Status Report on NOAA’s Current & Future Satellite Systems

Presented to CGMS-44, Plenary Session, Agenda Item D
Science, Service, Stewardship – Supporting NOAA’s Mission

PLANES FLY,

SHIPS SAIL,

UMBRELLAS OPEN,

CITIES PREPARE AND LIVES ARE SAVED

CROPS ARE PLANTED,

WITH FORECASTS MADE USING DATA & INFORMATION

FROM NESDIS
National Environmental Satellite, Data, & Information Service

www.nesdis.noaa.gov
Recent & Upcoming Launches

- **JASON-3**: Operational June 2016
- **DSCOVR**: Operational 2016
- **JPSS Series**: JPSS-1 - 2017, JPSS-2 - 2021, JPSS-3 - 2026, JPSS-4 - 2031
NOAA’s Established LEO and GEO Platforms

• From Geostationary Orbit
  - The GOES-R through U series, following on the GOES-N/O/P series, provides the US continental coverage well into the 2030s

• From Low Earth Orbit
  - The five satellite combination of JPSS + Polar Follow-On will establish NOAA’s LEO coverage in the afternoon orbit well into the 2030s

• Together, these platforms form the backbone of our observing network for the coming decades
The Future of Forecasting:
GOES-R

3X MORE CHANNELS
Improves every product from current GOES Imager and will offer new products for severe weather forecasting, fire and smoke monitoring, volcanic ash advisories, and more.

4X BETTER RESOLUTION
The GOES-R series of satellites will offer images with greater clarity and 4x better resolution than earlier GOES satellites.

5X FASTER SCANS
Faster scans every 30 seconds of severe weather events and can scan the entire full disk of the Earth 5x faster than before.

GOES-R
2016
Preparing Users for GOES-R: Learning from JMA’s Himawari-8
"For initial development along the dryline, convection went up very fast. Without the 1-minute data, we wouldn't have been able to recognize so soon that convection initiation was occurring. It was helpful to see the overshooting tops as they occurred in near real-time. It helped us to figure out right away which storms had the strongest updrafts." – William Line, Storm Prediction Center/Hazardous Weather Testbed GOES-R/JPSS Satellite Liaison, University of Oklahoma-CIMMS
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NOAA & Partner Polar Satellite Programs
Continuity of Weather Observations

As of January 2016

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Early-Morning Orbit
DMSF: Defense Meteorological Satellite Program
JPSS: Joint Polar Satellite System Program
Suomi NPP: Suomi National Polar-orbiting Partnership
Note: DoD and EUMETSAT data provided for reference only

Mid-Morning Orbit
MetOp Second Generation (SG) - A1
MetOp SG - B1
MetOp SG - A2
MetOp SG - B2

Afternoon Orbit
PFO/JPSS - 3
PFO/JPSS - 4

Approved: [Signature]
Assistant Administrator for Satellite and Information Services

Note: Extended operations are reflected through the current FY, based on current operating health.

**Legend**
- **In orbit**
- **Post Launch Test**
- **Fuel-Limited Lifetime Estimate**
- **Planned Mission Life, from Launch Readiness Date**
- **Launched before Oct 2008**
- **Operational beyond Dec 2036**
The Future of Forecasting: JPSS

- Suomi NPP is operational
- JPSS-1 is executing as planned
- JPSS-2 procurement progressing well
- Polar Follow-On – JPSS-3/4
Plan for Suomi NPP & JPSS-1 Joint Operations
Ocean Altimetry: Jason-3

- Partnership with EUMETSAT, CNES, NASA
- Successfully launched 17 January 2016
Radio Occultations: COSMIC-2

12 Satellites - 2 inclinations
Data are distributed more homogeneously
Space Weather: DSCOVIR

- Launched 11 February 2015
- NOAA operating since 28 October 2015

Image Credit: SpaceX
Coordination Group for Meteorological Satellites - CGMS

NESDIS Data Lifecycle

UNDERSTANDING OUR DYNAMIC PLANET AS A TRUSTED SOURCE OF ENVIRONMENTAL DATA

Provide useful data in near real-time
NESDIS operates satellites 24/7, processes data using developed algorithms, and transmits data to users in near real-time.

Provide archived data
NESDIS houses data in an archive and makes it available to outside researchers.

Use data and conduct research
NESDIS uses its own data to create operational products and conduct internal research.

Access Data
Obtain the necessary data by building, blending, or buying it.
- Build: Managing NOAA's current and future satellite programs
- Blend: Working with U.S. and international partners to develop and build satellite systems
- Buy: Purchasing data provided by commercial satellite systems

Make the Data Useful
Develop algorithms to create products as well as calibrate and validate data to ensure quality and accuracy.
Commercial Space

• NOAA Commercial Space Policy:
  – Released January 8, 2016

• NESDIS Commercial Space Activities Assessment Process:
  – Reviewing public comments received about draft

• NOAA Commercial Weather Data Pilot:
  – Project to assess data from commercial companies
  – Request for Information (RFI) seeking radio occultation data released May 24, 2016
Big Data Project

- Cooperative Research and Development Agreement (CRADA)
- 3-year Project
- Developing Prototypes

https://data-alliance.noaa.gov/
Architecture of the Future

*Develop a space-based observing enterprise that is flexible, responsive to evolving technologies, and economically sustainable.*

--FY15 NOAA Annual Guidance
The Future of Forecasting: Learning from Suomi NPP
The Future of Forecasting: Learning from Suomi NPP