OSPO
COPC Brief

Spring 2016

Suitland, MD

Vanessa L. Griffin

Director

Office of Satellite and Product Operations (OSPO)

College Park, MD

Fairmont, WV

Wallops, VA

Fairbanks, AK

Agenda

- NOAA NESDIS Organization
- Current Program Highlights
- Future NOAA Mission Update
- Non-NOAA Update
- Other Topics

NESDIS National Environmental Satellite, Data, and Information Services

Our mission is to deliver accurate, timely, and reliable satellite observations and integrated products and to provide long-term stewardship for global environmental data in support of the NOAA mission.

Our vision is to be the world's most comprehensive source and recognized authority for satellite products, environmental information, and the official assessments of the environment in support of societal and economic decisions.

NOAA Organizational Chart

CORPORATE FUNCTIONS

Deputy Assistant Secretary for International Fisheries
Russell Smith

Federal Coordinator for Meteorology
Dave McCarren (A)

Under Secretary of Commerce for Oceans & Atmosphere & Administrator
Dr. Kathryn D. Sullivan

Assistant Secretary for Conservation and Management
Dr. Christine Blackburn

Assistant Secretary Environmental Observation & Prediction/Deputy Administrator
Manson K. Brown, P.E.

Chief Scientist
Dr. Richard W. Spinrad

Deputy Under Secretary for Operations
Benjamin Friedman

Chief of Staff
Renee Stone

Decision Coordination & Executive Secretariat
Kelly Quickle

Military Affairs
Capt. Gary Joseph Brenner, USN
Col. Paul Roelle, USAF

Legislative & Intergovernmental Affairs
Coby Dolan

Communications
Ciaran Clayton

International Affairs
Vacant

Education
Louisa Koch

Executive Director
Troy Wilds

General Counsel
Lois Schiffer

Acquisition & Grants
Mitchell J. Ross

Chief Administration Officer
Edward Horton

Chief Financial Officer
Mark Seiler

Chief Information Office/HP Computing & Communications
Zach Goldstein

Workforce Management
Kimberlyn Bauhs

LINE OFFICES

Assistant Administrator
National Marine Fisheries Service (NMFS)
Eileen Sobeck

Deputy Assistant Administrator for Operations
Dr. Paul Doremus

Deputy Assistant Administrator for Regulatory Programs
Samuel Rauch

Director of Scientific Programs & Chief Science Advisor
Dr. Richard Merrick

Assistant Administrator
National Ocean Service (NOS)
Dr. Russell Callender (A)

Deputy Assistant Administrator
Dave Holst (A)

Assistant Administrator
National Environmental Satellite, Data & Information Service (NESDIS)
Dr. Stephen Volz

Deputy Assistant Administrator
Mark S. Paese

Assistant Administrator
Oceanic & Atmospheric Research (OAR)
Craig McLean

Deputy Assistant Administrator for Laboratories & Cooperative Institutes
Dr. Michael Farrar (A)

Deputy Assistant Administrator for Programs & Administration
Ko Barrett (A)

Assistant Administrator
National Weather Service (NWS)
Dr. Louis Uccellini

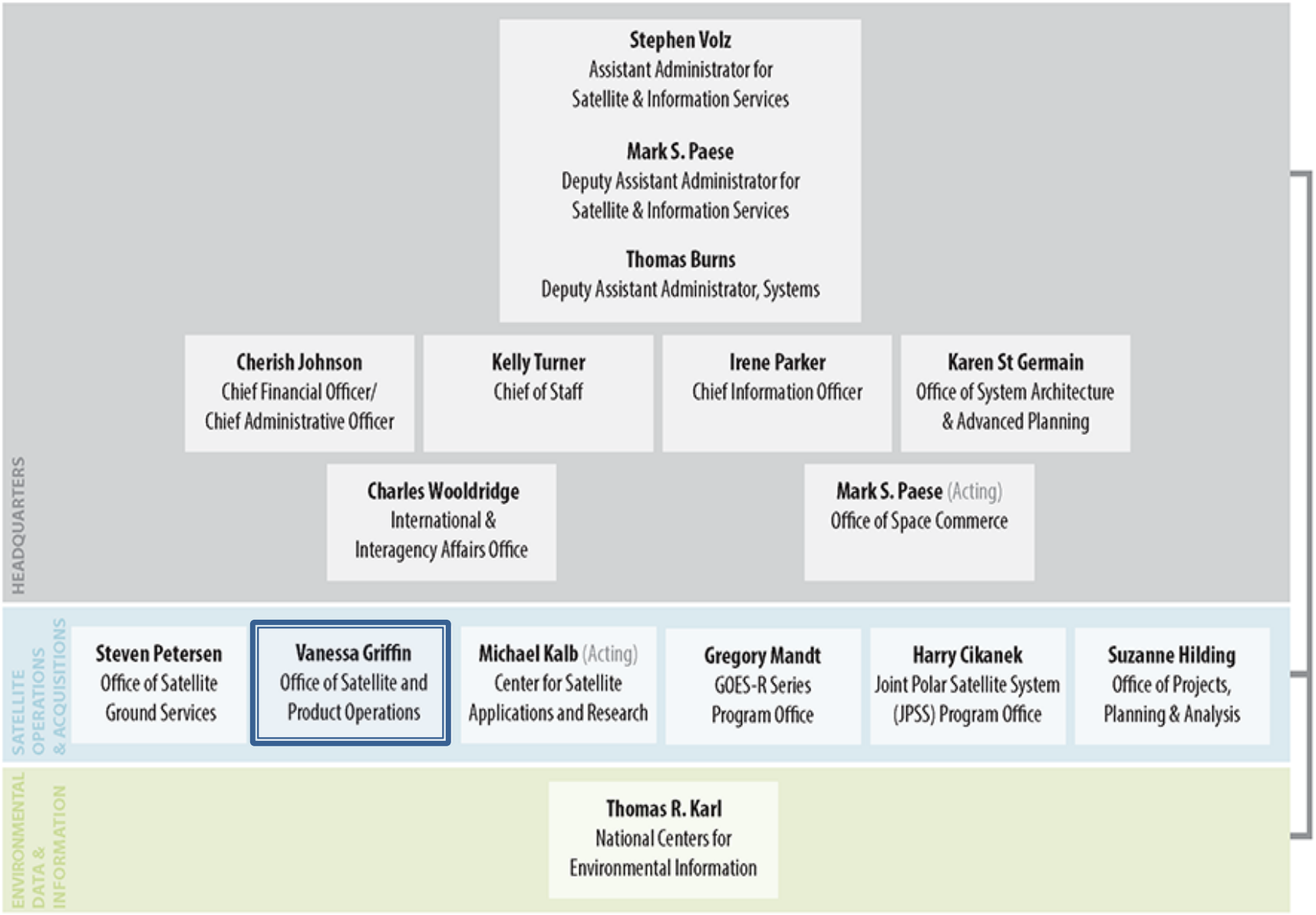
Deputy Assistant Administrator
Laura Furgione

Director Office of Marine & Aviation Operations (OMAO) & Director, NOAA Commissioned Officer Corps
RADM David A. Score

Deputy Director for Operations and Deputy Director, NOAA Commissioned Officer Corps
RDML Anita Lopez

Deputy Assistant Administrator for Programs & Administration, NOAA Corps
Thomas D. Crowley

NOAA Satellite and Information Services Organizational Chart



OSPO Organizational Chart

Vanessa L. Griffin
Director

CAPT Will Odell
Assistant Director

Karl Hampton
Chief of Staff

Greg Marlow
Deputy Director

Keith Amburgey
Corporate Services Manager

Larry Ledlow
Manger
Fairbanks
CDA Station

George McAulay
Deputy Manager

Doug Crawford
Manager
Wallops
CDA Station

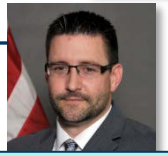
- **Al McMath** — Chief, Operations
- **Jim Deck** — Chief, Support
- **Bob Clark** — Chief, Systems Engineering

Ron Mahmot
Mission Operations
Division Chief
Scott Leonard
(Deputy Division Chief)

- **Scott Leonard** — Chief, Operations
- **Mike Settles** — Chief, Support Branch
- **Alva Jackson** — Chief, Systems Branch
- **Andre' Hammond** — Chief, IT Services Branch
- **Mark Danehy** — Chief, Engineering Branch

Tom Renkevens
Satellite Products &
Services Division Chief
Chris O'Connors
(Deputy Division Chief)

- **Antonio Irving** — Satellite Products Branch
- **Davida Streett** — Satellite Analysis Branch
- **Chris O'Connors** — Direct Services Branch



Kevin Berberich
National Ice Center
Deputy Director

Operations Summary

- GOES-R, JPSS, and ESPC Programs are working in concert with OSPO to ensure operational readiness.
  - Continuing to meet launch dates for GOES-R (10/13/2016) and JPSS-1 (1/20/2017).
- Performance of legacy systems is nominal; satellites and ground systems are aging.
- Completed Ground Transitions for DSCOVR.
- Completed Class Transition to OSPO, Q1 FY16.
- Impending Ground Transitions for GOES-R and JPSS being tracked carefully.

Future Missions/Events

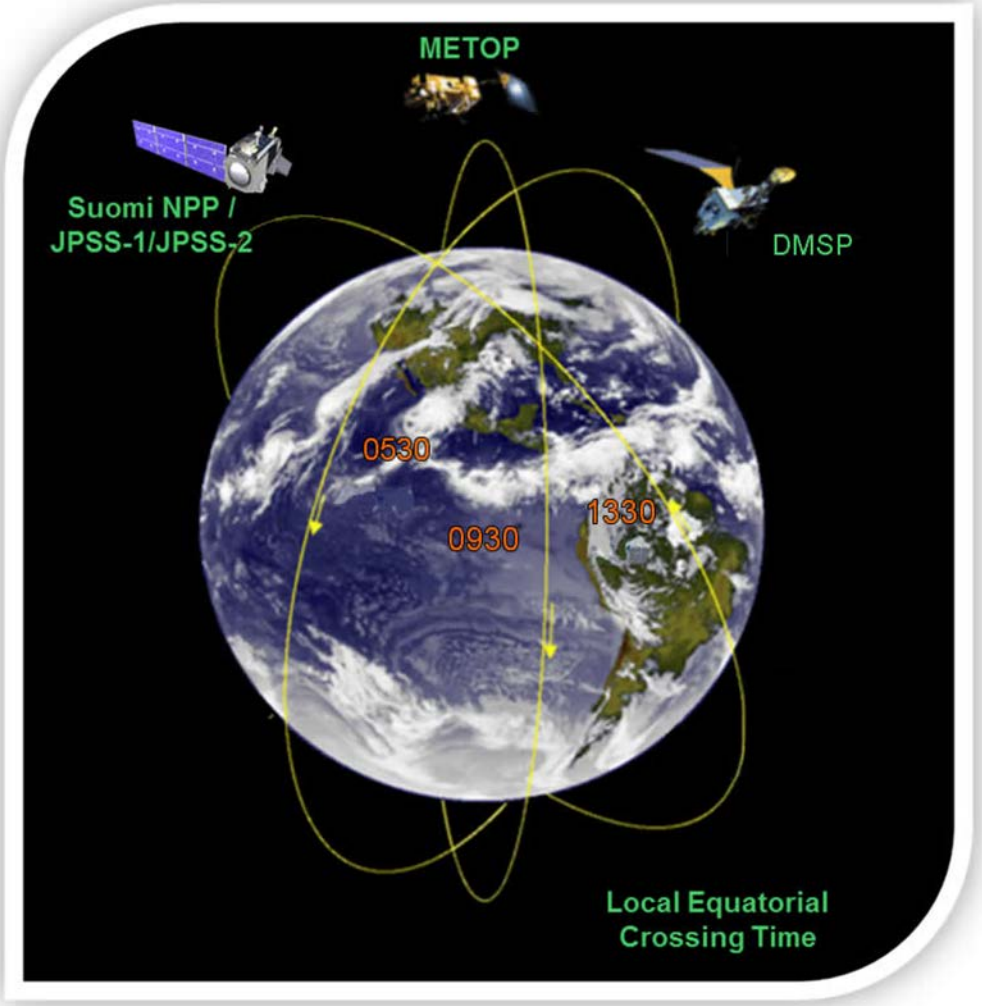
Mission	Date
NDE 2.0	4th Quarter FY 2016
PDA	4th Quarter FY 2016
Jason-3 CNES handover to NOAA Ops	June 1, 2016
COSMIC-2 Launch	3rd Quarter FY 2016
CBU	FY 2017
GOES-R Launch	October 13, 2016
JPSS-1 Launch	January 20, 2017
GOES-S Launch	2nd Quarter FY 2018
JPSS-2 Launch	4th Quarter FY 2021

Program Highlights: Polar

POES Satellites: Status - Green
- NOAA-15 launched May 1998
- NOAA-18 launched May 2005
- NOAA-19 launched Feb. 2009

Orbits
- Early Morning - DoD
- Mid Morning - EUMETSAT
- Afternoon - NOAA

3-orbit coverage provides the vast majority of data critical for 3-7 day ahead forecast and environmental monitoring.



Program Highlights: S-NPP

Suomi-NPP Mission Status:

- Launched on October 28, 2011, bridge from legacy POES/EOS to JPSS
- Instruments carried aboard:
  - Advanced Technology Microwave Sounder (ATMS)
  - Cross-track Infrared Sounder (CrIS),
  - Visible Infrared Imaging Radiometer Suite (VIIRS)
  - Ozone Mapping and Profiler Suite (OMPS)
  - Clouds and Earth's Radiant Energy System (CERES)
- Operations of the satellite transferred from NASA to NOAA in 2013
- Named NOAA's primary polar-orbiting weather satellite on May 1, 2014
- Observations/Products are exceeding expectation:
  - High data (SMD) recovery rates: ~100%
  - S-NPP NDE Product generation success rate: 99.9%
  - S-NPP NDE Product distribution success rate: 99.9%

NOAA-16 Breakup

Event:

- At 0816z on Nov 25th, the JSpOC detected multiple objects near NOAA-16. JSpOC assessed that NOAA-16 suffered a breakup event.

Status:

- NOAA and NASA received Honeywell/Lockheed study to determine most likely cause(s) of N-16 breakup.
- In March, JSpOC added 75 debris objects to catalog for a total of 275.

Findings of Study (Mar 1, 2016):

- Single “Likely” Root Cause: Battery Overcharge.
  - Due to Power Bus failure, likely that decommission commands not effective.
  - Battery explosion accounts for observed energy required for amount of debris and dispersion.

S-NPP Anomalies

S-NPP CrIS Autonomous Reset

- On Nov 19th, 2015 SNPP SVL Cross-track Infrared Sounder (CrIS) experienced an autonomous reset.
- Different signature from previous CrIS autonomous resets in Jan 2013 and Sep 2014.
- The CrIS has been returned to nominal operations.
- Flight Anomaly Review Board held on Feb 17. Harris presented status with no root cause yet determined.

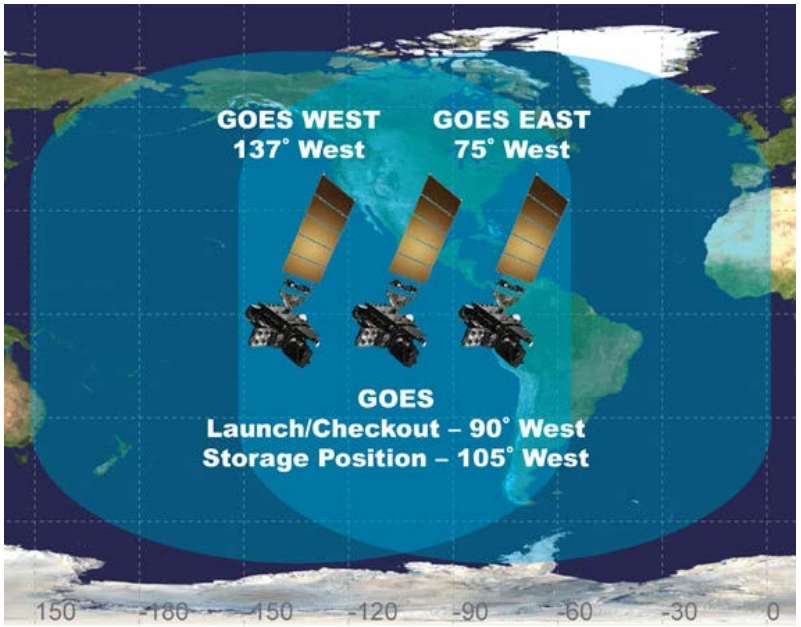
S-NPP ATMS Scan Drive Motor Bearing

- ATMS Scan Drive Motor (SDM) is occasionally drawing higher than normal current.
- Failure of the scan drive motor would cause a permanent outage of the ATMS microwave sounder information used in NWP data assimilation.
- Vendor exploring way ahead.

Program Highlights: GOES

Operational Satellite Configuration

- **GOES East** – GOES-13 at 75° W longitude
  - Operational GOES East since April 2010
  - No plan to replace GOES-13 at this time
  - Increased the coverage (both south and east) from GOES-13 Rapid Scan Imager, May 2014
  - GOES -13 Sounder Issue (separate slide)
- **GOES West** – GOES-15 at 137° W longitude
  - Operational GOES West since December 2011
  - Primary SXI and XRS instruments for Space Weather Prediction Center
  - Star Tracker issues (separate slide)



On-orbit Standby

- **GOES-14** at 105° W longitude as backup
  - Has been activated, used to support GOES East or GOES West within 6 hours
  - Support Super Rapid Scan Operation for GOES-R (SRSOR) as requested

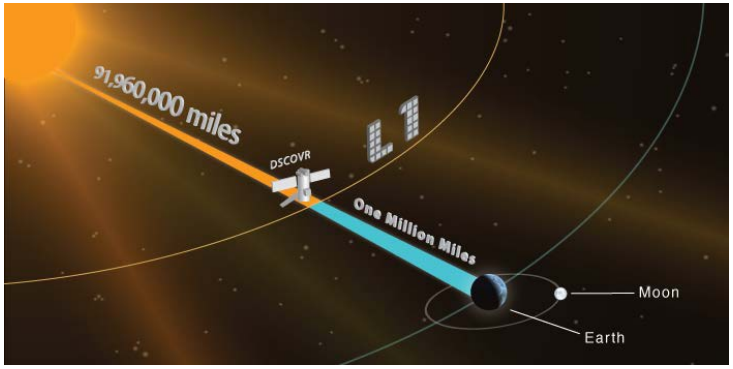
GOES Anomalies

- On April 23, 2015 **GOES-15** (West) is single string on Star Tracker (ST)
  - NWS has not reported any user related impacts upon their operations.
  - Satellite continues to operate nominally with single Star Tracker, ST3.
- On Oct 20, 2015, **GOES-13** Solar X-Ray Imager (SXI) experienced a flare level protection problem when the flare level increased unexpectedly.
  - Cause: degraded detector issue
  - Degraded detectors added to bad pixel map and software load generated.
  - Feb 3, SXI was restarted nominally without any false flare level issues.
- On Nov 20, 2015, **GOES-13** Sounder Filter Wheel (FW) motor experienced an anomaly which resulted in complete loss of IR data.
  - There is not useable Sounder IR data when the FW rpm deviates 5% or more from its nominal speed, 600 rpms.
  - Suspected Cause: FW motor lubricant viscosity
  - If the filter wheel does not restart in July, after the summer solstice, recommend declaring the filter wheel failed and the issue closed.

Program Highlights: DSCOVR

Key Accomplishments / Milestones:

- Launched February 11, 2015
- Insert observatory into L1 final orbit (June 7, 2015), and commission the observatory - Q3 FY15
- NASA returned first image from the Earth Polychromatic Imaging Camera (EPIC) July 6, 2015
- DSCOVR operational handover from NASA to NOAA completed October 28, 2015
- SWPC Operations Switch to DSCOVR from ACE – Summer 2016



On March 11, 2016, NASA's EPIC camera, aboard NOAA's DSCOVR satellite, captured a unique view of this week's solar eclipse. While residents of the Western Pacific looked up in the early morning hours to observe a total eclipse of the sun, DSCOVR looked on from a million miles away and captured the shadow of the moon crossing the planet.

DSCOVR Anomalies

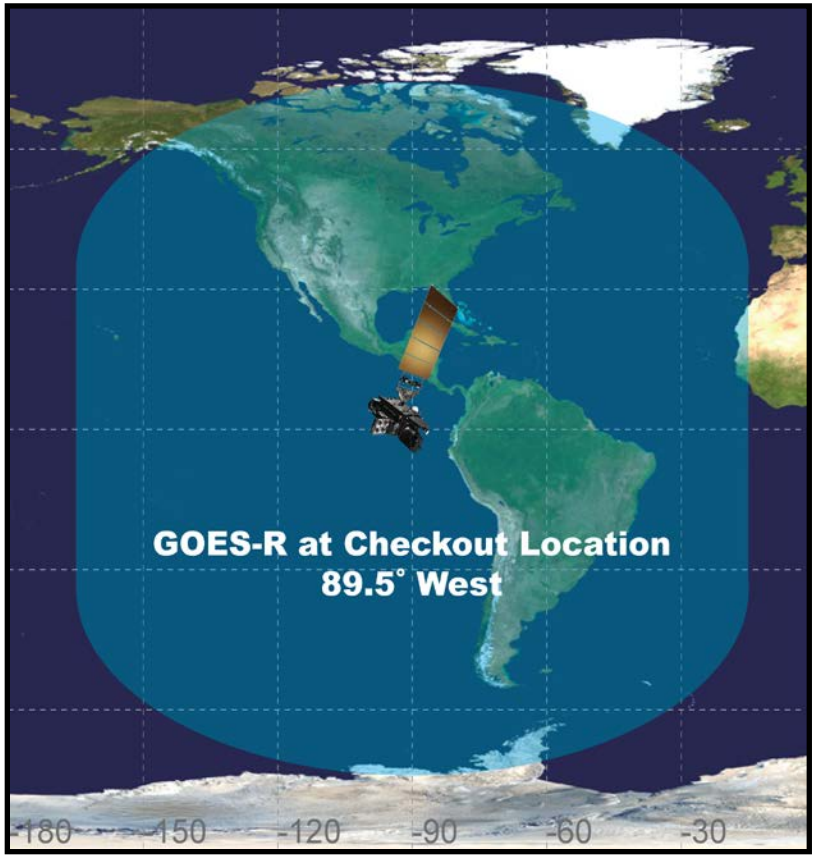
DSCOVR Safe-Hold

- Safe-hold events have occurred 8 times.
- Spacecraft entered Safe-Hold/Boot mode twice in January. The signature was same as previous instances – Processor Watchdog time-out. The previous safe-hold event (#6) was on Oct. 8th, prior to Transition from NASA.
- This anomaly is a known spacecraft issue.
- Spacecraft is in nominal configuration with all instruments and subsystems operating nominally.
- SWPC is working towards switching from ACE to DSCOVR date is this late Spring
- ACE will be available as back-up after switch to DSCOVR.

Future NOAA Mission Update

Look Ahead: GOES-R Series

- **GOES-R** launch scheduled for Oct 13, 2016
- Launch and orbit raising: 12 days, checkout location, 89.5° W longitude
- Level 1b products will be validated during Post Launch Test (6 months) and will be available through GOES-R Rebroadcast (GRB) service as products are certified.
- Level 2+ product certification begins after L1b products and will be distributed on a product-by-product basis as they mature.
- Observatory Acceptance: L + 195 days
- **GOES-16** extended validation: Mar 2017-Oct 2017 (TBD)
- **GOES-16** operational: Oct 2017 (TBD)
- **GOES-S** launch 2nd Quarter FY 2018 (TBD)



Look Ahead: JPSS

JPSS Summary	
Launch Dates	**JPSS-1: January 20, 2017; JPSS-2: 4th Quarter FY 2021**
Program Architecture	▪ **3 Satellites (Suomi NPP, JPSS-1, JPSS-2)** ▪ **4 Primary Instruments (ATMS, CrIS, VIIRS, OMPS)** ▪ **Global Ground System (Alaska, Colorado, Maryland, West Virginia, Norway, Antarctica)** ▪ **Operational design life: Suomi NPP: 5-year; JPSS-1 & JPSS-2: 7-year**
Program Operational Life	**FY 2012 - FY 2028**

NOAA responsibilities:

- End-to-end responsibility, requirements, funding, delivering to National Weather Service (NWS)
- Operations, data product science, enterprise ground elements services

NASA Goddard Space Flight Center responsibilities:

- Systems engineering lead
- Flight Segment, majority of Ground Segment
- Safety and mission assurance

Instrument Summary:

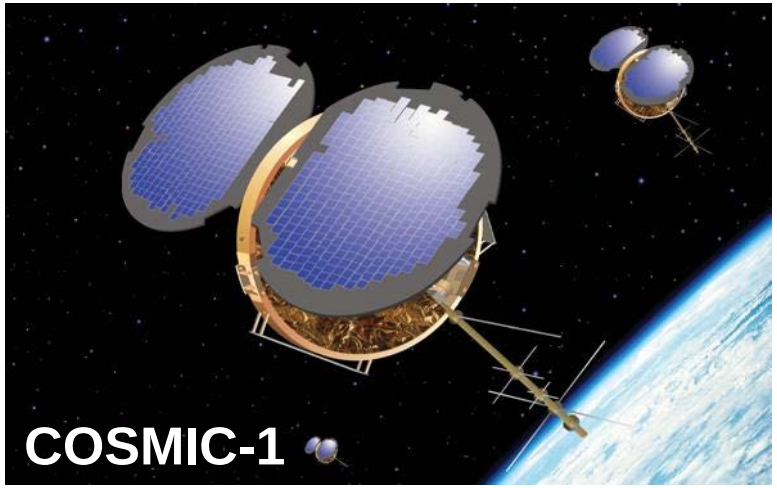
- Both JPSS-1 and JPSS-2 will carry the same 4 primary instruments: ATMS, CrIS, VIIRS, and OMPS
- JPSS-1 will carry the Cloud and Earth Radiant Energy System (CERES) and JPSS-2 will carry the Radiation Budget Instrument (RBI)

Non-NOAA Missions

Program Highlights: COSMIC

COSMIC-1 Constellation Status

- 4 of the original 6 satellites are still operational, operational satellites are degraded (batteries)
- Currently collecting a little over 1000 soundings per day



COSMIC-2 Status

- Launch six satellites into low-inclination orbits (24 degrees) in 2016, and another six satellites into high-inclination orbits (72 degrees) in 2018.
- USAF has agreed to modify Mark IVB ground terminals for receipt of COSMIC-2 data

Program Highlights: Jason-3

JASON-3 US-European Mission Milestones:

- January 17, 2016: Satellite successfully launched from Vandenberg Air Force Base in California.
- February 12, 2016: Satellite reached its final orbit at 830 miles above the earth, directly behind Jason-2.

- May 23, 2016: Scheduled Jason-3 Handover review.
- June 1, 2016: Scheduled Satellite Handover from CNES to NOAA.
- December 15, 2016 (TBC): Final verification and official release of the Jason-3 climate data records for users in the climate community.

Other Topics

Continuity of Operations Plan (COOP)

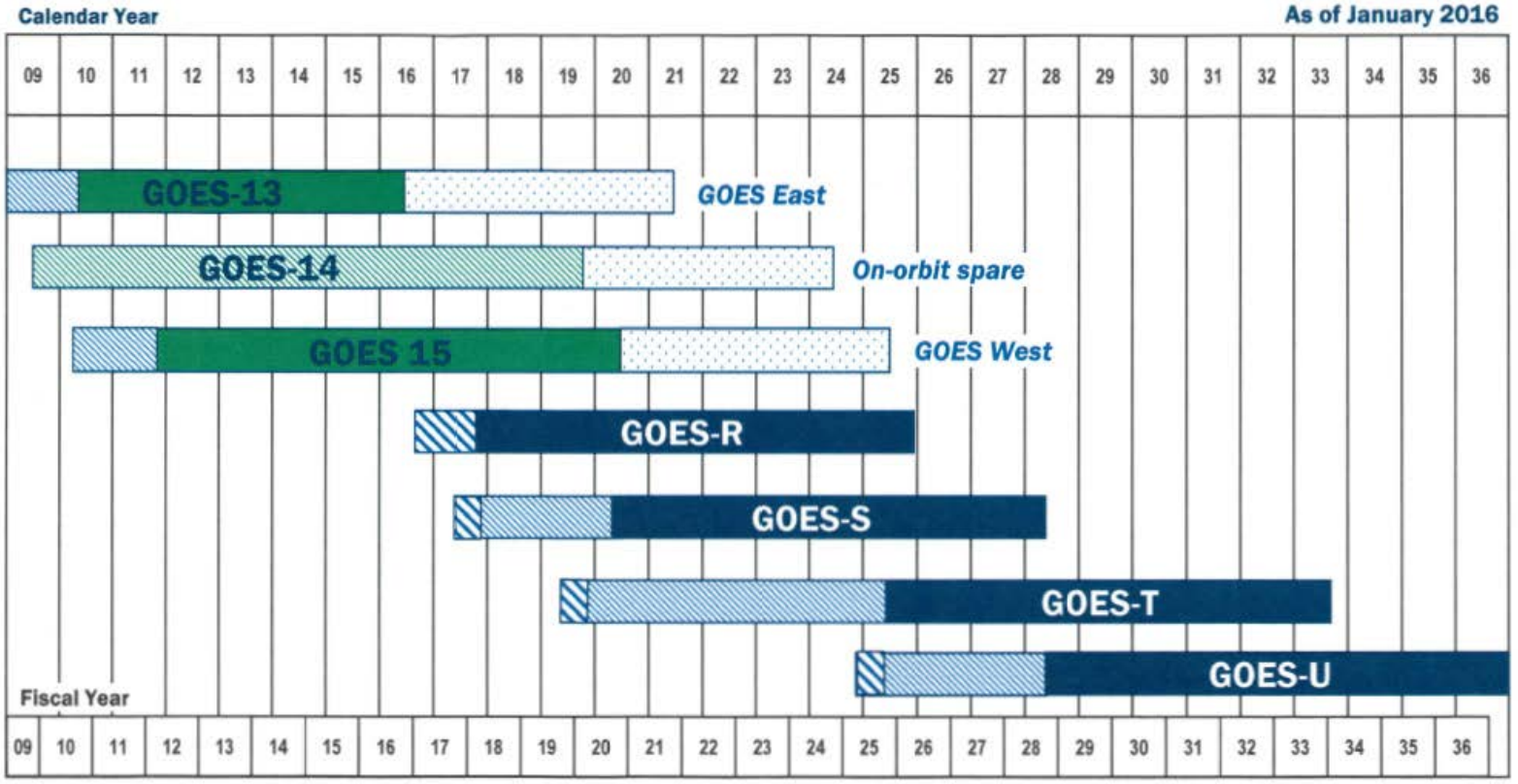
- Partial ESPC MPLS Failover Exercises successfully completed December 31, 2015.
- Full ESPC MPLS Failover Exercises scheduled April 27-28, 2016.
- SOCC MPLS Failover Exercises scheduled May 16-20, 2016.
  - GOES and POES at WCDAS, Wallops, VA
  - S-NPP, Aurora, CO

Navy's Next Generation Triton Drone Program

- Wallops Island is one of 3 sites under consideration to be home to the Triton surveillance program.
- Navy's assessments are expected to be complete by late June.
- Operations are planned to start in 2020.

Backup Slides

NOAA Geostationary Satellite Programs
Continuity of Weather Observations

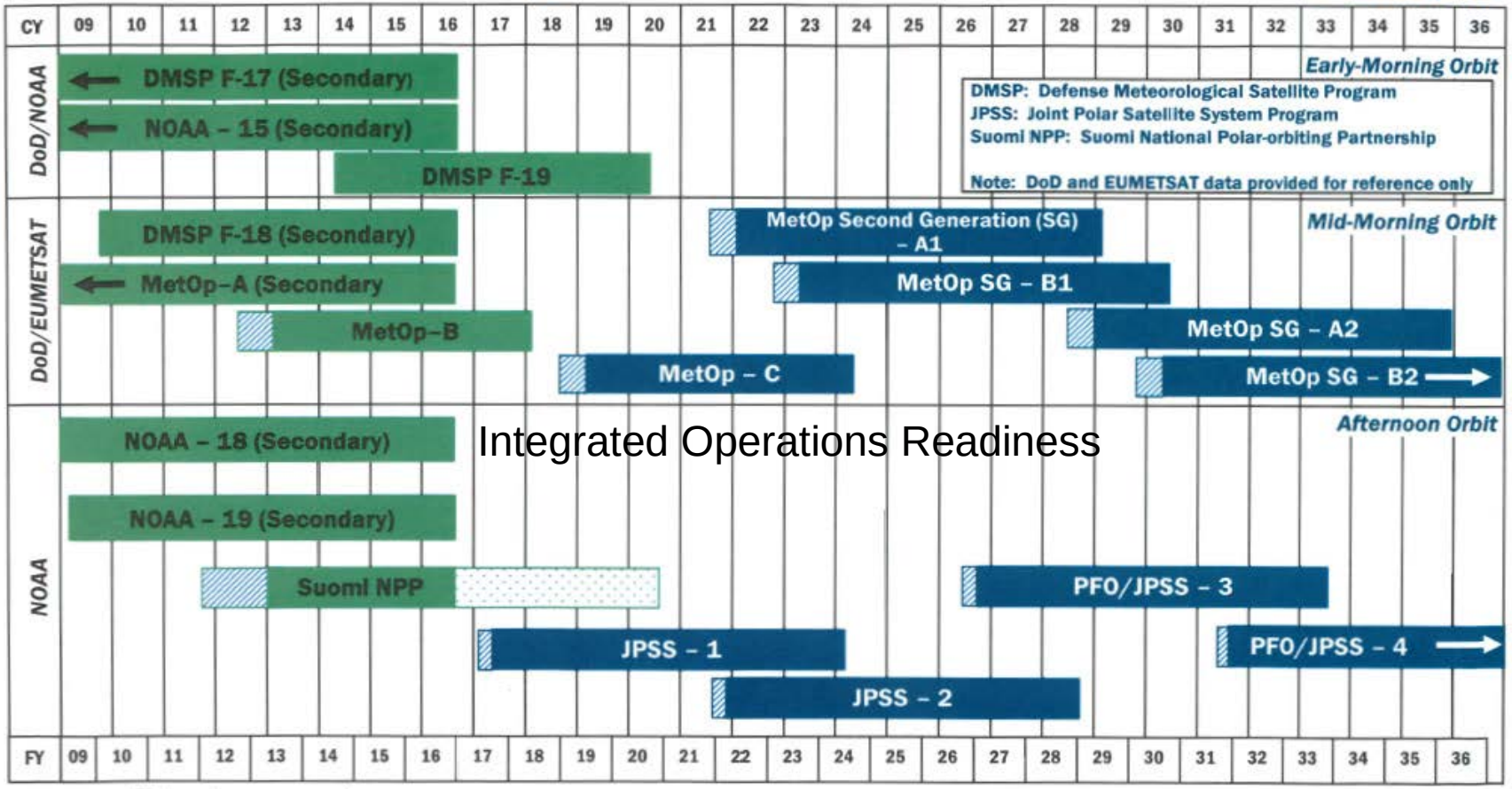


Approved: _____
Assistant Administrator for Satellite and Information Services

In orbit, operational
In orbit, storage
Fuel-Limited Lifetime Estimate
Planned On-orbit Storage
Test & Checkout
Planned Mission Life

NOAA & Partner Polar Satellite Programs
Continuity of Weather Observations

As of January 2016



Integrated Operations Readiness

Approved: Stephen Volz

Assistant Administrator for Satellite and Information Services

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

- In orbit
- Post Launch Test
- Fuel-Limited Lifetime Estimate
- Planned Mission Life, from Launch Readiness Date
- Launched before Oct 2008
- Operational beyond Dec 2036

Acronyms

A&DP	Algorithms and Data Processing
A&O	Acquisition and Operations
AA	Assistant Administrator
ABI	Advanced Baseline Imager
AC	Active Cooler
Ack	Acknowledged
ADRS	Ancillary Data Relay Systems
AIADD	Algorithm Interface and Ancillary Data Description
ASIC	Application Specific Integrated Circuit
ATBD	Algorithm Theoretical Basis Document
ATC	Assurance Technology Corp
ATMS	Advanced Technology Microwave Sensor
AWIPS	Advanced Weather Interactive Processing System
BAC	Budget at Complete
BS-2	Beam Splitter-2
BSS	Boeing Space Systems
C&DH	Command and Data Handling
C3S	Command, Control, and Communication Segment
CA	Contract Award
Cal/Val	Calibration and Validation
CCB	Configuration Control Board
CCD	Charge Coupled Device
CDR	Critical Design Review
CIO	Chief Information Officer
CLA	Coupled Loads Analysis
CLASS	Comprehensive Large Array-data Stewardship System
CLIN	Contract Line Item Number
CMC	Center Management Council
CMI	Cloud & Moisture Imagery
COTR	Contracting Officer's Technical Representative
CPI	Cost Performance Index
CPLI	Critical Path Length Index
CPT	Comprehensive Performance Test
CONOPS	Concept of Operations
CR	Continuing Resolution
CrIS	Cross Track Infrared Sounder
CS	Consolidated Storage
CV	Cost Variance
DCS	Data Collection System
DDF	Distributed Data Fabric
DE	Development Environment
DMZ	Demilitarized Zone
DOD	Depth of Discharge
DPA	Data Products and Algorithms
DPMC	Directorate Program Management Council
DPU	Data Processing Unit
EAC	Estimate at Completion
ECD	Estimated Completion Date
ECRB	Engineering Change Review Board
EDU	Engineering Development Unit
EHIS	Energetic Heavy Ion Sensor
ELV	Expendable Launch Vehicle
EM	Enterprise Management
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EOL	End-of-Life
EPP	Earth Pointing Platform
EPS	Energetic Particle Sensor
EPS	Electrical Power Subsystem
ESD	Electrostatic Discharge
ESPDS	Environmental Satellite Processing & Distribution System
EUVS	Extreme Ultra-Violet Sensor
EVM	Earned Value Management
EXIS	EUVS / XRS Irradiance Sensor

Acronyms (con't.)

FM-1	**Flight Model 1**
FMDS	Fault Management Design Specification
FMFO	Fault Management Flight Operations
FOR	**Flight Operations Review**
FPA	**Focal Plane Assembly**
FPAA	**Focal Plane Array Assembly**
FPM	**Focal Plane Module**
FSDE	**Flight Software Development Environment**
FSW	**Flight Software**
FY	**Fiscal Year**
GAO	**Government Accountability Office**
GAS	**GOES-R Access Subsystem**
GLM	**Geostationary Lightning Mapper**
GN&C	**Guidance Navigation and Control**
GRB	**GOES Re-Broadcast**
GRD	**Ground Readiness Date**
GRID	**Giver-Receiver Intersegment Database**
GS	**Ground System**
GSA	**General Services Administration**
GSE	**Ground Support Equipment**
GSFC	**Goddard Space Flight Center**
HAG	**High Assurance Guard**
HOPA	**High Output Paraffin Actuator**
I&T	**Integration and Test**
IBR	**Integrated Baseline Review**
ICE	**Independent Cost Estimate**
IDPS	**Interface Data Processing Segment**
IFDS	**IF Distribution Switch**
IIRT	**Integrated Independent Review Team**
IP	**Intermediate Products**
IPMS	**Integrated Program Master Schedule**
IRD	**Interface Requirements Document**
IRT	**Independent Review Team**
IS	**Infra Structure**
IT	**Information Technology**
ITE	**Integration & Test Environment**
ITT	**ITT Industries**
JCL	**Joint Confidence Level**
JPSS	**Joint Polar Satellite System**
KDP	**Key Decision Points**
KSC	**Kennedy Space Center**
LASP	**Laboratory for Atmospheric and Space Physics**
LLA	**Launch Lock Assembly**
LMATC	**Lockheed Martin Advanced Technology Corp**
LMSSC	**Lockheed Martin Space Systems Corp.**
LOE	**Level of Effort**
LRE	**Latest Revised Estimate**
LRD	**Launch Readiness Date**
LWIR	**Longwave Infrared**
MAR	**Mission Assurance Requirements**
MCP	**Management Control Plan**
MM	**Mission Management**
MOR	**Mission Operations Review**
MPS	**Magnetospheric Particle Sensor**
MRD	**Mission Requirements Document**
MTF	**Modulation Transfer Function**
MWIR	**Midwave Infrared**
Nack	**Not Acknowledged**
NG	**Northrop Grumman**
NGAS	**Northrop Grumman Aerospace Systems**
NGES	**Northrop Grumman Electronic Systems**
NIST	**National Institute of Standards and Technology**
NIR	**Near Infrared**
NOSC	**NOAA Operating Systems Council**
NSOF	**NOAA Satellite Operations Facility**
NTE	**Not To Exceed**
OIG	**Office of the Inspector General**

Acronyms (con't.)

OBE	Overcome by Events
OMPS	Ozone Mapping and Profiler Suite
ORR	Operations Readiness Review
OPSA	Optical Port Sunshield Assembly
OS-COMET	Satellite Command and Control Tool Suite from Harris Corporation
OSPO	Office of Satellite Products and Operations
OWL	One Way Links
PD	Product Distribution
PDA	Product Distribution and Access
PDR	Preliminary Design Review
PFM	Proto-Flight Model
PG	Product Generation
PMC	Program Management Council
PPZ	Product Processing Zone
PSE	Program Systems Engineering
PTM	Proto-Type Model
PWB	Printed Wiring Board
QA	Quality Assurance
RBU	Remote Back-up Unit
RE	Radiated Emissions
RFA	Request for Action
RFP	Request for Proposal
ROM	Rough Order of Magnitude
RS	Radiated Susceptibility
RW	Rolling Wave
RWA	Reaction Wheel Assembly
SA	Solar Array
SAR	Search and Rescue
SAWA	Solar Array Wing Assembly
S/C	Spacecraft
SCR	System Concept Review
SDR	System Definition Review
SEB	Sensor Electronics Box
SEISS	Space Environmental In-Situ Suite
SE&I	Systems Engineering and Integration
SGC	Space to Ground Communications
SGPS	Solar and Galactic Particle Sensor
SMC	Space and Missile Center
SMSR	Safety and Mission Success Review
SNPP	Suomi National Polar-orbiting Partnership
SOW	Statement of Work
SOZ	Satellite Operations Zone
SPI	Schedule Performance Index
SPP	Solar Pointing Platform
SPS	Solar Pointing Sensor
SRB	Standing Review Board
SRR	System Requirements Review
STAR	Satellite and Applications Research Center
SUVI	Solar Ultra Violet Imager
SV	Schedule Variance
SWPC	Space Weather Prediction Center
SXI	Solar X-ray Imager
TBX	To be Determined/Revised/Supplied
TCPI	To Complete Performance Index
TCTE	`Total solar irradiance Calibration Transfer Experiment
TIM	Technical Interchange Meeting
ULA	United Launch Alliance
VIIRS	Visible Infrared Imager Radiometer Suite
VNIR	Visible Near-Infrared
VPN	Virtual Private Network
WCDAS	Wallops Command and Data Acquisition Station
WFE	Wave Front Error
WRT	With Respect To
XRS	X-Ray Sensor