
# The Marshall Star

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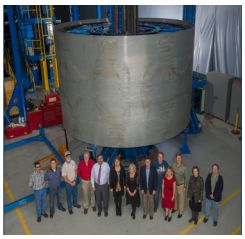

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256–544–0030
http://www.nasa.gov/centers/marshall

The Marshall Star is published every Wednesday by the Public and Employee Communications Office at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. The Star does not publish commercial advertising of any kind.

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## Marshall Center's Jennifer Hawkins on the Giving and Receiving End of CFC Donations

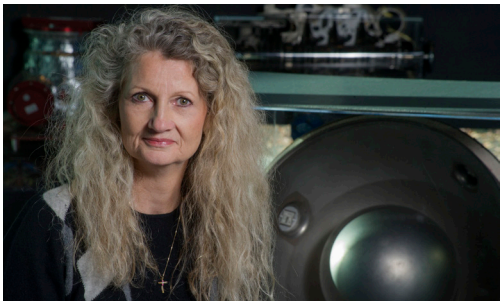
*By Bill Hubscher*

"It's there, but I don't allow it to be a shadow over my life."

The shadow is a diagnosis of a life-threatening disease Jennifer Hawkins, a propulsion engineer in the Marshall Space Flight Center's Engineering Directorate, received five years ago.

"I went in for blood tests on a Friday because I had been unusually tired," Hawkins said. "The next day, my

*See **Jennifer Hawkins** on page 3*



*Jennifer Hawkins, a propulsion engineer in the Marshall Space Flight Center's Engineering Directorate, began contributing to the Leukemia & Lymphoma Society through private donations and the Combined Federal Campaign seven years before she was diagnosed with a rare form of leukemia. (NASA/MSFC/Emmett Given)*

## Marshall Center Honors Military Veterans

*Marshall Space Flight Center team members and U.S. Air Force veterans Ray Downward, foreground, and Jack Hood, background, both of the Application, CRM, & Multimedia Office, are pinned with American flags by Sheila Woods, foreground, and Kesia Kimbrough, background, at the 2013 Annual Veterans Meet and Greet Program on Nov. 7, in Building 4200, Room P110. During the event, Marshall senior managers and guest speaker Col. William M. Darby, commander of the Fox Army Health Center, expressed gratitude to Marshall*

*Center veterans for their service. (NASA/MSFC/Emmett Given)*

# Brown Bag, Red Planet Encourages Community to Gather and View MAVEN Launch

*By Janet Sudnik*

NASA's Marshall Space Flight Center is encouraging a communitywide viewing of the launch of NASA's next Mars-bound spacecraft, MAVEN — Mars Atmosphere and Volatile EvolutioN. Brown Bag, Red Planet is a grassroots initiative to get everyone from students to families to businesses to grab their lunch and tune in on Nov. 18 and be a part of the agency's latest achievement.

MAVEN will examine the upper atmosphere of Mars in unprecedented detail, hoping to study specific processes that led to the loss of much of its atmosphere. Data and analysis could tell planetary scientists the history of climate change on the Red Planet and provide further information on the history of planetary habitability.

Marshall is planning employee and public viewing events to celebrate the historic launch. The employee event will be at the Activities Building 4316, and the launch screened live at 12:28 p.m. There will be special Mars-themed pizza for purchase at noon.

The public viewing event will be held at the U.S. Space & Rocket Center's Digital Theatre located in the Davidson Center. The activities will start at 11 a.m., with a panel of experts taking part in a community discussion and question-and-answer session, and the launch will be shown live at 12:28 p.m. Panelists from the Marshall Center will include Dr. Paul Bookout, Deep Space Habitat Project manager, Concept Demonstrator; Bill Cooke, Meteoroid Environments Office lead; and Dr. Sharon Cobb, Space Launch System assistant program manager. There will also be activities for kids, and the Space & Rocket Center will have lunches available for guests to purchase. The panel discussion will also be broadcast live via the Marshall Center's Ustream channel at http://www.ustream.tv/channel/nasa-msfc. Questions can be submitted to panel members via the center's Twitter account - @NASA_Marshall.

More information on both of these events can be found in Heads Up, ExplorNet and the Marshall Center's social media channels.

Coverage with commentary and prelaunch media briefings will be broadcast live on NASA Television and the agency's website.

For more information about the MAVEN mission, visit: www.nasa.gov/maven.

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

# Painting toward Progress on Orion Flight Test Hardware

*A technician at NASA's Marshall Space Flight Center applies the finishing touches on the stage adapter that will connect NASA's Orion spacecraft to a United Launch Alliance Delta IV rocket for Exploration Flight Test-1 (EFT-1) in September 2014.The top coat for the adapter is a special paint that protects the hardware and its components, like sensors, from electrical discharge on ascent.*

*During EFT-1, Orion will travel to an altitude of approximately 3,600 miles above Earth's surface, farther than any spacecraft built for humans has gone in more than 40 years. It will provide engineers with early flight-performance data before Orion is flown on NASA's new heavy-lift rocket, the Space Launch System (SLS), in 2017.*

## Jennifer Hawkins *Continued from page 1*

doctor calls and tells me not to be alarmed, but don't leave the house because my immune system was under attack."

Hawkins has hairy cell leukemia, named for the unusual image of the cells under a microscope. While she is now in remission, there is currently no cure. It is a rare form of leukemia -- only 500 or so known cases are discovered annually and only 25 percent of those are women.

"I knew I would be OK either way because of my faith. I was calm and at peace, but I was more concerned for my husband, Jim, and our three kids," said Hawkins. "I didn't want to leave him to raise our family alone."

*The Hawkins family, from left, Katelyn, Jim, David, Jennifer and Abigail, visits the beach in Destin, Fla., a few weeks before Jennifer was diagnosed with Leukemia in 2008. (Jennifer Hawkins)*

While speaking, Hawkins toys with a small black cloth bracelet around her wrist that says "Puck Cancer." It was a token gift from a friend who plays in an annual ice hockey tournament, the proceeds of which go to cancer research. It also serves as a reminder of her personal support group.

"While undergoing treatment, I had to miss a lot of work and people here donated literally hundreds of hours of leave for me and my husband, who also works at Marshall as a booster analyst in the Propulsion Systems branch," said Hawkins. "It showed me how many lives we touch every day and how generous people can be. It was very humbling."

Call it serendipity or a higher power working in her life, but 12 years ago, she started contributing to the Leukemia & Lymphoma Society.

"No one in my family or my husband's family ever had leukemia. I just felt the need to support them," she said. "My diagnosis gave me more of an appreciation for those organizations and how they fund research and provide support to people with this disease. I was lucky that I had family, friends at work and my church to help me, but others really need groups like the Leukemia & Lymphoma Society to make it through those difficult times."

She now donates to leukemia-related groups and other non-profits regularly through the annual Combined Federal Campaign, or CFC, charity drive.

"My experience with our many Marshall Center friends donating an hour here and there taught me there is strength in numbers," Hawkins said. "Even if team members can only donate a little to the CFC, several hundred donations add up. No gift is too small. A large group with a single goal can make a difference."

When the official drive ends in mid-January, the organizing committee for the Marshall Center CFC hopes to have raised more than $700,000 for charity.

The CFC mission is to support and promote philanthropy, giving all employees an opportunity to improve the quality of life for all. Marshall's fundraiser is part of the annual Tennessee Valley Combined Federal Campaign, a joint effort between the Marshall Center, other federal agencies at Redstone Arsenal, and in surrounding Alabama and Tennessee counties.

For details on how to help local groups financially or by volunteering during Community Service days, visit the CFC page on ExplorNet.

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

# Marshall Astronomer Bill Cooke Part of International Science Coalition Reporting Chelyabinsk Meteor Findings Nov. 6

*By Rick Smith*

Detailed findings about the size, power and impact of the Chelyabinsk meteor, which streaked across Russian skies on the morning of Feb. 15, 2013, were published Nov. 6 in a pair of acclaimed science journals by an international coalition of space scientists -- including astronomer Bill Cooke of NASA's Marshall Space Flight Center and several other NASA researchers.

The teams of astronomers, "cosmochemists," "meteoriticists" and other space-science specialists, having painstakingly gathered and analyzed a wealth of data about the event from civilian observers and amateur videographers, authored three papers -- two in the latest issue of Nature and another in the newest edition of Science.

The atmospheric entry and airburst of the meteoroid over the Russian city of Chelyabinsk injured approximately 1,600 people on the ground. Shattered windows or structural damage were documented in more than 7,200 buildings, according to officials in that city. Read Cooke's detailed account of the meteor's descent and disintegration here.

The event -- unprecedented in modern times -- provided a valuable opportunity to study a rare but natural hazard that often preoccupies Cooke, he said, both as lead of the Meteoroid Environment Office at the Marshall Center and as author of NASA's Watch the Skies blog.

"These papers represent efforts by NASA's Science Mission Directorate and Office of Safety & Mission Assurance, along with the agency's global partners, to develop a complete picture of the Chelyabinsk event -- helping us better understand the behavior and effects of both large and small meteoric impactors," Cooke said.

"That's invaluable to our study of near-Earth objects and for the development of strategies to protect our planet from stray asteroids and other hazards from space," he added.

**Unexpected findings**

The findings published in Nature, to which Cooke contributed, reconstruct the path of the meteor and the damage caused by the explosion to determine the origin, trajectory and power of the airburst. The Science paper documents the circumstances that resulted in the shockwave, and establishes a benchmark for future asteroid impact modeling; the field studies that led to many of its findings are archived here.

Most startling? The findings suggest previous theories about the frequency of potentially dangerous meteoroid incursions into Earth's atmosphere may have been short of the mark. The number actually could be "an order of magnitude higher" than predicted in the past, according to a new Science article about the findings.

But people shouldn't worry unnecessarily, Cooke added. "Chelyabinsk-type events are still very, very rare," he said.

**Future research**

In the wake of the Chelyabinsk event and these new findings, the Meteoroid Environment Office at Marshall, the Near-Earth Objects Program Office at NASA's Jet Propulsion Laboratory and other NASA and partner organizations continue to work to develop better ways to detect potentially dangerous near-Earth objects, or NEOs, and to develop strategies for deflecting any found to be on a collision course with Earth.

NASA's recently announced asteroid initiative will be the first mission to identify, capture and relocate an asteroid. It represents an unprecedented technological feat that will lead to new scientific discoveries and technological capabilities that will help protect our home planet.

Aside from representing a potential threat, the study of asteroids and comets represent a valuable opportunity to learn more about the origins of our solar system, the source of water on the Earth, and even the origin of organic molecules that lead to the development of life.

This video shows a brilliant fireball over Lake Ontario in 2009. Fireballs that drop meteorites are rare, such as the case with the Chelyabinsk meteor.

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

# Partnership with Dynetics Reduces Risk for Space Launch System

*By Shannon Ridinger*

If you look up the word "partnership" in the dictionary, the following is a common definition: a relationship between individuals or groups that is characterized by mutual cooperation and responsibility, as for the achievement of a specified goal. The Flight Programs and Partnerships Office at NASA's Marshall Space Flight Center works every day to bring that definition to life by developing relationships across organizations at the center and the industry, academia and other government agencies that are helping them further space technology, research and development.

*Members of the Dynetics and Flight Programs and Partnerships teams stand in front an Advanced Booster Demonstration Cryogenic Tank Test Article on the Vertical Weld Tool for trimming and friction stir welding. From left are John Meyer, Todd Renz, both of Dynetics; Mike Ledford, Tim Vaughn, both of Marshall Center; Bob Meadows, Kim Doering, both of Dynetics; Jody Singer, of Marshall Center; Andy Crocker, of Dynetics; Mike Terry, Stacy Counts, Jon Street, Whitney Young and Joe Simpson, all of Marshall Center. (NASA/MSFC/Emmett Given)*

As the Marshall Center is leading the way among a variety of programs and projects critical to NASA's mission and goals, the Space Launch System (SLS) is at the forefront of the center's capabilities. SLS is America's next heavy-lift rocket capable of reaching deep space destinations. Developing and building the new rocket includes working with partners across many areas, and one of those is Dynetics Inc., based in Huntsville. The SLS Advanced Development Office is working with companies like Dynetics on advanced boosters and propulsion designs.

Dynetics and Aerojet Rocketdyne have teamed to begin development of a liquid oxygen and liquid kerosene advanced booster, powered by an advanced version of the Apollo-era F-1 rocket engine being developed under the name F-1B. The current engineering effort is focused on cost savings through advances in manufacturing and consists of design, analysis and testing. Dynetics' efforts in the structural design of the booster tanks have led to advances in the manufacturing process that reduce risk and save money.

"The partnership between Dynetics and the SLS Advanced Development Office is a great example of the kinds of relationships our organization wants to continue to help facilitate," said Whitney Young, a specialist in the Flight Programs and Partnerships Office at Marshall. She works to develop partnerships among the center and outside organizations. "We help companies utilize our capabilities at Marshall that allow them to further critical technologies needed for future space and science exploration. By doing this, it also allows us to meet our NASA agency goals and provides opportunities for our partners to participate in our mission, foster innovation and contribute to a strong economy," Young said. "It is truly a win-win situation."

Dynetics is working with multiple vendors on the advanced booster effort, and also is using NASA tools, such as the friction-stir-welding machine at the Marshall Center, to build a demonstration cryogenic tank to use in the testing. The work is being done through a NASA Letter of Agreement which provides floor space, equipment and tooling that allow Dynetics to make more rapid progress in the building of the demonstration tank, referred to as the Advanced Booster Cryogenic Tank Test Article. The Marshall Center is also helping with component deliveries, barrel handling logistics and the safety training needed to operate NASA equipment and facilities.

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

# University of Alabama Grads Go Back to Alma Mater to Talk SLS

*At left, University of Alabama students listen to a panel discussion Nov. 7 at the College of Communication and Information Sciences. Participating on the panel are, at front from left, Kristina Hendrix, an ASRC Federal/Analytical Services Inc. internal communications strategist; Shannon Raleigh, a Media Fusion Inc. education and public outreach lead; and Trey Cate, strategic communication lead -- all part of the Office of Strategic Analysis & Communications, supporting the SLS Program Office at the Marshall Center. Also participating on the panel, but not pictured, was Kim Henry, SLS public affairs officer in the Office of Strategic Analysis & Communications.*

*At right, Garry Lyles, SLS chief engineer, shares information about SLS with some 300 students during a panel discussion at the University of Alabama's College of Engineering. Serving on the panel with Lyles were Michael Kynard, manager of the SLS Liquid Engines Office; Sharon Cobb, assistant program manager for the SLS Program Office; and Michelle Taylor, a Boeing engineer supporting the SLS Program Office. (NASA/MSFC)*


*Shannon Raleigh, left, a Media Fusion Inc. education and public outreach lead, and Trey Cate, center, strategic communication lead, both in the Office of Strategic Analysis and Communications, supporting the Space Launch System (SLS) Program Office at NASA's Marshall Space Flight Center, talk to students about the new heavy-lift launch vehicle Nov. 6 at the University of Alabama in Tuscaloosa. Raleigh and Cate -- along with other Alabama alumni who now work at the Marshall Center -- were in "Roll Tide" country for a series of events highlighting the SLS Program. The SLS capability is essential to America's future in human spaceflight and scientific exploration of deep space, including Mars. (NASA/MSFC/Kirk Pierce)*

# ‘Thanks-for-Giving’ CFC Charity Fair Nov. 12


*Renee Higgins, right, manager of the Training and Incentives Office in the Marshall Space Flight Center’s Office of Human Capital, and this year’s executive chairperson for the center’s Combined Federal Campaign, or CFC, greets Anne Sentell and Weezy from Therapy Partners in Huntsville at the CFC “Thanks-for-Giving” charity fair. The non-profit Therapy Partners -- providing professionally trained handlers and animals as therapeutic tools in hospitals, schools and long-term care facilities -- was one of nearly 30 groups represented at the event Nov. 12 in the Activities Bldg. 4316. Organizations from Madison County and nearby areas spoke to Marshall Center team members about the many ways they can help those in need – including both financially and by volunteering. (Image: MSFC/ Emmett Given)*

# Obituaries

**Charles Adolphus Faulkner Jr.**, 88, of Huntsville, died Nov. 11. He retired from the Marshall Center in 1980 as an aerospace engineer.

**Roberto Garcia**, 51, of Huntsville, died Oct. 10. Garcia most recently served as the NASA Propulsion Technical Fellow for the NASA Engineering and Safety Center (NESC). Prior to that, Garcia managed the Solid Propulsion Systems Division and the Propulsion Systems Division, both at NASA’s Marshall Space Flight Center. In both of these assignments Garcia was responsible for assuring excellence in propulsion systems engineering support to the projects. Six years prior to becoming the division chief, he managed the Applied Fluid Dynamics Analysis Group (TD64) which was responsible for providing Marshall Center programs with fluid analysis, designs and technology development support. Garcia had 17 years of experience in performing aerodynamic, hydrodynamic and engine system design and analysis of rocket propulsion.