NASA Appropriations: FY 2013

- 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 2013 (FY13) NASA Appropriations Process

Account	**Enacted FY12** ($million)	**President's FY13 Request** ($million)	**House Action** ($million)	**Senate Action** ($million)	**Conference Committee Action** ($million)
NASA (total)	17,770	17,711	17,574		
Science (total)	5,074	4,911	5,095		
--Earth Science	1,760.5	1,785	1,775		
---Earth Science Research	440	434			
---Earth Systematic Missions	881	886			
---Earth System Science Pathfinder	188	219.5			
---Earth Science Multi-Mission Operations	163	162			
---Earth Science Technology	51	49.5			
---Applied Sciences	36	35			
-- Planetary Science	1,501	1,192	1,400		
--Astrophysics	673	659	650		
--Heliophysics	620.5	647	642		
Aeronautics and Space Research	569.4	551.5	569.9		
Exploration	3,713	3,933	3,712		
Space Operations	4,187	4,013	3,985		
Education	136.1	100	100		

President's Request

The National Aeronautics and Space Administration (NASA) would receive $17.7 billion in the President’s fiscal year (FY) 2013 budget request; a $59 million reduction from the FY 2012 enacted level. Administrator Charlie Bolden said at a February 13 budget briefing, “Despite a constrained fiscal environment, this budget continues to aggressively implement the space exploration program agreed to by the President and a bipartisan majority in Congress…laying the foundation for remarkable discoveries here

on Earth and in deep space."

The budget request would reduce NASA's Science Mission Directorate by 3.2 percent, or $162.5 million. Most of the reductions would come from Planetary Science (- $309.1 million) though Astrophysics (- $13.3 million) would see reductions too. The James Webb Telescope (+ $109 million), Heliophysics (+ $26.5 million), and Earth Science (+ $24.3 million) would all receive increases.

Though the overall Earth Science budget would increase by $24.3 million under the President's request, Earth Science Research (- $6.5 million), Earth Science Multi-Mission Operations (- $1.7 million), and Earth Science Technology (- $1.7 million) would decrease.

The proposed budget decrease for Earth Science Research (- $6.5 million) is explained in the FY 2013 budget proposal:
The revised budget allocations will result in slightly fewer grants to the research community (NASA Centers, universities, private, public, and non-profit sector laboratories) for the analysis and interpretation of data from satellites and field campaigns, as well as decreased effort by NASA investigators in prospective modeling designed to help scientists understand the future evolution of the earth system and its components.

Instead, Earth Science Research activities and solicitations will focus on supporting the National Climate Assessment.

The President's budget would increase Earth Systematic Missions by $4.9 million. This increase is primarily because NASA is speeding up activities for the Soil Moisture Active Passive (SMAP) mission and the Ice, Cloud, and Land Elevation Satellite-2 (ICESat-2). SMAP has an estimated launch date in October, 2014 while ICESat-2 is expected to undergo its critical design review in FY 2013. NASA plans to ship the final Global Precipitation Measurement (GPM) Core Observatory to Japan in FY 2013 and to launch the Landsat Data Continuity Mission (LDCM) in January 2013.

The budget proposal for Earth System Science Pathfinder would reduce the Orbiting Carbon Observatory 2 (OCO-2) mission by $23.1 million, or 23.5 percent, but increase the Venture Class Missions by $52.6 million, or 98.1 percent. The OCO-2 project is currently pending the outcome of an investigation into the loss of the Glory Mission due to a failure of the Taurus XL launch vehicle. The planned OCO-2 launch vehicle is the Taurus XL. The Venture Class Missions consist of a series of low cost, competitively selected Earth observing systems. The proposed increase is to help support an increasing workforce to prepare for more Venture class missions and instruments reaching development.

The proposed decrease for the Earth Science Multi-Mission Operations program (- $1.7 million) is explained in the budget:
This decrease is due to revised demand for the data centers and other multi-mission operations (MMO) support for delayed Earth science missions.

The Earth Science Technology Program would be reduced by $1.7 million from the FY 2012 estimate ($51.2 million) while the Applied Sciences program would be reduced $1.8 million. These reductions are primarily due to a reallocation of funding "based on Administration priorities."

The President's FY 2013 budget proposal would reduce the Planetary Science program in the Science Missions Directorate significantly from $1,501 million in FY 2012 to $1,192 in FY 2013. This is primarily related to a 38.5 percent reduction of the Mars Exploration program (- $226.2 million) caused by a proposed termination of two collaborations with the European Space Agency (ESA). The two missions that may be terminated include the ExoMars Trace Gas Orbiter 2016 (EMTGO) mission and a mission to deliver a large rover in 2018. Bolden said at NASA's budget briefing, "We are developing an integrated strategy to ensure that the next steps for the robotic Mars Exploration program will support long-term human exploration goals as well as science and meet the President's challenge to send humans to Mars in the mid-2030's." He continued, "A problematic part of the ExoMars mission is that it was another multibillion dollar flagship mission…We could not afford to do another one."

The Explorations Mission Directorate would see a 5.9 percent increase (+ $220 million) to develop the Orion Multi-Purpose Crew Vehicle and the Space Launch System and to conduct exploration research and development.

The Space Operations Mission Directorate would receive a $173.8 million reduction though this is due to a 87.3 percent reduction of the Space Shuttle program as NASA finalizes the shuttles' retirement. The directorate would provide the International Space Station with $3,007.6 million (+ $177.7 million) and Space and Flight Support with $935 million (+ $134.1 million).

Proposed reductions to the Education Directorate (- $36.1 million, 26.5 percent) are explained in the budget request:
In FY 2013, decreases in funding authority due to budget reductions will be managed by reducing the number of new grant awards and seeking operational efficiencies (e.g., increased use of education technologies, reduced printing/warehousing/shipping costs, reduced travel expenses, and coordinated solicitations).

The total request of $100 million includes $24 million for the National Space Grant College and Fellowship Program (Space Grant), $9 million for the Experimental Program to Stimulate Competitive Research (EPSCoR), $30 million for the Minority University Research and Education Program (MUREP), and $37 million for Science, Technology, Engineering, and Mathematics (STEM) Education and Accountability projects.

House Action

The House of Representatives passed the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2013 (H.R. 5326) on May 10, 2012 on a vote of 247-163. The House bill provides the National Aeronautics and Space Administration (NASA) with $17.574 billion. Relevant language from the House Report (112-463) follows:

Science

Earth Science and Heliophysics.—The Committee's recommendation includes $1,775,000,000 for Earth Science and $642,000,000 for Heliophysics. In both instances, the modest increases provided are attributable to increased prices in the launch vehicle market and the development phasing of high priority decadal missions already underway.

Planetary Science.—The Committee understands that budget pressures within and outside of the Science Mission Directorate have required reductions in NASA's science portfolio. The Committee is concerned, however, by the Administration's proposal to make those reductions disproportionately within the planetary science program. Planetary science has long been one of NASA's most successful programs, and the cuts proposed in the budget request will endanger this strong record and deviate significantly from the program plan envisioned by the most recent planetary science decadal survey. The Committee's recommendation of $1,400,000,000 seeks to address programmatic areas where the Administration's proposal is most deficient in meeting the decadal survey's goals while also ensuring that the program, as a whole, maintains balance among program elements. The first area of deficiency in the request is Planetary Science Research. The decadal survey recommended increasing research funding by a specified rate above inflation, but the request only achieves this standard by including in the total a new Joint Robotics Program for Exploration (JRPE), which is not a traditional research program as envisioned by the NRC. The Committee has addressed this problem by providing $192,000,000 for Planetary Science Research. This level is sufficient to support both the requested level for JRPE and an additional $3,500,000 above the request for traditional research and analysis activities in order to achieve better consistency with the decadal recommendation. The request also proposes insufficient funding for the Discovery and New Frontiers programs, resulting in significant delays relative to the mission tempos outlined in the decadal. To improve these tempos, the Committee has provided a total of $480,000,000 for Discovery and New Frontiers, which is $115,400,000 above the aggregate requests for these programs. NASA is directed to divide these funds between Discovery and New Frontiers in a manner that optimizes the potential mission tempos for both programs. The final areas of deficiency in the request are Mars Exploration and Outer Planets. The decadal survey chose a Mars sample return mission and a Jupiter Europa orbiter as its top two flagship-class priorities, but the budget request reduces funds for a future Mars mission (''Mars Next Decade'') to a fraction of previous planning estimates and eliminates all funding for substantive work on a new outer planets mission. As such, the request will inhibit significant progress from being made on either priority, even in descoped form. The Committee rectifies this situation by increasing the funds available for Mars Next Decade to $150,000,000, or $88,000,000 above the request, in order to allow for a more substantial mission concept to be developed. According to the decision rules of the decadal survey, however, that mission concept must lead to the accomplishment of sample return in order to remain a top funding priority. Because the Committee is unable to discern whether this condition is being met from the scant information provided to date about Mars Next Decade, NASA is directed to promptly submit its Next Decade mission concept to the NRC for evaluation. The recommendation includes language prohibiting the obligation of funds for the mission unless and until the NRC submits to the Committees on Appropriations a certification confirming that the mission concept will lead to the accomplishment of sample return as described in the Mars Astrobiology Explorer-Cacher section of the decadal survey. If the NRC instead determines that NASA's chosen mission concept will not lead to the accomplishment of sample return, NASA is directed to immediately: (1) notify the Committees; (2) reallocate the funds provided for Mars Next Decade to the Outer Planets Flagship program in order to begin substantive work on the second priority mission, a descoped Europa orbiter; and (3) submit the Mars Next Decade mission concept, or any substitute Mars mission concept, for competition in the Discovery or New Frontiers programs.

Plutonium–238.—Progress on a Europa orbiter or any other longrange planetary science mission will require a sustainable source of Plutonium–238 (Pu–238), a radioisotope that is an essential source of electricity for spacecraft venturing beyond the range of solar power. The bill makes available $14,500,000 from this account, as requested, to restart production of Pu–238. The Committee directs NASA to provide a plan, including an anticipated schedule and milestones, for the Pu–238 program through the reestablishment of production. This plan should be coordinated with NASA's partners at DOE and should be provided to the Committees on Appropriations no later than 120 days after the enactment of this Act. The Committee also directs the Planetary Science Division, in conjunction with elements of the Space Technology program, to continue working on Advanced Stirling Radioisotope Generator (ASRG) technology, which will enable NASA to make more efficient use of available radioisotope fuels in the future.

James Webb Space Telescope (JWST).—The recommendation includes $628,000,000 for JWST in order to keep the program on track for a 2018 launch. NASA is expected to continue cooperating with the GAO review of JWST that was begun in fiscal year 2012 and to give GAO access to all relevant and necessary program information. The bill retains language establishing a cap of $8,000,000,000 for JWST formulation and development costs and requiring NASA to have the program reauthorized by Congress in the event of further cost increases. These provisions are necessary to ensure that NASA is appropriately managing risks and containing costs. As another means of cost control, NASA committed to calculating new cost and schedule estimates for the program. The Committee expected that this process would result in estimates that meet the agency's 70 percent joint cost and schedule confidence level (JCL) standards, but the actual JWST JCL is only 66 percent. NASA has assured the Committee that the lower JCL is not due to any weakness in its estimates but is an artifact resulting from the late application of the JCL tool to a fairly mature project. In the absence of a high confidence JCL, however, the Committee requires additional information in order to regularly monitor the program's fiscal health. NASA shall submit to the Committees on Appropriations, on a quarterly basis, a listing of all JWST performance milestones met and not met for that quarter; a description of the budget and schedule

ramifications associated with those milestones; and an overall assessment of the current budget and schedule posture of the program.

Education

Portfolio restructuring.—The Committee supports NASA's ongoing efforts to restructure its education portfolio. This restructuring will reduce the programmatic fragmentation documented in the NSTC's inventory of STEM education investments; address the goals and priorities of the upcoming government-wide STEM education strategic plan; and be responsive to the findings of a recent GAO report on potential duplication in Federal STEM education programs. While the restructuring has led, in part, to a reduced total funding level for NASA education activities, the Committee notes that NASA is working to leverage partnership and other coordination opportunities to expand its reach and influence at low cost.

Informal science education.—Within funds provided for STEM Education and Accountability projects, NASA may offer competitive grant opportunities for informal science education programs to qualifying institutions as described in section 616 of the NASA Authorization Act of 2005 (Public Law 109–155) and/or NASA Visitors Centers.

The House of Representatives considers funding for NSF, NASA, NOAA and NIST in the Commerce, Justice, Science and Related Agencies Subcommittee of the House Appropriations Committee.

Senate Action

The Senate considers funding for NSF, NASA, NOAA and NIST in the Commerce, Justice, Science and Related Agencies Subcommittee of the Senate Appropriations Committee.

Conference Committee Action

Appropriations Hearings

- March 7, 2012: House Committee on Science, Space, and Technology Hearing to Review the FY 2013 NASA Budget Request

---

House Committee on Science, Space, and Technology Hearing "An Overview of the National Aeronautics and Space Administration Budget for Fiscal Year 2013"

March 7, 2012

Witness:

Charles Bolden

Administrator, National Aeronautics and Space Administration

Members Present:

Ralph Hall (R-TX), Chairman

Eddie Bernice Johnson (D-TX), Ranking Member

James Sensenbrenner (R-WI)

Brad Miller (D-NC)

Lamar Smith (R-TX)

Jerry McNerney (D-CA)

Randy Hultgren (R-IL)

Suzanne Bonamici (D-OR)

Chip Cravaack (R-MN)

Donna Edwards (D-MD)

Sandy Adams (R-FL)

Daniel Lipinski (D-IL)

Dana Rohrabacher (R-CA)

Terri Sewell (D-AL)

Scott Rigell (R-VA)

Jerry Costello (D-IL)

Steven Palazzo (R-MS)
Marcia Fudge (D-OH)
Michael McCaul (R-TX)
Mo Brooks (R-AL)
Larry Bucshon (R-IN)

On March 7, 2012 the House Committee on Science, Space, and Technology held a hearing to review the National Aeronautics and Space Administration (NASA) budget proposal for fiscal year (FY) 2013. NASA Administrator Charles Bolden was present to answer questions from the Committee. In his proposed budget released February 13, 2012, President Obama proposed $17.7 billion, a $59.9 million decrease over FY 2012, for NASA.

Committee Chairman Ralph Hall (R-TX) opened by calling the NASA budget proposal for FY 2013 "reasonable" given the nation's tough fiscal situation. The Chairman expressed concern over the continued delays of the Commercial Crew and Cargo Program, which he dubbed crucial to the International Space Station (ISS). He is worried that tax payer money is being spent on funding of two commercial crew programs that lack a sizeable enough market to be successful. Additionally, Hall worried about the safety standards of the Commercial Crew Development Program, delays of the Space Launch System (SLS) heavy lift rocket and Orion multipurpose crew vehicle, and U.S. withdrawal from the international ExoMars missions in 2016 and 2018.

In her opening statement Ranking Member of the Committee Eddie Bernice Johnson (D-TX) expressed her happiness to see only a one half percent decrease in the budget proposal. However, she expressed worry for the future when she said, "I fear that years from now, we are going to question why we didn't recognize how important it is to maintain our investments in research and innovation and to continue to provide the means to inspire our students even in challenging economic times." Johnson questioned the cuts to the Planetary Exploration program, which she said, "has captured the imaginations of people around the world." Johnson wondered why there had to be such a funding discrepancy between increases in Space Technology funding and general decreases throughout the NASA offices of Science, Education, and Aeronautics. She said that NASA has still not provided Congress with an independent cost and schedule estimate for the Commercial Crew and Cargo Program or a taxpayer cost estimate for NASA astronauts to use the commercial crew and cargo program. She urged NASA to identify alternate markets for the commercial crew services and said, "I can't justify to my constituents the expenditure of their tax dollars so that the super-rich can have joy rides."

In his testimony Bolden said the budget will "enable NASA to continue to execute the bipartisan space exploration plan agreed to by the president and the congress in 2010." He told the committee that the proposed budget will enable the U.S. to work towards future goals of putting a human on an asteroid and on Mars. He said that NASA's focus on the ISS will shift to utilizing its research capabilities. Bolden proclaimed that the budget request will enable private U.S. companies to transport crew and cargo to the ISS by 2017. He stated that SLS and Orion programs are on schedule to carry Americans in to deep space by 2021. He said the proposed budget supports a 2018 launch of the James Webb Space Telescope. The James Webb Space Telescope with a 21.3 feet diameter lens and a one million mile orbit around Earth will be the most advanced space telescope ever designed. Bolden confirmed that NASA will not participate in the ExoMars missions due to budget restraints. However, Bolden made it clear that the U.S. is not backing away from Mars when he listed several current or planned missions "…two space craft currently orbiting Mars, the Opportunity rover on the surface, a multi year exploration of Mars by the Mars science laboratory Curiosity, and the planned 2013 Maven mission to explore Mars's upper atmosphere." Bolden closed by saying that NASA's education plan will focus on "demonstrative results" in order to captivate students and educators.

Hall opened the question and answer period by asking Bolden if NASA has an interim plan for the five year gap in available U.S. transport capabilities in the event that Russian transport is unavailable. The U.S. currently does not have any crew and cargo transport capabilities and will not until the Commercial Crew and Cargo Program is ready in 2017. Bolden echoed Hall's worries and called it "regrettable" that NASA has put themselves in this situation citing a "lack of execution prior to now" as the reason for this conundrum. Hall stated that in August NASA's Commercial Crew Program plans to grant private companies $300-$500 million to develop these commercial crew launch capabilities. He asked Bolden, since the Space Act Agreement hinders NASA's ability to impose safety regulations on the private contractors, what NASA is planning to do to ensure the American taxpayer that their large monetary investment is being used in a safety conscious way. Bolden explained to Hall that although NASA cannot impose safeguards they can set safety design requirements and standards. He said that all of these private contractors have the design requirements and safeguards in hand. Bolden further explained to Hall that he ultimately chooses the contractor and told Hall, "Safety is my number one concern."

Johnson started her question and answer period by expressing her disappointment that the budget request calls for a $36 million decrease in education programs. She asked Bolden to comment on Director of the Office of Science Technology and Policy John Holdren's statement that education did not "stack up" well against other agency priorities in the President's budget proposal.

Bolden did not wish to comment on Holdren's statement but said he believes education did stack up well. He assured Johnson that he is conscious of education by stating that when he was appointed to administrator he formed an education summit of 25 education experts from foundations and institutions to reform NASA's education program. Johnson asked Bolden what areas made up the $36 million in cuts to the education program. Bolden said the cuts were made to the number of locations throughout the country where NASA education programs are implemented not to the education curriculum. He believes that through social media NASA is reaching more people today and spending less money doing it than they ever have before.

Congressman James Sensenbrenner (R-WI) directed questioning at Holden regarding the loss of 10,000 jobs as a result of delays in NASA projects. He asked Bolden if he believes private industry could absorb these 10,000 jobs or if these highly trained engineers will be delegated to more menial career paths. Bolden said that unfortunately the situation is regional. In Texas, there is a high job placement rate where the petrochemical industry has integrated these highly skilled workers. In contrast Florida has been the hardest hit where NASA is having a difficult time working with the state to bring in high tech jobs. Bolden said he is working with the Lieutenant Governor of Florida to attract companies that will harness the abilities of the highly skilled workers in that area. Sensenbrenner asked Bolden if it is possible to reduce the ISS $3 billion budget. He calls the ISS the "most expensive jobs program" in the nation on account of the $1.5 billion being spent per astronaut. Bolden dismissed the idea that the ISS is a jobs program instead calling it "the most incredible technological achievement of this nation and the world." Sensenbrenner finished by asking "will the [James Webb] telescope be strong enough to see the bottom of the financial hole that we have dug for it?" in reference to the 900 percent cost run up accrued on the project. Bolden expressed the importance of the James Webb Telescope by claiming it will exceed the understanding of the universe far beyond what the Hubble Telescope has done. He does not believe a dollar amount can be put on the knowledge that we will gain.

Congresswoman Marcia Fudge (D-OH) took a portion of her allotted time to direct more education questions at Bolden. She asked Bolden to explain the reasoning behind the reduction of funding in inspirational education programs like the National Space Grant College and Fellowship Program. Bolden said that cuts had to be made in these tough fiscal times, and NASA tried to do this through equal cuts across the board. He responded that NASA looked for new ways to inform and educate students through social media. He believes that this has unfortunately decreased the number of schools that education programs have been able to reach but it simultaneously increased the overall number of students that NASA has been able to reach.

Congressman Daniel Lipinski (D-IL) asked Bolden if NASA has any contingency plans in place in case none of the commercial crew designs meet the safety design requirements and standards. Bolden responded that they have made sure the private contractors have these requirements and human ratings standards in hand. He assured Lipinski that the safeties of the design requirements are reasonable because NASA worked in close cooperation with these contractors in developing the requirements. NASA has provided an option for these companies to have a NASA Partner Integration Team (PIT) on hand to observe and provide insight if the company chooses. Lipinski asked Bolden to identify the one greatest benefit of the ISS. An emotional Bolden said the ISS gives the opportunity for individuals like Don Pettit the opportunity to talk to kids. He said that Pettit who he called "a modern Mr. Wizard" mesmerizes kids when he talks to them about the ISS.

-APR

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

Please send any comments or requests for information to AGI Geoscience Policy at govt@agiweb.org.

Prepared by Linda Rowan and Wilson Bonner, AGI Geoscience Policy Staff, and Aaron Rodriguez, AGI/AAPG Spring 2012 Intern.

Last updated May 16, 2012
