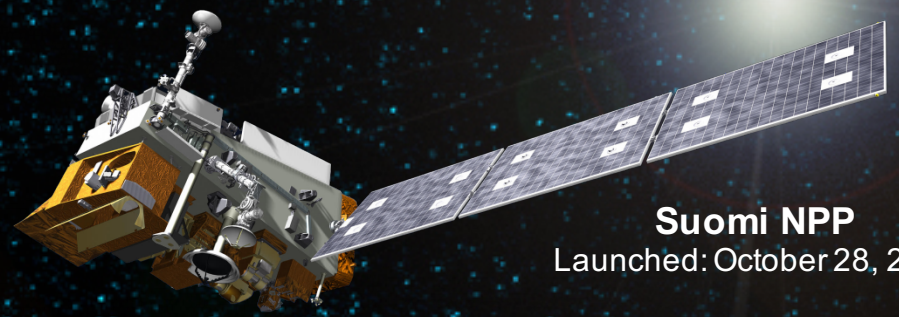
$7.6B over FY2016–FY2038

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

What are **POLAR SATELLITES?**

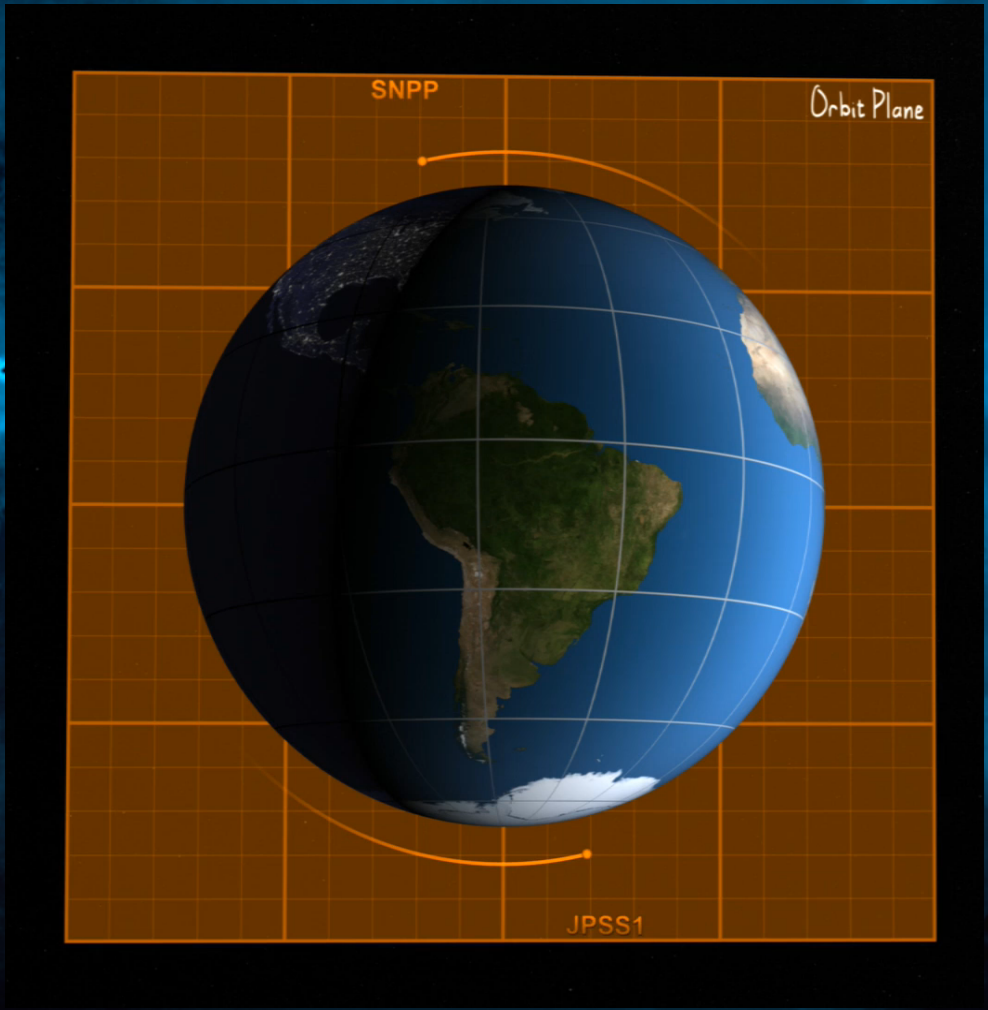
Low Earth Orbit—512 miles

14x Orbits Earth 14 times pole-to-pole

2x Images entire globe twice a day

Unique instrumentation to measure moisture and temperature profiles throughout the atmosphere

Provide 85% of data used in numerical weather prediction



JPSS
PROVIDES...

...

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

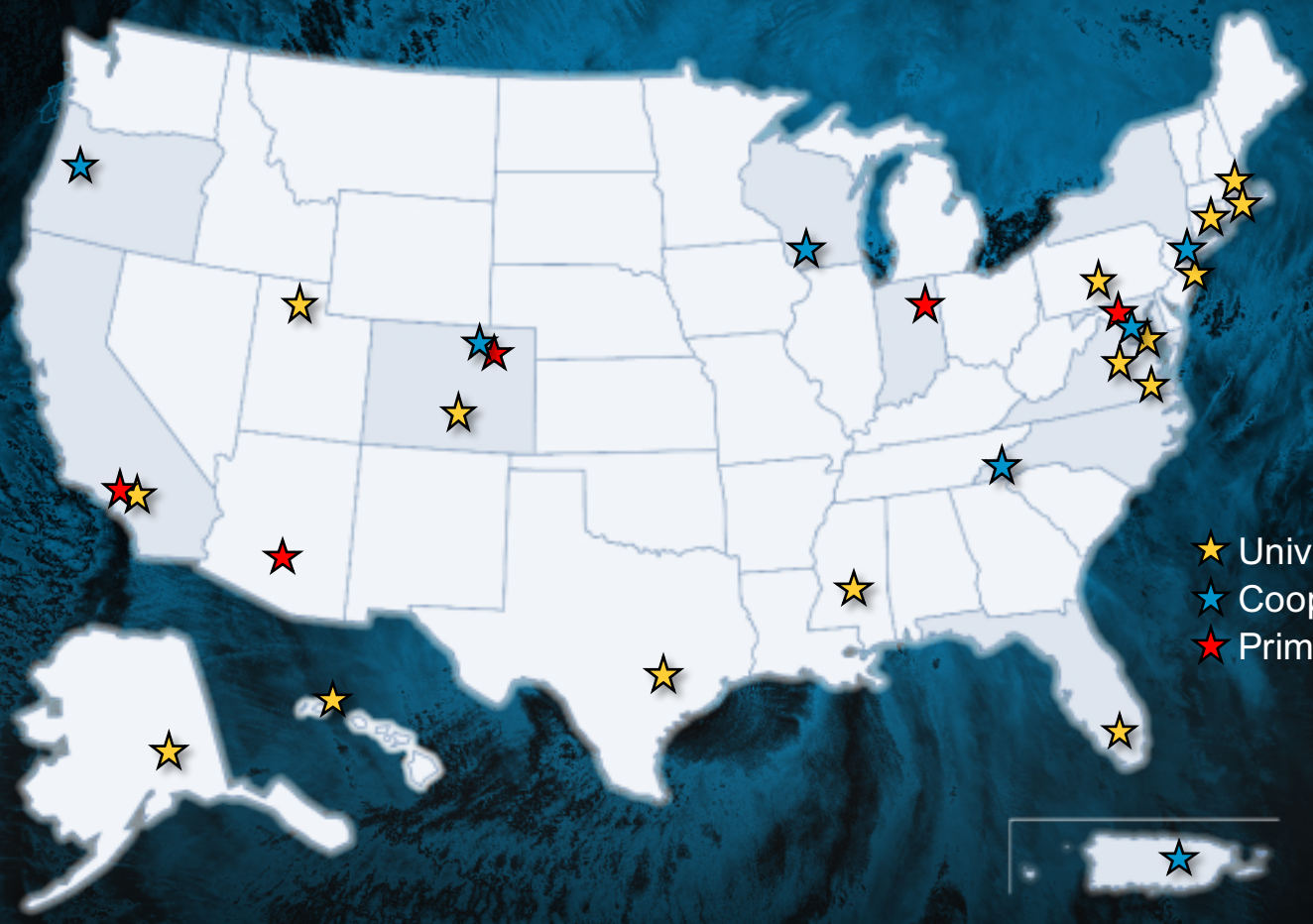
...

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.

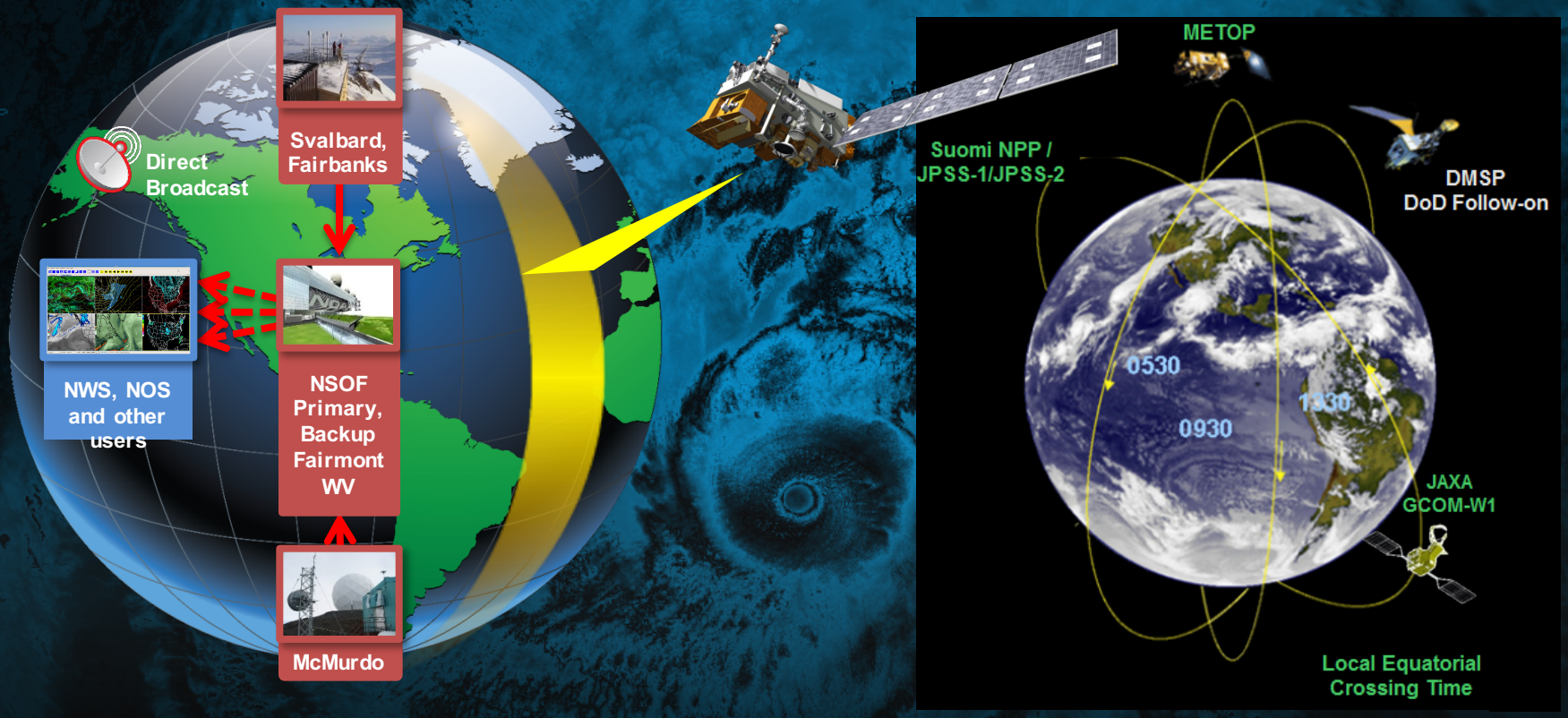
National and Global
COOPERATIVE EFFORTS



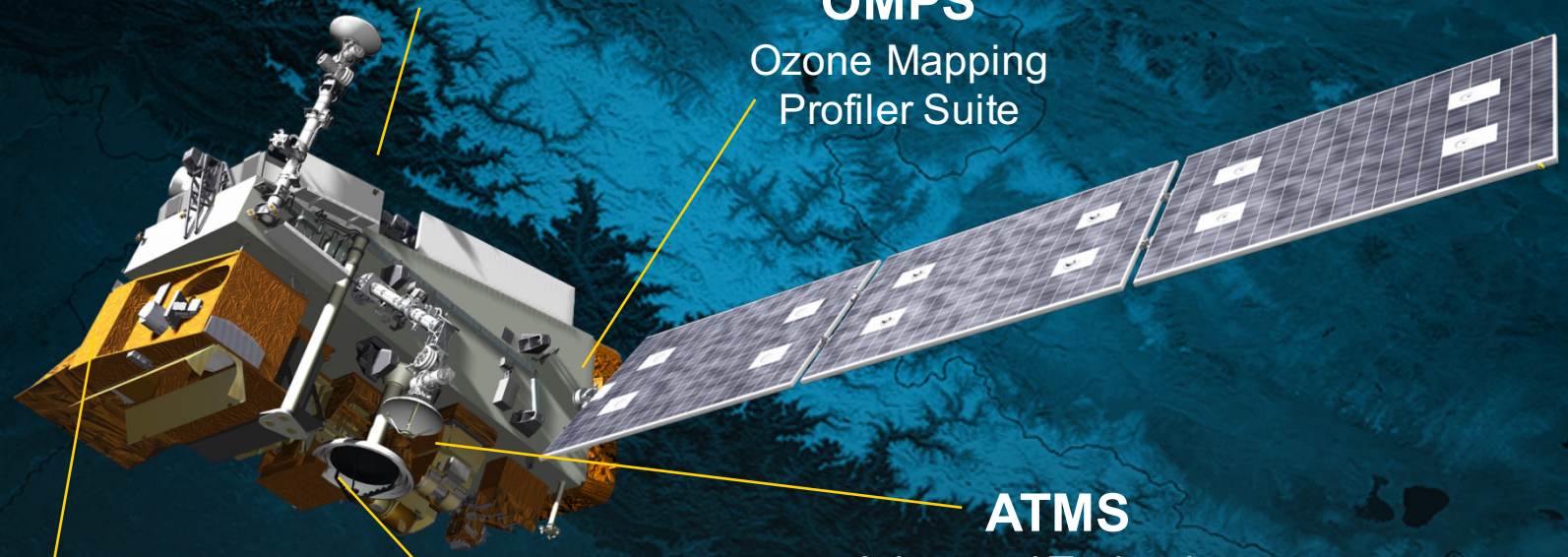
University Partner
Cooperative Institute
Prime Contractor

National and Global
COOPERATIVE EFFORTS (cont.)

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



JPSS-1
SATELLITE



JPSS-1
INSTRUMENTS

ATMS
Advanced Technology Microwave Sounder

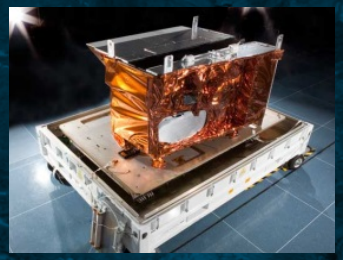
ATMS and CrIS together provide high vertical resolution temperature and water vapor information needed to maintain and improve forecast skill out to 5 to 7 days in advance for extreme weather events, including hurricanes and severe weather outbreaks.

NORTHROP GRUMMAN

CrIS
Cross-track Infrared Sounder

HARRIS

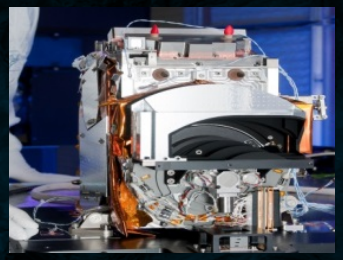
VIIRS
Visible Infrared Imaging Radiometer Suite



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

Data
PRODUCTS

VIIRS (28 EDRs)

● AP, ● RDR, ● SDR

EDRs

- Active Fires
- Aerosol Detection
- Aerosol Optical Depth
- Aerosol Particle Size
- Albedo (Surface)
- Annual Surface Type[5]
- Cloud Height (Top and Base)
- Cloud Cover/Layers
- Cloud Mask
- Cloud Optical Depth
- Cloud Particle Size Distribution
- Cloud Phase
- Cloud Top Pressure
- Cloud Top Temperature
- Green Vegetation Fraction
- Ice Age/Thickness
- Ice Concentration
- Ice Surface Temperature
- ●○ Imagery
- Land Surface Temperature
- Ocean Color/Chlorophyll
- Polar Winds
- Sea Surface Temperature
- Snow Cover
- Surface Reflectance
- Vegetation Health Index Suite
- Vegetation Indices
- Volcanic Ash Detection & Height

CrIS (5 EDRs)

● AP, ● RDR, ●○ SDR

EDRs:

- Carbon Dioxide (CO_2)
- Carbon Monoxide (CO)
- Infrared Ozone Profile
- Methane (CH_4)
- 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
- Ice Concentration
- Imagery
- Land Surface Emissivity
- Land Surface Temperature
- Moisture Profile
- Rainfall Rate
- Snow Cover
- Snow Water Equivalent
- Temperature Profile
- Total Precipitable Water

OMPS-Nadir (2 EDRs)

OMPS-N ● AP, ● RDR, ● SDR

EDRs:

- Ozone Total Column
- Ozone Nadir Profile

OMPS-Limb[2]

OMPS-L ● AP, ● RDR

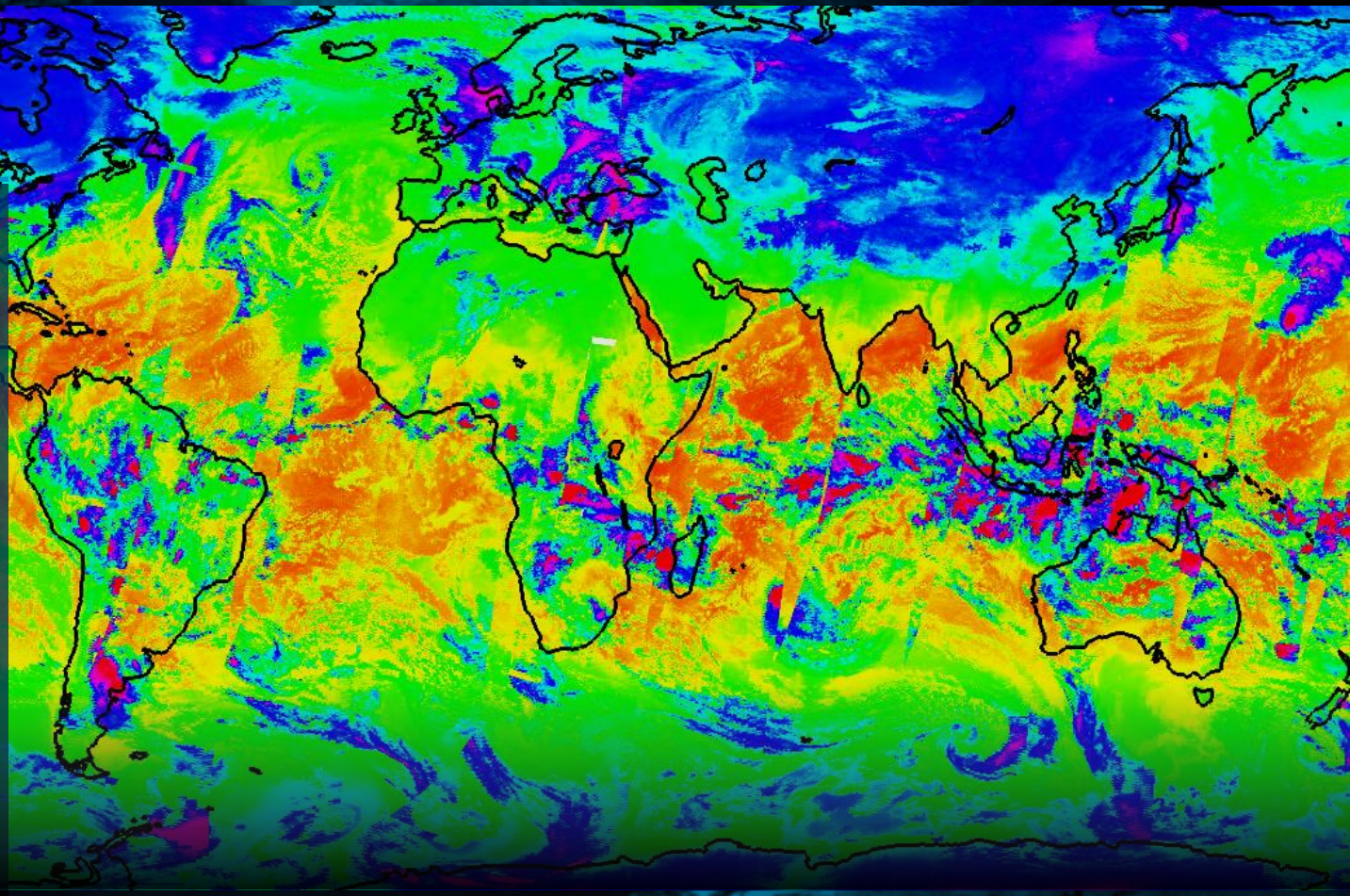
CERES/RBI[1]

● 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

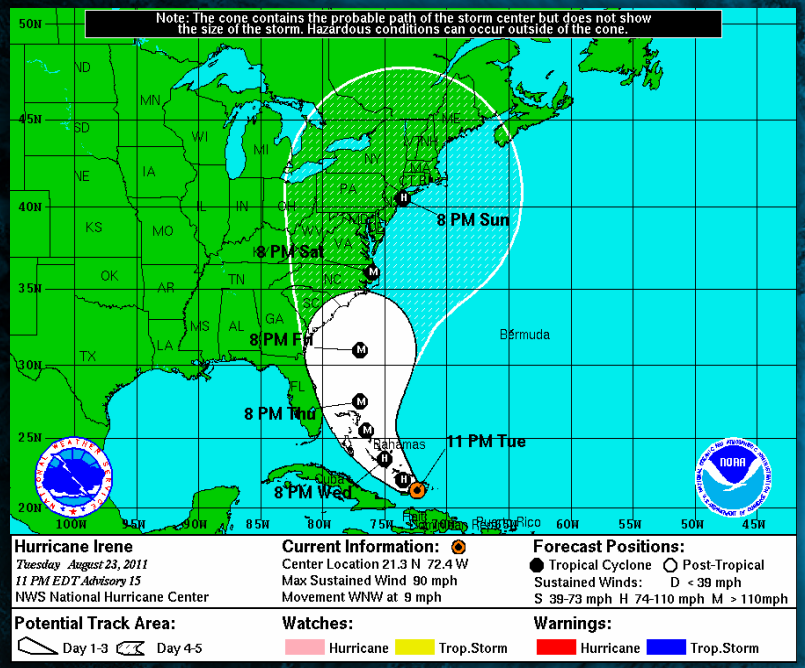
ADVANCED TECHNOLOGY MICROWAVE SOUNDER (ATMS) AND CROSS-TRACK INFRARED SOUNDER (CrIS)



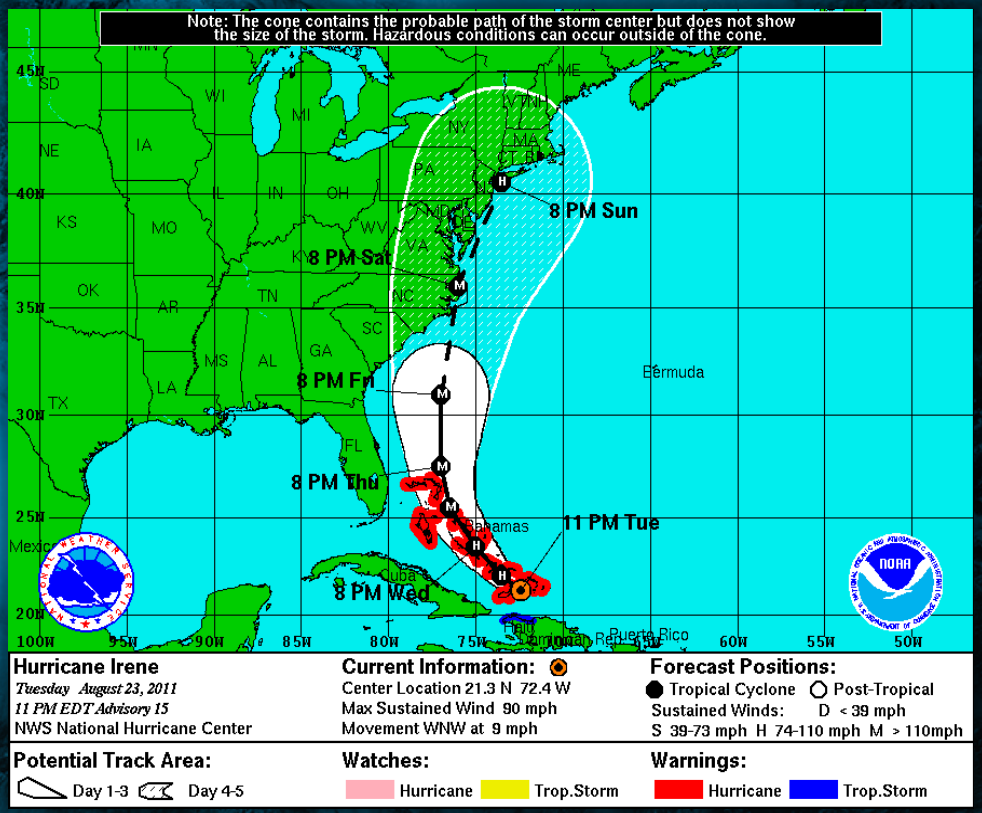
- 3-D temperature and moisture profiles
- Rainfall rates and snow/ice information
- Improved short- and medium-term forecasting
- Improved storm tracking and climate prediction models

Supporting the
ADVANCED FORECAST ENTERPRISE

"2001" Irene Forecast



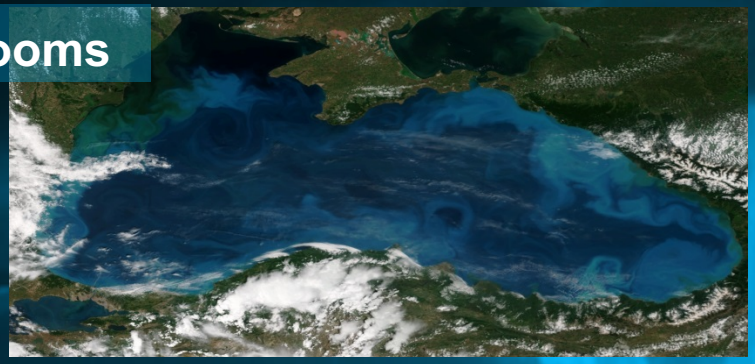
2011 Irene Forecast



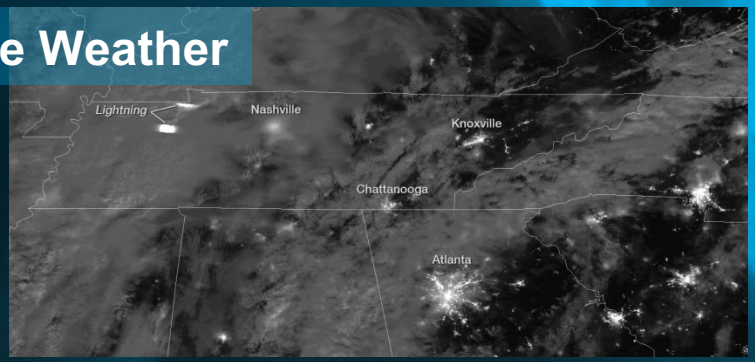
Without JPSS data, Hurricane Irene's path would have been less accurately predicted, resulting in more evacuations and greater economic impact to coastal communities.

VISIBLE INFRARED IMAGING RADIOMETER SUITE (VIIRS)

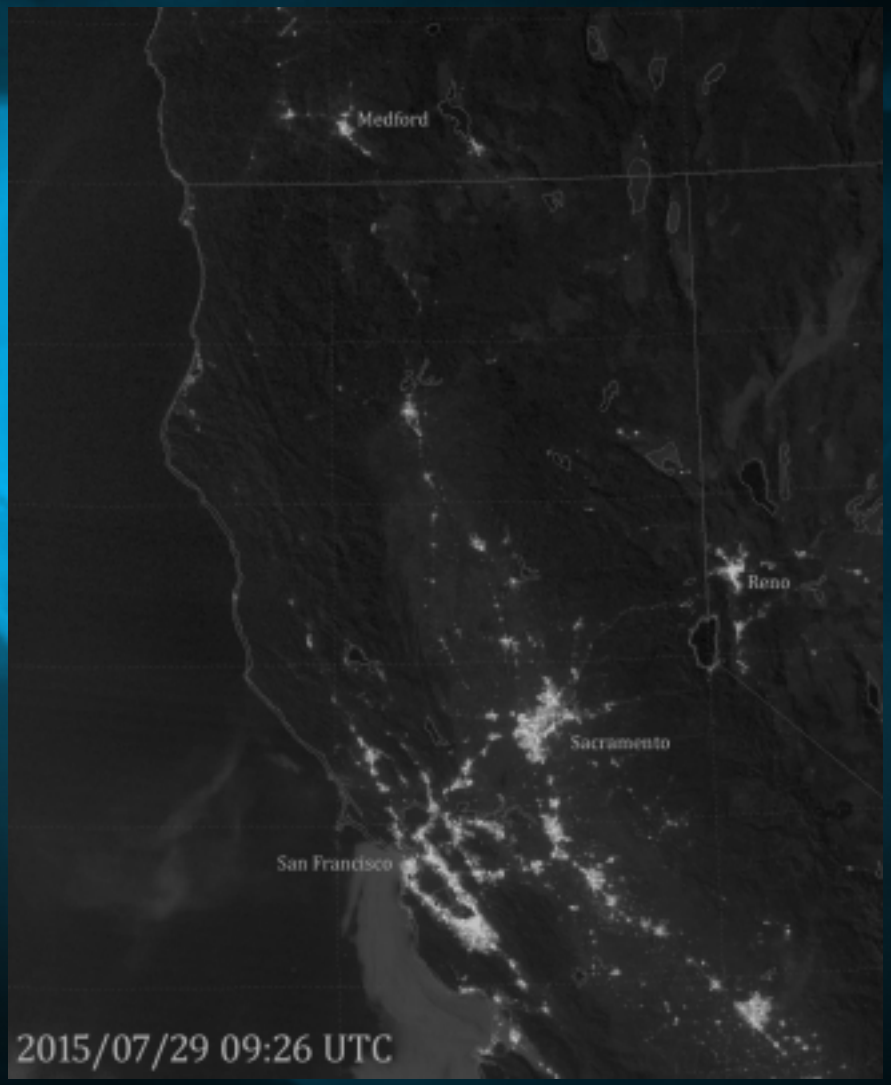
Algal Blooms



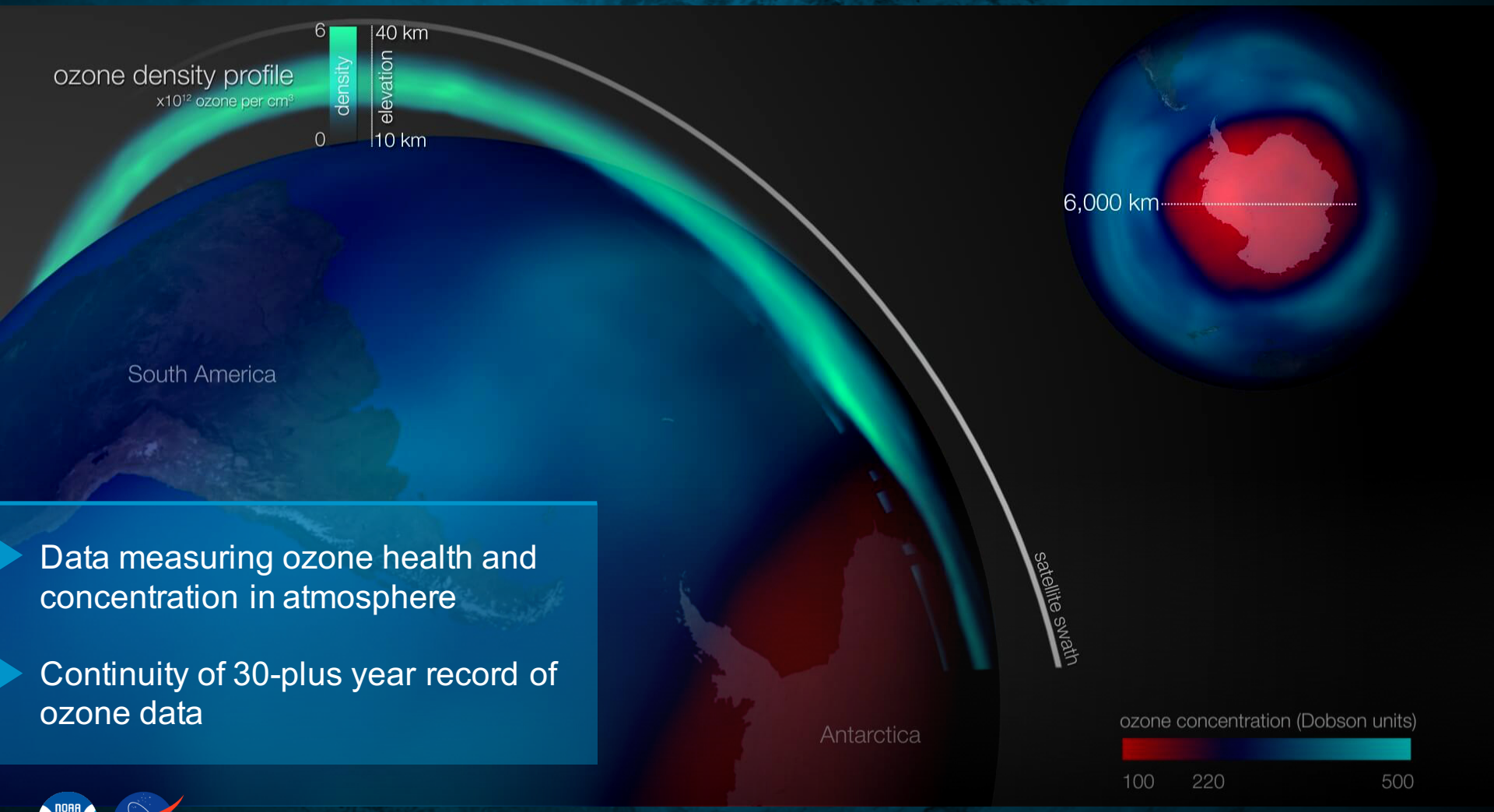
Nighttime Weather



Active Fires



OZONE MAPPING AND PROFILER SUITE (OMPS)



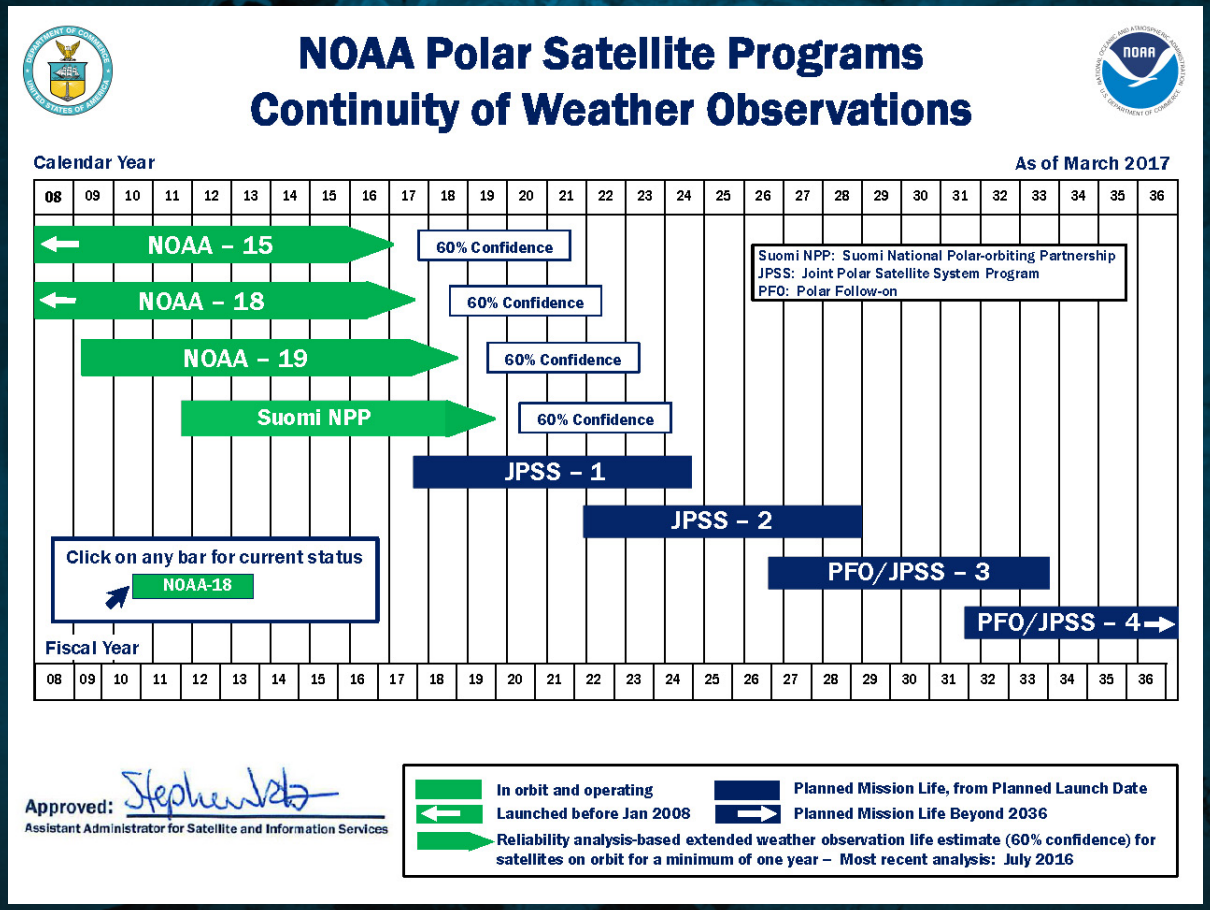
- Data measuring ozone health and concentration in atmosphere
- Continuity of 30-plus year record of ozone data

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.

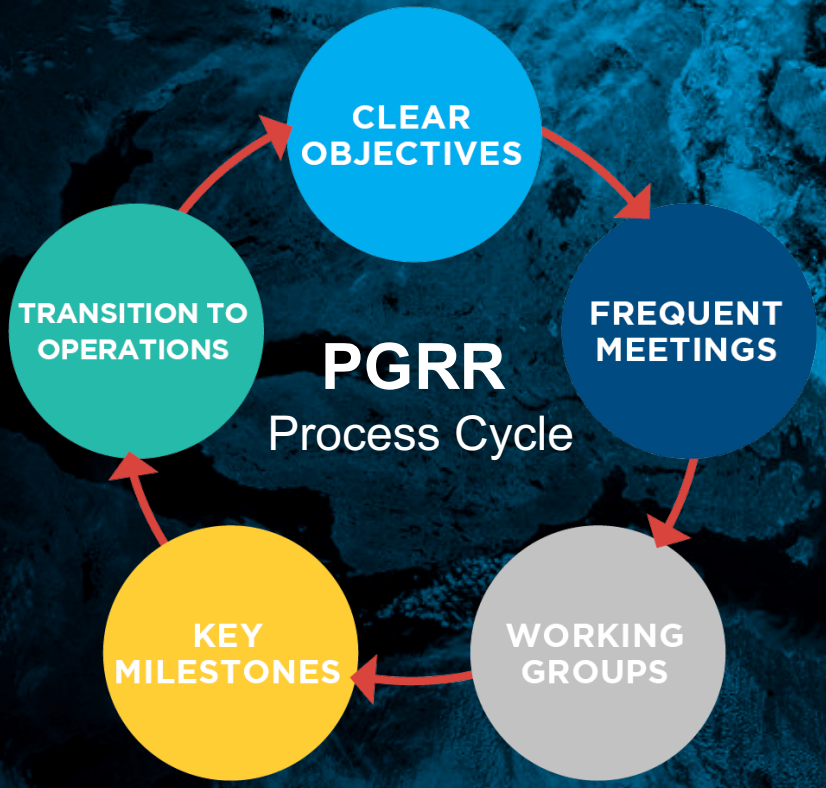
JPSS will continue the exploration of new scientific and societal applications for polar-orbiting data.

Continuity and Launch Schedule



Proving Ground and Risk Reduction Program (PGRR)

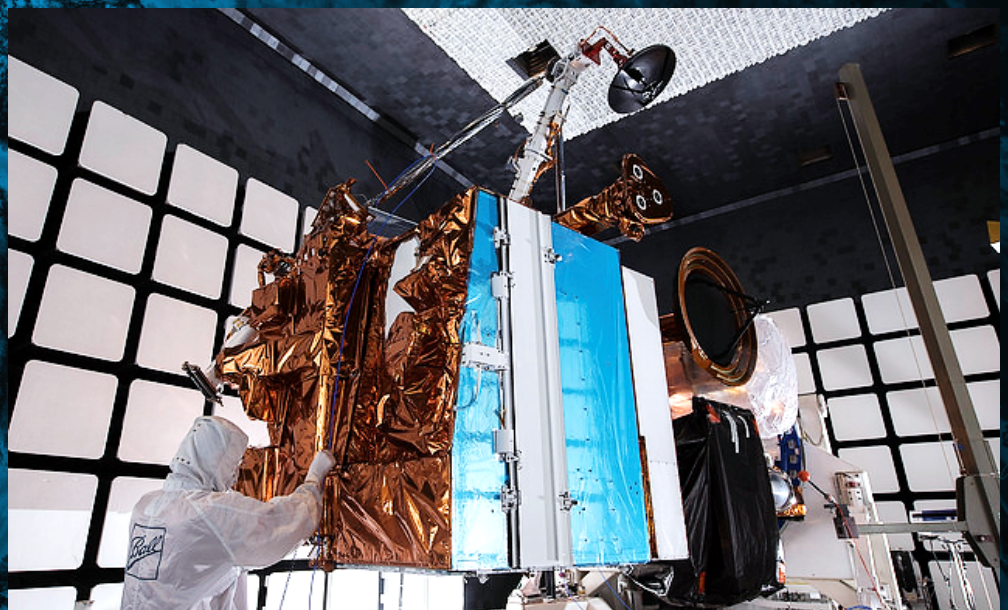
The PGRR program develops and maintains engagement between JPSS experts and end users about data products and applications.



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

Preparing for Launch
JPSS-1



NOAA
presents

THANK YOU!

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

CONNECT WITH US!

/NOAANESDIS

@NOAASATELLITES

@NOAASATELLITES

/NOAASATELLITES