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
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.
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

Iceberg as detected by VIIRS imager 11 micron band.

July 12-14, 2017
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.
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
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.
THANK YOU!

For more information visit www.jpss.noaa.gov

CONNECT WITH US!

/NOAANESDIS @NOAASATELLITES /NOAANESDIS @NOAASATELLITES /NOAASATELLITES
Backup
### Status

**JPSS-3, JPSS-4**

Spacecraft Deliveries are Pre-Award Government Estimates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Quarter / Year</td>
<td>F'15</td>
<td>F'16</td>
<td>F'17</td>
<td>F'18</td>
<td>F'19</td>
<td>F'20</td>
<td>F'21</td>
<td>F'22</td>
<td>F'23</td>
<td>F'24</td>
<td>F'25</td>
<td>F'26</td>
<td>F'27</td>
<td>F'28</td>
<td>F'29</td>
<td>F'30</td>
<td>F'31</td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JPSS-3</td>
<td>7/15</td>
<td>10/15</td>
<td>2/16</td>
<td>7/15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>J-2,3,4 SRM + IFR</td>
<td>10/15</td>
<td>J-3 KDP-C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JPSS-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JPSS-3</td>
<td>J-2,3,4 SRR</td>
<td>J-2,3,4 SRR</td>
<td>J-2,3,4 DMR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JPSS-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground</td>
<td>NASA</td>
<td>NOAA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tech Refresh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

ALGAL BLOOMS

NIGHTTIME WEATHER

ACTIVE FIRES

VISIBLE INFRARED IMAGING RADIOMETER SUITE (VIIRS)
OZONE MAPPING AND PROFILER SUITE (OMPS)

Data measuring ozone health and concentration in atmosphere

Continuity of 30-plus year record of ozone data
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
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).
Data Products

**VIIRS (28 EDRs)**
- AP, RDR, SDR
  - Active Fires
  - Aerosol Detection
  - Aerosol Optical Depth
  - Aerosol Particle Size
  - Albedo (Surface)
  - Annual Surface Type
  - 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
  - Carbon Dioxide (CO₂)
  - Carbon Monoxide (CO)
  - Infrared Ozone Profile
  - Methane (CH₄)
  - Outgoing Long Wave Radiation

**CrIS/ATMS (2 EDRs)**
- Atm Vertical Temperature Profile
- Atm Vertical Moisture Profile

**OMPS-Nadir (2 EDRs)**
- AP, RDR, SDR
- Ozone Total Column
- Ozone Nadir Profile

**OMPS-Limb²**
- OMPS-L AP, RDR

**ATMS (11 EDRs)**
- AP, RDR, SDR, TDR
  - 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

**CERES/RBI¹**
- 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