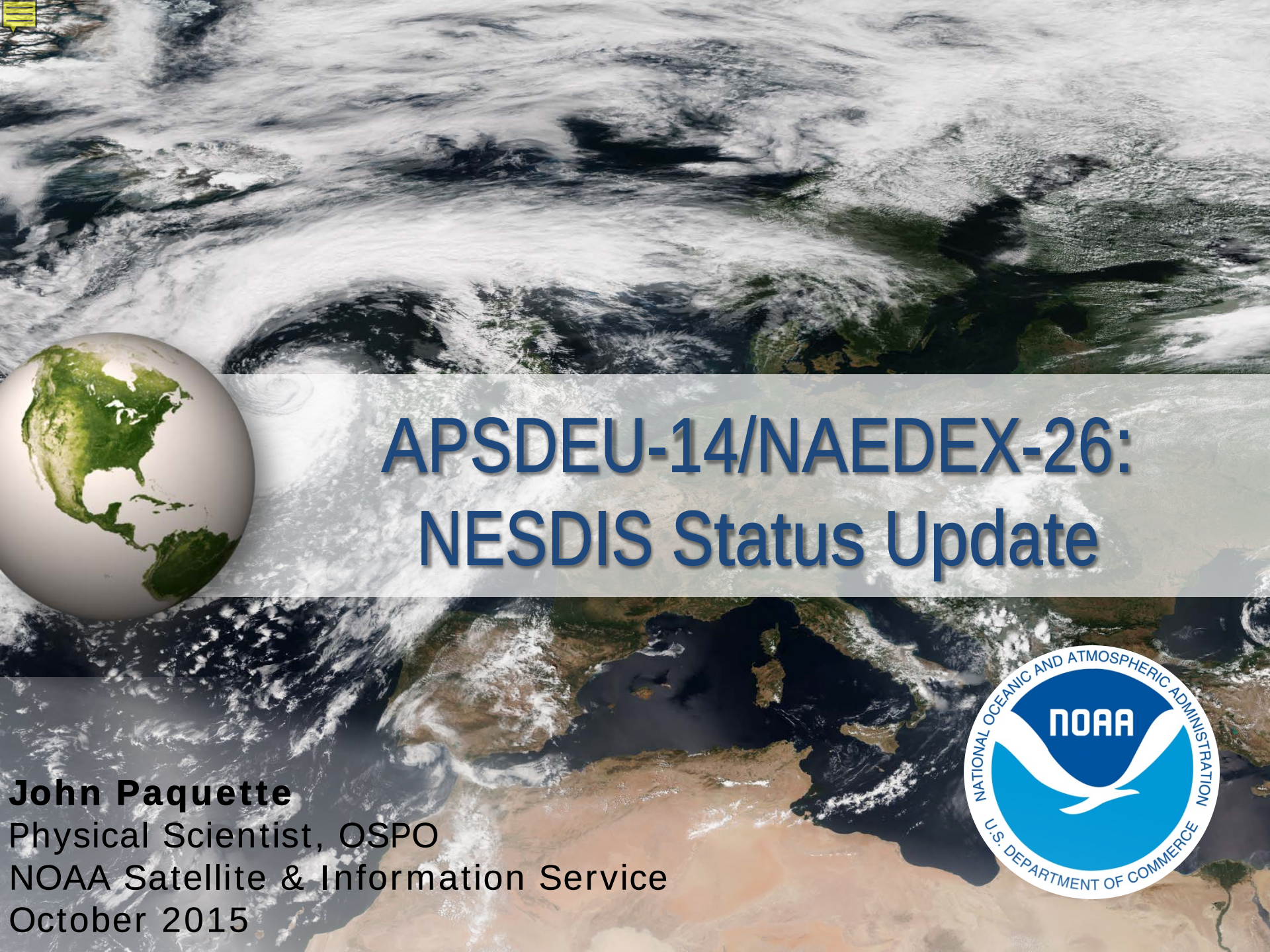


APSDEU-14/NAEDEX-26: NESDIS Status Update

John Paquette
Physical Scientist, OSPO
NOAA Satellite & Information Service
October 2015

NESDIS Principal Activities

Currently Providing 24/7 On-Orbit Satellite Operations

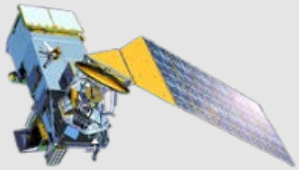
- Geostationary satellites (GOES)
- Polar-orbiting satellites (POES)
- Defense Meteorological Satellite Program (DMSP)
- Jason-2 Altimetry Satellite
- Suomi National Polar-orbiting Partnership (S-NPP)
- DSCOVR (Solar Wind Continuity)

POES

GOES

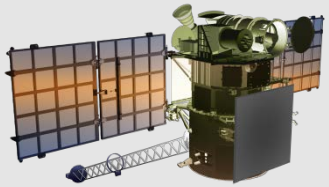
Acquiring Next Generation Satellites

- Jason-3 Altimetry Satellite
- COSMIC-2 Radio Occultation
- GOES–R Satellite Series
- Joint Polar Satellite System (JPSS)



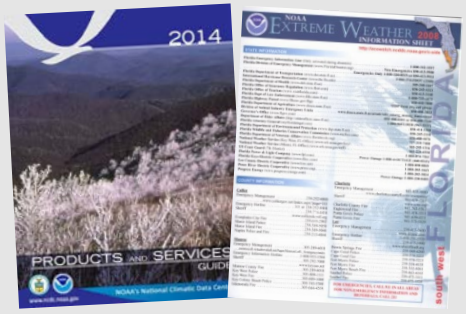
JPSS

GOES-R



DSCOVR

Providing Long Term Data Stewardship

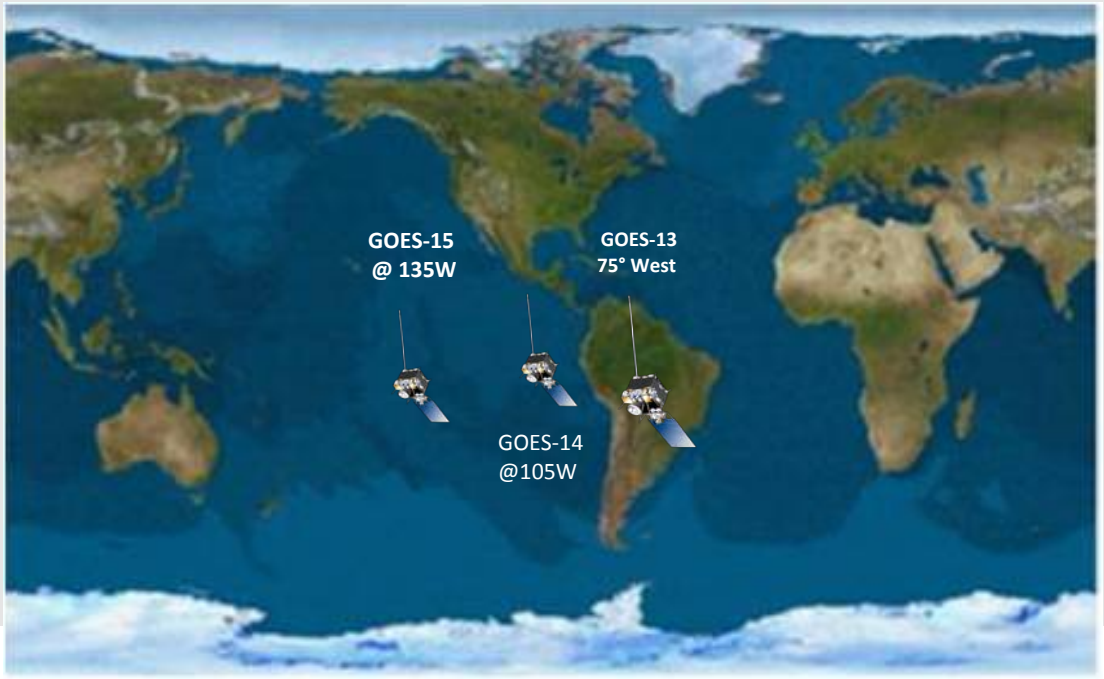


NEIO

Conducting Research and Developing Operations

Current Geostationary Observations: GOES-NOP

GOES-15	GOES-14	GOES-13
Launched: 3/2010 Located: 135°W GOES-WEST	Launched: 6/2009 Located: 105°W On-Orbit Storage	Launched: 5/2006 Located: 75°W GOES-EAST



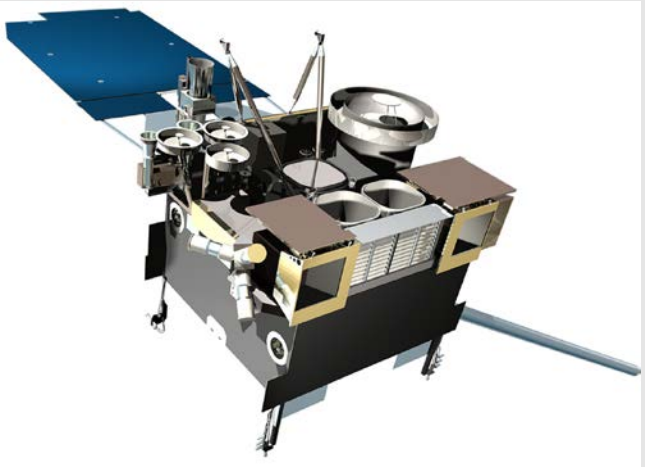
Current Geostationary Observations: GOES-13 (East)

Issue #1:
Sounder filter wheel anomaly.
Sounder frame sync losses.

Impact:
Sounder pixel dropouts (minimal).

Issue #2:
CRS capacitor short.

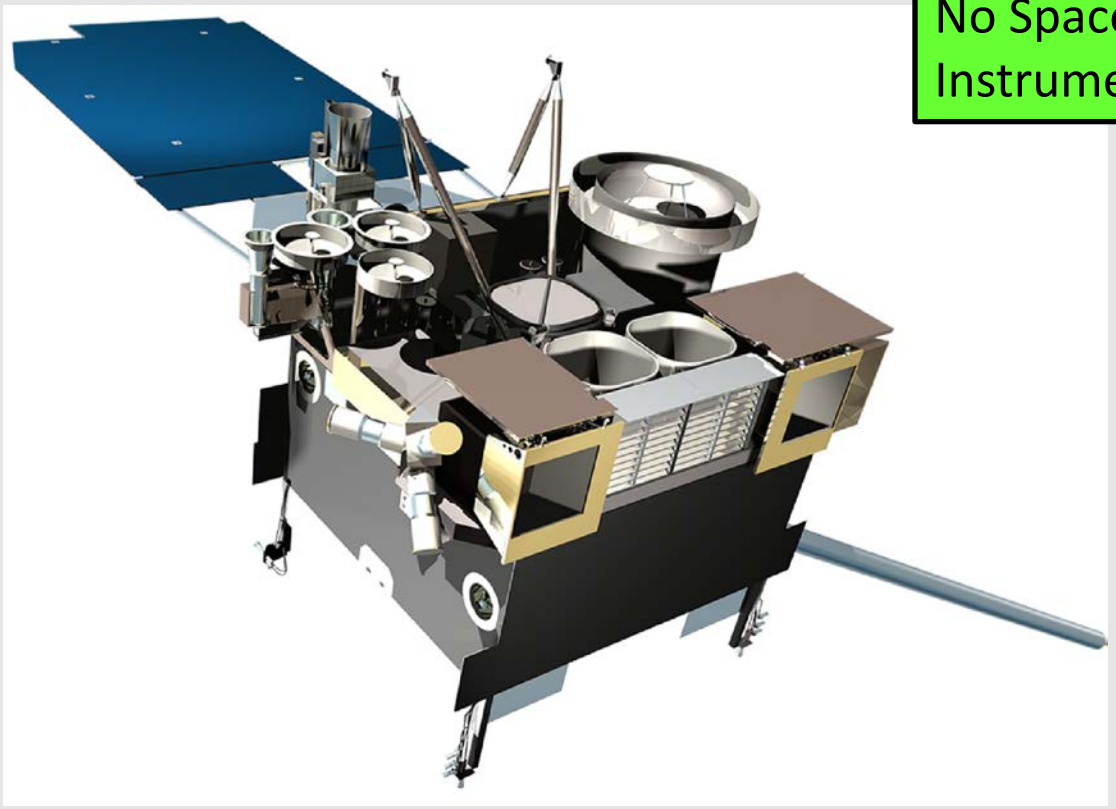
Impact:
XRS X-ray measurements can potentially invert unexpectedly.



Issue #3:
SXI detector damage due to flare.

Impact:
Nine rows currently affected out of 512 total.

Current Geostationary Observations: GOES-14 (Standby)

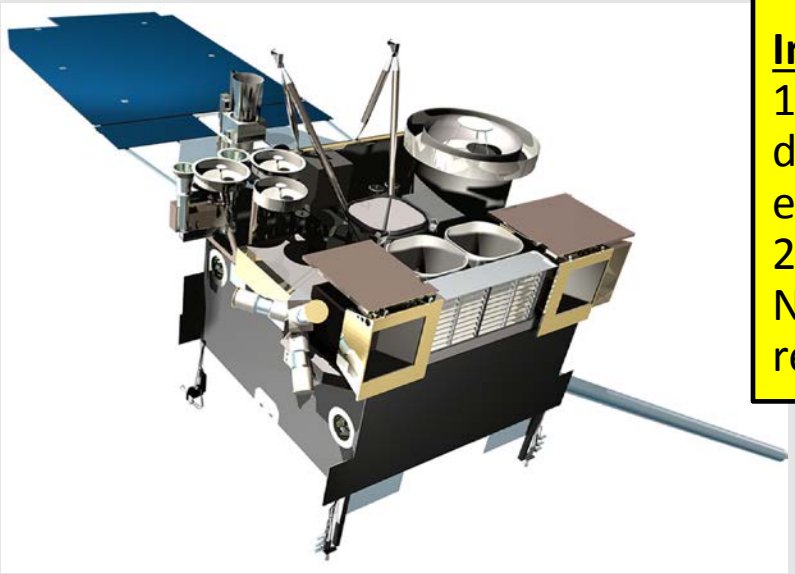


No Spacecraft or Instrument Issues

Current Geostationary Observations: GOES-15 (West)

Issue #1:
Star Tracker1 (ST1) and Star Tracker2 (ST2) failure. Operations with ST3 only.

Impact:
Degraded INR performance.



Issue #2:
Sounder temperature control blanket is raised. To maintain patch temperature control, a yaw flip at Equinox to keep Sun angle below cooler plane.

Impact:
1 hour data outage and degraded products during each yaw flip maneuver and 28 hours of INR (Image Navigation & Registration) recovery period.

Current Geostationary Observations: Instrument Status GOES-NOP

Payload Instrument	GOES-13 (East) Launch: May 06 Activation: Apr 10	GOES-14 (Standby) Launch: Jun 09 Activation: TBD	GOES-15 (West) Launch: Mar 10 Activation: Dec 11
Imager	G	G	G
Sounder	G	G	Y
Energetic Particle Sensor (EPS)	G	G	G
Magnetometers	G	G	G
High Energy Proton and Alpha Detector (HEPAD)		G	G
X-Ray Sensor (XRS)	Y	G	G
Solar X-Ray Imager (SXI)	Y	G	S/C
Spacecraft Subsystems			
Telemetry, Command & Control	G	G	G
Attitude and Orbit Control	G	G	G
Inclination Control	G	G	G
Propulsion	G	G	G
Mechanisms	G	G	G
Electrical Power	G	G	G
Thermal Control	G	G	G
Communications Payloads	G	G	G

Key

Operational

G

Operational with limitations

Y

Non-operational

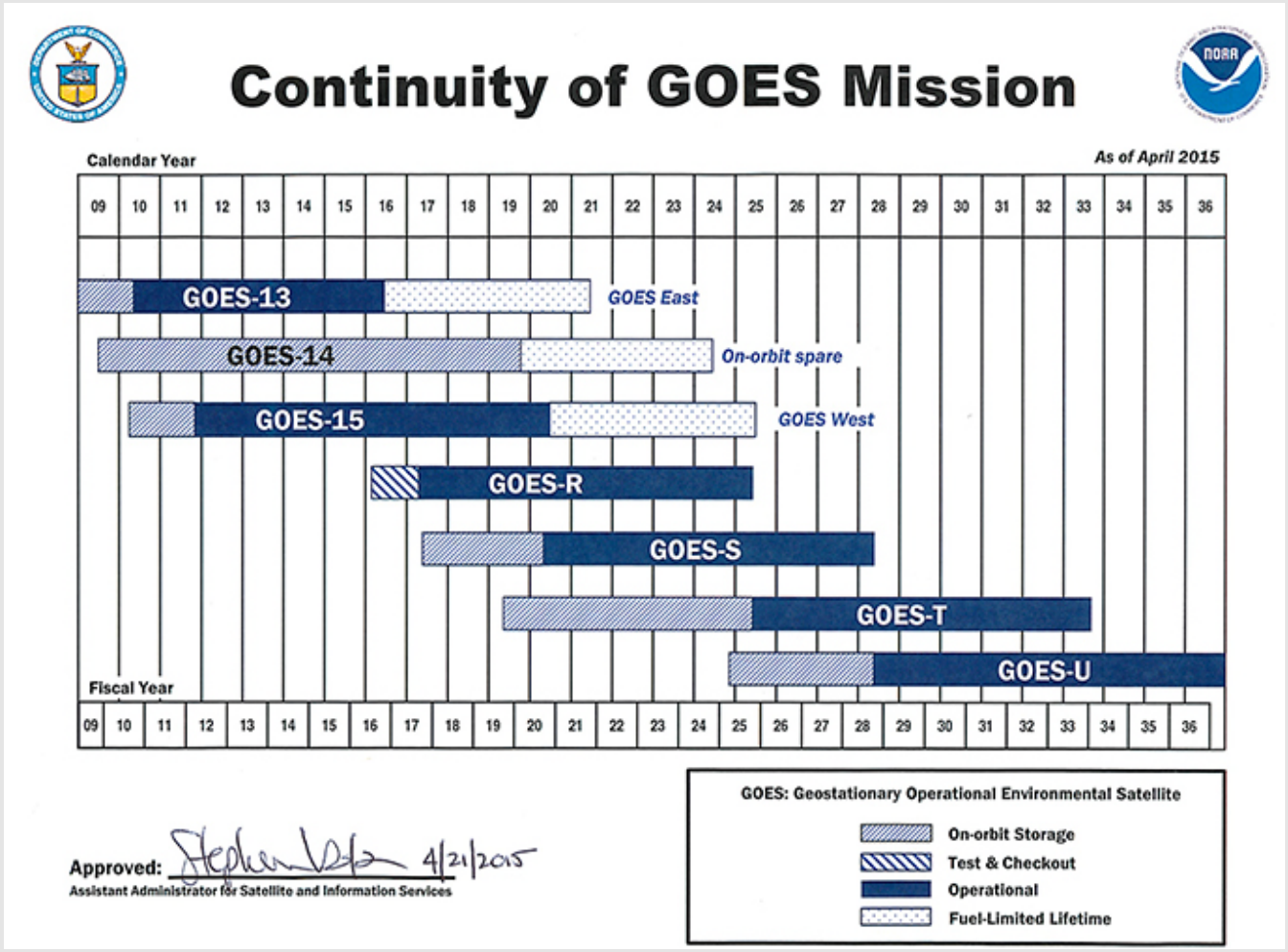
R

Current Geostationary Observations: Product Status GOES-NOP

	GOES-13	GOES-15
Launch Date	May 2006	March 2010
Operational Date	April 2010	December 2011
Mission Data Category	GOES-East	GOES-West
Product Areas		
Imagery	G	G
Radiances	G	G
RadBud/Emissivity	G	G
Soundings	G	G
Winds	G	G
Sea Surface Temp	G	G
Precipitation	G	G
Volcanic Ash	G	G
Tropical Products	G	G
Ozone	N/A	N/A
Fire and Smoke	G	G
Snow and Ice	G	G
Vegetation	N/A	N/A
Broadcast Services	G	G

Operational	G	Future S-NPP products	
Operational with Issues During Reporting Period	Y	Operational with Degradation	O
Non-Operational	R	Not Applicable	N/A

Geostationary Observations: Flyout Schedule



Current Polar-Orbiting Observations: POES and Suomi NPP

NOAA-15	NOAA-18	NOAA-19	Suomi NPP
Launched: 12/1998 Secondary AM orbit	Launched: 8/2005 Secondary PM orbit	Launched: 6/2009 Secondary PM orbit	Launched: 10/2011 Primary PM orbit

Current Polar-Orbiting Observations: Instrument Status

Spacecraft Subsystems	METOP-A	METOP-B	NOAA-19	NOAA-18	NOAA-15
Launch Date	Oct 2006	Sept 2012	Feb 2009	May 2005	May 1998
Operational Date	May 2007	April 2013	Jun 2009	Aug 2005	Dec 1998
Mission Data Category	Secondary (AM)	Primary (AM)	Secondary (PM)	Secondary (PM)	Secondary (AM)
Payload Instruments					
AVHRR	G	G	G	G	Y(19)
HIRS	G	Y(32)	O (31)	R (3)	R (5)
AMSU-A1	O (30)	G	G	G	Y(20)
AMSU-A2	G	G	G	G	
AMSU-B	N/A		N/A	N/A	R (11)
MHS	G	G	Y (6)	G	N/A
SEM	G	G	G	G	G
SBUV	N/A		S/C (9)	R(27)	N/A
Spacecraft Subsystems					
Telemetry, Command & Control	G	G	G	G	G
ADACS	G	G	G	G	O (10)
EPS	G	G	G	G	G
Thermal Control	G	G	G	G	Y(21)
Communications	Y (1)	G	G	G	Y(22)
APT/LRPT	R (2)	G	G	G	G
DCS	N/A	N/A	N/A	G	G
ADCS	G	O(29)	Y(34)	N/A	N/A
SAR: SARR & SARP	G	Y(35)	G	G	Y(23)

Definition of Status Colors

Operational	G	Spacecraft Issue but No User Impact	S/C
Operational with Limitation	Y	Operational with Degradation	O
Non-Operational	R	Not Applicable	N/A

Current Polar-Orbiting Observations: Product Status of Operational Satellites

	METOP-B	NOAA-19	S-NPP*
Launch Date	Sept 2012	Feb 2009	Oct 2011
Operational Date	April 2013	Jun 2009	Sept 2013 (NDE)
Mission Data Category	Primary (AM)	Secondary (PM)	Primary (PM)
Product Areas			
Imagery	G	G	G
Radiances	G	G	G (CrIS/ATMS)
RadBud/Emissivity	G	G	G (Emissivity)
Soundings	G	G	G (CrIS/ATMS Moist and Temp Profiles)
Winds	G	G	G (VIIRS PW)
Sea Surface Temp	G	G	G (VIIRS SST)
Precipitation	G	G	G (MIRS RR+TPW)
Volcanic Ash	G	G	FY-16
Tropical Products	G	G	G (NTCP)
Ozone	G	G	G (OMPS TC/Profile + CrIS Ozone)
Fire and Smoke	G	G	G(Active fires and AOT)
Snow and Ice	G	G	G (Binary Snow Cover)
Vegetation	G	G	G (VIIRS Green Vegetation Fraction)
Broadcast Services	G	G	G

Operational	G	Future S-NPP products	
Operational with Issues During Reporting Period	Y	Operational with Degradation	O
Non-Operational	R	Not Applicable	N/A

*NPP Products includes only those deemed operational since NDE handover Sept 26, 2013

Current Polar-Orbiting Observations: Product Status of Backup Satellites

	METOP-A	NOAA-18	NOAA-15
Launch Date	Oct 2006	May 2005	May 1998
Operational Date	May 2007	Aug 2005	Dec 1998
Mission Data Category	Secondary (AM)	Secondary (PM)	Secondary (AM)
Product Areas			
Imagery	G	G	G
Radiances	G	Y	Y
Radiation Budget/Emissivity	G	G	G
Soundings	Y	R	R
Winds	G	G	G
Sea Surface Temp	G	G	R
Precipitation	G	G	Y (TPW Only)
Volcanic Ash	G	G	N/A
Tropical Products	G	G	G
Ozone	G	Y	R
Fire and Smoke	G	G	G
Snow and Ice	G	G	G
Vegetation	G	G	R
Broadcast Services	Y*[1]	G	G

Operational	G	Future S-NPP products	
Operational with Issues During Reporting Period	Y	Operational with Degradation	O
Non-Operatioal	R	Not Applicable	N/A

1. *[2]Metop-A AHRPT does not support full global coverage due to earlier failure of part of the AHRPT system

Current Polar-Orbiting Observations: Status of Suomi NPP

S-NPP Space System is GREEN

Spacecraft	S-NPP
Launch Date	Oct 28, 2011
Mission Category	LTAN 1330 (PM)

- Operational (or capable of)
- Operational with limitations (or standby)
- Operational with degraded performance
- Not functional

Spacecraft Subsystem	**Status**
TLM, Command & Control	G
ADCS	G
EPS	G
Thermal Control	G
Communications	G
CDP	G
SCC	G
GPS	G
1553	G
1394	G

Payload Instruments	**Status**
ATMS	G
CERES	G
CrIS	G
OMPS – Nadir	G
OMPS – Limb	G
VIIRS	G

Current Polar-Orbiting Observations: Suomi NPP NDE Operational Products

Application Short Name	Application Name	Product Name	Format	Satellite
ACSPO SST	Advanced Clear Sky Processor for Oceans (NDE) - SST	SST, Clear Sky Mask	netCDF	SNPP
AOT	Aerosol Optical Thickness	VIIRS Aerosol Optical Thickness (NDE)	BUFR	SNPP
ATMS-SDR	ATMS SDR radiances	ATMS SDR radiances 22 channels (NDE)	BUFR	SNPP
CRIS-SDR-399	CrIS SDR radiances 399	CrIS IR sounder SDR radiances 399 channels for NWP data assimilation (NDE)	BUFR	SNPP
CRIS-SDR-1305	CrIS SDR radiances 1305	CrIS IR sounder SDR radiances 1305 channels for NWP data assimilation (NDE)	BUFR	SNPP
GVF	GVF	Green Vegetation Fraction – 7 day product	Grib2	SNPP
NUCAPS Level 2	NOAA Unique CrIS ATMS product System Level 2	CrIS/ATMS Atmospheric Temp Profile CrIS/ATMS Atmospheric Moisture Profile	netCDF	SNPP
NTCP	Tropical Cyclone Products	ATMS Microwave Tropical Cyclone Product	ATCF Ascii	SNPP
MIRS ATMS	Microwave Integrated Retrieval System (NDE) - ATMS	MIRS ATMS image products MIRS ATMS SND products	netCDF	SNPP
OMPS-NP	OMPS nadir profile	Ozone nadir profile (NDE)	BUFR	SNPP
OMPS-TC	OMPS total column	Ozone total column (NDE)	BUFR	SNPP
VIIRS-EDR	VIIRS EDR	VIIRS EDR (NDE)	netCDF	SNPP
VIIRS-SDR	VIIRS SDR	VIIRS SDR (NDE)	netCDF	SNPP
VIIRS Binary Snow Cover	VIIRS Binary Snow Cover	VIIRS Binary Snow Map	netCDF	SNPP
VPW	VIIRS Polar Winds	VIIRS Polar Winds	BUFR netCDF	SNPP

Upcoming Operational Products (SPSRB schedule)

- Vegetation Health (Aug), GCOM → NDE 1.0 (Sep)

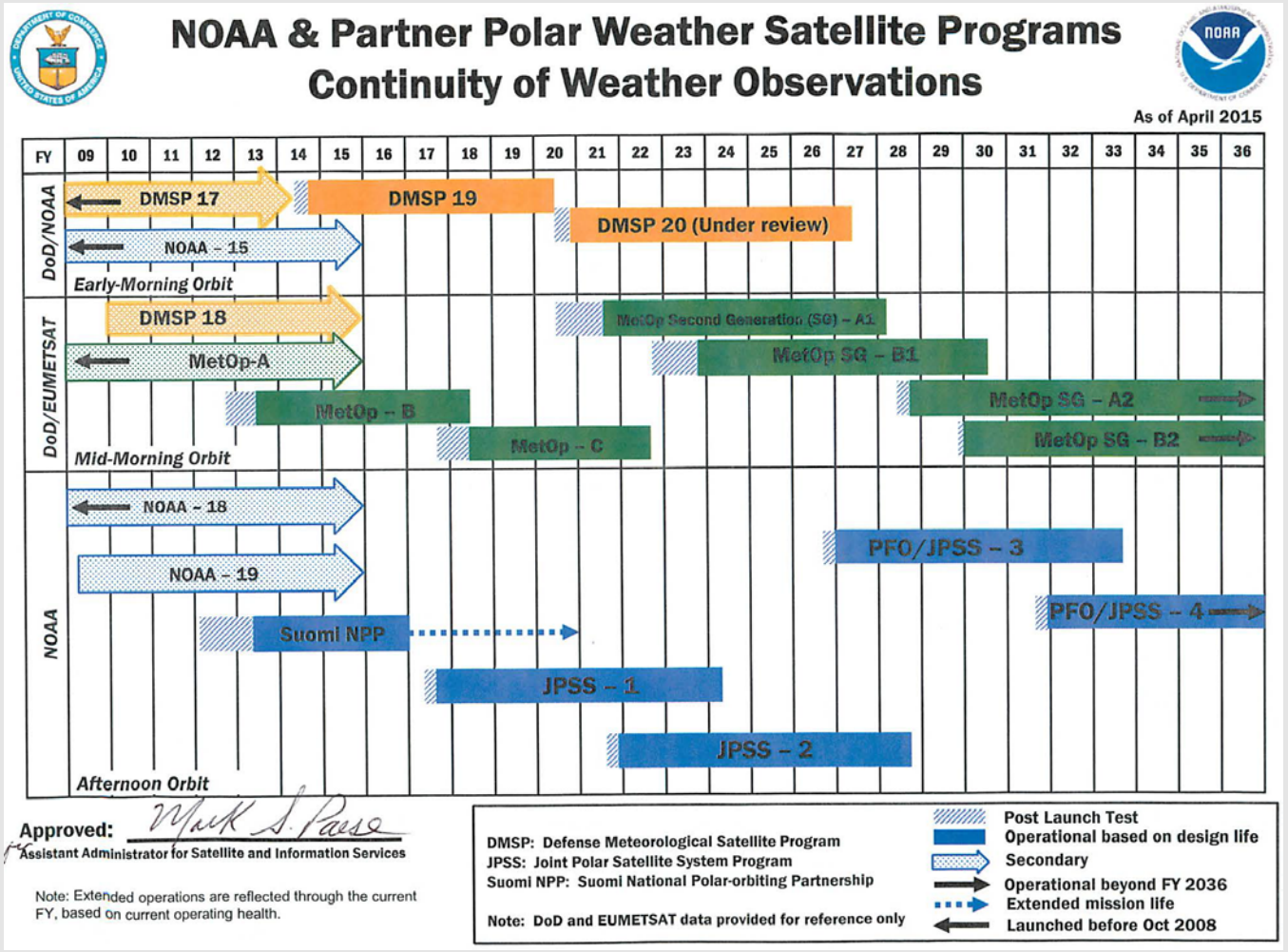
Current Polar-Orbiting Observations: Suomi NPP Users

External Users	Product Types
NWS-AWIPS	• NUP – VIIRS
~~NWSTG~~	• ~~NUP – ATMS /CrIS~~ (moved to NCO)
NCEP-NCO	• NUP – ATMS/CrIS/OMPS
NCEP-EMC	• NUP – VIIRS
EUMETSAT	• NUP – ATMS/CrIS/VIIRS
CMC	• NUP – ATMS/CrIS/OMPS/VIIRS
JMA	• NUP – ATMS/CrIS/OMPS
NASA-GPM	• xDR – ATMS (pass-thru)
NASA-JPL	• NUP - VIIRS
India-NCMWRF	• NUP – ATMS/CrIS
NEP-IDP	• NUP – VIIRS/ATMS-MiRS
STAR-CIRA	• xDR – VIIRS (pass-thru)
STAR	• NUP – ATMS/CrIS/VIIRS
NOAA-AOML	• NUP – VIIRS
CLASS	• NUP – VIIRS/ATMS/CrIS
***JTWC**	• ATMS (derived)
***NCEI**	• ACSPO – SST

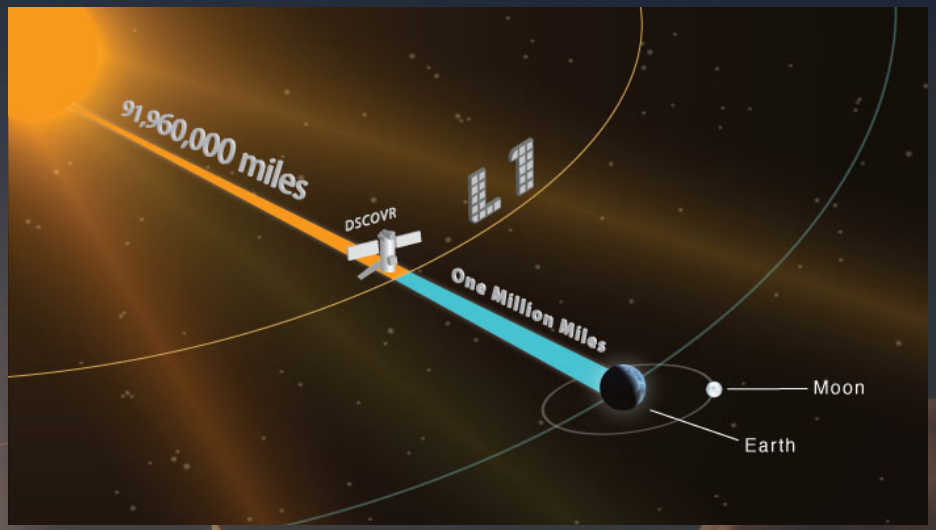
Internal Users	Product Type
VIIRSDIST	• NUPS – VIIRS
SFS MiRS	• NUP – ATMS • xDR – ATMs (pass-thru)
SFS NIC-IMS	• xDR – VIIRS (pass-thru) • NUP – ATMS
NIC	• xDR – VIIRS (pass-thru) • NUP – ATMS
GCOM-GPDS	• xDR – GCOM RDR (pass-thru)
Coast Watch	• NUP – VIIRS
NUCAPS	• NUP – ATMS/CrIS
TOAST	• NUP – ATMS/ CrIS/OMPS
Okeanos	• xDR – VIIRS (pass-thru)
Blended SST	• NUP - VIIRS
DAPE	• NUP – ATMS/CrIS/VIIRS
Prod Mon	• NUP – ATMS/CrIS/VIIRS
DDS-Legacy	• Ancillary

* New Users
Note – NWSTG serviced moved to NWS/NCEP NCO

Polar-Orbiting Observations: Flyout Schedule



Current Space Weather Observations: DSCOVR



- **Launched 11 February 2015, at L1 on 8 June**
- **Should be operational in October 2015**

Credit: SpaceX

Current Ocean Altimetry Observations: Jason-2

Jason-2 Spacecraft Status Summary

Spacecraft: Ocean Surface Topography Mission/Jason-2 (OSTM)

Orbit Time: 112 minutes at an altitude of 1,324 km to 1335 km., (about 830 miles)

Orbital inclination: 66.05°
non-sun-synchronous orbit

Operational Date: 12/15/2008
(real time data available)

Launch Date: 06/20/2008

Operational Status: Operational

Notes: The spacecraft is flying in a low Earth orbit and monitoring 95 percent of the world's ice-free oceans every 10 days.

Subsystem Status:

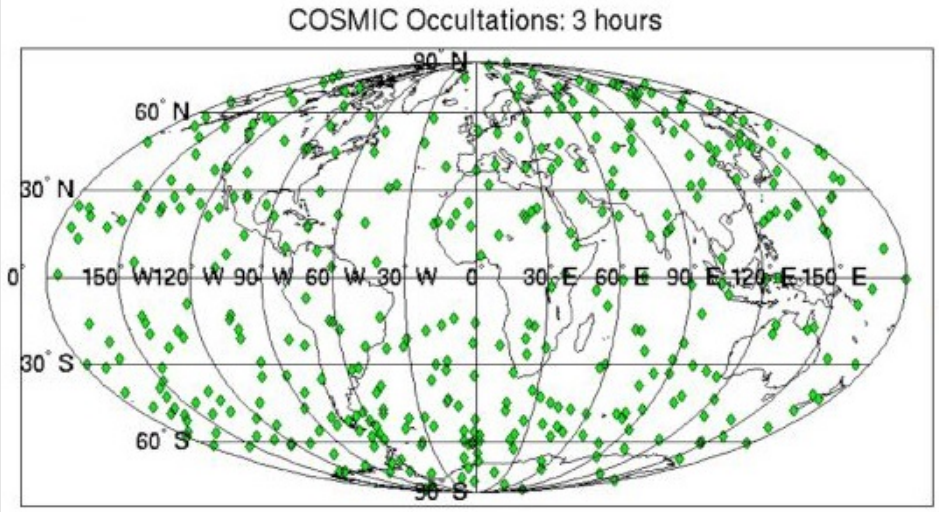
Subsystem	Description	Status
Poseidon-3	Poseidon-3 Radar Altimeter	GREEN
AMR	Advanced Microwave Radiometer	GREEN
DORIS	Doppler Orbitography and Radio-positioning Integrated by Satellite	GREEN
GPSP	Global Positioning System Payload	GREEN
LRA	Laser Retroreflector Array	GREEN
Carmen-2	Environment Characterization and Modelisation-2	GREEN
T2L2	Time Transfer by Laser Link	GREEN
LPT	Light Particle Telescope	GREEN

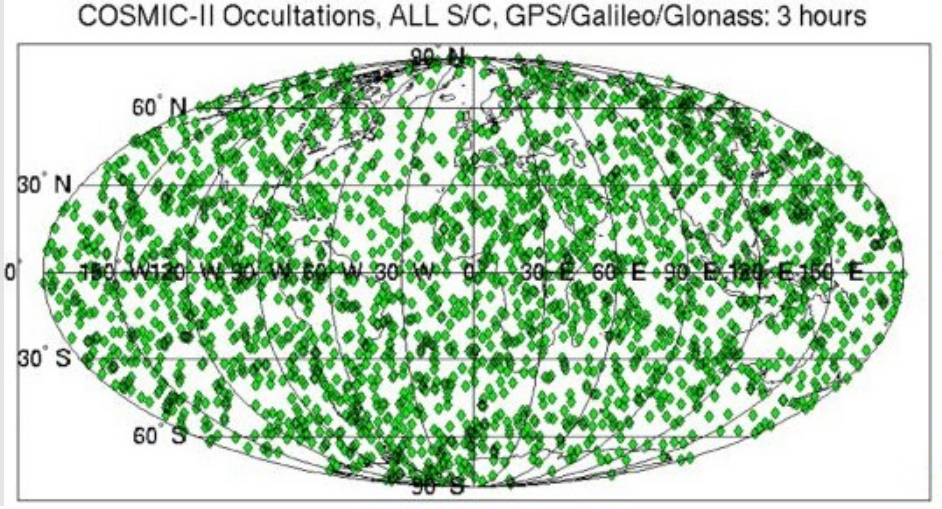
Future Ocean Altimetry Observations: Jason-3

- **Partnership with EUMETSAT, CNES, & NASA**
- **Launch date TBD**

Future GNSS Radio Occultation: COSMIC-2

- The Constellation Observing System for Meteorology, Ionosphere, and Climate, or COSMIC, mission is a Partnership with Taiwan, NASA, and the U.S. Air Force
- Will provide global radio-occultation measurements of ionosphere, temperature and water vapor information to improve weather forecasts
- Valuable data due to non-biased quality, accuracy and depth
- Shown here is a comparison of sounding distribution over three hour periods between COSMIC and fully-implemented COSMIC-2 (12 satellites)
- Launch in 2016 of the first set of six COSMIC-2 satellites





Future Geostationary Observations: GOES-R

3X MORE CHANNELS

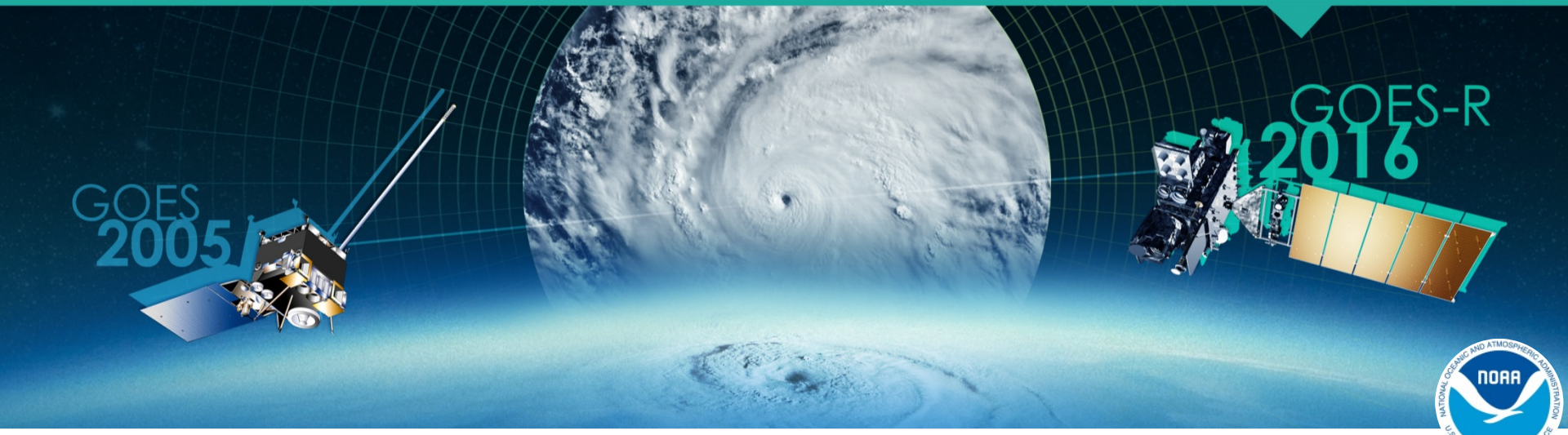
Improves every product from current GOES Imager and will offer new products for severe weather forecasting, fire and smoke monitoring, volcanic ash advisories, and more.

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.



Future Geostationary Observations: GOES-R

- March 2016 launch date postponed to Fall 2016
  - NOAA, NASA, and Lockheed Martin have identified schedule risks that have impacted the current launch date for GOES-R.
  - After extensive review, NOAA decided it can best avoid these risks to the mission by moving the launch date from March 2016 and to pursue a potential launch slot in the fall 2016.
  - Revised GOES-R satellite delivery schedule will be available in October-November 2015.

Future Geostationary Observations: GOES-R Advanced Baseline Imager

	ABI	Current GOES-N to P
Spectral Coverage	16 bands	5 bands
Spatial resolution		
0.64 μm Visible	0.5 km	Approx. 1 km
Other Visible/near-IR	1.0 km	n/a
Bands (>2 μm)	2 km	Approx. 4 km
Spatial coverage		
Full disk	4 per hour	Scheduled (3 hrly)
CONUS	12 per hour	~4 per hour
Mesoscale	Every 30 sec	n/a
Visible (reflective bands)		
On-orbit calibration	Yes	No

Future Geostationary Observations: GOES-R Planned Products

Baseline Products

Advanced Baseline Imager (ABI)

- Aerosol Detection (Including Smoke and Dust)
- Aerosol Optical Depth (AOD)
- Clear Sky Masks
- Cloud and Moisture Imagery
- Cloud Optical Depth
- Cloud Particle Size Distribution
- Cloud Top Height
- Cloud Top Phase
- Cloud Top Pressure
- Cloud Top Temperature
- Derived Motion Winds
- Derived Stability Indices
- Downward Shortwave Radiation: Surface
- Fire/Hot Spot Characterization
- Hurricane Intensity Estimation
- Land Surface Temperature (Skin)
- Legacy Vertical Moisture Profile
- Legacy Vertical Temperature Profile
- Radiances
- Rainfall Rate/QPE
- Reflected Shortwave Radiation: TOA
- Sea Surface Temperature (Skin)
- Snow Cover
- Total Precipitable Water
- Volcanic Ash: Detection and Height

Geostationary Lightning Mapper (GLM)

- Lightning Detection: Events, Groups & Flashes

Space Environment In-Situ Suite (SEISS)

- Energetic Heavy Ions
- Magnetospheric Electrons & Protons: Low Energy
- Magnetospheric Electrons: Med & High Energy
- Magnetospheric Protons: Med & High Energy
- Solar and Galactic Protons

Magnetometer (MAG)

- Geomagnetic Field

Extreme Ultraviolet and X-ray Irradiance Suite (EXIS)

- Solar Flux: EUV
- Solar Flux: X-ray Irradiance

Solar Ultraviolet Imager (SUVI)

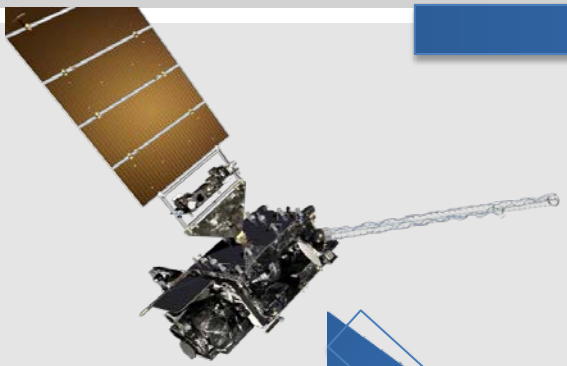
- Solar EUV Imagery

Future Capabilities

Advanced Baseline Imager (ABI)

- Absorbed Shortwave Radiation: Surface
- Aerosol Particle Size
- Aircraft Icing Threat
- Cloud Ice Water Path
- Cloud Layers/Heights
- Cloud Liquid Water
- Cloud Type
- Convective Initiation
- Currents
- Currents: Offshore
- Downward Longwave Radiation: Surface
- Enhanced "V"/Overshooting Top Detection
- Flood/Standing Water
- Ice Cover
- Low Cloud and Fog
- Ozone Total
- Probability of Rainfall
- Rainfall Potential
- Sea and Lake Ice: Age
- Sea and Lake Ice: Concentration
- Sea and Lake Ice: Motion
- Snow Depth (Over Plains)
- SO_2 Detection
- Surface Albedo
- Surface Emissivity
- Tropopause Folding Turbulence Prediction
- Upward Longwave Radiation: Surface
- Upward Longwave Radiation: TOA
- Vegetation Fraction: Green
- Vegetation Index
- Visibility

Future Geostationary Observations: GOES-R Data Distribution



GRB

Direct Broadcast Community

Sectorized Cloud and Moisture Imagery

AWIPS NCFs

NOAAPort Community

NOAA Port

GRB

L1B and L2+ Derived Products

Instrument Data

GRB

Sectorized Cloud and Moisture Imagery

GOES-R GS

PDA

NSOF

Operational User Community (NOAA Centers, DOD, NCEP, Int'l Partners)

L1B, L2+

WCDAS

GOES-R GS

RBU

CLASS

Climate Research & Academia

Fastest

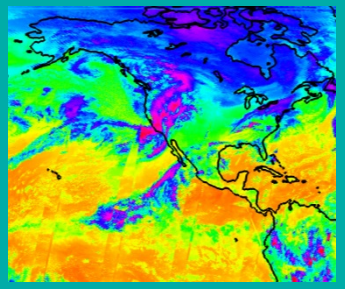
Access Speed

Slowest

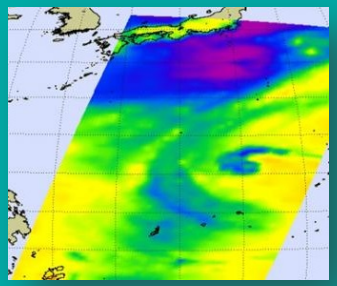
Future Geostationary Observations: Himawari Project

- JMA and NOAA/NESDIS collaborated on testing and establishing a connection to HimawariCloud service for the access of H-8 HSD level 1b to support NOAA users.
- NESDIS Center for Satellite Applications and Research (STAR) is hosting the IOC (including Data Ingest, Data Processing and Product Generation, and Data Distribution).
- Full H-8 16 channel AHI data distribution from the STAR server began in April 2015. This configuration will be in effect until the activation of the PDA in summer 2016.
- SINET and Internet pathways are being used to access H-8 data from JMA's HimwariCloud service.
- H-8 data from STAR's server is provided on a best effort basis to NWS JCSDA, NWS AWIPS II, and DoD.
- Future Data Processing and Product Generation
  - NESDIS is currently assessing alternatives for the operational data processing and product generation system at the NSOF.

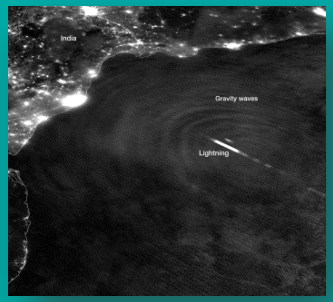
Future Polar-Orbiting Observations: JPSS



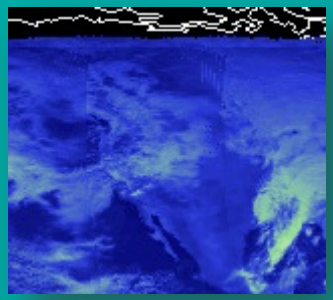
CrIS



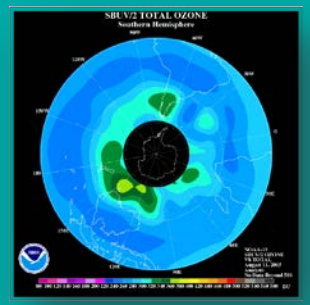
ATMS



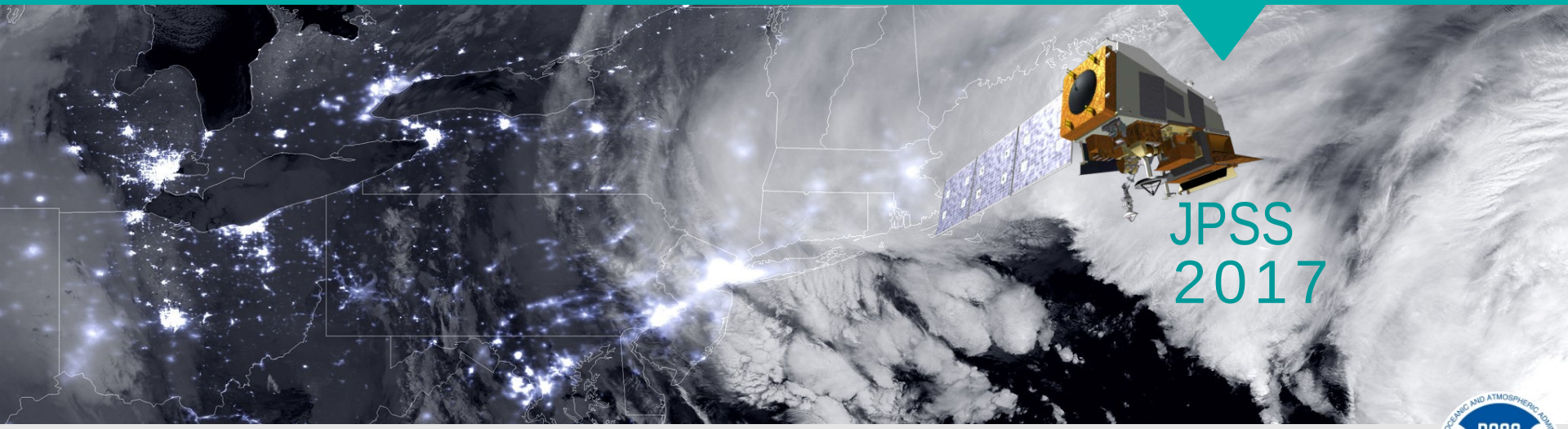
VIIRS



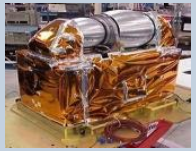
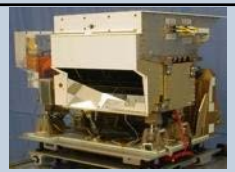
CERES



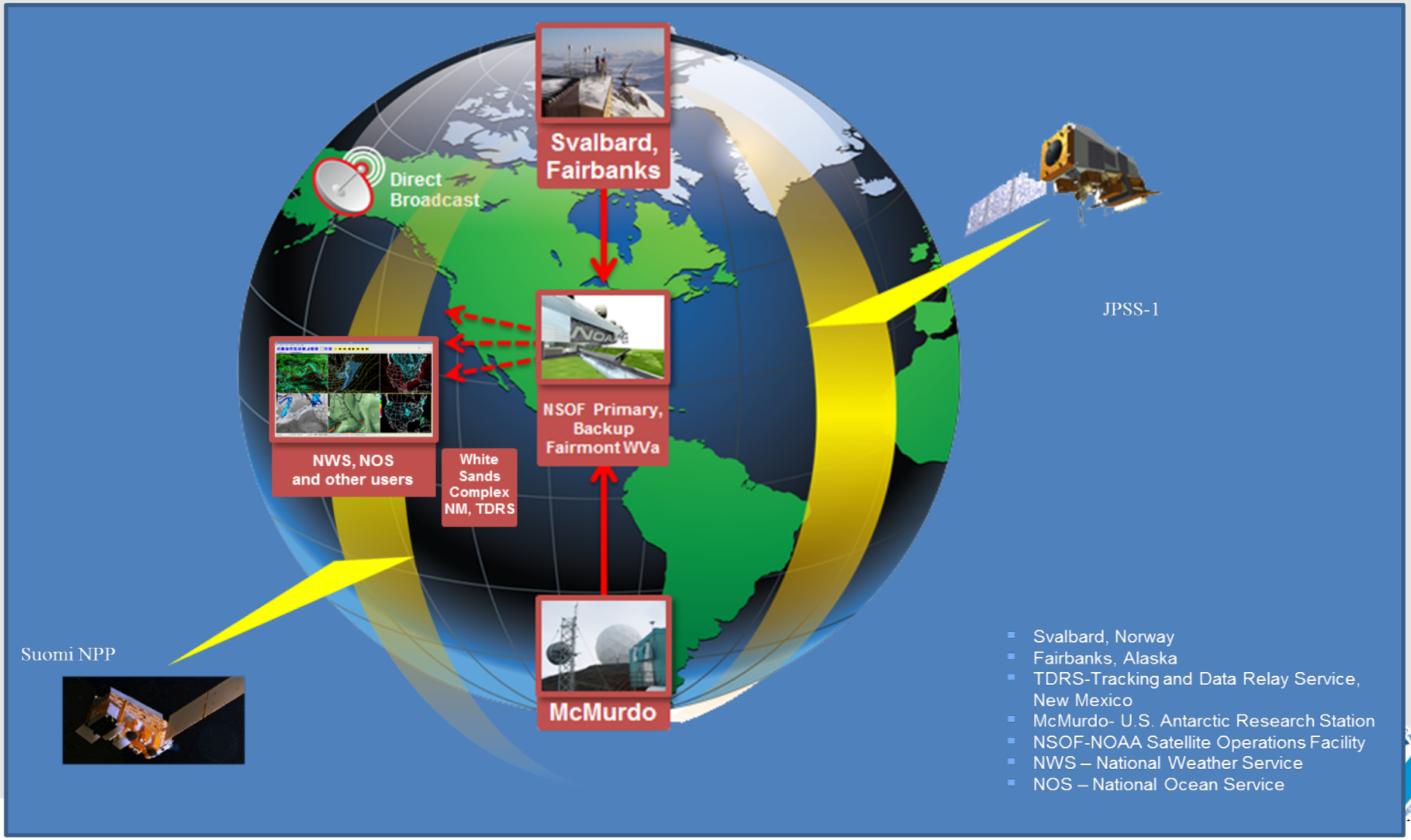
OMPS



Future Polar-Orbiting Observations:

JPSS Instruments		Measurements & Products	Contractor
	**ATMS** - Advanced Technology Microwave Sounder	High vertical resolution temperature and water vapor information critical for forecasting extreme weather events, 5 to 7 days in advance	Northrup Grumman Electronic Systems
	**CrIS** - Cross-track Infrared Sounder		Exelis
	**VIIRS** – Visible Infrared Imaging Radiometer Suite	Critical imagery products, including snow/ice cover, clouds, fog, aerosols, fire, smoke plumes, vegetation health, phytoplankton abundance/chlorophyll	Raytheon Space and Airborne Systems
	**OMPS** - Ozone Mapping and Profiler Suite	Ozone spectrometers for monitoring ozone hole and recovery of stratospheric ozone and for UV index forecasts	Ball Aerospace and Technologies Corp.
	**CERES** – Clouds and the Earth's Radiant Energy System (S-NPP and JPSS-1) **RBI** – Radiation Budget Instrument (JPSS-2, 3, 4; provided by NASA)	Scanning radiometer which supports studies of Earth Radiation Budget (ERB)	CERES - Northrup Grumman Aerospace Systems RBI - Exelis

Future Polar-Orbiting Observations: JPSS System Architecture



NOAA-EUMETSAT Joint Polar System Agreement

- Governs JPSS-2, Polar Follow-On, and Metop-Second Generation
- Secures critical partnership for global NWP through the 2030s

Future Data Distribution: PDA Overview

The Production Distribution and Access (PDA) system will serve as the NESDIS enterprise distribution system for our near real-time users.

- PDA will set subscriptions for international and non-US government partners, as is done now on the DDS.
- All near real time distribution except for McIDAS will be migrated to PDA – phased approach (new missions and then current missions).
- McIDAS ADDE access will remain on GEODIST systems for the foreseeable future.
- GOES-R products will be provided to the primary PDA system (at NSOF)
- S-NPP/JPSS products will be provided via IDPS and PDA
- All distribution will use FTPS or SFTP protocols

Future Data Distribution: PDA Overview

- There are three PDA Systems:
  - Full Operational System at NSOF
    - S-NPP/JPSS, GOES-R and current mission data
  - Test system at NSOF
    - Internal test system only and just a few select users with periodic access

- Smaller capacity operational contingency system at Consolidated Back-Up (Fairmont, West Virginia)
  - S-NPP/JPSS data only (just the prime mission sensor)
  - GOES-R data only available via GRB (GOES Re-Broadcast) and AWIPS

Future Data Distribution: PDA Schedule

Internal readiness reviews:

- Operational Readiness Review (ORR) scheduled for Summer 2016
- Actual near real-time data flow is dependent upon the new JPSS ground system upgrade (Spring 2016)
- Existing users of S-NPP NDE system are being scheduled for integration.

Existing NESDIS ESPC DDS and NDE users with questions should contact:

- Donna McNamara (Data Access Manager) donna.mcnamara@noaa.gov
- Chris Sisko (JPSS Data Operations Manager) chris.a.sisko@noaa.gov
- Matt Seybold (GOES-R Data Operations Manager) matthew.seybold@noaa.gov

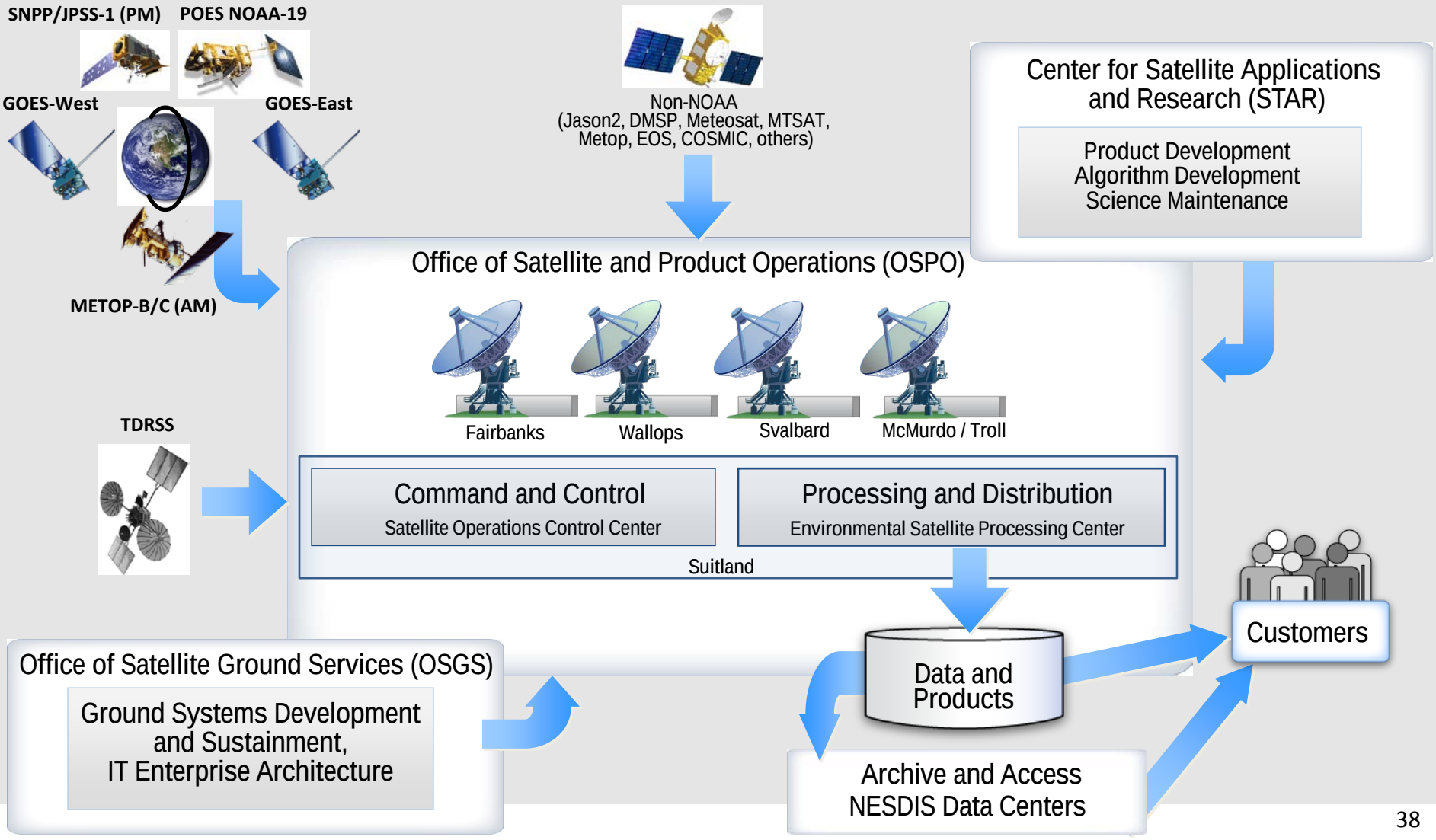
New users with questions should contact:

- NESDIS Satellite User Services NESDIS.Data.Access@noaa.gov

Thank you!

Backup

Data Distribution: Architecture



Refocusing Our Organization

Office of System Architecture & Advanced Planning

- Next generation satellite systems planning

Office of Projects, Planning & Analysis

- Increased focus on project execution

Office of Satellite Ground Services

- Development lead for future integrated ground system

National Centers for Environmental Information

- Consolidated environmental services

DMSP Constellation Status

Flight Number Operations Number	F-14 48		F-15 49		F-16 54		F-17 51		F-18 53		F-19 52	
LTAN (+/- 5 Mins)	1552		1442		1621		1813		1925		1836	
Launch Date	4/4/1997		12/12/1999		10/18/2003		11/4/2006		10/18/2009		4/3/2014	
Spacecraft Subsystems [Bus]												
Command & Control												
Power												
Attitude Control												
Communications												
Strategic Mission [Primary sensors & recorders]												
Visible/IR Imager (OLS)												
Individual Recorder Status	1	2	1	2*	1*	2*	1*	2*	1*	2*	1*	2*
	3	4	3	4*	3*	4*	3*	4*	3*	4*	3*	4*
Microwave Imager/Sounder (SSMI/SSMIS)												
Microwave Temp Sounder(SSMT1)												
Microwave Water Vapor Sounder(SSMT2)												
Tactical Mission [Spacecraft transmitters]												
Transmitter Status	DDT	PDT1	DDT	PDT1	DDT	PDT1	DDT	PDT1	DDT	PDT1	DDT	PDT1
		PDT2	*RAD*	PDT2		PDT2		PDT2		PDT2		PDT2
	EDT1	EDT2	EDT1	EDT2	EDT1	EDT2	EDT1	EDT2	EDT1	EDT2	EDT1	EDT2
Space Environment Mission [Secondary sensors]												
X/Gamma Ray Detector(SSB-X family)												
Magnetometer (SSM)												
Ionosphere (SSI-ES2/-ES3)												
Electron/Proton (SSJ4/SSJ5)												
UV Limb Imager (SSULI)												
UV Spectrographic Imager (SSUSI)												

Color Key:	Calibration	Nominal	Loss of Redundancy/Degraded	Loss of Mission Capability

CAO: 21 August 15

*** Denotes Solid State Recorder (SSR)**

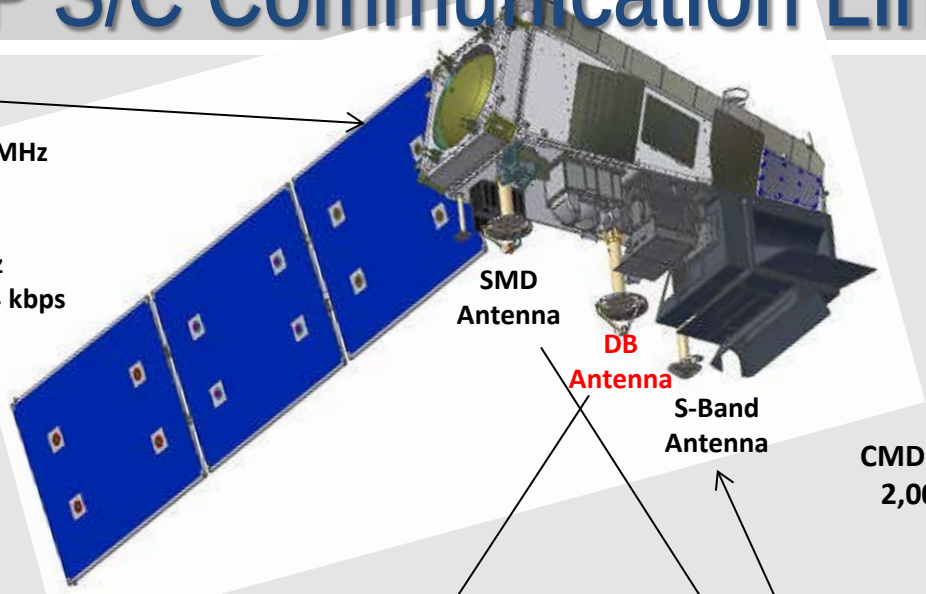
POC: 50 OG/DET 1 Watch Officer (301-512-8479)

Current Polar-Orbiting Observations: Suomi NPP S/C Communication Links

TDRS

CMD: 2067.270833 MHz
125& 1000 bps

TLM: 2247.5MHz
1.024, 4.096 or16.384 kbps
(Realtime Only)



SMD Antenna

DB Antenna

S-Band Antenna

CMD2067.270833 MHz
2,000 & 128,000bps

TLM2247.5MHz
1.024, 4.096, 16.384,
32.768 kbps (Realtime)
524.288 kbps (Stored)

8.2125GHz
300.0Mbps

Svalbard,Norway Sta

7.812 GHz
15 Mbps

Direct Broadcast Downlink
Direct Readout User Terminal

TDRSS
Ground Link

TDRSS
White Sands Station

Current Polar-Orbiting Observations: Instrument Status

	METOP-A	METOP-B	NOAA-19	NOAA-18	NOAA-15
Launch Date	Oct 2006	Sept 2012	Feb 2009	May 2005	May 1998
Operational Date	May 2007	April 2013	Jun 2009	Aug 2005	Dec 1998
Mission Data Category	Secondary (AM)	Primary (AM)	Prime Services Mission (PM)	Secondary (PM)	Secondary (AM)
Payload Instruments					
AVHRR	G	G	G	G	Y(20)
HIRS	G	Y (33)	Y (32)	Y (3)	R (6)
AMSU-A1	G	G	G	G	Y(21)
AMSU-A2	G	G	G	G	G
AMSU-B	G	G	G	G	R (12)
MHS	G	G	G	G	N/A
SEM	G	G	G	G	G
SBUV	N/A	N/A	N/A	R	N/A
Spacecraft Subsystems					
Telemetry, Command & Control	G	G	G	G	G
ADACS	G	G	G	Y (7)	Y(10)
EPS	G	G	G	G	G
Thermal Control	G	G	G	G	Y(22)
Communications	Y (1)	G	G	G	Y(23)
APT/LRPT	R (2)	G	G	G	G
DCS	N/A	N/A	G	G	G
ADCS	G	Y(31)	G	G	N/A
SAR	G	Y(31)	G	G	Y(24)

HIRS Long W... Channels 5, ... be out of sp... out of spec.

HIRS Long Wave C... noise increased.

HIRS long wa... noise. Incons... of IR channe...

HIRS filter wheel stalled. No impact . METOP-A used.

AMSU-B antenna scan motor failed. No products available. METOP-A used.

MHS H3 operating dynamic ranges decreased. Out of spec.

Chopper motor stalled. No usable data generated.

NO LRPT data available. Transmitter off.

A... ~... w... fo...

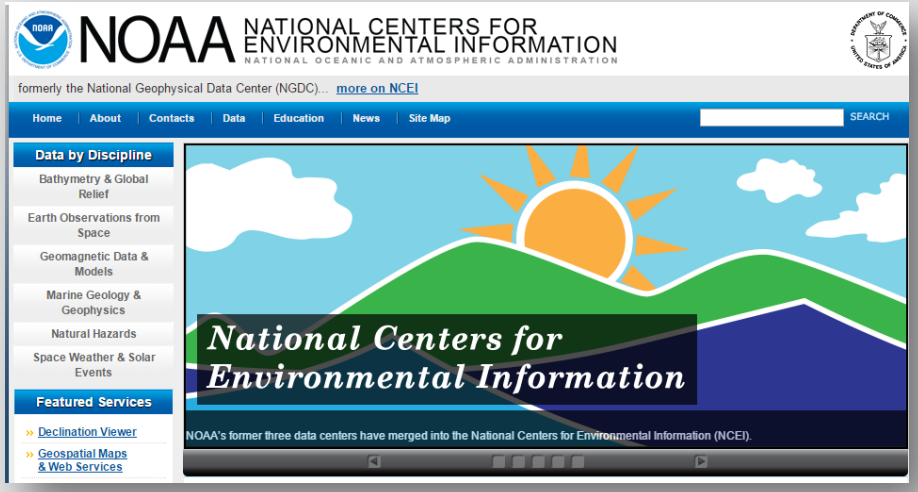
STX1 & 3 failed, STX2 HRPT, STX4 PB. Limited amount of data retrieved per pass.

Environmental Information

National Climatic Data Center

National Ocean Data Center

National Geophysical Data Center



https://www.ncei.noaa.gov/

Maximize the Return on Investment of the Nation's Earth Observing Satellites Systems

- Ensure a high scientific quality satellite data stream
- Develop science to maximize the utilization of the different satellite data
- Analyze and interpret data for decision making purposes