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NASA Names New Goddard Center Director

By Mark Hess, David Mould, and Jason Sharp



Photo credit: JHUAPL

Caption: Robert Strain.

NASA Administrator Michael Griffin has announced that Robert Strain will be the next Center Director of NASA's Goddard Space Flight Center in Greenbelt, Md. Strain is currently the head of the Space Department at the Johns Hopkins University Applied Physics Lab in Laurel, Md. He will assume his duties as Center Director on Aug. 4.

"My association with Rob Strain spans years of shared experiences in both industry and at the Applied Physics Laboratory," said Griffin. "He is one of the finest managers I know, and complements those talents with equally impressive people skills and an unbending sense of personal integrity. I am truly looking forward to his addition to a superbly talented NASA management team."

A resident of Poolesville, Md., Strain has a bachelor's degree in business administration from Western Michigan University. He has more than 25 years of experience in the aerospace business, including executive positions at Orbital Sciences, where he led its Satellite and Electronic Sensors divisions, and Fairchild Space and Defense Company, for which he served as Chief Financial Officer and various other operational roles.

Strain previously served as the Associate Department Head and Assistant Department Head for Operations at the Applied Physics Lab's Space Division. ■

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Cover caption: The Goddard folks that helped with the pre-dawn shipment of flight hardware to Kennedy Space Center. Front row from left to right: Ken Budden, Jean Manall, and Jeff Crane. Second row from left to right: Larry Dorsey, Al Strojny, Charlie Provost, Tony Keim, Mark Hubbard, Rick Vermillion, Larry Diggs, and Mike McClare.

Photo Credit: Pat Izzo.

GoddardView Info

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Managing Editor: Trusilla Steele

Editor: John Putman

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.

Dignitaries and Students Gather to Celebrate Dr. Sally Ride and Women in Space

By John Putman

On June 18, 1983, Dr. Sally K. Ride lifted off aboard Space Shuttle *Challenger* to become the first American female in space. To celebrate the 25th anniversary of her historic flight and recognize the contributions of women to space, science, and engineering, a reception was held at the Goddard Visitor Center entitled "We Have Come a Long Way."

On July 22, 2008, Dr. Ride and other dignitaries visited the Center as Goddard hosted the reception, which also served as the opening event for the "Earth Then, Earth Now: Our Changing Climate" educator conference being sponsored by Sally Ride Science in conjunction with NASA, the National Oceanic and Atmospheric Administration (NOAA), the National Science Teacher's Association, and the Department of Energy.

Included in the evening's events were showings of *Science on a Sphere*, the visualization system developed by NOAA that uses computers and video projectors to display animated data on the outside of a suspended, 6-foot diameter, white sphere.

Using the projection system, Deputy Center Director for Science and Technology, Dr. Laurie Leshin, gave a presentation and overview of Goddard's mission as it relates to climate change. Dr. Leshin often spoke specifically and directly to the many young women in the packed Globe Theater at the Visitor Center. After the presentation, Dr. Leshin served as host and introduced the evening's guests and speakers.

Acting Center Director Rick Obenschain spoke about Goddard's role in both Sally Ride's flight and in Alan Shepherd's brief suborbital flight in 1961. He also spoke of Dr. Ride's "hard work, dedication, commitment, talent, and skill."

Obenschain added, "Now, a generation has passed since your flight, and you are still a role model for many young women as the President and CEO of Sally Ride Science. You [Ride] are still breaking barriers and challenging old assumptions."

After the book report, Dr. Leshin introduced U.S. Senator Barbara Mikulski. Mikulski has been a strong and vocal supporter of Goddard and NASA. She spoke about the importance of continued support for NASA and how inspiring the achievements of women like Sally Ride are to the Nation and to young men and women.



Photo credit: Bill Hrybyk

Caption: Astronaut Sally Ride.

When Sally Ride took the podium, she recounted some of her early experiences with NASA. One anecdote had to do with the astronaut-only gym at Johnson Space Center. Because there had never been a female astronaut, the gym did not have a women's locker room. This was one of many adaptations NASA had to make for the new era in space exploration.

After her prepared remarks, Dr. Ride took questions from students from the Catholic High School in Baltimore, alumni from Greencastle-Antrim High School's Women in Science program, high school interns spending the summer at Goddard, and daughters of NASA and NOAA employees.



Photo credit: Bill Hrybyk

Caption: Astronaut Sally Ride and Senator Barbara Mikulski share a laugh.

Earlier in the afternoon, some of these young women were given the opportunity to get an inside look at the *Lunar Reconnaissance Orbiter* (LRO) and get an overview of the spacecraft and its mission from LRO Deputy Project Manager Cathy Peddie. They also enjoyed an informal meet and greet with some of Goddard's female scientists and engineers. ■



Photo credit: Bill Hrybyk

Caption: Grace Powers reads her book report.

As a special treat, the audience heard a book report read by Grace Powers. Grace is a third grader at Clarksville Elementary School. Her class was assigned a book report on a famous person. Grace chose Sally Ride.

Exploration Sciences Building Construction Update Number 7

By Rob Gutro

If you've driven by the center of the Goddard campus lately, you've noticed that Goddard's new Exploration Sciences Building is coming together.

David Larsen, Exploration Sciences Building NASA Project Manager, reports that the project site work, which includes storm water, grading, paving, and underground utilities, was 76% complete. He also noted that the concrete structure was 99% complete.

Other work in progress includes masonry, structural steel, exterior waterproofing, stud walls and doorframes, fire protection, mechanical, and electrical work.

There have been a number of recent major construction accomplishments. The roof concrete pour has been completed, and all other building concrete pours are complete except for the loading dock. The tower crane was also removed successfully.

Some of the things happening in the near future include installation of the roofing, exterior brick, curtain walls and windows, and continuing the interior construction of the building.

The building was designed by EwingCole Architects, based in Philadelphia and Washington, D.C.

For more information about the NASA Exploration Sciences Building, visit: http://www.nasa.gov/centers/goddard/news/green_building.html. ■



Photo Credit: Deborah McCallum.

Caption: A welder puts the finishing touches on a pipe.



Photo Credit: Deborah McCallum.

Caption: A worker considers the progress so far on the building.



Photo Credit: Dave Larsen.

Caption: View of the Exploration Sciences Building from the west.



Photo Credit: Dave Larsen.

Caption: Final concrete pour for the Exploration Sciences Building.

Servicing Mission 4 Hardware Passes Pre-Ship Review

By Susan Hendrix

The *Hubble Space Telescope* (HST) Program passed a significant milestone, the Pre-Ship Review (PSR), held July 14 at NASA's Goddard Space Flight Center in Greenbelt, Md. The review demonstrated the Servicing Mission 4 (SM4) flight hardware successfully passed all environmental and performance tests and is ready for shipment to the launch site for final processing prior to launch and mission operations.

According to Mike Kienlen, Deputy Project Manager for the HST Development Project, the PSR proves the project is on schedule and shows, "that we are ready to support the shipments of flight hardware and Government-supplied equipment to the launch site." The first of several shipments left the Center during the early morning hours of July 14, destined for Kennedy Space Center in Florida.



Photo Credit: Pat Izzo

Caption: Despite heavy rains, the truck carrying the first shipment of Hubble Servicing Mission 4 flight hardware makes its way out of the truck dock in Building 29 on July 14th. The pre-dawn journey will end at Kennedy Space Center in Florida.

SM4 flight hardware flying on the Space Shuttle *Atlantis* to the *Hubble Space Telescope* include:

- Wide Field Camera 3 (WFC3), a new camera that will study early and distant galaxies that are currently beyond *Hubble's* reach, as well as galaxies in our cosmic neighborhood;
- Two Battery Module Assemblies (BMA), contain six nickel hydrogen batteries, which will provide electrical power to *Hubble* during its night-time orbit;
- Super Lightweight Interchangeable Carrier, the first totally composite carrier ever to fly in the manned space program that will hold the WFC3 and BMAs;
- Cosmic Origins Spectrograph (COS), a new spectroscope that will study the large-scale structure of the universe and how galaxies, stars, and planets formed and evolved;
- Orbital Replacement Unit Carrier, which will hold the new COS science instrument, as well as the IMAX camera, which will document the mission for a future film on *Hubble*;

- Advanced Camera for Surveys repair hardware, which will allow the astronauts to remove the four failed boards that drive the Wide Field Channel detectors;
- The Latch Over Center Kit, which maximizes EVA time for Cosmic Origins Spectrograph and Advanced Camera for Surveys servicing by reducing the time required to open and close *Hubble's* aft shroud doors;
- Space Telescope Imaging Spectrograph repair hardware, which will allow astronauts to replace a low voltage power supply board containing a failed power converter;
- Rate Sensor Units are six gyroscopes packaged in pairs that allow *Hubble* to point at stars, planets, and other celestial targets;
- A refurbished Fine Guidance Sensor, which, along with the gyroscopes, are part of *Hubble's* pointing control system;
- New Outer Blanket Layers, which will provide additional thermal protection and increase operational margins;
- The Soft Capture Mechanism is designed to enable and assist in the safe end-of-life de-orbit of *Hubble*;
- Crew Aids and Tools will allow the astronauts to do all their assigned tasks on this mission;
- Multi-Use Logistic Equipment carrier, which will hold SM4 contingency hardware;
- The Bit Sync Assembly, which facilitates clean telemetry between HST and the Orbiter S-band communications system by processing the data stream through a digital bit synchronizer board; and
- The Relative Navigation Sensor system, which will obtain and store high resolution images of *Hubble* during SM4 capture and deploy.

When astronauts complete all five planned EVAs, or spacewalks, for this mission, *Hubble* will be reborn.

"Servicing Mission 4 marks the apex of not only the scientific capabilities of *Hubble*, but the apex of NASA's capabilities," explained Preston Burch, Associate Director of the Astrophysics Projects Division and HST Program Manager at Goddard. "In addition to making enormous gains in our understanding of the universe we live in, we have learned a lot in the areas of technology development, engineering, and management."

Space Shuttle *Atlantis* is currently on track for an October 8 launch from Kennedy. Designated as STS-125, it will carry a crew of seven astronauts to the world's most famous telescope for an 11-day mission that will give *Hubble* new eyes on the universe for many years to come.

For more information about *Hubble* and SM4, visit:
<http://www.nasa.gov/hubble>. ■

For Toy-Like NASA Robots in Arctic, Ice Research Is Child's Play

By Gretchen Cook-Anderson

Several snowmobiles navigated speedily over arctic ice and snow in Alaska's outback in late June. This scene might seem ordinary except that the recently unveiled snowmobiles are unmanned, autonomous, toy-size robots called SnoMotes—the first prototype network of their kind. The SnoMotes are envisioned to rove treacherous areas of the Arctic and Antarctic capturing more accurate measurements that will help scientists better understand what is causing the melting of ice in those regions.



Caption: SnoMotes measure just two feet long and one foot wide. Their light weight bodies can traverse volatile terrain effectively and without endangering scientists.

Ayanna Howard, an associate professor in the School of Electrical and Computer Engineering at the Georgia Institute of Technology in Atlanta, Ga., worked with scientists at the Pennsylvania State University in State College, Pa., to create the toy-like robots. The robots are designed to traverse terrain often too dangerous for scientists in pursuit of barometric pressure, temperature, and relative humidity measurements that will help scientists improve climate models. Howard, a former member of NASA's Mars technology

program team who developed SmartNav—an autonomous, next-generation Mars rover—believed that science-driven robotics could be just as useful of a vehicle to new discoveries on Earth as it has been in the quest to learn more about Mars.

“After working with robots for the Mars technology program, I thought a similar type of rover could be used to collect multiple science measurements on this planet,” said Howard. She is lead on the SnoMotes project funded by the Advanced Information Systems Technology program in NASA's Earth Science Technology Office, a NASA Headquarters office located at Goddard Space Flight Center in Greenbelt, Md.

“My research colleagues at Penn State agreed that we could possibly advance what we know about how changes in climate affect ice sheets and glaciers using robots to trek landscapes with volatile cracking or shifting ice where scientists have difficulty going to gather important measurements. The robots could also fill gaps in the existing network of satellites and weather station sensors that occur due to immobility of the grounded station sensors or remote location and limited resolution of the satellites. Essentially, the robots could act as ‘mobile weather stations,’ able to travel to capture real-time data at the spot where change is occurring.”

In June, Howard and researchers from the University of Alaska Southeast in Juneau completed the first tests of the SnoMotes' capabilities on the Mendenhall Glacier in Juneau. To test the basic ability of the SnoMotes to navigate the terrain and communicate with the science console and the team's base, Howard and others released three SnoMotes into a multi-textured environment on the glacier that featured ice, deep snow, crevices, and “sun cups,” rough patches that develop when the Sun partially melts icy areas.



Caption: University of Alaska Southeast scientist Matt Heavner and Georgia Tech engineer Ayanna Howard observe SnoMotes during field tests of the robots' navigation and communications capabilities in June on Juneau, Alaska's Mendenhall Glacier.

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For Toy-Like NASA Robots in Arctic, Ice Research Is Child's Play

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Photo Credit: University of Alaska Southeast/Alex Bogolepov.

Caption: Ayanna Howard, an associate professor in the School of Electrical and Computer Engineering at Georgia Tech, working with SnoMote robots.

"Though our analysis of the data from the field test will not be complete until this fall, the robots did well spanning the terrain without difficulty and we were able to communicate with them from the base camp without any noticeable errors," said Howard.

The current SnoMotes are a prototype of what Howard expects will be a full-scale system about twice the size of the current robots, which are two feet long and one foot wide. With the intent to use low-cost materials, the three prototypes were developed from remote-controlled plastic snowmobile toys that Howard and her team adapted with sensors, microprocessors, and cameras for autonomy that expand upon rover innovations from

Howard's SmartNav robot developed for NASA in 2004. NASA's Earth Science Technology Office cultivates technologies like the SnoMotes that offer scientific measurements and practical applications that benefit society in tangible ways.

"This is the third rendition of the robot," said Howard. "In the development stage, I considered the nature of ice and snow and how people actually walk on both. The first version of the robot had legs. We then shifted to a hybrid leg and wheel design that allowed the wheels to maneuver out of snow patches if the legs became stuck. We finally thought about the other ways in which scientists travel on the icy arctic terrain, and decided to use a snowmobile-type design to solve the maneuverability problems."

Howard and colleagues Derrick Lampkin of Penn State and Magnus Egerstedt of Georgia Tech hope to create a low-cost final model of the SnoMotes that will be scalable into a network that institutions can use, with 30–40 mobile robots located across the Arctic. During future field tests on the next generation of SnoMotes, Howard plans to assess whether multiple SnoMotes can use advanced artificial intelligence skills and enhanced mobility to navigate at the same time, distinguish varying types of terrain, and communicate with one another, and whether a full set of finely-tuned sensors can capture barometric pressure, temperature, and relative humidity while also being durable enough to sustain extremely cold temperatures. To this end, Howard and her team have begun thinking of ways to add a heating mechanism to preserve the robots' sensitive internal instruments.

"With a comprehensive system that boasts a communications infrastructure, mobile sensors with moving data streams, plus existing weather stations and Global Positioning System measurements of glacier motion, the entire network will be able to alert scientists, in real time, about what may be happening, let's say, when an Arctic lake is draining," said Matt Heavner, director of the Southeast Alaska Monitoring Network for Science, Telecommunications, Education, and Research at the University of Alaska Southeast in Juneau. Howard plans to work with Heavner to eventually broadcast SnoMote data on the Web for easy access by scientists.

For more information, visit NASA's Earth Science Technology Office Web site: <http://esto.nasa.gov>. ■

Hubble Instruments Slated for On-Orbit “Surgery”

By Ann Jenkins and Kelsey Paquin

When astronauts visit the *Hubble Space Telescope* (HST) in October 2008 for its final servicing mission, they will be facing an unprecedented task—performing on-orbit “surgery” on two ailing science instruments that reside inside the telescope: the Space Telescope Imaging Spectrograph (STIS) and the Advanced Camera for Surveys (ACS).

Hubble was designed with servicing in mind, so its instrument bay doors are lined with handrails and, with custom tools, are relatively easy to open for the astronauts. The same cannot be said for the instruments themselves.

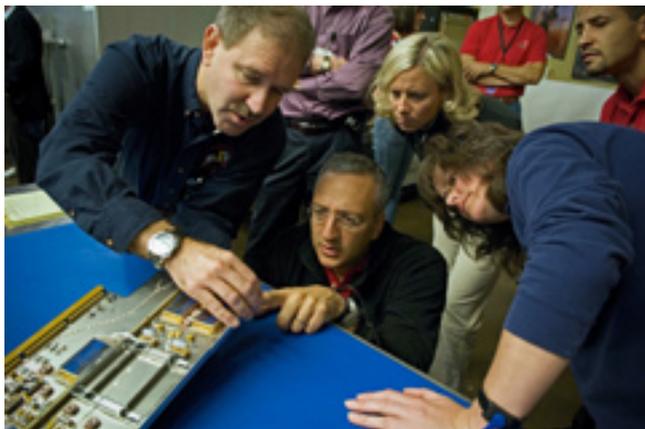
“The repair of STIS and of ACS in particular, involves techniques that the astronauts have never performed on *Hubble*, possibly never before anywhere,” explained HST Senior Scientist at Goddard, Dave Leckrone. “That is, to open up an instrument that was not designed to be opened up and actually pull out electronic printed circuit boards and replace them with new boards.”

To accommodate these groundbreaking repairs, *Hubble* engineers and astronauts worked diligently to design special tools and procedures. Like doctors performing surgeries, preparation is imperative for success.

The Space Telescope Imaging Spectrograph

Astronauts installed STIS in *Hubble* in 1997 during Servicing Mission 2. Its main function is spectroscopy—the separation of light into its component colors, or wavelengths—to reveal information about the chemical content, temperature, and motion of stars and gas. Among its many accomplishments, STIS confirmed the existence of super-massive black holes and was the first instrument ever to detect and analyze the atmosphere of a planet orbiting another star.

Although spectrographs like STIS generally do not produce the beautiful images that *Hubble* is famous for, the data they provide are essential to understanding the physical properties of the universe.



Caption: Astronauts John Grunsfeld (left) and Mike Massimino and a team of Hubble engineers inspect position indicator decals on the STIS replacement printed circuit board. The board will be installed during Servicing Mission 4 in an attempt to restore power to the instrument.

After a long life of scientific discovery, STIS experienced a power supply failure in August 2004, causing it to suspend operations. NASA engineers were able to pinpoint exactly where and how the failure occurred by examining data from STIS and determined that the inoperable power supply resides on a printed circuit board housed within the instrument.

The Advanced Camera for Surveys

Installed during Servicing Mission 3B in 2002, ACS quickly became *Hubble*'s workhorse imaging camera. Designed to survey large areas of the sky at visible and red wavelengths, it had twice the field-of-view and a finer resolution than its predecessor, the Wide Field Planetary Camera 2. It quickly became *Hubble*'s most heavily used instrument and was responsible for many of the telescope's most popular and dramatic images.

It took three failures to put ACS out of commission—the first two were recovered by operating the instrument in different ways. To protect against failures, all *Hubble* instruments have some degree of redundancy, meaning that there are duplicate parts that can perform the same function. If one part fails, another can be activated to restore the function.

When the first two failures occurred in 2006, the ground operations team was able to keep the entire instrument fully operational by using a redundant power supply. The final failure came in January 2007 when the backup power supply failed.

With less than two years until the final servicing mission, there would have been little time to develop procedures and tools needed to repair ACS had the team not already been preparing for a very similar task involving the repair of STIS. Designing a repair process for ACS became very workable by adapting the processes already under development for STIS repair.

Tool and Procedure Development

The repair of STIS and ACS presented a multitude of challenges during the development process. Engineers needed to work around three major issues: safely getting access to the failed boards, figuring a way to pull them out wearing the pressurized gloves, and closing out the work site when repairs are complete.

Knowing exactly what needs to be fixed is not enough to make repairs easy. To access the failed circuit boards on these two instruments, astronauts will have to remove 111 screws from the cover of STIS, and 32 screws from ACS, a time-consuming process in an environment where time is a scarce commodity.

To confront this challenge, Goddard engineers developed a high-speed power screwdriver with low torque, or twisting force. This combination of operational abilities means that the drill will speed up the removal process without breaking the screws and fasteners.

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Hubble Instruments Slated for On-Orbit “Surgery”

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The sheer number of screws to be removed is not the only issue with gaining access to the circuit boards. Despite its mammoth size, *Hubble's* instruments are extremely delicate. Floating debris pose the threat of contaminating exposed electronics. When astronauts open *Hubble's* outer shell to make their repairs, they must exercise extreme caution. Even tiny metal shavings resulting from the removal of just one screw could be disastrous for the telescope.

To avoid the debris issue, NASA engineers designed a fastener capture plate. Using the custom drill, astronauts will first remove four screws to install the transparent capture plate over the electronic access panel. Tiny, labeled holes in the plate will allow them to then insert the drill bit and remove screws as the capture plate contains them. When all of the screws have been removed, the entire capture plate can be released as one unit, safely taking the access panel and all debris with it.



Caption: Astronaut Andrew Feustel practices installing the Fastener Capture Plate on an underwater mockup of the Advanced Camera for Surveys at the Neutral Buoyancy Laboratory in Houston, Texas.

The astronauts' second challenge is grasping the failed circuit boards once the access panel has been removed. The boards are thin and the astronaut's suits, including their gloves, are bulky and pressurized to protect them from the space environment. If you were to put on a pair of thick, wool mittens and try to grab a single piece of paper from the middle of a stack, you might have some idea of how difficult and time-consuming the task is for astronauts. NASA engineers got around this issue by developing a special card extraction tool that will allow the astronauts to easily grab and remove the circuit boards using large handles made specifically for their gloves.

The last major challenge of the repair process involves closing the instruments back up after repairs are complete. To conserve time, engineers designed a simplified version of the access panels. Two lever-like latches

will be all it takes for the astronauts to securely lock the new STIS cover into place. A new panel is not required for ACS because the new electronic cards have all been built into one box that easily slides into place and covers the open side of the instrument.

Appreciating a Complement

Because NASA will be installing similar instruments into *Hubble* during SM4, you may wonder what purpose it serves to fix STIS and ACS. The answer lies in their differing, but complementary, capabilities.

While the new Wide Field Camera 3 will expand *Hubble's* high resolution and provide a wide field of view into the near-ultraviolet and near-infrared regions of the spectrum, the ACS has a slightly higher discovery potential in the visible wavelengths of light. STIS is a two-dimensional spectrograph while the Cosmic Origins Spectrograph is a point-source ultraviolet spectrograph. These two spectrographs working in tandem will give astronomers a full, spectroscopic suite of instruments.

The improvements will add years of science to *Hubble's* mission and provide a full toolkit to astronomers around the world. “Personally, I think that’s where the more exciting results will come from after this servicing mission,” explained Leckrone. “The new ideas that astronomers have about how to use these wonderful instruments now that they’re all together in a set that is internally complementary.”

Making History Again

Hubble has been arguably the most well-known and successful telescope in NASA history, but it is not solely a pathfinder for the science it has yielded over the years. The processes and procedures carried out during servicing missions have also always been innovative.

Before *Hubble*, nothing launched into space had even been built to be serviced and upgraded in orbit. The telescope is close to making history again with the first on-orbit repairs of existing instruments. Should these repair tasks be successful, *Hubble* is expected to be 90 times more powerful than ever before.

“At the end of SM4, when the astronauts leave *Hubble* for the last time, we have a very good prospect that *Hubble* will be at the apex of its capabilities. It will be better than it’s ever been before, which is quite awesome when you realize that it will be over 18 years old as an observatory,” Leckrone said. ■

In Memoriam: Tom Weber and Norman "Junior" Rembert

By John Putman



Photo Credit: Debora McCallum.

Caption: Tom Weber.

Thomas W. Weber Jr. died suddenly Thursday, July 17, 2008, at his home in Columbia, Md. He was 51.

Tom worked in the Science Data Systems Branch in the Software Engineering Division. He had been the Earth Science Data and Information System (ESDIS) Project Integration and Test Manager since 2002, and was the primary liaison between the development teams and the data centers.

Acting Center Director Rick Obenschain talked about Tom, "Before joining the ESDIS team, Tom was a key member of the Information Technology (IT) technical team on the Integrated Financial Management Program (IFMP). He was instrumental in establishing the technical requirements on IFMP and in establishing the IFMP technical testing team at Goddard.

"Tom began his civil service career in 1978 and held a variety of IT-related positions during his time at Goddard. Tom was a former member and Chairperson of the Goddard Equal Opportunity Advisory Committee on People with Disabilities, now the Equal Accessibility Advisory Committee. In that role he was a dynamic leader and a strong advocate for the equal opportunity of individuals with disabilities. Those who worked with him said he served the Committee with an unwavering commitment and led the Committee with wisdom and insight.

"Tom's sudden death comes as a tremendous shock to his countless friends and colleagues and he will be sorely missed. His passion for life and helping others inspired all who knew him."

Tom is survived by his wife, Jo, and sons Kyle and Colin. His siblings include brothers Timothy of Raleigh, N.C.; Todd of Warminster, Pa.; Kevin of Warminster, Pa.; Craig of Greer, S.C.; and sister Tami Schmidt of Warminster, Pa. He also is survived by several nieces and nephews.

In lieu of flowers, the family asks that you donate to the Alzheimer's Association at the below address:

Alzheimer's Association
225 N. Michigan Ave., Suite 1700, Chicago, IL 60601-7633.

Please enclose a note that states:
In Memory of Thomas W. Weber, Jr.
9628 Green Moon Path, Columbia, MD 21046. ■

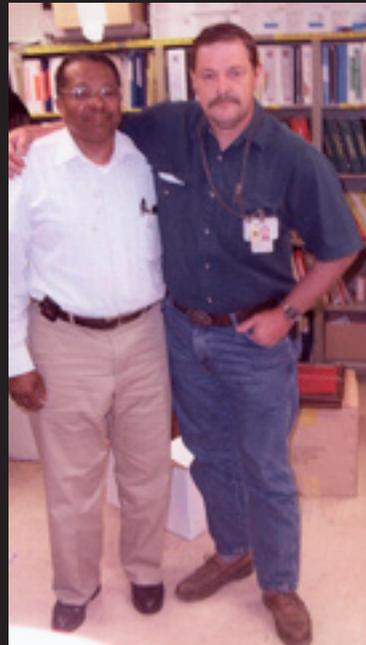


Photo provided by Randy Dembrowicz.

Caption: Norman Rembert (left) and Randy Dembrowicz in 2002.

Norman "Junior" Rembert died on June 29th at Georgetown University Hospital in Washington, D.C.

Born in Pineville, S.C., Norman moved to Washington, D.C. in 1959, where he met his future spouse, Pearl, who he married in 1964.

Norman started at Goddard as an electrician and was ultimately promoted to Power Plant Supervisor. He served in that position for approximately 15 years.

Friend and colleague Randy Dembrowicz, Assistant Energy Manager in Code 227, describes Norman as, "A southern gentleman. He was a great person, a great boss, a great friend." This sentiment is echoed by the many who knew and respected Norman.

Besides Goddard, Norman belonged to another family, The Master's Touch Praise Ministries church in Oxen Hill, Md. During his membership at the church, he served on the board of trustees, as president of the Male Chorus, and on the Board of Deacons, where he later became Vice Chairman. He served on several auxiliaries, including Men's Day, the evangelistic committee, and the decorating committee, among others.

"Junior" is survived by his wife, Pearl; his daughter, Dawn Ashton; his two sons: Norman and John; six brothers: James, Theodore, Dan, John, Archie, and Jerome; two sisters: Evelyn Graham and Lelia M. Hartgrove; and two grandchildren: Tiffany and Dexter Ashton. ■

Goddard Earth Science Film Producer Focuses on Plight of Atlantic Puffins

By Kelsey Paquin

What do puffins—colorful-billed birds resembling miniature penguins—have to do with the work we do at NASA?

That would be a good question to ask Maria Frostic, an Earth science film producer at Goddard. A shortened version of her documentary, “Plight of the Puffins,” was featured on National Geographic’s “Wild Chronicles” during the week of July 20–26.

On a Fulbright scholarship, Maria took leave from Goddard in July and August 2007 and traveled to the Westman Islands of Iceland to make a documentary on the shrinking population of puffins. Originally, she had planned to produce a film on medieval Icelandic sagas, but her plans changed after hearing the story of the islands’ native bird.

Maria explained, “Upon my arrival in Iceland, I was introduced to a puffin biologist who had just launched a study to understand why Iceland’s Atlantic puffin population, which is the largest in the world, is threatened. I learned that the birds’ food source has shifted due to climate change, and I thought this would make an interesting film.”

While Maryland and Iceland may be geographically, geologically, and culturally different, Maria felt interconnections between her work in both of these places. As an Earth science producer at NASA, all of her projects have involved climate change in some way.

For instance, Maria recently produced new science data visualizations from the Sea-viewing Wide Field-of-view Sensor (SeaWiFS), a unique instrument that observes global levels of phytoplankton. SeaWiFS gathers data on ocean color from space, which enables researchers to understand the oceans’ role in the global carbon cycle, as well as other biogeochemical cycles, through a comprehensive research program. One of the mission’s findings has been evidence that increased sea surface temperatures result in lower amounts of marine phytoplankton.

Most marine life depends on phytoplankton, including the fish that sustain Iceland’s Atlantic puffin population. In the past year, researchers linked the disappearance of the birds’ missing food source to Earth’s changing climate. Some baby puffins, known as pufflings, are dying of starvation. Their food source, a fish called the sandeel, has become scarce.

The people of the Westman Islands have strong ties to puffins as a part of their culture and express concern about the fate of the birds. Once an important food source, the puffin is now a revered mascot. Images of the birds grace signs, buildings, and busses throughout the town of Heimaey.

In late summer, baby puffins must make their first flight to sea. The baby birds are often drawn to the town’s lights, and wind up stranded and disoriented. The children of Heimaey have an annual tradition of catching the vulnerable pufflings and releasing them at the water’s edge. Island

adults recall rescuing the birds in droves. In the last few years, however, puffin reproduction has plummeted, and far fewer birds are venturing out toward sea.

Fascinated by the people and their connection to the puffin, Maria did as the Icelandic people do. She pulled herself up the precarious cliff sides using the old ropes hung by the locals. There she filmed the puffin nesting grounds as unobtrusively as possible.



Photo Credit: Mary Tucker

Caption: Maria Frostic films the Jokulsarlon iceberg lagoon in Iceland.

“I strive to create films that are entertaining and informative, but have scientific integrity,” said Maria. “It’s not always easy to balance each of these elements, but I work closely with the scientists I document to ensure that they are comfortable with how I portray them and their work.”

Maria believes that audiences enjoy nature documentaries. The recent unexpected success of the Discovery Channel’s “Planet Earth” is a good indicator of the kind of programming the general public wants to view.

“‘Planet Earth’ was wildly popular and proved to the large networks that the public cares about the natural world and stories related to the natural sciences. There is also a large green movement happening around the globe, which coincides with a widened platform for making and distributing documentary films,” said Maria. “It is an exciting time to be involved with making science films.”

Originally from Richmond, Va., Maria received bachelor’s degrees in biology and English language and literature from the University of Virginia. She earned her Master of Fine Arts degree in science and natural history filmmaking from Montana State University in Bozeman. She has worked as a newspaper reporter, teacher, park ranger, and marine science researcher.

Science filmmaking allowed Maria to combine all of her interests and experience. Having always been drawn to nature and science, she is appreciative of the opportunity to close the gap between science and communicators. When the opportunity to do just that arose at Goddard, she thought there would be no better place to communicate science stories than at NASA. ■

New Faces:

A semimonthly feature spotlighting new members of the Goddard community.

By John Putman



Photo credit: Debora McCallum

Caption: Gina Lofton.

Gina Lofton is the Branch Secretary for the Mission Systems Engineering Branch, Code 599.

Gina is a local, having grown up in Prince George's County. She went to High Point High School on Powder Mill Road, then went on to study early childhood education. Gina then stayed home to raise her two daughters, Jackie and Alexis. She also volunteered as an emergency medical technician with the Waldorf Volunteer Fire Department, where she had, "the experience of a lifetime."

Goddard and Gina already have a history together. "I worked here at GSFC back in the '80s [1980–1988 as a Project Secretary]," Gina says. "When I decided to get back into the work world, I wanted to get back into the Federal Government. When I saw the announcement for secretary for Goddard, I was very excited and I applied. It's amazing to be back here and find everything automated. I have also seen people again that I haven't seen since I last worked here."

For Gina, the most rewarding parts of working at Goddard is having, "a wonderful office of coworkers, being back in the Government again, and my mom works here too!"

When not at work, Gina enjoys shopping with her daughters, playing with her dogs, and summer days by the pool. ■



Photo credit: Debora McCallum

Caption: Graham Webster.

Graham Webster is a student trainee in engineering (co-op), Code 597.

This fall, Graham will be a junior at the Pennsylvania State University, where he is in the Schreyer Honors College. He is majoring in aerospace engineering.

Graham says he came to Goddard because, "I wanted to work for an employer who dealt with space where I would be given challenging and rewarding work."

According to Graham, "The most rewarding part of my experience with NASA is working alongside extremely intelligent, dedicated individuals who are all working to collectively achieve amazing results. I have enjoyed the exposure to real world working experiences where I have been given real work assignments that I can follow through start to finish." Graham's current project is working on citric acid passivation of propulsion flight tubing lines.

Away from Goddard, Graham enjoys exercising, riding his motorcycle, and anything active and outdoors. Graham also enjoys the simple pleasure of being around his family and friends. ■