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GoddardView

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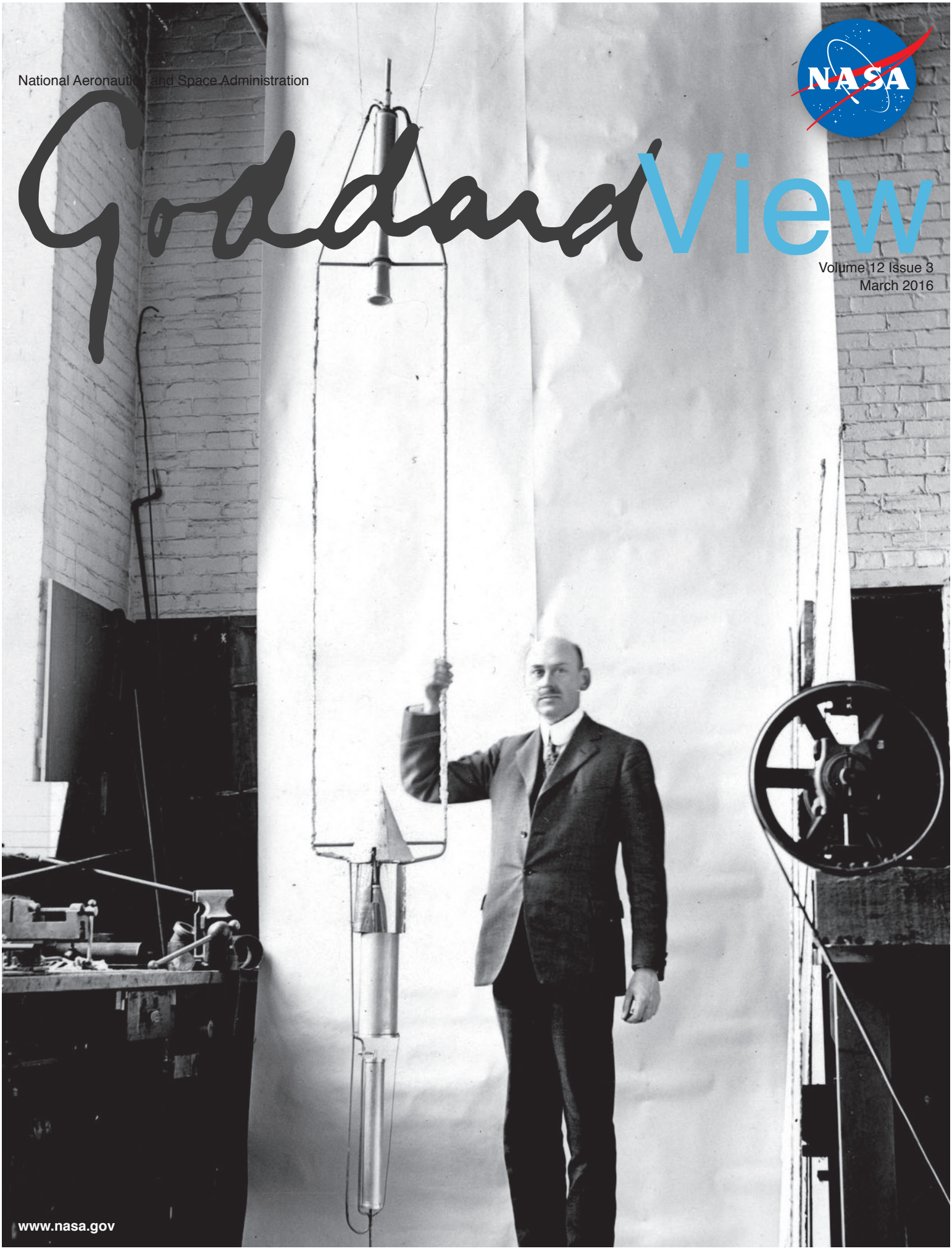

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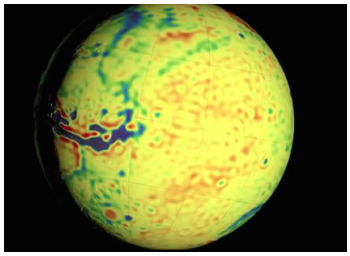
TRENDING

NASA Launches Earth Expeditions
This year, NASA is sending scientists around the world to confront the tough questions about how the planet is changing. Results from these field campaigns will be shared through social media channels, videos, photos, blog posts and web features.

My Brother's Keeper Participants Visit Goddard
Five local schools and organizations toured Goddard in March as part of My Brother's Keeper National Lab Week, a nationwide effort to engage students from underrepresented communities in STEM education.

Goddard Scientist Appears on CNN Public Affairs Show
Piers Sellers, Goddard deputy director of sciences and exploration and former NASA astronaut, appeared on the March 20 episode of "Fareed Zakaria GPS" to discuss climate change and his ambitions in life.

Mars Gravity Map
NASA has released a new map illustrating the gravitational forces on Mars. Made with three NASA spacecraft, the map — the most detailed of its kind to date — provides a revealing glimpse into the hidden interior of the Red Planet.



GoddardView

Trending – 2
Goddard Library Shelves Its Past and Goes High Tech – 3
It's Competitive Out There: Planetary School Teaches Young Scientists the Art of Instrument Design – 5
Goddard Symposium Highlights Opportunities and Challenges in Coming Decade – 6
From Midwest to Maryland: Students Take Annual Road Trip to Goddard Symposium – 8
Celebrating 90 Years: Robert Goddard's Rocket and the Launch of Spaceflight – 9
For Women's History Month, Goddard Welcomes NASA's Current and Future Leaders – 10
Goddard Engineer Wins Prestigious Washington Award – 11
Stephanie Milam: Studying the Volatile Universe – 12

On the cover: Robert Goddard with his liquid-fueled rocket that launched in 1926. In March, NASA's Goddard Space Flight Center celebrated the 90th anniversary of the launch.

Photo credit: U.S. Air Force

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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.

CONTENTS

GODDARD LIBRARY SHELVES ITS PAST AND GOES HIGH TECH

By Clare Skelly

Sunlight welcomed by 50-year-old floor-to-ceiling windows fills the modern, renovated library at NASA's Goddard Space Flight Center. On March 18, the Homer E. Newell Memorial Library reopened as the Goddard Information and Collaboration Center, or GIC^2, following 10 months of renovations. The redesign integrates the library stacks and reading room space with a collaboration hub and meeting area to create a multipurpose facility.

"Having a collaborative space like this coupled with research resources is an incredible capability to have," said Center Director Chris Scolese at the ribbon-cutting ceremony. "Sharing information is something Goddard prides itself in, and this space enables that."

The library's new layout can be adapted to fit any group, regardless of size, and its needs. A video wall made up of 18 large monitors can be used for presentations. Modular walls made up of erasable whiteboard panels border each collaboration pod. Technology pods feature large screen monitors that enable wireless screen sharing from laptop computers.

"I always thought the library was predominantly for the science community, but I think the redesign showcases how it's useful to everyone at Goddard," said Denna Lambert, GIC^2 program manager.

Over time, as more of the library's resources became accessible electronically, the staff noticed a decrease in daily visitors. Representatives from across Goddard came together to brainstorm ideas for the redesign, considering how to best use the large, naturally lit space.

"The library services business is changing alongside technology," said Robin Dixon, library branch head. "The center's library needed to evolve to better fit the needs of its customers."

One of the suggested enhancements was the installation of a 3-D printer. Goddard employees can now create small-scale model designs using computer-aided drafting, or CAD technology.

Another new aspect is the Goddard Archives. Holly McIntyre-DeWitt, Goddard's first full-time archivist, catalogs historically and culturally significant materials relating to the center.

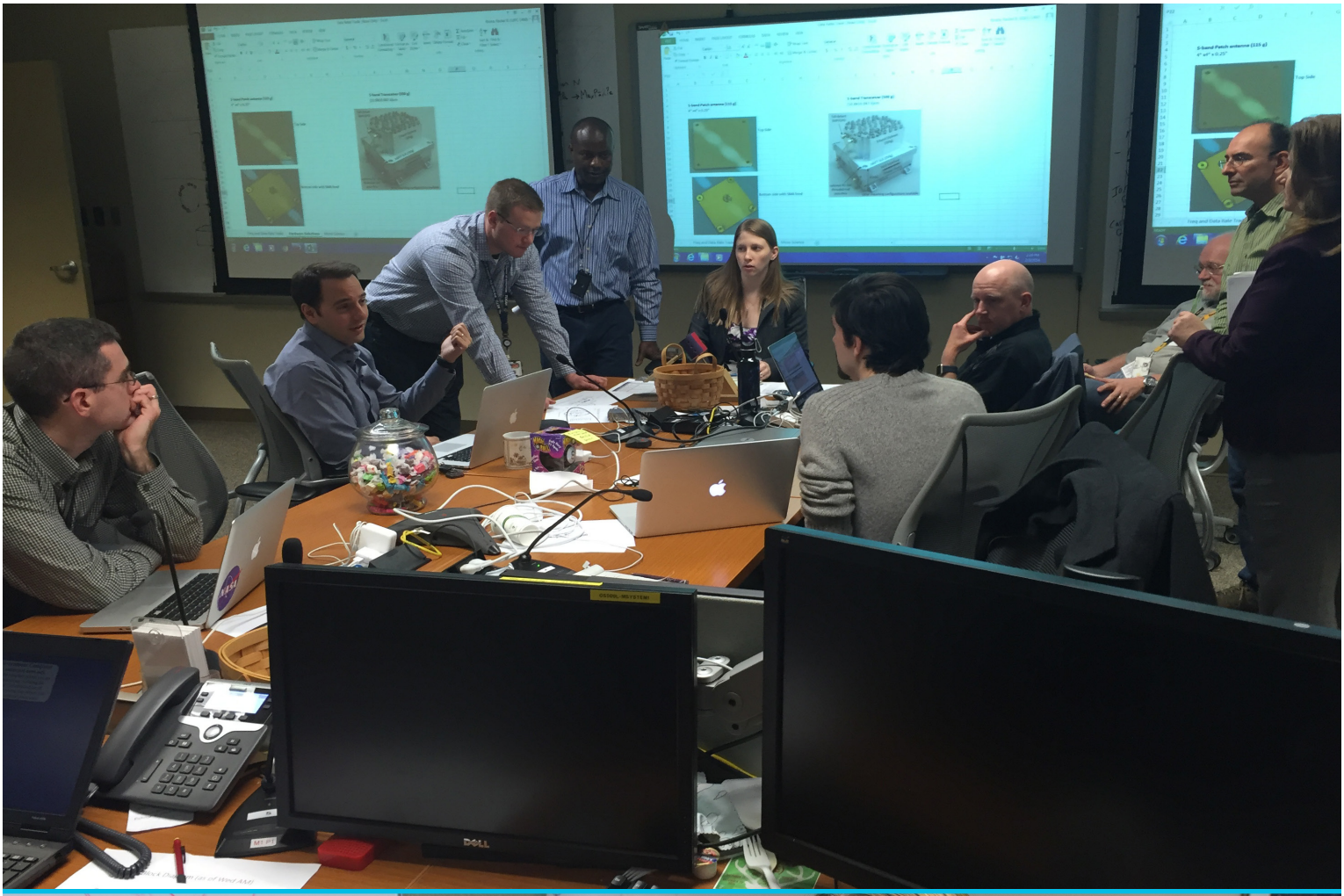
In addition, the GIC^2 staff continues to offer research support, information services and knowledge management.

"The uncertainty over the library was unconscionable," said Goddard engineer Paul Mirel, referring to the library's temporary closure in 2012. "It gives me great pleasure to see a space designed to enhance the work we do here."

A neutral space for the entire Goddard community, GIC^2 offers a change of pace and place for individuals as well as the ideal location for a team lunch meeting or special event for a large group. ■

Above: Guests gather at the opening of the Goddard Information and Collaboration Center on March 18. Photo credit: NASA/Goddard/Bill Hrybyk

Below: Center Director Chris Scolese (left) cuts the ribbon to officially open GIC^2 alongside Robin Dixon, library branch head. Photo credit: NASA/Goddard/Bill Hrybyk



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IT'S COMPETITIVE OUT THERE: PLANETARY SCHOOL TEACHES YOUNG SCIENTISTS THE ART OF INSTRUMENT DESIGN

By Lori Keesey

Early-career scientists understand data. They know how to analyze information to better grasp the physical processes that generated the numbers. But it takes a different set of skills to conceive and successfully propose a spaceflight instrument.

That's why Brook Lakew, scientist and associate director in the Solar System Exploration Division at NASA's Goddard Space Flight Center, founded the Planetary Science Winter School two years ago.

Held once a year on center for these young scientists and NASA postdoctoral fellows, the school is teaching the next generation of instrument leads how to identify top-rated science questions, the best instruments to find the answers, and how to design winning concepts that address systems engineering, mechanical design, optics, electronics, thermal control, and estimated costs — all of which are critical in flight instrument design.

"I saw that in this highly competitive environment we didn't have a formal training process for our younger scientists," Lakew said, adding that NASA offers only a limited number of new flight instrument and mission opportunities each year. And the announcements of opportunity that the agency does release can result in as many as 28 proposals for a new mission and even many more for mission instruments.

"You have to train people how to convert an early concept into a well-designed instrument," he added. "They don't yet know the details of what goes into planning and developing an instrument. Once we train them, they can become better proposers. This increases our win rates, which result in funding to pay for our scientific investigations and work for our engineers and support personnel who build hardware and get it ready for flight."

A distinctive feature of the school is that students develop real instrument concepts during their training. The weeklong course isn't an academic exercise. The students flesh out their concepts at the Goddard Integrated Design Center, a facility that uses very sophisticated analytical tools to help engineers and scientists design instruments and missions. The students then present the results to Goddard's more senior scientists who plan to compete for an instrument opportunity. The latter are, for all intents and purposes, the students' coaches and customers.

For the seven students who attended the school in February, the experience was an eye-opener.

Before developing their concepts, the students held several meetings with their science coaches. After fully understanding their customers' scientific goals and best instrument approaches, they headed to the IDC where they took on the roles of principal investigators, instrument scientists, systems engineers, as well as experts in thermal control, mechanical design, electronics, and costing. Once the students completed their trade-offs and created the best possible instrument concept, they presented their research and prepared a report for their customers.

"This was a totally different experience than what I am used to," said student Ravi Kumar Kopparapu, who works as a Goddard assistant research scientist studying the habitability of exoplanets with climate models and observational data. "The takeaway, at least for me, is not just how the school taught me about mission design or the technical aspects, but also how to lead a team, select a team, assign appropriate roles to maximize productivity, plan and manage time."

For Lakew, that's the point of it all.

"It's a win, win, win," he said. "The senior scientist gets a design. We train our up-and-coming scientists, and we increase our chances that an instrument design will result in a successful proposal." ■

Center: Brook Lakew, scientist and associate director in the Goddard Solar System Exploration Division, founded the Planetary Science Winter School to teach young scientists how to better design spaceflight instruments. Photo courtesy: NASA/Goddard/Brook Lakew

Opposite, top: Planetary Science Winter School students gather at the Goddard Integrated Design Center during their training in February. Photo credit: NASA/Goddard/Bill Hrybyk

Opposite, bottom: Planetary Science Winter School students (from left to right) Jacob Burke, Debra H. Needham and Obadiah Kegege share ideas during a brainstorming session. Photo credit: NASA/Goddard/Bill Hrybyk

GODDARD SYMPOSIUM HIGHLIGHTS OPPORTU

Since 1963, leaders in science, engineering and aerospace policy have gathered at the Robert H. Goddard Memorial Symposium to review the current state of space exploration and challenges that lie ahead. Sponsored by the American Astronautical Society and supported by NASA's Goddard Space Flight Center, the 54th edition of the symposium – held at the Greenbelt Marriott in Maryland from March 9 to 10 – highlighted the theme "Leadership for Space: Opportunities and Challenges."

"As our committee has done every year, we endeavored to find a theme that would be relevant to our audience," said Harley Thronson, Goddard astrophysicist and chair for the symposium's program planning committee. "This year it was for government, academic and industry leaders to discuss the most exciting challenges of the coming decade."

Jean-Jacques Dordain, former director general of the European Space Agency, opened the first day by describing a future with increased global cooperation and more engaging short missions to capture the shifting interest of younger generations. He advocated for greater U.S. leadership, but encouraged deferring to others on specific projects. "The United States has to be a leader on many projects, but must also accept that other projects are initiated and led by other leaders," Dordain said. "This is the only way to create global momentum."

NASA Administrator Charles Bolden delivered the keynote, recounting such successes as the International Space Station and mentioning the extension of the mission until 2024. He brought attention to the NASA Space Launch System and Orion Multi-Purpose Crew Vehicle – on schedule for their first flight in five years – setting the stage for a human expedition to Mars. "Everyone is needed for our journey to Mars, where we will be living and working as a fact of life," he said.

Goddard Deputy Center Director George Morrow moderated the first panel, in which representatives from NASA's mission directorates expanded on Bolden's remarks, provided perspectives on the agency's recent achievements and outlined a potential blueprint for the future.

Bill Gerstenmaier, associate administrator for human exploration and operations, described the research support given by more than 90 countries to the International Space Station, and he underscored the need to leverage information from NASA astronaut Scott Kelly's recently completed year in space. John Grunsfeld, associate administrator for science, gave an optimistic outlook for the next decade and addressed such challenges as cost and schedule performance, teamwork, communications, and STEM education. Robert Pearce, deputy associate administrator for strategy in the NASA Aeronautics Research Mission Directorate, detailed the role of a sustainable and energy-efficient aeronautics program as part of the agency's spaceflight goals. Dennis Andrucyk, deputy associate administrator for space technology, highlighted innovative technologies that will help bring NASA closer to a Mars mission.

John Holdren, senior science and technology advisor to President Barack Obama, served as the luncheon speaker. He reiterated Obama's support for NASA, citing the president's 2015 State of the Union address in which he encouraged Americans "to push out into the solar system, not just to visit, but to stay."

And he explained how the space program influences young scientists. "The stunning images and discoveries made about celestial bodies, both near and far, have touched generations of students and inspired countless scientists and engineers across the country," Holdren said.

Following Holdren's address, AAS President Lyn Wigbels presented the society's annual awards, recognizing those who have made exceptional contributions to spaceflight and space exploration. Twelve individuals and teams were honored, including U.S. Sen. Barbara Mikulski from Maryland, whose assistant accepted the Goddard Medal on her behalf, and Jim Lovell – NASA astronaut aboard Apollo 13, which he commandeered back to Earth following an aborted mission to the moon.

Ken Sembach, director of the Space Telescope Science Institute in Baltimore, opened the afternoon session with an overview of the James Webb Space Telescope – which will be the most powerful space telescope every built upon its completion

NITIES AND CHALLENGES IN COMING DECADE

By Mike Calabrese

in 2018 – and the Wide Field Infrared Survey Telescope, which will investigate dark energy, exoplanets and galaxy formation.

Frank Morring Jr., senior editor for Aviation Week & Space Technology, moderated a panel on achieving consensus on space policy. Tom Krimigis, head emeritus for the space department at the Johns Hopkins University Applied Physics Laboratory, facilitated a discussion on space technology trajectories. Benjamin Reed, deputy project manager for the Goddard Satellite Servicing Capabilities Office, unveiled Restore-L – a new mission equipping a spacecraft with tools to refuel and service satellites in orbit.

Oscar- and Emmy-nominated documentary filmmaker Nathaniel Kahn closed the first day with clips from "Telescope," his production which provides an insider's look into the making of Webb. "NASA has to have storytellers," he said. "We want to help get the story out there to as many people and in as many wonderful ways that we can."

William Wrobel, director of NASA's Wallops Flight Facility in Virginia, opened the second day of the symposium by describing the range of programs offered at Wallops.

Richard Spinrad, chief scientist for the National Oceanic and Atmospheric Administration, engaged panelists on his agency's strategic research and partnerships. Thomas Berger, director of NOAA's Space Weather Prediction Center, described how data from the Deep Space Climate Observatory satellite provides timely, actionable and reliable space weather predictions. Michael Freilich, director of the NASA Earth Science Division, explained how NASA partners with NOAA to create flexible systems that effectively combine technology from both agencies. Harris Corporation Vice President Jack Hayes spoke about leveraging industry strengths to improve NOAA's research results, while Rear Adm. Tim Gallaudet summarized the U.S. Navy's collaboration with NOAA and other agencies to achieve maritime superiority and enhance fleet safety.

A panel moderated by Sam Scimemi, director of the International Space Station, discussed the importance of financing, government policies and partnerships to maintain the transport of commercial cargo and crews to the orbiting outpost. Following a luncheon address by NASA Associate Administrator Robert Lightfoot, Purdue University engineering professor Dan Dumbacher and Boeing Senior Vice President Scott Drach outlined challenges associated with recruiting engineering talent and recent changes in engineering education.

The symposium's final panel featured NASA Advisory Council Chairman Steve Squyres; NASA scientists Aki Roberge, Ellen Stofan and Eileen Stansbery; and National Science Foundation Program Director for Space Weather Research Therese Jorgensen. Titled "Exploration and Science Missions: Vision 2020," the panel focused on the increasing rate of scientific discoveries in such disciplines as planetary science and astrophysics and how these discoveries are helping inspire the next generation.

Lightfoot and Goddard Center Director Chris Scolese provided the closing remarks, in which they emphasized the need for sustained funding for space exploration as well as constant communication with the president and U.S. Congress.

"I've been involved in planning this symposium for 16 years," said Jim Kirkpatrick, AAS executive director. "Based on feedback alone, this has been the best one yet in terms of speakers, substance and relevance." ■

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

Above: Jean-Jacques Dordain, former director general of the European Space Agency, delivers remarks on the first day of the symposium (left). Former NASA astronaut Jim Lovell accepts the John F. Kennedy Astronautics Award from AAS President Lyn Wigbels during a luncheon ceremony (center). A group of scientists participate in the "Exploration and Science Missions: Vision 2020" panel.

Photo credits: NASA/Goddard/Bill Hrybyk

FROM MIDWEST TO MARYLAND: STUDENTS TAKE ANNUAL ROAD TRIP TO GODDARD SYMPOSIUM

By Clare Skelly

Caravanning 700 miles may be a typical way for college students to spend spring break. Each year, a group of student members of the Illinois Space Society does exactly that – sometimes before or after the weeklong recess – but the destination isn't the beach or a series of U.S. landmarks. Traveling more than 12 hours from their dorm rooms at the University of Illinois at Urbana-Champaign, the students arrive in Greenbelt, Maryland, to attend the Robert H. Goddard Memorial Symposium. Sponsored by the American Astronautical Society and supported by NASA's Goddard Space Flight Center, the annual conference brings together leaders in science, engineering and space policy to discuss the latest developments in space exploration.

The university's relationship with AAS dates back to 2004, and it's only flourished over the years. Kirk Kittell was one of four UIUC students who made the first trip. "You never know what you are going to get as a student," said Kittell, who now works as a Boeing systems engineer in St. Louis. "AAS and conference attendees talked to us and made it seem like we were really a part of their community."

This year, a dozen UIUC students attended the conference in March. In past years up to 23 students made the trip. "University of Illinois could have been any school," said Jim Kirkpatrick, AAS executive director. "In this case, the tradition funneled down within the club, and the relationship has maintained itself year to year."

Several more students from other colleges and universities attended as well.

Over the past decade, the experience has become more robust. Students now have the opportunity to meet NASA Administrator Charles Bolden, tour Goddard's facilities and attend networking sessions with conference participants.

"It sounds like they are getting things a bit better now," Kittell joked. "We used to try to corner the administrator to get a few minutes with him."

Today's students ask questions in a private, one-hour meeting with Bolden and learn about the state of NASA. "Who knew that as a freshman in college I would be talking with the NASA administrator?" asked student Sarah Legg rhetorically.

"Bolden offers us a different perspective. He communicates technical details behind big decisions," added Steven Macenski, junior aerospace engineering major, two-time conference attendee and organizer for this year's trip.

The opportunity to network with government and industry professionals is a large selling point for students looking to pursue science and engineering careers. "It can be challenging to build your network when you do not have any experience," said Legg, a first-time symposium participant. "These conferences are an opportunity to connect with top minds, no matter what year you are in school."

For Macenski, who interned in the Goddard Satellite Servicing Capabilities Office last summer, it's a chance to pick the brains of the like-minded. "It is important to learn the personalities of these people," he said. "That's a first step to understanding how they work on amazing projects."

These students may someday contribute to current or successive projects, according to Kirkpatrick. "Now is the time for them to connect and reach out to the movers and shakers in the government and industry landscape," he said.

While Kittell helped begin the tradition, he's happy to know his alma mater has carried it forward all these years. "They didn't need my help after those first few years and that was satisfying for me, knowing they were really getting something out of it," he said. ■

Above: NASA Administrator Charles Bolden (left) speaks to students from the University of Illinois and other universities during the Robert H. Goddard Memorial Symposium.

Photo credit: NASA/Goddard/Bill Hrybyk

CELEBRATING 90 YEARS: ROBERT GODDARD'S ROCKET AND THE LAUNCH OF SPACEFLIGHT

By Ashley Morrow

Ninety years ago on March 16, 1926, a rocket lifted off – not with a bang, but with a subtle, quiet flame – and forever changed the scope of scientific exploration. The event ties directly to the birth of NASA more than 30 years later.

Less than a century ago, astronomers relied entirely on ground-based observations to further their scientific study. Today, descendants of that first liquid-fueled rocket provide eyes on cosmic phenomena, unravel mysteries of the early universe and even take a closer look at what makes our own planet tick.

None of this would be possible without the experiments of Massachusetts physics professor Robert Goddard, best known for inventing the liquid-fueled rocket. The namesake of NASA's Goddard Space Flight Center, he dreamed as early as 1909 of creating an interplanetary vehicle. While he wouldn't achieve that in his lifetime, his inventions in the first half of the 20th century became the engineering foundation for the rockets that first took humans to the moon in the 1960s and for today's rockets, which look farther into space than ever before.

Prior to his experimentation, rockets had not changed much in several centuries. Chinese engineers invented them as war machines in the 13th century, using solid gunpowder as fuel. But Goddard realized that liquid propellants offered a number of advantages over solid-fueled rockets.

Testing rockets fueled by liquid gasoline and liquid oxygen, he found his new design posed a number of challenges. For instance, he had to find a way to mix the fuel with oxygen. Otherwise, it wouldn't burn fast enough to produce the necessary thrust to lift the weight of the rocket. He also had to find a mechanical solution to pressurize the fuel chamber so it would continually feed fuel to the engine. Each solution he found brought with it a new challenge to solve.

After nearly 17 years of work, Goddard successfully launched his creation.

"It looked almost magical as it rose, without any appreciably greater noise or flame, as if it said, 'I've been here long enough; I think I'll be going somewhere else, if you don't mind,'" Goddard wrote in his journal the following day.

Most rockets today use liquid fuels because they provide more thrust per unit of fuel and allow engineers to more precisely control how long the rocket will remain lit. For example, the Atlas V, on which many NASA missions launch – including the Magnetospheric Multiscale mission which set off into space in March 2015 – as well as the Ariane V, on which the James Webb Space Telescope will launch in late 2018, both use liquid fuels in one or more of their stages.

Over the course of his career, as well as posthumously, Goddard was awarded more than 200 patents for his inventions, many of which pertain to rocketry. These also included the invention of multistage rockets, which contain multiple fuel tanks and engine segments that can be jettisoned as they are emptied.

Goddard's work didn't stop there. He continued to improve upon his rocket concepts until his death in 1945. The United States failed to recognize the full potential of his work until after his death. In fact, some of his ideas about reaching space were ridiculed during his lifetime. But the first liquid-fueled rocket flight was as significant to space exploration as the Wright brothers' first flight was to air travel, and 90 years later, his patents are still integral to spaceflight technology. ■

Above: Robert Goddard in his rocket workshop in Roswell, N.M.

Photo credit: NASA/Goddard

FOR WOMEN'S HISTORY MONTH, GODDARD WELCOMES NASA'S CURRENT AND FUTURE LEADERS

Every March, NASA celebrates and pays tribute to the many women who have been instrumental in shaping the history of the agency. To mark Women's History Month this year, NASA's Goddard Space Flight Center hosted about 100 students from high schools in Baltimore, suburban Maryland, and Washington, D.C., for a day of interaction with women who are making an impact in their science, technology, engineering and mathematics careers.

Moderated by Trena Ferrell from the Goddard Office of Communications, a morning panel featured four NASA women who offered guidance on following STEM career paths: Sandra Cauffman, deputy system program director for the Geostationary Operational Environmental Satellite-R Series at Goddard; Lori Perkins, Goddard scientific data visualizer; Aprille Ericsson, Goddard engineer and manager of a NASA small business innovation research program; and Julie Robinson, NASA chief scientist for the International Space Station.

"Don't let others stop you," said Cauffman, "Let your dreams be the compass for your life."

"Don't be afraid to try new things," added Perkins. "Make your own dreams; don't follow someone else's dream."

Students enjoyed lunch with the panelists and toured several facilities at Goddard, including the Robotic Operations Center where a massive robot arm and other satellite servicing capabilities are under development, as well as a hyperwall video screen that projects meteorological images of Earth. They also visited the observation deck for the James Webb Space Telescope, which is currently being assembled and undergoing testing in preparation for its 2018 launch.

A second panel with senior NASA leaders was held in the afternoon, featuring Dava Newman, NASA deputy administrator; Ellen Ochoa, director of NASA's Johnson Space Center in Houston and a former astronaut; Lesa Roe, NASA deputy associate administrator; Ellen Stofan, NASA chief scientist; and moderator Christyl Johnson, Goddard deputy director for technology and research investments.

Jo Handelsman – associate director for science in the White House Office of Science and Technology Policy – delivered an opening keynote address. "Many women are pushing the boundaries of science, and in so doing, pushing the boundaries of our universe," she told attendees, referring to some members of the panel.

Panelists spoke about their career trajectories, what they enjoy most about their jobs, what they studied to arrive at NASA and where they find inspiration.

"I always loved science," Stofan said of her childhood. "Nobody ever told me that I couldn't."

"In college and graduate school, I was often the only woman in a class, and I felt self-conscious," said Ochoa. "But it has gotten a lot easier as I've gone through my career. If you feel self-conscious in the beginning, it's not always going to feel that way."

Johnson closed the panel by asking each of the panelists to impart one piece of advice to those seeking to pursue STEM careers.

"You can do it," said Newman to the students. "You'll never regret it. You'll never look back." ■

Above: Female leaders from NASA speak to a group of students about pursuing science and engineering careers as part of a Women's History Month event at NASA's Goddard Space Flight Center.

Photo credit: NASA/Bill Ingalls

GODDARD ENGINEER WINS PRESTIGIOUS WASHINGTON AWARD

By Ed Campion

For more than 100 years, the prestigious Washington Award has recognized engineers whose accomplishments have "pre-eminently promoted the happiness, comfort and well-being of humanity."

Normally presented each year in February during National Engineers Week, the award's past honorees have included such individuals as Orville Wright, Henry Ford, Neil Armstrong and Bill Nye.

This year's recipient was Aprille Ericsson, an engineer from NASA's Goddard Space Flight Center. In accepting her award, Ericsson reflected on both the people and projects that have encompassed her career.

"From peering into the distant reaches of the universe to examining things like the big-bang theory, black holes and gravitational waves, to our exploration efforts with the moon and Mars, to addressing a vital issue such as climate change, it has been an honor to work with so many bright and committed individuals," she said.

In addition, Ericsson spoke of the importance of outreach and engaging students. "I have been afforded the opportunity to speak to many young people across our country and the globe," she added. "I get to inspire the youth and touch the future and have an impact on the future pipeline of engineers and scientists. Who could have asked for a better job with such a profound legacy?"

Ericsson has spent most of her engineering career at Goddard, where she has made noteworthy contributions in aerospace engineering. She has worked as a project manager or engineer for several science instruments, including the Lunar Orbiter Laser Altimeter aboard the Lunar Reconnaissance Orbiter that has been orbiting the moon since 2009.

She has also helped manage instruments set to take flight, such as the Advanced Topographic Laser Altimeter System – which will observe ice sheet elevation change, sea ice freeboard and vegetation canopy height as part of the ICESat-2 mission – and the Near-Infrared Spectrograph on the James Webb Space Telescope.

Ericsson is currently the Goddard manager for the federal program that enables small businesses to support NASA – and collaborate with universities – to compete for opportunities to provide technology that solves identified research and development challenges. Those challenges may also be faced by other technology-driven government agencies within the United States.

The presentation of the 2016 award was made in Chicago on Feb. 26 at a joint banquet of members and guests of the Western Society of Engineers; the American Institute of Mining, Metallurgical, and Petroleum Engineers; American Society of Civil Engineers; American Society of Mechanical Engineers; Institute of Electrical and Electronics Engineers; National Society of Professional Engineers; and American Nuclear Society. ■

Above: Representatives from several engineering organizations gather for a banquet in Chicago on Feb. 26 during the presentation of the 2016 Washington Award. Photo courtesy: Western Society of Engineers/Leigh Loftus

Below: Goddard engineer Aprille Ericsson holds a plaque as the recipient of the 2016 Washington Award. Photo courtesy: Western Society of Engineers/Leigh Loftus

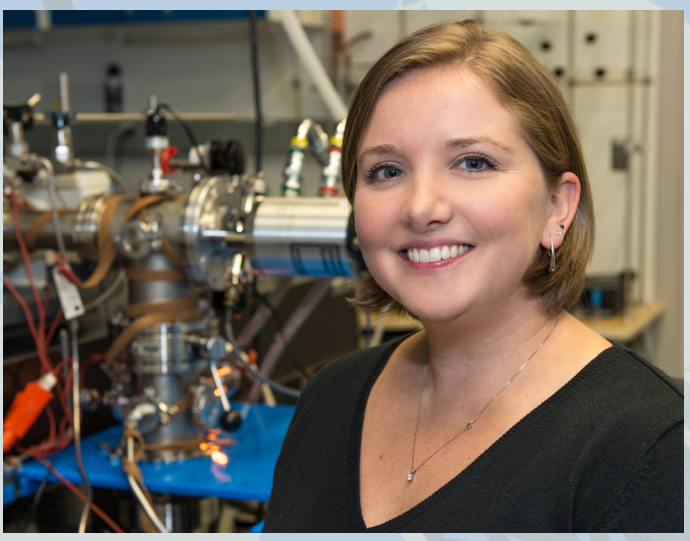
STEFANIE MILAM: STUDYING THE VOLATILE UNIVERSE

By Jenny Hottle

Research scientist Stefanie Milam seeks to understand the origin of our solar system through laboratory and observational studies.

How do you support Goddard's mission, and what is most interesting to you about your role here?

I came to Goddard in February 2010 from NASA's Ames Research Center in Moffett Field, California, where I worked for two years. I was brought here to do work on radio and submillimeter astronomy of comets and observations of the whole star-formation process, from when the star forms and makes its own solar system through the death of stars. I have a laboratory where I actually study molecular processes that occur in interstellar and planetary environments.



Finally, I work on the James Webb Space Telescope as the deputy project specialist for planetary science. It's quite a bit of work to balance it all and a lot of fun.

What's a typical day on the job like?

Being on a project, especially one that's as big as Webb, I have days that are notoriously consumed with meetings. I'm very schedule-driven and deadline-driven. A lot of my actual science is done in between meetings. I tend to work later in the day when everybody else goes home. I find that's the best time to do actual research and catch up on reading and writing.

How did you get into your line of research?

When I was 6 years old, I told my mom I was going to be a ballerina or an astronaut. Even though I danced most of my life, I knew I was not going to make a career out of it. That is when I began my journey to work for NASA.

Unfortunately, I never had another growth spurt, and I found out I was too short to be a pilot for the space shuttle. So I decided to pursue becoming a mission specialist for the astronaut program. If you're working on the International Space Station or the shuttle, or if you go to the moon or Mars, you need to know how to do sample analysis and run experiments. Thus, I pursued an education in chemistry.

However, by the time I was graduating with my bachelor's degree, I couldn't stand the sight of a beaker. My advisor recommended I look into a field called astrochemistry. After some research on it I thought it was the best thing for me. My "chemical" laboratory grew from a beaker – or the size of a room – to an entire universe.

What do you like most about your job?

I love that it's so dynamic. I love how research evolves and grows. I get to work on these projects and develop new missions, and the whole NASA environment is really open to advancing technology and knowledge.

The people here are fantastic. You're working with some of the best minds in the world. I get to sit down in meetings every week with an astronaut and a Nobel laureate. Not many people get to say that.

What are some of your hobbies and interests outside of work?

I have a niece that's close in age to me. We travel together a lot, and that's really cool because we practically grew up like sisters. She's my sidekick. We take little adventures here and there as much as we can.

I also have a dog that I spend a lot of time with. He's a chocolate Labrador named Sirius. He takes up a lot of my energy and time, but he's my world.

Fill in the blank: What makes me happiest is _____.

"Scientific achievement." When you get that paper published and it gets a lot of recognition in the field. Winning an award for a big scientific accomplishment or giving a keynote talk at a big meeting. That makes me very happy. It means that all these hours you work and the frustration you have pay off in the end.

Other than that, what makes me happy is my dog. As much travel as I do, I always say, "Home is where my dog is." ■

Center: Stefanie Milam

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