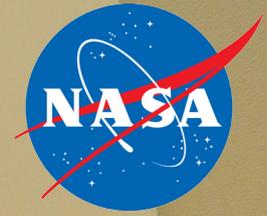


National Aeronautics and Space Administration



goddardview

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Goddard Scientist Elected into National Academy of Sciences

By Rob Gutro and Christina Coleman

Dr. Neil Gehrels, an astrophysicist at NASA's Goddard Space Flight Center, has been elected into the National Academy of Sciences (NAS), an honor considered to be one of the highest awarded to scientists and engineers.

The honor, which also yielded 71 other newly elected members, was announced recently at the 147th annual meeting of the Academy.

Dr. Gehrels pioneering research and contributions to gamma ray astronomy and leadership of the *Compton Gamma-Ray Observatory* (CGRO) and *Swift* missions to study active galaxies and gamma-ray bursts have earned him the prestigious honor. He joins Dr. John Mather and Dr. James Hansen as the current NASA scientists in the NAS. "I had a phone call from Professor John Huchra from Harvard with the news" said Gehrels. "I was driving to work and pulled over. It was a wonderful surprise."

The NAS is a private, nonprofit organization consisting of an honorific society of distinguished scientists and engineers. Signed into being by President Abraham Lincoln in 1863, NAS is dedicated to the furtherance of science and technology and has served to "investigate, examine, experiment, and report upon any subject of science or art" whenever called upon to do so by any department of the Government.

"It has been an adventure learning about the gamma-ray sky," Gehrels added. "There were new surprises every day in data from CGRO and continuing now with *Swift*. It is my greatest pleasure working with the expert teams at NASA and in the universities on these discovery missions."

For more information about the National Academy of Sciences, visit:
<http://www.nationalacademies.org>. ■



Caption: Dr. Neil Gehrels.

Photo credit: NASA

GoddardView

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Cover caption: NOVA Producer Rush DeNooyer (l) and Goddard Producer Mike McClare in front of their favorite subject.

Photo credit: NASA/Goddard/Pat Izzo

GoddardView Info

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Deadlines: News items for publication in the Goddard View must be received by noon of the 2nd and 4th Friday 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 Community Gets Special *Hubble* Viewing

By John M. Putman

On May 4, 2010, over 300 Goddard employees and their guests got to see a special, private screening of the IMAX movie “Hubble 3D” at the Maryland Science Center in Baltimore, Md. This spectacular film was presented on a monumental five-story screen and immersed the viewers in glorious 38-speaker surround sound.



Photo credit: NASA/Goddard/Bill Hrybyk

Caption: Goddard employees and their guests enjoy pre-movie treats.

Before the movie, visitors enjoyed movie-inspired food and drinks during a catered reception. Drinks, hot dogs, veggie burgers, cookies, and popcorn were offered. Goddard’s Public Affairs Office (PAO) offered shuttle transportation to and from the Science Center and Goddard to employees who had purchased tickets.



Photo credit: NASA/Goddard/Bill Hrybyk

Caption: Guests show off their popcorn while waiting to see “Hubble 3D.”



Photo credit: NASA/Goddard/Bill Hrybyk

Caption: Hubble scientist Jennifer Wiseman speaks to the audience.

Once inside the St. John Properties IMAX Theater, *Hubble* scientist Jennifer Wiseman gave a presentation called “Discoveries Unbound.” The presentation was filled with great *Hubble* images and people who worked on the *Telescope*.

The film itself filled the guests with pride and wonder at *Hubble’s* adventures and future accomplishments. The 3D effects were astounding, virtually exploring a nebula millions of light-years away. The footage recorded by the astronauts of Servicing Mission 4 gave viewers a peek at life aboard a spacecraft during a physically and emotionally exhausting mission. There was some fun in the movie too, including scenes of astronaut Drew Feustal successfully assembling a burrito in a zero-g environment.

Organized by PAO, this event is part of the Center’s celebration of *Hubble’s* 20th anniversary. ■



Photo credit: NASA/Goddard/Bill Hrybyk

Caption: Some enjoyed the 3D glasses even without a movie.

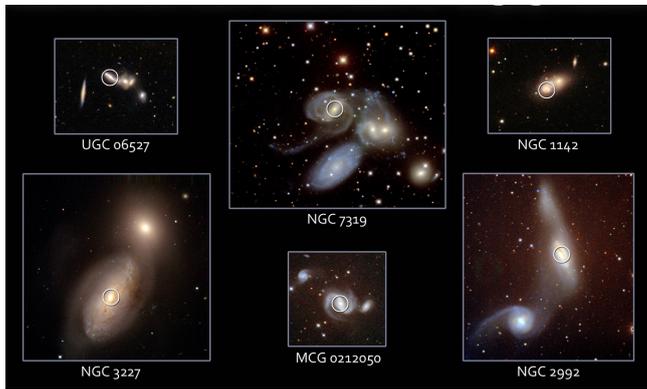
NASA's *Swift* Survey Finds 'Smoking Gun' of Black Hole Activation

By Francis Reddy

Data from an ongoing survey by NASA's *Swift* satellite have helped astronomers solve a decades-long mystery about why a small percentage of black holes emit vast amounts of energy.

Only about one percent of supermassive black holes exhibit this behavior. The new findings confirm that black holes "light up" when galaxies collide, and the data may offer insight into the future behavior of the black hole in our own Milky Way galaxy. The study will appear in the June 20 issue of *The Astrophysical Journal Letters*.

The intense emission from galaxy centers, or nuclei, arises near a supermassive black hole containing between a million and a billion times the Sun's mass. Giving off as much as 10 billion times the Sun's energy, some of these active galactic nuclei (AGN) are the most luminous objects in the universe. They include quasars and blazars.



*Caption: The optical counterparts of many active galactic nuclei (circled) detected by the *Swift* BAT Hard X-ray Survey clearly show galaxies in the process of merging. These images, taken with the 2.1-meter telescope at Kitt Peak National Observatory in Arizona, show galaxy shapes that are either physically intertwined or distorted by the gravity of nearby neighbors.*

"Theorists have shown that the violence in galaxy mergers can feed a galaxy's central black hole," said Michael Koss, the study's lead author and a graduate student at the University of Maryland in College Park. "The study elegantly explains how the black holes switched on."

Until *Swift*'s hard X-ray survey, astronomers never could be sure they had counted the majority of the AGN. Thick clouds of dust and gas surround the black hole in an active galaxy, which can block ultraviolet, optical and low-energy, or soft X-ray, light. Infrared radiation from warm dust near the black hole can pass through the material, but it can be confused with emissions from the galaxy's star-forming regions. Hard X-rays can help scientists directly detect the energetic black hole.

Since 2004, the Burst Alert Telescope (BAT) aboard *Swift* has been mapping the sky using hard X-rays. "Building up its exposure year after year, the *Swift* BAT Hard X-ray Survey is the largest, most sensitive and complete census of the sky at these energies," said Neil Gehrels, *Swift*'s principal investigator at Goddard. The survey, which is sensitive to AGN as far as 650 million light-years away, uncovered dozens of previously unrecognized systems.

"The *Swift* BAT survey is giving us a very different picture of AGN," Koss said. The team finds that about a quarter of the BAT galaxies are in mergers or close pairs. "Perhaps 60 percent of these galaxies will completely merge in the next billion years. We think we have the 'smoking gun' for merger-triggered AGN that theorists have predicted."

Other members of the study team include Richard Mushotzky and Sylvain Veilleux at the University of Maryland and Lisa Winter at the Center for Astrophysics and Space Astronomy at the University of Colorado in Boulder. "We've never seen the onset of AGN activity so clearly," said Joel Bregman, an astronomer at the University Michigan, Ann Arbor, who was not involved in the study. "The *Swift* team must be identifying an early stage of the process with the Hard X-ray Survey."

Swift, launched in November 2004, is managed by Goddard. It was built and is being operated in collaboration with Penn State, the Los Alamos National Laboratory in New Mexico, and General Dynamics in Falls Church, Va.; the University of Leicester and Mullard Space Sciences Laboratory in the United Kingdom; Brera Observatory and the Italian Space Agency in Italy; plus additional partners in Germany and Japan. ■

Image credit: NASA/NOAO/University of Maryland

James Webb Space Telescope Inspires Future Scientists

By Catherine Lilly

Engineers and Scientists working on the *James Webb Space Telescope* (JWST) met at Northrop Grumman's Space Park in Redondo Beach, Calif. for the JWST Mission Critical Design review.

Amid a series of weeklong meetings and project discussions, Northrop Grumman co-sponsored a fantastic hands-on community event at the Da Vinci School in Hawthorne, Calif. to celebrate astronomy and promote the study of math and science in schools. The event featured a speech by Nobel Prize winner and JWST Senior Project Scientist, Dr. John Mather, as well as a "Student Question and Answer Session" hosted by three JWST Project Scientists.

Dr. Mather opened his speech to the crowd of students and their families with some history about the school's name sake, Leonardo Da Vinci. He described how Da Vinci was an enthusiast of astronomy and drew a picture of a reflecting telescope about 100 years before the first telescopes were ever constructed. Dr. Mather went on to explain that humans have attempted to empirically study the universe as far back as 1,000 B.C. In fact, "The Greeks," he described, "were able to measure the distance of the Moon from the Earth quite accurately."

The *James Webb Space Telescope* is another scientific leap forward in the ongoing study of astronomy. Dr. Mather expressed how JWST will be able to "uncover the story of the universe" by capturing light over 15 billion

years old. He explained how JWST will observe light in the infrared, which will allow it to view galaxies in all stages of development as well as see through dust clouds at new stars and planetary systems.

Dr. Mather went on to discuss the Big Bang Theory, other modern scientific breakthroughs in the field of astronomy, and astronomical mysteries such as dark matter and anti-matter. After speaking for about 45 minutes, the floor was opened up for questions, where students asked about the mission launch date, JWST's relationship to the *Hubble Telescope*, and the possibility of human space travel.



Photo provided by Northrop Grumman

Caption: Students from the Da Vinci School and representatives from the James Webb Space Telescope, including Goddard's Todd Toth and Lee Feinberg.

After the speech, students were led out of the auditorium to the Da Vinci School's Northrop Grumman Innovation Lab. The high tech media and research lab was set up with hands-on activities for the students, models of the telescope, and JWST Project Scientists waiting to answer questions and talk further about the science behind the telescope. Students also had the opportunity to get a lesson on how a telescope works by observing stars through telescopes set up by the South Bay Astronomical Society.

The event was extremely successful and excited the audience about space science and inspired students to give a little more thought to the age old question of our universe's origin and its amazing history. ■

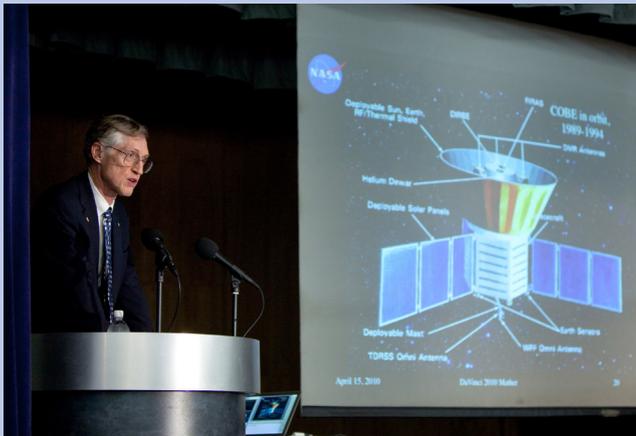


Photo provided by Northrop Grumman

Caption: Nobel laureate John Mather speaks to students at the Da Vinci School in Hawthorne, Calif.

Goddard Participates in Public Service Recognition Week

By Christina Coleman

On May 6–8, 2010, NASA was one of the 100 civilian and military agencies that participated in this year's Public Service Recognition Week, which was held on the National Mall in Washington, D.C.

Celebrated since 1985, this year's campaign was titled "Innovation and Opportunity," a theme that echoed the goal of Public Service Recognition Week to honor civilians and military personnel who dedicate themselves to public service.

Partnership for Public Service President Max Stier kicked off the week with an opening ceremony and concert where he shared a letter of warm wishes from President Obama and introduced the 2010 honorary co-chairs. "Making our country work is our most challenging problem and we need great people to make it work and do the job," Stier said.



Caption: Hundreds of students gathered for Public Service Recognition Week.

Employees from Goddard Space Flight Center and Wallops Flight Facility were present to showcase their missions, innovative research, and career opportunities. During the three days, Jacob Owen, a Wallops photographer and contractor with LJT & Associates, Inc., presented videos of Wallops launching capabilities with rockets and balloons.

The Innovative Partnerships Program office (IPP) at Goddard showcased many great interactive and educational presentations, including NASA City, an interactive screen that shows children how NASA technology has been applied and used in everyday life. A version of the NASA City Display called "Spinoff NASA City," provided a more specific look at NASA technology's effect on everyday life. Visitors were allowed to take CD versions of the display home with them.

There was Integrated Lunar Information Architecture for Decision Support (ILIADS) software on display, used to calculate the optimum path for possible landing sites. Also on display was Moonbase Alpha, a demo for the multi-player online game that utilizes actual NASA *Constellation* program designs for mankind's return to the Moon. "This demo explores the surface of the Moon through different tasks," said Laura Walker, an engineer from IPP.

The Public Affairs Office was in attendance with a digital photo booth, which was a big hit for students, civilians, and military alike.



Caption: Michelle Jones, Amy Pruett, and Maria Acevedo-Rivera, from the Office of Public Affairs, await subjects for the digital phot booth.

The final day of the event, titled Opportunities in Government, brought big and eager crowds to the NASA booth for information on careers and insider tips on how to land a job. Richard Gudnitz, the Recruitment Program Manager in the Office of Human Capital Management at Goddard, presented vital information about student programs, co-op programs, and openings at Goddard, as well as information about other NASA Centers.

"It's vital for the benefit of our future workforce that NASA take advantage of all potential opportunities to share our career opportunities with job seekers, particularly those with a passion for aerospace and science." Gudnitz said. "Public service is at the foundation of what we do at NASA. Since our inception, we've been tasked with pushing the limits of technological advancements and scientific discovery," he added.

In addition to three days packed with information about NASA technology and employment opportunities, visitors were able to take home space exploration and science activity books for students, pamphlets about Goddard's Visitor Center, and NASA's Space Place bookmarks for children. ■

Goddard Hosts Winter Camp for Educators

By Dewayne Washington

Members of the Goddard community, with support from the Education Office, hosted educators from across the country at the 2010 History of Winter (HOW) camp, Feb. 10–16, in Lake Placid, New York.

For more than 10 years, HOW has provided high school teachers and college professors the opportunity to live and work in real world, arctic conditions. Educators gain a greater understanding of arctic climate through the study of ice and snow with hands-on activities. They are also exposed to the why, what, and how of satellite remote sensing.

Gathering from as far away as Juneau, Alaska, the 18 high school teachers and college professors were placed in the role of scientist for the week. Through scientific inquiry, they were to gain firsthand understanding of how the study of snow and ice can be indicators of climate change.

"I have always been fascinated by ice and snow and believe this is a great environment to excite teachers about science, essentially introducing them to a teacher-as-scientist (TAS) role," said Dr. Peter Wasilewski, Goddard planetary scientist and Director of the NASA HOW expedition. After the week of arctic activities, the educators are expected to return more knowledgeable and better prepared to engage and inspire students about science.

The wintry experience also introduces participants to the Global Snowflake Network. "You can learn a lot from a snowflake," says Wasilewski. "The shape reveals temperature and content in the clouds where the snowflake forms and grows."

During the week, the teachers are introduced to the many uses of the ThermoChron®. The button-sized device has the unique ability to measure and record data that can later be retrieved for extensive study. Introduced at HOW in 2004, the ThermoChron® has quickly become a staple classroom device in the study of temperature variations.



Caption: A "teacher team" busy at various tasks intending to characterize the snow pack. They will measure temperature and snow density and then attempt to relate the structure of the snow column to the "History of Winter."

Photo credit: NASA/Goddard/Peter Wasilewski

Other camp activities included learning to how to use field tools in arctic conditions, collecting snow pit data and ThermoChron® data retrieval and handling. With the sub-zero temperatures, the educators were able to conduct real-time ice pit studies within the Lake Placid, Saranac Lake, and Tupper Lake areas.

Lake Placid, host of the 1932 and 1980 Winter Olympics, is considered an ideal location for non-polar snow-ice-cold investigations because of the extreme temperature and yearly snowfall totals.

Participants have all ventured back to their respective home states to complete their snow and ice studies. Their HOW experience will be used to develop innovative science curricula that meets National Science Education Standards.

"It was an exhausting week, no time is wasted and we covered so much material," said Lori Alterman, a teacher from Annandale, Va. "There was ecology, meteorology, hydrology, and more. I thought the ice thin sections were absolutely gorgeous and wish I could recreate them for science classes. The week was also a great opportunity for discourse between current and aspiring teachers. The experience gave me a great starting point to strategize how to bring this knowledge into the classroom."



Photo credit: NASA/Goddard/Peter Wasilewski

Caption: The team of teachers from nine states, including Alaska and Native American schools, pose with the HOW content providers at the SARANAC ice castle. The ice castle is part of the yearly winter festival.

With this program, NASA continues the Agency's tradition of investing in the Nation's education programs. It is directly tied to NASA's goal of attracting and retaining students in science, technology, engineering, and mathematics, or STEM, disciplines.

For more information about the History Of Winter or The Global Snowflake Network, visit: <http://education.gsfc.nasa.gov/how>. ■

Goddard Develops New Technology to Save Lives

By Rani Gran

Just seven days after setting sail for a tiny island off the eastern tip of Puerto Rico on Dec. 26, 2009, Missourian Dennis Clements thought his life was over; his crippled 34-foot fiberglass sailboat—buffeted for four days by gale-force winds and high seas—had capsized, tossing him into the frigid waters of the North Atlantic.

“At one point, I saw the mast pointed straight down to the bottom of sea, and the boat continued to roll,” he said. “I was shaken loose somewhere underwater and when I reached the surface, I could see my boat about 30 feet away. I could see her stand up. She righted herself. She was heavily flooded. There was still a piece of sail and I saw it catch the wind. I saw her sail away and leave me there. And I was alone in the dark, and in the storm, 250 miles from the shore. As I floated there, I knew this was the end. This was how it would end for me.”

Today, Clements considers himself fortunate. Thanks to NASA technology, the Search and Rescue Satellite-Aided Tracking (SARSAT) program managed by the National Oceanic and Atmospheric Administration (NOAA), and the bravery of military rescuers, Clements was ultimately plucked to safety by a Navy seaman who had been dispatched from the U.S.S. Dwight D. Eisenhower. It was the only vessel within a hundred miles of Clements’ location able to respond to the Coast Guard’s call for help and attempt the rescue, which took only four minutes once the Navy helicopter arrived on the scene. “It was the bravest thing I’ve ever seen,” Clements said.

In a sense, Clements dramatic rescue began years earlier when he bought a 406 MHz Emergency Position Indicating Radio Beacon (EPIRB), designed for maritime use. When his sailboat, “Gloria Adios” had taken on water, the beacon activated, transmitting an emergency distress signal that NOAA weather satellites equipped with NASA-developed repeaters then relayed back to NOAA-operated ground stations. While Clements battled the storm, which was slowly but surely overwhelming his sailboat, a chain reaction had already been set in place before the rogue wave had even capsized his boat.

Sometime after the beacon began transmitting the emergency alert, SARSAT equipment located hundreds of miles away received the signal and had begun processing it to determine its precise location. The U.S. Coast Guard, which is responsible for at-sea rescues, received the alert and searched the NOAA Registration Database to determine whether the beacon had been registered. Luckily for Clements, he had done so, providing emergency contact numbers and other information that the Coast Guard used to contact Clements’ family.

The database is a vital part of the SARSAT program. “We use the database to provide critical information to help expedite the search process, especially if the location of the beacon is not immediately known,” said Mickey Fitzmaurice, a space systems engineer for the SARSAT program, the organization that operates the U.S. component of the COSPAS-SARSAT system now comprised of 40 nations.

The beacon on Clements’ boat was an older model and did not encode GPS location data, with its signal. However, the ground-station equipment used the Doppler Effect from its low-Earth orbiting weather satellites to help pinpoint the location of the signal. This can take a little time depending on where the satellites are located at the time of the incident. While the SARSAT system calculated the location of the signal, a Coast Guard search and rescue controller was on the phone calling to find out if Clements had gone to sea and where he was headed. From this information, a more precise location could be provided to the rescuers.



Caption: A variety of emergency beacons used to transmit distress signals. All 406 MHz beacons can and should be registered.

Photo credit: NASA/Goddard/Rebecca Roth

Given the weather conditions the night Clements was rescued, Fitzmaurice said it was fortuitous that Clements had registered his beacon. The U.S. Coast Guard was able to confirm the validity of Clements’s distress signal. U.S. Coast Guard and U.S. Navy personnel involved in his rescue were not unnecessarily exposed to life-threatening conditions due to a false alert.

“The beacon registration information can help save lives, not only the person in distress, but also the rescuers,” said LCDR Kathy Niles, U.S. Coast Guard SARSAT Liaison Officer. “NOAA’s database currently contains about 275,000 registrations which, unfortunately, are only about 75 percent of the beacons out there.”

Since his rescue in January, Clements has had time to reflect on the technology and people who saved his life. “I’m very glad I had that beacon,” he said. “I knew it was a satellite system and somewhere there were people monitoring it, but I didn’t know it was a weather satellite. It really is a wonderful system that they have come up with,” he said. “It speaks volumes about the United States of America in the things that matter to us as a Nation, that we would invest time, resources, and manpower (into technologies) that save people’s lives.”

Continued on Page 9

Goddard Develops New Technology to Save Lives

Continued from Page 8

Now, NOAA, NASA, U.S. Coast Guard, and U.S. Air Force officials are working together to develop a new and improved search and rescue system, called the Distress Alerting Satellite System (DASS).

Engineers at Goddard are developing next-generation search and rescue technologies that will more quickly detect and locate distress signals generated by 406 MHz beacons installed on aircraft, vessels or carried by individuals. That's because NASA plans to install the repeaters on *Global Position System* (GPS), a constellation of 24 spacecraft operating in mid-Earth orbit, and not weather satellites.



Photo credit: NASA/Goddard/Debra McCullum

Caption: Inside the Search and Rescue Mission Office at Goddard.

"A few years ago, we looked to see how we could improve the system. We concluded that the international search and rescue community would benefit from new technology installed on GPS," said NASA Search and Rescue Mission Manager David Affens. "We would be able to identify distress signals faster and with a greater level of precision. In the end, this will save more lives, reduce risk to rescuers, and save money because less time will be spent searching."

The improved response time is made possible because of the coverage provided by a constellation of satellites encircling the globe. With a mid-Earth orbit search and rescue capability provided by GPS, one emergency signal goes off, and at least four satellites will be in view. Almost instantly, processing of the signal can begin to determine its precise location."

Although the current system is effective, a satellite may not be in position to pick up a distress signal the moment a user activates the beacon. Furthermore, weather satellites in geostationary orbit cannot independently locate a beacon unless it contains a navigation receiver that encodes and transmits its position—a capability not offered on most units. "Right now, it can take an hour or more before we can even act on a signal," Fitzmaurice said.

Currently, nine GPS satellites are flying the proof-of-concept technology and an additional 12 are planned. Goddard is conducting testing to fine tune the technology before transitioning to a final system after 2015.

"The bottom-line here is that within one minute, we'll know where the distress signals come from," Fitzmaurice said. "It is the future." ■

Hubble's Amazing Viewing

By John M. Putman



Photo credit: NASA/Goddard/Pat Izzo

Caption: (l to r) Goddard Producer Mike McClare, NOVA Producer Rush DeNooyer, and Public Affairs Chief Mark Hess join other Goddard employees to watch the NOVA special "Hubble's Amazing Rescue."

On May 25, Goddard employees gathered in the Building 8 Auditorium to experience the NOVA special, "Hubble's Amazing Rescue," in a new way.

The Producer of the NOVA special, Rushmore DeNooyer, and Goddard Producer Michael McClare, who also worked on the program, gave some behind the scenes insight on the making of the documentary.

In his opening remarks, DeNooyer talked about the challenges of reducing over 150 hours of video into one 52-minute program. He also spoke about the "spectacular" job done by the Office of Public Affairs in gaining him access to film for the NOVA special.

McClare talked about his professional and personal relationship with DeNooyer. He also discussed the unprecedented access granted him and DeNooyer during the lead up to Servicing Mission 4.

After their comments, employees got to watch the NOVA special on the giant screen in the auditorium.

"Hubble's Amazing Rescue" debuted October 13, 2009 on PBS. To watch the special online, visit: <http://www.pbs.org/wgbh/nova/hubble>. ■



Photo credit: NASA/Goddard/Pat Izzo

Caption: NOVA Producer Rush DeNooyer talks about his time at Goddard.

Goddard Scientist Jack Trombka Wins NASA's Highest Honor

By Nancy Neal Jones

Dr. Jack Trombka, an Emeritus Senior Fellow at NASA's Goddard Space Flight Center, has been awarded the Agency's highest award honor, the NASA Distinguished Service Medal. The award is granted only to individuals whose distinguished accomplishments contributed substantially to the NASA mission.

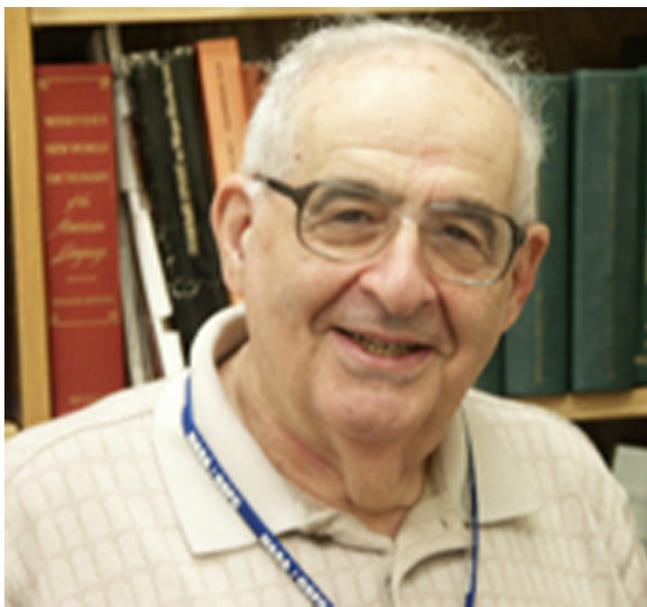


Photo credit: NASA

Caption: Engineers, scientists and other Lunar Reconnaissance Orbiter team members toast the successful arrival of LRO at the Moon in this photograph taken inside a control room at Goddard.

"I am overwhelmed with winning this award," said Dr. Jack Trombka, Emeritus Senior Fellow at Goddard. "It has been a team effort starting with *Apollo*. I have been very fortunate to work with many talented colleagues who have participated with me in this research over my many years at NASA. This award is for all of us."

Trombka began his career in space sciences in the early 60s working on the *Ranger* mission. Not long after that, he was assigned to NASA Headquarters to direct the physics program for the *Gemini*, *Mercury*, and *Apollo* programs. He played a crucial role in ensuring the highest scientific output from *Apollo*. He was the Principal Investigator (PI) or Co-Principal Investigator (Co-PI) on all of the orbital X-ray and gamma-ray instruments flown on the *Apollo 15*, *16*, and *17* missions.

Trombka and his team members were involved in producing the first successful orbital geochemical instruments on a planetary science mission. His work helped solve the fundamental problem of how to relate the overall surface or bulk composition of the Moon to the information obtained from

the individual Moon rocks collected at the *Apollo* landing sites. He received the NASA Exceptional Scientific Achievement Medal in 1971 for this ground-breaking work.

Trombka has been an instrument PI or Co-PI on many planetary science missions since *Apollo*, including *Apollo-Soyuz*, the *Russian Mars 94 Mission*, *WIND*, *Near Earth Asteroid Rendezvous* (NEAR), *Mars Surveyor*, *Mercury Surface, Space Environment, Geochemistry and Ranging* (MESSENGER), the *Lunar Reconnaissance Orbiter* (LRO)/*Lunar Exploration Neutron Detector* (LEND), a U.S./Russian Antarctic Gamma Ray Balloon Flight and the United States/Russian Program for the Development of Remote Sensing X-Ray and Gamma-Ray Sensing Techniques.

Trombka's work also includes a variety of projects outside of the space science field. He has been PI for the NASA/National Institutes of Justice Space Age Teleforensics Program. This program focused on the development of cutting edge technology, i.e. an X-ray fluorescence system that could be used in criminal forensics cases. In addition, he is Co-PI for the NATO Project on Non-Destructive Testing of Historic Monuments and an advisor to the NATO Science for Peace working group.

"This medal is well deserved for all of Jack's wonderful and significant contributions to NASA," said Dr. Anne Kinney, Director Solar System Exploration Division at Goddard. "During Jack's rich and storied tenure at NASA, he has done a great deal to enrich our understanding of the universe. He has shown remarkable energy and creativity and his charismatic leadership inspires great creativity in his colleagues. His interdisciplinary interests and experience allows him to see connections between ideas and people, and between problems and technical solutions. He is a true pioneer."

Trombka has received many other awards for his research. An asteroid, 1981 ET26, has been renamed "(4990) Trombka" in honor of his work in developing remote X-ray and gamma-ray sensing spectroscopy for the geochemical exploration of planetary bodies. He is author or co-author of over 150 papers in his field. He has two patents for instruments developed at Goddard. Trombka's mentoring of students and his innumerable stories from his long career continue to inspire the next generation.

Trombka, a resident of North Bethesda, Md., has been married to his wife Elsie for 58 years. They have three children: Barbara, David, and Aron. He received his bachelor's and master's degrees from Wayne State University, Detroit, Michigan in physics. He obtained his doctorate degree in nuclear science from the University of Michigan, Ann Arbor. ■

Goddard Scientist Claire Parkinson Elected to American Philosophical Society

By Sarah DeWitt and Christina Coleman

Another renowned scientist at NASA's Goddard Space Flight Center is taking home a prestigious honor this year.

Dr. Claire L. Parkinson, a climate scientist at Goddard, is one of the 38 new members elected into the American Philosophical Society (APS).

The APS, which was founded by Benjamin Franklin, is the oldest learned society in America and boasts many famous notables such as Albert Einstein, Nelson Mandela, and Thomas Jefferson. Aiming to "promote useful knowledge," the APS is comprised of top scholars from a wide variety of academic and other disciplines, all organized into five classes. Parkinson has earned a spot in Class 1, which is Mathematical and Physical Sciences. Other classes include Biological Sciences, Social Sciences, Humanities, and the Arts, Professions, And Leaders in Public and Private Affairs.

Over the course of its history, the Society has not only provided a forum for discussion of important topics but has funded important experiments and expeditions and has established a notable library containing more than 300,000 printed items and over 8 million manuscripts.

"It is quite a thrill for me to be elected to an organization with the history and goals of the American Philosophical Society. This society has had so many notable people in it and has done so many good things that I really feel quite humbled and thrilled to be elected," Parkinson said.

Parkinson, who has been a scientist at Goddard since 1978, has worked extensively on using satellite data to reveal and quantify the decreases in the Arctic sea ice cover over the past three decades and the lesser but still important increases in the Antarctic sea ice cover over the same time period. She is also the Project Scientist for the Aqua satellite mission and has

written books about the history of science, satellite observations, and current climate change issues. Her latest book, "Coming Climate Crisis? Consider the Past, Beware the Big Fix," was published this spring. Parkinson resides in Greenbelt, Md.

For information about "Coming Climate Crisis? Consider the Past, Beware the Big Fix," visit:
<http://www.nasa.gov/topics/earth/features/parkinson-book.html>.

For more information about the American Philosophical Society, visit:
<http://www.amphilsoc.org> ■



Photo credit: NASA/Goddard/Sieve Graham

Caption: Dr. Claire Parkinson, climate scientist at NASA's Goddard Space Flight Center.

OutsideGoddard: When Bob Met Mary Alice

By Elizabeth M. Jarrell

Robert C. Wigand, P.E., married an older woman. He is 85. His new wife, the former Dr. Mary Alice Smith, is 86. Both Wigands worked at NASA and knew each other during their careers, but married long after retirement. "Thanks to Goddard for giving us a common background," says Bob, "We know a lot of the same people."

After retiring from the Marine Corp Reserve, Bob worked at Goddard from 1963 to 1995 and worked on building the 26 ground tracking stations we had at one time throughout the world. He was involved with building 14 ground tracking stations for Project *Mercury*.

Mary Alice was a physician on contract in Goddard's Health Unit from 1975 to 2003. For years, she worked part time at Goddard and at Headquarters until she became full time at Goddard.

Bob and Mary Alice met when Bob would come in for his annual checkups. Bob remembers, "When I met her at the health unit, she really impressed me." After one of his checkups, Mary Alice called Bob's daughter to make sure that Bob followed through on some of her advice. Bob's daughter then called him and told him that she thought Mary Alice really liked him.

Bob eventually mustered the courage to ask Mary Alice out for a date, to attend Goddard's 50th Anniversary Party last May. They were so taken with each other that they even asked the official NASA photographer to take their picture. They dated for about five months and then got engaged. Neither one can remember the location of their engagement. Mary Alice, however, is still impressed that he went down on one knee. Then they shopped together for her two carat diamond ring. The couple married the next month on December 17, 2009, in a civil ceremony in Rockville, Md.

"We've been going to have a church wedding ever since," explains Mary Alice. Before doing so, they need to collect a multitude of documents including death certificates and baptismal certificates. As for a wedding reception, Mary Alice says, "We go to his children's homes and to my children's homes. We're always going somewhere." They did manage to go on what Mary Alice terms a "pseudo honeymoon" in Bermuda. Between them, the Wigands have 11 children and 29 grandchildren. That's a lot of homes to visit. "That also means a lot of birthday and Christmas presents. Everybody still gets a present or at least taken out to dinner. I have a book one of my daughters-in-law fixed up for me with everybody's birthdays," notes Mary Alice. She and Bob get half a dozen calls a day from one of their children or grandchildren.

According to Mary Alice, their future plans include "taking care of the everyday things and keeping track of all these children. We have all kinds of things to do for everybody." They also enjoy gardening together. They

attend the monthly Goddard Retirees and Alumnae Association luncheons at the recreation center and often assist in labeling and addressing the Association's monthly newsletter.

Mary Alice's current project is assisting the Harvard University School of Public Health with a study of the treatments and long-term results of different cancers. She is also working on the family lottery for the children to determine which week each will get to spend in her summer house in Bethany Beach, Del. A former professional pianist and violinist, she enjoys playing these instruments for fun. She is also an accomplished seamstress.

Meanwhile, Bob is busy helping the Staten Island Museum of New York, organize an upcoming exhibit honoring his Great Aunt Adeline Albright Wigand and Great Uncle Otto Charles Wigand, both of whom were well-known portrait painters whose works were exhibited at the 1886 and 1887 Salons in Paris, France. "I'm in one of the paintings going on exhibit," notes Bob.

Mary Alice explains that Bob was five years old when he was painted but that "you'd know it was Bob." The 40–50 paintings will go on exhibit June 28, 2010.



Caption: Bob Wigand with a portrait of himself painted when he was 5 years old.

Photo credit: NASA/Goddard/Pat Izzo

Bob and Mary Alice appear to be in the best of health. "We work hard at being healthy. We walk every day at least for half an hour. If we walk like Marines, we walk right along. That's given us a great challenge," explains Mary Alice. After Bob mentions that she is a heavy coffee drinker, Mary Alice replies, "One of the reasons I drink coffee is so I don't eat something. We keep our coffee pot ready."

When asked what makes their marriage such a success, Mary Alice says that both of them have a "most positive outlook on life." Bob agrees. He adds that it was "surprisingly pleasant to fall in love with Mary Alice."

"We're all characters in a way," Mary Alice concluded. ■