

## NASA Appropriations: FY 2012

- Summary Table of Appropriations
- President's Request
- Appropriations Hearings
- Appropriations Homepage

The National Aeronautics and Space Administration (NASA) conducts space and aeronautical research, development, and flight activities for peaceful purposes designed to maintain United States preeminence in aeronautics and space. The geoscience community is most interested in the Earth science observations conducted within the Science Mission Directorate within four themes (Earth Science, Planetary Science, Heliophysics and Astrophysics).

Fiscal Year (FY) 2012 NASA Appropriations Process

<u>Account</u>	<u>Enacted FY11</u> (\$million)	<u>President's FY12</u>	<u>House Action</u> (\$million)	<u>Senate Action</u> (\$million)	<u>Conference</u>
		<u>Request</u> (\$million)			<u>Committee Action</u> (\$million)
<b>NASA (total)**</b>	18,724.3	18,724.3	16,810.3	17,900	17,800
Science (total)	4,469.0	5,016.8	4,504	5,100	5,090
--Earth Science	1,439.3	1,797.4	1,699	1,766	1,766
---Earth Science Research	375.8	450.4		435	
---Earth Systematic Missions	705.2	900		887	
---Earth System Science Pathfinder	128.4	190.9		190	
---Earth Science Multi-Mission Operations	149	168.5		168	
---Earth Science Technology	45.6	51.2		50	
---Applied Sciences	35.3	36.4		36	
-- Planetary Science	1,364.4	1,540.7	1,500	1,500	1,500
--Astrophysics	647.3	682.7	683	682^	672^
--Heliophysics	608	622.3	622	622	622
Aeronautics and Space Research	497	569.4	569.9	501	569.9
Exploration	3,594.3	3,948.7	3,649	3,775	3,771
Space Operations	6,146.8	4,346.9	4,064	4,285	4,234
Education	182.5	138.4	138	138.4	138.4

\*\*NASA has changed how they administer civil service labor and expenses starting in FY 2012. These costs will be administered within a single consolidated account and not allocated within the program amounts shown above. This means that all of the amounts for FY2012 above (except for NASA (total)) should be reduced. See NASA's detailed budget tables for recalculated amounts. ^Astrophysics would also receive an additional \$530 million for the James Webb Space Telescope. \*Has not been voted upon by either chamber as of November 15, 2011.

## President's Request

### **NASA Budget Request for FY2012 Released on February 14, 2011**

For more information about specific programs related to the geosciences please see AGI's budget tables above.

Details of the FY2012 request are available from the NASA budget web page.

#### House Action

The Commerce, Justice and Science Subcommittee of the House Appropriations Committee prepared a draft bill on July 7, 2011. The full committee will consider the bill during the week of July 11.

#### Senate Action

The Senate Appropriations Committee passed the Commerce, Justice and Science fiscal year 2012 appropriations bill (S. 1572) on September 15, 2011. Below are excerpts from the press release of subcommittee Chairman Barbara Mikulski (D-MD). The full Senate passed S. 1572 as part of a "minibus" on November 1, 2011.

*The U.S. Senate Appropriations Subcommittee on Commerce, Justice, science, and related agencies today approved fiscal year (FY) 2012 funding legislation that totals \$52.701 billion in discretionary budget authority, a reduction of \$626 million below the fiscal year 2011 enacted level. The bill also includes \$135 million in disaster assistance.*

*"In a spending bill that has less to spend, we naturally focus on the cuts and the things we can't do," said CJS Subcommittee Chairwoman Mikulski. "But I'd like to focus on what we can do. The bill invests more than \$12 billion in scientific research and high impact research and technology development, to create new products and new jobs for the future.*

Regarding specific agencies, the press release offered the following highlights:

#### *National Aeronautics and Space Administration*

*The National Aeronautics and Space Administration (NASA) is funded at \$17.9 billion, a reduction of \$509 million or 2.8 percent from the FY2011 enacted level.*

*The bill preserves NASA portfolio balanced among science, aeronautics, technology and human space flight investments, including the Orion Multipurpose Crew Vehicle, the heavy lift Space Launch System, and commercial crew development.*

*The bill provides funds to enable a 2018 launch of the James Webb Space Telescope.*

The Senate Commerce, Justice, Science Subcommittee Report 112-78 contains specific comments about the following NASA Earth Science projects:

*Earth Science Decadal Survey Missions.—The Committee sup-ports the ongoing development of the Tier I Earth Science missions, and provides the full budget requests for the Soil Moisture Active and Passive [SMAP]; the Ice, Cloud and Land Elevation Satellite (IceSat-2); and the Climate Absolute Radiance and Refractivity Ob- servatory [CLARREO] missions. The Committee also recommends the Deformation, Ecosystem Structure and Dynamics of the Ice (DESDnyl) mission continue at the fiscal year 2011 level. The Na-tional Academies recommended flying a suite of these four missions concurrently to gather critical information about the Earth and its climate.*

*IceBridge.—The Committee provides the full budget request for IceBridge to continue making high-resolution measurements of polar sea ice and glaciers during the gap between IceSat-1 and IceSat-2. The Committee encourages NASA to use unmanned aerial vehicles [UAVs] for this mission and to seek competitive proposals to improve IceBridge instruments for use on UAVs.*

*Carbon Monitoring.—The Committee recommends \$10,000,000 from within available funds to continue the development of a carbon monitoring system initially funded in fiscal year 2010. The Committee expects no less than one-half of this amount shall be awarded externally.*

*Cooperation Between NASA and NOAA.—NASA continues to provide valuable program management expertise to assist NOAA with its satellite program. At the same time, NASA continues its role as the pathfinder, developing new Earth science instruments and pushing the leading edge on experimental missions today that will benefit NOAA's operational missions tomorrow. However, the Committee is discouraged by NASA's lack of cooperation with NOAA's Ocean and Atmospheric Research office in the area of non-space based Earth science. NASA shall better coordinate with NOAA on all aspects of relevant NASA-funded projects, including project planning, project execution and post-project data sharing.*

*SERVIR.—The Committee directs NASA to move forward, as requested in the fiscal year 2012 budget request, to continue the expanded SERVIR network within the Applied Sciences Program and to enhance its scientific capabilities across a broader set of NASA Earth science products and its service as a testbed for innovative applications.*

#### Conference Committee Action

On November 15, the House Committee on Rules released the conference report agreed to by the House and the Senate for the "minibus" which includes the Agriculture, Rural Development, Food and Drug Administration and Related Agencies Appropriations Act, 2012; the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2012; and the Transportation, Housing and Urban Development, and Related Agencies Appropriations Act, 2012 (H.R. 2112). The conference report for Commerce, Justice, Science, and Related Agencies includes appropriations for the National Oceanic and Atmospheric Administration, the National Institute for Standards and Technology, the National Science Foundation, and the National Aeronautics and Space Administration (NASA). Below are highlights of the conference report related to NASA appropriations:

*Fiscal oversight. - In order to promote strong fiscal oversight, the Committees on Appropriations have been pursuing with NASA a number of crosscutting issues, including cost estimation and control, financial management, acquisition reform and grants management. The conferees direct NASA to stay engaged in these ongoing efforts and to comply with all related reporting requirements and directives on these topics that were contained in the House and Senate reports.*

*Program, project and activity level funding designations. - The conferees have not included a detailed, line-item finding table for the Science Mission Directorate. Instead, the conference table provides totals for Earth Science, Planetary Science, Astrophysics, the James Webb Space Telescope and, Heliophysics. Using these totals, as well as any additional funding direction provided below, NASA should develop a budget plan for each division that incorporates any necessary reductions and submit these proposals as part of the spending plan required by section 538 of this Act. In proposing reductions, NASA should take care to protect, to the extent possible, high priority missions of the decadal surveys, as well as missions with near-term launch readiness dates. In addition, NASA should be careful to propose a funding portfolio that maintains an essential balance between actual spaceflight projects and the critical mission-enabling activities (research and data analysis, data application, etc.) that support and enhance the value of those projects.*

*Earth Science. - The conference agreement adopts, by reference, language from the Senate report on carbon monitoring systems and the Deformation, Ecosystem Structure and Dynamics of Ice mission.*

*Planetary Science.-The conference agreement includes no less than \$581,700,000 for Mars Exploration. Within the amount provided, NASA shall continue working to define, plan and execute future Mars missions and continue seeking and taking advantage of opportunities for international cooperation on such missions.*

The conference report included an extensive passage on the James Webb Space Telescope (JWST) which was not funded in the House report.

*James Webb Space Telescope (JWST).* - According to the recent JWST budget replan, the program's lifecycle cost estimate is now \$8,835,000,000 (with formulation and development costs totaling \$8,000,000,000). This represents an increase of \$1,208,000,000 over the previous lifecycle cost estimate, including an increase of \$156,000,000 above the budget request for fiscal year 2012. In order to accommodate that increase in this agreement, the conferees received input from the administration and made reductions to the requested levels for Earth and planetary science, astrophysics and the agency's budget for institutional management. Although the amounts provided for these other science activities still constitute an increase over the fiscal year 2011 levels, the conferees note that keeping JWST on schedule from fiscal year 2013 through the planned launch in fiscal year 2018 will require NASA to identify another \$1,052,000,000 over previous JWST estimates while simultaneously working to meet the deficit reduction requirements of the Budget Control Act of 2011 (P.L. 112-25). As a result, outyear work throughout the agency may need to be reconsidered. The conferees expect the administration to come forward with a realistic long-term budget plan that conforms to anticipated resources as part of its fiscal year 2013 budget request.

To provide additional assurances that JWST's management and funding problems are under control, the conference agreement includes language strictly limiting JWST formulation and development costs to the current estimate of \$8,000,000,000 and requiring any increase above that amount to be treated according to procedures established for projects in 30 percent breach of their lifecycle cost estimates.

In addition, the conferees direct the GAO to continually assess the program and to report to the Committees on Appropriations on key issues relating to program and risk management; achievement of cost and schedule goals; and program technical status. For its first report, the conferees direct the Comptroller General to assess: (1) the risks and technological challenges faced by JWST; (2) the adequacy of NASA's revised JWST cost estimate based on GAO's cost assessment best practices; and (3) the extent to which NASA has provided adequate resources for and is performing oversight of the JWST project to better ensure mission success. The first report should be provided to the Committees no later than December 1, 2012, with reports continuing on an annual basis thereafter. Periodic updates should also be provided to the Committees upon request or whenever a significant new finding has been made. NASA is directed to cooperate fully and to provide timely access to analyses, data, applications, databases, portals, reviews, milestone decision meetings, and contractor and agency personnel.

For the Space Exploration Program, the conference included the following language:

*Orion Multipurpose Crew Vehicle (MPCV).* - The conference agreement provides \$1,200,000,000 for the Orion MPCV. The MPCV is intended both to be launched on the heavy lift rocket system in furtherance of NASA's beyond Earth orbit (BEO) exploration goals and to provide an alternative means of cargo and crew delivery to the International Space Station (ISS) in the event that commercial or partner-supplied vehicles are unable to perform those functions. The MPCV will begin uncrewed and crewed flight operations in conjunction with the Space Launch System (SLS) within the next decade, but the conferees understand that NASA may want to pursue an earlier MPCV flight test utilizing a commercially available launch vehicle. The conferees have no objection to necessary and useful testing as long as the costs of procuring the launch vehicle and executing the test flight can be accommodated within the MPCV budget. Within the larger MPCV program, components should be procured via fixed price contracts wherever possible in order to improve cost control and maximize the impact of all available dollars.

*Space Launch System.* - The conference agreement provides \$1,860,000,000 for the SLS, which is a sustained, evolvable heavy lift vehicle utilizing a common core. While this evolvable approach will enable NASA to achieve the earliest possible initial flight capability by using a 70 ton SLS configuration, only the 130 ton configuration will allow NASA to achieve its BEO exploration goals. Consequently, NASA is directed to ensure that all work done on the early configurations of the evolvable vehicle is in service of the eventual BEO capability. Similarly, NASA is reminded of its legal obligation to design the system from inception to the 130 ton standard and to proceed with simultaneous development of the core and upper stages. Wherever possible, SLS components should be procured via fixed price contracts in order to improve cost control and maximize the impact of all available dollars. The conferees note the need for additional clarity on the amount of money being allocated to the development of each major component of the SLS. In order to address this need, NASA is directed to provide quarterly reports to the Committees on Appropriations showing anticipated and actual SLS obligations and outlays by major component (core stage, upper stage, engines, boosters, avionics/instrumentation). NASA is further directed to work with the Committees to refine the content and format of these reports.

*International Space Station (ISS).* - The conferees support the decision to extend ISS research and operations through 2020. In support of the ISS program, the conference agreement provides \$2,830,000,000 for ISS operations, research and cargo supply.

#### Appropriations Hearings

- March 3, 2011: House Committee on Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies Hearing on the National Aeronautics

- March 2, 2011: House Committee on Science, Space, and Technology Hearing on the National Aeronautics and Space Administration Fiscal Year 2012 Budget Request
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**House Committee on Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies Hearing on the National Aeronautics and Space Administration Fiscal Year 2012 Budget Request**

March 3, 2011

*Witness*

**Charles F. Bolden, Jr.**

Administrator of the National Aeronautics and Space Administration

*Committee Members Present*

Frank Wolf, Chairman (R-VA)

Chaka Fattah, Ranking Member (D-PA)

Jo Bonner (R-AL)

Mike Honda (D-CA)

John Culberson (R-TX)

Norman Dicks (D-WA)

Adam Schiff (D-CA)

Jose Serrano (D-NY)

Steve Austria (R-OH)

Kevin Yoder (R-KS)

The House Committee on Appropriations Commerce, Justice, Science, and Related Agencies Subcommittee held a hearing on the President's fiscal year (FY) 2012 Budget for the National Aeronautics and Space Administration (NASA) on March 3, 2011.

Chairman Frank Wolf (R-VA) opened the hearing by attacking the President's budget and its departure from the NASA Authorization Act of 2010, (S.3729; Public Law 111-267). "No amount of authorizing language can hold NASA to a particular goal or commitment if that language is not backed up by the budget," he said. Wolf further chided the funding levels for the Space Launch System and the Multi-Purpose Crew Vehicle. In his belief, the funding levels "virtually guarantee" NASA won't have the capabilities to develop these technologies by the 2016 deadline in the authorization act.

Administrator Charles Bolden reassured the committee that NASA was funding all the projects and programs in the authorization act appropriately though certain "tough cuts" had to be made. He displayed graphs illustrating human space flight as 57% of NASA's budget and described the importance of the International Space Station (ISS) as an "anchor for future exploration."

During the question and answer period, Wolf and Steve Austria (R-OH) tried to find areas of duplication between NASA and other agencies. Concerned with the amount of money allocated for earth science, Wolf asked Bolden if there were ways to "free up NASA's resources" by passing on responsibilities to the National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Survey (USGS), or the National Science Foundation (NSF). Bolden said, "Everything we do in NASA with earth science is unique to NASA." He cited a Government Accountability Office (GAO) report from October of 2009 that found no duplication between NOAA and NASA's earth science programs and a memorandum of understanding with USGS on the implementation and operation of the Land Remote System Program (Landsat 7). Wolf was still convinced that NASA would benefit from a decrease in earth science funding but did agree to look at the GAO report and possibly change his mind.

More supportive of earth science funding was Representative Jo Bonner (R-AL), who was very concerned with the public's perception of NASA. "We need to make sure the American citizens understand what NASA is doing now, not forty years ago," he said. The committee was reminded during Bonner and Bolden's conversation that the first objective of the National Aeronautics and Space Act of 1958 was to expand human knowledge of the Earth. Bonner saw NASA's research in earth science as fundamental to the health and well-being of the American people. Adam Schiff (D-CA) was also supportive of earth science research, calling it "a good investment," and asked Bolden questions about the potential launch date of the satellite, DESDynI (Deformation, Ecosystem Structure and Dynamics of Ice). Bolden took the question as an opportunity to express his frustration with having no budget yet for 2011. "If I can get a budget for 2011, it keeps earth science on course to plan for what I get in 2012," he argued. "If what I get in 2011 is significantly lower than 2012, [then] 2012 is a mess," Bolden warned.



Led by John Culberson (R-TX), the committee agreed that NASA needs to be free to terminate the *Constellation* program. Language in the appropriations bill prohibits NASA from terminating any element of *Constellation*, even programs not in line with the new direction given in the more recent authorization act. “One thing I hope we can do is to, in one of the short-term CRs we’re dealing with, is get you some immediate clarification on that,” Culberson said.

Other topics discussed by Bolden and the members included science, technology, engineering and mathematics (STEM) education efforts, human rights issues in China, the future of the retiring shuttle fleet, and the soon to be released decadal survey on planetary science.

**House Committee on Science, Space, and Technology Hearing on the National Aeronautics and Space Administration**

**Fiscal Year 2012 Budget Request**

March 2, 2011

*Witness*

**Charles F. Bolden, Jr.**

Administrator of the National Aeronautics and Space Administration

*Committee Members Present*

Ralph Hall, Chair (R-TX)

Eddie Bernice Johnson, Ranking Member (D-TX)

Dana Rohrabacher (R-CA)

David Wu (D-OR)

Sandy Adams (R-FL)

Scott Rigell (R-VA)

Lamar Smith (R-TX)

Donna Edwards (D-MD)

Mo Brooks (R-AL)

Steven Palazzo (R-MS)

Marcia Fudge (D-OH)

Randy Hultgren (R-IL)

Daniel Lipinski (D-IL)

Terri Sewell (D-AL)

Lynn Woolsey (D-CA)

Larry Buchson (R-IN)

Michael McCaul (R-TX)

Jerry McNerney (D-CA)

James Sensenbrenner (R-WI)

Judy Biggert (R-IL)

Ben Quayle (R-AZ)

The House Committee on Science, Space, and Technology held a hearing on the President’s fiscal year (FY) 2012 Budget for the National Aeronautics and Space Administration (NASA) on March 2, 2011.

Chairman Ralph Hall (R-TX) opened the hearing describing his concern for the future of the space program, specifically human space flight. Citing recent problems with the termination of *Constellation*, Hall urged NASA to craft realistic plans and to execute them with efficiency and thrift. Ranking Member Eddie Bernice Johnson (D-TX) warned that arguments over NASA’s budget should result in cuts neither to critical investments in research and development (R&D), which she called a “vital resource”, nor to investments in earth science. She apologized for the lack of a solid budget by expressing her sympathy to “the challenges you are facing, Mr. Administrator, in trying to plan and carry out the challenging activities that the nation has asked you to undertake when the budgetary sands keep shifting under you.”

Before commenting on the President's budget request, Administrator Charles Bolden began his testimony with a video greeting to the committee from astronauts in the International Space Station (ISS). Bolden then assured the committee that the \$18.7 billion request for FY 2012, a hold from 2010 spending levels, was enough to "invest in excellent science to win the future" and provided NASA with a "clear direction." To address Chairman Hall and other's apprehension about the future of human space flight, Bolden displayed various graphs showing how human space flight is still a substantial 57% of the budget. Bolden said safety remains his "number one priority," but he spent time discussing the heightened importance of the ISS as an exceptional research center and "anchor for future exploration."

Most of the question and answer session was dominated by discussion of the future commercial space flight program, in which NASA would transfer lower orbit operations over to private companies such as Boeing and Orbital. Bolden explained that the most efficient and fastest way to get his astronauts into lower orbit safely was with established private contractors, allowing NASA to focus on deeper space exploration. NASA's long term goals and schedule were investigated by the committee. Bolden avoided giving concrete launch dates for most projects, including earth science related missions CLARREO and DESDynI, citing uncertainty in the budget battle for 2011. Congressman Lamar Smith (R-TX) dove into this topic by asking Bolden whether NASA could in fact complete its goals, like enabling a heavy lift module in 2016, with the current budget. "Very difficult," responded Bolden, "but not impossible."

Representative Donna Edwards (D-MD) sought to understand the lack of consistency in earth science funding between the authorization and budget request (about \$150 million in cuts). Bolden called these cuts "very difficult" but elaborated on the importance of earth science telling the committee, "we need the tools to see natural hazards...the atmosphere, oceans, [and] topography." Edwards supported Bolden's comments by requesting a focused look at the earth science program to make sure there are no gaps. Administrator Bolden cautioned the committee not to inject politics in their consideration of NASA's earth science funding by warning against "dumb things like taking away satellites because of global warming."

"I don't do global warming," Bolden said, "I do earth science."

"I don't do global warming, either," Chairman Hall deadpanned.

Other discussion areas included STEM education, NextGen and aeronautics issues, the benefit of NASA technologies to the manufacturing sector, and the future of various NASA facilities and centers in members' districts.

-WMB

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*Sources: NASA Budget Information web site, Congress, Thomas, and Hearing Testimonies*

Please send any comments or requests for information to the AGI Government Affairs Program at [govt@agiweb.org](mailto:govt@agiweb.org).

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Last updated November 15, 2011

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