



Marshall Star, April 17, 2013 Edition

MARSHALL STAR

In This Week's Star ☐

- › [NASA's Proposed FY2014 Budget Will Provide Stability for Marshall Center Workforce](#)
- › [Marshall Center Employees React to FY 2014 Budget Proposal](#)
- › [3-2-1, LIFT OFF! NASA Student Launch Projects Activities Set for April 19-20](#)
- › [Marshall Center to be Recognized by Alabama Legislature for Contributions to the State](#)
- › [Keeping the Wheels Turning: NASA Great Moonbuggy Race Set for April 26-27](#)
- › [Catch NASA Moonbuggy Race Action Live on Ustream, Twitter](#)
- › [The Sounds of Progress: NASA's Space Launch System Engineers Begin Acoustic Testing](#)
- › [New Building Enhances Collaboration Between Boeing and Space Launch System Program](#)
- › [Marshall Team Complete Testing for Lunar Atmosphere and Dust Environment Explorer](#)
- › [NASA's Twitter Account Wins Back-To-Back Shorty Awards](#)
- › [Obituaries](#)

NASA's Proposed FY2014 Budget Will Provide Stability for Marshall Center Workforce

By Kenneth Kesner

NASA Marshall Space Flight Center Director Patrick Scheuermann said the president's proposed \$17.7 billion NASA budget for fiscal year 2014 provides the resources needed by the center and the agency for the United States to remain the leader in space exploration and scientific discovery.

Image right: NASA Marshall Space Flight Center Director Patrick Scheuermann outlines NASA's fiscal year 2014 budget proposal during an all-hands in Morris Auditorium on April 10. In meetings with Marshall Center team members and, later, with reporters, he said the proposal "is a solid budget for us here at Marshall and will provide stability for our workforce."
(NASA/MSFC/Emmett Given)



The budget includes \$2.18 billion and allows continuity for the program and projects managed by the Marshall Center. In meetings April 10 with employees and Huntsville-area media following the unveiling of the spending plan, Scheuermann said that amount is almost the same as last year's request and will enable Marshall to continue the development of the "essential" Space Launch System and Orion crew vehicle, maintain International Space Station operations, proceed with testing the James Webb Space Telescope and continue other core programs.

"This is a solid budget for us here at Marshall and will provide stability for our workforce," Scheuermann said. "The center has a clear mission, and this budget will give us the resources we need to perform it."

The FY2014 NASA budget proposal also includes a bold, new plan: "We are developing a first-ever mission to identify, capture and relocate an asteroid," said NASA Administrator Charles Bolden. "This mission represents an unprecedented technological feat that will lead to new scientific discoveries and technological capabilities and help protect our home planet."

Scheuermann pointed out that the mission to capture and place an asteroid in a stable Earth-moon system orbit, where it can be closely studied and sampled by astronauts and scientists, simply won't be possible without the Space Launch System -- the most powerful rocket in history.

"The only way to get the humans to the asteroid, no matter where it is taken, will be on the SLS, which means great news for Marshall Space Flight Center," he said.

Scheuermann said the Marshall Center's portion of the proposed budget includes \$1.3 billion for Exploration, which is mainly the flagship SLS rocket program. Other highlights of the center's part of the budget:

- \$184 million to continue support for ISS operations, including the Payload Operations Center.
- \$59 million to support various space technology assignments, including the two Centennial Challenges and Technology Demonstration Missions managed at Marshall.
- \$122 million for Earth and planetary science, astrophysics, space weather research and other Marshall-managed missions, such as the Chandra X-ray Observatory and SERVIR, which uses NASA satellite imagery to aid emergency response around the world.
- \$108 million to support construction and environmental improvements at the Marshall Center and the Michoud Assembly Facility.
- \$39 million for the Marshall Center's Building 4221, the second major replacement project in the main 4200 administrative office quad. The building will meet LEED Silver standards for lower operating costs while reducing energy needs and environmental impact.

During the Marshall Center all-hands on the budget, Scheuermann echoed Bolden's appreciation for NASA's workforce. He urged Marshall Center team members to not let events in Washington be a distraction and to focus on the tremendous responsibilities already placed in their hands. The best way to influence the future, he said, is to demonstrate how well the Marshall Center executes its mission and delivers on the investments already made.

"The only way we are going to succeed is to do it together," Scheuermann said.

The proposed NASA FY2014 budget and supporting information are available at: <http://www.nasa.gov/budget>

Kesner, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

[› Back to Top](#)

Marshall Center Employees React to FY 2014 Budget Proposal



"As NASA's budget support shows, SLS is making real progress to support our nation's continued exploration of space. The Core Stage received the green light to proceed to our Critical Design Review, or CDR, and we're getting ready for the vehicle's preliminary design review this summer. We have completed almost all of the avionics box-level CDRs and are pumping out design drawings. Some of the largest manufacturing tooling in the world is being installed at the Michoud Assembly Facility. With this budget, the momentum will continue to grow."

Joan Funk
Stages Office, XP 30

"I'm excited about the NASA budget -- pretty good news. In these days of sequestration and tough overall budget times, I think that our administrator did a good job setting our program priorities, aligning them with our mission and allocating resources to those programs. Here at Marshall, we have a launch vehicle to design, build and test. We have a space station and experiments to take care of, we have a role on the James Webb Space Telescope, and I'm sure that we will be involved with the asteroid mission. So, overall, we are in good shape!"

Jose Matienzo
Space Craft & Vehicle Systems Department,
EV71





"The full scope of the NASA budget appears to be well aligned with the 2010 priority agreements between the president and Congress. The Marshall portion of the budget has significant content to execute key pieces of the agency priorities and I look forward to supporting Marshall in executing the work that has been assigned. I am pleased to see that the budget reflects support for NASA's key missions and further demonstrates a confidence in the Marshall team to lead the way."

Sherri Spotswood

**Propulsion Systems Department, ER 22
Jacobs Technology, Inc/ESSA Group**

"I joined the SLS team in November 2011 as a member of the Program Integration Office. Since my arrival, the message from the SLS management team has been consistent and clear: Focus on the things that you can control - building a safe, affordable, robust and evolvable vehicle. Based on what I heard April 10, that message has not changed. As a matter of fact, our NASA leadership and commander in chief reinforced that message with the release of the NASA fiscal 2014 budget proposal. I am extremely excited about the future of NASA and the role that Marshall will play in this next historic step toward human exploration beyond Earth's orbit."

Van Strickland

Program Integration Office, XP02





"The NASA administrator's agency all-hands meeting about the NASA FY2014 budget request on April 10, in Morris Auditorium excited me in many ways. The \$17 billion will fund innovations in space technology and provide game changing technology in space and human exploration that will help better protect the Earth and our environment. I'm proud to work for an agency that inspires the world through exploration and discovery. We are developing a world-class capability with commercial crew missions to have a U.S. capability to transport us to the International Space Station. The FY2014 budget request will fully fund SLS and the commercial crew missions. This supports jobs and increases understanding of our planet, the solar system and beyond. It's a budget without the effects of

sequestration, which has had us all on the edge of our seats. Details on the Marshall budget left me very optimistic that the budget provides a stable basis for us to continue our mission. I feel like a significant contributor in all aspects of NASA's mission and I have great hopes that one day my 7-year-old son, Devinti II, will visit the space station -- NASA's 11th center - - to continue exploring our solar system and beyond."

Kimberly Williams
Procurement Office, PS33

[› Back to Top](#)

3-2-1, LIFT OFF! NASA Student Launch Projects Activities Set for April 19-20

By Megan Davidson

More than 600 students, representing middle schools, high schools, colleges and universities in 26 states, will launch rockets of their own design -- with working science payloads -- into the skies at the 2012-13 NASA Student Launch Projects.

Image right: At the 2011-12 NASA Student Launch Projects challenge, a team from Florida A&M University in Tallahassee received the "Closest to Altitude" university-level award for coming closest to the specified 1-mile altitude goal. The rocket reached an altitude of 5,270 feet -- just 10 feet off the mark. A team from the school will return to this year's challenge to try to retain their title. (NASA/MSFC)



Activities for the annual engineering and science challenge will kick off April 19 with a Rocket Fair and poster presentation in Activities Building 4316. At the event, NASA Marshall Space Flight Center team members will have the opportunity to talk

with some of the 57 student teams participating in the challenge, and get a first-hand look at their specially crafted rockets.

The "launchfest" will begin at 7:30 a.m. -- weather permitting -- April 20 at Bragg Farms in Toney. A rain date is scheduled for April 21. Teams will try to send their rockets to a goal altitude of 1 mile high.

The free event is open to the public. NASA will provide live coverage from the challenge on [Ustream](#) and real-time updates - including the post-launch awards ceremony -- on [Twitter](#).

NASA created the rocketry challenge to encourage young people to pursue careers in the science, technology, engineering and mathematics (STEM) fields.

The Academic Affairs Office, part of the Office of Human Capital at the Marshall Center, manages the rocketry challenge. ATK Aerospace Group of Magna, Utah, is providing corporate sponsorship. The National Association of Rocketry will provide launch readiness reviews and launch support. Bragg Farms has hosted the launch challenge since 2008.

More information about the 2012-13 NASA Student Launch Projects, including a full list of participating teams, is available [here](#).

Davidson, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

[› Back to Top](#)

Marshall Center to be Recognized by Alabama Legislature for Contributions to the State

By Kenneth Kesner

NASA's Marshall Space Flight Center will be honored by the Alabama Legislature on April 18 with activities recognizing the center's achievements in space exploration and its continuing significance to the state's economy and citizens.

For more than 50 years, the Marshall Center has been an anchor of the aerospace industry in Alabama. Today, the center directly employs more than 5,000 people in work that generates thousands of other jobs and business opportunities, developing technology and advanced manufacturing techniques that benefit all while furthering our knowledge of Earth and the stars.

Marshall Center Director Patrick Scheuermann will meet with Alabama Gov. Robert Bentley, Lt. Gov. Kay Ivey, other state officials and legislators at the State Capitol on April 18. Scheuermann also will be the guest speaker at a luncheon for state leaders.

NASA exhibits representing some of the technological and scientific achievements of Marshall Center engineers and researchers will be on display in the State House that day.

Astronauts Jack Fischer, an Air Force lieutenant colonel, and Kathleen "Kate" Rubins, a biologist, will accompany Scheuermann in meetings with state leaders. Both were selected in 2009 to become members of the 20th NASA astronaut class, and completed their candidate training in 2011.

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[› Back to Top](#)

Keeping the Wheels Turning: NASA Great Moonbuggy Race Set for April 26-27

By Rick Smith



When America's space agency hosts the annual NASA Great Moonbuggy Race® April 26-27 in Huntsville, it will mark the 20th run of "keeping the wheels turning," say organizers of the popular education initiative at NASA's Marshall Space Flight Center.

Image right: A team from Tennessee Technological University of Cookeville powers through the first course obstacle at the 2012 NASA Great Moonbuggy Race. A team from the university will return to this year's race, to be held April 26-27 at the U.S. Space & Rocket Center. (NASA/MSFC)

They're referring to the wheels on the lightweight, human-powered "moonbuggies"

designed, built and tested since 1993-94 by as many as 10,000 high-school and college-aged students. Scores of them register for the race and travel to Huntsville each spring to represent their schools, their youth organizations, their hometowns or even countries half a world away. They compare inventive buggy designs, meet NASA team members, and spend two grueling days demonstrating can-do spirits and teamwork as they tackle a rocky, obstacle-strewn "lunar" race course.

But there's more to "keeping the wheels turning" than operating an innovative sporting event year after year, says Tammy Rowan, manager of the Academic Affairs Office at the Marshall Center. To her Marshall team, the philosophy means keeping in motion the wheels of discovery and innovation - critical drivers for continued exploration of Earth and the cosmos beyond.

"It's the turn of those internal wheels that we're most interested in," she says. "It's always been NASA's goal to work closely with educators, enhancing classroom learning in science, technology, engineering and mathematics with practical, hands-on challenges that fuel excitement and suggest paths to rewarding careers."

This year, more than 90 registered student teams from 33 states, Puerto Rico, Canada, Germany, India, Mexico and Russia are working feverishly to complete this year's crop of buggies and raise the funds to make the trip. Will it be worth it?

"It absolutely will," says NASA engineer Chris Randall, an employee recruiter in Marshall's Office of Human Capital -- and a member of the moonbuggy team from Alabama A&M University in Huntsville in 2004, where he was then a student majoring in mechanical engineering.

"I already had my eye on NASA as a career goal, but the race definitely piqued my interest," he says. "We were a young team, and hardly knew what we were doing, but we sweated blood on that vehicle. Our instructor, Dr. Amir Mobasher, who teaches mechanical engineering and continues to mentor race teams at Alabama A&M, showed us how to apply the engineering

Catch NASA Moonbuggy Race Action Live on Ustream, Twitter

By Rick Smith and Megan Davidson

More than 90 student teams from across the globe are ready to compete in the 20th NASA Great Moonbuggy Race April 26-27. Fans of the longtime competition can watch all of the race action, including the April 27 awards ceremony, live on [Ustream](#).

NASA also will "[Tweet](#)" live updates throughout the race, including preliminary course times for each team and all award winners.

The NASA Great Moonbuggy Race is inspired by the Apollo-era Lunar Roving Vehicles built at NASA's Marshall Space Flight Center in the late 1960s and driven on the moon during the Apollo 15, 16 and 17 missions in 1971 and 1972. Students' buggies address many of the same design challenges NASA and industry engineers overcame to deliver those historic rovers,

principles we were studying, how to use computer-aided design and conduct dynamic testing of our materials. Over the course of the year, we poured our heart and soul into our buggy."

It also helped lock his sights on the rewarding career he now has -- building rockets for NASA and helping recruit new generations of scientists, engineers and explorers. And he's not alone.

NASA engineer Mike Selby was a student racer for the University of Alabama in Huntsville in 1995 and 1996. Selby graduated with a degree in mechanical engineering and went right to work for NASA.

"This competition provides a tremendous amount of real-world experience you just can't replicate in a classroom," he says. "Whether students serve as buggy drivers, wrench jockeys, welders, team secretaries or fundraisers, it's an experience none will ever forget -- and one that demonstrates career paths and aptitudes that can change their lives forever."

To read the full story about "keeping the wheels turning" at the NASA Great Moonbuggy Race, click [here](#).

Smith, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

which dramatically expanded astronauts' range across the lunar surface, helping them conduct vital research that captured the fascination of a generation.

Major corporate sponsors for the 2013 race are Lockheed Martin Corporation, The Boeing Company, Northrop Grumman Corporation, Aerojet and Jacobs Engineering ESSSA Group, all with operations in Huntsville. Other corporate and institutional sponsors include the U.S. Space & Rocket Center and Science Applications International Corporation (SAIC), both of Huntsville; ATK Aerospace Systems of Salt Lake City, Utah; Davidson Technologies Inc. of Huntsville; the Universities Space Research Association (USRA), headquartered in Columbia, Md.; the U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC) at Redstone Arsenal in Huntsville; Naval Mobile Construction Battalion Two-Four; Teledyne Brown Engineering and MSB Analytics Inc., both of Huntsville; the American Institute of Aeronautics and Astronautics (AIAA), headquartered in Reston, Va.; the National Space Club, headquartered in Washington; AI Signal Research Inc. and Industrial Fabrication Co., both of Huntsville; and the Tennessee Valley chapter of the International System Safety Society, headquartered in Unionville, Va.

Learn more about the NASA Great Moonbuggy Race [here](#). For images and additional information about past races, visit the Moonbuggy [site](#).

Smith and Davidson, Analytical Services Inc. employees, support the Office of Strategic Analysis & Communications.

[› Back to Top](#)

By Bill Hubscher

Test conductors at NASA's Marshall Space Flight Center are making progress on the agency's new rocket by listening closely to the roar of four thrusters.

Image right: A collection of four thrusters representing the core stage engines of the new Space Launch System, or SLS, are ignited at Test Stand 115 at the Marshall Center. The green flame is a result of the ignition fluid that is burned along with the propellant during this short duration test. The completed scale model of the SLS vehicle, planned for testing later this year, will help design the water suppression system for the launch pad facility at the Kennedy Space Center. (NASA/MSFC)



The agency is developing the new rocket, called the Space Launch System, or SLS, at the Marshall Center. This vehicle will enable space exploration beyond low Earth orbit and take astronauts farther into space than ever before.

Marshall Center engineers recently assembled and ignited a sub-scale collection of thrusters to verify safe operation of an integrated system before creating a full model mockup of the SLS propulsion elements. The combined sub-scale elements, scheduled for testing in the fall of 2013, will help simulate the intense conditions of the SLS propulsion system, including the noise the engines and boosters make coming off the launch pad.

"If you've seen launches at the Kennedy Space Center in Florida, then you may have noticed the thousands of gallons of water poured onto the launch pad just before ignition," said Janice Houston, a launch vehicle acoustics engineer with the Marshall Center's Propulsion Systems Department. "All this water doesn't just cool things off as the engines ignite. The primary purpose of the deluge is to help dampen the massive sound waves generated by the rocket."

Test conductors will listen for low- and high- frequency sound waves, as they can both potentially harm the rocket during ascent if not addressed. Low frequency pressure waves can physically impact the vehicle and affect the health of the crew. High frequencies could hurt the smaller, more complex components within the vehicle. Studying these sound waves helps engineers redesign the suppression system for a safe launch.

Microphones scattered around the test stand will collect acoustic data and provide valuable information to help redesign NASA's Kennedy Space Center's sound suppression system at the launch pad to accommodate the SLS, which will be the largest and most powerful launch vehicle ever constructed.

"The entire assembly of hardware and propellant feed lines needs to fit in a defined space represented as the rocket's structure," said Sandy Greene, an aerospace engineer in the Combustion Devices group of Marshall's Propulsion Systems Department. "So plumbing the propellant lines, instrumentation and hardware into a tight space for a scale model test was a challenge. We had to verify all systems work as required to safely ignite and operate the four thrusters representing the SLS core stage engines."

One of the key tenets of SLS is affordability. In order to help remain on budget, NASA will use RS-25 engines for the SLS core stage. These same engines were used as the space shuttle main engines and helped power 135 shuttle flights. Like the engines, the hardware used as the test thrusters at the Marshall Center is the same design used for acoustic testing for the shuttle in the 1960s.

Much like those same tests from the shuttle era, the initial nine tests of the thrusters over the course of February and March ran successfully. The roar of a scale model of all the SLS propulsion elements will echo across the Marshall Center later this year.

To see a video of a recent test firing, visit [here](#).

Hubscher, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

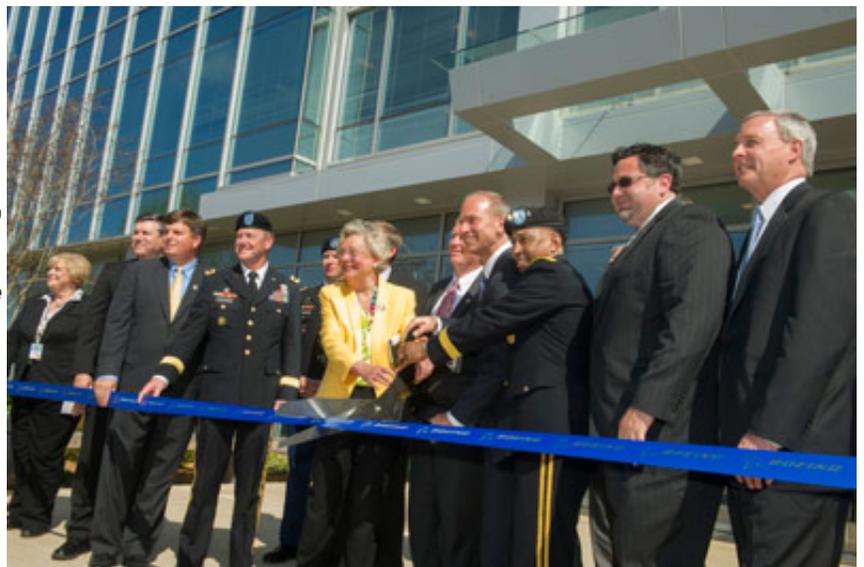
[› Back to Top](#)

New Building Enhances Collaboration Between Boeing and Space Launch System Program



Todd May, manager of the Space Launch System Program at NASA's Marshall Space Flight Center, addresses the audience gathered at the grand opening of the first building at Redstone Gateway on April 15. The building will be the new home for offices of The Boeing Co., dedicated to supporting the Space Launch System. Boeing is the prime contractor of the core stage for the new rocket that will carry humans farther into space than ever before. (NASA/MSFC/Emmett Given)

Officials from Team Redstone, including the Marshall Space Flight Center, The Boeing Co., and state and local leaders help cut the ribbon and officially open the first building of Boeing's Redstone Gateway office complex. The new facility, located near Redstone Arsenal's Gate 9 at the Interstate 565 interchange at Rideout Road/Research Park Boulevard will consolidate the offices of Boeing's team supporting the Space Launch System Program, formerly spread out over 30 different buildings. (NASA/MSFC/Emmett Given)



[› Back to Top](#)

Marshall Team Complete Testing for Lunar Atmosphere and Dust Environment Explorer



Even though 12 men have walked on the moon, and it has been the subject of much research throughout the years, there is still so much we can learn about our closest celestial neighbor. This fall, the Lunar Atmosphere and Dust Environment Explorer, or LADEE, spacecraft will launch from NASA's Wallops Flight Facility, Wallops Island, Va.

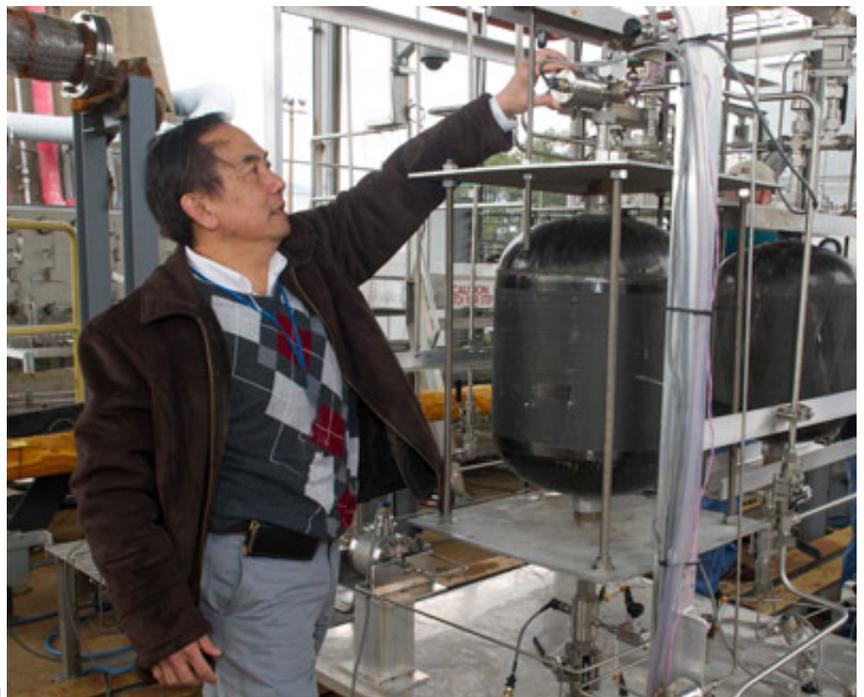
Image left: Marshall Center team members who conducted the LADEE flow testing include, back row, from left, Jeremy Briscoe, Jack Chapman, Lisa Tunstall and Hunter Williams; and front row, from left, Joey Hatchett, Cedric Evans, Craig Havens and Scott Chartier. (NASA/MSFC/Emmett Given)

The spacecraft will orbit the moon and gather information about the lunar atmosphere, conditions near the surface of the moon, and collect samples of lunar dust. NASA's Ames Research Center manages the development, design and science of the LADEE spacecraft. NASA's Marshall Space Flight Center is the program office for the project. Dr. Huu Trinh and his team with the Propulsion Systems and Test Departments at Marshall recently completed a series of tests to simulate cold-flow using the same propulsion system components as those used for the LADEE spacecraft.

The test team at Marshall conducted the cold-flow test to identify how fluid flows through the propulsion system feed lines, especially during critical operation modes. The LADEE team will use the test data to help identify, address and correct any potential flow issues in the propulsion system before launch.

"Our testing of the propulsion systems is a small but important part of the LADEE project," said Dr. Huu Trinh. "There has been a lot of hard work by Ames and across the NASA centers to get this spacecraft ready to launch. We are all excited to see it get started collecting data."

Image right: Dr. Huu Trinh examines some of the equipment used in the LADEE flow testing. (NASA/MSFC/Emmett Given)



The LADEE spacecraft will be equipped with several science instruments and a technology demonstration that will allow it to perform experiments. These instruments will do everything from measure the amount of light in materials to determine atmosphere composition to collecting and analyzing dust particles in the atmosphere. The technology demonstration on board will be the Lunar Laser Communications Demonstration and will demonstrate the use of lasers instead of radio waves to achieve broadband speeds

to communicate with Earth.

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

[› Back to Top](#)

NASA's Twitter Account Wins Back-To-Back Shorty Awards

NASA's official Twitter feed, @NASA, has won its second consecutive Shorty Award for the best government use of social media.

The Shorty Award honors the best of social media across sites such as Twitter, Facebook, Tumblr, YouTube, Foursquare and others. NASA took the prize April 8 at the fifth annual Shorty Awards ceremony in New York.

The @NASA acceptance tweet was, "We're sharing the universe 1 tweet at a time. Be inspired! Follow @NASA & RT if you love science & space. #ShortyAwards."

"By sharing our activities on social media, we are able to give our fans and followers a first-hand connection to NASA's exciting space exploration missions," said Jennifer Stanfield, a public affairs officer at NASA's Marshall Space Flight Center. "Social media also allows us to reach new audiences and engage with 'fans' and 'followers' in a direct and authentic way."

The Marshall Center uses several social media accounts to communicate its mission to a wide range of followers, as well. The primary @NASA_Marshall Twitter account has over 36,000 followers and offers daily tweets about the latest center activities.

Marshall also maintains presences on Facebook, Google+, Flickr and other popular platforms. NASA Socials, formerly known as NASA Tweetups, allow social media followers to attend functions and interact with NASA's engineers, astronauts and scientists.

To follow Marshall on Twitter, visit: https://twitter.com/NASA_Marshall

To view all of Marshall's social media sites, visit: http://www.nasa.gov/centers/marshall/multimedia/msfc_social.html

For more information about the Shorty Awards: <http://shortyawards.com>

[› Back to Top](#)

Obituaries

James R. "Jay" Carpenter Jr., 55, of Huntsville died April 9. He is survived by his wife, Leigh Caudill Carpenter. He was a mechanical engineer at the Marshall Center.

Find this article at:

<http://www.nasa.gov/centers/marshall/about/star/index.html>