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Inside This Issue:

NASA Launches
Global Precipitation
Measurement
Observatory [page 4](#)



Marshall Meteor Experts
to Participate in 'I Am
a NASA Meteor Expert,
Ask Me Anything' Reddit
Event Online March 6
[page 5](#)



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Center Director Scheuermann: 2015 Budget Good For Marshall Center, Allows U.S. to Maintain Leadership in Space Exploration

By *Kenneth Kesner*

NASA Marshall Space Flight Center Director Patrick Scheuermann said the \$17.5 billion NASA budget proposed by the president for fiscal year 2015 will allow the United States to continue world leadership in space exploration, and is also a good budget for the center.

In separate meetings March 4 with employees and the Huntsville

media, Scheuermann said Marshall's proposed \$2.15 billion budget for FY15 will provide stability for the workforce, programs and projects. NASA's top priorities remain the Space Launch System and Orion spacecraft, the International Space Station and the James Webb Space Telescope, he said, "and we are heavily involved in all three."

See 2015 Budget on [page 2](#)

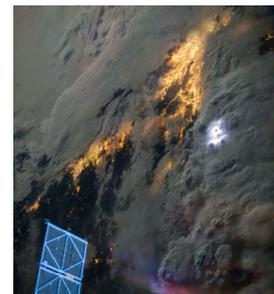
Space Station Sensor to Capture 'Striking' Lightning Data

By *Janet Anderson and Jessica Eagan*

Keeping a spare on hand simply makes sense.

Just as drivers keep spare tires on hand to replace a flat or blowout, NASA routinely maintains "spares," too. These flight hardware backups allow NASA to seamlessly continue work in the unlikely event something goes down for a repair. When

See [Lightning Data on page 3](#)



This International Space Station Crew Earth image of storm clouds over California shows lightning as a white glow to the right of center. The yellow-lit areas beneath the clouds are the night lights from the highly populated areas of Los Angeles and San Diego. (NASA)

2015 Budget *Continued from page 1*

There is \$1.4 billion in the administration's Exploration budget for SLS, which he said is essential to America's future in human spaceflight and scientific exploration of deep space. "Our job is to deliver it to the American people, like we did with Saturn and shuttle, and to ensure SLS is affordable and sustainable for decades to come," Scheuermann said. "Only with this heavy-lift launch vehicle can humans explore our solar system, investigate asteroids and ultimately set foot on Mars. The impressive capacity of this vehicle minimizes cost and risk of many missions by reducing the number of launches and travel time required to reach deep space destinations."

"The SLS team has hit all their milestones and remains on track," he said. "We all look forward to Exploration Flight Test-1 later this year, the first major flight test of NASA's deep space exploration system. After the first flight of SLS, we plan to continue with a flight rate of once per year."

The president's FY15 budget provides \$193 million for space operations, including Marshall's Payload Operations Center and support of research aboard the ISS; \$41 million for Space Technology to support various space technology projects and assignments, including the two Centennial Challenges and the Technology Demonstration Missions Programs managed at Marshall; and \$140 million for Marshall science including operations of the Chandra X-ray Observatory, the Discovery and New Frontiers robotic programs, and the work of SERVIR.

The proposed budget also has \$71 million for construction, revitalization and environmental improvements at Marshall and NASA's Michoud Assembly Facility, which is managed by Marshall.

"Our Marshall Center Master Plan continues to make progress this year and next," Scheuermann said. "From 2010 and through 2019 we will invest a total of \$500 million to revitalize the Marshall campus. Here in the main office area, we'll open our new office building this spring and demolish another. Then we'll begin construction of its replacement near the site of 4202."

Demolition projects allow the center to avoid the cost of maintaining aged and inefficient buildings.



Patrick Scheuermann, director of NASA's Marshall Space Flight Center, briefs Huntsville media about the fiscal year 2015 budget proposal. (NASA/MSFC/Bill Hubscher)

Revitalizing through green buildings makes financial sense, because it allows more efficient use of space, and savings of up to 65 percent on operations and maintenance costs, and up to 35 percent on energy costs.

"The Marshall Center is in great shape," Scheuermann said. "We have the resources, the highly skilled workforce, and a fierce commitment to accomplish our mission. I am proud to lead this great team and be a part of this community, proud of our center's achievements, and have great confidence we'll continue to excel going forward."

NASA Administrator Charles Bolden said there is a lot of good news for NASA in President Obama's FY 2015 budget request.

"The president's funding plan for America's space program reaffirms the path we are on, and will keep us moving forward -- pushing farther in the solar system and leading the world in a new era of exploration. Through NASA's work at all of our centers, our nation is recognized for scientific and technological leadership and knowledge-sharing that improves lives all around the world," he said.

"This budget keeps NASA's deep space exploration program on track by funding the Space Launch System and Orion crew vehicle to take American astronauts farther into the solar system than we have ever gone before. Our stepping stone approach to sending humans to Mars involves continued research on the space station, testing our new capabilities beyond the moon, exploring an asteroid and ultimately sending a crewed mission to the Red Planet," Bolden said.

See 2015 Budget on page 3

Lightning Data *Continued from page 1*

projects end, these handy spares can sometimes find second lives in new areas for use.

Researchers at NASA's Marshall Space Flight Center developed a sophisticated piece of flight hardware called a Lightning Imaging Sensor (LIS) to detect and locate lightning over the tropical region of the globe. Launched into space in 1997 as part of NASA's Tropical Rainfall Measuring Mission (TRMM), the sensor undertook a three-year baseline mission, delivering data used to improve weather forecasts. It continues to operate successfully aboard the TRMM satellite today.

The team that created this hardware in the mid-1990s built a spare -- and now that second unit is stepping up to contribute, as well. The sensor is scheduled to launch on a Space Exploration Technologies (SpaceX) rocket to the International Space Station in February 2016. Once mounted to the station, it will serve a two-year baseline mission as part of a U.S. Department of Defense (DoD) Space Test Program (STP)-H5 science and technology development payload. STP-H5 is integrated and flown under the management and direction of the DoD's STP.

NASA selected the LIS spare hardware to fly to the space station in order to take advantage of the orbiting laboratory's high inclination. This vantage point gives the sensor the ability to "look" farther toward Earth's poles than the original LIS



Discussing the Lightning Imaging Sensor engineering test unit are, from left, Bill Lopez and Jim McLeroy from the Department of Defense (DoD) Space Test Program (STP); John Davis from Marshall; Nathan Harnagel from DoD STP; and Mike Stewart from the University of Alabama in Huntsville. (NASA)

can aboard the TRMM satellite. Once installed, the sensor will monitor global lightning for Earth science studies, provide cross-sensor calibration and validation with other space-borne instruments, and ground-based lightning networks. LIS will also supply real-time lightning data over data-sparse regions, such as oceans, to support operational weather forecasting and warning.

"Only LIS globally detects all in-cloud and cloud-to-ground lightning -- what we call total lightning -- during both day and night," said Richard Blakeslee,

*See **Lightning Data** on page 4*

2015 Budget *Continued from page 2*

"The fiscal year 2015 budget advances NASA's strategic plan for the future, and with it we'll continue to build on U.S. preeminence in science and technology, improve life on Earth and protect our home planet, while creating good paying jobs and strengthening the American economy.

"The passion and dedication of the NASA workforce has taken us to new heights over the past 50-plus years. Today, we build on that strong foundation and carry out new pioneering missions to lead the world and reach even higher," Bolden said. "Working together, we turn science fiction into science fact and make the impossible possible."

The proposed NASA FY15 budget and supporting information are available at: <http://www.nasa.gov/budget>

Bolden's complete statement is available at: <http://www.nasa.gov/press/2014/march/nasa-administrator-boldens-statement-on-the-agencys-fy-2015-budget-request>

Kesner, an ASRC Federal/Analytical Services employee, supports the Office of Strategic Analysis & Communications.

NASA Launches Global Precipitation Measurement Observatory

The Global Precipitation Measurement (GPM) Core Observatory, a joint Earth-observing mission between NASA and the Japan Aerospace Exploration Agency (JAXA), thundered into space on Feb. 27 at 12:37 p.m. CST from Japan. The four-ton spacecraft launched aboard a Japanese H-IIA rocket from Tanegashima Space Center on Tanegashima Island in southern Japan. The GPM Core Observatory will take a major step in improving the capabilities of the Tropical Rainfall Measurement Mission, a joint NASA-JAXA mission launched in 1997 and still in operation. While TRMM measured precipitation in the tropics, the GPM Core Observatory expands the coverage area from the Arctic Circle to the Antarctic Circle. GPM will also be able to detect light rain and snowfall, a major source of available fresh water in some regions. To better understand Earth's weather and climate cycles, the GPM Core Observatory will collect information that unifies and improves data from an international constellation of existing and future satellites by mapping global precipitation every three hours. For more information about NASA's Earth science activities this year, visit [here](#). (NASA/Bill Ingalls)



Lightning Data *Continued from page 3*

LIS project scientist at Marshall. "As previously demonstrated by the TRMM mission, better understanding lightning and its connections to weather and related phenomena can provide unique and affordable gap-filling information to a variety of science disciplines including weather, climate, atmospheric chemistry and lightning physics."

LIS measures the amount, rate and radiant energy of global lightning, providing storm-scale resolution, millisecond timing, and high, uniform-detection efficiency -- and it does this without land-ocean bias.

The sensor consists of an optical imager enhanced to locate and detect lightning from thunderstorms within its 400-by-400-mile field-of-view on Earth's surface. The station travels more than 17,000 mph as it orbits our planet, allowing the LIS to observe a point on Earth, or a cloud, for almost 90 seconds as it passes overhead. Despite this brief viewing duration, it is long enough to estimate the lightning-flashing rate of most storms.

Since more than 70 percent of lightning occurs during the day, daytime detection drove the technical design of the LIS. From space, lightning appears like a pool of light on the top of a thundercloud. During the day, sunlight reflected

from the cloud tops completely masks the lightning signal, making it difficult to detect. However, LIS creates a solution by applying special techniques that take advantage of the differences in the behavior and physical characteristics of lightning and sunlight signals. These allow LIS to extract the strikes from bright background illumination.

As a final step in processing, a real-time event processor inside the LIS electronics unit removes the remaining background signal, enabling the system to detect the lightning signatures and achieve 90-percent detection efficiency.

Once the sensor is installed on the space station, the LIS team will operate it remotely. They will then assess the data it produces and disseminate it to forecasters and researchers from the [Global Hydrology Resource Center](#), one of NASA's Earth science data centers.

To read about how this instrument can help our lives here on Earth, visit [here](#).

Anderson is a public affairs officer in the Public & Employee Communications Office. Eagan, an ASRC Federal/Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

Marshall Meteor Experts to Participate in 'I Am a NASA Meteor Expert, Ask Me Anything' Reddit Event Online March 6

Marshall Space Flight Center's meteor and fireball expert Dr. Bill Cooke and colleagues Danielle Moser and Rhiannon Blaauw will host Marshall's first Reddit Ask Me Anything event. They will answer questions on Reddit.com on March 6 beginning at 1 p.m.

Reddit, a popular online community where users vote on content they find interesting, has a sub-forum for interviews with volunteers who answer questions about their specific experiences.



Those interested in asking questions during "I Am a NASA Meteor Expert, Ask Me Anything," may visit [here](#).

SLS Celebrates Future of Space Exploration in Salt Lake City



SLS Boosters Office Manager Alex Priskos, left, talks about SLS at the ATK rocketry display ribbon cutting at Clark Planetarium. Priskos, a native of Salt Lake City, also took part in a panel discussion on deep space exploration with, seated from left, ATK space launch executive and former astronaut Charlie Precourt and NASA astronaut Tony Antonelli. Also participating in the ribbon-cutting event was Clark Planetarium director Seth Jarvis. During his visit, Priskos returned to his alma mater, the University of Utah, to meet with students and discuss the positive impact his education has had on his NASA career and building America's next great rocket. (NASA/MSFC)



A student from William Penn Elementary School in East Millcreek, Utah, visits the new ATK rocketry exhibit at Clark Planetarium in Salt Lake City, featuring NASA's Orion Spacecraft, Space Launch System (SLS) and the supporting ground equipment at Kennedy Space Center. ATK is the prime contractor for the SLS boosters. SLS, NASA's new rocket, will have the greatest capacity of any launch system ever built, minimizing cost and risk of deep space journeys. Team members from the SLS Program attended the ATK display unveiling and led SLS events and activities -- including interactive displays and an autograph signing by NASA astronaut Tony Antonelli -- at the planetarium. NASA's Marshall Space Flight Center manages the SLS Program for the agency. (NASA/MSFC)

Marshall Center Hosts Industry Strategic Investment Symposium

By Shannon Ridinger

NASA Marshall Space Flight Center's Flight Programs and Partnerships Office, along with the Space Launch System Advanced Development Office, hosted the first Industry Strategic Investment Symposium at the Jackson Center on Feb. 24.

The event featured representatives from several Marshall organizations including the Office of the Chief Technologist, promoting discussions on affordability, risk reduction and technology advancement. Partners were encouraged to engage and collaborate at the event with Marshall Center representatives and to offer innovative ideas to further enhance the development of technology roadmaps that relate to deep space travel and exploration.

The agenda also featured a panel discussion of industry partners moderated by Chris Crumbly, manager of the SLS Advanced Development Office. Partners discussed the future of space exploration, government roles and responsibilities in today's environment, and ways to open the door for communication across the community.

"Doing the important work of space exploration would not be able to happen without our industry partners," said Crumbly. "It truly is a team effort within NASA, at the Marshall Center and throughout industry and academia. Sharing our knowledge with each other helps us advance technologies that are going to enable us to go farther into



Jody Singer, manager of the Marshall Flight Programs and Partnerships Office, addresses participants attending the Industry Strategic Investment Symposium. (NASA/MSFC/Ray Downward)

the solar system than ever before."

For more information on the Flight Programs and Partnerships Office, visit their [webpage](#).

For SLS information, visit their [webpage](#).

Ridinger is a public affairs officer in the Office of Strategic Analysis & Communications.

Marshall Exchange Hosts Marshall Chili Cook-off and Dessert Contest

On Feb. 25, NASA Marshall Space Flight Center Director Patrick Scheuermann, left, was joined by NASA Associate Administrator Robert Lightfoot to judge the 2014 Marshall Chili Cook-off and Dessert Contest in Activities Building 4316. Approximately 250 Marshall team members attended the event and sampled chili and desserts, ate a free hotdog lunch, enjoyed musical entertainment by the Marshall Music Club and some even participated in a friendly game of Corn Hole. The chili cook-off winners were: first place, Jason Stumfoll, an intern from the Academic Affairs Office; second place, Darius Yaghoubi, Spacecraft & Vehicle Systems Department; and third place, Terry Wall, Propulsion Systems Department. The dessert contest winners were: first place, Kathryn Lambert, an intern from the Academic Affairs Office; second place, Brenda Polk, Propulsion Systems Department; and third place, Clothilde Giacomoni, Propulsion Systems Department. Other judges of the competition were Bobby Watkins, director of the Office of Strategic Analysis & Communications; Rebecca Spyke-Keisser, associate deputy director NASA Headquarters Office for Strategy & Policy; Jody Singer, manager of the Flight Programs & Partnerships Office; and Josh Harrison, budget analyst in the Budget Integration & Analysis Office. The event was hosted by the Marshall Exchange. (NASA/MSFC/Ray Downward)



Obituaries

Houston McCullough, 90, of Huntsville, died Feb. 10. He retired from the Marshall Center in 1975 as a contract specialist.

Donald Stewart, 83, of Huntsville, died Feb. 18. He retired from the Marshall Center in 1984 as an aerospace engineer. He is survived by his wife, Moira Dulligan Stewart