

## Goddard Memorial Symposium Hits the Mark

By Susan Hendrix

Photos by Chris Gunn/293

Chilly temperatures, wind and rain did nothing to curb the overwhelming response to the 42<sup>nd</sup> Goddard Memorial Symposium, held March 16 & 17 at the Greenbelt Marriott and sponsored by the American Astronautical Society (AAS).

Jon Malay of Lockheed Martin Corporation and president of the AAS provided opening remarks and introductions and Center Director Al Diaz presented the keynote address before a crowd that included about 250 Goddard employees and contractors. “We broke all past attendance records this year,” Malay said. “Our theme ‘Exploration – To the Moon and Beyond’ really hit the mark.”



Center Director Al Diaz provides his keynote address - NASA: Building for the Future - before a full house on opening day.

Speakers presiding over the sessions candidly addressed a myriad of topics. Roger Launius, formally of NASA and now with the National Air and Space Museum, provided his take on why NASA should go back to the Moon. According to Launius, his rationale for returning to the Moon is simple – it’s only three days from Earth and an excellent testbed for science and technology. “Although we didn’t go to the Moon for scientific reasons...we got a lot of science out of the missions,” Launius told the audience.

Goddard geophysicist **Paul Lowman, Jr.** discussed what Americans learned from Apollo. According to Lowman we learned three main things: that the Moon is predictable, stable, and survivable if we go properly prepared. He told the audience that we learned the geological evolution of the Moon and can now compare planetary aspects of this planet with others within our solar system.



James Garvin, NASA lead scientist for Mars exploration.

James Garvin, NASA lead scientist for Mars exploration, invigorated the morning session on day two with an overview of the current Mars program and latest results from the Mars Rovers. Garvin said it’s imperative to explore Mars because it is the nearest planet with evidence of past life, and the scientific data we are now analyzing is helping us understand planet Earth.

Continued on page 15

## Table of Contents

<b>GMS Hits the Mark .....</b>	<b>Page 1</b>
<b>New Internal Page .....</b>	<b>Page 2</b>
<b>Earth Science Web Site ...</b>	<b>Page 2</b>
<b>UAV Completes Flight .....</b>	<b>Page 3</b>
<b>Neutron Star Emerges .....</b>	<b>Page 4</b>
<b>NASA Explains ‘Dust Bowl’</b>	<b>Page 5</b>
<b>New Work Schedule .....</b>	<b>Page 6</b>
<b>Can We Talk? .....</b>	<b>Page 6</b>
<b>Lights, Camera, Action! ...</b>	<b>Page 6</b>
<b>Earth Day .....</b>	<b>Page 6</b>
<b>FIRST Competition .....</b>	<b>Page 7</b>
<b>Nat’l Space Club Award ...</b>	<b>Page 8</b>
<b>Carpal Tunnel Syndrome .</b>	<b>Page 9</b>
<b>Safety Alerts .....</b>	<b>Page 10</b>
<b>Lunchtime Movie .....</b>	<b>Page 11</b>
<b>Pre-Aura Validation .....</b>	<b>Page 12</b>
<b>Return to Flight .....</b>	<b>Page 13</b>
<b>Employee Spotlight .....</b>	<b>Page 14</b>
<b>IT Security .....</b>	<b>Page 16</b>
<b>Bennett-Nominated for Wire Magazine .....</b>	<b>Page 17</b>
<b>Goddard in the News .....</b>	<b>Page 18</b>
<b>Earth As Art .....</b>	<b>Page 19</b>
<b>BIG Dinner Dance .....</b>	<b>Page 20</b>
<b>Earth Science Awardees</b>	<b>Page 21</b>
<b>GEWA Activities .....</b>	<b>Page 22</b>
<b>Announcements .....</b>	<b>Page 23</b>
<b>Events .....</b>	<b>Page 25</b>



### NASA’s Mission:

- \*To understand and protect our home planet
- \*To explore the Universe and search for life
- \*To inspire the next generation of explorers as only NASA can

For further detail of the NASA mission, go to:  
<http://www.nasa.gov/bios/vision.html>

# Coming This Month, the New Goddard Internal Home Page!

By Mark Hess

This month, we will be rolling out the new GSFC internal home page. The new Goddard intranet will be your one-stop shop for the latest news, information and events concerning NASA and GSFC. We have redesigned the site to make it easier for you to get information on important activities and events that affect your job, but also find the dates and times of the fun things that make Goddard such a great place to work.

There are a number of Agency and GSFC programs and initiatives - from the new NASA Vision for Space Exploration, to the NASA Shared Services Center to the new Alternative Work Schedule, just to name a few — and it's hard to keep up to date on all of them. So we have redesigned the site to make it easier to get the latest scoop on these important initiatives because they have an impact on YOU, and how you do your job. With the newly designed internal home page as your home base for information, you can keep up with the changes and stay informed.

So, what's new? For one, the new GSFC intranet is easy to navigate so that you can find and retrieve the information you need. Also, program leads and coordinators will be able to submit announcements and events directly for posting to the page. Complete the simple on-line submission form and send it. Approved announcements and events will appear in the order of precedent or by the date of event. We've made it easy to



Image of new Goddard internal page.

tell if an announcement has been updated which is indicated by the posted date.

Second, we've added an events timeline, updated daily, so you can quickly scan the site to see times and locations for things like Goddard endorsed colloquia, seminars, GEWA clubs activities and special events that are taking place on campus that day. In addition, you can check out what's coming up in the months ahead. And finally, there will be links to all of your favorite, most used NASA and Goddard resources and organizations.

The Office of Public Affairs will be rolling out the new internal home page very soon, and once it's up, we welcome your comments and your events. Please send your information to Trusilla Steele at e-mail address: [Trusilla.Y.Steele@nasa.gov](mailto:Trusilla.Y.Steele@nasa.gov).

Visit the new internal page on April 12 at: <http://internal.gsfc.nasa.gov/> and tell us what you think! ■

# NEW Earth Sciences Directorate Web Site

By Cynthia M. O'Carroll

How does NASA's technology and view from space help researchers answer questions such as "How is the Earth changing and what are the consequences for life on Earth and human civilization?" See for yourself by visiting the new Earth Sciences Directorate at: <http://earthsciences.gsfc.nasa.gov>. Meet the largest combined group of Earth scientists and engineers in the United States and learn how they are exploring our planet and sharing their knowledge of the Earth's climate, weather and natural hazard prediction from NASA's unique vantage point in space.

From the Directorate's home page a visitor can instantly sample the breadth of the site. It offers one-stop shopping for all you need to know when it comes to Goddard's Earth Science



Image of new Earth Science Web Site.

research and related activities in the laboratories for Atmospheres, Terrestrial Physics, and Hydrospheric Processes, to the Earth and Space Data Computing Division - home

to Goddard's supercomputers, to the Global Change Data Center, and the Goddard Institute for Space Studies. The Directorate also provides support to the Earth Observing System (EOS) through the EOS Project Science Office.

The "Today's Top Stories" section will keep you current with breaking NASA Earth science research with more in-depth

# Aerosonde UAV Completes First Operational Flights at NASA Wallops

By Keith Koehler

A small, unmanned airplane recently conducted flights along the Virginia coast showing its capability to support NASA science missions.

NASA and Aerosonde North America, Inc., conducted several flights of the Aerosonde unmanned aerial vehicle (UAV) February 20 through 27.

The flights showed the ability of the small UAV to operate from the runways of the NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Va.; fly a predetermined flight mission; and gather scientific data. The flights operated in the controlled airspace at Wallops, but the concepts demonstrated could be applicable to future missions over less tightly controlled airspace.

The Aerosonde UAV flew a NASA instrument that measures Global Positioning System (GPS) signals reflected from the Earth surface. Using these reflected signals over land, scientists can infer surface soil moisture and over water derive winds speeds and surface roughness or waves heights.

Stephen Katzberg, NASA Langley Research Center's principal investigator for the GPS reflection experiment, said, "The Aerosonde UAV with the NASA GPS reflectometer performed well together and we are currently extracting surface reflection information from the flight data."

He noted that the instrument has flown on manned aircraft but this is the first time it was flown on a UAV. "The ability to fly this instrument on the Aerosonde will allow us to fly into or around weather systems such as tropical storms without endangering humans," Katzberg said.

In addition to the NASA instruments, Aerosonde North America flew a suite of instruments to measure temperature, pressure, humidity and wind speeds in the atmosphere.

**Maurice Gonella**, Aerosonde UAV Facility manager at Wallops, said, "We are pleased to be able to collaborate with NASA in proving the operational capability of the GPS instrument on a UAV. These flights open the door to develop and fly other science instruments around the world to study Earth's systems."

The Aerosonde UAV offers scientists the opportunity to conduct long duration missions by flying continuously for more than 30 hours.



(left to right) Maurice Gonella, Aerosonde North America; Chuck Williams, NASA Wallops; and Stephen Katzberg, NASA Langley, test the GPS reflectometer in an Aerosonde UAV fuselage.

Long endurance UAVs, such as the Aerosonde UAV, have the potential to fill the gap between satellites and surface networks in the integrated global observing system. The in-situ measurements gathered by instruments on these UAVs are used in conjunction with the larger global datasets obtained from satellites.

**Jay Pittman**, chief of the Wallops Range and Mission Management Office, said, "These operational flights are a major step in developing the UAV for scientific studies. In cooperation with Aerosonde and the scientific community, we are excited about the opportunities small sensors and UAVs offer in Earth science research."

"UAVs open the door to completely new mission concepts that include so-called "sensor web" missions where UAV platforms work collaboratively to gather scientific data. We look forward to conducting these flights world-wide and to contributing to the Agency's ability to utilize next-generation platforms in support of its missions," said Pittman.

NASA and Aerosonde are determining the feasibility of conducting Earth science research using small, long endurance UAVs through a cooperative agreement.

For information about the Aerosonde UAV, visit: <http://www.aerosonde.com> ■

# A Neutron Star Emerges as A Rare Magnetic Emerald

By Chris Wanjek

Sometimes astronomers get lucky, and that's just what happened in July 2003.

A group of astronomers at NASA's Goddard Space Flight Center were, by chance, looking in just the right place and saw a neutron star emerging from a metamorphosis. The star was shedding its dim, nondescript existence of millions of years and suddenly transformed itself into a bright and exotic object called a magnetar.

Only ten magnetars are known in the whole Universe. This was a real gem of a find.

These magnetars are a class of ultra-magnetic neutron stars. They are so magnetic that they could strip an electronic gift card clean at a distance of 100,000 miles, or half way to the Moon. Where do they come from, and how do they get so magnetic? These are two questions that the lucky observation will help answer.

Neutron stars are scattered throughout our Milky Way galaxy and in billions of other galaxies too. These are fascinating objects in their own right. A neutron star is created in a type of star explosion called a supernova.

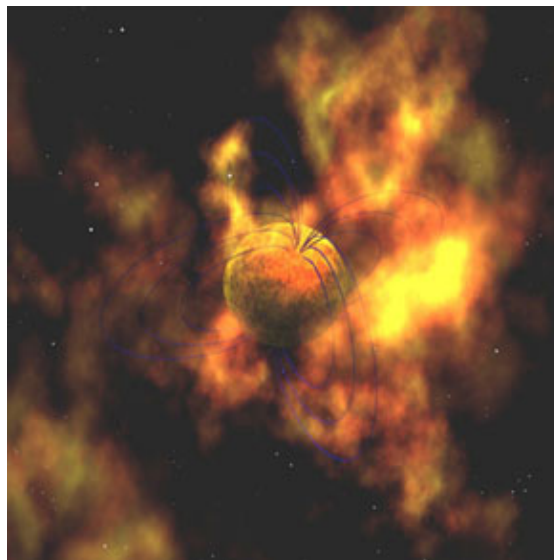
The precursor to a neutron star (which scientists call the progenitor star) is over eight times more massive than our Sun. Ultimately, a star runs out of nuclear fuel to burn. When this happens, it explodes. The outer shell explodes into space; this is the colorful supernova we can see. The core of the star collapses onto itself. This is the neutron star, a very dense object. A neutron star contains the mass of the Sun compacted into a sphere only about 10 miles across.

Neutron stars are very magnetic. They have a magnetic field strength of a billion to a trillion Gauss. In comparison, the Earth's magnetic field is about 0.5 Gauss, and a refrigerator magnet is about 10 to 100 Gauss. Magnetars are a thousand times more magnetic than neutron stars, about a hundred trillion ( $10^{14}$ ) Gauss.

**Dr. Alaa Ibrahim** led the discovery of the new magnetar, which he and his colleagues called XTE J1810-197. Part of the name comes from the instrument that spotted the magnetar, NASA's Rossi X-ray Timing Explorer.

What's interesting is that Dr. Ibrahim was studying another magnetar at the time. Caught in this "routine" observation was a strange, new bright object. He thought it might have been a magnetar because it was so bright. Magnetars are very energetic, and the type of light they radiate is called X rays.

Dr. Ibrahim's colleagues, including Dr. Craig Markwardt, pinpointed the location of the new source. No one had seen it before. They then poured through archived data from past missions. Sure enough, if you look closely in the old data back to 1990, you can see a very dim neutron star in the exact spot where the new magnetar is. This magnetar must have "turned on" between January and March of 2003.



An Artist's concept of a magnetar. The blue lines emanating from the magnetar's pole represent its powerful magnetic field.

The observation supports one theory of magnetars. Some scientists think that about 10 percent of neutron stars are born with ultra-high magnetic fields. This might be because of the mass of the progenitor star or the

spin that the neutron star gets from the explosion. Such neutron stars sit unnoticed, extremely dim because they have no fuel to burn.

Gradually, the magnetic field slows the spin of the neutron star. This act of slowing releases energy, making the star brighter. Additional disturbances in the star's magnetic field and crust (called starquakes) can make it brighter yet. This is when it reaches the magnetar stage. The original neutron star was also very magnetic, but that field simply couldn't be measured from afar until the star got bright. To measure a magnetic field, scientists have an equation that compares the speed of the neutron star spin to the rate that it is slowing down. When a star is dim, scientists can't gather this information.

So, magnetars might start out magnetic but dim (at this point, it might be called a regular neutron star, or maybe it isn't visible at all). Then, after existing for tens to hundreds of millions of years like this, it gets bright — the magnetar stage. Then, the magnetic fields weaken and the star gets dim again. The magnetar stage may be but a brief moment of beauty in the billion-year existence of special neutron star.

This would explain why scientists have only found 10 magnetars so far. There could be many more out there simply in prolonged dim stages. To confirm this theory, scientists will need to find many more magnetars turning on.

In the future, they may not need to be so lucky. Along with the Rossi Explorer, which is still going strong after 11 years in orbit, scientists will soon have the Swift Gamma-ray Burst Explorer in orbit. Although Swift's primary goal is to detect gamma-ray bursts, the observatory will also likely find magnetars. This is because Swift will be good at spotting transient events, that is, explosions or objects that suddenly appear in its field of view.

Continued on page 21

# NASA Re-Creates Climate Conditions to Explain 'Dust Bowl' Drought

By Krishna Ramanujan

In 1931, the middle of the U.S. was hit by a long-term drought that brought fear in handfuls of dust. Rain stopped falling from the skies over the Great Plains, and crops died. Then, the "black blizzards" began, as dust from over-plowed and over-grazed fields blew across the land. By late spring of 1934, the Dust Bowl drought was named the worst in our country's history, severely drying out 27 states and three-fourths of the country. By the time it ended in 1939, the U.S. economy had been devastated.



Dust storm approaching Stratford, Texas. Dust bowl surveying in Texas.

These changes in sea surface temperatures contributed to a weakened low-level jet stream and changed its course. The jet stream, a ribbon of fast moving air near the Earth's surface, normally flows westward over the Gulf of Mexico and then turns northward pulling up moisture and dumping rain onto the Great Plains. As the low level jet stream weakened, it traveled farther south than normal. The Great Plains dried up and dust storms formed.

"The 1930s drought was the major climatic event in the nation's history," Schubert said. "Just beginning to understand what occurred is really critical to understanding future droughts and the links to global climate change issues we're experiencing today," he said.

While droughts like this are rare, it is important to understand why they occur. Now, a team of scientists from NASA GSFC, headed by **Siegfried Schubert**, have an explanation. In a study published in the March 19<sup>th</sup> issue of *Science*, Schubert and colleagues used a NASA computer model developed with modern-era information from satellites to look back and reconstruct the climate of the past 100 years.

By discovering the causes behind U.S. droughts, especially severe episodes like the Plains' dry spell, scientists may recognize and possibly foresee future patterns that could create similar conditions. For example, La Niñas are marked by cooler than normal tropical Pacific Ocean surface water temperatures, which impact weather globally, and also create dry conditions over the Great Plains.

The research sheds light on how tropical sea surface temperatures can have a remote response and control over weather and climate. The study also helps us understand droughts throughout the 20th century. Analysis of other major U.S. droughts of the 1900s suggests a cool tropical Pacific was a common factor. Schubert said simulating major events like the 1930s drought provides an excellent test for computer models. While the study finds no indication of a similar Great Plains drought in the near future, it is vital to continue studies relating to climate change.



Credit: Historic NWS Collection

A dust storm approaching Spearman, Texas on April 14, 1935.

The study found cooler than normal tropical Pacific Ocean surface temperatures combined with warmer tropical Atlantic Ocean temperatures to create conditions in the atmosphere that turned America's breadbasket into a dust bowl for most of the 1930s.



Credit: Historic NWS Collection

A wall of dust approaching a Kansas town. In: "Effect of Dust Storms on Health," from the Public Health Reports, Vol. 50, no. 40, October 4, 1935.

Authors Siegfried Schubert, **Max Suarez**, **Philip Pegion**, **Randal Koster**, and **Julio Bacmeister** all work at the NASA GSFC Global Modeling and Assimilation Office.

For information about this research and images on the Internet, visit: <http://www.gsfc.nasa.gov/topstory/2004/0319dustbowl.html>

## New Alternate Work Schedule Plan

By Dewayne Washington

### To Assist in Your Worklife Balance

Goddard civil servants are being asked to attend briefing sessions concerning a new Alternative Work Schedule (AWS) implementation that is scheduled to start **April 18, 2004**. The session dates and times have been posted in a special announcement that was distributed on or about March 3. This is another opportunity that will help Goddard employees to better balanced home and worklife.

Since when and how we do our work greatly influences that balance, a Centerwide committee was chartered to explore options for greater flexibilities for the AWS and Telework programs. Following briefing sessions for all employees and supervisors and incorporation of the options in WebTADS, these flexibilities will be available starting April 18.

The new work schedule options fall under the "Maxiflex" category of AWS tour types. They offer a wide range of alternatives within which work schedules can be established. Options for arrival and departure times, uncompensated breaks, and days of the week to work or be off, have been greatly expanded. Additionally, Maxiflex can be used in combination with credit hours. Credit hours are extra hours worked that can be used for future absences. All work schedules must be compatible with job responsibilities, the mission of each organization, and safety, and be approved by the supervisor.

Separate briefing sessions for employees and supervisors were developed in order to assure that these options could be used effectively. Discussion has included the possibilities of telework to facilitate the flexibilities of certain work schedule options. Experts from the Office of Human Resources have been available upon request to work with organizations that may want specially tailored assistance.

If you would prefer having a presentation at one of your already scheduled staff meetings, please contact your liaison or the Career Development and Employee Worklife Office at 301-286-7918.

Remaining scheduled employee briefings are: **9-10:30 a.m. and 1-2:30 p.m., April 6, 7 & 8**, in the Building 8 auditorium. ■

## Can We Talk?

Is something on your mind? Then speak up! Come to the next "Can We Talk" discussion and tell us what you think. These informal dialogue sessions are held each month with either Center Director, **A.V. Diaz** or Deputy Director, **Bill Townsend**. There's no agenda, no set topics, no notes. Just an opportunity to tell the Center's leadership what's on your mind. Anyone can come. Sessions are small, no more than 20 people, and it's "first come, first serve." The next session is scheduled for **Thursday, April 8** at 11:30. For more info and to sign up, go to the Goddard Internal home page at <http://internal.gsfc.nasa.gov/canwetalk.html> or call the Office of Public Affairs at x6-8955. ■

## Lights, Camera, Action!

By Sarah DeWitt

This month Goddard will play a starring role in a feature film from India. The film is called *Swades* (pronounced **swah-dess**), which means "Our Country" in Hindi. It is written, produced, and directed by Academy Award nominated director, Ashutosh Gowariker, and stars one of India's leading actors, Shah Rukh Khan.

*Swades* tells the story of a NASA scientist who returns home to his family in India while he and his colleagues move towards completion on the Global Precipitation Measurement (GPM) satellite. The bulk of the film takes place in India, where much of the production has already been completed in the outskirts of Wai village in Maharashtra. About twenty percent of the film will be shot at NASA, with scenes at Goddard on April 25-29<sup>th</sup> and at Kennedy Space Center the following week.

The scenes at Goddard will take place in various locations around campus, featuring some of the most exciting and beautiful aspects of the center. Most of the scenes will feature Goddard employees going about their daily work.

The film is described as a period drama on a contemporary subject the director calls "India's brain-drain." It is scheduled for release in India on Independence Day, August 15, and later in mainstream theaters abroad. Details of the production have yet to be revealed to the Indian press, and the director plans to keep quiet about the story until it is released. Eager film fans in India have been referring to *Swades* as "Gowariker's next patriotic masterpiece." ■



The Safety and Environmental Division will host Earth Day events on April 22nd. A Center clean up will be conducted between the hours of 9 - noon. Register for a time you are available to help.

At 12:30 a showing of the video "The Next Industrial Revolution" will be held in the Bldg. 3, Goett Auditorium. Bill McDonough a noted architect in the field of sustainable development, and chemist, Michael Braungart, bring together ecology and human design.

Check out <http://earthday.gsfc.nasa.gov/> for Earth Day information and clean up registration

# FIRST Rookie Team Makes Impressive Showing

By Dewayne Washington

Photos by Chris Gunn/293



Team members await the start of the human player interaction.

Baxter Bomb Squad, team #16, were the big winners of the 2004 FIRST Chesapeake Regional Robotics Competition held March 18-20 at the historic U.S. Naval Academy's Halsey Field House in Annapolis, Md. The veteran team from Mountain Home, Ark. took home the prestige 2004 Chesapeake Regional Chairman's Award. They also took with them the second place competition trophy in a close, high-scoring regional.

The Chairman's Award is presented to the team judged to have created the best partnership effort among team participants and to have best exemplified the true meaning of FIRST (For Inspiration and Recognition of Science and Technology). In 2004, 26 teams will be selected for this prestigious award. From these 26 teams, one will be selected to win the Chairman's Award at the Championship on April 17, in Atlanta, Ga.

To the surprise of everyone at the regional, rookie team #1405, Penfield, N.Y., along with team #222, Tunkhannock, Pa., took first place and are the 2004 winners of the FIRST Chesapeake Regional Robotics Competition

award. Team #303, North Branch, NJ, along with team #16 took home the second place trophy. Teams #449, Silver Spring, Md., and #291, Erie, Pa., placed third. The Chesapeake Regional also saw the highest score recorded so far in the '2004 FIRST Frenzy: Raising The Bar' game. A score of 295 was posted.

According to John Murdock, chairperson for the Chesapeake Regional Planning Committee, "This was our most successful regional. I am grateful to everyone that participated in some way to make this our best effort and look forward to continue on with our success here in 2005."

There were 58 teams competing this year, 17 teams from Maryland. Visiting dignitaries included representation from the offices of the United States Secretary of Commerce and the Governor of Maryland.

There were more than 1,500 students along with mentors and other family members visiting from throughout Maryland. and 11 other states. NASA and the state of Maryland endorse the Chesapeake Regional Competition.

This year's regional also saw a dramatic increase in local involvement doubling last year's list of volunteers. Two NASA volunteers share the 2004 Volunteer of the Year award. Goddard's own **Desiree Taminelli**, Code 200 and **Pete Baltzell**, Code 547, were selected because of their tireless efforts to insure that this year's Chesapeake Regional was the best yet.

Those who witnessed this year's competition thought the game was more exciting and entertaining. The 2004 game, 'FIRST Frenzy: Raising the Bar', requires the designing of robots more capable than last year's. These robots have to be able to race

around the playing field collecting and passing 13-inch balls to human players who then shoot the balls into fixed and moveable goals.

Additionally, robots may attempt to hang from a 10-inch bar. Time has been of the essence as FIRST participants have worked with their mentors to solve common problems using the "kit of parts" while following a standard set of rules.

The 2004 FIRST season is comprised of 26 regional competitions (held in the U.S. and

Canada). Regional competition began the first weekend of March



Spike attempts to top a stack of balls for additional points.

## FIRST Rookie Team (cont'd)

and will continue each weekend leading up the championship to be held April 15-17, inside the Georgia Dome, in Atlanta, Ga.

Teams compete for honors and recognition that reward design excellence, competitive play, sportsmanship and high-impact partnerships between schools, businesses and communities. This year, FIRST is offering eligible high school participants more than 180 merit-based scholarship opportunities amounting to more than \$3.8 million from leading universities, colleges and companies. Currently in its 13th year, the FIRST Robotics Competition anticipates its largest season ever with 935 teams, including 220 rookie teams, representing Brazil, Canada, Mexico, the United Kingdom, and throughout the U.S. The 2004 competition will reach more than 20,000 students on over 900 teams in 26 competitions.

Photos by Chris Gunn/293



Rick Obenschain finishes another competition interview with a FIRST team.

The FIRST Robotics Competition is an exciting, multinational competition that teams professionals and young people to solve an engineering design problem in an intense and competitive way. The program is a life-changing, career-molding experience—and a lot of fun. The competitions are high-tech spectator sporting events, the result of lots of focused brainstorming, real-world teamwork, dedicated mentoring, project timelines, and deadlines.

Colleges, universities, corporations, businesses, and individuals provide scholarships to the participants. Involved engineers experience again many of the reasons they chose engineering as a profession, and the companies they work for contribute to the community while they prepare and create their future workforce. The competition shows students that the technological fields hold many opportunities and that the basic concepts of science, math, engineering, and invention are exciting and interesting.

If you are interested in being a mentor for a team or starting your own, contact Mike Wade 301-286-9101.

For a complete listing of the final standing check out <http://www2.usfirst.org/2004comp/Events/MD/rankings.html> ■

## NASA and Northrup Grumman Receive National Space Club Award

By Susan Hendrix

Goddard Space Flight Center and Northrop Grumman Corporation's Space Technology Sector are recipients of the National Space Club's prestigious Nelson P. Jackson Aerospace Award, named in honor of one of the Space Club's founders and past presidents.

The award is presented annually for exceptional teamwork between government and industry in the missile, aircraft and space fields. The 2004 award cites Goddard and Northrop Grumman's exceptional efforts in conceiving, developing and operating the original fleet of Tracking and Data Relay Satellites and associated ground control systems, which together comprise the Tracking and Data Relay Satellite System (TDRSS). The award citation includes a statement that reads, "TDRSS has profoundly altered the state of Earth-orbit communications."

The award was presented March 19 at the 47<sup>th</sup> Annual Goddard Memorial Dinner. **Phil Liebrecht**, associate director and program manager for Mission Services at Goddard and Deputy Program Manager **Roger Flaherty** were among more than 2,000 government officials, aerospace executives, space educators and guests in attendance. This is the 12<sup>th</sup> time that NASA has been selected for this distinguished award and the second year running that Goddard has been the recipient.

Accepting the award on behalf of Goddard, Liebrecht said he was absolutely thrilled for the TDRSS team. "This is a tremendous tribute to the hundreds of men and women who have worked for nearly 30 years to make this system a success," stated Liebrecht. Both Flaherty and Liebrecht have dedicated much of their careers to TDRSS and the space community which it serves.

The original TDRSS was comprised of six Northrop-built satellites and their associated ground control facilities. NASA has since built two new ground terminals, upgraded the original one, and procured three replenishment satellites from Boeing Satellite Systems. This sophisticated communications signal relay system transmits voice and television, as well as digital and analog data between user satellites and Earth-based control centers.

According to Flaherty, the service workload on the TDRSS continues to grow. "At this time we are fast approaching eight million minutes of support per year," Flaherty said. Noteworthy, considering that more than two decades later all of the original series spacecraft, with the exception of TDRS-2, which was lost aboard Challenger, are still on orbit and functioning.

"TDRSS is the envy of many agencies," said Flaherty. "Thirty years after its conception, TDRSS continues to be a state-of-the-art communications relay system that is key to enabling our nation's future human, space and earth science missions." TDRSS is 'the' link between the Space Shuttle, International Space Station, robotic missions and the ground, providing 100 percent global coverage – anytime, anyplace. ■



## In the Safety Corner

### Combating Carpal Tunnel Syndrome with Ergonomics and Exercise

We hear a lot about ergonomics these days. What does the word mean and how does it affect you in your job?

Ergonomics is the study of the relationship between workers and work. It includes how the workplace is designed, equipped and organized, as well as how work is performed.

Ergonomics can help prevent injuries, particularly stresses and strains that can turn into disabilities over time. Known as Repetitive Stress Injuries or Cumulative Trauma Disorders, they particularly affect the upper body muscles, tendons and joints.

CTS or RSI is an inflammation of the nerve and tendons running through the tunnel in the wrist. Continued movement of the hand and wrist — as in keyboarding or prolonged use of a tool — cause these tendons to swell and put pressure on the nerve.

The first symptoms are a mild tingling but eventually stiffness, numbness, weakness and severe pain occur. With early detection and proper treatment, complete recovery is common.

Get medical help at the first signs of CTS.

#### Ways To Stop CTS

Ergonomics — the arrangement of the work area and the job — is an important part of prevention of CTS. The workstation arrangement should not involve excessive bending, twisting or reaching to do the job. Working with awkward postures such as bent wrists contribute to repetitive strain injuries such as Carpal Tunnel Syndrome.

**Breaks** - Frequent and regular short breaks to allow the tendons to recover also help prevent CTS. You don't have to stop productive work; just do something different for awhile.

**Exercises** - When taking a short break, try this: Clench your fists tightly for a second or two and then stretch your fingers out and hold for several seconds. Repeat this exercise several times. Also, hold your hands out in front of you and rotate them several times.

#### Prevent CTS At Home Too

The precautions for preventing repetitive strain injury are the same for home computer use as they are in the workplace.

Here are some reminders:

- Place your keyboard on a low enough surface that you can work with your arms parallel to the floor and your elbows bent at a 90-degree angle.
- Keep the mouse close to you and try to move it without bending your wrist.
- The monitor should be low enough for you to look down at it. Tilting your head up to see the monitor puts a strain on your neck.
- Use a good chair, not a folding lawn chair or a shaky old kitchen chair. The chair should be sturdy and adjustable. Textured fabric upholstery is preferable to a slippery surface. You should be able to sit with your knees at the same level or slightly higher than your hips.
- Arrange lighting to minimize glare on the screen and help prevent eyestrain. Keep the screen free of dust and fingerprints. Rest your eyes often by looking away from the screen and into the distance. Make an effort to blink a lot.
- Don't sit in the same position too long. Move around in your chair to various comfortable positions. But try to keep your back relatively straight and your feet on the floor.
- Take frequent breaks. Get up from your chair, stretch and walk around.

Lack of sleep is another hazard associated with computer use at home. Some computer activities can be so addicting that you find yourself staying up most of the night. The result is dangerous fatigue on the job the next day.

#### Personal Security

It is also important to be aware of your personal security on the Internet just as in other areas of life. Don't casually give out your physical address or other clues to your identity or location. Use the same sort of common sense you would use in meeting new people through any other form of communication.

Home computers have added an exciting new dimension to our lives, with their productivity software, realistic games and instant access to information and other people. Lots of us are reaching out online; in fact, a recent study indicates one in six adults in the United States regularly use the Internet or commercial online services.

**As you enjoy these new possibilities, remember to use some old-fashioned safety sense. ■**

## Safety Alerts

The Center receives information from the Government-Industry Data Exchange Program (GIDEP) concerning product recalls. In an effort to keep employees informed of recalls that may affect you at work and at home, Code 300 will provide alerts or recalls that have been issued by the Consumer Product Safety Commission along with web site links for retrieving further information on the recalls or alerts.

New Federal Web Site for Agency Recalls: <http://www.recalls.gov>

Lasko Products Inc. Announce Recall of Space Heaters.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04094.html>

Wagner Spray Tech Corporation Announce Recall of Drill Charger Base  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04091.html>

Lakewood Announce Recall of Electric Heaters.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04098.html>

Brass Light Gallery Announce Recall of Wall Sconces.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04099.html>

Salton, Inc. Announce Recall of Timex Outdoor Appliance Timers.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04092.html>

APA Marketing Inc. Announce Recall of Home Entertainment Wall Units.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04100.html>

Lithonia Lighting Announce Recall of HID Light Fixtures.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04544.html>

Murray Inc. Announce Recall of Lawn Mowers and Lawn Tractors.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04103.html>

Bath & Body Works Announce Recall of Votive Candles.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04101.html>

CPSC Issues New Safety Warning for Paintball Guns.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04105.html>

Char-Broil Announce Recall of Gas Grills to Replace Temperature Gauges.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04096.html>

GE Security, Inc. Announce Recall of Carbon Monoxide Alarms.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04534.html>

Dollar Tree Stores, Inc. Announce Recall of Candle Sets.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04081.html>

Progress Lighting Announce Recall of Fluorescent Light Fixtures.  
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml04/04082.html>

## Earth Sciences Web Site (cont'd)

coverage of the press releases from which they are adapted. You can also meet the Directorate's senior staff and project scientists, read about missions, proposals, instruments and campaigns; learn about the history of Earth science at NASA. You can find the themes, benefits and practical application of Earth science; and see what's happening at the Directorate

including upcoming events, conferences, Goddard colloquia and recent project news. An archive of past top stories is also available.

The "Kid's Page" contains the *Earth Science Educator*



Kid's Page in the new Earth Science Website.

which links to hundreds of teaching and learning web resources within the Directorate. It provides teachers and students with quick access to a set of rich scientifically-oriented educational resources on a wide range of Earth science research activities. The Educator is organized by educational elements and is fully searchable.

This Directorate web site also hosts the *Earth Sciences Portal* which is a collection of over 280 science and research web sites within the Directorate that span from atmospheric and climate studies to Earth science technology and global change data. Another portal within the Directorate site, called *Disaster! Finder*, is a searchable portal containing hundreds of carefully selected disaster web resources on the Internet. It also provides informative links to Earth Observatory's Natural Hazards web site that displays a global map of timely disaster events and information.

You can also explore some of the Directorate's most popular and award winning web sites like the Earth Observatory, Scientific Visualization Studio or IMAGERS (Interactive Multimedia Adventures for Grade-school Education using Remote Sensing). There are also links to other world-class Earth science research organizations and institutions that currently collaborate with NASA on Earth Science research.

For "quick pics" of the Earth, check out the wealth of Earth imagery available at the Earth Observatory's Visible Earth (<http://visibleearth.nasa.gov/>) which provides a consistently updated, central point of access to the superset of NASA's Earth science-related images, animations, and data visualizations.

If you have any questions or suggestions about this fantastic web site, please contact its chief editor, Tom Hood at 301-614-5564 or email him at: [thood@pop900.gsfc.nasa.gov](mailto:thood@pop900.gsfc.nasa.gov). ■



## First Diversity Lunchtime Movie

By Trusilla Steele

On March 25, 2004 the Goddard Diversity Action Team (GDAT) held its first Lunchtime Diversity Movie.

Before the start of the movie, **Sharon Wong**, special assistant for diversity, announced the winning diversity theme. Several creative responses were submitted, such as "We Are All Pieces to the Puzzle of Success", "Opportunity, Respect and Differences: The Keys to Goddard's Success", "Bridging the Gap to Reach New Heights" and "Pursuing Excellence Through Diversity". However, **George Barth's** (Code 429) submission "**Many Faces, Many Places, Many Voices: One Goddard,**" prevailed overall. The winning 2004 diversity theme will be used on all promotion materials for GDAT and Celebrate Goddard festivities.

GDAT was established in 2003 to work in conjunction with Goddard's Diversity Council to assist with strengthening the understanding and appreciation for diversity, as a critical component of Goddard's mission success. GDAT strives to accomplish this by developing events, activities and literature to increase diversity awareness.

The movie *Radio*, starring Cuba Gooding Jr. and Ed Harris is based on a true story about a mentally challenged student, Radio (Cuba Gooding Jr.) who develops a mentoring relationship with a

high school football coach, Harold Jones (Ed Harris). Although many in his town of Anderson, South Carolina embraced Radio, he still faced many struggles and tensions from the community.

As the unique relationship between coach Jones and Radio develops into a meaningful friendship, Coach Jones learns that it doesn't take much to be happy and that there is more to life than winning. It is through their relationship of inspiring each other that transforms the attitudes of the people in the small town.

The dramatic movie was not only uplifting, but also touching which was conveyed by the sniffing from the audience. In addition, the movie sets the example of how a comfortable and non-judgmental environment can be created as a result

of valuing and appreciating the unique differences of others.

After the movie, remaining audience members participated in a dialogue session facilitated by **Julie Knight** and **Ann Haase**, two of Goddard's Diversity

Dialogue Project facilitators. Participants reflected upon how the movie made them feel about the importance of accepting people with differences and examined how Goddard is moving to a more inclusive environment. There was an overall consensus that it is imperative for everyone at Goddard to participate in diversity efforts and activities.

The GDAT will have more lunchtime movies with dialogues sessions as a continuing effort to build an organizational climate in which employees, respect, appreciate and value individual differences. Look for more information on the next lunchtime diversity movie.

For more information on the Diversity Council or GDAT, visit: <http://diversity.gsfc.nasa.gov/>. ■



Photo by Pat Izzo/Code 293

Employee viewing Lunchtime Diversity movie, *Radio* in building 3, Goett Auditorium.

### Entertainers Needed

The Entertainment Committee for this year's Celebrate Goddard festivities and Community Day are looking for talented singers, dancers, musicians or anyone with a unique talent to volunteer to be a part of the festivities. Celebrate Goddard will have entertainment events **on Tuesday, July 27** between 10 a.m. to 2 p.m., and **on Thursday, July 29** between 10 a.m. to 1 p.m. and Community Day will take place on **Saturday, July 31** from 10 a.m. to 6 p.m. The events will be occurring on the Goddard Mall. Acts/performances should be approximately 20 minutes in length. Interested performers/individuals should contact Gerald Tiqui, 301-286-9461 for Celebrate Goddard

festivities. Those interested in performing at Community Day should contact Nancy Neal, 301-286-0039.

### Craft Vendors Needed

The Craft Committee for this year's Celebrate Goddard Day is looking for craft vendors to be a part of this event. Celebrate Goddard Day will take place on Thursday, July 29 between 10 a.m. to 1 p.m. The events will occur on the Goddard Mall in front of Bldg 8. If you are interested in obtaining a table to display your crafts or need more information, please contact Cindi Savoy 301-286-7149 or via email [Cynthia.A.Jones-Savoy@nasa.gov](mailto:Cynthia.A.Jones-Savoy@nasa.gov). The cost for obtaining a table is \$30.00 (includes table, tent, and chair). Space available on "first-come, first-served" basis.

# Pre-Aura Validation Campaign in Costa Rica Produces Key Results

By Cynthia M. O'Carroll

Will climate change affect the tropical atmosphere? How will water vapor levels change in our atmosphere? Will rain rates increase? Will the upper atmosphere get wetter and cloud frequencies increase? These questions require both computer modeling of the atmosphere, and global measurements to test the accuracy of the models. Water vapor and ozone in the atmosphere are extremely important "greenhouse gases," but few measurements are actually available in the tropics. Researchers need high quality measurements around the equator to answer these key questions.



Photo Credit: Dr. Andrew Dessler

U. S. Air Force C5a cargo plane that carried the scientists and all of their equipment to Costa Rica

The NASA Pre-Aura Validation Experiment (AVE) recently flown in Costa Rica in January and February, 2004, has produced some key data about water and clouds in the tropics. New instruments (including a new balloon borne instrument) provided extremely high quality water observations in the tropics, and new insights into cloud formation in the tropical upper troposphere. Co-project scientists **Dr. Paul A. Newman** of NASA Goddard, and Dr. David Fahey of the NOAA Aeronomy Laboratory led the campaign.

The Pre-AVE campaign is a prelude to the future Aura Validation Experiment (AVE) that will be flown on NASA aircraft for validation of Aura instrument data. The Earth Observing System (EOS) Aura satellite is a NASA mission for studying the Earth's ozone layer, air quality and climate. NASA sponsors ground and aircraft campaigns to measure the same atmospheric gases that Aura will measure from space. These campaigns provide a ground-truthing or validation of the satellite observations and give researchers a higher degree of confidence in using Aura observations for science studies.

"This field campaign showed that NASA's WB-57F aircraft is an excellent platform for the tropical upper troposphere and lower stratosphere, and that San Jose, Costa Rica is an ideal tropical site for observations," said Dr. Newman.

The Pre-AVE campaign enabled scientists to test fly aircraft instruments to make sure that their measurements are adequate for Aura validation. The campaign was designed to exercise the aircraft instruments and to test flight strategies for underflights of Aura after it is launched. Underflights happen when the aircraft flies directly below the path of the satellite. **Dr. Leslie R. Lait** of NASA GSFC used meteorological forecasts of air motions at altitudes from 20,000 to 65,000 feet to design flight tracks for the NASA WB-57F. These "designer" flight tracks provided a bigger bang for the buck, by directing the aircraft into air that was either extremely cold

or possibly influenced by descent from the stratosphere into the troposphere.

There were three main goals at the outset of the Pre-AVE campaign. First, the researchers wanted to test Aura satellite validation concepts and show that they could provide high quality in-situ and remote data for gases and particles for the Aura satellite instruments. The team also wanted to characterize air in the upper troposphere that is transported to the lower stratosphere and is intimately involved in ozone depletion. Finally, they wanted to examine water vapor, particles and other gases in the tropics to gain insight into their relationships to climate change.

The campaign began on January 12, 2004 with the integration of 20 instruments onto the NASA WB-57F aircraft at NASA Johnson Space Center's Ellington Field. The first test flight of the full payload was flown on January 15, and two additional flights were flown on January 19 and 21 near the jet stream over the United States. The WB-57F reached altitudes over 60,000 feet on these flights, and made a number of measurements in the lower stratospheric ozone layer. On January 24, the WB-57F flew to San Jose, Costa Rica at 10 $\times$ U. The complement of 60 scientists accompanied the WB-57F in a U. S. Air Force C-5a cargo plane flown by members of the Texas Air National Guard. Following the arrival, 3 science flights were flown over the equator from San Jose on January 27, 29, and 30. The WB-57F and the C-5a concluded the campaign with their return to the United States on Monday, February 2.

Now that the Pre-Ave campaign has been completed, scientists are gearing up for the Aura Validation Experiment (AVE), a multi-year experiment that will be flown on NASA aircraft for validation after the Aura satellite is launched, currently scheduled for June 2004.

During the upcoming AVE campaign, a set of aircraft instruments will be flown approximately twice a year to provide a direct test of the Aura observations. These twice per year campaigns will be selectively flown on the NASA WB-57F,

Continued on page 13

## Return to Spaceflight

### A Change in the Lineup and a New Target Launch Date

By Ed Campion

When the Space Shuttle returns to safe flight, Discovery, fresh from an extended overhaul, will pinch-hit for Atlantis.

The decision to switch which orbiter flies first was done in order to accommodate the additional time for any inspection and refurbishment, if required according to William Readdy, associate administrator for Space Flight.

NASA has also moved the target planning window from September 2004 to March 2005. Shuttle managers say the date change is crucial to ensuring the safety of the crew and orbiter.

Moving the target date gives the agency the time it needs to prepare for new launch constraints. For example, a new rule states that for at least the next few flights, Shuttles should only launch during daylight hours to allow the best photography of the Shuttle assembly for post-launch review. Another challenge will be having a second Shuttle on standby, ready to launch a rescue mission if necessary.

"We're going through the process of further defining exactly what that rescue capability will be and defining the mission products that are required to be on the shelf, ready to execute," Readdy said.

The extension also allows NASA to work out some technical challenges.

During Discovery's overhaul period, technicians analyzed the actuators that drive the rudder speed brake, which helps control and slow the orbiter during entry and landing. Because the inspection revealed minor corrosion, wear and installation problems, further work is required to inspect and repair the actuators on all three orbiters. Discovery was the first orbiter



In front are astronauts Eileen M. Collins (right), commander; Wendy B. Lawrence, mission specialist; and James M. Kelly, pilot. In back are astronauts Stephen K. Robinson (left), Andrew S. W. Thomas, Charles J. Camarda, and Soichi Noguchi, all mission specialists.

to receive this attention, so it was selected as the Return to Flight vehicle.

NASA also needs more time to design and build the boom that will allow the astronauts to inspect the orbiter for damage while in space. Designing the camera/laser sensor package for the end of the boom has proven challenging, but Readdy is confident that a solution is close.

Finally, further research, analysis and testing are necessary before the Shuttle's massive orange external tank can be deemed safe for flight. NASA is paying special attention to the way debris that comes off the tank reaches the orbiter during launch, and how the tank's foam insulation is applied.

"We've said for months that we'd be driven by milestones, not a calendar," said Readdy. "When we successfully reach those milestones, that's when the Space Shuttle will return to safe flight." ■

### Pre-Aura Validation (cont'd)

the NASA DC-8, and unpiloted robotic aircraft, and will be about 3 weeks in duration. The measurements from the aircraft will include common observations such as temperature, water vapor, and ozone, but will also include other more exotic observations such as nitric acid, methane, and sulfur hexafluoride. These atmospheric measurements will be used to validate Aura instrument measurements and will also be used to study the Earth's ozone layer, air quality and climate.

Key collaborations have been set-up between satellite instrument investigators and aircraft instrument teams. Furthermore, key collaborations have also been established with Costa Rican scientists for future tropical missions.

For more information about the mission, please visit on the Internet: [http://earthobservatory.nasa.gov/Newsroom/Campaigns/AVE\\_Mission.htm](http://earthobservatory.nasa.gov/Newsroom/Campaigns/AVE_Mission.htm) ■



The Pre-AVE mission was staged from the Costa Rica National hangar of Aerotransport Investigations (Hangar Nacional de Investigaciones Aerotransportadas, Juan Santamaría, Costa Rica) also known as the clam-shell hangar.

# Employee Spotlight



## He's got the Moniker, the License Plate and an Asteroid

By Rachel A. Weintraub

A Goddard Local is the World's Eclipse Authority

"The most difficult [trip] was my most recent one - Antarctica. To get to that eclipse, we had to go aboard a Russian icebreaker that left from South Africa and took about two weeks to get to Antarctica. We observed the eclipse, then it took another two weeks to get back."

This might have been a journal entry from a more romantic era, when scientists traversed the Earth to explore the unknown, but it actually happened last year. In a time when science is often performed in a stale office in front of a computer, Goddard's **Fred Espenak** has not only become



Computer enhanced eclipse image taken by Espenak, of the solar corona. This image was created by combining 22 separate negatives into a single photograph. Features on the dark face of the Moon are visible as well as a wealth of subtle details and streamers in the corona.

renowned for making eclipse predictions, but also for still traveling around the world to watch and photograph them. He has become one of the foremost authorities on solar and lunar eclipses and maintains a web site that lists everything you'd ever want to know about the astronomical events from 2000 BC through 4000 AD. And, unlike the reports from the Naval Observatory that he's taken over, his includes information for the scientist going on an expedition, amateur astronomers, photographers and even students in a classroom.

"I originally came to eclipses from an amateur point of view because I saw my first total [solar] eclipse in 1970. I was a high school student at the time and there was a total eclipse on March 7, 1970 that ran from Florida up through the Carolinas and Virginia. I'd only had my driver's license for a couple of months and convinced my parents to let me take the car on a 600-mile trip down to North Carolina for this eclipse. Even with all the reading and preparation I had made for the eclipse, I wasn't ready for the impact the eclipse had

when I saw it. It's unlike anything you can possibly imagine. It's just spectacular," Espenak said with a gleam.

After North Carolina, there was the solar eclipse in Canada in 1972. Then the eager student convinced his Wagner College alumni office to sponsor a trip to northern Africa in 1973. In exchange, he agreed to give lectures and share his photographs, which were becoming accomplished in their own right. In the next few years, Espenak made it a point to see as many total solar eclipses as possible - 17 and counting. During the late 1970s he also became interested in predicting where and when eclipses take place.

Since the days of Edmund Halley in the 1600s, there has been some type of eclipse predicting. What has changed is access to these predictions, not to mention accuracy. In the 1970s there were literally two or three books worldwide that had detailed predictions, but these were usually only available at science libraries. The US Naval Observatory published predictions of individual eclipses a year or two in advance, but Espenak, who was studying computer programming at the

t i m e ,  
wanted to  
generate  
maps 10-  
20 years  
in advance.  
"That was  
part of my  
motivation  
- both in  
terms of  
seeing the  
eclipses  
themselves  
and just  
daydreaming  
- trying to  
figure out  
where the  
next eclipse  
was going  
to be and  
m a k i n g  
plans to  
see it  
depending  
on the part  
of the world  
in which it  
was going  
to occur."



Espenak poses by his trusty telescope on an expedition to Australia in 1999.

He started publishing papers with predictions and people started requesting copies and traveling to see the events based

**Continued on page 15**

## Espenak (cont'd)

on his papers. By 1992, the Naval Observatory stopped publishing and asked Espenak to take over. "There are a lot of people doing the calculations, but Fred has the passion to go to the eclipse, publish his photographs, keep up the web site. Maybe that's what distinguishes him. I think Fred has popularized what he does more than others. [His] articles appear in 'Sky & Telescope' magazine, for example," said John Bangert of the Naval Observatory.

The eclipse reports are available for download on the Internet, and are requisite links for any science web page. But it is Espenak's photographs and travel information at his personal sister site, 'MrEclipse.Com' that will really drive home the excitement of eclipses. Said Espenak stoically, "if you're going to stay in one spot [to see an eclipse], you've got to wait hundreds of years on average, so you've got to be willing to travel. The people that you meet along the way assist you and want to put their best foot forward to show you their country. You realize in a certain way you're an ambassador of goodwill."

Espenak no longer has to rely on alumni offices - today he leads eclipse tour groups to far-flung destinations like last year's trip to Antarctica. On that month-long trip, "we [toured] some of the sub-Antarctic islands and Antarctica itself for some sightseeing and observing the wildlife. Just in terms of remoteness, this is a part of Antarctica that never had tourists until 1992. It's called the 'far side'. But that's where the eclipse happened to pass."

So how do you follow up a reputation as an eclipse authority? Any astrophysicist will tell you to branch out into the solar system. In 2003 Espenak had an asteroid named for him. "It's pretty small, just five miles or so and it's not visible with the naked eye. Maybe I'll find the time to take a photograph of it after I retire."

Of course, asteroids don't have the draw of eclipses - even a partial one. As Espenak put it into perspective, "on a scale of 1-10, a partial [solar] eclipse is maybe a 6 and a total eclipse is a million."

*Fred Espenak will observe the Venus Transit from Athens on June 8. The next partial solar eclipse occurs April 2004 and a total solar eclipse occurs in March 2006. His official solar eclipse site: <http://sunearth.gsfc.nasa.gov/eclipse/> ■*

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## Goddard Memorial Symposium

(cont'd)

According to Garvin, the six integrated science instruments aboard the rovers are providing researchers with incredible data. What have we found out so far? Among other things that the sand on Mars is 100 times finer than anything found on Earth. Data that is seemingly mediocre, but is in fact very important because the fine sand sticks to everything. Garvin stressed that future human explorers and their



Congressman Nick Lampson (D-TX), Ranking Member, Space and Aeronautics Subcommittee, addresses luncheon guests on the first day of symposium.

spacecraft will need to effectively deal with this issue if we travel to Mars. Garvin stated that although the baseline mission for the two Rovers was originally 60 days, they now think they can extend the mission to 250 days or more days under the proper conditions. "So stay tuned," Garvin said, "more good stuff is coming!"

Congressman Nick Lampson (D-TX), the new ranking member for the Space and Aeronautics Subcommittee was the distinguished luncheon speaker on day one.

According to Lampson, "This (space) program has to be ours. Space exploration leads to advancements in science and medicine, bettering the lives of all U.S. citizens." He also stressed that we have to find a way to adequately fund programs such as health care as well as space exploration. Lampson ended his talk with a challenge for the audience to start talking to their neighbors and help shape their attitudes. Lampson embraces the 'Vision for Space Exploration' stating, "We've all experienced a higher standard of living because of the advancements in the space program."

Other Goddard presenters included the James Webb Space Telescope Senior Project Scientist **John Mather**, Space Architect Representative **Rud Moe**, and Laboratory for Terrestrial Physics Chief **Dave Smith**. More than 370 attended various sessions during the two-day event.

The second day concluded with Diaz thanking everyone for a grand turn out. He was followed by a special student session that focused on space exploration career perspectives for future scientists and engineers. **Vigdor Teplitz**, Chief of University Programs at Goddard, moderated a panel that included NASA Director of Higher Education Brad Weiner, Goddard astrophysicist **Tali Figueroa**, Goddard aerospace engineer **Melissa Vess** and Goddard electrical engineer **Tracee Jamison**.

Undergraduate and graduate students from the University of Maryland (College Park), Morgan State University, The Johns Hopkins University, Howard University, Southeastern University, The Catholic University of America, University of Kansas, and the College of Notre Dame (Maryland) attended the session, which covered career discussions in the Earth science, space science and engineering fields. ■

# Passwords, Firewalls and Vulnerabilities, Oh My!

By Tara Holby

Most people are aware of the large financial losses companies experience from computer viruses. Most have heard the frightening stories about credit card fraud and identity theft. But what is the importance of information technology (IT) security at Goddard?

“Some of the data that NASA produces can be quite sensitive,” says **Judy Montgomery**, CNE security manager. “If we are not protecting ourselves from hackers, then the programs that NASA provides to the country are at risk.”

Goddard conducts business with outside corporations, universities and foreign countries, which complicates IT security by permitting GSFC networks to interact with outside computers. “Computer crimes happen here almost every day,” says **Josh Krage**, senior IT security specialist. “We have a lot of individuals from around the world trying to get into our systems.”

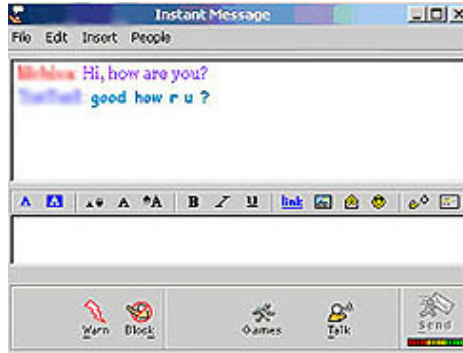
Understanding and applying IT security policies can be overwhelming. To relieve frustration caused by constantly changing IT regulations and to unify IT security at GSFC, management created the Enterprise Information Technology (IT) Security Branch, Code 297. The three-year-old Branch is GSFC’s protection against the outside (and sometimes inside) computer criminals, including those in foreign countries where most intrusions originate. This small organization of only 12 employees provides IT security services and oversight to the entire GSFC campus (including WFF, IV&V, GISS, White Sands) in support of mission, science, engineering and business activities. The Enterprise IT Security Branch aims to guarantee the safety of information and acts as an IT security resource for GSFC organizations.

At times the Enterprise IT Security Branch is seen as an enemy. “Most people think we are preventing them from doing their job, when we are simply trying to comply with the Federal and Agency requirements,” says Center IT Security Manager, **Hank Middleton**.

It is stated within the NASA strategic plan, Goal 7, to engage the public in sharing knowledge, therefore it is pertinent for GSFC to provide and promote information distribution. However, it is also vital to ensure the data is not violated or tainted. “We don’t

want to stop you from giving information away, we want to ensure that the information you send is the same information they receive,” further explains Krage.

For example, Code 297 noticed a security fault in instant messaging services and as a result blocked the protocol allowing the service. “The main reason we cut it off is because there are some types of data, restricted data, that should not be exposed to anyone,” said Middleton. With instant messaging services, the message goes to a server located at the company running the messaging services, and GSFC no longer has control over the data. “We don’t know who’s accessing it or how they are accessing it,” continues Middleton.



AOL Instant Messenger screen

In addition, constant password changing can cause some frustration among Goddard employees. The reasoning for password mania is that automated tools easily decipher passwords of either all characters or all numbers, even if they are encrypted. Therefore, if passwords are of a variety of letters, characters and symbols, and are reset on a regular basis, it will deter computer hackers. The Enterprise IT Security Branch has seen an increase in hackers gaining access to Goddard systems due to password vulnerabilities. The agency has noted the aggravation caused by passwords and is planning a solution. “NASA is working on technology that will not require users to remember 15 passwords, or five passwords,” says Middleton.

With constantly improving technology and an ever-growing Internet, it is hard to predict where IT security will be in the future. “With the new technologies...the Internet could get very, very dangerous for a lot of people,” says Montgomery. The good news is that with the formally established Enterprise IT Security Branch, IT security will be more adequately recorded, applied and utilized at GSFC.

For Goddard, the plan is to employ and promote the One NASA vision. Ideally, NASA would like to work towards merging all the different center networks together, to provide a central One NASA e-mail service, to unify all the NASA Web sites and to provide a one-stop account sign-in process. The agency is focusing on tying IT security policies into everyday business processes, making it easier

for employees to follow the rules by default.

For more information about the Enterprise Information Technology (IT) Security Branch, Code 297, visit <http://eitsb.gsfc.nasa.gov/> ■



A variety of GSFC applications that require separate passwords.



# Cosmology Is Way Cool!

By Nancy Neal

## NASA Scientist Nominated for Wired Magazine's Scientist of the Year

One of Goddard's very own was nominated for a WIRED Rave Award alongside such famous names as George Clooney, Steven Soderbergh, Jon Stewart, Sofia Coppola, Peter Jackson and OutKast. **Dr. Charles L. Bennett**, Principal Investigator for NASA's Wilkinson Microwave Anisotropy Probe (WMAP) was nominated as WIRED Magazine's Rave Award scientist of the year. The award is given to innovators who are "*The People Changing People's Mind.*"

Although Bennett was not selected, it was still quite prestigious to be nominated for his work. "I was honored and surprised to be nominated, especially in the company of such renown scientists," said Dr. Bennett.

Other nominees in the scientist category include such prestigious names as: Patrick Brown, Michael Eisen, Harold Varmus Biology, Public Library of Science; Boldizar Janko Physics, University of Notre Dame; Craig Venter The Center for the Advancement of Genomics; and Alessandro Vespignani Theoretical Physics, Universite Paris-Sud

Bennett was nominated for his leadership role in the revolutionary WMAP mission. WMAP took the most famous "baby picture" of all; that of our very own universe. The image contains stunning detail of the universe just after the big bang. Scientists captured the afterglow of the big bang and revealed that the universe is 13.7 billion years old and dominated by a mysterious dark energy. The confirmation of the dark energy, which drives the universe to expand at an ever increasing rate, was hailed by Science magazine as the 2003 Breakthrough of the Year.

"By measuring light that's over 13 billion years old, the WMAP space mission is, in WIRED words, 'Changing your mind' by revealing the beginnings of the universe," Dr. Bennett explained.

The light we see today, as the cosmic microwave background, has traveled over 13 billion years to reach us. Within this light are minute patterns that mark the seeds of what later grew into clusters of galaxies and the vast structure we see all around us. Like a detective, the WMAP team compared the unique "fingerprint" of patterns imprinted on this ancient light with fingerprints predicted by various cosmic theories and found a match.

The scientific results from this extraordinary mission were eagerly awaited. Bennett has been praised for his leadership of the science team. "The WMAP Science Team is the best," says Dr. Bennett. Our Team worked days, nights, and weekends to get the results out just as soon as we possibly could, but only after we convinced ourselves that we had it right."

"The results were of great interest to the scientific community, of course. But more than that, it is clear that there is vast public interest in the 'big' questions, such as the age of the universe and what, exactly, happened at the very beginning of it all?" added Dr. Bennett.

This remarkable medium classed explorer mission was launched on June 30, 2001 aboard a Delta II rocket and is in its permanent orbiting station of L2, some million miles away from Earth. To reach

this deep space orbit, ground controllers performed a series of maneuvers to slingshot WMAP around the Earth using the spacecraft's on-board thrusters. With a gravity assist from the Moon, WMAP performed its swing-by on July 30, several weeks before WMAP reached its permanent station orbiting about L2.

WMAP was produced in partnership between Princeton University, N.J. and Goddard. Goddard and Princeton University produced the WMAP hardware and software. WMAP, an Explorer mission, is managed by the NASA Goddard Space Flight Center for NASA's Office of Space Science.



Dr. Charles L. Bennett, Principal Investigator for WMAP was nominated as WIRED Magazine's Rave Award scientist of the year.

In addition to Goddard and Princeton, science team members are located at the University of Chicago, the University of California, Los Angeles, Brown University, Providence, R.I., and the University of the British of Columbia, Vancouver.

In his position as WMAP Principal Investigator, Bennett led the proposal effort and was responsible for the mission design and development, ongoing mission operations, and production of the scientific results.

Prior to this, Bennett served as branch head of the Infrared Astrophysics Branch in the space science directorate at NASA. Bennett also held the title of Deputy Principal Investigator of the Differential Microwave Radiometers (DMR) instrument and participated as a science team member on the Cosmic Background Explorer (COBE).

Bennett has been the recipient of numerous awards. For his work on COBE, Bennett was awarded NASA's highest scientific honor, the NASA Exceptional Scientific Achievement Award. In 1999, Bennett was named a Fellow of the American Physical Society and was presented NASA's Leadership Award. In 2002, he was named the most Highly Cited Researcher in space science worldwide by ISI, an information company. In 2003, he received the John C. Lindsay Award for Space Science, and was honored as the 2003 Alumnus of the Year by the Physics Department of the University of Maryland. He was recently named a Fellow of the American Association for the Advancement of Science.

A native of New Brunswick, N.J. but raised in Bethesda, Md., Bennett graduated from the University of Maryland in 1978 with a bachelor's degree in physics and astronomy. He received a Ph.D in physics from the Massachusetts Institute of Technology, Cambridge, in 1984.

More information on WMAP and the WIRED Rave awards is available on the Internet at: <http://wmap.gsfc.nasa.gov> or <http://www.raveawards.com/nominees.html> ■

# Goddard in the News

## Jeff Halverson's New Weatherwise Articles

NASA Goddard scientist **Jeff Halverson** is writing short feature articles for *Weatherwise* magazine that provide easy-to-understand explanations of meteorological hot topics and recent weather events. Below is a sampling of published articles. Be sure to check back often to review his latest topics. (You can find recent copies of *Weatherwise* in the Goddard Library).

### One Hail of a Storm (Mar/Apr 2004)



NOAA Photo Library, OAR/ERL/NSSL

Large hail collects on streets and grass during severe thunderstorm. Larger stones appear to be nearly 2 to 3 inches in diameter.

Halverson examines the processes at play during a severe thunderstorm that produced massive flooding—and large hail—over the City of Angels in November 2003, an event so rare it won't likely happen again for another 10,000 years!

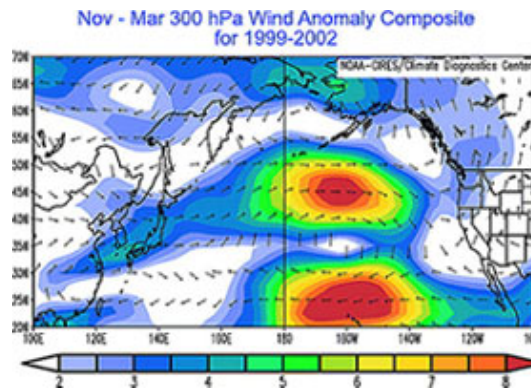
### Snowblind in the West (Mar/Apr 2004)

Although the East Coast can experience heavy snow from vicious storms called nor'easters, nothing compares to the powerful storms that strike the mountainous west every season, leaving some locales with up to 300 inches of the white stuff annually, all beautifully captured by remote sensors, such as NASA's MODIS satellite.



MODIS Rapid Response Team at NASA/GSFC

This is a false color image of Colorado on March 20, 2003, from the Terra satellite. The Rocky Mountains received up to 7.25 feet of snow snow on the ground is bright blue, liquid water clouds are white, vegetation is green, naturally bare ground is tan, and water is deep blue.



This composite of the years 1999-2002 shows an unusually strong westerly jet stream around 30,000 feet, (yellow and red areas are strong winds) at 45°N in the eastern North Pacific.

Photo Credit: University of Washington

*Albuquerque Journal, The British Columbia Portal, Federation of Earth Science Information Partners and U.S. Politics Today* were among the many media outlets that featured the science discovery that

sea surface temperatures and sea level pressure in the North Pacific have undergone unusually changes over the last five years. Scientists conclude that there is more than one key to the climate of that region than previously thought.

Hubble's unveiling of the deepest portrait of the visible universe ever taken was the focus of major media networks across the nation which included, *ABC's Good Morning America* and *World News This Morning*, *CNN's Headline News*, *NBC*, *CBS* and *FOX*.



This galactic snapshot is part of a collage of close-ups pulled from the Ultra Deep Field.

A world interest was received for the improved NASA's Global Change Master Directory web site. Internet users can access the directory at: <http://globalchange.nasa.gov>. Ireland, the Netherlands, Switzerland, Germany, France, Canada were among the many places the featured the new website.

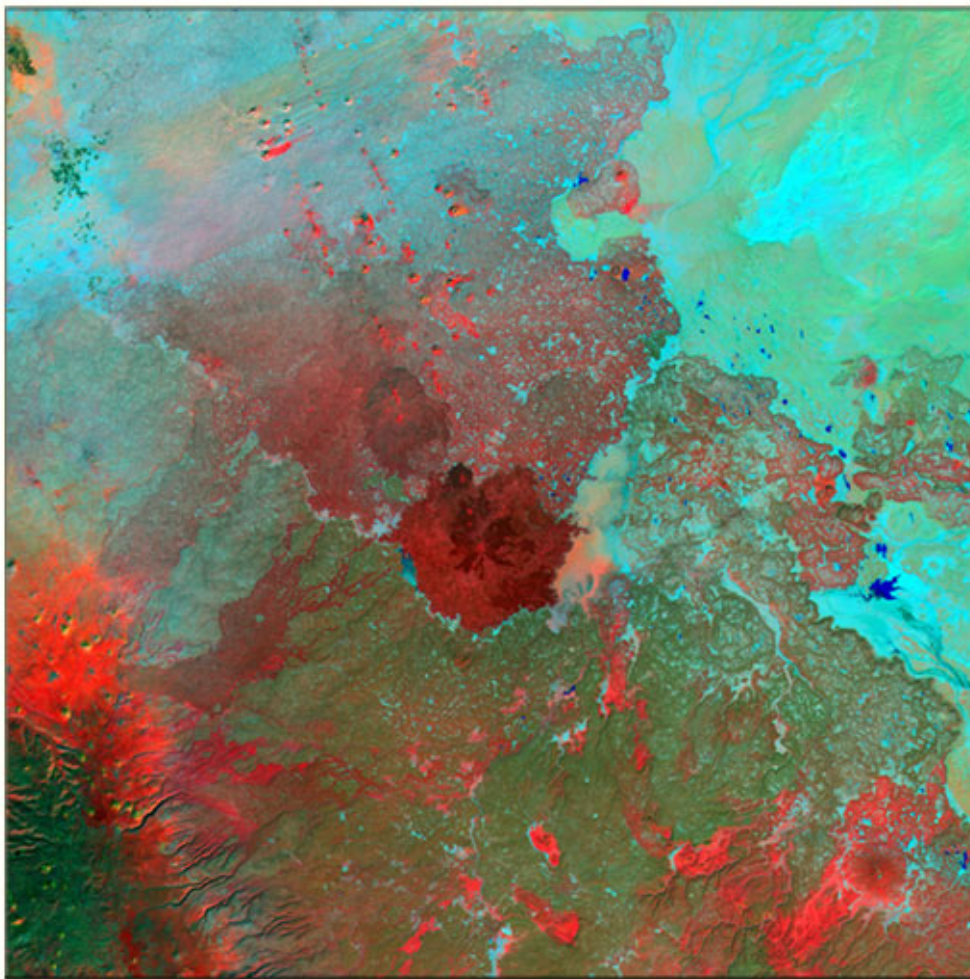
NASA explaining the cause and possibly foreseeing future patterns that caused the 1935 Dust Bowl received coverage from such print media as the *Chicago Sun*, *Nature.com (UK)*, *Science Daily*, *Minneapolis Star Tribune*, *Baltimore Sun*. In addition, television coverage was received *CNN's Headline News*, *CBS* and from *MSNBC*. An estimated audience of two million was generated by this coverage. ■

# A Unique Perspective on the Earth

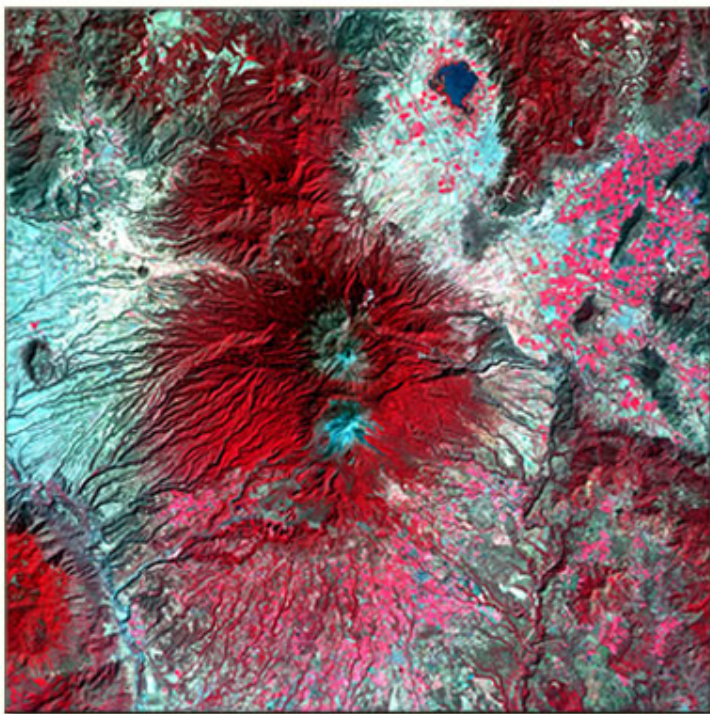
By Maggie Masetti

For over 30 years, the Landsat series of satellites has captured images of the varied landscapes below: from desert to wetland, from man-made features to natural ones, from ice and snow to cloud features. These satellite images offer more than just scientific information about the Earth - they have aesthetic value as well. And from space, the Earth is indeed a thing of beauty.

From this idea, the Earth As Art exhibit was born. It was initiated by the USGS EROS Data Center (<http://edc.usgs.gov/>) to commemorate the 30<sup>th</sup> Anniversary of the Landsat program. Initially, forty-one Landsat-7 images of different areas of the world were created out of visible and infrared data in colors visible to the human eye. The images were chosen on the basis of aesthetic appeal, and the



Syrian Desert



Snow-capped Colima Volcano, the most active volcano in Mexico, rises abruptly from the surrounding landscape in the state of Jalisco.

band combinations and colors were chosen to optimize their dramatic appearance.

These images have been displayed at several locations around the country, from the Library of Congress and the US Senate in Washington, DC to the Children's Science Center in Rapid City, South Dakota and the New Mexico Museum of Natural History and Science. In conjunction with the traveling exhibit, a hugely popular on-line gallery was created to showcase the images. The site also has a free screensaver available for download and information on how to purchase prints of the images!

Thirty-three new Earth as Art images have just been added to the collection, from both Landsat-7, and the Terra Satellite's Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER).

Come visit the Gallery and enjoy a new and thrilling perspective on the Earth!

<http://landsat.gsfc.nasa.gov/earthasart/> ■

# Black and Gold Dinner Dance

By Dewayne Washington

## An Investment In Our Children

It was a time for Goddard community members to dress up in their finest and dance the night away while “Investing In Our Children’s Future.” That was also the theme for this year’s annual Black and Gold Dinner Dance sponsored by the local chapter of Blacks in Government (BIG), March 13, at the Goddard Recreation Center. Proceeds from this event are to be used for the local chapter scholarship fund.

Photos by Pat Izzo/Code 293



NASA Deputy Director, Colonel (Ret) Frederick Gregory gave an enlightening speech on how the community can influence with inspiring the next generation.

According to GSFC/WFF Chapter, Region 11 President, **Larry Phillips**, “the keynote address by NASA Deputy Director, Colonel (Ret) Frederick Gregory, was a true inspiration.” As an Anacostia High School Graduate, U.S. Air Force Academy Graduate, Flight Test Pilot, Rotary Fixed Wing Pilot, and Astronaut, Gregory spoke words of insight and wisdom. “Over the years, his dedication to NASA, and the Aeronautics and Space programs has been stimulating. “It is an inspiration to everyone to

continue to accomplish something in their lifetime and make a difference in a life, even if it is one child at a time,” said Phillips.

“When I was in school there was a sixth grade teacher that use to say, you are significant, you will contribute,” said Gregory. “It never registered to me what Ms. Smith was saying until later years.” The former space shuttle pilot talked of a realization that everyone has a significant role and must now make contributions for the next generation.

“I grew up in a strong community and there were four pillars: school, community, family and church,” said Gregory. He spoke of the importance of each and how those values have provided life long guidance throughout his career.

He told the story of a trip with his dad that was a great influence on his career path. “My dad made the mistake of taking me to Andrews Air Force Base to see a sports car race, but in the background were these huge airplane hangers,” said Gregory. Forever changed, Gregory would spend lots of time throughout his youth discussing airplanes with his older friends.

The District of Columbia native spoke of a famous American who had an impact in his career choice. “In 1977 when NASA put out a call for the shuttle program, I got a call from General Benjamin O. Davis, Jr.,” said the former shuttle commander. “He said I should apply to the program.” Gregory was selected to the astronaut corps in January 1978 and has flown three space shuttle missions, logging more than 455 hours in space.

“Sitting here you are history,” the retired Air Force Colonel told the Goddard audience. He talked about the new vision for space exploration and told the audience, “People will write about what you do. I think it will drive the math, science and engineering, and have us doing things no one has done before.”



Deputy Director, Fred Gregory holds Lifetime Achievement Award with (lft) Dillard Menchan, chief equal opportunity program office, James Jennings, associate deputy administrator, Al Diaz, Larry Phillips, BIG Region 11 president and Merle Robbins, BIG member.

Following his presentation, Al Diaz personally thanked the Deputy Administrator for attending and recognized him as a great American to honor. And to honor his brilliant career of achievement, Gregory was presented the BIG NASA GSFC/WFF Chapter Lifetime Achievement Award.

“I would like to thank all the attendants of this year’s BIG GSFC/WFF Chapter Black and Gold Dinner Dance, especially our Center Director Mr. Al Diaz, **Dillard Menchan** of GSFC-EEO and James L. Jennings, Associate Deputy Administrator for Institutions and Asset Management, NASA Headquarters for their continued support of our efforts,” said Phillips.

## BIG (cont'd)



Claire Cashwell, On-Site Chair for 2004 BIG National Training Conference gave notice of new partnerships for the upcoming training conference.

Photo by Pat Izzo/Code 293

“The BIG GSFC/WFF Chapter will continue to bring focus on the topics of importance to the minority community at Goddard,” said Phillips. “We wish to continue our efforts with outreach in the Goddard Community, mentoring, Christmas in April, Elementary and Middle School assistance as requested, and scholarships to local college’s to name a few of the many activities of the BIG NASA GSFC/WFF Chapter.” During the

evening of activities the chapter also awarded a scholarship check to Howard University’s School of Engineering.

Past chapter president and mistress of ceremony **Merle Robbins** closed the evening stating, “It does take a village to raise a child, each one reach one, each one teach one.”

The BIG organization was established in 1975 and incorporated as a non-profit organization under the District of Columbia jurisdiction in 1976. BIG has been a national response to the need for African Americans in public service to organize around issues of mutual concern and use their collective strength to confront workplace and community issues. BIG’s goals are to promote equity in all aspects of American life, excellence in public service, and opportunity for all Americans.

The BIG NASA GSFC/WFF Chapter under its present charter has been in existence since 1997. To date, the chapter has given numerous scholarship awards to the General Scholarship fund for numerous colleges and universities.

The 2004 Blacks in Government National Training Conference, “Promoting Knowledge, Growth and Flexibility in a Global Government,” will be held August 16-20, 2004 at the Marriott Wardman Park Hotel in Washington D.C. The convention will be a showcase of Project Management material, sponsored and conducted by colleges within the local area under the partnership with BIG and BIG Region XI. The training is for the membership at the Federal, State and local government levels.

The local chapter is looking for volunteers for this year’s conference. For more information about BIG membership or the National Training Conference visit the national web site at <http://www.bignet.org>.

## Earth Science Award Recipients

By Cynthia O’Carroll

The American Meteorological Society (AMS) announced the newest Fellows at the 84<sup>th</sup> Annual Review and Fellows Awards. These individuals have made outstanding contributions to the atmospheric or related sciences during a substantial number of years. It is AMS’s way of saying that these people have achieved the summit of their profession. The newest Fellows are:

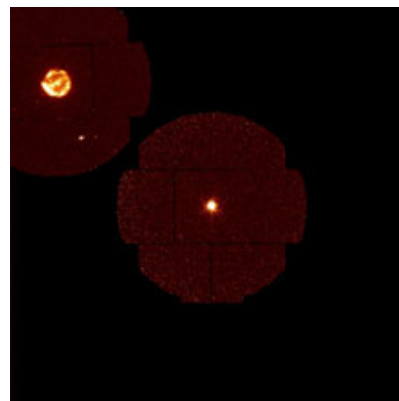
**Robert F. Adler**, Laboratory for Atmospheres, Code 910  
**Robert M. Atlas**, Laboratory for Atmospheres, Code 910  
**Richard B. Rood**, Earth and Space Data Computing Division, Code 930

The American Geophysical Union presented the 2003 Charles S. Falkenberg Award to **Jeff de la Beaujardiere** of the Earth and Space Data Computing Division, Code 933. The award is for “a scientist under 45 years of age who has contributed to the quality of life, economic opportunities and stewardship of the planet through the use of Earth science information and to the public awareness of the importance of understanding the planet.”

The Institute of Electrical and Electronics Engineers, Inc. (IEEE) presented the 2004 Dennis J. Picard medal for Radar Technologies & Applications to **David Atlas** of the Laboratory for Atmospheres, Code 910. He received the award “for exceptionally outstanding leadership and significant individual technical contributions to the application of radar for the observation of weather and other atmospheric phenomena.”

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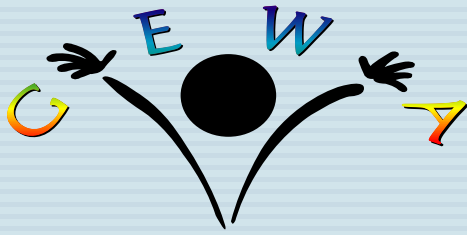
## A Neutron Star (cont'd)



A 2003 image of the neutron star XTE J1810-197, shortly after it increased in brightness by a factor of 100, emerging as a new magnetar (center).

Other members of Dr. Ibrahim’s team are Dr. **Jean Swank** of NASA Goddard; Dr. William Parke of George Washington University; Drs. Scott Ransom, Mallory Roberts and Vicky Kaspi of McGill University; Drs. Chryssa Kouveliotou and Peter Woods of NASA Marshall; Dr. Samar Safi-Harb of the University of Manitoba; Dr. Sölen Balman of the Middle East Technical University in Ankara; and Dr. Kevin Hurley of University of California at Berkeley. Dr.

Ibrahim has a joint position with George Washington University. ■



# GEWA Activities

## Goddard Islamic Study Group

Please join the Goddard Islamic Study Group to view a showing of a video entitled "The Creation of the Universe" on **Tuesday, April 20** in Building 26, Room 212, from 12 pm to 1 pm. In this film, you will see how modern astronomy and physics imply a fact that materialists are unwilling to accept, that is, the existence of a Creator. Refreshments will be provided.

## Rock 'N' Roll Standards

A new club of musicians, vocalists, engineers and song writers is in the works on site. All are invited to participate. Initially the club will focus on playing and sharing rock 'n' roll standards, and then diversify accordingly to interest. For the agenda send an e-mail message to [Patrick.L.Kilroy@nasa.gov](mailto:Patrick.L.Kilroy@nasa.gov).

## Wanted: Strong Men or Women

For all of you who are armchair umpires and believe that you know the rules and can do better than the major leaguers, here is the opportunity to, prove your point and get paid at the same time. Even if you have never officiated before, but have a learning attitude, I can teach you the rules and how to umpire. If you are experienced - all the better. The Goddard Slow Pitch Association is looking for a few new umpires to fill out our existing roster. League play starts in late April and goes thru August. You need to be able to commit to either a Monday/Tuesday/Wednesday night for most of the season. The games are played at the Beaver Dam complex off Soil Conservation Road starting at 5:30PM. Pay is \$18/game payable at the end of each month. If you are interested, contact: Frank Stocklin 301 286-6339 or [frank.j.stocklin@nasa.gov](mailto:frank.j.stocklin@nasa.gov).

## GPSA Preparing for Upcoming Season - New Teams and New Players Welcome!

The Goddard Slow Pitch Softball Association (GPSA) leagues are preparing for the upcoming season, and would like to extend an invitation to any new teams or players to join the GPSA. The leagues are open to all civil servants and contractors working on a NASA contract, and/or their immediate family members (spouse, siblings, children or in-laws).

The games are played at the old Antenna Test Facility, located off of Beaver Dam Road, on Monday through Wednesday evenings, immediately after work. The games are supervised by Goddard umpires. All skill levels are represented on the various teams, and the games are competitive, but fun. The GPSA is interested in any new teams that would like to join, or individuals who might want to play as the existing teams may need a few players. Interested new team representatives, or individuals, should contact Bill Guit (GPSA President) at 301-614-5188, [William.J.Guit@nasa.gov](mailto:William.J.Guit@nasa.gov) or Walt Moleski (GPSA Treasurer) Walt Moleski 301-286-7633 or [Walter.F.Moleski@nasa.gov](mailto:Walter.F.Moleski@nasa.gov)

## Goddard Co-Ed Softball

Spring is right around the corner, and that means Goddard co-ed softball! The Goddard Mixed League softball season starts **April 19**, with openings for new teams and individual players on both Monday and Tuesday nights. This recreational league emphasizes fun over competition, and is open to all Goddard employees, their families and friends. League fees are minimal. Contact Jim Closs at [James.W.Closs.1@gsfc.nasa.gov](mailto:James.W.Closs.1@gsfc.nasa.gov) or 301-867-6252. Come out and join the fun!

# Announcements

## Goddard Referral Service

Looking for information on issues such as adult care, child care, legal or financial assistance, health & wellness, or education, but don't know where to start? Let Goddard's Referral Service do the work for you! This service includes a website as well as Specialists available 24 hours a day/7 days a week - whenever the need arises. Check it out at: [www.worklife4you.com](http://www.worklife4you.com), and enter the following information: Agency Code: GSFC; password: last name + last 4 digits of SSN. Don't worry - the site is very secure & your information remains confidential. Please contact Khrista White at X6-9059, [khrista.n.white@nasa.gov](mailto:khrista.n.white@nasa.gov), or <http://ohr.gsfc.nasa.gov/family/home.htm> for assistance.

## The New CNE Call Center

The Code 290 Center Network Environment (CNE) Project, which provides network support to the Greenbelt and WFF user communities, is now fully operational. Some of the services offered by the CNE include: Network Connectivity and Design, IP Address Management, Wireless Networking, Remote Access as well as Back Office Services such as Electronic Mail, Web Mail and Web Drive, Video Webcast, Meeting Maker, Active Directory and GSFC Domain Management and much more. For more information on the CNE services and functions, please visit the CNE web site at <http://cne.gsfc.nasa.gov>.

## Wanted: Band & Singers for free Lunchtime Concerts

Singers and bands are wanted to entertain GSFC employees for free at Lunchtime Concerts sponsored by the Goddard Employees Welfare Association (GEWA) from May through September. All performers receive an opportunity to showcase their talents and, as a token of appreciation for their services, a free lunch of their choice at the GSFC Building 21, Cafeteria. For more information, please contact Cindi Jones-Savoy, at x6-7149, email: [Cynthia.A.Jones-Savoy@nasa.gov](mailto:Cynthia.A.Jones-Savoy@nasa.gov), or Tasha Davis, at x6-3243, email: [Tasha.L.Davis@nasa.gov](mailto:Tasha.L.Davis@nasa.gov).

## Goddard Child Development Center-Open Enrollment

GCDC is now accepting new members and new children to the waiting list for enrollment. Phone calls will be placed to families on the waiting list starting mid April through August for summer and fall enrollment.

Any GSFC employee may join the GCDC club. Whether you have young children at the present time, plan to in the future, or just wish to support the organization through membership dues, we welcome you to be a part of our family.

Please visit our internal web page at <http://childcare.gsfc.nasa.gov> for membership information. All member profiles and dues checks can be sent through interoffice mail to Code 200.9.

Mention this advertisement and receive a free GCDC lapel pin with your active membership dues!

NASA's Goddard Space Flight Center's (NASA's GSFC) African American Recognition Committee (AARC) is soliciting nominations for the upcoming **2004 Women of Color Technology Awards**.

The Women of Color Awards and Conference is an annual event sponsored by Career Communications Group, Inc., located in Baltimore, Maryland. This organization celebrates the superior achievements of minority women in the workplace. The conference provides encouragement and promotes educational opportunities for aspiring professional women in business, engineering, science, management, and today's world of innovative technology. The award identifies exceptional women who are making outstanding contributions in the Federal Government, Defense, and in the Private Industry sector. AARC and Goddard take pride in acknowledging past winners of this prestigious award including the 1999 Women of Color Award recipient for Career Achievement, Ms. Jacqueline Mims, and the 2002 Women of Color Award recipient for Educational Leadership, **Ms. Charlene Malloy**. AARC looks forward to nominating more outstanding, hard-working minority women who continuously demonstrate strength, determination, and dedication along the lines of science, management, research, and technology in the workplace. We are looking to submit candidates in the following categories:

1. Career Achievement
2. Community Service
3. Corporate Responsibility
4. Educational Leadership
5. Managerial Leadership
6. New Media Leadership
7. Research Leadership
8. Professional Achievement
9. Student Leadership
10. Technical Innovation

**2004 Women of Color Awards Nominations (cont'd)**

Please forward this information to your perspective committees /committee members, co-workers, and colleagues. Individuals who are interested in applying should contact me on extension 6-9708 or by e-mail at [Anetra.M.Tucker@nasa.gov](mailto:Anetra.M.Tucker@nasa.gov) to receive a copy of the application package and its' requirements. **Applicants are due Friday, June 4, 2004... NO EXCEPTIONS!** This year's Women of Color Technology Awards and Conference will be held October 28-30, 2004 in Atlanta, Georgia. Applicants should also note that head-shot photos in both black & white and color are required for all submitted application packages (contextual, action shots are preferred).

For additional information, you may contact Ms. Anetra Tucker, AARC's 2004 Women of Color Awards Coordinator/ Chairperson. You may also visit Career Communication's website at <http://www.ccgmag.com> or the 2004 Women of Color Technology Awards' website at <http://www.womenofcolor.net>.

**Volunteers Needed for Educational Programs/Fairs: Presenters Needed****Science Fair Judges Needed**

Bladensburg Elementary School is having their science fair on **Wednesday, May 5**, from 8:30 am to 1pm.

If you can participate please call Nichel Brown-Smith at 301-985-1450 to sign up.

**Career Week: May 14-18, 2004**

Cesar Chavez Elementary School: You are invited to visit our school to discuss your career with our students. You can contact: Verna L. Cabralis at 301-853-5694 to sign up.

**Call For Mentors: SHARP Program**

Mentors are needed for the Summer High School Apprenticeship Research Program (NASA SHARP). Students will have the opportunity to work with a scientist, engineer or technologist conducting meaningful research to enrich and develop oral and written communications, computer and leadership skills, experience in preparing written final reports and developing abstracts of research. If you are interested in mentoring a SHARP student this summer contact Charles Mercer at [cmercer@pop100.gsfc.nasa.gov](mailto:cmercer@pop100.gsfc.nasa.gov) or Mrytle Brijbasi at [mybrij@comcast.net](mailto:mybrij@comcast.net).



# Events

## NASA History Review Program and NASA UNILIB Librarians' Meeting

Hosted by the Goddard Space Flight Center Library

**When: April 27, 28, & 29, 2004**

**What:** This event brings together staff from the Headquarters History Office, Center history and library representatives, the NASA History Advisory Group and others working on NASA history. The program will be introduced by GSFC Director Al Diaz, and will include an overview of the History Office programs; the status of publications in various stages of research, writing and production; plans for upcoming events such as conferences; reports from the Centers; and wide-ranging discussions on how to improve the NASA history program for a variety of users.

## Scientific Colloquium

(All the colloquia are held in Bldg 3 Goett Aud at 3 p.m.)

**Who:** Michael Strauss, Princeton University will discuss *3D Map of the Universe from Sloan Digital Sky Survey*. Dr. Strauss will discuss various parts of cosmology with particular emphasis on the Sloan Digital Sky Survey, which has mapped the distribution of almost half a million galaxies.

**When/Where: Friday, April 2**

**Who:** Fulvio Melia, University of Arizona will present on *The Supermassive Black Hole at the Center of Our Galaxy*. Dr. Melia will examine the evidence of supermassive black holes that have undergone a dramatic shift in paradigm, possibly being critical to the formation of structure in the early universe. In addition to examining why the astrophysical community is now looking with great anticipation to the imminent breakthroughs that will permit visualization of the shadow of a black hole.

**When: Friday, April 16**

**Who:** Kerry Emanuel, Massachusetts Institute of Technology will discuss, *Hurricanes*.

**When: Friday, April 23**

**Who:** Mark Kessler, Univ of California, Santa Cruz will discuss, *Self-organizations of Patterned Ground*. Dr. will examine the many incredible sorted patterns which includes polygons, labyrinths, islands and stripes that are found in Arctic and high alpine environments in the uppermost layer of soil where freezing and thawing is experienced.

**When: Friday, April 30**

## System Engineering Seminar

**Who:** Stephen J. Kapurch, Program Executive Officer, Systems Engineering, Office of the Chief Engineer, Code AE, NASA HQ will describe the work by the NASA Systems Engineering Working Group (SEWG), under the NASA Systems Engineering Excellence Initiative, to develop a common framework for engineering systems within NASA. All employees and visitors with a Goddard badge are welcome.

**When/Where: Tuesday, April 6** at 1p.m. in the bldg 3 Goett Auditorium.

For more information call Tom Bagg, 301-867-0063, email [Thomas.C.Bagg.1@gsfc.nasa.gov](mailto:Thomas.C.Bagg.1@gsfc.nasa.gov), or visit: [http://seacd.gsfc.nasa.gov/SE\\_Seminar/](http://seacd.gsfc.nasa.gov/SE_Seminar/)

The seminar will be webcast live to the NASA domain at: [http://128.183.174.165/Colloquia\\_asx/NASA/Live/B3NASALive.aspx](http://128.183.174.165/Colloquia_asx/NASA/Live/B3NASALive.aspx)

## Director's Colloquium

**Who:** Dr. Robert Putnam was the focus of seminars hosted by former President, Bill Clinton at Camp David and by Prime Minister Tony Blair. In his most recent book, *Bowing Alone*, Dr. Putnam writes about the decline of civil engagement in the United States over the last 30 or so years. Putnam will speak on the importance of community and what we can do to strengthen our community.

**When/Where: Tuesday, April 20** at 10 a.m. in the bldg 3 Goett auditorium

For more information, visit: <http://centerdircolloq.gsf.nasa.gov/>

**Think BIG!** The NASA GSFC/WFF Chapter of Blacks in Government (BIG) welcomes new members and visitors to join us for our monthly General Meeting. Meetings are held **the third Wednesday of each month** from 11:30 a.m. – 1p.m. Individuals who are interested in attending our Membership Meetings should contact Larry Phillips, Chapter President at (6-6035 or 6-4401) or Anetra Tucker (6-9708) to have his/her name added onto the mailing list.

**For more information,** please contact the following BIG Members:

Joyce Brooks, BIG GSFC/WFF 1<sup>st</sup> Vice President, at GSFC, 6-5912  
Regina Waters, BIG GSFC/WFF 2<sup>nd</sup> Vice President, at Wallops Flight Facility, 7-1337  
Willis Jenkins, BIG GSFC/WFF Executive Vice President, at NASA Headquarters, (202) 358-1285

**Continued on page 26**

**Space and Cosmic Ray Physics Seminars - Spring 2004**

All seminars are held at the University of Maryland, Computer and Space Science building in room 2400 at 4:30 p.m., tea and cookies at 4 p.m.

**Who:** Dr. Rogelio Caballero-Lopez, U. of Maryland, College Park will discuss, *Modeling Cosmic Ray Transport*. This work studies the radial intensity profiles of galactic cosmic ray protons (H) and alpha particles (He) during the solar minimum periods of 1987 (the so-called negative drift state) and 1977/1997 (both positive drift states). These intensities, as measured with the Pioneers 10/11, Voyagers 1/2, and IMP spacecraft, are examined with numerical solutions of the cosmic ray transport equation. Previous studies have shown that the galactic cosmic ray intensities and radial gradients observed by the Voyagers during 1997 in the outer heliosphere were so low that they cannot be readily explained by a standard no-shock modulation model.

**When: Monday, April 5**

**Who:** Dr. Peter Biermann, Max Plank Inst. Fur Radioastronomie, Bonn, Germany

**When: Monday, April 12**

**Who:** Dr. Gerald H. Share, NRL, Wahington, DC will speak about the, *Fall 2003 Solar Event/RHESSI*

**When: Monday, April 19**

**Who:** Dr. Edward C. Stone, Caltech, Pasadena, CA will discuss *ACRs & Termination Shock/Voyager*

**When: Monday, May 3**

For free parking please park in lot DD or anywhere on levels 1-2 in lot B (the big parking garage) after 4:00 pm. Make sure that you park in a spot WITHOUT a parking meter.

For information call Matthew Hill at (301) 405-6209 or go to the following website: [http://space.umd.edu/seminars/Spring\\_2004\\_Seminar.html](http://space.umd.edu/seminars/Spring_2004_Seminar.html)

**Goddard Referral Service Lunchtime Lecture Series**

**What:** The Career Development & Employee Worklife Office, Code 114, is sponsoring a series of lunchtime lectures, through our Goddard Referral Service, to enhance your Quality of Worklife. The last lecture series will be *Budget Basics on Tuesday, April 13* from 11:30 a.m. - 12:30 p.m. in the Bldg. 8 Aud. For more information, contact Khrista White at x6-9059, [khrista.n.white@nasa.gov](mailto:khrista.n.white@nasa.gov)

**Upcoming Training**

IDP Workshops

In the IDP Workshop for Supervisors and the IDP Workshop for Employees, many questions have come up around the IDP process. Under OHR's career development page, there is a list of Frequently Asked Questions (FAQs) that have come from both supervisors and employees. These questions have been answered by OHR staff and legal counsel. Please take time to review these FAQs at <http://ohr.gsfc.nasa.gov/DevGuide/idp.htm>.

Questions? Please contact Tracey White. To view all of the upcoming training courses, visit: <http://ohr.gsfc.nasa.gov/DevGuide/Calendar/home.htm>

**Resume Writing Training Classes**

All the classes scheduled for Greenbelt will be held in building 1 room 006.

May 13	2:00 - 03:30 p.m.
July 15	10:00 - 11:30 a.m.
Sept 15	1:00 - 2:30 p.m.

Classes will also be offered at WFF in the MEC room 208. The dates and times are as follows:

April 21	1:00 - 3:00 p.m.
August 19	9:00 - 10:30 a.m.

If you need any additional information, please contact Sherri Tepper 6-5170. No training form required.

**Information Science and Technolgy Colloquia**

The IS&T colloquia are held at 3:30 p.m. in the bldg 3, Goett Auditorium

**Who:** Mema Roussopoulos, assistant professor of Computer Science on the Gordon McKay Endowment, Harvard University. Roussopoulos will discuss *Preserving Data Integrity in Peer-to-Peer Networks*. Peer-to-peer systems have become synonymous with file-sharing systems. Much of the focus of research in this area has been on providing algorithms to improve the efficiency, robustness, and security of routing in peer-to-peer systems, or designing services such as indexing and search for use by file-sharing applications running on these systems. There has been less focus on discovering new applications or enumerating the characteristics of applications for which peer-to-peer systems provide a viable, if not the only, solution.

**When: Wednesday, April 7**

**Education Symposium**

**Dr. Adena Loston**, associate administrator for NASA Education Enterprise (Code N) will discuss the goals and objectives along with **Dr. Cliff Houston**, deputy associate administrator for Education Programs to discuss criteria for education programs. This will be followed by a question and answer session. Everyone is invited to attend this event.

**When/Where:** Thursday, May 6 in the Bldg. 8 auditorium from 9 a.m. to 11 a.m.

A follow-up Education Symposium is scheduled for May 25 in the Bldg 8 auditorium with the Directors of elementary and secondary education, higher education, informal education and technology and products. The event also includes a question and answer session.

**Continued on page 27**

**2004 Quality of Worklife Expo “Discover the Other Side of Goddard”**

Save the Date - **Tuesday, May 11th** in the Building 8 Auditorium

Beyond the work that we do, there are programs, activities and other amenities that enhances our work experience at Goddard. Come to the QWL Expo and learn more about:

- Compensation
- Employee Development
- Health Services
- Family Friendly Services
- Community Involvement/Outreach
- Goddard Environment

**Mark Your Calendars For: Goddard’s Community Day**

Explore NASA’s Goddard and Beyond

**Saturday, July 31, 2004 at 10 a.m. to 6 p.m.**

Bring your family and visit the Goddard Space Flight Center for a free day of exploration and fun for all ages!

- ❑ Live Entertainment and Delicious Food from Local Restaurants
- ❑ Real-Time Rocket and Robotic Demonstrations
- ❑ Exciting tours of the facilities on the Goddard Campus
- ❑ Explore Earth and Space with Exhibits and Presentation by NASA Scientists and Engineers
- ❑ Enjoy Hands-on and Interactive Educational Opportunities For the Kids
- ❑ Learn about Goddard Student Programs and possible job opportunities

Learn All About What’s Happening In Your Own Backyard!

**First Call for Papers-7th Mil/Aerospace Applications of Programmable Logic Devices International Conference (MAPLD)**

This Conference is hosted by the NASA Office of Logic Design

**What:** The 7th annual MAPLD International Conference’s extensive program will include presentations, seminars, workshops, and exhibits on programmable logic devices and technologies, digital engineering, and related fields for military and aerospace applications.

Devices, technologies, logic design, flight applications, fault tolerance, usage, reliability, radiation susceptibility, and encryption applications of programmable devices, processors, and adaptive computing systems in military and aerospace systems are among the subjects for the conference.

This event promises to be exciting with presentations by government, industry, and academia, including talks by distinguished invited speakers. This conference is open to US and foreign participation and is not classified. For related information, please see the NASA Office of Logic Design Web Site (<http://klabs.org>).

This year, there will be special emphasis on the following themes:

- “War Stories” and Lessons Learned
- Programmable Logic and Obsolescence Issues
- Implementing high performance, high reliability processor cores.
- Logic design evaluation, design guidelines, and recommendations.
- Verification methods for radiation hardness and fault tolerance.
- Applications such as MIL-STD interfaces, UAV’s, and controllers.
- Automated Checkers for low reliability design constructs.
- PLD tools/methods that we need but vendors don’t supply.

**When/Where:** September 8-10, 2004 at the Ronald Reagan Building and International Trade Center in Washington, D.C.

For more information, visit the Conference home page at: <http://klabs.org/mapld04>