

GoddardView

MOU

Pg 2

Honored Delegates Visit Goddard

Pg 3

Shawbotics Team Proves the Power of Spirit!

Pg 9

Interview with Dr. Leshin

Pg 12

MOU

By Amy Pruet

NASA Centers such as Goddard Space Flight Center (GSFC) and Langley Research Center (LaRC) have a lot in common with scrumptious, irresistible cookies. They are not like the kind you purchase from a local grocer, but instead are widely varied like homemade cookies, made of interesting ingredients, and shaped with different instruments. The Centers share the same NASA vision for space exploration, but beyond that, each has a set of unique characteristics such as diverse work forces and a wide range of specialties that enrich the organization. Just as there could never be one sort of cookie, so would NASA be affected if there were only one kind of Center. The differences contribute to NASA's excellence, but to maximize its efficiency Centers must maintain a close partnership. To further enhance their strategic relationship the Center Directors of NASA's GSFC and LaRC signed a Memorandum of Understanding on August 18, 2005.

The MOU signed by Center Directors Dr. Edward Weiler and Roy Bridges, Jr., on August 18 details a commitment to maintain close communication between GSFC and LaRC. As atmospheric science and technology are strengths of the two Centers, it is only natural for them to join efforts.

A strong partnership should result in an increase in assignment of science and exploration missions, benefiting both Centers. GSFC, with its expertise in NASA mission management, is to look to LaRC for realization of common or complementary goals when possible. Similarly, LaRC, as a mission implementation center, will look to GSFC first for mission management opportunities, looking to other Centers only after opportunities have been exhausted with Goddard.

In addition, the MOU details that it is essential for both Centers to propose instruments for NASA missions that would explore space. GSFC and LaRC should be a rich source for Principal Investigators, Project/Instrument Scientists, and Project/Instrument Managers for NASA missions.

"The MOU will help both Centers be more competitive when it comes to acquiring missions and projects," says Dorothy Zukor, Deputy Director of Earth-Sun Exploration Division. "We are trying to make it easier for GSFC and LaRC to work together and create opportunities for team efforts at an earlier stage than ever before."

"To realize the goals set in the MOU, we are establishing steering groups to allow us to discuss partnership opportunities with Langley," says Dolly Perkins, Deputy Center, Technical. "Right now, we are setting up a structure to establish regular communications so that both Centers can reach complimentary goals."

The formal recognition signed on May 18, 2005 is a revision of one signed on November 19, 2003 by previous GSFC Center Director, Al Diaz, and LaRC Center Director, Roy Bridges, Jr. The MOU on August 18, 2005 details a commitment to maintain constant communication between GSFC and LaRC.

The MOU will inevitably increase the quality and efficiency of GSFC and LaRC. With close partnership and close communication, the two Centers will manage and support additional exciting missions, taking NASA further than it has ever been before. ■

Table of Contents

Inside Goddard

MOU - 2

Honored Delegates Visit Goddard - 3

Goddard Missions

Goddard Engineers Use Their Charms on Cold Materials - 4

Goddard Updates

NASA Shared Services Contract (NSSC) Status - 5

James Webb Space Telescope Reaches Milestone - 5

Proposal Opportunities - 5

Goddard News

GSA City Pairs Program Airline Fares for Official Travel - 6

Water Savings Project - 6

Goddard Inventions Win Awards - 7

Goddard Education

Weatherwise Magazine - 8

New Millennium - 8

Shawbotics Team Proves the Power of Spirit! - 9

Learning Center's 20th Anniversary Celebration - 10

Goddard Family

Remembering Astrophysics Pioneer John Bahcall - 11

Goddard Research Scientist Receives Lindsay Award - 11

Meet Goddard's New Sciences and Exploration Director:

Dr. Laurie Leshin - 12

Interview with Dr. Leshin - 12

Cover: Center Directors Dr. Edward Weiler and Roy Bridges, Jr., sign MOU between GSFC and LaRC on August 18.

Photo Credit: Chris Gunn

GoddardView Info

Goddard View is an official publication of the Goddard Space Flight Center. It is published bi-weekly by the Office of Public Affairs in the interest of Goddard employees, contractors, and retirees. Its circulation is approximately 11,500.

Managing Editor: Trusilla Steele

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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 alittle@pop100.gsfc.nasa.gov. Ideas for new stories are welcome but will be published as space allows. All submissions are subject to editing.

Honored Delegates Visit Goddard

By Alana Little

On Wednesday August 3, 2005, Goddard Space Flight Center (GSFC) played host to honorable members of the Maryland Congressional Delegation in honor of Maryland Congressional Day. At the personal invite of Dr. Ed Weiler, director of GSFC, Senator Paul Sarbanes, Senator Barbara Mikulski, Congressman Benjamin Cardin, Congressman Roscoe Bartlett, as well as staff members from other Congressional offices, attended an all-day event which included a tour of GSFC facilities, and an all-hands meeting in the Building 8 auditorium. Dr. Weiler wanted to take this chance to thank these



Photo Credit: Chris Guinn

Senator Barbara Mikulski addresses Goddard employees at all-hands meeting.

special members of the Maryland Delegation for all their continued support of Goddard, IVV, and Wallops, and to showcase GSFC's accomplishments and upcoming missions, in particular, GSFC's role in the Vision for Space Exploration. Dr. Weiler also wanted to give employees the opportunity to hear how members of Congress support Center initiatives.

Referred to as the "Godmother of the NASA budget," Barbara Mikulski spoke to attendees at the all-hands session about NASA's "Return to Flight," and said "no matter how rock and roll it's been, we are able to encourage and inspire people because of how difficult it was ...when we go out into space we show that we can do what needs to be done!"

She went on to say she is proud knowing, "that when we go out into space...we stand on the shoulders of Goddard. We [members of Maryland Government] know how important you are."

Senator Paul Sarbanes spoke to the group about the NASA budget and how he and his people work tirelessly so that, "teams can be put together and the very complicated processes that have to be developed in order to carry through these programs, (some of the most complicated programs in the world) can be put together with some sense of security." He went on to praise Goddard for its substantial impact on Maryland's economy by transferring technology developed at Goddard to Maryland companies.

Congressman Ben Cardin echoed the sentiments of Sen. Sarbanes and said "the work that we do at Goddard yields us results in quality of life here on Earth and for this reason Congress is dedicated to developing a consistent budget for NASA."

Congressman Steny Hoyer, who could not attend the day's events but who sent a senior staff member on his behalf, also sent a letter to Dr. Weiler which he read to the employees at the all-hands meeting.

Congressman Hoyer acknowledged the challenges the space program continues to face and wrote, "I am convinced that the Goddard family is more than equal to the challenge and will continue to play a critical role in helping our nation further understand and explore distant galaxies and develop breakthrough technologies important to our health and security."

The Maryland Delegation was then given a VIP tour where they saw the New Horizon spacecraft and were briefed on the spacecraft's upcoming mission to Pluto which is scheduled to take place in 2006. New Horizons, built by the Applied Physics Lab, is at GSFC for testing and evaluation prior to shipment



Photo Credit: Chris Guinn

Maryland Delegation at the all-hands meeting.

to Cape Canaveral Air Force Station for launch. The visitors were also shown the Space Technology-5 spacecraft, which consisted of 3 micro-satellites that will test and validate new technologies and further scientists' understanding of the harsh environment of the Earth's magnetosphere. In addition, the delegation was taken to the Scientific Visualization Lab, which translate complex terrestrial and solar data into products that communicate visually the significance of the data collected from NASA spacecraft. The tour also included visits to GSFC's test and evaluation facility, and NASA's largest clean room, which houses the Hubble Space Telescope instruments and equipment.

With profuse thanks to the Maryland Congressional Delegation from Dr. Weiler and with GSFC's accomplished horn successfully tooted, the day was considered a success. ■

Goddard Engineers Use Their Charms on Cold Materials

By Ronald Toland

The test engineer leans back from his computer monitor, eyes blinking. He lets out a deep sigh, rubbing his hands over his face, and reaches for one last swig of coffee. It has taken the better part of two days to get to this point. The instrument has been cooled to its operating temperature of 30K (-405.67° F), and now the sample images have come in, telling him how the instrument is performing. Getting up, he crosses the room and braces himself as he dials the number to the Lead Integration and Test (I&T) Engineer, to report another failed test.

The problem lies in the instrument's lenses, which aren't performing as the designers planned. It turns out the index of refraction—a measure of how far light rays are bent passing through a material—of the lens material changes unexpectedly below 75K (-324.67 °F). This slight change shifts where light coming into the instrument focuses, blurring the image on the camera.

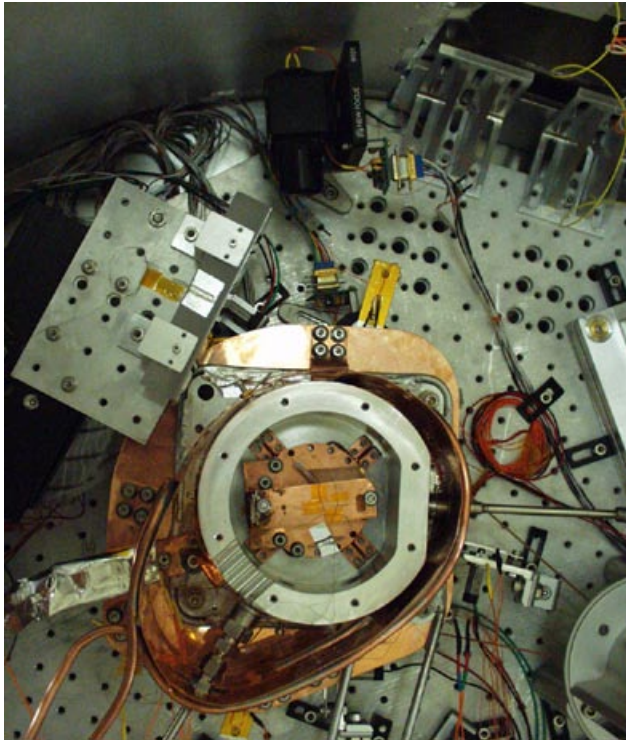


Photo Credit: NASA

An overhead view of the inside of CHARMS. The prism to be tested sits in the circular chamber in the center. During testing, light rays traveling from the bottom of the picture towards the top pass through the prism chamber. Some of the light is deviated as it passes through the prism. The rest of the light passes to the side of the prism, and is not deviated.

Without knowing the index of refraction of the lens, the test engineers are forced into a lengthy process of alignment at room temperatures, then cooling the instrument to check its performance, then warming it back up to make corrections to the alignment. Each cycle takes two weeks, start to finish, and the I&T manager is understandably livid over the phone: this is the tenth failed test, and the project is running low on funds and on time.

After 15 runs, with the spacecraft now held up for lack of performance of her instrument, the I&T manager decides to cut her losses and declare the instrument results “good enough.” She shuts down the testing, ships the

instrument off to be integrated into the carrier spacecraft, and moves on. Today, this is the scenario faced by many instruments that operate at low temperatures. Faced with a lack of knowledge about how optical materials behave at very low temperatures, engineers must use a combination of guesswork and repetitive cold-testing cycles to produce a satisfactory space instrument.

Doug Leviton and Brad Frey, two Goddard optical engineers in Code 551, are working to eliminate guesswork from the lens design of infrared instruments. Their new instrument, the Cryogenic, High-Accuracy, Refraction Measuring System (CHARMS), can measure the index of refraction of material samples from above room temperature all the way down to 15K (-432.67 F). The challenge is not just to cool the sample, but also to accurately measure the sample's index of refraction at those low temperatures.

With that aim, the entire system sits inside a single vacuum chamber, eliminating both air turbulence and heat input from outside the chamber as concerns. Measurements of the deviation of a beam of light passing through a sample are made using high-accuracy optical encoders developed by Leviton. Once the sample has been cooled to the desired temperature, a computer program perfected by Frey takes the needed data without human oversight.

The result: CHARMS can measure index of refraction to about one part in two hundred thousand, akin to you knowing your weight to 1/80th of an ounce. This is good so that the James Webb Space Telescope Near-Infrared Camera (JWST/NIRCam) project sent samples and funding to CHARMS for measurements to guide their lens design process. For many of the materials the NIRCam team wants to use in their instrument, the data from CHARMS is either the first cold data ever taken or the first data at any temperature in as many as 50 years.

Other projects are already lining up to take advantage of CHARMS' capabilities. “We have just finished measuring samples of the fused quartz from which the very large telescope corrector for the Kepler Mission is made of for NASA Ames and Ball Aerospace,” says Leviton. “Both the European Space Agency [ESA] and Johns Hopkins University are also counting on us to make index measurements for infrared instruments they are building.”

CHARMS has proven so useful that Frey, who did much of its design, assembly, and testing, recently won an Applied Engineering and Technology Division (AETD) Science and Technology Advancement Award for his work on the instrument.

From humble beginnings as a Director's Discretionary Fund (DDF) project, CHARMS has grown into a measurement facility that puts Goddard at the forefront of materials science research. Armed with data from CHARMS, designers will be able to anticipate lens performance at low temperatures, cutting the cost and time required to produce new infrared space instruments.



NASA Shared Services Contract (NSSC) Status

By Koby L. South

The Most Efficient Organization (MEO) QUESTeam was notified on August 22, 2005, that their agency contest over the NASA Shared Services Center (NSSC) contract award was denied in its entirety.

The NSSC contract was awarded to Computer Sciences Corporation (CSC) as the prime contractor and service provider for the NSSC on May 9, 2005. The award followed a competition by NASA pursuant to the OMB Circular A-76. On May 31, NASA's in-house MEO QUESTeam filed its contest over the award of the NSSC contract. Pursuant to A-76 procedures, NASA had imposed a suspension of performance to the NSSC contract pending an independent review by the Agency.

A separate bid protest was filed with the GAO on May 25, 2005 by IBM Corporation. On June 28, 2005 IBM notified the GAO that it was withdrawing its protest of the NASA Shared Services Center (NSSC) procurement. The GAO formally dismissed the IBM protest. The final resolution of these two protest actions has allowed the NASA NSSC Contracting Officer to rescind the suspension of contract performance applicable to CSC. NSSC will permanently be located at Stennis Space Center, Mississippi. ■

James Webb Space Telescope Reaches Milestone

By Susan Hendrix

NASA's James Webb Space Telescope (JWST) team recently accomplished an important milestone, completing the initial step in manufacturing the telescope's primary mirrors.

The mirrors move through manufacturing in a process that takes about 53 months to complete. Following blank production, the mirror segments are precision machined, a step that reduces the weight of each segment from 553 pounds to just 46 pounds and puts the correct optical 'prescription' on the mirror. The next step involves precision grinding and polishing of the optical surface before the segments are incorporated into optical assemblies and mounted on the telescope structure.

JWST will feature a 6.5 meter (20 feet) aperture primary mirror, comprised of 18 beryllium segments, making it the largest deployable telescope ever launched. Currently, launch is planned for 2012.

For more information about the JWST mirror, instruments and mission, visit: <http://www.jwst.nasa.gov/> ■

Proposal Opportunities

NASA Research Announcements (NRA)

InfraRed Telescope Facility (IRTF) Observing Time

Close Date: 10/3/2005

For more information please visit <https://nspires.nasaprs.com>

Research Opportunities in Space and Earth Science (ROSES)

Terrestrial Ecology and Biodiversity

Proposal Due Date: 9/12/2005

FUSE Guest Instigator/Cycle 7

NOI: 9/16/2005

Proposal Due Date: 9/16/2005

Planetary Instrument Definition and Development

Proposal Due Date: 9/16/2005

NASA Astrobiology Institute - Cycle 4

Proposal Due Date: 10/28/2005

Radiation Belt Storm Probes Investigations and Geospace-Related Missions of Opportunity

NOI: 9/27/2005

Proposal Due Date: 11/22/2005

For more information contact the New Opportunities Office x6-5442

GSA City Pairs Program Airline Fares for Official Travel

By Koby L. South

The NASA Financial Management Regulation (FMR) Program now requires travelers to use the General Service Administration (GSA) City Pairs Program (CPP) airline fares for official travel. These airline routes are competed by GSA among the airline companies and awarded by contract in order to obtain the best possible fares for U.S. Government agencies along with maximum travel support flexibility such as flight cancellations with full refunds without penalty.

Overall, the CPP provides cost savings to the federal agencies even when compared to the various airline super saver discount fares which carry cancellation penalties and/or no-refund provisions. In order to maintain these airline fare benefits for the Federal Government, GSA guarantees the airline industry that the CPP airline fares will be used for all federal employee official travel unless one of the various authorized exceptions applies. In addition, our NASA Travel Services contractor, CI Travel, is required to book NASA



Image Credit: Microsoft

travelers using the CPP airline fares for official government travel unless the traveler claims one of the five GSA exceptions. The GSA exceptions can be found in the Federal Travel Regulation, Paragraph 301-10.107, that are available at <http://www.gsa.gov/fttr>. If the traveler qualifies to use a GSA exception, CI Travel will annotate the exception code on the employee's travel itinerary. When a contract fare is not available, CI Travel must then book the NASA traveler on the lowest cost service unless the employee's Travel Authorization (TA) orders state that use of the higher cost airline fare is more advantageous to the government.

CI Travel will also document the justification of the higher cost service on the itinerary. Please also note that GSA receives quarterly reports from all federal agencies, including NASA, of travelers' usage of CPP airline fares and the authorized or non-authorized exceptions and this data may be used for compliance audits. NASA contractors are not allowed to use CPP airline fares. Questions regarding GSA's CPP and CI Travel's airline flight booking processes may be directed to Ms. Carolyn Lott, Code 234, at x6-7677. ■

Water Savings Project

By Sam Chuppetta

A project is currently under construction at GSFC to replace existing restroom flush valves with water efficient flush valves. This water conservation project was awarded under the Pepco Energy Services Agreement (ESA). The project is similar to an Energy Savings Performance Contract whereby a project is awarded with no up-front funding from the Government. In this case, Pepco Energy Services provides financing to cover the capital costs of the project. Pepco is repaid over the contract term from the cost savings generated by the water efficiency measures.

This project will enable Goddard to meet the water efficiency standards established by the Energy Policy Act of 1992. Urinals will save an average of 1.5 gallons per flush and toilets an average of 2 gallons per flush with the new flush valves. The project is expected to save approximately \$130,000 per year which equates to an annual savings of 13,500,000 gallons of water.

In addition to the water savings, the project will help reduce maintenance costs by replacing aging flush valves with new piston type flush valves.

During the construction phase, only one men's or women's restroom will be out of service at any time in a building. If there is only one restroom (men's or women's) in a building, work will be scheduled for either after normal working hours or a weekend. Building occupants will be advised on work affecting their areas through the Building Managers and FOM.

The scheduled completion date of this project is November 15, 2005. FMD appreciates your cooperation and patience during the construction phase.

If you have any questions, please contact Sam Chuppetta at x6-8590.



Goddard Inventions Win Awards

By Nancy Pefar

NASA Software Invention of the Year

At a September 6 ceremony, Goddard's Land Information System (LIS), which helps enable accurate prediction of Earth's water and energy cycles, received this prestigious recognition. The award emphasizes those software innovations that have a positive impact on NASA's mission and others areas of science and technology.

LIS enables scientists to obtain near-real-time land surface information at a fine resolution: 1-km scale. LIS greatly increases the efficiency of Earth-system modeling and expedites the incorporation of the latest Earth science for research and applications, saving NASA an estimated \$3 million per year. LIS also provides useful information for water-resource management, weather prediction, air quality, and military operations.

The LIS development team was led by Goddard's Christa Peters-Lidard and Paul Houser of George Mason University. More information is available online (<http://lis.gsfc.nasa.gov/>).

Federal Laboratory Consortium Mid-Atlantic Regional Excellence in Technology Transfer Award

On September 15, James Spinhirne and Ellsworth J. Welton and their colleagues will receive this award, which recognizes laboratory employees who have accomplished outstanding work in the process of transferring a technology to the commercial marketplace.

Their technologies—Micro Pulse Lidar (MPL) and the MPL Network—have opened the door to a previously inaccessible realm of research. MPL allows Earth's atmospheric aerosols and clouds to be safely studied with lidar in a mode of continuous, autonomous operation, especially in remote areas. MPLNET makes the data from many MPL devices freely available for use by a wide range of researchers, many of whom have published important findings.

Through MPL and MPLNET, researchers around the world are gaining a better understanding of the atmosphere's aerosols and their movement over the globe. This better allows the sources for pollution to be traced and opportunities to make changes to protect the environment to be identified. It also allows for anticipating and protecting against dangerous aerosol conditions, as is done with the Doppler radar system for weather prediction. More information is available online (<http://mplnet.gsfc.nasa.gov>).

Interested? Goddard's OTT Can Help

The Office of Technology Transfer (OTT) is committed to nominating Goddard technologists for these and other awards. For more information about the Awards Program, see Awards section of OTT's Web site (<http://techtransfer.gsfc.nasa.gov/awards-info.html>) or contact Dale Hithon (x6-2691; Dale.L.Hithon@nasa.gov). ■



Award Winners: (from left to right) Frederick Gregory, Luther Lighty, Sujay Kumar, Christa Peters-Lidard, James Geiger, Jr., Susan Olden, Yudong Tian, and Keith Hudkins.

Photo Credit: Dale Hithon

Weatherwise Magazine

By Mike Bettwy

Looking to learn more about the weather? Turn to the pages of Weatherwise magazine, where NASA research meteorologist Jeff Halverson explains some of the most recent outstanding meteorological events...without the jargon. See below for a sampling of Halverson's columns and be sure to check out Weatherwise at the Goddard Library.

Forecasting in the Dark

(Weatherwise: Sep.–Oct. 2005):

Halverson discusses how meteorologists glean fine details from satellite and radar data at night to make up for the loss of an important daytime tool—spot-terers that can see the storms firsthand and help alert the public during severe weather.



Image Credit: NASA

Tropical Storm Katrina had just become the eleventh named storm of the 2005 Atlantic Hurricane season when the Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Terra satellite captured this image on August 24, 2005, at 11:50 a.m., Eastern Daylight Savings Time.

“A” is for Arlene

(Weatherwise Sep.–Oct. 2005):

Tropical storms and hurricanes have long been a forecasting challenge, but Halverson shows how new technology and research efforts are paying off, helping meteorologists better predict where these monsters will track and how much they'll intensify, as was proven in the first storm of the 2005 Atlantic hurricane season—Arlene—that behaved as expected.

Jeff Halverson is an education and outreach scientist for NASA's TRMM program and an associate professor of geography at the Joint Center for Earth Systems Technology (JCET) at the University of Maryland-Baltimore County.

Also in this issue... a feature article by Goddard research meteorologist J. Marshall Shepherd examining current research attempting to answer the role of urban growth on precipitation patterns around the globe. ■

New Millennium Program

By Lori Keeseey

Jack Stocky, chief technologist of NASA's New Millennium Program, will brief employees on the program's next advanced technology validation experiment — Space Technology 10 (ST10) —and ways that employees might participate in the effort at a meeting Sept. 20.

The 2-hour briefing will be held in the Building 3 auditorium at Goddard Space Flight Center starting at 10 a.m. A videoconference is scheduled to take place in Building F6, room 213 at the Wallops Flight Facility so that employees there may participate.

During his talk, Stocky will describe current plans for the next mission — ST10 — and discuss the first planned step in that process as well as new capabilities needed for future Science Mission Directorate missions. He also will describe ways in which Goddard personnel can participate in the ST10 formulation phase.

Managed by the Jet Propulsion Laboratory, the New Millennium Program was created to provide in-space validation of needed technologies that a mission manager might find too risky to use without prior in-space experience. The first mission, Deep Space 1, was launched in 1998.

Since then, the program has validated a variety of technologies and capabilities and involved a number of Goddard employees, including those who participated in the Goddard-managed Earth Observing 1 (EO-1) mission. Three advanced land-imaging instruments and seven revolutionary spacecraft technologies flew on EO-1.

In 1999, the program selected Goddard employees to build, test, and validate three micro-satellites as part of the ST5 effort. The mico-sats aren't much larger than a large birthday cake or small TV, and will function as a single constellation to gather research-quality measurements about Earth's magnetosphere when they fly next year aboard a Pegasus XL rocket.

And more recently, three Goddard technologists were tapped to lead yearlong concept studies for the program's ST9 project, which is testing system-level technologies in the area of solar sails, precision formation flying, and large space telescopes, among other technologies (See Goddard View, August 2005). ■

Shawbotics Team Proves the Power of Spirit!

By Amy Pruett

Genuine passion and enthusiasm can get you places, and in the Shawbotics Robotics Team's case, Japan. The FIRST (For Inspiration and Recognition of Science and Technology) LEGO® League (FLL) team from Dr. Anna Howard Shaw Middle School in Philadelphia, Pa participated in the FIRST Japan Robotics No Limits Challenge Tournament in Aichi, Japan on August 23, after receiving an invite from U.S. FIRST officials.

As there are over 80 FLL competitions annually held in the United States, and only 29 in other countries, it is extremely rare for U.S. teams to receive an invitation to compete in a foreign country's tournament. So, when FIRST Japan officials announced they had one slot open for a U.S. team, U.S. FIRST officials had the difficult task of selecting one team out of the thousands registered. That is, until they received an application from the Shawbotics Robotics Team.

"The Shawbotics Robotics Team has always impressed us with their passion for outreach and promoting FLL," says Nancy Paul, program coordinator for FLL. In addition, while they were certain of the ability to be fine representatives of the US FIRST organization, FIRST officials foresaw that if anyone could raise \$30,000 dollars, the cost of the trip, in only two weeks, it would be Janet Hudson.

And just as they predicted, she did just that. With the support of the school's NASA Explorer School (NES) partners and others such as The Mayor's Commission on Technology, National Archives MidAtlantic Region, Drexel University's College of Engineering, Department of Mechanical Engineering and Mechanics, and Senator Anthony H. Williams, she raised every penny. Hudson attributes her success to her NES partners, as they did everything in their power to make sure her students would not have to pass on the

opportunity to take the trip. She recounts that all she had to do was call her NES partners that Goddard connected her with, and they took care of the rest. In only 2 weeks she had \$30,000 dollars in the bank.

Her hard work paid off as the six students enjoyed an experience that will be on their minds for a long time to come. The students said that they learned a lot about the nature of competitions and the importance of cooperation and team spirit. In addition, they discovered the uniqueness of Japanese culture.

"The competition was a wonderful experience for the students and something they will never forget," says Janet Hudson, leader of Shawbotics Robotics Team. "They were extremely motivated throughout the whole competition and did not hesitate once or break down during challenging matches. They were very professional and were fine representatives of the US and NASA."

FIRST LEGO® League is an international program for children between the ages of 9 and 14 who have an interest in robotics. Teams of up to 10 players are given eight weeks to strategize, design, build, and program their robots, which use LEGO® MINDSTORMS™ technology, to meet a specific challenge set by the FIRST organization each September. Teams gather at the end of the time period at competitions throughout the world in order to battle other teams' robots, testing their ability to cooperate, problem solve, and think of creative solutions for problems that inevitably arise. Dean Kamen, the founder of the competition, designed the program to be sport-like as athletes are often the central role models of youths today. FIRST is designed to get kids to think of engineers and scientists as superstars and arouse excitement in them about science at a young age. ■



Photo Credit: NASA

Shawbotics Robotics Team from Dr. Anna Howard Shaw Middle School competes at the First Japan Robotics No Limits Challenge Tournament in Aichi, Japan.

Learning Center's 20th Anniversary Celebration

By Sherron Tharpe

The Office of Human Resources' Learning Center (LC) celebrated its 20th Anniversary on July 15, 2005. The LC started as an idea from a 1984 Professional Intern Program (PIP) presentation, "A Computer Aided Multimedia Learning Center," prepared by Carolyn Casey. In 1985, the Personnel Division's Employee Development Branch (Code 224) and the Information Management Division's Computer Services Branch (Code 254)—along with Carolyn's expertise—merged resources and developed the facility, making it a reality.



The Learning Center

Photo Credit: NASA

The Information Technology Center—as it was called then—officially opened its doors for business on July 15, 1985. The facility consisted of: the Self-Paced Learning Center, an Office Automation Demonstration Center, a Computer Training Classroom, a Software Library, and a Technical Support Group.

In April 1992, space became available in Building 1, and the Office of Human Resources made the decision to move the Computer Training Classroom and the Self-Paced Learning Center to Building 1, Room 001. In April 1992 it was renamed the "Learning Center." Over the years, the Learning Center has grown and new programs have been added and developed. The Web-Based Training program was introduced in September 2001, the Satellite-Based Training program in April 2002, and the Books24x7 Referenceware program in February 2005. The newer of the two Computer Training classrooms was opened in March 2005.

The 20th Anniversary celebration was held in the Learning Center on July 14, 2005. Carolyn Casey was presented the "Special Recognition with Gratitude and Appreciation" award in acknowledgement of her efforts and energies in the development of the Learning Center. Pamela Barrett has been supporting the LC since its opening and was presented the "Outstanding Commitment and Dedication" award. Mike Marshall, the Technical Lead, and Sherry Tharpe, the Task Monitor, were each presented with a "Special Recognition" award. The celebration included a "Trip Down Memory Lane", photographs of the grand opening as it was twenty years ago, tours, presentations and refreshments. The LC staff is excited about meeting the challenges of GSFC's training needs for the next twenty years! ■



Learning Center Staff from left: Mike Marshall - LC Technical Expert, Sherry Tharpe - LC Task Monitor, Pam Barrett - LC Coordinator and Carolyn Casey

Photo Credit: NASA

Remembering Astrophysics Pioneer John Bahcall

By Susan Hendrix

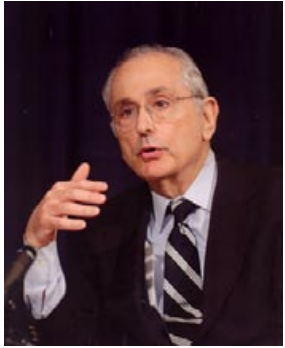


Photo Credit: NASA

Photo of Dr. John H. Bahcall

Dr. John N. Bahcall, an astrophysicist who made fundamental and lasting contributions to an astonishing number of different areas of modern astrophysics, died August 17 from a rare blood disorder at the age of 70.

The NASA community knows him best as one of the leaders who helped create the Hubble Space Telescope, which he continued to lobby for until his death.

“John Bahcall was one of the founding fathers of the Hubble Space Telescope. Without his tireless advocacy for the mission in the 1970’s, Hubble likely would not have come into being,” said senior HST scientist Dave Leckrone of NASA Goddard Space Flight Center. “His passion for Hubble science continued unabated for more than three decades. We will all miss him.”

Bahcall was a theoretical astrophysicist with expertise in the study of solar neutrinos, models of the Galaxy, dark matter, atomic, and nuclear physics applied to astronomical systems, stellar evolution, and quasar emission and absorption lines. He was educated at Louisiana State University and the University of California at Berkeley, and earned a Ph.D. from Harvard.

Bahcall was recognized numerous times for his career achievements. Early on he was awarded a Sloan Foundation Fellowship, 1968-71. The American Physical Society named Bahcall the first Hans Bethe Prize recipient in 1998.

In 1998, he also was honored with the Presidential Medal of Science in recognition of his theoretical work on solar neutrinos and for his role in the development of the Hubble Space Telescope. NASA also recognized his achievements, awarding him the 1992 Distinguished Public Service Medal for his observations and leadership with Hubble.

National awards include the Warner (1970), and Russell (1999) Prizes from the American Astronomical Society and the Heineman Prize for Astrophysics (1994) jointly from the American Astronomical Society and the American Institute of Physics.

Internationally, he was recognized by the Royal Swedish Academy of Sciences, Medal College de France, and the University of Helsinki. He held Honorary Doctorates from the Universities of Pennsylvania, Chicago, Notre Dame and Ohio State.

Bahcall was the author or co-author of four books, most recently *Solar Neutrinos: The First Thirty Years*, Addison-Wesley (1995) and *Unsolved Problems in Astrophysics*, Princeton University Press (1997). He also published nearly 500 papers on a variety of topics in astrophysics.

Bahcall served as President of the American Astronomical Society from 1990–1992, and chaired the National Academy of Sciences/National Research Council panel that produced the decadal study, which set the direction for astronomy and astrophysics research in the U.S. in the 1990s.

Bahcall was born December 30, 1934 in Shreveport, Louisiana. He is survived by his wife Dr. Neta Bahcall, their three children and a brother. ■

Goddard Research Scientist Receives Lindsay Award

By Susan Hendrix

Dr. Cornelis Gehrels is the Center’s most recent recipient of its highest accomplishment—the John C. Lindsay Memorial Award for Space Science—presented to civil servants who best exhibit the qualities of broad scientific accomplishments in this area.

Gehrels received the award May 27 for his contributions for the development of NASA’s Swift gamma-ray burst (GRB) mission, as well as for its early scientific results.

“I’m delighted to receive this prestigious award,” Gehrels said. “The Swift mission is going well, returning exciting new findings on gamma-ray bursts every week. Hundreds of people dedicated years to this mission and its success is a direct result of their skill and dedication. I thank them for this achievement and Goddard for its support of the mission.”

Swift is the first-of-its-kind multi-wavelength mission dedicated to the study of gamma-ray bursts. Its three instruments work in unison, observing GRBs and afterglows in the gamma-ray, X-ray, optical, and ultraviolet wavebands. Swift, which launched November 20, 2004, has observed 45 GRBs, and is expected to observe more than 200 bursts during its nominal 2-year mission, creating the most comprehensive study of GRB afterglows to date.

Gehrels currently works in the Laboratory for High Energy Astrophysics. He heads up the Gamma Ray, Cosmic Ray and Gravitational Wave Astrophysics Branch, where his main focus is gamma-ray astronomy, instrument development, and data analysis. His other responsibilities include serving as project scientist for the Compton Observatory, mission scientist for the INTEGRAL mission, deputy project scientist for the GLAST mission, study scientist for the EXIST mission, and co-investigator for the InFOCUS, TGRS and GLAST-LAT instruments.

Gehrels’ other accomplishments include the 2005 GSFC Award of Merit, the 2000 Randolph Lovelace Award for leadership of the Compton Observatory, NASA’s Outstanding Leadership Medal in 1993, and Discover Magazine’s Award for Technological Innovation in 1992.

The Lindsay Award commemorates the launch of the first of eight Orbiting Solar Observatories (OSO) that Dr. Lindsay and others contributed their efforts. Scientific results from the OSO Program include the first visible light and extreme ultraviolet photographs of the corona, the first full-disk photograph of the solar corona, and the first X-ray observations of a solar flare in the initial stage of eruption. ■

Meet Goddard's New Sciences and Exploration Director: Dr. Laurie Leshin

By Don Savage

Let's start with what is probably one of the most far-out things about Goddard's new Director of the Sciences and Exploration Directorate, Dr. Laurie Leshin—she has an asteroid named after her.

The asteroid is called 4922 Leshin. Not a great deal is known about it, except, as she is glad to note, it won't hit Earth. The International Astronomical Union bestowed this honor on Leshin to recognize her contributions to planetary science.

Dr. Leshin comes to Goddard from Arizona State University (ASU) in Tempe, where she was the Dee and John Whiteman Dean's Distinguished Professor of Geological Sciences, and the Director of the Center for Meteorites Studies. A cosmochemist with a particular interest in following the record of water in objects in our solar system, she has collaborated on 26 published scientific papers, won numerous research grants, has participated in NASA missions, and is a member of two science teams on the 2009 Mars Science Laboratory (MSL) mission. Dr Leshin is also a co-investigator on the Sample Analysis at Mars (SAM) experiment. Under the leadership of Principal Investigator Paul Mahaffy of NASA Goddard, SAM is the most sophisticated instrument to be sent to Mars since Viking, and will allow us to trace the volatile and organic constituents in rocks and soils on Mars.

"Dr. Leshin was a clear choice to head our new Sciences and Exploration Directorate," said Goddard Center director, Dr. Ed Weiler. "I don't think anyone could match Laurie's enthusiasm, drive, and truly impressive list of accomplishments. Where I think she may ultimately make her most important contribution is her ability to communicate the excitement of our science to the public, and to school kids as well as graduate students."

NASA honored Leshin in 2004 by awarding her the Distinguished Public Service medal, the highest award for non-NASA personnel. Among her other awards are the first Dean's Distinguished Professor in the ASU College of Liberal Arts and Sciences, and in 1996 she was recognized as the first recipient of the Meteoritical Society's Nier Prize, which is awarded for outstanding research in meteoritics or planetary science by a scientist under the age of 35. Dr. Leshin was also one of only nine people selected to be on President Bush's Commission on Implementation of United States Space Exploration Policy.

Although she has spent most of her life in Arizona and California, she said she's looking forward to living in a part of the country that has four seasons, and is excited about her new job at Goddard.

"I feel excited and honored to be joining the NASA family. It's both humbling and exhilarating to be leading such an accomplished group of scientists and working with so many talented, committed people," Leshin said. "I'm psyched!" ■

Interview with Dr. Leshin

When asked by email about her goals for SED and science at Goddard, Dr. Leshin answered,

"Our goal will be to sustain a vibrant, diverse Earth and space science enterprise at NASA. Achieving this goal requires a healthy and innovative SED at Goddard, aggressively exploring Earth and space, and making transformative discoveries. NASA's re-aligned mission of exploration presents abundant opportunities for Goddard science to contribute. We already have unparalleled strengths in Earth Science and Astrophysics, on which we will build. We have an extraordinary opportunity with the Lunar Reconnaissance Orbiter to set the tone for how and what science will be done at the Moon. Our key participation in the Mars Science Lab, and our aggressive pursuit of discovery and scout opportunities give us the chance to expand our presence in Planetary Science."



Photo Credit: Chris Gunn

Dr. Laurie Leshin

"One of the most exciting aspects of the new integrated SED is the opportunity for us to lead the way within NASA in transdisciplinary research. The breakthrough discoveries of the coming decades will be transdisciplinary, and to address the pressing needs of our home planet, scientists must engage in teams that span disciplines, cut across them, even ignore them. By combining sciences into a single organization, NASA and Goddard have taken a very positive step toward making such transdisciplinary work possible, and valued. I will work to engage the considerable talents of Goddard scientists and engineers in this endeavor, and work with NASA to make sure that such bold approaches to exploration are rewarded." ■