National Research Council
Space Studies Board

Update on NOAA Program and Budget

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Past Year's Accomplishments

- Support to Icelandic volcanic ash cloud
- Support to Deepwater Horizon oil spill
- Movement of GOES-12 to support South America
- New Fairbanks, Alaska satellite operations building
- Joint NOAA-NASA team to manage JPSS acquisition
- Merging of NOAA's satellite operations and data operations into a single organization
- Initial receipt of ocean surface vector winds data from India's Oceansat-2
- Preliminary agreement with China to exchange meteorological satellite data (no data exchanged yet)

Past Year's Disappointments

- The end of SeaWiFS data collection
- The Glory launch failure, especially the Total Irradiance Monitor (TIM)
- Slow pace of JPSS transition from the Air Force contract to NASA contracts
- Moratorium on new GOES and POES satellite data products due to lT security concerns
- Lack of an FY 2011 appropriation, and its impact upon multiple NOAA satellite programs

NOAA's Climate Service Proposal

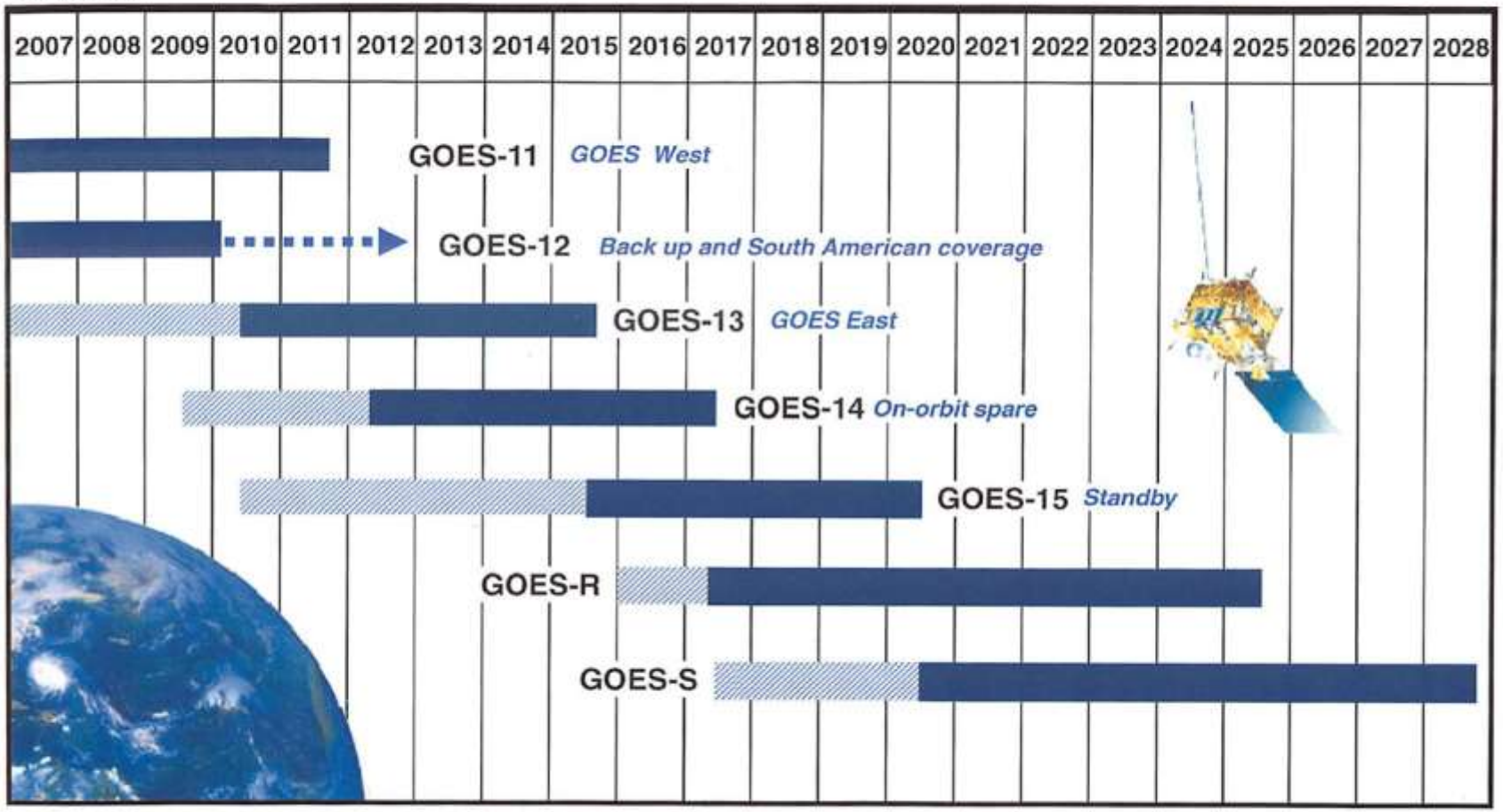
- The FY 2012 President's Budget proposes to reorganize NOAA to form a Climate Service:
  - From OAR: Climate Program Office and 4 Laboratories
  - From NWS: Climate Prediction Center
  - From NESDIS: 3 Environmental Data Centers
- Impact upon NOAA satellites
  - NESDIS will become the National Environmental Satellite Service (NESS)
  - Climate will become an external customer to NESS, just like Weather has been

Budget Highlights ($M)

	FY 2010 Enacted	FY 2011 President's Budget	FY 2011 Annualized Continuing Resolution	FY 2012 President's Budget
GOES-R	667.5	730.0	667.5	617.4
JPSS	382.2	1,060.8	382.2	1,070.0
Jason-3	20.0	50.0	20.0	53.0
Climate Sensors	0	49.4	0	30.4
DSCOVR	0	9.5	0	47.3
COSMIC-2	0	3.7	0	11.3
Dual Frequency Scatterometer	0	0	0	0
Adv Sounder	0	0	0	0
NESDIS Total	**1,398.5**	**2,209.0**	**1,396,4**	**2,015.4**

Continuity of GOES Operational Satellite Programs

As of January 10, 2011



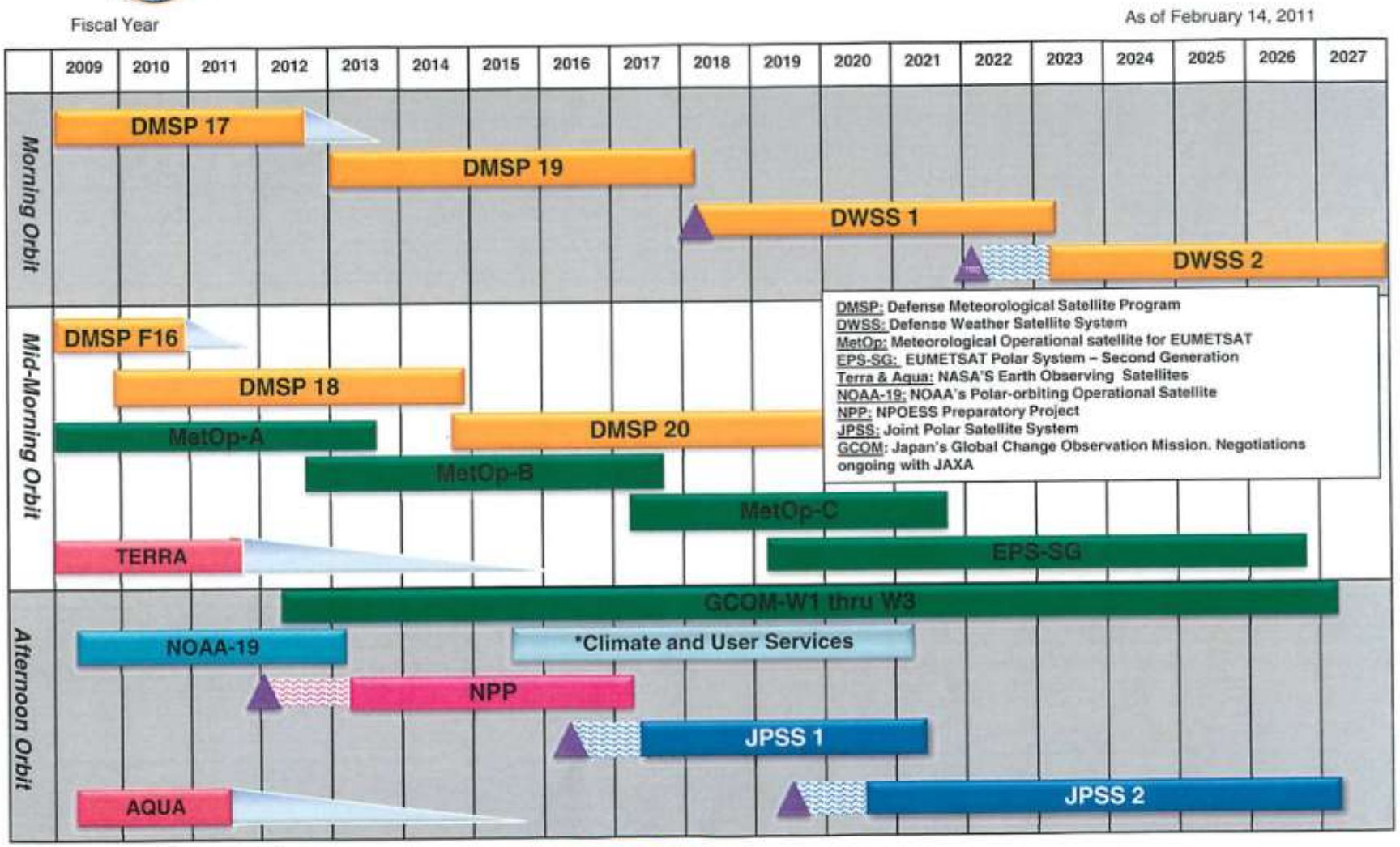
GOES-R Series

- New generation of geostationary satellites with enhanced capabilities
- Instruments: advanced imager, lightning mapper, 3 space weather instruments, search and rescue, and data collection
- FY 2012 budget adds GOES-T and GOES-U, expanding from a two to a four satellite program
- NESDIS and NWS agreed that none of the four GOES-R series satellites will carry an advanced sounder

Joint Polar Satellite System (JPSS)

- New generation of polar-orbiting satellites with enhanced capabilities (replaces NPOESS)
- Instruments: advanced imager, infrared sounder, microwave sounder, ozone (nadir and limb), search and rescue, and data collection
- Joint NOAA-NASA management team in place
- NPP scheduled to launch in late 2011
- Satellite bus under contract for JPSS-1
- 3 of 4 instruments and ground system have been moved from Air Force contract to NASA contracts
- Lack of budget in FY 2011 causing major program delay which may result in a data gap in the afternoon orbit between NPP and JPSS-1

Continuity of Polar Operational Satellite Programs



Jason-3 Altimetry Satellite

- Jason-2 was launched in 2008 and is operated by NOAA
- Jason-3's 2014 launch will provide continuity of global space-based precise measurement of sea surface height and topography
- Helps to monitor sea level rise and to forecast hurricane intensity
- NOAA is partnered with NASA, the French Space Agency, and EUMETSAT for Jason-3
- NOAA will provide a microwave radiometer, launch vehicle, command and control, and data processing
- Reduced NOAA funding under the FY 2011 Continuing Resolution has the potential to delay the program

Climate Sensors

- Restores the Total Solar Irradiance System (TSIS) and Clouds and Earth's Radiant Energy System (CERES) sensors that were removed from NPOESS during the 2006 Nunn-McCurdy
- FY 2012 funding will continue development of CERES FM-6 and TSIS FM-1
- Reduced NOAA funding under the FY 2011 Continuing Resolution has the potential to delay the program
- Glory launch failure also impacts the continuity of TSIS data, as Glory would have flown a TIM instrument
- TSIS will not fit on JPSS-1, so free flyer alternatives are being evaluated

DSCOVR

- A large increase in geomagnetic storm frequency and severity is expected during the next solar maximum beginning in 2013
- NOAA currently relies upon NASA's aging ACE satellite in L1 orbit for early warning of geomagnetic storms
- NOAA will refurbish the DSCOVR satellite for a 2014 launch into L1 orbit
- Air Force will provide the launch vehicle
- The FY 2011 Continuing Resolution has prevented the start of the DSCOVR refurbishment

COSMIC-2

- COSMIC-1 is a six satellite constellation launched in 2006 by Taiwan and its U.S. partners to measure GPS radio occultation
- COSMIC-1 proved that GPSRO can provide extremely accurate, bias free, worldwide measurements of atmospheric temperature and moisture profiles over oceans and land and greatly improve weather forecasting
- In the COSMIC-2 partnership with Taiwan, NOAA will procure 12 sensors and provide ground processing
- The FY 2011 Continuing Resolution has delayed the start of NOAA's COSMIC-2 efforts

Ocean Surface Vector Winds

- NOAA used NASA's QuikSCAT satellite to forecast both hurricanes and winter storms
- QuikSCAT stopped providing data in November 2009
- Currently relying upon ASCAT data from the European METOP-A satellite, but it has a narrower track and a longer revisit rate
- Began receiving scatterometry data from India's Oceansat-2 in March 2010
- NOAA had hoped to build a dual frequency scatterometer and fly it on Japan's GCOM-W2, but this proposal has not survived the budget process

Heavy Rainfall Event in Southern U.S.

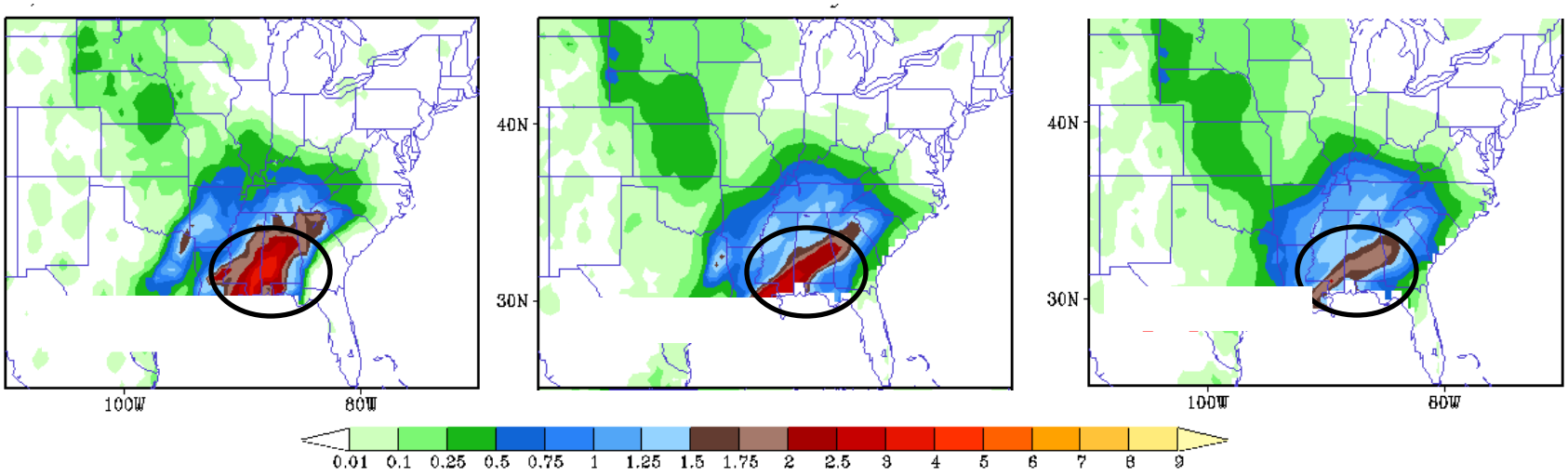
February 5, 2010

Forecast comparison using NOAA's Polar-orbiting Operational Environmental Satellite data

Observed Precipitation

1 day forecast **with all** NOAA orbiting satellite data

1 day forecast **without NOAA afternoon** satellite data



24 Hr Accumulated Precipitation Totals (inches) for 5 Feb (am)

Result: Up to a 50% error increase in precipitation rates in southern US

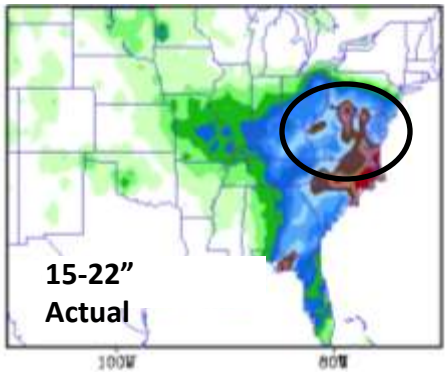
Impacts: Future errors of this scale could result in flood forecast error providing less time for population to react and increasing risk to life and property (hours vs days)

"Snowmageddon"

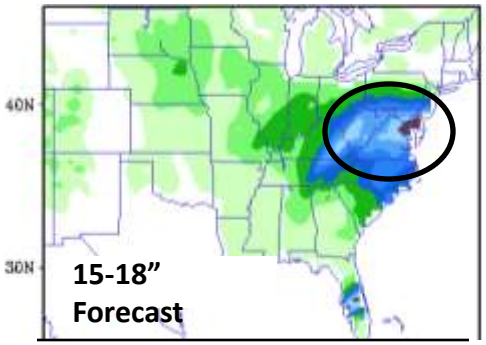
February 6, 2010

Forecast comparison using NOAA's Polar-orbiting Operational Environmental Satellite Data

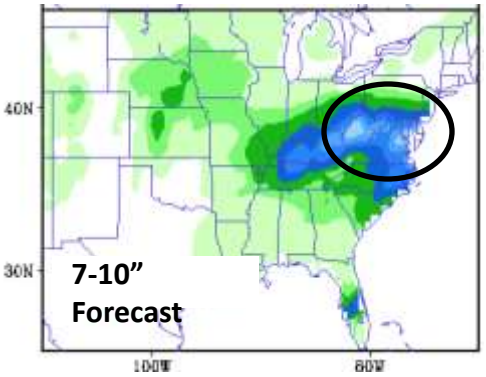
Observed Snowfall

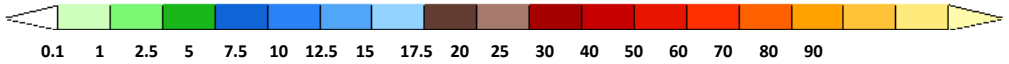


5 day forecast **with all** NOAA orbiting satellite data



5 day forecast **without NOAA afternoon** orbiting satellite data





24 Hr Accumulated Snowfall Totals (inches) for 6 Feb (am)

Result: In DC and Mid-Atlantic coast, models without NOAA orbiting satellite data did not forecast this paralyzing event and ***under-forecast snow by at least 10 inches***

Impacts: Aircraft and airline passengers would have been stranded, ground commerce would have been halted with no mitigation plans, population would have been unprepared for paralyzing snow-depth

New Advisory Panel

- NOAA's Science Advisory Board (a Federal Advisory Committee) plans to establish a Satellite Working Group