



GoddardView

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On the cover: A model rocket soars sky high on July 14 as families from around the area came to NASA Goddard's Visitor Center to show off their model rockets and compete to see who could land theirs on the moon.

Photo credit: NASA/Goddard/Talya Lerner

GoddardView

Goddard View is an official publication of NASA's Goddard Space Flight Center. *Goddard View* showcases people and achievements in the Goddard community that support Goddard's mission to explore, discover, and understand our dynamic universe. [Goddard View](#) is published weekly by the Office of Communications.

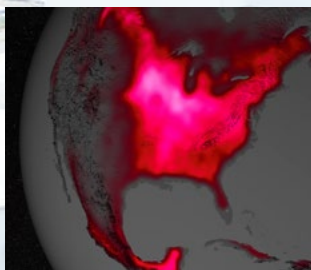
News items for publication in *Goddard View* must be received by noon Wednesday of each week. You may submit contributions to the editor via e-mail at john.m.putman@nasa.gov. Ideas for new stories are welcome but will be published as space allows. All submissions are subject to editing.

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THE WEEKLY

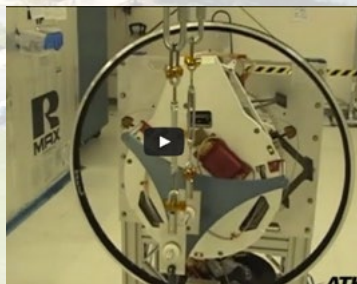
Seeing Photosynthesis from Space

During photosynthesis, plants emit what is called fluorescence—light invisible to the naked eye but detectable by satellites. NASA scientists have now established a method to turn this satellite data into global maps of the subtle phenomenon in more detail than ever before. Click on the image to learn more.



GOES-R Satellite Magnetometer Boom Deployment Successful

The GOES-R Magnetometer Engineering Development Unit made an important completed a successful boom deployment test at an ATK facility in Goleta, Calif. Click the image to watch.



NASA's New Chief Scientist

NASA Administrator Charles Bolden has named planetary geologist Ellen Stofan the agency's chief scientist, effective Aug. 25. Stofan will be Bolden's principal advisor on the agency's science programs and science-related strategic planning and investments.



MAVEN Spectrometer Opens Window to Red Planet's Past

When MAVEN begins its journey to Mars later this year, it will be equipped with the Neutral Gas and Ion Mass Spectrometer that will measure the charged gas particles—or ions—making up Mars' upper atmosphere. Explore more by clicking on the picture.



SCIENCE OUTREACH REACHES IN

By: Crystal Garner

Some 60 scientists, researchers, interns and outreach personnel manned stations for the annual Science Jamboree at NASA's Goddard Space Flight Center in Greenbelt, Md., on July 16.

Michelle Thaller, Goddard's assistant director of science for communications, led this year's science celebration, sharing the center's work internally.

With Goddard being home to the largest collection of scientists and engineers in the world, "It wasn't about inviting outside experts because we have the world experts here," Thaller said. "People talk about outreach, but there's also inreach; this is about reaching out to our [Goddard] community."

For personal education and inspiration, reaching out to inform internally helps employees keep track of what their friends and neighbors throughout Goddard are doing.

Jamboree speakers and notable guests included James Garvin, Goddard's chief scientist; Earth scientist Claire Parkinson; and prominent climate modeler Bill Putman. Summer interns had the opportunity to share their work and explore the work of others.

Students like Elizabeth Daly, an intern with the Planetary Magnetospheres Laboratory, came to explore. "Every day you're in your own little cubicle, but there's so much more going on," she said.

In contrast, Samim Manizade, an intern with NASA's Wallops Flight Facility came to share his research.

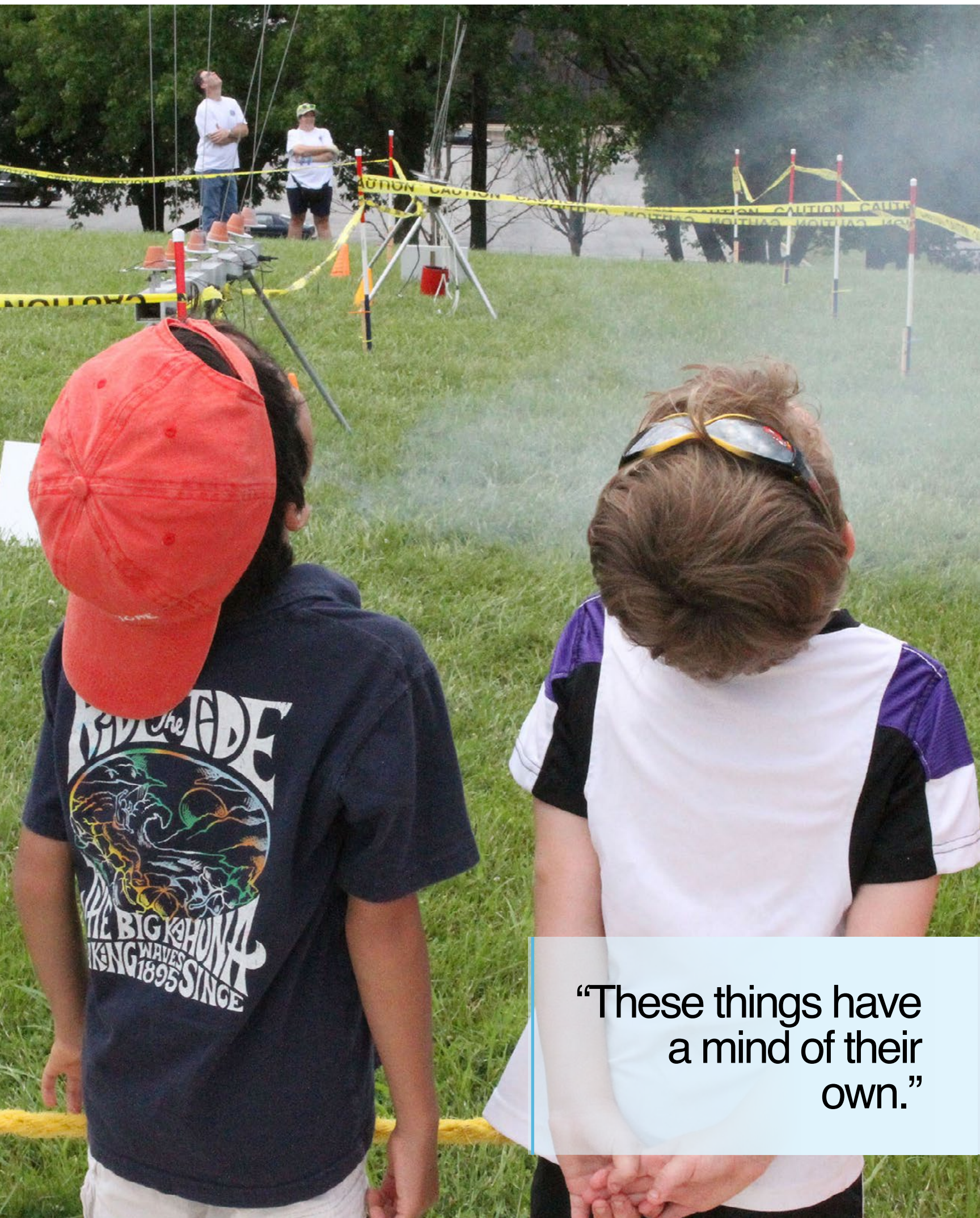
"My primary focus this summer has been studying climate changes on the Eastern Shore," he said, while showing a demonstration of remote sensing capabilities using a Lite-Brite display.

In addition to spending the day listening to experts and interacting with science projects and models, attendees had the opportunity to watch science visuals on the "hyperwall," a set of video screens that shows high-definition data visualizations and images.

While satisfying their science cravings, members of the Goddard community indulged in sweet treats from Curbside Cupcakes and TAMO Smoothies, available outside Building 28, where the jamboree was held.

In addition to the cupcakes and smoothies, Goddard employees left the jamboree with a broader view of the work going on at the center and a greater pride in what they do.

Above: Goddard's Astrobiology Lab made ice cream using liquid nitrogen at the center's Science Jamboree on July 16, 2013. The event allowed the different departments at Goddard a chance to showcase their research and projects to other employees and summer interns. Photo credit: NASA/Goddard/Sawyer Rosenstein. Click on the image to see more pictures.



“These things have a mind of their own.”



GODDARD HOSTS A BLAST TO THE PAST

By: Sawyer Rosenstein

Model rocketeers at the Goddard Visitor Center may have aimed for the moon, but when they missed, they most likely landed in a tree.

The visitor center in Greenbelt, Md., hosted a model rocket launch on July 14, 2013, where guests of all ages tried to land their rocket onto a 150-foot-wide “moon” represented by a circle outlined on the ground. The annual event was held this year in honor of the 44th anniversary of the first moon landing by Apollo 11. The contest challenged visitors to land their rocket as close as possible to the center of the moon, marked by a large American flag.

Guests’ rockets had to meet weight and safety requirements before being loaded onto two racks of launchers, each capable of holding up to six rockets. The person whose rocket was launched was able to pick between different strength rocket motors, and then angle the launcher to try and adjust for wind and the power of the engine.

Trying to land an uncontrollable rocket in a target about 75 feet away proved to be a challenge. Only 18 of the almost 100 rockets launched actually made it into the moon, with the rest either landing just outside of the target in the grass, in a tree or hundreds of feet away or in a parking lot.

“Before, I just launched in a field with my family,” 12-year-old Rachel Shaw said. “This time I had to position my rocket at the right angle so it wouldn’t go past the moon into space.”

Landing on the moon could only be described as, “Accomplishing,” Shaw said.

The rockets the contestants built ranged from simple white rockets with an orange nose cone to one painted purple and gold by the children who made it. Some of the more unique designs included rockets shaped like pencils, a lunar lander and a small, plastic pumpkin with a rocket engine inside.

“Getting to build the rocket was really fun,” seven-year-old Cub Scout Jack Hauprich said.

The contest was divided into two groups, ages 15 and younger, which made up the majority of the contestants, as well as a 16-and-older category. The closest rocket for the younger group landed slightly more than 16 feet away from the middle of the moon. The winner for the older group, Waymon Humphries, managed to get a perfect score, wrapping his rocket’s parachute around the flagpole.

“These things have a mind of their own, and don’t often do what you want them to do, which is the reason this one wrapped around the pole—pure luck,” Humphries said. “Aiming for a target is a lot more fun than putting a big engine in a rocket and watching it go out of sight.”

Each person who landed on the moon walked away with a model rocket kit. The top three in each age category also took home a trophy. The Goddard Visitor Center holds public rocket launches the first Sunday of each month. They also hold other types of model rocket contests during the year, including trying to get the highest altitude, achieve the longest time in the air or even deploying balsa wood gliders. In cooperation with the local chapter of the National Association of Rocketry, Goddard’s Visitor Center has been holding model rocket launches since 1976.

Opposite: Ashwin (left) and Michael watch model rockets fly. Photo credit: NASA/Goddard/Talya Lerner

Above: The award winning rocketeers who landed on the moon. Photo credit: NASA/Goddard/Talya Lerner

Click on either image to see more pictures.



GODDARD HOSTS 2013 SISTER PROGRAM STUDENTS

By: Talya Lerner

When I was in middle school, I had no idea what I wanted to do when I grew up. I still don't. So one can understand my shock when I met 35 middle school girls from the Washington metropolitan area who are already on track to be leading scientists, engineers and researchers.

From July 6 to July 12, the girls visited NASA's Goddard Space Flight Center in Greenbelt, Md., to participate in the Summer Institute in Science, Technology, Engineering and Research program. SISTER is designed to provide an opportunity for middle school girls to meet women working as engineers, mathematicians, scientists, technicians and researchers at Goddard.

Goddard has had outreach programs aimed at middle school girls for almost 30 years. Lisa Kelleher, now a resource management officer at the center, participated in a SISTER precursor in 1981. "I think the program helped me become more aware of what NASA can offer in terms of career opportunities," she said.

NASA scientists and engineers joined the offices of Education and Equal Opportunity Programs to inspire this year's participants. The girls learned about science, technology, engineering and math. They built rockets, were introduced to the concepts of robotics, and visited the Scientific Visualization Studio, where teams create animations and multimedia from satellite data to help communicate science.

"My favorite part of the program was watching [the girls] enjoy themselves, network, and engage with the scientists and engineers," said Marian Carson, an equal employment opportunity specialist at Goddard who co-manages the SISTER program with Sarah Brown, senior outreach coordinator.

"You have to tap into that spirit and turn that light on," said Brown.

Getting into this year's SISTER program was no small feat. Each of the girls had to fill out an application, write an essay, submit their science and math grades, and provide a recommendation from a teacher. When I asked the girls what they wrote their essays on, they answered in a whirlwind: global warming to terraforming Mars and even going to the Red Planet one day.

Dr. Amber Straughn, an astrophysicist at Goddard, taught them about the James Webb Space Telescope, designed to be the successor to Hubble and set to launch no earlier than 2018. It amazed me to see how much these girls already knew about the stars and our early universe. To be honest, these girls were asking and answering questions that I just learned in my college astronomy classes. I am not sure if this makes me look bad or them look smart, but I am really hoping for the latter.

These girls were even interested in what I do at Goddard. Suddenly I realized something. These seventh and eighth graders were eager to learn what they can do to be like me and work at NASA, when all I was doing was thinking how much I wish I could be like them.

I began to tell them that I am studying communications and astronomy at the University of Maryland and learning the exact same things Dr. Straughn had been teaching them about the different stars, planets and galaxies. I tried my hardest to make my communications internship sound exciting to them but all I got were blank stares.

"Have you girls ever read an article on the Goddard website?" I asked them. "Yeah!" some responded. I began to explain, "I learn from all the different scientists and engineers about what they do here at Goddard, and once I understand it, I write about it so you girls can understand and learn from it too."

Their blank stares soon turned into smiles. I was so used to hiding behind the computer screen writing everyday, that I forgot how important it is to be able to communicate to all age groups face-to-face. I was thrilled to see that these girls were excited about what I get to do as much as I am.

This year's SISTER program ended July 12 with a student-run closing ceremony. Parents shuffled in to cheer on their children and look at posters they made. The posters, lining the auditorium walls, described what the girls learned while they were at Goddard. The girls welcomed the guests, handed out flyers as people walked in and introduced the keynote speaker, astronaut Piers Sellers, Goddard's Sciences and Exploration Directorate deputy director.

Sellers explained that he thinks the best years to send humans to Mars will be about 2033 or 2034, when this year's SISTER participants will be in their early 30s. As he pointed to the crowd he said, "I am pretty sure one of these ladies will go to Mars." The girls began to look at one another, and you could tell they were picking out who they thought would be in that astronaut class.

While these girls are talented in science and math, they have an artistic side as well. As part of the closing ceremony they played piano, sang the national anthem and read poetry.

Asha Lang wrote a poem about the mysteries of the universe and how it will be these girls' jobs to solve them. She concluded with:

"This is our course, our life, our game,
And perhaps that will lead us to fame."

I know one day, I will be there covering their discoveries, and I can't wait. ■

Above: The 2013 SISTER participants. Photo credit: NASA/Goddard/Debra McCallum

Below: Some of the girls engaged in a color spectrum activity. Photo credit: NASA/Goddard/Debra McCallum





ENGINEERING AS A COMPETITIVE SPORT

By: Cynthia O'Carroll

Despite competing against 26 other teams, the students mentored by NASA Goddard's Kamili Jackson, Sanetra Bailey and Renee Reynolds were too tough to beat. In March 2013, a group of their students won first place in the Engineering Design Competition at the 39th Annual Convention of the National Society of Black Engineers held in Indianapolis, Indiana.

The Engineering Design Competition is one of three competitions high school students from the Maryland, D.C. and Virginia area participated in during the 2012/2013 school year. The teams spent countless Saturdays designing and building their robots using the LEGO MINDSTORMS NXT Base Set that enables students to build and program real-life robotic solutions. Instead of using the LEGO software, the Goddard mentors decided to have the students use a real world software program called Robot C. The four students had to build a robot that would lift a large, grapefruit-sized foam ball, aim and then shoot it thru a 9.5-inch basketball net.

The students not only had to build and program their robot, but they also had to write a technical report and give an oral presentation. Participation in these activities provides cross-curricular opportunities in science, technology, engineering, and math. The advice provided by the NASA Goddard mentors allows the students access to professionals they may never encounter in their home or school life. Further, they learn to work as a team while brainstorming complex solutions to engineering problems.

"This win was not only a win for the competing students, but a win for our entire NSBE Jr. (National Society of Black Engineers) chapter. All of the students dedicated time to expanding

their knowledge, taking on new challenges and accomplishing their goals for the year," stated Bailey. "Seeing the students engaged and excited encourages me to continue inspiring the next generation. The ultimate win is that the students can take the knowledge and lessons learned into their future STEM world."

Introducing young people to complicated engineering concepts in an inventive way is just as rewarding for the mentors, and since 2008, these NASA Goddard professionals have done just that in their spare time. Each of the three engineers have fond memories of how their teachers and other professionals inspired them as young women struggling to find their niche in careers traditionally held by men.

Jackson, a product assurance engineer in the Mission Assurance Branch of the Safety and Missions Assurance Directorate, was the first of the three women to recognize that she had a lot to offer high school students in the local area. She, along with others, started the National Society of Black Engineers Future Innovative Rising Engineers, Junior Chapter. Next to sign up to help inspire students were two equally enthused women from the Applied Engineering and Technology Directorate, Reynolds, an electrical engineering supervisor with the Instrument Electronics Development Branch, and Bailey, a computer engineer with the Science Data Processing Branch.

Jackson develops the yearly projects that will engage students in solving real-life problems using engineering skills in fun hands-on activities. Bailey and Reynolds support with mentoring and fundraising for materials and travel expenses. During the 2012/2013 school year, they took on the engineering robotic challenge, an Amazing Race-like competition and a rocketry competition.

They participated in the robotic "Amazing Race" challenge in April 2013 which was set up in a similar way as the television show, except moving to the next level required the team to solve math and science problems. One step required the team to build and race a car using a mousetrap kit and compact discs for wheels. For the finale, the teams participated in a Jeopardy-style game with math questions.

The Team America Rocketry Challenge competition, sponsored by the Aerospace Industry Association, required the students to design and build their own rockets within strict guidelines. They had to reach exactly 750 feet, carry one raw egg sideways and have a total flight time of between 48 to 50 seconds. The teams used the classic engineering cycle of design, build and test.

First they designed their rocket in a program called "Rocksim," which uses complicated math formulas to model the rocket. Then they built and tested their rockets to see how they worked in the real world. Using the information they learned from the first attempt, they began the process again, modeling a modified design, building the modified design and testing until the teams came as close as possible to the goal.

Out of more than 700 initial entrants, the rocketry team mentored by NASA Goddard employees finished 22 out of 100 finalists.

"We are certainly proud of our accomplishment and want to do even better next year but winning is not always the measure of success. The true measure is watching the light bulb go off in students' heads as they connect concepts to real

life, discover new areas of interest, accomplish something difficult and get a real idea of what working as an engineer might be like," said Jackson. ■

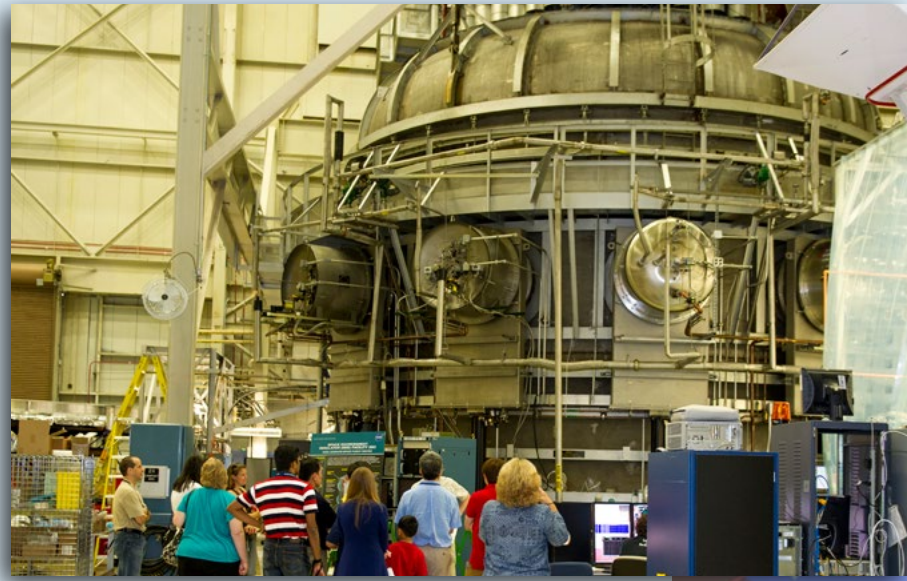
Above: Engineering Design Competition Team with Coach - L to R Coach Sanetra Bailey, Jahmyire Jones, Shannon Kirkland, Isiah Crite, and Wesley Ross. Photo credit: Kamili Jackson

Below: Engineers Sanetra Bailey, Kamili Jackson and Renee Reynolds with 1st place award for 2013 Engineering Design Competition NSBE 39th Annual Convention. Photo credit: NASA/Goddard/Bill Hrybyk



EMPLOYEE ENGAGEMENT ACTIVITIES INSPIRE

By: John M. Putman



On July 16–18, Goddard employees explored and discovered the center through knowledge sharing and team building activities. With diverse activities held on each day, there was something for everyone.

On July 16, employees and their families got to see the Webb Telescope, the Magnetospheric Multiscale mission and the Deep Space Climate Observatory before they launch during tours of the Spacecraft Test and Integration Facility.

Also on July 16, the Goddard Science Jamboree filled the atrium in Building 28. Visitors experienced displays and demonstrations from all Goddard Science Divisions, 3D movies in the Scientific Visualization Studio and presentations on the Hyperwall.

Later that afternoon, Ed Rogers, Goddard Knowledge Officer, gave a presentation about a project's life cycle. The presentation walked through a project, beginning with idea concept through obsolescence.

Employees chased down clues as part of the Goddard Scavenger Hunt on July 17. Teams had one hour to find and photograph at least five of the many items on the super-double-top-secret list.

The New and Developing Professionals Advisory Committee hosted an open conversation with Judy Bruner, Director of Safety and Mission Assurance, about staying motivated and passionate in your work.

On the morning of the 17th, the Goddard Visitor Center presented model rocket launch demonstrations.

In "Name the Org," two teams of employees competed to correctly answer the most questions related to Goddard organizations.

To cap of the days of activities, NASA Astronaut Thomas Marshburn of Expedition 34/35 shared his extraordinary spaceflight experiences with the Goddard community. ■

Photo credit: NASA/Goddard/Bill Hrybyk



i am goddard

By: John M. Putman

NO MAY NOT MEAN NEVER

A constant and committed learner, Karen Weaver has several master's degrees and says she will someday go back to school. Her restlessness has shaped her education and her career.

Having recently become a supervisor, Weaver can see both sides of the "i am goddard" value of having meaningful conversations with your supervisor. Her experiences, both personal and professional, have shown the value of meaningful conversations to supervisors and others.

"One thing I am really grateful for is that I've never been afraid to ask people for anything. All they can say is yes. They can say no. They can say maybe. But, if you don't ask, if you don't have the conversation, then you will never know what you're going to be able to do. And remember, no may not mean 'never'; no may mean 'not now.'"

One example of Weaver having a meaningful conversation with her supervisor completely changed her career trajectory. "I went to the head of procurement and said I want to move into a whole other field. I met somebody who knew somebody and somehow finagled my way from Procurement into the training office."

Conversations with a supervisor don't always result the way one would like. From her years of coaching, Weaver offers ways to overcome the effects of hearing "no."

"They [supervisors] could say no but it won't be the end of the world if you learn that every time you ask for something, they're not going to say yes.

Don't get so stuck on the 'no' that you can't see other opportunities. The 'no' gives you an opportunity to shift your focus."

Preparation is vital for both parties, especially if the conversation is going to be a challenging one. "I try to prepare people for difficult conversations by telling them ahead of time that the conversation will be hard for you and it will be hard for me too."

Weaver believes that these kinds of conversation are vital to one's career and to one's personal life. "I think that's how we are able to really move around. I think that's how we're able to do our work. It's really through having powerful and meaningful conversations. Having that authenticity, trust and you can't do it without being able to connect to people."

"Conversations are key because everybody has some level of influence. Learning to have powerful conversations is key to your success." ■

Below: Weaver, a licensed pastor, in the pulpit of her church. Photo credit: NASA/Goddard/Bill Hrybyk

