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GoddardView

Goddard Invites Students to Become Rocket Scientists at the Sunday Experiment

Pg 3

Magnetic Portals Connect Sun and Earth

Pg 8

Mission Manager Childhood Dream Becomes Reality with *Interstellar Boundary Explorer* Launch

Pg 10

Combined Federal Campaign Book, Media, and Bake Sale

By Dennis Woodfork

Goddard's Combined Federal Campaign (CFC) steering committee sponsored a book, media, and bake sale to promote awareness for Goddard's ongoing CFC efforts. The event was held on Tuesday, November 18 in the Building 21 lobby from 10:00 am to 2:00 pm. Proceeds from the book, media, and bake sale will go to CFC's undesignated funds.

Broad employee participation is key to a successful campaign and integral to the CFC national theme for this year: "Be a star in someone's life!" CFC contributions are voluntary (and tax deductible) and may be easily pledged.

Employees can give via the electronic WebTADS Time and Attendance System, which is by far the easiest method of giving available. Goddard employees can participate by contributing as little as $1 per pay period, which amounts to $26.00 per year. Even a contribution of $1 per pay period will help a charitable organization to further its mission. Donations can also be submitted through paper pledge cards, which were distributed throughout each Code via Goddard's network of CFC keyworkers. CFC material is also available online at Goddard's CFC Web site: http://cfc.gsfc.nasa.gov. The Web site features links to the official CFC Web site for the National Capital Area, as well as WebTADS.

As of November 7, Goddard employees have generously donated $237,117 (43 percent of goal) towards Goddard's 2008 contribution goal of $552,000. Other 2008 campaign goals are to personally ask 100% of the Goddard civil servant employees to consider donating to the charities of their choice, and to have at least 40 percent of the Center's employees contribute to the CFC. Thus far, Goddard's contributions have come from approximately 16 percent (441 employees) of the workforce. Attaining a 40 percent participation rate will keep Goddard on par with the CFC participation level of the National Capital Area—approximately 42 percent.

Nancy Abell, the Center's Associate Director and 2008 Campaign Chair, and Team Captains led by Paul Mexcur, the 2008 Campaign Manager, are working together as the Goddard CFC Steering Committee to plan, organize, and conduct this year's campaign. ■

Table of Contents

Cover caption: One of the many children inspired by the Sunday Experiment .

Photo credit: Pat Izzo.

GoddardView Info

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Deadlines: News items and brief announcements for publication in the Goddard View must be received by noon of the 1st and 3rd Wednesday of the month. 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.

Goddard Invites Students to Become Rocket Scientists at the Sunday Experiment

By Rani Gran and Amy Pruett

About 50 students explored the edge of the universe and watched the *Interstellar Boundary Explorer* (IBEX) launch into space at the October 19 Sunday Experiment. The Sunday Experiment is held the third Sunday of each month from September through May and features activities that showcase NASA's world-renowned science and engineering research and technological developments. "The Sunday Experiment is a place where children and adults alike can discover the excitement of Goddard through fun and easy hands-on activities," said Emilie Drobnes, founder of Sunday Experiment.

"You get to act like scientists and engineers while building all types of little rockets and hovercrafts, designing your own planets and stars, and even trying your hand at being part of the manned spaced program. At the Sunday Experiment, we energize the public about NASA and the science we do here and we aren't afraid to get our hands dirty in the process," added Drobnes.

Families leave inspired by the hands-on activities, wowed by the scientists and engineers, and excited about Goddard's revolutionary research and technology.

Students will get a chance to earn a NASA engineering certificate by building three types of small rockets—pop rockets, straw rockets, and foam rockets. They will even get to meet a real NASA engineer.

In addition to celebrating all things science, technology, engineering, and mathematics, the Sunday Experiment celebrates major science missions that are managed by Goddard and set to launch in 2008 or 2009.

NASA's Goddard Space Flight Center in Greenbelt, Md., invites elementary school students and their families to its Visitor Center on Sunday, December 21 from 1:00–3:00 p.m. for a free afternoon of eye-opening, hands-on activities that will help you experience what it's like to be a NASA engineer.

For more information on the Sunday Experiment, visit: http://www.nasa.gov/centers/goddard/visitor/events/index.html. ■

Photo credit: Pat Izzo

Caption: Kids enjoy learning about Goddard's work.

Photo credit: Pat Izzo

Caption: A family enjoys a balloon experiment.

Photo credit: Pat Izzo

Caption: Maria Acevedo-Rivera interacts with visitors to Sunday Experiment at the Goddard Visitor Center.

Blind Engineer Finds Solution That Could Provide Insight into *Soyuz* Capsule Re-entry Issues

By Edward Campion

A blind engineer, Marco Midon, at NASA's Goddard Space Flight Center in Greenbelt, Md. had the vision to find a solution to obtaining important data on the flight of a *Soyuz* capsule. The capsule was carrying two *International Space Station* crew members, and spaceflight participant Richard Garriott to Earth.

Midon is an electronics engineer in the Microwave and Communications Branch at Goddard and has been with NASA for almost 11 years. He recently provided critical engineering support for the implementation of 18 meter Ka-Band antennas at White Sands Test Facility in New Mexico and also served as systems engineer on a project to upgrade a NASA ground station at McMurdo Station, Antarctica.

Earlier this month, Midon read a memo from the head of space operations at NASA Headquarters asking for ideas on how the Agency could respond to a request from the Russian Federal Space Agency to provide telemetry data on the *Soyuz* capsule during de-orbit and re-entry.

"I saw the e-mail asking for ideas about how data from the *Soyuz* could be received and recorded and right away I knew how it could be done," said Midon. "The real question was whether it could be done in the time that was available."

The Agency-wide request from the head of all human spaceflight efforts came after it was determined that there were no commercial or Space Station partner facilities that could provide the service needed because the downlink frequency (VHF) is not usually used for space telemetry. NASA and Russian partners agreed that providing data beyond that which is recorded just prior to separation of the *Soyuz* modules might be valuable in shedding light on the spacecraft's past entry performance.

"In the spirit of the old NASA, the Goddard team responded to my request with an amazing can-do attitude. The team was focused on the problem to be solved and let no hurdles stand in the way," said Bill Gerstenmaier, NASA Associate Administrator for Space Operations. "Good *Soyuz* performance is important for *International Space Station* operations, and any help NASA could provide helps all of the partnership."

Midon's proposal involved a low-cost mobile system that could be transported and deployed along the track of the separation and re-entry plan of the *Soyuz* vehicle.

"After getting the go-ahead to pursue my idea, my first course of action was to verify that we could obtain the necessary equipment" said Midon. "I called one vendor about the antenna needed and then another about the pre-amp that would be required to amplify signals tuned to this particular oddball frequency and how both items were needed immediately. The answer from everyone was 'yes,' so rush orders were placed."

With less than four days before *Soyuz* landing, the next step involved Midon contacting individuals at NASA's Wallops Flight Facility in Virginia to confirm that the Center could support a test of the system being proposed. After getting confirmation, he traveled to Wallops and supported activities that simulated what the Russian signal would look like and verified it could indeed be received and recorded.

A day later, all the equipment ordered was in place, and the stage was set for the final test to prove that Midon's idea could indeed work.

"We took the equipment down to Wallops and set up everything," said Midon. "While we were busy doing that, other folks talked to the Russians who agreed to turn on the *Soyuz* that was docked to the Space Station for two communication passes. Basically, we were 72 hours out from landing and knew we would only have these two short communication passes to prove the whole thing worked."

As it turned out, the first pass wasn't all that successful with little or no signal received. But Midon came up with some tweaks to the system to make it a little more sensitive, and during the second pass good data was received.

While Midon and his group continued with their efforts, other NASA engineers were busy in determining the best location to place the portable system. Three potential locations were initially identified—Turkey, North Africa, and Greece. After reviewing flight path trajectories, it was decided that Athens would provide the best view to capture telemetry data.

So, on Wednesday, October 22, with less than 48 hours before *Soyuz* landing, the site for the temporary station was set. Midon and Jim Evans, a Honeywell Technical Solutions employee at Wallops, traveled to Baltimore–Washington International Airport with all the equipment.

Photo credit: NASA

Caption: Goddard Space Flight Center employee Marco Midon (left) and Jim Evans, a Honeywell employee at the Wallops Flight Facility, are seen in an office at the American Embassy in Greece, where they set up equipment used to collect data during a Soyuz *capsule's re-entry and landing on Oct. 24, 2008.*

Continued on Page 5

Blind Engineer Finds Solution That Could Provide Insight into *Soyuz* Capsule Re-entry Issues

Continued from Page 4

A new challenge arose when one package was determined to be 12 pounds over the airline's allowed limit. Midon and Evans decided to take most of the equipment on their flight to Greece, while others worked options for getting the remaining equipment delivered.

Because no commercial delivery service could guarantee the equipment would arrive in time, Harry Schenk, a Honeywell employee at Goddard who had helped with earlier efforts, volunteered to fly to Greece with the remaining items.

By the time Midon and Evans arrived in Athens, less than 24 hours remained before the *Soyuz* flyover would take place. The two went immediately to the American Embassy in Athens, which was the chosen location for setting up their equipment.

Photo credit: NASA

Caption: Harry Schenk (right), a Honeywell employee at Goddard, made a last-minute trip to Greece, to ensure the final pieces of equipment were in place in time to collect data during the Soyuz *re-entry.*

Throughout the afternoon and into the evening, Midon and Evans worked to set up things while waiting for Schenk to arrive with the final pieces of equipment. By around 10 p.m., with less than eight hours before the event, all the equipment was powered up and verified ready to support.

After finally checking into the hotel and getting at least a few hours of sleep, the three men were back at the embassy around 4 a.m., local time, for the *Soyuz* flyover, which was planned for just after 6 a.m.

But there was still one more issue to work.

"When we got back to the Embassy for the event, we realized a recorder wasn't working," said Midon. "We realized that the likely cause was a heating problem because the room wasn't air conditioned. We found a Marine, who was one of the few people around at that time of day, who found us a fan so we could circulate more air around the unit and that seemed to fix the problem."

Based on information provided by flight dynamics engineers, the antenna on the roof was positioned, and just after 6 a.m., the system began receiving data from the *Soyuz* capsule as it traveled through the atmosphere.

"The pass was very low, only 8 1/2 degrees, and we were in a valley so I wasn't sure we were going to get anything" said Midon. "At first, the signal was very weak. But then, after 2–3 minutes, the signal got much stronger and it was clear we were getting good data. The strong signal lasted about a minute and with processing back in the lab, we're hoping there is at least 90 seconds of good data that can be utilized."

Later, Midon had a phone conversation with Gerstenmaier who thanked him and his group and said how much both the American and Russian flight control teams appreciated their incredible effort.

Midon remarked "I think the real story here is that we only had 2 or 3 days to come up with a solution to something and were then able to implement it in Europe. I may have been the technical guy who figured out how to do it, but there were a lot of other folks whose willingness to pitch in provided us with an opportunity to succeed." ■

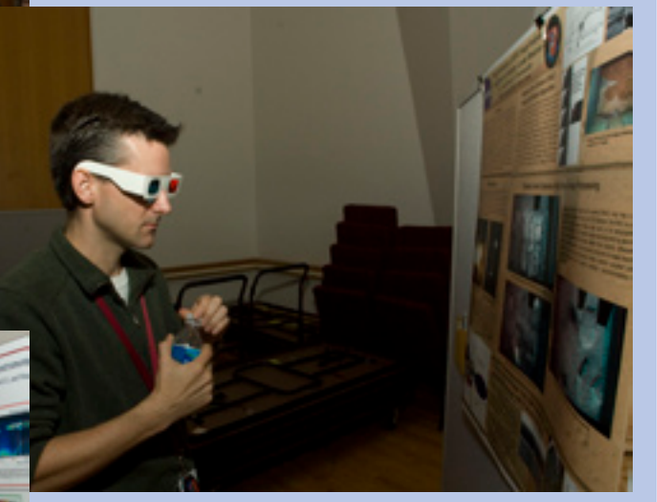
Internal Research and Development Poster Session Attracts More Than 220 Visitors

By Lori Keesey. Photos by Bill Hrybyk

More than 220 visitors, including Center Director Rob Strain, attended the FY08 Internal Research and Development (IRAD) program poster session at the Building 8 auditorium on November 6 to learn more about potential mission-enabling technologies developed by Goddard innovators.

Sponsored by the Office of the Chief Technologist, the annual event showcases the accomplishments of IRAD-funded engineers and scientists, and provides a forum where they can meet others who might benefit from their research. The winners of this year's "IRAD Innovator of the Year" award—the Soft X-ray Spectrometer (SXS) team, led by Principal Investigator Richard Kelley—also were on hand to receive their plaques and certificates. ■

Internal Research and Development Poster Session Attracts More Than 220 Visitors



Magnetic Portals Connect Sun and Earth

By Tony Phillips

During the time it takes you to read this article, something will happen high overhead that, until recently, many scientists didn't believe in. A magnetic portal will open, linking Earth to the Sun—93 million miles away. Tons of high-energy particles may flow through the opening before it closes again, around the time you reach the end of the page.

"It's called a flux transfer event or 'FTE,'" says space physicist David Sibeck of the Goddard Space Flight Center. "Ten years ago I was pretty sure they didn't exist, but now the evidence is incontrovertible."

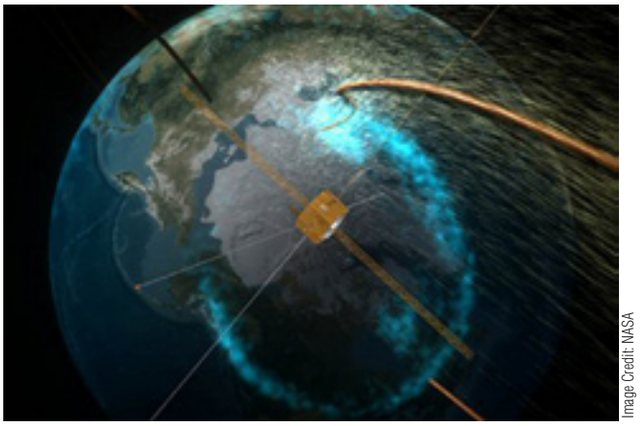


Image Credit: NASA

Caption: An artist's concept of Earth's magnetic field connecting to the Sun's—a.k.a. a "flux transfer event"—with a spacecraft on hand to measure particles and fields.

Indeed, Sibeck told an international assembly of space physicists on October 30 at the 2008 Plasma Workshop in Huntsville, Ala., that FTEs are not just common, but possibly twice as common as anyone had ever imagined.

Researchers have long known that the Earth and Sun must be connected. Earth's magnetosphere (the magnetic bubble that surrounds our planet) is filled with particles from the Sun that arrive via the solar wind and penetrate the planet's magnetic defenses. They enter by following magnetic field lines that can be traced from terra firma all the way back to the Sun's atmosphere.

"We used to think the connection was permanent and that solar wind could trickle into the near-Earth environment anytime the wind was active," says Sibeck. "We were wrong. The connections are not steady at all. They are often brief, bursty, and very dynamic."

Several speakers at the workshop outlined how FTEs form. On the dayside of Earth (the side closest to the Sun), Earth's magnetic field presses against the Sun's magnetic field. Approximately every eight minutes, the two fields briefly merge or "reconnect," forming a portal through which particles can flow. The portal takes the form of a magnetic cylinder about as wide as Earth. The European Space Agency's fleet of four *Cluster* spacecraft and NASA's five *Time History of Events and Macroscale Interactions during Substorms* (THEMIS) probes have flown through, and surrounded, these cylinders, measuring their dimensions and sensing the particles that shoot through. "They're real," says Sibeck.

Now that *Cluster* and THEMIS have directly sampled FTEs, theorists can use these measurements to simulate FTEs in their computers and predict how they might behave. Space physicist Jimmy Raeder of the University of New Hampshire presented one such simulation at the workshop. He told his colleagues that the cylindrical portals tend to form above Earth's equator and then roll over Earth's winter pole. In December, FTEs roll over the North Pole; in July they roll over the South Pole.

Sibeck believes this is happening twice as often as previously thought. "I think there are two varieties of FTEs: active and passive." Active FTEs are magnetic cylinders that allow particles to flow through rather easily; they are important conduits of energy for Earth's magnetosphere. Passive FTEs are magnetic cylinders that offer more resistance. Their internal structure does not admit such an easy flow of particles and fields. Sibeck has calculated the properties of passive FTEs and he is encouraging his colleagues to hunt for signs of them in data from THEMIS and *Cluster*. "Passive FTEs may not be very important, but until we know more about them we can't be sure."

There are many unanswered questions: Why do the portals form every eight minutes? How do magnetic fields inside the cylinder twist and coil? "We did some heavy thinking about this at the workshop," says Sibeck.

Meanwhile, high above your head, a new portal is opening, connecting your planet to the Sun.

For more information on magnetic portals, visit: http://science.nasa.gov/headlines/y2008/30oct_ftes.htm. ■

NOAA-N Prime Satellite Arrives at Vandenberg for Launch

By Cynthia O'Carroll

The latest polar-orbiting operational environmental weather satellite developed by NASA for the National Oceanic and Atmospheric Administration (NOAA), called *NOAA-N Prime*, arrived November 4 by C-5A military cargo aircraft at Vandenberg Air Force Base (AFB), Calif., in preparation for a February 4, 2009 launch. *NOAA-N Prime*, built by Lockheed Martin, is similar to NOAA-N launched on May 20, 2005.

Photo Credit: NASA

Caption: NOAA-N Prime *is offloaded from a C-5A military cargo aircraft.*

NOAA-N Prime will be launched from the Western Range at Vandenberg AFB by a United Launch Alliance two-stage Delta II rocket managed by NASA's Launch Service Program at the Kennedy Space Center, Fla.

NOAA-N Prime is the latest satellite in the Advanced Television Infrared Observational Satellites–N series built by Lockheed Martin Space Systems Company. *NOAA-N Prime* will provide a polar-orbiting platform to support environmental monitoring instruments for imaging and measuring the Earth's atmosphere, its surface, and cloud cover, including Earth radiation, atmospheric ozone, aerosol distribution, sea surface temperature, vertical temperature, and water profiles in the troposphere and stratosphere. The satellite will assist in measuring proton and electron fluxes at orbit altitude, collecting data from remote platforms, and will assist the Search and Rescue Satellite-Aided Tracking system.

NOAA-N Prime will be prepared for launch in a NASA payload processing facility located at Vandenberg AFB. On November 5, the satellite was removed from its shipping container and rotated from the horizontal to vertical position. Spacecraft systems testing and launch preparations then began, which will take about a month.

Meanwhile, at the launch pad, the rocket that will launch N*OAA-N Prime* is a Delta II 7320, manufactured and prepared for launch by the United Launch Alliance. The first stage is scheduled to be erected on Space Launch Complex 2 on December 2. The three, strap-on, solid rocket boosters will be raised and attached to the booster the following day. The second stage, which burns hypergolic propellants, will be hoisted atop the first stage on December 4. The fairing that will surround the spacecraft will then be hoisted into the clean room of the mobile service tower.

The following week, as a leak check, the first stage will be loaded with liquid oxygen during a simulated countdown. The following day, a simulated flight test will be performed simulating the vehicle's post-liftoff flight events without fuel aboard. The electrical and mechanical systems of the entire Delta II will be exercised during this test.

In mid-January, the *NOAA-N Prime* spacecraft will be hoisted atop the Delta II at the launch pad. The following week, a final major test is then ready to be conducted, which will involve the Delta II and *NOAA-N Prime* working together. This will be a combined minus count and plus count, simulating all events as they will occur on launch day, but without propellants aboard the vehicle. Finally, during the last week of January, the fairing will be installed around the spacecraft.

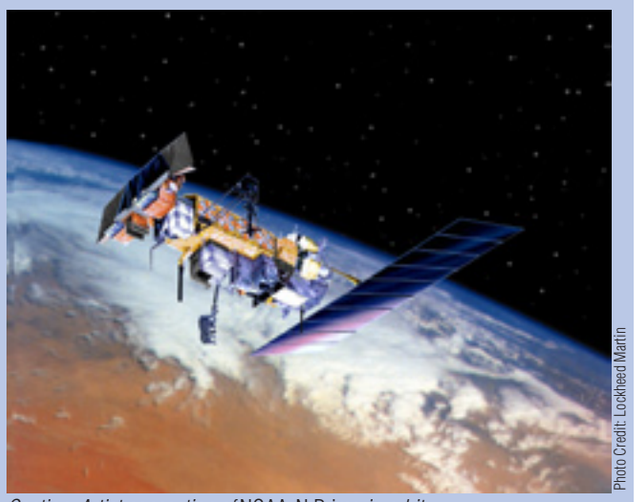


Photo Credit: Lockheed Martin

Caption: Artist conception of NOAA-N Prime *in orbit.*

NOAA manages the polar-orbiting operational environmental weather satellite program and establishes requirements, provides all funding, and distributes environmental satellite data for the United States. NASA's Goddard Space Flight Center in Greenbelt, Md., procures and manages the development and launch of the NOAA satellites for NOAA.

For more information about *NOAA-N Prime* and the polar orbiting satellites, visit: http://goespoes.gsfc.nasa.gov. ■

Mission Manager Childhood Dream Becomes Reality with *Interstellar Boundary Explorer* Launch

By Dewayne Washington

As a young boy, the Mission Manager for the *Interstellar Boundary Explorer* (IBEX) dreamed of returning to his old neighborhood to impress friends about his knowledge of flight. The launch of the IBEX mission has provided Gregory Frazier another opportunity to showcase his knowledge of just what it takes to reach the stars.

IBEX is currently circling the Earth in extremely high-altitude orbits to investigate and capture energetic neutral atoms that originate far beyond the solar system. Known as the interstellar boundary, this region marks where the solar wind meets interstellar space. The two-year mission will study how solar wind interacts with the interstellar medium and image that interaction.

As Mission Manager, Frazier is responsible for working directly with the prime contractor, Southwest Research Institute. He must ensure that the development and execution of the IBEX mission is in accordance with NASA policies and procedures. "I have a team of engineers that I deploy to provide me with technical insight into the mission development," Frazier says. "If I think the IBEX team needs assistance, I can draw from Goddard resources."

Frazier is well aware of the outstanding resources Goddard can provide because the aerospace engineer grew up here. His professional working experience began within the Mechanical Engineering Branch. Frazier was a co-op student and worked on the *Cosmic Background Explorer* under the leadership of Principal Investigator, Dr. John Mather.

With his first encounter of experiencing the challenges and discovery of aerospace work, school was never the same for Frazier. His work assignment as a co-op student included assisting in designing hardware that would actually fly onboard the Shuttle. "During my next two years of school I did very well because my motivation went through the roof. It was outstanding," Frazier says.

Following graduation from the University of Maryland, College Park, there were other employment options, but Goddard was now home for Frazier. As a full time employee, he soon took on increased responsibilities. Paired with a designer, Frazier was responsible for the design, manufacturing, and flight readiness for mechanical subsystems to fly aboard various spacecraft. "It felt good, we were an integrated team, we helped each other solve problems," Frazier says. "There were seasoned individuals around to guide us."

He has fond memories of the team spending time together away from the work environment. The mechanical systems team members would hang out at each others' homes or take trips together. "It was like hanging out with the friends back home but with a different set of similar interests," Frazier says. He calls those growing up years at Goddard instrumental in his understanding of the simplest to the most complex parts involved in space flight.

As the years passed, there would be more complex responsibilities, a greater learning curve, and greater satisfaction. For the *Compton Gamma Ray Observatory* mission, he was responsible for the airborne electrical support equipment that flew onboard the Shuttle. Frazier was the lead structural analyst for the *X-Ray Timing Explorer* mission, providing analysis for the mechanical subsystems. He was the Mechanical Systems Manager for the second *Hubble* servicing mission. On the Burst Alert Telescope, the largest instrument built at Goddard for the *Swift* mission, Frazier was the Instrument Manager.

Frazier now realizes his work ranging from co-op student to *Swift* was the training ground for his latest and greatest challenge as Mission Manager for the IBEX mission. "That is absolutely true and the process of working on in-house projects at Goddard was exactly what I needed," Frazier says. "It has provided me a greater understanding of the challenges and corrective actions required to keep a mission on track."

Photo provided by Gregory Frazier

Caption: Gregory Frazier in front of the L-1011 aircraft carrying the Pegasus XL rocket that carried IBEX into orbit.

Frazier values the ability to understand and communicate at all levels of responsibility as the most precious asset to oversee the many details in preparing a spacecraft for flight. "Many of the people on my team have worked with me before," Frazier says. "I know many of the other individuals and where to go to find the skills I need to tackle almost any challenge." He also insists that each mission is not just about hardware, but the development of his team, "I value my team and their contributions."

What is the greatest joy for this seasoned aerospace engineer with the pressures that come with such responsibility? "The most exciting part of my work is to take a concept, lay it out, assemble a team, execute, and watch it unfold," Frazier says. It is also about the human element of any mission. "I was mentored well, people took time with me and I saw the benefit, so I try to return that as well. It requires regular interaction to get some less experienced people going on the right track. I have no problem with that."

The Baltimore, Md. native went back to his old neighborhood and had several conversations about the aspects of space flight. He thanks his parents for instilling a strong work ethic and showing him that education would provide a sure path to realize his dreams. "My parents encouraged me to continue my education and choose what I wanted to do and I did." ■

Employee Spotlight Wanda Peters

By Leslee Cork

Photo Credit: Pat Izzo

Caption: Wanda Peters.

Wanda Peters, Coatings Engineering Group Lead, Code 546, has worked at Goddard for nearly two decades. Her career began on January 3, 1990, after attending a job fair upon the recommendation of long-time friend and Goddard employee William (Bill) Reaves. Bill's Thermal Engineering Branch Head, Norm Ackerman, was looking to fill a thermal coatings position, which Wanda fit perfectly. She was already doing thermal analysis work at the Naval Research Laboratory and holds a bachelor's degree in biology from the University of Maryland, Eastern Shore, another bachelor's in engineering from the Catholic University of America, and a master's degree in engineering management from the George Washington University. Wanda's educational background, work experience, and dynamite interviewing skills made her the top pick for the systems engineer position.

While serving in this role, Wanda was responsible for thermal property measurements. Her work enabled thermal engineers to determine what properties they needed to complete their designs. It was during this time of her career that Wanda recalls her most memorable moment. "Following the first HST [*Hubble Space Telescope*] mission, I traveled to NASA's Jet Propulsion Laboratory to take measurements on the Wide Field Camera 1. I was actually touching and characterizing the return flight properties of hardware that had just been in space. I was in disbelief. This experience was special because it brought home what we do here at Goddard."

Wanda now spends her time serving as the Coatings Engineering Group Lead for the Contamination and Coatings Branch, a position she's held for nearly four years. Her team conducts space environmental tests and thermal properties classification measurements, researches new types of coating applications and provides coating recommendations, and gives beginning-of-life and end-of-life properties for mission specific parameters. Wanda's team is also involved in dust mitigation efforts for NASA's return to the Moon. Lotus coating, a plant inspired technology, with self-cleaning and anti-contamination properties, would prevent lunar dust from sticking to surfaces and space suits. In addition, the team is addressing the impact of dust on living quarters, thermal control, and instrument operations.

It's easy to see that Wanda is very excited about, and connected to, the work being done here at Goddard. She goes on to say that "NASA is the best place to work. I have a great team of individuals who are enthusiastic and passionate about their work. They are really interested in doing their job well, learning from past experiences, and contributing to the overall success of the mission. To have that kind of dedication is refreshing."

Outside of work, Wanda volunteers with the District of Columbia Department of Parks and Recreation. The program she supports is one of the longest running dance programs. "Footsteps," a co-ed cultural arts program, has been in existence for 17 years providing quality dance classes and performance experience at an affordable price for children age 5–18. The 7-month program culminates in a May recital for the 300+ participants at one of Washington, D.C.'s most familiar venues, some of which have included Howard University's Cramton Auditorium and the Lincoln Theater. A few years ago, Wanda's daughters were a part of the program, initially sparking her interest. Upon their completion, Wanda stayed on as an instructional aide. Wearing many hats, Wanda oversees one of the dance sites, serves as dance captain, conducts rehearsals, and interacts with the parents, among other duties. As cliché as it sounds, Wanda believes that children are our future, and if we don't invest in our future we can't expect to have much of a future.

Wanda says of her own childhood inspiration, "[When I was a child] I remember watching cartoons and having my show interrupted because NASA had landed on the Moon. Initially I was upset, but that quickly turned to awe because I could actually see the Moon and I thought 'Wow, somebody's actually up there.' Even though the astronauts returned, as a child, I didn't think that far ahead." Nor did Wanda realize that she would grow up to work at this awe inspiring space Agency. Her professional demeanor and groundbreaking work has made her a trailblazer in the field of technology and research development. ■

Meet Some of Goddard's *Hubble Space Telescope* Team

By Susan Hendrix

Photo Credit: Bill Hrybyk

Caption: Joyce King.

Joyce King is the Senior Systems Manager for the *Hubble Space Telescope* (HST) at NASA's Goddard Space Flight Center in Greenbelt, Md. King provides system engineering leadership for all aspects of the *Hubble* Operations project, including HST operations, life extension, and servicing mission activities. During Servicing Mission 4, King will serve as the Mission Operations Manager (MOM) on the planning shift, responsible for all operations in the STOCC.

King coordinates with the Servicing Mission Manager and Systems Manager for all nominal mission operations, contingency operations, and Command Plan/Servicing Mission Integrated Timeline re-plan activities. The MOM is the key interface to the Senior Systems Manager at Johnson Space Center to provide operational status and coordinate all mission critical activities.

King has a Bachelor of Science degree in mechanical engineering from the University of New Haven in West Haven, Conn., and a master's in engineering management from the University of Central Florida. ■

Photo Credit: Bill Hrybyk

Caption: Hsiao Smith.

Hsiao Smith is the *Hubble Space Telescope* Instrument Development Office Manager at NASA's Goddard Space Flight Center in Greenbelt, Md. Smith's team is responsible for providing the new science instruments for *Hubble*'s Servicing Mission 4—the Wide Field Camera 3 and Cosmic Origins Spectrograph—along with hardware that will repair the Space Telescope Imaging Spectrograph and Advanced Camera for Surveys on *Hubble*.

Smith manages the design, fabrication, and test of the two new science instruments and replacement hardware—a collaborative effort involving numerous companies around the country as well as personnel at Goddard.

Smith has a Bachelor of Science degree in electrical engineering and a master's degree in engineering management from the University of Maryland, College Park. ■