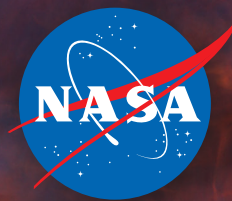


National Aeronautics and Space Administration



GoddardView

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GoddardView

TRENDING



Jim Bridenstine Takes Office as New NASA Administrator

Previously a U.S. representative from Oklahoma, Jim Bridenstine was confirmed by the U.S. Senate as the 13th administrator of NASA. He took office on April 23 after being sworn in by Vice President Mike Pence.

NASA's Planet Hunter Sets Off Into Space

The Transiting Exoplanet Survey Satellite launched from Cape Canaveral Air Force Station in Florida on April 18. The mission will search for planets beyond our solar system, including some which could support life.



NASA Celebrates Earth Day at Union Station

Scientists, engineers and others across the agency gathered at Union Station in Washington, D.C., from April 19 to 20 to celebrate Earth Day and engage the public around NASA's work in Earth science and other fields.

Maryland Students Connect With NASA Astronauts

Students from Anne Arundel County, Maryland, gathered at South River High School in Edgewater to speak with astronauts Ricky Arnold and Drew Feustel, both of whom serve on the International Space Station.



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On the cover: Hubble's 28th anniversary image, the Lagoon Nebula, captures the roiling heart of a vast stellar nursery.

Image credit: NASA, ESA, Space Telescope Science Institute

GoddardView Info

Goddard View is an official publication of NASA's Goddard Space Flight Center in Greenbelt, Maryland. Goddard View showcases people and achievements in the Goddard community that support the center's mission to explore, discover and understand our dynamic universe. Goddard View is published by the Goddard Office of Communications.

You may submit story ideas to the editor at darrell.d.delarosa@nasa.gov. All contributions are subject to editing and will be published as space allows.

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GCDC TEACHER SHINES ON THE NATIONAL STAGE

By **Syretha Storey**

On a typical school day at the Goddard Child Development Center, you can find Lakshini Wijeweera artfully teaching her prekindergarten students. A teacher at the center for more than 19 years, Ms. Lakshini – as her students know her – has been recognized locally for her exceptional teaching in many ways throughout her career.

Her latest honor, however, came on the national level as she was named a recipient of the Terri Lynne Lokoff National Children's TYLENOL Children's ZYRTEC Child Care Teacher Award.

Given annually by the Terri Lynne Lokoff Child Care Foundation since 1994, the award acknowledges the critical role of child care teachers in providing quality early care and education. The foundation was created in 1987 by Fred and Kay Lokoff in honor of their daughter Terri Lynne, an early education teacher who died in a car crash a year earlier. Its mission is to improve the quality of programs that care for and educate children through 5 years of age.

For this year's award, a committee of national early childhood educators and experts reviewed, scored and ranked hundreds of applications from all 50 states and the District of Columbia, as well from U.S. military bases and installations around the world, and Wijeweera was selected to represent Maryland.

"Lakshini has the remarkable ability to bring her lessons to life. Her attention to detail, knowledge of developmentally appropriate practices and work ethic make her a remarkable teacher and respected professional," said Leona Dickens-Adams, GCDC assistant director. "We are so pleased that the Terri Lynne Lokoff Child Care Foundation award gives her the national recognition she so richly deserves."

The committee acknowledged Wijeweera as one of the top 10 applicants. During a ceremony in Philadelphia in April, Wijeweera received a \$1,000 award – \$500 to implement a

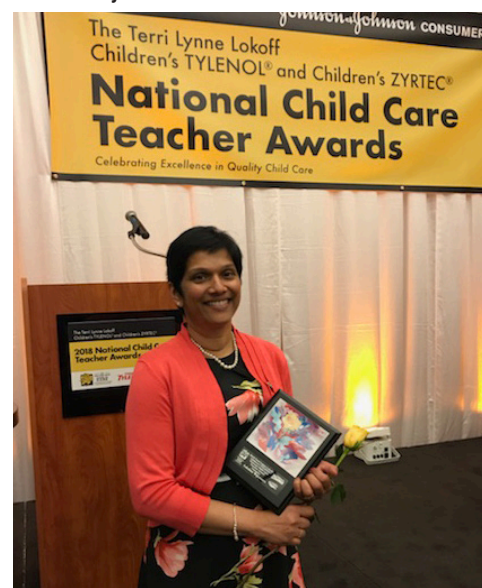
proposed project and \$500 to acknowledge her dedication to early childhood education.

Wijeweera's project, "The World Through The Eyes of a Preschooler," will incorporate digital cameras in the classroom to make children's experiences more meaningful. "Not only will this experience improve the children's fine motor skills as they learn how to hold a camera steady and focus on what they want to capture. The children will also learn how to use the cameras as a tool to see the world," she said.

Recipients were also given a tour of the city and networked to exchange ideas for their respective classrooms. ■

Above: Goddard Child Development Center teacher Lakshini Wijeweera (center) with her prekindergarten students. Photo credit: NASA/Goddard/Syretha Storey

Below: Lakshini Wijeweera holds her award from the Terri Lynne Lokoff National Child Care Foundation. Photo courtesy: Lakshini Wijeweera





WORKPLACE SAFETY: WHAT'S HEALTH GOT TO DO WITH IT?

By **Darrell Dela Rosa**

One might not normally associate an employee's health with a desire to commit espionage. As NASA counterintelligence agent Chris Breil pointed out during the Goddard Safety Awareness Campaign, however, history is replete with examples of spies who carried out their acts while others ignored the health conditions which may have led them in part to compromise the safety and security of their country.

Every year in April, the campaign connects employees with some of the foremost safety experts as part of the center's continuous commitment to cultivating safety practices inside and outside of its gates. For an entire week across campus, personnel gathered for this year's event in auditoriums and training rooms to gain insight into some of the more traditional topics associated with a safe working environment, from evacuations and electricity to close calls and CPR – nearly 100 courses and activities in all.

The central theme of the campaign, though, underscored what Breil and other speakers determined to be an often overlooked component of workplace safety: the overall well-being of the workforce.

Campaign organizers began convening last summer to come up with a slogan that would focus directly on those who develop, analyze, administer and support Goddard's missions. "We chose 'Total Worker Health: Live Well; Work Well' because it encompasses the complete person," said John Pak, co-chair of the campaign. "We are so much more than pieces of a person when we come to work. The campaign wanted to highlight how what we do at home and in the workplace affects us."

To kick it all off, researchers Chia-Chia Chang and Sara L. Tamers from the National Institute for Occupational Safety and Health – a unit within the Centers for Disease Control and Prevention – gave the keynote presentation in which they defined the Total Worker Health paradigm and highlighted psychosocial factors, such as work-related stress and individual conflicts, which directly impact well-being in our personal and professional capacities. "The elements of everyday work impact the safety and health of workers both on and off the job," said Tamers. "In addition to keeping workers safe, the concept of Total Worker Health promotes policies, programs and practices that grow the health of each employee."

During his opening remarks, Center Director Chris Scolese noted the correlation between the campaign's purpose and Goddard's overarching goals. "Having a culture of safety success leads directly to a culture of mission success," he said.

Several sessions throughout the week leveraged the points of Chang and Tamers' initial discussion, addressing such matters as stress relief, drug use, ergonomics, eating habits and cancer prevention. A series of demonstrations in the Building 28 atrium presented available options for advancing worker health, including participation in Goddard activity clubs.

Each of the center's directorates also gathered for their annual stand-down sessions – gatherings in which they discussed safety issues and concerns unique to their organizations.

Injecting levity into the week's serious subjects, Chief Financial Officer Steve Shinn served as host for Safety Jeopardy, a trivia contest based on the popular television quiz show "Jeopardy!" Representatives from the Goddard Sciences and Exploration Directorate claimed the competition's Safety Cone Award, dethroning the two-time defending champions from the Goddard Applied Engineering and Technology Directorate.



Whether it was a talk about espionage or a playful reinvention of a game show, the week showcased the various elements of safety that lead to a more competitive, productive and healthy workforce.

"The campaign is important to the Goddard community because it allows us to pause once a year to reflect and learn about why safety is so important to us," said Pak. "After all, safety is one of our missions." ■

Center: Health researchers Chia-Chia Chang (left) and Sara L. Tamers delivered the campaign's keynote presentation. Photo credit: NASA/Goddard/Debora McCallum

Opposite, top: Goddard Chief Financial Officer Steve Shinn served as host for Safety Jeopardy. Photo credit: NASA/Goddard/Bill Hrybyk

Opposite, bottom: The Goddard Cuong Nhu Karate Club was one of several clubs demonstrating healthy physical activities in Building 28. Photo credit: NASA/Goddard/Bill Hrybyk



GODDARD SYMPOSIUM EXPLORES THE

Sponsored by the American Astronautical Society and supported by NASA's Goddard Space Flight Center, the annual Robert H. Goddard Memorial Symposium brings together leaders across government, industry, policy and academia to determine the future direction of spaceflight and space technology.

Under the theme "Exploration, Science and Technology: Partnerships for the Next Decade," the 56th edition of the symposium was held from March 14 to 15 at the Greenbelt Marriott in Maryland.

"The Goddard Symposium once again invited speakers and panelists who could capture both the excitement and the challenges ahead in the human and robotic exploration of space, ranging from the Earth sciences and cosmology to advancing new designs in rocket propulsion," said Goddard's Harley Thronson, the event's program planning committee chair.

AAS President Carol Lane delivered the welcome remarks and highlighted the importance of partnerships. She also encouraged college students in attendance to make a difference.

Opening speaker Carissa Christensen, CEO of Bryce Space and Technology, spoke about the global space economy and the rising space startup industry which caters toward risk-tolerant investors looking for high returns.

Goddard Center Director Chris Scolese introduced the keynote speaker, then-NASA Acting Administrator Robert Lightfoot, who provided a framework for where we are as

an agency and a nation in the areas of seven Ps: purpose, policy, progress, people, passion, partnership and performance. He said the NASA team is bigger than any individual, and he looks for NASA to move forward in the next decade with industrial partnerships.

"The whole value of what we do from an agency perspective is being part of something bigger than yourself," he told the audience.

Krista Paquin, deputy associate administrator at NASA Headquarters in Washington, moderated a panel of other NASA leaders on advances and partnerships in the next five years.

"We like to look for partnerships with a commercial infusion potential," said James Reuter, deputy associate administrator for programs in the NASA Space Technology Mission Directorate.

Luncheon speaker Bill Barry, NASA chief historian, highlighted the 60th anniversary of the forming of NASA in 1958, while AAS announced its 2017 fellows and award recipients, which were presented to three teams and eight individuals, including astronaut Peggy Whitson.

Following panel discussions on Goddard's science missions and developing the workforce of tomorrow, Freeman A. Hrabowski III – president of the University of Maryland, Baltimore County – described the importance of STEM diversity, mentors and hand-on experiences for students that can be achieved through partnerships.



By **Michael Calabrese**

U.S. Sen. Chris Van Hollen of Maryland opened the symposium on the second day, encouraging the United States to continue its leadership in space by relying on input from “real scientists as opposed to political scientists.”

He also channeled the teachings of influential physicist Stephen Hawking, who recently passed away, and thanked former U.S. Sen. Barbara Mikulski for her decades of support to NASA.

Another opening speaker, Bill Wrobel – director of Wallops Flight Facility in Virginia – described technology and partnerships enabling the next decade.

Phil McAlister, director of the NASA Commercial Space Flight Division in Human Exploration and Operations, moderated a panel on innovative partnerships and said all partners should have aligned goals and share technology provisions, resources and risks.

Steve Volz, assistant administrator for satellite and information services at the National Oceanic and Atmospheric Administration, gave a luncheon talk on his agency’s Environmental Satellite Program and the importance of partnerships between NASA and NOAA.

Goddard planetary scientist Lori Glaze described the six Venus missions to date and the importance of the next mission for in situ atmospheric and surface measurements to study the evolution of habitability on the planet.

Following a conversation on future space strategy, Ben Reed of the Goddard Satellite Servicing Projects Division

moderated a panel on space robotics and traced the history of space robotic servicing back to the Solar Maximum Mission in 1984 all the way through five Hubble servicing missions and 42 International Space Station assembly missions.

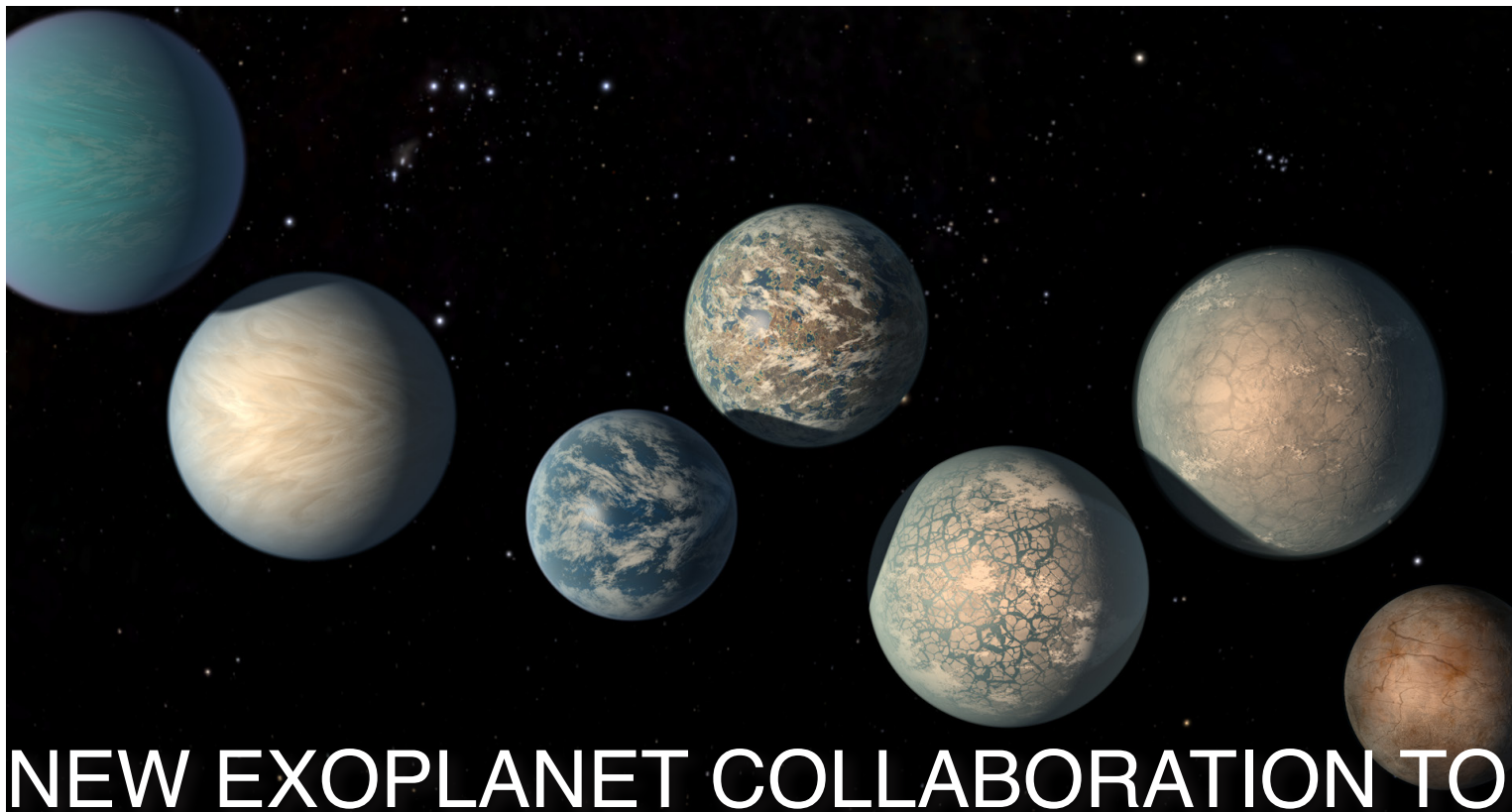
A closing conversation with Scolese, Frank DeMauro of Orbital ATK, Debra Facktor of Ball Aerospace and Goddard Chief Scientist Jim Garvin gave insight into what the space industry may look like 10 years from now and beyond.

Jim Way, AAS executive director, said, “This year’s Goddard Symposium truly brought the entire space community together, including a large student population, to discuss all aspects of the industry. The AAS is very appreciative of everyone’s efforts and participation in making this event such a great success.” ■

For complete video recordings of the symposium, visit www.astronautical.org.

Above: Carissa Christensen delivers opening remarks on the first day of the symposium (left). Then-NASA Acting Administrator Robert Lightfoot addresses students attending the symposium (center). Panelists talk about the state of Goddard’s science missions.

Photo credits: NASA/Goddard/Bill Hrybyk



NEW EXOPLANET COLLABORATION TO

By [Jeanette Kazmierczak](#)

Earth's early days featured a catalog of environmental horrors including vigorous volcanic activity, an atmosphere lacking oxygen and a sun that blasted our planet with X-ray flares and storms of charged particles more intense than what we see today. All in all, the young Earth doesn't sound as if it was a particularly hospitable place for the development of life. A better understanding of how life acquired and maintained its toehold on Earth will help prepare scientists for assessing conditions around worlds beyond our solar system, also known as exoplanets.

It's a fitting topic for the Sellers Exoplanet Environments Collaboration (SEEC), a new interdisciplinary collaboration at NASA's Goddard Space Flight Center, which is exploring how the first molecules needed for life could have developed in such unlikely conditions.

SEEC hosted its first annual symposium at Goddard in April. Titled "Environments of Terrestrial Planets Under the Young Sun: Seeds of Biomolecules," the meeting brought together researchers from eight countries to discuss how our knowledge of the early days of the solar system can be leveraged to study the environments of other worlds.

Researchers presented what is currently known about the conditions on planets like Earth and Mars under the early sun, including how solar activity, climate and weather could have affected the development of biomolecules, the precursors of RNA and DNA, which are essential to life as we know it.

Attendees deliberated on how to best shape future research on exoplanet environments. Their conclusions will be submitted to journals for review by the scientific community.

Formed in 2017, SEEC's initial goals are to produce high-quality, cross-divisional research at Goddard, promote similar work in the larger scientific community and provide outreach by hosting workshops and facilitating collaboration across disciplines.

"Named after our preeminent astronaut and NASA science champion, the late Piers Sellers, SEEC will reveal valuable insights about the diversity of exoplanet atmospheres and climate," said Colleen Hartman, director of the Goddard Sciences and Exploration Directorate. "This initiative harnesses Goddard's ability to combine capabilities from all of our science divisions — astrophysics, heliophysics, Earth sciences and solar system. Pooling our talent and resources gives us a significant advantage in our mission to answer the most pressing questions about our universe. With this collaborative approach, we will continue to blaze trails in scientific exploration and discovery."

Avi Mandell, a Goddard astrobiologist and SEEC's director, said these efforts are focused on preparing the tools scientists will need to interpret data from NASA exoplanet missions over the next 10 to 20 years.



EXPLORE MOLECULAR SEEDS OF LIFE

For example, the James Webb Space Telescope will use spectroscopy, the study of the absorption of light, to discover what molecules are in exoplanet atmospheres by looking at how they absorb light in the infrared.

“Right now, even if we succeeded in measuring a high-quality spectrum of a potentially habitable planet, we would only have the basic building blocks of the tools needed to interpret that spectrum and determine what the data are telling us about the planet,” he said. “The long-term goal from all of SEEC’s work is to be ready with a set of integrated and well-tested tools, institutional knowledge and collaborative relationships so we can dive into this type of research when the data arrive.”

Part of that effort is housed in the Exoplanet Modeling and Analysis Center (EMAC), which is home to community modeling and analysis tools with an accessible web interface.

A central hub for codes like this will help improve standardization and efficiency, explained Bill Danchi, a Goddard astrophysicist and deputy director of SEEC.

“EMAC is modeled on the Community Coordinated Modeling Center, which was developed by heliophysicists through NASA and the National Science Foundation,” Danchi said. “Without it, everybody would be spending a lot of time writing their own versions of the same algorithms — reinventing the wheel. With EMAC, users will be able to access tools through a web interface, and users

can combine tools and add modules to do their new bit of physics. It’s more efficient. There’s agreement that the code is good, and it’s well tested by users in the community. It will produce numbers that make sense.”

Vladimir Airapetian, a Goddard astrophysicist and a member of the SEEC leadership team, said the goal of the meeting was to hammer out what we have, what we don’t have and what we need to move forward with exoplanet environment studies. The interdisciplinary background of the attendees reflects a crucial aspect of both the symposium and SEEC as a whole.

“Imagine that life is a big elephant in a dark room. You’re just seeing one of the legs, and therefore you call it life,” Airapetian said. “Another guy looks at the trunk and says, this is life. Goddard is the place where trunks and legs unify in three dimensions. That’s the only way to approach it, to bring those people together. ■

Above, left: The Sellers Exoplanet Environments Collaboration will help scientists build the tools needed to study the atmospheres and climates of exoplanets — like those of the TRAPPIST-1 system — and look for biomolecules that could be the foundation for life. Image credit: NASA/ Goddard

Above, right: The logo of the Sellers Exoplanet Environments Collaboration. Image credit: NASA/Goddard



Quintin Schiller

Code 672, Research Scientist

Why Goddard?: Goddard is the premier facility for my professional interests.

Hobbies/interests: anything my 3-year-old is interested in, board games, sci-fi novels, brewing beer



Mayria Morris

Code 703, Resource Analyst

Why Goddard?: NASA is saving our planet and impacting so many lives. I want to be part of something larger than myself.

Hobbies/interests: traveling, line dancing



Kharla Malave Gonzalez

Code 155, Student Business Trainee

Why Goddard?: I had an amazing internship experience. The people made me want to come back.

Hobbies/interests: family, reading, traveling, amusement parks, crafts



Donald Ellison

Code 595, Aerospace Engineer

Why Goddard?: To be a part of a world-class team of trajectory optimization experts.

Hobbies/interests: parenting, swimming, running, software development



Darlease Hyman

Code 120, Equal Opportunity Specialist

Why Goddard?: I wanted an opportunity to work at a great agency that was ranked among the best places to work.

Hobbies/interests: different kinds of dancing



Paul Edward Markie

Code 224, Mechanical Engineer

Why Goddard?: Witnessing the space shuttle Columbia's inaugural launch is one of the many reasons.

Hobbies/interests: family, traveling, photography, automobiles, sports, reading

EMPLOYEE SPOTLIGHT

Goddard is pleased to welcome these new employees to the NASA community.



Hari Subedi

Code 551, Pathways Intern

Why Goddard?: Interest in detecting and characterizing planets outside our solar system.

Hobbies/interests: sports, outdoors, music, movies, travel

KIDS TAKE OVER GODDARD FOR TAKE YOUR CHILD TO WORK DAY



Kids often wonder exactly what their parents do for a living. On April 26, the children of employees stepped in their parents' shoes during the annual Take Your Child to Work Day. The center offered tours of select facilities and organized activities to give NASA's future generations inspiration for moving the agency's work forward in the decades to come. ■

Photo credits: NASA/Goddard/Bill Hrybyk

JESSICA THOMPSON: CREATING A NEW PATH EVERY DAY

By [Elizabeth M. Jarrell](#)

What do you do and what is most interesting about your role here at Goddard? How do you help support Goddard's mission?

I'm a systems engineer supporting flight projects and proposal development. Depending on the phase of the mission, my role varies between design, integration and testing all the way through launch and on-orbit operations. For some projects, I have been involved from end to end. For others, I have only been a part of the project for a specific phase.

What is your current project?

I am the deputy project systems engineer on a proposal called Focusing Optics X-Ray Solar Imager (FOXSI). If approved, FOXSI would explore impulsive solar magnetic energy releases with direct hard X-ray imaging spectroscopy. FOXSI is a proposal under the Heliophysics Small Explorer Announcement of Opportunity. Step Two selections will be made around May 2019.

With your background in physics, why did you decide to work as a systems engineer?

My goal is to help bridge the gap between engineers and scientists. I love the science. Being able to execute it from an engineering standpoint is very fulfilling. Looking across the science and the engineering gives me so much to think about and so much to do.

What was your first project as a systems engineer?

In 2010, I began working on the Magnetosphere Multiscale mission, which launched in March 2015. I focused on fault detection and correction for the spacecraft and instruments. This was a particularly fun role because you get to ask, "How could the hardware or software fail and what can we do to prevent it?" The goal is to ensure the spacecraft stays power and thermally safe and continues to gather important science data.

What is most important about systems engineering?

In all phases of a mission, it is important to be available to the team. This means being in the clean room, in the control room and wherever the engineers are working so that you are aware of what is going on day to day. Communication between the engineering team members is critical to mission success, and I

spend a lot of time making sure connections between different disciplines are made. Even in the early phases of a mission, as design decisions are being made, it is important to evaluate the impacts each decision has on the system as a whole.

What lessons or words of wisdom would you pass along to somebody just starting their career at Goddard?

Goddard held a leadership colloquium led by Daniel Pink a few years ago. He talked about what makes people happy in their job. He said you need mastery, autonomy and purpose. That really resonates with me. I have found that working for NASA provides the autonomy to explore your own career path and keep learning every day.

Who inspired you?

My paternal grandmother always inspired me. She was forever learning. She got a Ph.D. in psychology at age 67. She was very open-minded, always encouraging all of her grandchildren to think outside the box and remember that we can do anything and change our path at any time. Her advice really stuck with me and is what drove me into systems engineering.

Is there something surprising about your hobbies that people do not generally know?

I really enjoy outdoor activities. I learned to snowboard while I was in high school. I like fishing, camping, hiking and biking. I like all kinds of water sports: waterskiing, paddle boarding, kayaking and canoeing. I've been fishing on almost every vacation. Something people don't know about me is I have some experience fixing cars. A few summers ago I replaced and rebuilt the engine and clutch in my Jeep. My dad owned a transmission shop for 20 years and made sure I knew how to take care of my vehicles.

What is your "six-word memoir?" A six-word memoir describes something in just six words.

Outgoing. Open-minded. Laid-back. Patient. Considerate. Dependable. ■

Center: Jessica Thompson

Photo credit: NASA/Goddard/Bill Hrybyk

