



FY 2015 NOAA Satellites Budget Comparison

Update 4

President's FY 2015 Budget Request; FY 2015 Omnibus Appropriations bill (H.R. 83)

This document provides an overview of the President's FY 2015 NOAA Budget Request for satellites in comparison with the FY 2015 Omnibus Appropriations Bill (H.R. 83).

NOAA Satellites – FY 2015 Funding¹

Budget Authority, \$ in million	President's FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
Satellites		
Geostationary Systems – R Series	980.838	980.838
Altimetry Mission - Jason-3	25.656	23.175
Polar Orbiting Systems - Joint Polar Satellite System (JPSS)	916.267	916.267
Solar Irradiance, Data and Rescue (SIDAR)	15.000	7.300
Deep Space Climate Observatory (DSCOVR)	21.100	21.100
COSMIC-2/Global Navigation Satellite System Radio Occultation (GNSS RO)	6.800	6.800
Satellite Ground Services	52.717	50.000
Systems Architecture and Advanced Planning (SAAP)	4.587	3.000
Projects, Planning and Analysis	33.488	25.200
Total	2,056.453	2,033.68

President's FY 2015 Budget Request for NOAA Satellites

In FY 2015 the President base budget requested \$2,056.453 million for NOAA satellites, \$161.715 million more than the funds appropriated for NOAA satellites in FY 2014.

¹Please 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

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$2,033.68 million for NOAA satellites, \$22.773 million below the President's FY 2015 base budget request.
- The agreement directs NOAA to “examine carefully all overhead costs associated with these programs and shall maximize efficiency by eliminating any unnecessary redundancies.”
- NOAA is also directed to “provide quarterly updates on the status of implementing the recommendations in the July 2014 OIG report, *Significant Security Deficiencies in NOAA 's Information Systems Create Risks in its National Critical Mission*”

Geostationary Operational Environmental Satellite–R (GOES-R)

Budget Authority, \$ in million	President’s FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
GOES-R	980.838	980.838
Total	980.838	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

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$980.838 million for GOES-R to fully fund the President's FY 2015 base budget request.

Jason-3

Budget Authority, \$ in million	President's FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
JASON-3	25.656	23.175
Total	25.656	23.175

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

2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$23.175 million to Jason-3, \$2.481 million below the President's FY 2015 base budget request.
- In an effort to "best maintain the launch schedule," the agreement "does not adopt Senate language regarding transfer" of the Jason-3 to NASA and "instead provides full funding...within NOAA's appropriations."
- Congress mandates that "NOAA shall keep the Committees informed regarding the status" of the program.
- Finally, "the Committees expect to see a reduction in overhead costs associated" with the Jason-3 program "in the NOAA and NASA fiscal year 2016 budget requests" as a result of the "transition from development to operations."



Joint Polar Satellite System (JPSS)

Budget Authority, \$ in million	President's FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
JPSS	916.267	916.267
Total	916.267	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

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$916.267 million for JPSS to fully fund the President's FY 2015 base budget request.
- According to the Joint Explanatory Statement, the agreement "reiterates House and Senate language regarding NOAA's satellite portfolio and includes additional emphasis that NOAA and the Department shall take aggressive steps to address the fragility of the JPSS and shall continue to provide quarterly updates to the Committees regarding the NOAA satellite portfolio and steps being taken to address any potential gaps in weather satellite coverage."



Solar Irradiance, Data and Rescue (SIDAR)

Budget Authority, \$ in million	President's FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
Solar Irradiance, Data and Rescue (SIDAR)	15.000	7.300
Total	15.000	7.300

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

2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$7.3 million to SIDAR, \$7.7 million below the President's FY 2015 base budget request. However, neither the House nor Senate passed appropriations bills appropriated any funds for SIDAR.
- The Joint Explanatory Statement notes that the "decision to host TSIS-1 on the ISS was not part of the President's fiscal year 2015 budget request."
- NOAA is directed to "submit a report no later than 60 days after enactment of this Act regarding the revised TSIS-1/ISS plan that shall include steps to ensure that TSIS-1 is ready to launch in



fiscal year 2017 as planned.”



Deep Space Climate Observatory (DSCOVR)

Budget Authority, \$ in million	President's FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
DSCOVR	21.100	21.100
Total	21.100	21.100

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

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$21.100 million for DSCOVR to fully fund the President's FY 2015 base budget request.
- In an effort to "best maintain the launch schedule," the agreement "does not adopt Senate language regarding transfer" of the DSCOVR mission to NASA and "instead provides full funding...within NOAA's appropriations."
- Congress mandates that "NOAA shall keep the Committees informed regarding the status" of the program.
- Finally, "the Committees expect to see a reduction in overhead costs associated" with the DSCOVR program "in the NOAA and NASA fiscal year 2016 budget requests" as a result of the "transition from development to operations."

COSMIC 2

Budget Authority, \$ in million	President's FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
Satellite and Ground Services	6.800	6.800
Total	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

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$6.8 million for COSMIC-2 to fully fund the President's FY 2015 base budget request.

Satellite and Ground Services (SGS)

Budget Authority, \$ in million	President's FY 2015 NOAA Budget Request	Omnibus Approps (H.R. 83)
Satellite and Ground Services	52.717	50.000
Total	52.717	50.000

Mission

SGS will merge or replace current disparate systems and, via common architectures and shared 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

2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$50 million to SGS, \$2.717 million below the President's FY 2015 base budget request.

About the Space Foundation

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