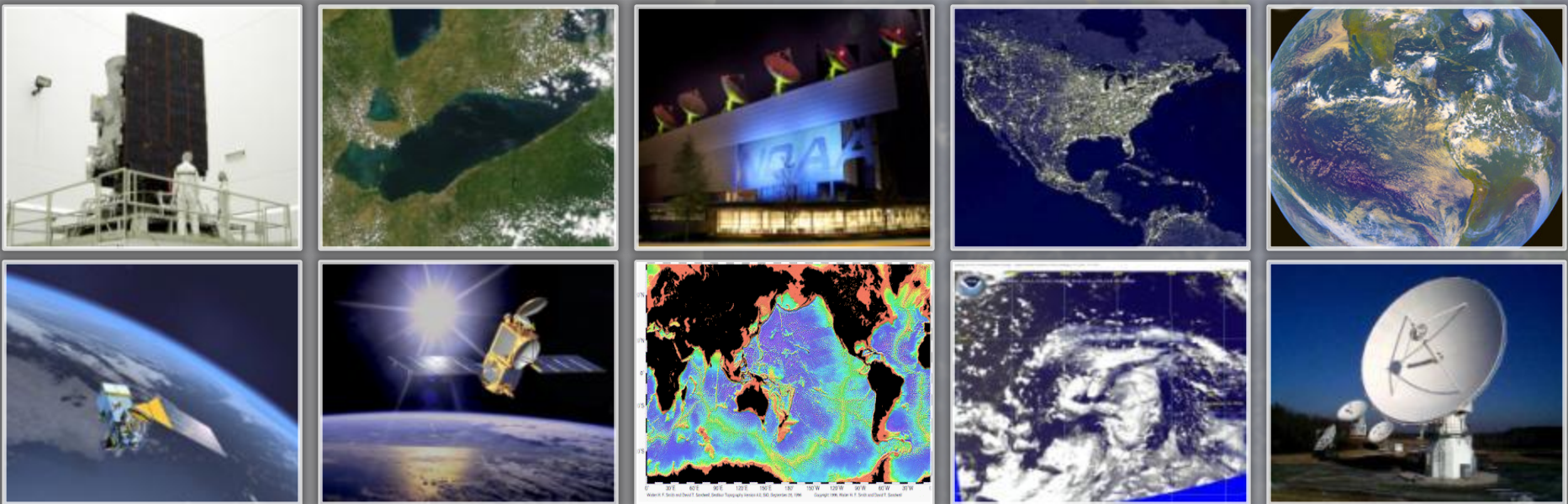


NOAA Satellite and Information Service

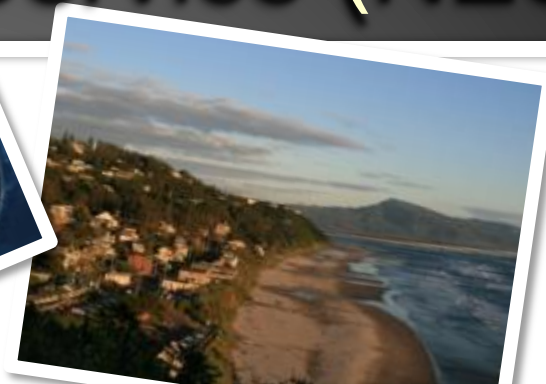
National Environmental Satellite, Data, and Information Service (NESDIS)



Briefing to Committee on Earth Science and Applications from Space
Marvin LeBlanc, Director of Systems Engineering
March 4, 2014



NOAA Satellite and Information Service (NESDIS)

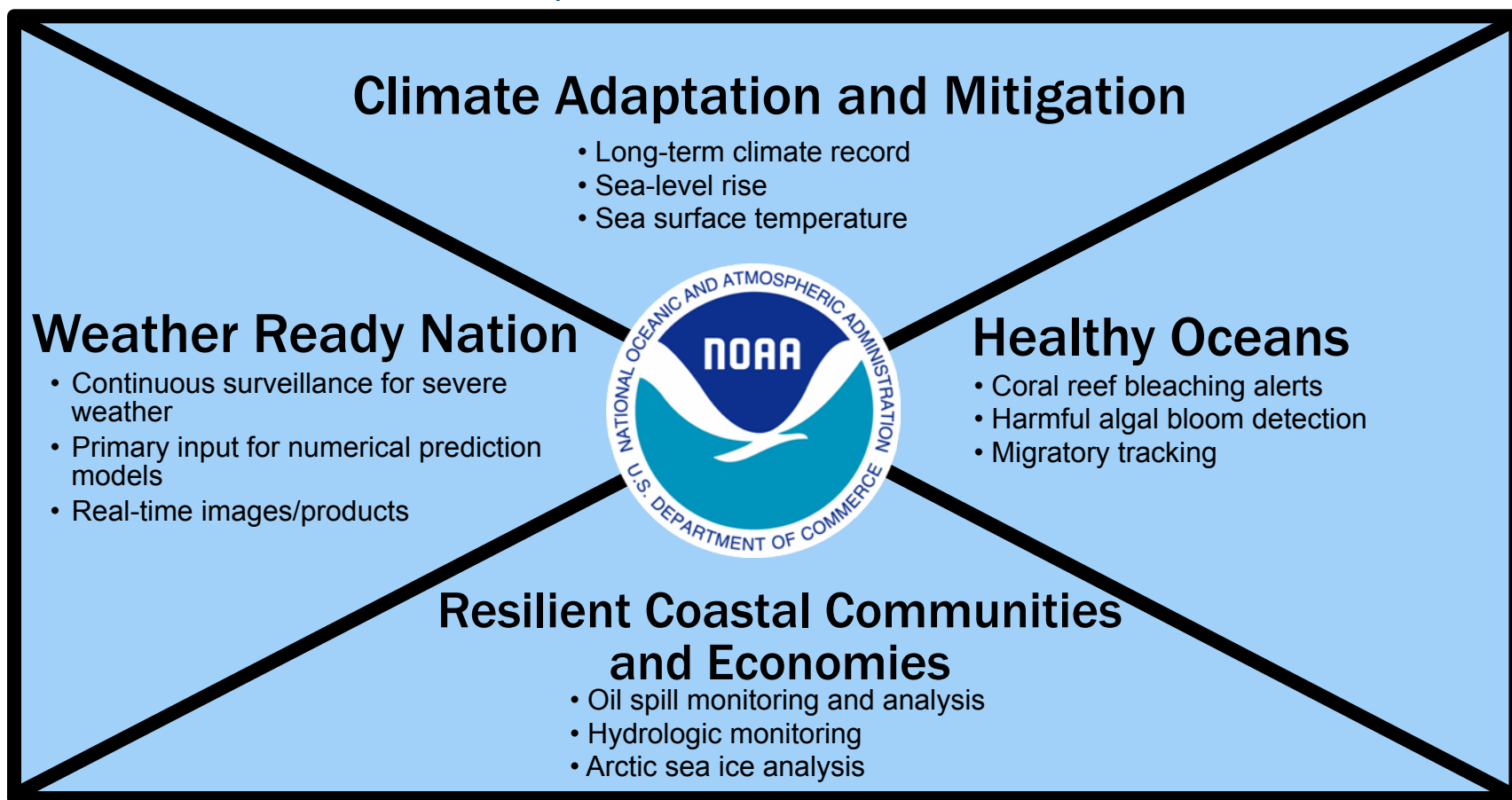


Our mission is to deliver accurate, timely, and reliable satellite observations and integrated products and to provide long-term stewardship for global environmental data in support of the NOAA mission.



NOAA/NESDIS Mission Supports NOAA's Mission and Goals

NOAA/NESDIS data products and services underpin and support NOAA's mission of Science, Service and Stewardship





NESDIS Principal Activities

Providing On-Orbit Satellite Operations

- ✓ 24/7 Satellite operations and product processing
 - ✓ Geostationary satellites (GOES)
 - ✓ Polar-orbiting satellites (POES)
 - ✓ Defense Meteorological Satellite Program (DMSP)
 - ✓ DMSP is operated by NOAA on cost reimbursable basis for the Air Force
 - ✓ Jason-2 altimetry satellite
 - ✓ Suomi National Polar-orbiting Partnership (SNPP)



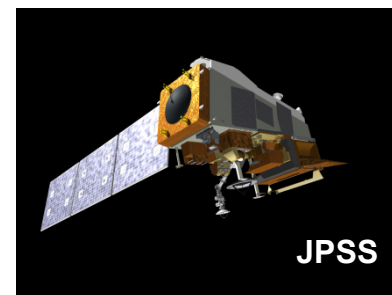
Acquiring Next Generation Satellites

- ✓ GOES-R Satellite Series
- ✓ Joint Polar Satellite System (JPSS)
- ✓ DSCOVR (Solar Wind Continuity)
- ✓ Jason-3 altimetry satellite
- ✓ Cosmic -2 (Radio Occultation)



Providing Long Term Data Stewardship

- ✓ National Climatic Data Center
- ✓ National Oceanographic Data Center
- ✓ National Geophysical Data Center

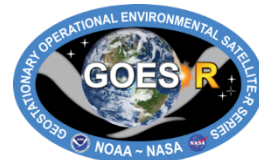
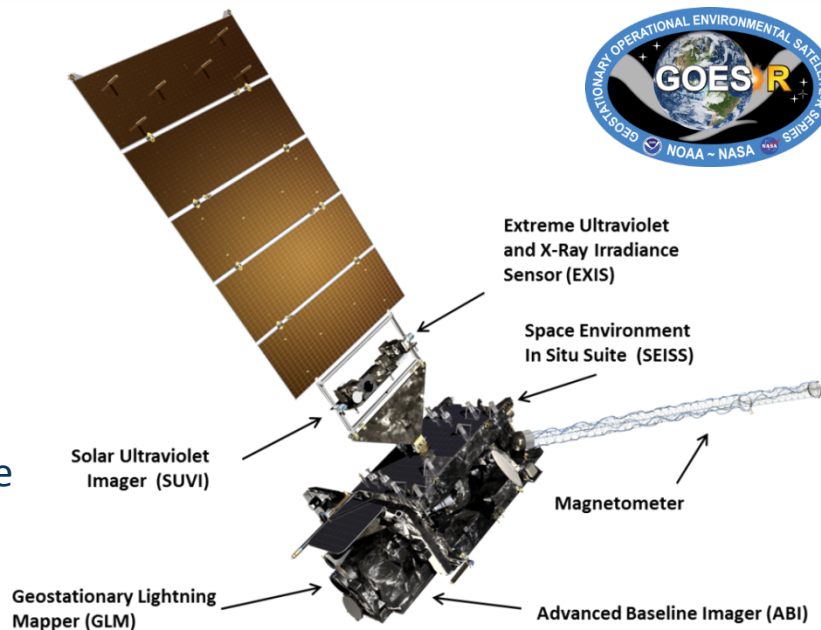




GOES-R Series Overview

Benefits

- ✔ Maintains continuity of weather observations and critical environmental data from geostationary orbit
- ✔ Provides faster scanning of entire hemisphere while simultaneously observing individual storms
- ✔ Provides a new lightning mapping capability for improved early warnings of severe weather
- ✔ Provides improved warning of solar events to minimize impact to communications, navigation systems, and power grids



GOES-R Launch Readiness Date*	2QFY2016
Program Architecture	4 Satellites (GOES-R, S, T & U) 10 year operational design life for each spacecraft
Program Operational Life	FY 2017 – FY 2036
Program Life-cycle	\$11.010 billion

*Launch Readiness Date based on FY 2014 President's Budget Request



JPSS Overview

Benefits

- ✓ Ensures continuity of global weather observations and critical environmental data around the world.
- ✓ Delivers real-time data to the National Weather Service, improving the quality of forecasts and enabling improved consistency in public warnings 3 to 8 days in advance of a severe weather event.
- ✓ Provides critical monitoring for hurricanes, droughts, floods, snowstorms and other severe weather events, allowing for the time to protect lives and property through evacuations and other preparations.
- ✓ Advances weather, climate, environmental and oceanographic science through technological improvements in satellite instruments and capabilities over legacy NOAA satellites.



Launch Dates	NLT 2QFY 2017 (JPSS-1)*; 1QFY 2022 (JPSS-2)
Program Architecture	3 Satellites (SNPP, JPSS-1, JPSS-2) SNPP- 5 year operational design life; JPSS-1 7-year operational design life
Program Operational Life	FY 2012 - FY 2025
Program Life-cycle (FY 2014 President's Budget)	\$11.349 billion

*Launch Date based on FY 2014 President's Budget Request





JPSS and GOES-R Advantages

JPSS

CrIS: significantly improved temperature and water vapor information than POES HIRS

ATMS: improved global coverage and spatial resolution than AMSU

VIIRS: superior imagery and more spectral bands than AVHRR

OMPS: improved spatial resolution, coverage and vertical profiling than SBUV

CERES: for fundamental energy budget climate measurements

JPSS-1 Launch: 2Q FY2017

JPSS-2 Launch: 1Q FY 2022

GOES-R

ABI: superior imagery and more spectral bands than the GOES imager

- ✓ Improved temporal sampling, CONUS every 5 minutes, full disk every 15 minutes and selected 1000 x 1000 km area at 30 seconds

GLM: first ever geostationary lightning mapper

SEISS/SUVI/EXIS: significantly improved space weather coverage

- ✓ Monitors solar radiation, locates solar flares and coronal mass ejections, detects solar irradiance

GOES-R Launch: 2Q FY2016

GOES-S Launch: 3Q FY2017



Other Satellite Programs

Jason-3 will succeed Jason-2 in providing global sea surface height measurements and continuity of a 20 year data record

- ✓ Joint NOAA/NASA/EUMETSAT/CNES mission for operational satellite oceanography measurements
- ✓ Crucial to improvements in weather modeling and hurricane intensification
- ✓ Launch Commitment Date- 2QFY15

Deep Space Climate Observatory (DSCOVR)

- ✓ Joint NOAA/NASA/DoD space weather program which will succeed NASA's ACE mission in providing solar wind measurement continuity
- ✓ Will provide improvements in geomagnetic storm warnings necessary for National infrastructure protection
- ✓ NOAA funding refurbishment by NASA for space weather mission; Air Force funding launch vehicle and services
- ✓ NOAA will operate post-launch
- ✓ Launch Commitment Date- 1QFY15

COSMIC-2

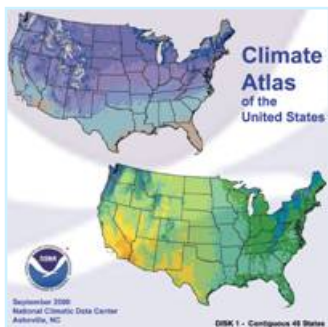
- ✓ Partnership with Taiwan and the U.S. Air Force will provide global radio-occultation measurements of ionosphere, temperature and water vapor information for weather and climate applications



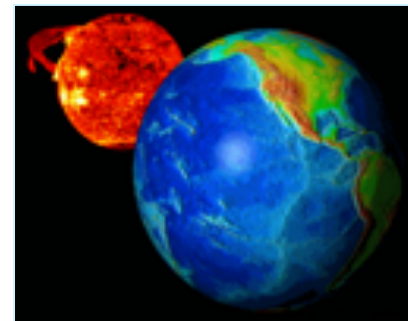
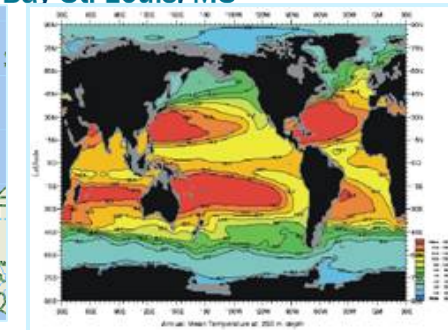
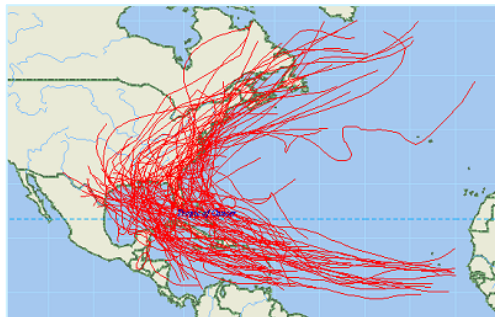
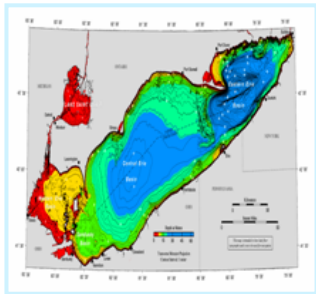
Data Centers & Information Services:

Archive, Access & Assessment

- ✓ NOAA's National Data Centers provide long-term preservation, management, data stewardship, and ready accessibility to the world's largest source of oceanographic, geophysical, solar-terrestrial, and climatic data
- ✓ Operation of NOAA's Central and Regional library system to support NOAA's scientific and technical personnel
- ✓ Loci for integration of data from various sources to address complex environmental challenges, e.g., Gulf of Mexico "dead zone", long term polar ice trends.



- ✓ Over 10 Petabytes of data in NOAA's National Data Centers.
- ✓ Over 4.1 PBs of data served in FY 2012, over 50 % annual growth rate





NOAA Budget Status

FY 2014 Omnibus

- NESDIS FY 2014 = \$2.084B (increase of \$219M from FY 2013 Spend Plan)
 - The GOES-R, JPSS and DSCOVR satellite programs were fully supported.
 - As requested the budget gives NOAA the authority to use JPSS funds to procure additional instruments and spacecraft to ensure continuity.
 - The Polar Free Flyer Program was not funded.
 - Two new programs, COSMIC-2/GNSS and Enterprise Ground Systems, were funded.
 - NOAA's CLASS operations was funded.
 - Funding was provided to distribute Suomi NPP environmental products on a 24/7 basis.
 - Jason-3 received \$18.5M or the requested \$37M.
 - Funding was not received for a \$10M increase in Climate Data Records and \$9M increase for new multi-Agency Big Earth Data initiative.



NOAA NESDIS Independent Review Team-2012

- In 2012, NOAA NESDIS chartered an Independent Review Team to conduct an independent assessment of the total NOAA satellite enterprise.
- The IRT -- using the guiding principle of maximizing the probability of success of the NOAA satellite enterprise -- produced their first report in July 2012.
- The IRT noted that -- while they saw many accomplishments across the enterprise -- they found several areas of concern. They organized their findings and offered 23 recommendations in five major areas:
 - Oversight and Decision Process
 - Governance
 - JPSS Gap
 - Programs
 - Budget
- The IRT noted that
 - Success of NOAA's satellite enterprise is critical to the United States
 - The areas of concern required significant and timely attention
 - With appropriate action, all identified concerns are resolvable



NOAA NESDIS Independent Review Team-2013

- In August 2013, NOAA NESDIS brought the IRT back to assess responses to their July 2012 recommendations. The IRT provided their report in November 2013, indicating that significant progress and improvements have been made in the past year. They reported that:
 - GOES-R and JPSS are proceeding well and being effectively executed
 - Oversight and decision process issues internal to DOC/NOAA/NESDIS are largely resolved
 - 20 of the 23 July 2012 report recommendations responded to positively, or responded to positively with the understanding that planned continued action was required
- The IRT urged DOC/NOAA/NASA to retain a primary focus of attention on the ultimate objective of establishing a robust JPSS polar weather program, consistent with other programs of critical national importance, indicating that the absence of JPSS data would have catastrophic results. Key IRT recommendations included:
 - Establishing a gap-filler program and advancing JPSS-2 launch schedule to the degree feasible
 - Immediately placing multiple (minimum of 3) ATMS and CRIS instruments under contract
 - Establishing a robust JPSS program consistent with a “two failures to have a gap” criterion as a national priority
 - Implementing JPSS-2,3,4 and beyond as an integrated program and establishing a robust JPSS program now
 - Focusing the total JPSS program (JPSS-2 and beyond) on high priority weather mission only
 - Do not make provisions or plans to fly climate instruments on any JPSS spacecraft (JPSS-2 and beyond)
 - NASA should establish a plan for flying climate instruments separately from the JPSS program
- NOAA/DOC and NASA are working with the Administration to examine options to respond to the 2013 IRT recommendations



Other Activities

- ✓ Executing FY13 Sandy Supplemental / Disaster Relief Funds to mitigate impacts of future natural disasters through:
 - Improved use of observations
 - NWP data assimilation and modeling
 - Strengthening domestic and international partnerships
- ✓ “Strengthening NESDIS” effort underway
 - Increases systems engineering emphasis at the Enterprise level, including examining future space/ground architectures
 - Lays groundwork for evolution to common ground services and consolidation of National Data Centers



Summary

- NOAA's satellite acquisition programs continue to successfully meet their major milestones as they progress towards their respective launches:
- NOAA/DOC and NASA are working with the Administration to examine options to respond to the 2013 IRT recommendations
- Strengthening NESDIS—will allow NESDIS to realize increased efficiencies in an increasingly austere budget environment