FY 2015 NOAA Satellites Budget Comparison

Update 3

NOAA appropriations within the Consolidated Approps, 2014 (P.L. 113-76); President's FY 2015 Budget Request; House passed FY 2015 Commerce, Justice, Science bill (H.R. 4660); Senate Appropriations Committee (SAC) passed FY 2015 Commerce, Justice, Science Appropriations bill (S. 2437);

This document provides an overview of the President's FY 2015 NOAA Budget Request for satellites in comparison with the Consolidated Approps, 2014 (P.L. 113-76) and House and Senate appropriations bills.

NOAA Satellites – FY 2015 Funding[1]

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
Satellites				
Geostationary Systems – R Series	954.761	980.838	981.000	980.838
Altimetry Mission - Jason-3	18.500	25.656	15.000	Transferred to NASA
Polar Orbiting Systems - Joint Polar Satellite System (JPSS)	824.000	916.267	916.500	916.267
Solar Irradiance, Data and Rescue (SIDAR)	0.000	15.000	0.000	0.000
Deep Space Climate Observatory (DSCOVR)	23.675	21.100	20.000	Transferred to NASA
COSMIC-2/Global Navigation Satellite System Radio Occultation (GNSS RO)	2.000	6.800	6.800	6.800
Satellite Ground Services	49.734	52.717	52.715	52.136
Systems Architecture and Advanced Planning (SAAP)	4.587	4.587	4.393	4.000
Projects, Planning and Analysis	33.488	33.488	33.488	25.200
Total	**1,894.738**	**2,056.453**	**2,029.896**	**1,987.407**

[1]Please note that the numbers used for this table reflect the numbers explicitly called out in the relevant document. In some cases, the sum of the budgets for each category does not match the total funding level given in the document.

Overall Congressional Guidance

House passed FY 2015 CJS Appropriations Bill (H.R. 4660):

- The Committee Report states that the Committee's "recommendation focuses limited resources on the Joint Polar Satellite System (JPSS) and Geostationary Operational Environmental Satellite (GOES) programs in light of their role in ensuring accurate and timely weather forecasts and warnings and continuing challenges identified by the Government Accountability Office (GAO), Office of Inspector General (OIG) and the NESDIS Independent Review Team (IRT)." Therefore, the Committee expects:
    - First, "the Department of Commerce to ensure that these critical programs are proceeding within the cost estimates and meeting program milestones."
    - Second, "to be notified promptly if any issues arise that could jeopardize the current launch schedules."
- The Committee Report goes on to state that the Department of Commerce and NOAA would be required to "remain engaged in the overall management of JPSS and GOES-R programs and efforts to develop solutions to mitigate any gaps in either JPSS or GOES-R programs and to address the fragility of the JPSS program." In addition, NOAA would be required to "continue to provide quarterly briefings to the Committee regarding all NOAA satellite programs." Further, these briefings would be required to "include the status of obligations for each program, including spacecraft, launch, sensor, integration, and ground components."
- Finally, the Committee "reiterates its desire to ensure that OIG and GAO staff are permitted to attend NOAA's monthly satellite meetings." In addition, "to further aid the Committee in its oversight function," NOAA would be required to "provide biannual updates to the Committee regarding the status of implementing OIG, GAO, and IRT recommendations for NOAA's satellite programs."

SAC passed FY 2015 CJS Approps Act (S. 2437):

- The Committee Report notes that the "2015 budget request shows a concerted direction from the Administration to focus on weather data acquisitions as the primary requirement of NOAA's weather satellites." The Committee Report states that "given the constrained budget environment and finite resources, the Committee expects the Department to continue to highlight the budget requests for satellite procurement and acquisition as necessary funding for NOAA to accomplish its core missions." In addition, the Committee "believes that NOAA should prioritize satellite programs directly related to weather forecasting including those that result in the greatest reduction of risk to lives and property."
- The Committee Report states that "while the budget request shows that NOAA is staying within its projected life-cycle cost caps for the Joint Polar Satellite System [JPSS] and the Geostationary Operational Environmental Satellites R-series [GOES-R] missions," however, "the Committee is concerned about the transparency of the annual accounting for individual fiscal years." The Committee Report notes that "one recent manifestation of this concern was NOAA's reprogramming request to the Committee in fiscal year 2014 that proposed to move funds from JPSS and GOES-R into other programs despite NOAA's previous insistence that all the funds requested in fiscal year 2014 for these two weather satellite programs were essential to maintain schedule integrity." The Committee agrees that "keeping these flagship weather satellite missions on-budget and on-schedule is extremely important, but so is maintaining cost controls, especially when NOAA's satellite missions continue to dominate NOAA's annual budget increases." Therefore, the "Committee reiterates its direction to NOAA to find savings from operating expenses and to reduce duplicative Government overhead shared with the National Aeronautics and Space Administration [NASA], starting with Projects, Planning and Analysis."

- Finally, the Committee is “troubled by reports that the Commerce Inspector General has been excluded from portions of Program Management Council [PMC] satellite meetings.” The Committee Report states that the Committee “has learned that the Council has established alternative meeting structures in order to exclude the Inspector General from critical discussions regarding the status of weather satellite acquisition and procurement.” The Committee Report notes that the “Inspector General serves a critical oversight role for the Department’s weather satellite procurement and acquisition programs,” and “given the history of NOAA’s satellite procurement program, including significant cost overruns and a looming gap in polar satellite data, it is vital that the Inspector General be present for all PMC satellite meetings to properly carry out his oversight responsibilities.” Therefore, the Committee would direct the Department of Commerce to “take necessary steps to ensure the Inspector General’s office is represented and present for all PMC meetings and report back to the Committee, not later than 30 days after the date of enactment of this Act, on the steps the Department has taken to address these issues.”
- The Committee would direct NOAA to “provide quarterly programmatic and procurement status reports of all satellites actively flying and under development unless any reprogramming, system failure, or other extraordinary circumstance warrants an immediate update.” Further, “as part of the agency’s quarterly satellite briefing,” NOAA would be required to include “updates on preparations and enhancements, and initial cost estimates compared to actual expenditures that need to be made to accommodate the increased volume of satellite data.”

Geostationary Operational Environmental Satellite–R (GOES-R)

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
GOES-R	954.761	980.838	981.000	980.838
Total	**954.761**	**980.838**	**981.000**	**980.838**

Mission

The Geostationary Operational Environmental Satellite –R (GOES-R) Series is a collaborative development and acquisition effort between NOAA and NASA to develop, deploy and operate the next-generation geostationary environmental satellite series that will provide timely and accurate weather forecasts, severe storm tracking, space weather monitoring, and meteorological research. The GOES-R series will incorporate new instruments with increased capability over the incumbent GOES-N series and will improve its ground system, which will provide better data products for National Weather Service (NWS) and other NOAA stakeholders.

President's FY 2015 NOAA Budget Request:

- The President requested $980 million for GOES-R, $38 million above its FY 2014 enacted budget.

FY 2015 funding will support:

- Completion of GOES-R satellite, ground system, and flight-to-ground integration and test activities;
- Begin GOES-R satellite pre-ship, ship and launch base activities, and GOES-R launch service activities, including launch vehicle integration and test;
- Delivery of GOES-S suite of instruments: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet/X-Ray Irradiance Sensors (EXIS), Space Environment In-Situ Suite (SEISS), Geostationary Lightning Mapper (SLM), and Magnetometer;
- Completion of fabrication of GOES-S spacecraft hardware and initiation of satellite-level integration;
- GOES-S launch service activities; and
- Continue fabrication, assembly, and integration of GOES T&U instruments and spacecraft hardware;

NOAA efforts to reduce program risks associated with GOES-R development:

- NOAA budget documents state: The GOES-R Series Program has and will continue to develop and present trade-off approaches to mitigate launch delays as a program management practice. It is difficult at this stage of development to generate a comprehensive set of trade-off approaches that don't affect the launch schedule. The GOES-R Series Program has gotten past the point at which substantial budget reductions can be accommodated without impacting schedule, or major schedule changes can be made without impacting the budget. The following are examples of GOES-R Series schedule mitigation actions:
    - Increase the spacecraft budget liens and threats to support additional Integration and Test (I&T) shifts. (Done)
        - Execute above in response to identified risks and issues. (As Required)
    - Identify more efficient spacecraft testing approaches to free up additional schedule margin. (Done)

- Develop alternative approaches to respond to delays in Geostationary Lightning Mapper (GLM). (Done)
  - Decision on alternatives (December 2013)
- Add liens and threats to support additional ground system contractor staffing. (Done)
- Re-plan Ground Factory and Site I&T activities to increase schedule confidence. (Underway)
  - Identify launch critical capabilities;
  - Identify capabilities and activities with greatest schedule risk;
  - Identify more efficient testing approaches to relieve schedule pressure;
  - Identify capabilities for post launch implementation;

FY 2015 Congressional Action

House passed FY 2015 CJS Appropriations Bill (H.R. 4660):

- The House passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $981 million for GOES-R to fully fund the President's FY 2015 base budget request.
- The Committee Report states that funding "will support spacecraft and ground system development, integration, and testing of sensors, and ground system testing prior to the planned launch date in the 2nd quarter of Fiscal Year 2016." In addition, NOAA would be required to "continue to provide updates to the Committee regarding the status of this program to include the on-orbit GOES satellites."

SAC passed FY 2015 CJS Approps Act (S. 2437):

- The SAC passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $981 million for GOES-R to fully fund the President's FY 2015 base budget request.

Jason-3

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
JASON-3	18.500	25.656	15.000	25.600
Total	**18.500**	**25.656**	**15.000**	**25.600***

*The Senate Appropriations Committee passed CJS Approps Act would transfer development costs and responsibility of Jason-3 from NOAA to NASA.

Mission

The Jason-3 satellite is planned as a follow-on for Jason-2. Jason-3 is a joint satellite altimetry mission between NOAA, the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), and the Centre National d'Etudes Spatiales (CNES), the French Space Agency. Jason-3 will provide continuity of precise measurement of sea surface heights for applications in ocean climatology and ocean weather. NOAA is providing a microwave radiometer, precision orbit determination components [e.g., GPS, Laser Retroreflector Array (LRA)], launch services, ground system and operations, and associated engineering services for Jason-3. EUMETSAT and CNES are providing the spacecraft, altimeter, additional precision orbit components, ground system and operations.

President's FY 2015 NOAA Budget Request:

- The President requested $25 million for JASON-3, $7 million above its FY 2014 enacted budget.

FY 2015 funding will support:

- Jason-3 will use requested funds as part of efforts to develop and initiate a re-plan to launch Jason-3. Base funding does not fully support launch services, launch vehicle procurement, and associated engineering services for the program. As a result, the program is initiating a re-plan within its current budget profile that will include launch delays beyond Quarter 2 (Q2) FY 2015 and increased lifecycle costs. Meanwhile, NOAA's European partners have indicated that if Jason-3 is not launched by Q2 FY 2015, they will be forced to cancel the program.
- NOAA's European partners have provided the spacecraft, altimeter and precision orbit components, and NASA, on behalf of NOAA, has completed the mission instruments build and has delivered the completed instrument to CNES for satellite integration. NASA also completed spacecraft integration and testing in FY 2013.
- The Administration is developing a FY 2014 reprogramming package that will maintain a Q2 FY 2015 Jason-3 launch.

FY 2015 Congressional Action

House passed FY 2015 CJS Appropriations Bill (H.R. 4660):

- The House passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $15 million for Jason-3, $10 million below the President's FY 2015 base budget request.

SAC passed FY 2015 CJS Approps Act (S. 2437):

- The SAC passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $24 million for DSCOVR, $3 million above the President's FY 2015 base budget request.
- The Committee Report states that "NOAA's flagship weather satellites take financial priority over NOAA's smaller observing satellites despite the fact that these smaller missions have just as much scientific merit." Therefore, "in light of the financial pressure within NOAA's PAC account

to keep the weather satellite missions moving forward," the Committee would transfer "the development costs and responsibilities of Jason-3 and DSCOVR from NOAA to NASA's Earth Science mission directorate." The Committee Report notes that "NASA is already partnering with NOAA on constructing these important missions as well as arranging the launch vehicles," and ultimately the "underlying goal of this transition is to keep Jason-3 and DSCOVR on-schedule and on-budget given that both missions are set to launch in fiscal year 2015."

Joint Polar Satellite System (JPSS)

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
JPSS	824.000	916.267	916.500	916.267
Total	**824.000**	**916.267**	**916.500**	**916.267**

Mission

The Joint Polar Satellite System (JPSS) is the United States' next generation polar-orbiting operational environmental satellite system. JPSS is a collaborative program between the National Oceanic and Atmospheric Administration (NOAA) and its acquisition agent—National Aeronautics and Space Administration (NASA). This interagency effort is the latest generation of U.S. polar-orbiting, non-geosynchronous environmental satellites. Established in February 2010 in the President's Fiscal Year 2011 budget request as the civilian successor to the restructured National Polar-orbiting Operational Environmental Satellite System (NPOESS), JPSS will provide continuity of critical, global Earth observations—including oceans, clouds, ozone, snow, ice, vegetation and atmosphere through 2028. The global environmental data from JPSS will be fed into Numerical Weather Prediction (NWP) models for forecasts and used for climate monitoring.

President's FY 2015 Budget Request:

- The President requested $916 million for JPSS, $95 million above its FY 2014 enacted budget.

FY 2015 funding will support:

- Completion of the JPSS-1 bus; and initiate development of the JPSS-2 spacecraft bus;
- Completion and delivery of the Cross-track Infrared Sounder (CrIS) and Visible/Infrared Imager/Radiometer Suite (VIIRS) instruments; integration and test of the JPSS-1 instruments onto the bus, followed by satellite/observatory environmental and performance testing and;
- Continued ground system operations for Suomi-National Polar-orbiting Partnership (S-NPP) under the Block 1.2X, continued development of the new Block 2.0 upgrade, and integrated testing of the Block 2.0 with the JPSS-1 flight segment to continue progression toward JPSS-1 launch readiness;
- Continue with preparation for launch vehicle and services for JPSS-1 launch in 2017;
- Continuing the build of instruments for JPSS-2;
- Complete procurement of the JPSS-2 spacecraft bus;

Gap Mitigation Plan:

NOAA budget documents state: NOAA acknowledges there is a high risk of a loss in satellite environmental coverage in the early afternoon orbit, should the S-NPP satellite fail prior to the planned launch of JPSS-1. In 2013, NASA evaluated options to accelerate the JPSS-1 launch readiness date by 3 to 6 months and determined it would result in substantial increases in cost, schedule and technical risk and would require removal of instruments or other hardware. NOAA concluded it could not support acceleration of JPSS-1 and is continuing to work with NASA to examine the costs and viability of accelerating the planned launch readiness date of JPSS-2.

NOAA is pursuing a more robust sparing strategy for the Advanced Technology Microwave Sounder (ATMS) and CrIS instruments, which are considered necessary to developing weather forecasts and may enable options to accelerate JPSS-2 schedules and reduce risk of a data gap between JPSS-1 and JPSS-2. The requested increase in funds would be used to procure spares to support JPSS-2 and additional CrIS

and ATMS builds with the best practicable schedule and risk posture. The instruments for JPSS-2 define the critical path and long-lead parts are the pacing items. Without spares for these system elements, even a minor flaw or anomaly can result in months, even years of schedule slip. NOAA has identified that such delays were contributors to cost growth and schedule delays in the predecessor program. This strategy supports the Administration's efforts to find cost savings and efficiencies within NOAA satellite programs, while strengthening satellite management and the likelihood of successful missions.
NOAA recognizes the need to build redundancy into the JPSS program to maintain observations in the event of a loss of a satellite in the afternoon polar orbit. The formulation and acceleration of follow-on missions is a critical component of NOAA's strategy to reduce the likelihood of a gap in satellite data through a more robust JPSS architecture. Consistent with the flexibility included in the FY 2014 Omnibus Appropriations and NESDIS Enterprise Independent Review Team (IRT) recommendations, NOAA will utilize JPSS funds to pursue procurements for JPSS-2 and future follow-on missions as an integrated program to ensure the continuity of polar observations.
The following are important details of the strategy JPSS developed to address the potential risk of a gap in environmental observations:

- Identified National Weather Service's (NWS) critical input into Numerical Weather Prediction, which is the observational data provided by the Advanced Technology Microwave Sounder (ATMS) and Cross-track Infrared Sounder (CrIS) sensors.
- Implementing a robust sparing strategy for ATMS and CrIS to protect or potentially accelerate the JPSS-2 development and acquisition schedule. This strategy will reduce risk to schedule and risk to life-cycle costs increases from instrument development and integration. Key spares will be critical Line Replaceable Units (LRUs) for the ATMS and CrIS instruments. These units will be prioritized according to criticality and lead time. Making these purchases in a timely manner will provide protection against potential cost increases from parts obsolescence and replacement lead times.

FY 2015 funds will be used to support the following activities:

- Initiate acquisition of additional copies of ATMS and CrIS sensors;
- Leverage existing acquisitions and contracts to initiate activities for follow-on missions to JPSS-2 and potential gap mitigation missions consistent with the flexibility provided in the FY 2014 Omnibus Appropriation Act;
- Implementation of the pre-procurement actions and procurement actions required to support contract Authority To Proceed (ATP) for follow-on instruments by early FY 2016 and award the JPSS-2 spacecraft bus contract with options to procure spacecraft for future polar missions;
- Begin to conduct studies to assess and plan follow-on missions to ensure polar continuity;

FY 2015 Congressional Action

<u>House passed FY 2015 CJS Appropriations Bill (H.R. 4660):</u>

- The House passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $916 million for JPSS to fully fund the President's FY 2015 base budget request.
- The Committee would require NOAA to "report to the Committee no later than 60 days after enactment of this Act on efforts to accelerate the JPSS-1 and JPSS-2 schedules." The report would be required to include:
    - First, "a discussion of any analysis conducted on the status of the sensors, integration, ground elements, and program reserves."
    - Second, an analysis of "NASA's Radiation Budget Instrument (RBI) on the JPSS-2 platform. The RBI instrument is intended as a follow-on to the Clouds and the Earth's Radiant Energy System (CERES) instrument that is currently flying on the Suomi-NPP and

is manifested on the JPSS-1 satellite. The Committee is concerned that development of the RBI instrument will introduce risk into the program."

- The Committee "recommendation also supports procurement of Advanced Technology Microwave Sounder (ATMS) and Cross-track Infrared Sounder (CrIS) spare instruments to reduce schedule risk and build redundancy into the JPSS program." The Committee Report notes that "these instruments are critical to the numerical weather models, providing detailed atmospheric temperature and moisture observations." The Committee Report states that "procurement of these instruments, which are currently flying on the Suomi-NPP and are manifested for JPSS-1 and JPSS-2, will reduce the fragility of the program" Therefore, the Committee would require NOAA to "keep the Committee informed regarding procurement and development milestones associated with these long-lead items."

<u>SAC passed FY 2015 CJS Approps Act (S. 2437):</u>

- The SAC passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $916 million for JPSS to fully fund the President's FY 2015 base budget request.
- The Committee "is disappointed by the Department's failure to present a viable gap mitigation plan for JPSS." The Committee Report notes that "the Government Accountability Office and the Department of Commerce Inspector General project a potential gap in critical polar satellite data between the Suomi National Polar-Orbiting Partnership satellite and JPSS-1 up to 17 months." The Committee Report notes that "while the Department has taken steps to ensure robustness and redundancy in JPSS-1 and JPSS-2, it has failed to put forth a comprehensive plan to fill or mitigate a potential gap that could occur before JPSS-1 becomes fully operational." The Committee "finds this unacceptable" and would direct the Department of Commerce "to provide the Committee a report detailing specific steps NOAA is taking to mitigate a gap in polar satellite data as part of the agency's spending plan required in" S. 2437. The report would be required to include "viable proposals for a gap filler to ensure continuity of data provided by ATMS and CrIS instruments."

Solar Irradiance, Data and Rescue (SIDAR)

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
Solar Irradiance, Data and Rescue (SIDAR)	0.000	15.000	0.000	0.000
Total	**0.000**	**15.000**	**0.000**	**0.000**

Mission

This request will develop and initiate an acquisition strategy to fly the Total Solar Irradiance Sensor (TSIS) instrument. TSIS was built by the Laboratory for Atmospheric and Space Physics at the University of Colorado at Boulder and consists of a suite of two instruments, the Total Irradiance Monitor (TIM) and the Spectral Irradiance Monitor (SIM). TIM is an active radiometer that monitors changes in Total Solar Irradiance at the top of the Earth's atmosphere. SIM is a prism spectrometer that monitors changes in Solar Spectral Irradiance as a function of wavelength.

As part of the SIDAR project, NOAA intends to continue an important collaboration with the French Space Agency (CNES) and the Canadian Department of National Defense (DND). CNES and DND are jointly providing the Search and Rescue Satellite Aided Tracking (SARSAT) system instrument and CNES is providing the Advanced Data Collection System (ADCS) instruments. The SARSAT and ADCS instruments have already been built and paid for by NOAA's Canadian and French partners, which have already contributed approximately $100 million to the project.

President's FY 2015 Budget Request:

- The President requested $15 million for SIDAR, $15 million above its FY 2014 enacted budget.

FY 2015 funding will support:

- NOAA will finalize its acquisition strategy for SIDAR in FY 2014. Funds in FY 2015 would implement the revised acquisition strategy.
- In order to accomplish the goal of providing continuity for solar irradiance measurements, NOAA is pursuing an acquisition strategy for best schedule and cost parameters to launch the TSIS. NOAA is reviewing options to field TSIS, including not limited to, as a hosted payload. Although the revised acquisition strategy is expected to further reduce the costs as compared to the predecessor Polar Free Flyer program, it does so with additional risks. By hosting TSIS on another satellite NOAA would have less control over the launch schedules as the launch schedules would also be affected by the other partners. In the worst case scenario, this reduced control could lead to a break in continuity of solar irradiance.

FY 2015 Congressional Action

House passed FY 2015 CJS Appropriations Bill (H.R. 4660):

- The House passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate no funds for SIDAR, $15 million below the President's FY 2015 base budget request.
- The Committee Report notes that SDIR is "the strategy to host the Total Solar Irradiance Sensor (TSIS) instrument," which would "measure variability in the Sun's total output." The Committee Report notes that "as stated in NOAA's justification materials, the TSIS instrument is a continuation of a NASA mission." Therefore, the Committee "expects NOAA to prioritize resources on its operational weather forecasting mission."

SAC passed FY 2015 CJS Approps Act (S. 2437):

- The SAC passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate no funds for SIDAR, $15 million below the President's FY 2015 base budget request.
- The Committee Report notes that the "newly proposed satellite mission SIDAR which is primarily, though not solely, intended to fly another Total Solar Irradiance Sensor [TSIS-2] as a continuation of NASA's SORCE mission and of TSIS-1, which NASA is also managing per the Committee's direction in fiscal year 2014." Further, the Committee "does not dispute the importance of maintaining the total solar irradiance dataset." However, "given NASA's current role in providing these instruments, NOAA is directed to work with NASA on how this follow-on mission can be better supported through that agency's Science directorate."
- In addition, "before the Committee considers funding another stand alone satellite mission or a non-weather centric polar free flyer proposal, NOAA must first create a comprehensive plan for weather gap mitigation" mentioned above within the JPSS section. Therefore, "NOAA should prioritize submitting that plan rather than aggressively pursuing missions that do not directly contribute to weather forecasting or help mitigate any future weather gaps."

Deep Space Climate Observatory (DSCOVR)

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
DSCOVR	23.675	21.100	20.000	24.800
Total	**23.675**	**21.000**	**20.000**	**24.800***

*The Senate Appropriations Committee passed CJS Approps Act would transfer development costs and responsibility of DSCOVR from NOAA to NASA.

Mission

Refurbishment of NASA's Deep Space Climate Observatory (DSCOVR) satellite will allow NOAA to maintain continuity of solar wind data used for geomagnetic storm warnings. NOAA will manage the DSCOVR mission as an operational sentinel to give notice of approaching solar storms with potentially calamitous consequences for terrestrial electrical grids, communications, GPS navigation, air travel, satellite operations and human spaceflight. This program is being conducted in partnership with the U.S. Air Force, which will provide the launch vehicle and services.

DSCOVR will also carry two earth remote sensing instruments. The Earth Polychromatic Camera (EPIC) that will take continuous full disc images of the Earth, and the NIST Advanced Radiometer (NISTAR) that will take continuous full disc measurements of the Earth's radiation balance. This will be the first time continuous full disc measurements of Earth have been taken from deep space. NASA will provide funds and support for integration and testing of these sensors.

President's FY 2015 NOAA Budget Request:

- The President requested $21 million for DSCOVR, $2 million below its FY 2014 enacted budget.

FY 2015 funding will support:

- Continue to perform spacecraft and sensor environmental testing;
- Launch spacecraft;

FY 2015 Congressional Action

House passed FY 2015 CJS Appropriations Bill (H.R. 4660):

- The House passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $20 million for DSCOVR, $1 million below the President's FY 2015 base budget request.

SAC passed FY 2015 CJS Approps Act (S. 2437):

- The SAC passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $24 million for DSCOVR, $3 million above the President's FY 2015 base budget request.
- The Committee Report states that "NOAA's flagship weather satellites take financial priority over NOAA's smaller observing satellites despite the fact that these smaller missions have just as much scientific merit." Therefore, "in light of the financial pressure within NOAA's PAC account to keep the weather satellite missions moving forward," the Committee would transfer "the development costs and responsibilities of Jason-3 and DSCOVR from NOAA to NASA's Earth Science mission directorate." The Committee Report notes that "NASA is already partnering with NOAA on constructing these important missions as well as arranging the launch vehicles," and

ultimately the “underlying goal of this transition is to keep Jason-3 and DSCOVR on-schedule and on-budget given that both missions are set to launch in fiscal year 2015.”

COSMIC 2

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
Satellite and Ground Services	2.000	6.800	6.800	6.800
Total	**2.000**	**6.800**	**6.800**	**6.800**

Mission

Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC) is a six satellite constellation that was launched in 2006 in a joint collaboration between Taiwan, National Science Foundation, NASA, USAF, and University Corporation for Atmospheric Research (UCAR) as a proof-of-concept for a new, inexpensive atmospheric sounding technique using the U.S. Global Positioning System (GPS) as a sounding signal source. The results were so positive that NOAA started using this data operationally.

President's FY 2015 NOAA Budget Request:

- The President requested $6.8 million for COSMIC 2, $4.8 million above its FY 2014 enacted budget.

FY 2015 funding will support:

- Continued reception and processing of COSMIC and foreign satellite RO data;
- Algorithm development for COSMIC follow-on mission;
- Develop improved, instrument specific, quality control algorithms for GNSS RO data and test in NWS operational systems;
- Establishment of complete ground network for equatorial satellite data reception;

FY 2015 Congressional Action

House passed FY 2015 CJS Appropriations Bill (H.R. 4660):

- The House passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $6.8 million for COSMIC-2 to fully fund the President's FY 2015 base budget request.
- The Committee Report notes that "six additional COSMIC satellites for the polar orbit are planned to launch in Fiscal Year 2018 but the Committee has not yet seen a comprehensive plan for this segment of the COSMIC 2 mission." Therefore, the Committee would require NOAA to "submit this plan no later than 120 days after enactment of this Act, to include expected outyear costs by agency and outside partners, with appropriate milestones and deliverables." In addition, NOAA would be required to "include in this report an analysis for acquiring radio occultation weather data from private sector providers." Further, NOAA would be required to include in this plan the "results of its observing system simulation experiment (OSSE) or other data denial studies conducted to determine the value of data from both global positioning system radio occultation and a geostationary hyperspectral sounder global constellation."
- Finally, the Committee would underscore "the value of COSMIC data as a potential gap filler for the fragile JPSS program and therefore directs NOAA to provide the analysis requested above within the prescribed timeframe."

SAC passed FY 2015 CJS Approps Act (S. 2437):

- The SAC passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $6.8 million for COSMIC-2 to fully fund the President's FY 2015 base budget request.
- The Committee Report notes that "currently NOAA is preparing to support the ground system for processing radio occultation [RO] data from the first phase of the Constellation Observing System for Meteorology, Ionosphere, and Climate [COSMIC] 2 RO satellites." Further, "six COSMIC-2 satellites are planned to launch in fiscal year 2018 as part of this first phase," however, the Committee "has not received a comprehensive plan for the second phase of the COSMIC-2 mission." Therefore, "if further RO data is needed past the first phase of COSMIC-2," NOAA would be directed to "submit a plan no later than 120 days after enactment of this Act, to include expected out year costs by agency and outside partners, with appropriate milestones and deliverables." Further, NOAA would be required to include "an analysis for acquiring radio occultation weather data from private sector providers in" S. Rept. 113-181.

Satellite and Ground Services (SGS)

Budget Authority, $ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 NOAA Budget Request	House passed FY 2015 CJS Approps (H.R. 4660)	SAC passed FY 2015 CJS Approps Act (S. 2437)
Satellite and Ground Services	49.734	52.717	52.715	52.136
Total	**49.734**	**52.717**	**52.715**	**52.136**

Mission

SGS will merge or replace current disparate systems and, via common architectures and hared resources, procure common ground services such as command and control, product generation, distribution and security solutions.

This initiative directly links to key findings and recommendations of the 2012 Satellite Enterprise Independent Review Team, name: establishing a core competency of system engineering, implementing engineering standards and configuration control, and establishing integrated management of the ground enterprise. By doing so, NESDIS will be able to more effectively and efficiently manage satellite throughput across its infrastructure.

President's FY 2015 NOAA Budget Request:

- The President requested $52 million for Satellite and Ground Services, $3 million above its FY 2014 enacted budget.

FY 2015 funding will support:

- Transition roadmap describing the process and steps for transition from the current architecture to the future architecture;
- Risk assessment and mitigation plan for the transition to common ground services;
- Prototyping and demonstration of candidate ground service implementations;

FY 2015 Congressional Action

House passed FY 2015 CJS Appropriations Bill (H.R. 4660):

- The House passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $52 million for Satellite and Ground Services to fully fund the President's FY 2015 base budget request.
- The Committee would require NOAA to "provide a report to the Committee no later than 60 days after enactment of this Act regarding the initial research and investments undertaken during Fiscal Year 2014 on a common ground system and integrated architecture."

SAC passed FY 2015 CJS Approps Act (S. 2437):

- The SAC passed FY 2015 Commerce, Justice, and Science Appropriations bill would appropriate $52 million for Satellite and Ground Services to fully fund the President's FY 2015 base budget request.

About the Space Foundation

The foremost advocate for all sectors of the space industry and an expert in all aspects of space, the Space Foundation is a global, nonprofit leader in space awareness activities, educational programs that bring space into the classroom and major industry events, including the *Space Symposium*, all in support of its mission "to advance space-related endeavors to inspire, enable and propel humanity." The Space Foundation publishes *The Space Report: The Authoritative Guide to Global Space Activity* and provides three indexes that track daily U.S. stock market performance of the space industry. Through its Space Certification™ and Space Technology Hall of Fame® programs, the Space Foundation recognizes space-based technologies and innovations that have been adapted to improve life on Earth. The Space Foundation was founded in 1983 and is based in Colorado Springs, Colo. Its world headquarters features a public Visitors Center with two main areas - the El Pomar Space Gallery and the Northrop Grumman Science Center featuring Science On a Sphere®. The Space Foundation also conducts research and analysis and government affairs activities from its Washington, D.C., office and has a field office in Houston, Texas. For more information, visit www.SpaceFoundation.org. Follow us on Facebook, LinkedIn and Twitter, and read about the latest space news and Space Foundation activities in *Space Watch*.

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