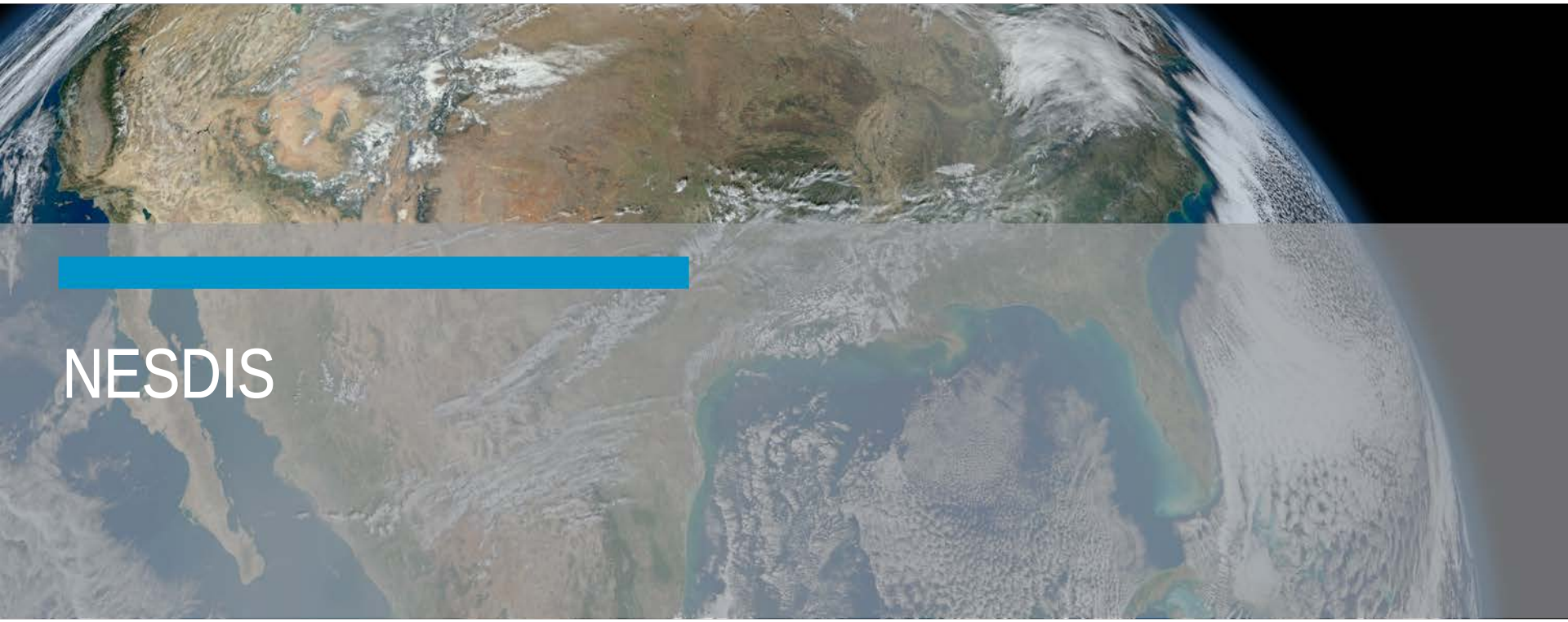


NESDIS

Vince Tabor
NESDIS Office of Satellite and Product Operations (OSPO)

2nd National Operational Processing Center Observational Data Workshop
May 22-24, 2018

Outline

- NESDIS Mission/Vision
- NESDIS Organization
- OSPO Organizations
- Recent Accomplishments
- Future Plans
- Distribution Mechanisms
- Satellite Products and Services
- Future Missions and Events

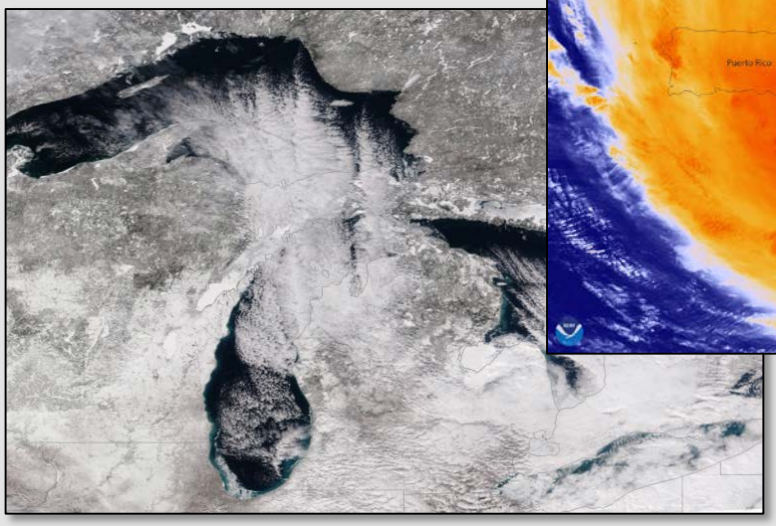
NESDIS Mission/Vision

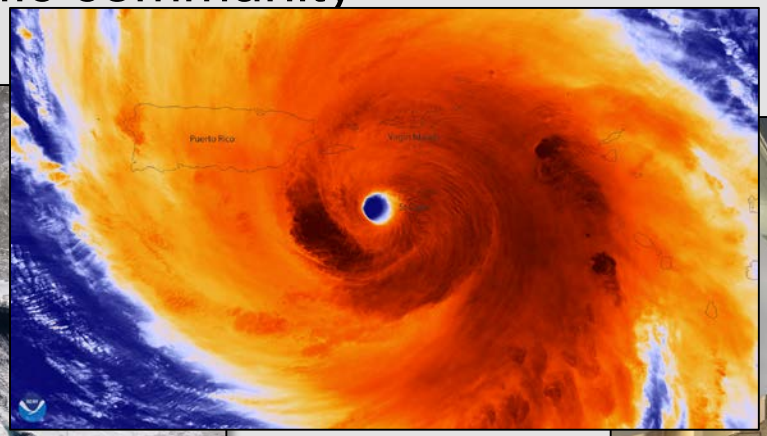
MISSION: Provide secure and timely access to global environmental data and information from satellites and other sources to promote and protect the Nation's security, environment, economy, and quality of life.

VISION: Expand understanding of our dynamic planet as the trusted source of environmental data.

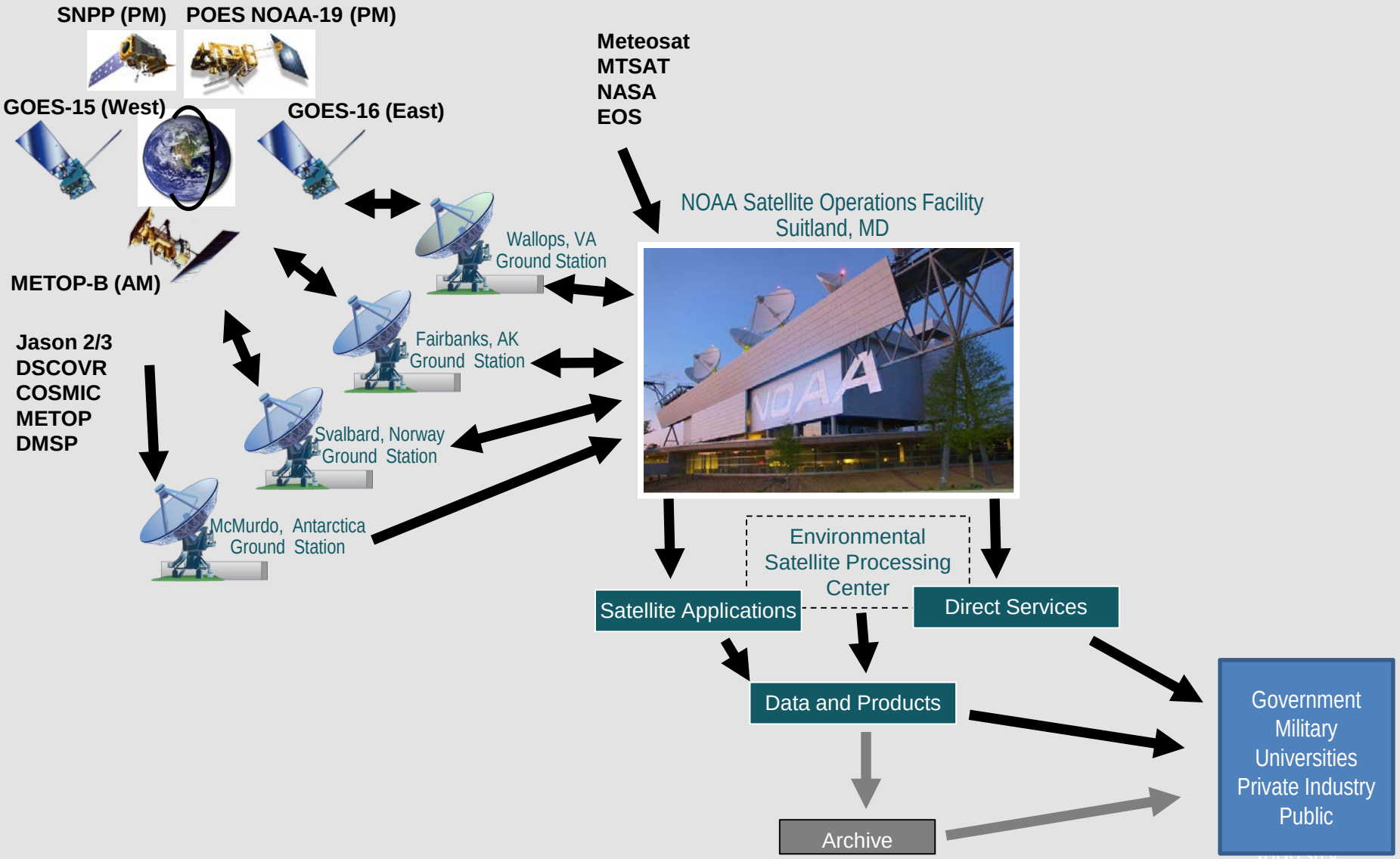
Office of Satellite and Product Operations (OSPO)
NOAA/NESDIS

- Perform command and control of the United States' operational weather satellites
- Operate ground based receptor sites for command & control; and for data acquisition/re-transmission
- Produce derived products from satellite observations and distribute those data to our authorized users in near real-time or to the archive use by the scientific community





Satellite Information Flow



OSPO Facilities

Suitland, MD

College Park, MD

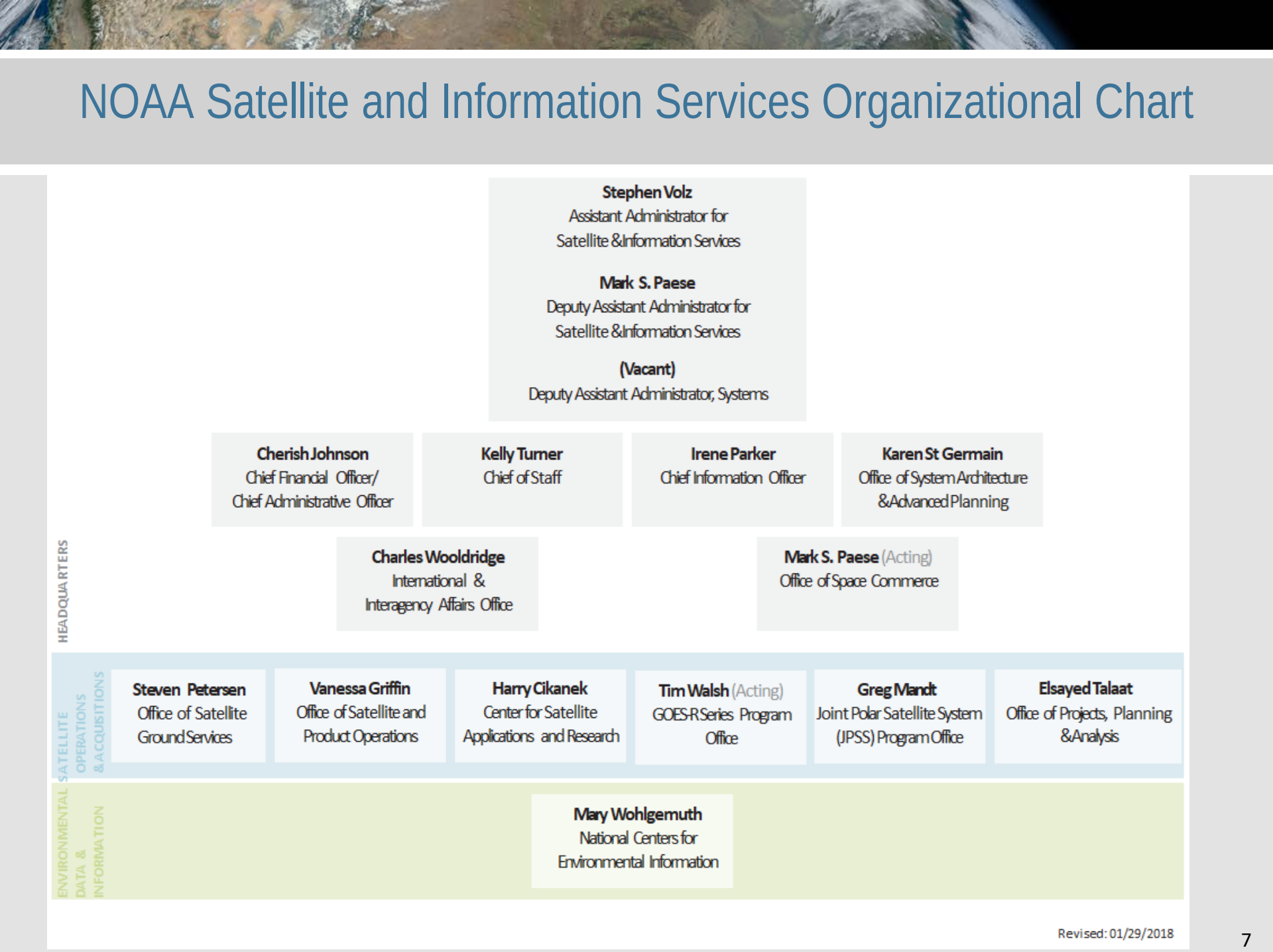
Asheville, NC

Fairmont, WV

Wallops, VA

Fairbanks, AK

NOAA Satellite and Information Services Organizational Chart



Revised: 01/29/2018

OSPO Organizational Chart

Director
Vanessa Griffin

Deputy Director
Greg Marlow

Chief of Staff
Pam Wright

Administrative Officer
Debra Mattson

IT Security
Eric Most

Budget Office
Karl Hampton

Assistant Director
CDR Marc Moser (July)

Mission Operations Division Chief
Scott Leonard
Deputy Division Chief
Mark Danehy (Acting)
Technical Director
CDR Richard Hester (July)

Chief, Operations
Bob Finson

Chief, Support Branch
Mike Settles

Chief, Systems Branch
Alva Jackson

Chief, IT Services Branch
Andre' Hammond

Chief, Engineering Branch
Brian Walling (Acting)

National Ice Center Deputy
Kevin Berberich

MOD Staff
JPSS Data Operations Manager
Chris Sisko
CLASS Operations Manager
Alan Hall
GOES-R Mission Ops Manager
Chris Wheeler

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

Satellite Analysis Branch
Davida Streett

Direct Services Branch
Mark Turner

Satellite Products Branch
Antonio Irving

SPSDStaff
GOES-R Data Ops Manager
Matthew Seybold

Manager Wallops CDA Station
Victor Grycenkov

Chief, Operations
Al McMath

Chief, Support
Jim Deck

Chief, Systems Engineering
Bob Clark

Manager Fairbanks CDA Station
Larry Ledlow
Deputy Manager
Tom Heinrichs

Recent Achievements

- NOAA in conjunction with our partners launched three new weather satellites in the past 2 years (GOES-16, NOAA-20, and GOES-17)
- Provides greater environmental monitoring capabilities for users

GOES-16/17

GOES-16 (R) launched on November 19, 2016 and GOES-17 (S) launched on March 1, 2018

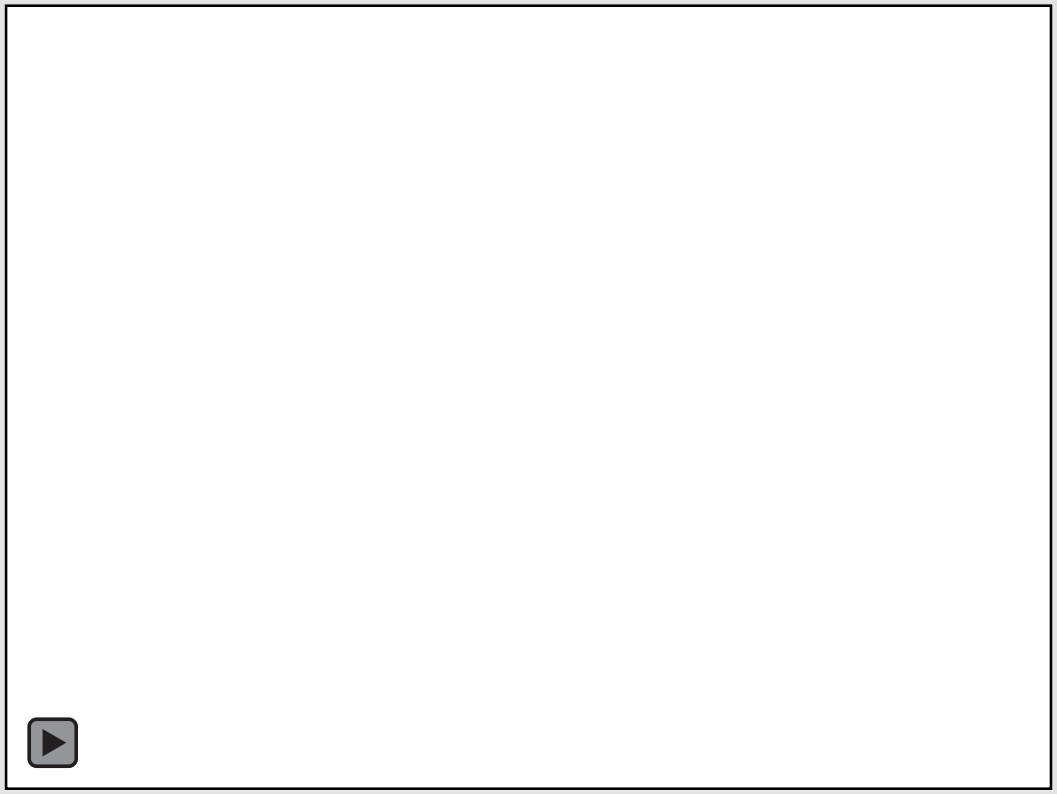
NOAA-20 (JPSS-1)

Launched on November 18, 2017

Higher Spectral, Temporal, and Spatial Resolution

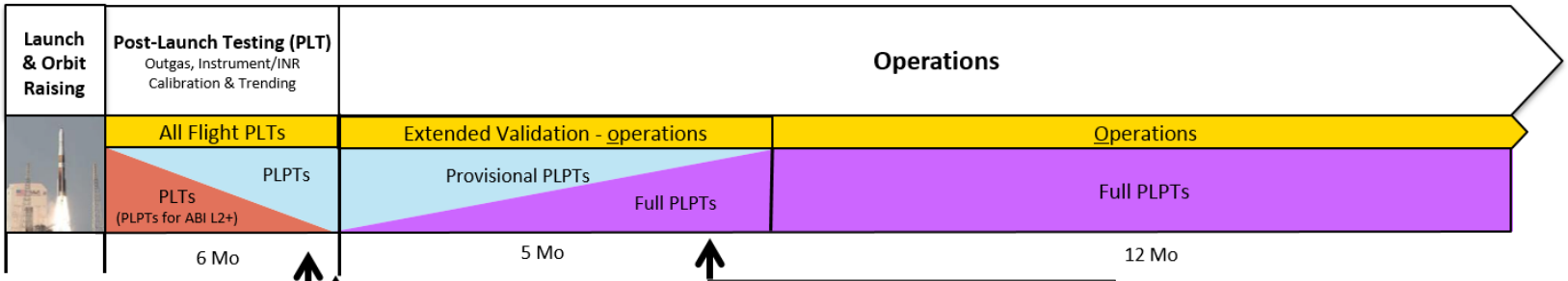
Greater Capabilities and Significant Data Volume Increases

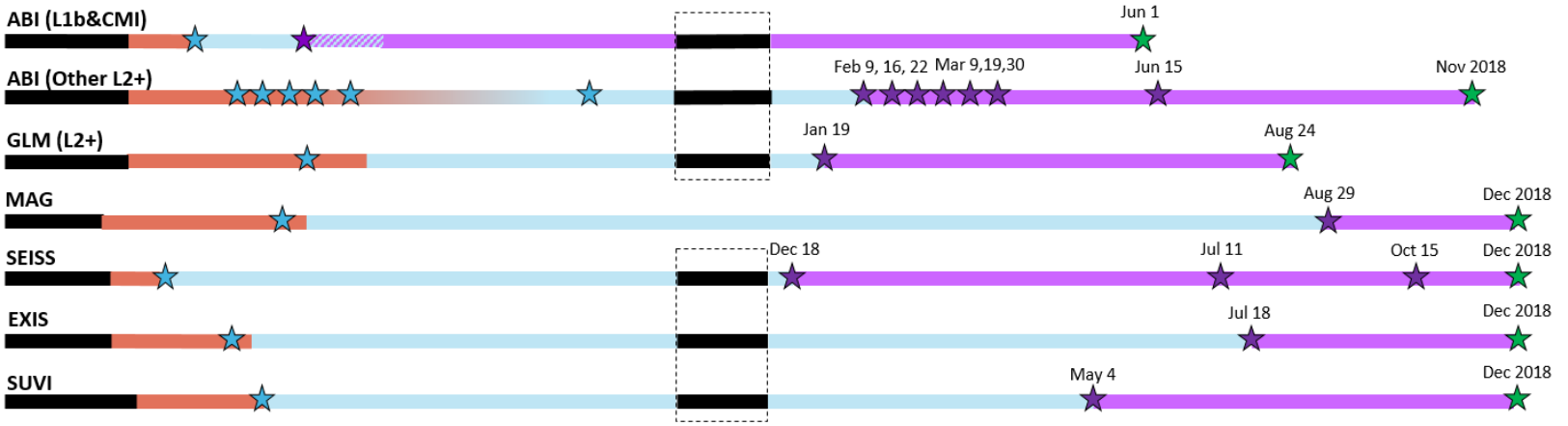
- 1.25 to 4 TB/day of information from each new satellite and their sensors
- Represents two orders of magnitude increase in data volumes
  - Terrestrial distribution systems can support egress up to 40 TB/day
  - Satellite uplinks/downlinks can range from 35 Mbps to 150 Mbps speeds depending on function

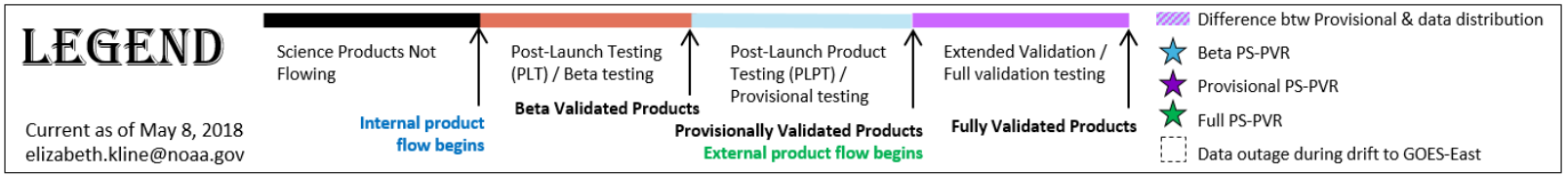


Hurricane Harvey captured by GOES-16

GOES-16 Post-Launch Science Product Validation Schedule







Note: All dates are subject to change.

GOES-16 L1b Science Product Validation Status

ABI L1b Product	Beta	Provisional	Full
Radiances	2/28/17	6/1/17	6/1/18
GLM L2 Product			
Lightning: Events, Groups, Flashes	7/5/17	1/19/18	8/24/18
SEISS L1b Products			
Energetic Heavy Ions	2/10/17	7/11/18	12/21/18
Magnetospheric e^-/p^+: Low Energy	2/10/17	10/15/18	12/21/18
Magnetospheric e^-/p^+: High Energy	2/10/17	12/18/17	12/21/18
Solar & Galactic Protons	2/10/17	7/11/18	12/21/18
EXIS L1b Products			
Solar Flux: EUV	3/23/17	7/18/18	12/21/18
Solar Flux: X-ray Irradiance	3/23/17	7/18/18	12/21/18
SUVI L1b Product			
Solar EUV Imagery	4/19/17	5/4/18	12/21/18
MAG L1b Product			
Geomagnetic Field	5/25/17	8/29/18	

Was 8/15, shifted due to schedule conflicts

5/8/18

Blue: Changes since last month

Validation Maturity Levels: Not Validated | Beta Maturity | Provisional Maturity | Full Maturity

GOES-16 L2+ Science Product Validation Status

ABI L2+ Products	Beta	Prov	Full
Cloud and Moisture Imagery (CMI) and Sectorized CMI (KPP)	2/28/17	6/1/17	6/1/18
Aerosol Detection (Smoke & Dust)	5/24/17	6/15/18	11/3/18
Aerosol Optical Depth (AOD)	5/24/17	6/15/18	11/3/18
Clear Sky Mask	4/19/17	2/16/18	11/3/18
Cloud Optical Depth	6/8/17	2/22/18	11/3/18
Cloud Particle Size Distribution	6/8/17	6/15/18	11/3/18
Cloud Top Height	5/16/17	2/16/18	11/3/18
Cloud Top Phase	5/16/17	2/22/18	11/3/18
Cloud Top Pressure	5/16/17	2/16/18	11/3/18
Cloud Top Temperature	5/16/17	2/16/18	11/3/18
Derived Motion Winds	6/8/17	2/9/18	11/3/18
Derived Stability Indices	5/16/17	2/22/18	11/3/18

ABI L2+ Products	Beta	Prov	Full
Downward S/W Radiation: Surface	6/23/17	6/15/18	11/3/18
Fire/Hot Spot Characterization	5/24/17	3/30/18	11/3/18
Hurricane Intensity Estimation	9/25/17	6/15/18	11/3/18
Land Surface Temperature	5/24/17	3/19/18	11/3/18
Legacy Vertical Moisture Profile	5/16/17	2/22/18	11/3/18
Legacy Vertical Temperature Profile	5/16/17	2/22/18	11/3/18
Rainfall Rate/QPE	9/13/17	3/30/18	11/3/18
Reflected S/W Radiation: TOA	6/23/17	6/15/18	11/3/18
Sea Surface Temperature	6/14/17	3/9/18	11/3/18
Snow Cover	TBD*	TBD*	TBD*
Total Precipitable Water	5/16/17	2/22/18	11/3/18
Volcanic Ash: Detection and Height	9/13/17	6/15/18	11/3/18

4/6/18

Validation Maturity Levels: Not Validated | Beta Maturity | Provisional Maturity | Full Maturity

* Snow Cover has a waiver. It is dependent upon a non-baseline Albedo Product which is in development.

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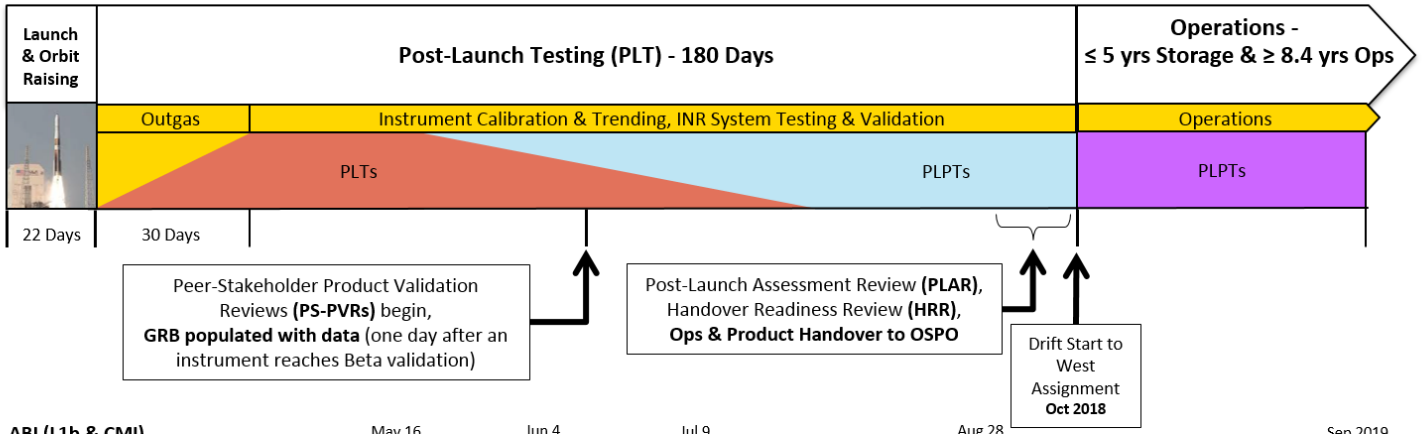
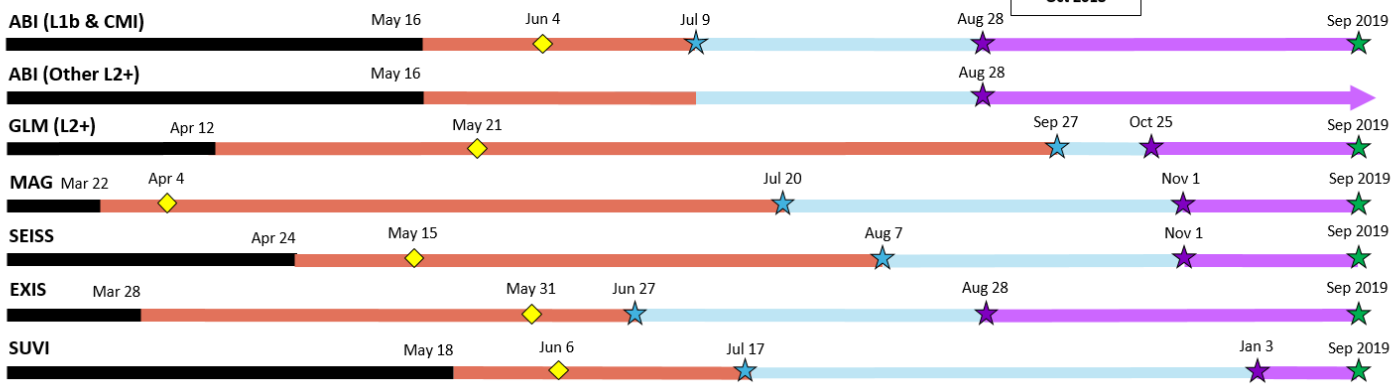
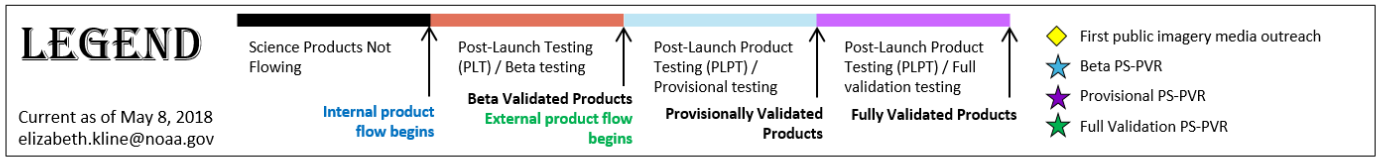
GOES-17 Post-Launch Science Product Validation Schedule







Note: All dates are coordinated with Flight/MOST PLT SOE group and are subject to change.

End-of-PLT dates in-progress by Flight & OSPO:

- Drift Start
- Drift Stop
- GOES-W Assignment

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NOAA-20 Algorithm Maturity

Updated: April 1, 2018

Sensor	Algorithm	Beta	Provisional	Validated
ATMS	ATMS TDR	08-Dec-17	23-Jan-18	May-2018
ATMS	ATMS SDR	08-Dec-17	23-Jan-18	May-2018
CrIS	CrIS SDR	17-Jan-18	16-Feb-18	Aug-2018
VIIRS	VIIRS SDR	01-Feb-18	19-Feb-18	May-2018
OMPS	OMPS Nadir Mapper SDR	05-Jan-18	Feb-2018	Aug-2018
OMPS	OMPS Nadir Profiler SDR	05-Jan-18	Feb-2018	Aug-2018
VIIRS	VIIRS Imagery	01-Feb-18	19-Feb-18	Aug-2018
VIIRS	VIIRS Cloud Mask	Jul-2018	Sep-2018	Mar-2019
VIIRS	Cloud Property Algorithms	Jul-2018	Sep-2018	Mar-2019
VIIRS	Aerosol Optical Depth and Particle Size Parameter	Apr-2018	Sep-2018	Mar-2019
VIIRS	Aerosol Detection	Apr-2018	Sep-2018	Mar-2019
VIIRS	Volcanic Ash	Jul-2018	Sep-2018	Mar-2019
VIIRS	Ice Surface Temperature	May-2018	Sep-2018	Mar-2019
VIIRS	Sea Ice Concentration and Ice Thickness	Jul-2018	Sep-2018	Mar-2019
VIIRS	Snow Cover (Binary Map & Snow Cover Fraction)	Jun-2018	Sep-2018	Mar-2019
VIIRS	Active Fire	Mar-2018	Dec-2018	Dec-2019
VIIRS	Land Surface Temperature	Jul-2018	Dec-2018	Nov-2019
VIIRS	Land Surface Albedo	Jul-2018	Dec-2018	Nov-2019
VIIRS	GST (Global Gridded Surface Type)	Jul-2019	Sep-2019	Nov-2019
VIIRS	Land Surface Reflectance	May-2018	Nov-2018	Nov-2019
VIIRS	Green Vegetation Fraction (GVF)	Aug-2018	Feb-2019	Feb-2020
VIIRS	Vegetation Index (VI)	Aug-2018	Feb-2019	Feb-2020
VIIRS	Vegetation Health (VH)	Aug-2018	Feb-2019	Jun-2020
VIIRS	Ocean Color	Oct-2018	Mar-2019	Jun-2020
VIIRS	Sea Surface Temperature	Apr-2018	Sep-2018	Apr-2019
VIIRS	VIIRS Polar Winds	Jun-2018	Sep-2018	Mar-2019
CrIS	NUCAPS Products	Jun-2018	Sep-2018	Sep-2019
ATMS	MiRS Products	Mar-2018	Sep-2018	Sep-2019
ATMS	Snow Fall Rate (SFR)	Jun-2018	Mar-2019	Jun-2020
OMPS	OMPS Ozone EDR: NP & TC	Mar-2018	Jul-2018	Aug-2018

Satellite Summary

- JPSS-1 (NOAA-20)
  - Launched on Nov 18, 2017
  - Operations Handover to NOAA Mar 7, 2018
- GOES-16 became GOES-East
  - Dec 18, 2017
- GOES-17(S)
  - Launched on Mar 1, 2018
  - Handed over from NASA to NOAA June 23, 2018
  - G17 Handover Readiness Review, Aug 2018
  - G13 Payload Deactivation (storage) – Feb 22, 2018

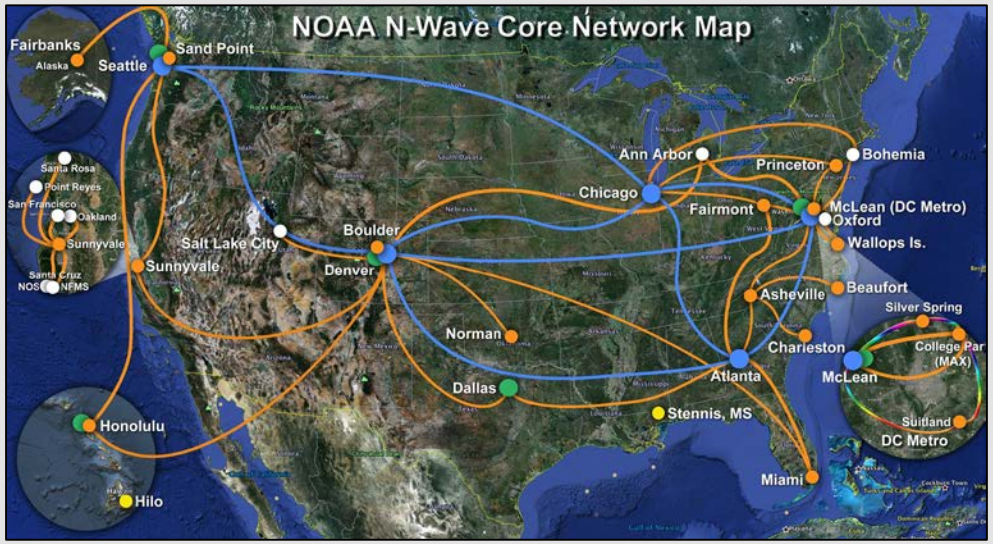
JPSS-1 (NOAA-20) Launch

Upcoming (6-12 months)

- NOAA-20 (JPSS-1) becoming the primary satellite in the afternoon (PM) orbit
- GOES-17 taking over West operations from GOES-15
- Metop-C launching in Sep 2018 and taking over the morning (AM) orbit
  - Metop-A/B/C host a payload of NOAA instruments

Data Processing and/or Distribution

- Satellite-based Services
  - GRB (GOES-R series)
  - HRD/Direct-Readout (JPSS)
  - HRIT/LRIT/EMWIN
  - GEONETcast
- Terrestrial-based Systems
  - Near Real-time Interface for authorized users (PDA)
  - Long Term Archive and community access (CLASS)
  - Cloud Services (Big Data Project)
  - STAR ftp services (limited)
  - NOAA One Stop



Storm Prediction Center
GRB Receivers

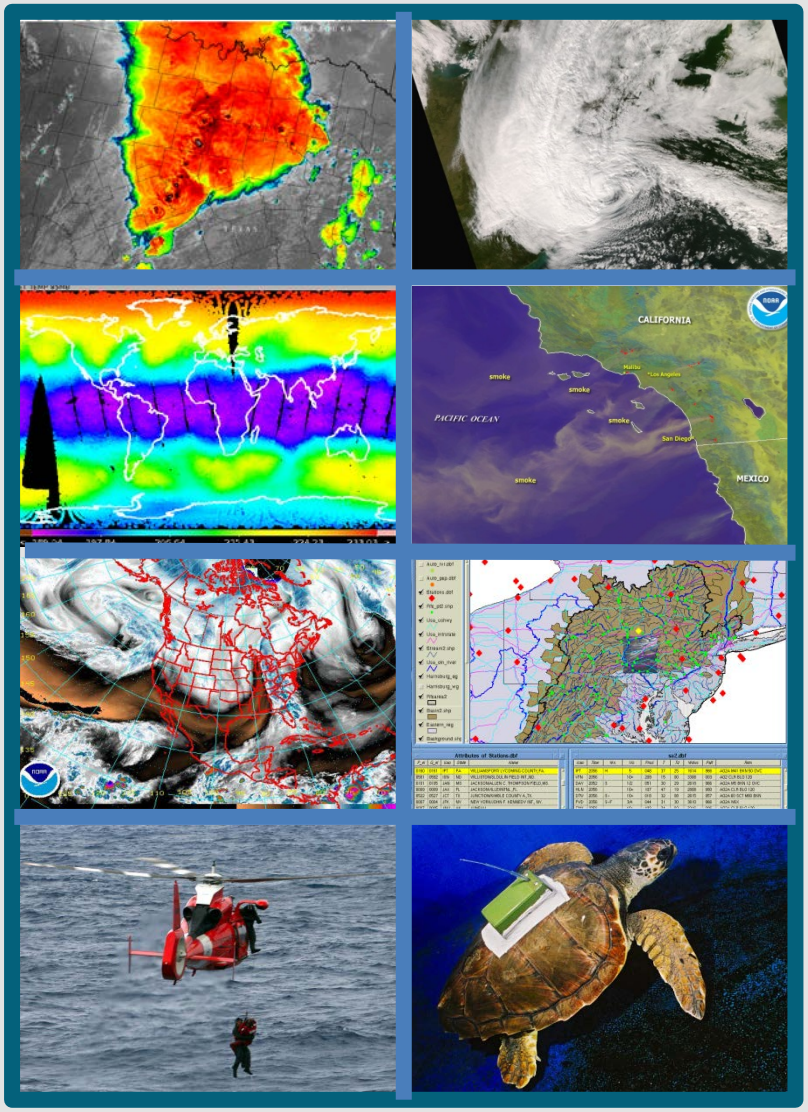
National Hurricane Center
GRB Receivers

Future Plans

- **Enterprise Systems**
  - multi-mission satellite control system (LEO/GEO)
  - ingest/production/distribution services
  - enterprise algorithms across diverse missions
  - high capacity networks (NWAVE)
  - greater security (continuous monitoring approach)
- **Cloud Services**
  - cost-effective solutions
  - rapid, scalable capability/capacity
- **Commercial Partnerships**
  - data buys/opportunities
  - CubeSats/SmallSats (long term)

Satellite Products and Services

- Provides 24x7 interpretive analyses of satellite data
  - Hurricane intensity and position
  - Significant Precipitation
  - Volcanic Ash
  - Fire and Smoke
  - Oil Spills
- Manages automated environmental products
- Search and Rescue Satellite Aided Tracking (SARSAT)
- Argos Data Collection System
- GOES Data Collection System
- Broadcast Services
  - Geonetcast
  - Emergency Managers Weather Information Network
  - Direct broadcast of geostationary and polar data
- Collaborate with partners to support transition of research products into operations

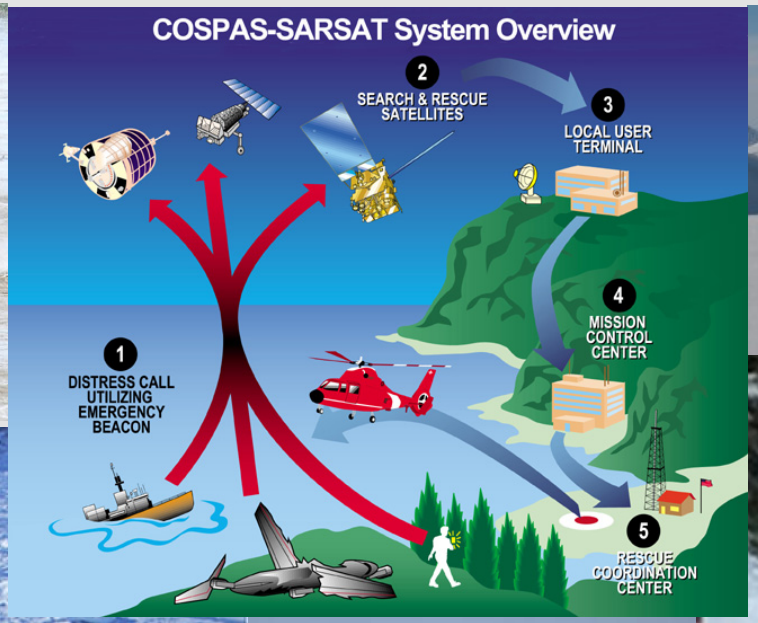


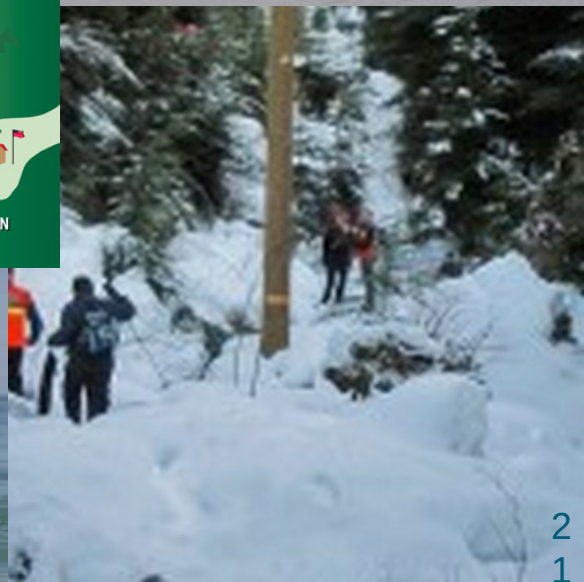
SARSAT Search and Rescue

Rescues since 1982:
World-wide: over *41,000*
United States: over *8,289*

Rescues in 2017:
United States: 265

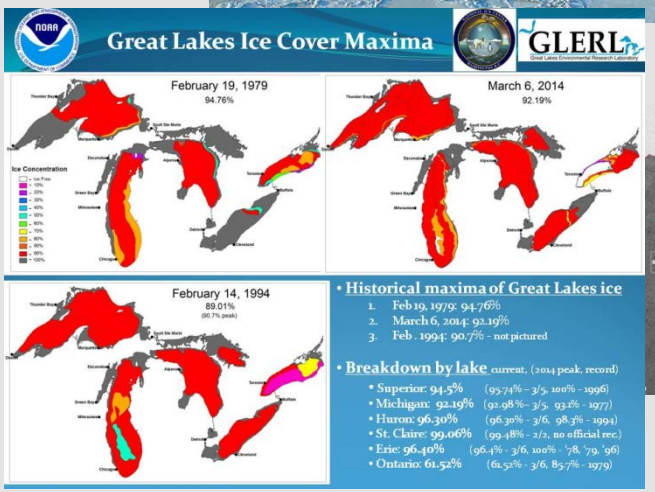
Rescues in 2018:
United States: *(as of 3/30/18)*
CY 18: 61
FY 18: 117

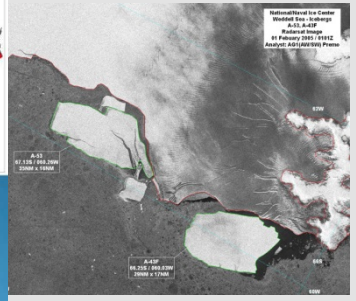




National Ice Center (NIC)

- Tri-agency activity with NOAA, U.S. Navy and U.S. Coast Guard
- Numerous international partners
- Supports National Weather Service operations in Alaska, the Great Lakes, and the northeast.
- Provides snow and ice data for National Centers for Environmental Prediction (NCEP) weather and climate prediction models
- Directly supports U.S. Navy SubForce arctic operations, U.S. Coast Guard icebreaking operations in Arctic and Great Lakes, and National Science Foundation operations (Arctic and Antarctic)





Future Missions/Events

Mission	Date
GOES-17 Satellite Transition to Operations	September 19, 2018
GOES-T Launch Commitment Date	4th Quarter FY 2020
GOES-T Launch Planning Date	May 2020
Metop-SG 1A	September 2021
JPSS-2 Launch	1st Quarter FY2022
Metop-SG 1B	December FY 2022
GOES-U Launch Commitment Date	1st Quarter FY 2025
GOES-U Launch Planning Date	April 2024
JPSS-3 Launch	4th Quarter FY 2026
JPSS-4 Launch	4th Quarter FY 2031

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- Thank You for Your Time!!