Goddard News

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President Bush Announces His Vision for Future Space Exploration

By Dewayne Washington

Photo by Chris Gunn/293

Televised view of President Bush as he announces new vision to NASA employees at Greenbelt.

It was a capacity crowd that gathered in building 3, Goett auditorium, Thursday, January 15 to hear President George W. Bush announce from NASA Headquarters, a new focus and vision for future space exploration. Following brief opening remarks from NASA Administrator Sean O'Keefe and Expedition 8 crewmember Michael Foale, aboard the International Space Station (ISS), the President was introduced.

He began by recognizing the men and women that make up the NASA family stating, "This agency, and the dedicated professionals who serve it, have always reflected the finest values of our country—daring, discipline, ingenuity, and unity in the pursuit of great goals."

The President spoke of America's pride in the space program that has revolutionized our understanding of the universe, and produced technological advances that have benefited all of humanity. He praised NASA's Administrator for his leadership, "I am comfortable in delegating these new goals to NASA, under the leadership of Sean O'Keefe. He's doing an excellent job."

He also acknowledged the ongoing cooperative efforts aboard the ISS and expressed his appreciation of the Russian participation. "I appreciate Commander Foale's introduction – I'm sorry I couldn't shake his hand," he joked. "I also know he is in space with his colleague, Alexander Kaleri. "I appreciate the joint efforts of the Russians with our country to explore."

To begin the outline of his vision, the President referred backward two centuries before when Meriwether Lewis and William Clark left St. Louis to explore the new lands acquired in the Louisiana Purchase. A journey made, according to the President, in the spirit of discovery, to learn the potential of vast new territory, and to chart a way for others to follow.

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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

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Employees are encouraged to attend the State of the Center Address Wednesday, February 4, 2004 Bldg 8 Auditorium at 1 p.m.

President's Vision (cont'd)

"America has ventured forth into space for the same reasons," said the President. "We have undertaken space travel because the desire to explore and understand is part of our character. And the quest has brought tangible benefits that improve our lives in countless ways."

The President spoke of advancements in weather forecasting, communications, computing, robotics, medical technologies and more. "Yet for all these successes, much remains for us to explore and to learn. In the past 30 years, no human has set foot on another world, or ventured farther upward into space than 386 miles – roughly the distance from Washington, D.C. to Boston, Massachusetts. America has not developed a new vehicle to advance human exploration in space in nearly a quarter century. It is time for America to take the next steps."

"Our first goal is to complete the International Space Station by 2010. To meet this goal, we will return the Space Shuttle to flight as soon as possible, consistent with safety concerns and the recommendations of the Columbia Accident Investigation Board. The Shuttle's chief purpose will be to help finish assembly of the International Space Station and then retire from service by 2010."

Photo by Chris Gunn/293

Capacity filled Goett auditorium.

"Our second goal is to return to the moon by 2020, as the launching point for missions beyond. Returning to the moon is an important step for our space program. Establishing an extended human presence on the moon could vastly reduce the costs of further space exploration, making possible ever more ambitious missions. With the experience and knowledge gained on the moon, we will then be ready to take the next steps of space exploration: human missions to Mars and to worlds beyond."

"We'll invite other nations to share the challenges and opportunities of this new era of discovery. The vision I outline today is a journey, not a race, and I call on other nations to join us on this journey, in a spirit of cooperation and friendship."

"Achieving these goals requires a long-term commitment, NASA's current five-year budget is $86 billion. Most of the funding we need for the new endeavors will come from reallocating $11 billion within the budget. We need some new resources, however. I call upon Congress to increase NASA's budget by roughly a billion dollars, spread out over the next five years."

"Mankind is drawn to the heavens for the same reason we were once drawn to unknown lands and across the open sea. We choose to explore space because doing so improves our lives, and lifts our national spirit. So let us continue the journey."

To view a videotape of the President's NASA Vision address by contacting Leslee Cork on x-6-7565.

BAT Takes Over Building 7

By Nancy Neal

Photo by Debbie McCallum/293

In Building 7's cleanroom, the BAT instrument is integrated on top of the Swift hardware.

The Burst Alert Telescope (BAT), an instrument aboard NASA's Swift Gamma Ray Burst Explorer (Swift) mission, is currently undergoing spacecraft mounting in Building 7 at the Goddard Space Flight Center.

Swift's Principal investigator is one of Goddard's very own, **Dr. Neil Gehrels**. "This is a major step forward for Swift," said Dr. Gehrels. "The BAT instrument is the most powerful gamma-ray imager ever made. It is a significant accomplishment to have it completed."

The BAT is designed to detect gamma ray bursts as they occur. It will detect more than 100 bursts per year and accurately locate them in the sky. Joining BAT aboard the observatory is The X-Ray Telescope (XRT) and the Ultra-Violet/Optical Telescope (UVOT). Once BAT detects a burst it commands the spacecraft to slew to bring the gamma-ray bursts into the view of the other two instruments. The XRT instrument measures the spectrum and time profile of the x-ray afterglow. The UVOT instrument localizes the burst very accurately (to 0.3 arcseconds) and its filter wheel looks at the bursts in different colors.

Swift is designed to observe gamma ray bursts and its afterglow in three bands, gamma-ray, X-ray and optical wavelengths. Some of Swift's mission objectives are to: classify gamma ray bursts and search for new types; determine how the afterglow evolves; and use gamma ray bursts to study the early universe.

Gamma rays bursts are the most energetic phenomena in the universe and occur randomly from all directions in the sky. Lasting between a millisecond and several minutes, they are extremely hard to detect. Working together, Swift's three instruments will help to pinpoint and understand these energetic objects.

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Sibling Rivalry: A Mars/Earth Comparison

By Michael Starobin and Mike McClare

Mars and Earth Comparison. Credit: NASA

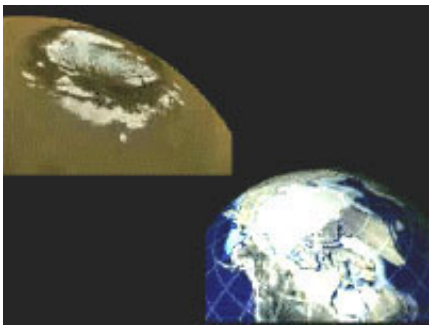
Scientific understanding is often a matter of making the right comparisons. In terms of studying the Earth, one of the best comparative laboratories exists one planet over—on Mars. In many ways, the study of Mars provides Earth bound scientists with a control set as they look at the processes of climate change, geophysics, and the potential for life beyond our own planet. In January of 2004 NASA landed two extraordinary research probes on Mars as part of an international armada of exploratory vehicles sent to Earth's dusty neighbor. Much of the technology and scientific methodology built into those missions directly relate to the sophisticated research efforts currently being used to study our own planet.

The Big Picture: Different but Not Dissimilar The similarities are striking. Each planet has roughly the same amount of land surface area. Atmospheric chemistry is relatively similar, at least as Earth is compared to the other planets in the solar system. Both planets have large, sustained polar caps and the current thinking is that they're both largely made of water ice. The sibling planets also show a similar tilt in their rotational axises, affording each of them strong seasonal variability. The neighbors also present strong historic evidence of changes in climate.

Olympus Mons: A Martian Peak with a View Earth is a planet constantly re-making itself. A vibrant climate, an active water cycle, and a dynamic interior reshape and redefine our home everyday, sometimes dramatically. In terms of topography, some of Earth's biggest changes come from moving tectonic plates floating on the planet's mantle, and volcanoes—huge outflows of heat and matter from deep inside the Earth's crust.

But while Earth's features eternally change, they do not persist with the same permanence as features elsewhere in the solar system. For a particularly interesting comparison, we look to Mars. In the entire solar system, Mars boasts general features that are some of the biggest, widest, and deepest. One of its standouts is the immense Olympus Mons, a volcano of such size and scale that it's own peak reaches above most of the Martian atmosphere. Olympus Mons could not even exist on Earth; with Earth's stronger gravity field, the massive volcano would collapse under its own weight if it were here. The Martian giant rises about 23 kilometers from the surrounding plains. On Earth, the closest thing resembling this volcanic giant is the Mauna Loa peak on Hawaii, which rises about 10 kilometers from its base on the floor of the Pacific Ocean. Both of these mountains are dramatically taller than the Himalayan Mt. Everest. But Mt. Everest is not a volcano; both Mauna Loa and Olympus Mons are. Their histories are described by dramatic deliveries of molten material to the surface of each planet from their respective interiors.

Magnetic Signatures Mars does not have the same kind of magnetic field as Earth. But evidence collected by the Mars Global Surveyor (MGS) indicates that the planet may have once had a global magnetic field, generated by an internal dynamo. Evidence suggests that the planet's magnetic field reversed direction, or flipped, several times in its early days as conditions in the mantle and core of the planet changed. But that dynamo faded, leaving only faint traces of its magnetic past locked in the Martian crust. Scientists continue to explore these processes on Mars and how they relate to magnetic processes on Earth. And speaking of home, Earth's magnetic field is powerful: powerful and profoundly important to everyone who lives here. It not only shows evidence of pronounced poles, but also clearly identifiable field lines - magnetic lines of force that define an intangible bubble of electromagnetic energy around the planet. The magnetic signature that defines the field around Earth acts like a protective shield from harmful solar and cosmic radiation. In many ways, the magnetic field is as much a defining characteristic of our planet as any of its other significant attributes. Not only does it protect the Earth from extraterrestrial radiation, but it also may have helped the Earth both hold on to its atmosphere and water.



Polar caps on Mars and Earth are very similar. Credit: NASA

Water Warehouses: Polar Caps May Reveal Planetary Histories Both the northern and southern Martian ice caps vary in size as its seasons change. Scientists believe that the permanent northern ice cap is mostly frozen water while the southern cap is frozen water and carbon dioxide. Mars' northern ice cap extends over a sizeable portion of the planet's pole, rippling and folding as ice and snow merge together. Its non-seasonally affected size is several times greater than its southern counterpart. On Earth much of the planet's fresh water is locked up in ice covering the two poles. This helps preserve a delicate balance in oceanic chemistry as well as relative temperature stasis for the planet. In the opposite corner of the picture above we're looking at Antarctica, surrounding Earth's South Pole. And while polar ice, plus the vast ice sheet covering Greenland in the north may only represent roughly three percent of the overall water contained on Earth, it represents two thirds of all the available fresh water - water that's vital to many of the myriad lifeforms found here. Data now indicate that Mars's northern polar region may contain as much water as all that's contained on Greenland's ice sheet - a vast tract of frozen water that's up to three kilometers thick in some places.

New Adventures, New Comparisons NASA's twin Mars Exploration Rovers bounced successfully onto Mars in January. You can follow Spirit and Opportunities adventures at the Jet Propulsion Laboratory's Mars Exploration Website (http://marsrovers.nasa.gov/home/index.html).■

SOHO Team Joins Elite Ranks

By Paal Brekke

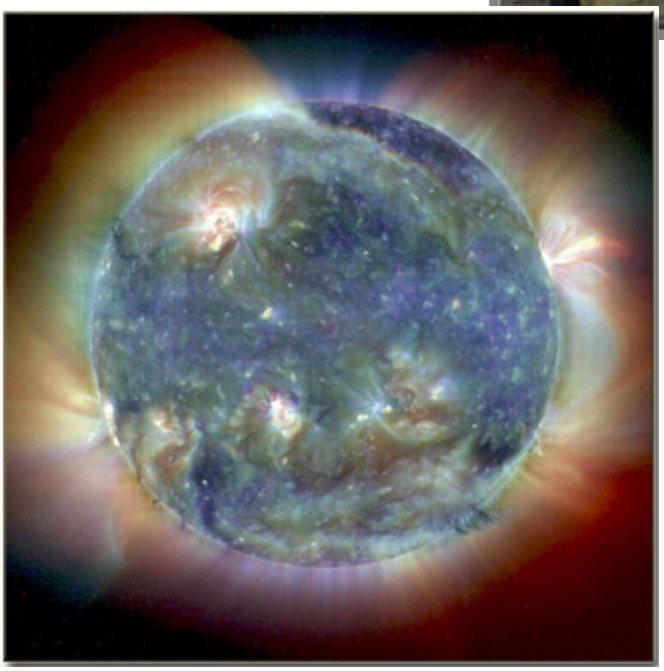
Center Director Al Diaz gives US Project Scientist for SOHO, Joe Gurman a plaque in recognition of the mission's successful eight years of service.

The prestigious Laurels for Team Achievement Award of the International Academy of Astronautics (IAA) was presented to the Solar and Heliospheric Observatory (SOHO) team in September.

The IAA presents the award in recognition of extraordinary performance and achievement by teams of scientists, engineers and managers in the field of astronautics. This honor has been awarded only twice before - to the Russian Mir Space Station team and the US Space Shuttle team.

"Many awards are given for specific scientific achievements or particular technologies. In this case, it's the entire team ... who make it possible to continue getting back science everyday," said Joe Gurman, US Project Scientist for SOHO.

The citation of the award reads: "To the team of scientists, engineers, and managers for the development and operation of a world-class mission leading to substantial advancements in understanding the Sun and the solar-terrestrial relationship. Mankind's knowledge and understanding of the dynamic processes within and around the Sun and the solar-terrestrial interactions have multiplied manifold since SOHO began its operations in 1995."



Most Popular Image: "The Sun as a Sparkling Diamond"

SOHO Celebrates Eight Years in Space!

This past December, SOHO celebrated its eight anniversary. Since its launch on Dec. 2, 1995, SOHO has been one of the most successful space missions in history.

The Solar and Heliospheric Observatory (SOHO) has provided an unparalleled breadth and depth of information about the Sun, from its interior, through the hot and dynamic atmosphere, and out to the solar wind. SOHO has continued to revolutionize our understanding of the Sun with its 24 hour-per-day observations of our daylight star. The SOHO spacecraft was nearly lost in space in 1998, but thanks to an amazing rescue operation, the satellite is still in very good shape and continues to deliver excellent science data.

The main objectives of the SOHO mission at launch were to study the structure and dynamics of the solar interior, the heating of the solar corona, and the acceleration of the solar wind. Five years later, science teams from around the world have made great strides toward answering these "big three" questions. At the same time, SOHO's easily accessible, spectacular data and basic science results have captured the imagination of the space science community and the general public alike. In addition, SOHO has several times demonstrated its leading role in the early-warming system for space weather. Furthermore, accurate monitoring of the energy output from the Sun is important for understanding any natural valiability of the Earth's climate.

In an anniversary-tied event, 23,990 people participated in selecting the most popular SOHO image. The winning image was *The Sun as a Sparkling Diamond,* shown to the left and on-line at: http://sohowww.nascom.nasa.gov/cgi-bin/top30_detail?TRICOLOR

In addition, SOHO has an impressive list of achievements including:

- Revealing the first images ever of a star's convection zone (its turbulent outer shell) and of the structure below sunspots.

- Providing the most detailed and precise measurements of the temperature structure, interior rotation, and gas flows in the solar interior.

- Measuring the acceleration of the slow and fast solar wind. Identifying the source regions and acceleration mechanism of

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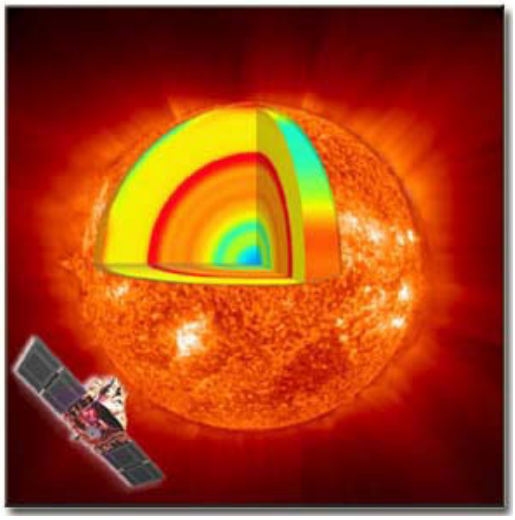
SOHO Team, Elite Ranks (cont'd)



The cutaway reveals rotation speeds inside the Sun. The left side of the image represents the difference in rotation speed between various areas on the Sun. Red-yellow is faster than average and blue is slower than average. The light orange bands are zones that are moving slightly faster than their surroundings. The new SOHO observations indicate that these extend down approximately 20,000 km into the Sun.

the fast solar wind in the magnetically "open" regions at the Sun's poles.

- Discovering new dynamic solar phenomena such as coronal waves and solar tornadoes.

-Revolution-izing our ability to forecast space weather, by giving up to three-days notice of Earth-directed disturb-ances, and playing a lead role in early space weather warnings.

- Monitoring the total solar irradiance (the 'solar constant') as well as variations in the extreme ultra violet flux, both of which are important to understand the impact of solar variability on Earth's climate.

During eight years of operation, the team has had to face several heart-stopping moments, but with extraordinary team spirit, skill and competence, they turned these episodes into remarkable success stories. In June 1998, control of SOHO was lost and the team fought for three months before regaining contact with the spacecraft. Then all three on-board gyroscopes failed. Again, the team rose to the challenge by reprogramming the spacecraft to completely eliminate the reliance on gyroscopes. In doing so, they crossed another frontier in space - SOHO became the first three-axis stabilized spacecraft to be operated without gyroscopes.

In May 2003, the East-West pointing mechanism of SOHO's high-gain antenna started showing signs of a possible breakdown. With this threat to the mission's lifeline, many people feared once again that the mission was in danger. After a long and arduous diagnostic process and a careful analysis of all options, the team decided to park the antenna in an "ideal" position, where data losses are minimized by rotating the spacecraft 180º every three months. In addition, new procedures and larger ground antennas (when available) can be used to all but eliminate the impacts to normal science operations.

Throughout, the team has continued to produce excellent science and SOHO has revolutionized the way scientists think about the Sun and how it might affect Earth's environment. More than 1500 papers, representing the work of more than 1500 scientists, have been published based on SOHO data. And with SOHO still going strong, the success story is set to continue.

The SOHO project is the result of an international effort. Fourteen European countries, led by the European Space Agency and prime contractor Astrium (formerly Matra-Marconi), built the SOHO spacecraft. It carries twelve instruments (nine European-led and three American-led) and was launched by an American Atlas II-AS rocket in 1995. The spacecraft was designed for a two-year-mission but its spectacular success has led to two extensions of the mission, first until 2003, and then again until March 2007.

SOHO appeared to be in everyone's focus this fall as the Sun turned from an almost spotless orb into an ominously scarred source of mighty fireworks in just a few days. Over two weeks, it featured three unusually large sunspot groups (including the largest one of this solar cycle), 11 X-class flares (including the strongest ever recorded), numerous halo CMEs (two with near-record speeds) and two significant proton storms which lasted for a combined five days. Satellites, power grids, radio communication and navigation systems were significantly affected in this period.

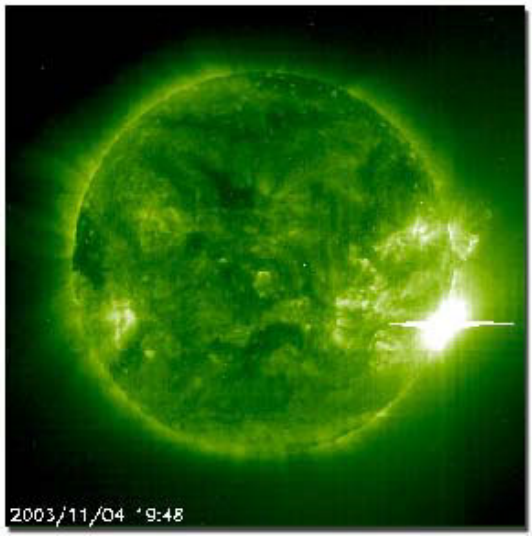


Image taken from SOHO's Extreme ultraviolet Imaging Telescope (EIT) of recent record-setting solar flare on Nov. 4.

The events caused unprecedented attention from the media and the public. Images from SOHO as well as quotes from SOHO scientists appeared in nearly every major news outlet (CNN, BBC, Associated Press, Reuters, to mention a few). Stories including SOHO images made the front page of newspapers and were featured prominently on major television networks.

The attention wiped out all existing SOHO web traffic records (requests/data volume): Monthly (31 million/4.3 TB), weekly (16 million/2.6 TB), daily (4.8 million/0.7 TB), and hourly (0.4 million/33 GB). The daily and hourly volumes were bandwidth limited.

For more on images and information about the SOHO project, visit: http:/soho.nascom.nasa.gov/. ■

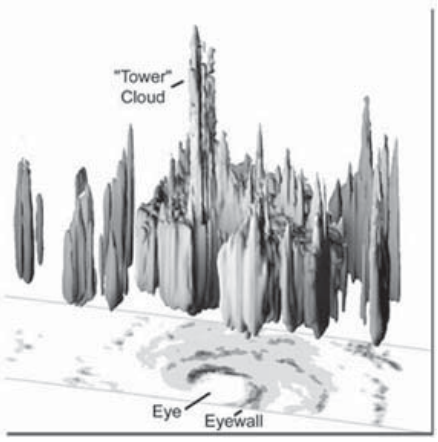
NASA Research Takes the American Meteorological Society Meeting by Storm

By Rob Gutro

The Annual Meeting of the American Meteorological Society (AMS) took place January 12-16, 2004 in Seattle, and NASA's Earth Science News Team, a part of NASA's Public Affairs office and the Earth Science Enterprise coordinated the efforts for all of NASA in terms of press releases and news stories.

Although the meeting was in January, the process of organizing the meeting began in November, when the Team's Editorial Assistant, **Mike Bettwy** started going through hundreds of abstracts for "newsworthy" findings that the general public may be interested in hearing about. **Rob Gutro**, team lead, and **Krishna Ramanujan**, veteran science writer on the team, helped Mike contact scientists for interest in press releases. Mike also sent other NASA centers tips on presentations being made by their center scientists at AMS.

Gutro coordinated the appearance of Earth Science research press releases with all of the NASA centers for the meeting. There were a total of 3 press releases, 2 features, and one note to Editors. On two of those releases, NASA JPL and HQ requested the team write them for NASA/JPL, because of JPL's current focus on the Mars mission. Ames, Langley, Stennis, Kennedy, and Marshall centers did not have any press releases at the meeting. There were contributions from some of the centers to the NASA Tip Sheet, which was written by **Cynthia O'Carroll**, NASA/GSFC Public Affairs.



This TRMM Precipitation Radar overflight of Hurricane Bonnie (August 22, 1998) shows an 11 mile high "tower" cloud perched on the eyewall of the storm. The 3D volume represents the raining region inside the clouds of the hurricane. The eye and eyewall are labeled on the image of surface rain rate. Cyclone intensification may be associated with the presence a tower cloud in the cyclone's eyewall. CREDIT: NASA / JAXA

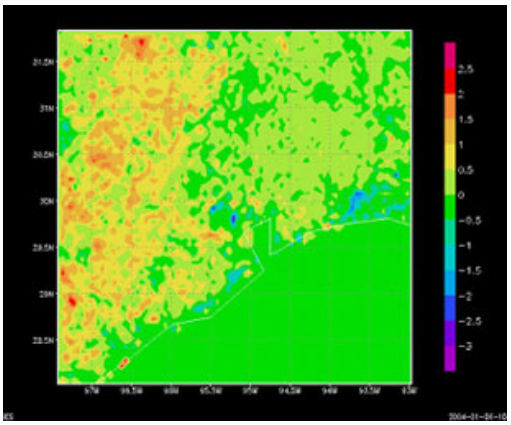
The "Hurricane Hot Tower" press release was a Goddard-related story, and received great media coverage, with thanks to Goddard/George Mason University researcher, Owen Kelley, who made himself available to the media. The 2 features were Goddard-related research presented at the meeting and also received good media coverage. Each of these releases and features included images and captions to help explain the stories. The 2 JPL releases were delayed for release until after the AMS meeting, because of President Bush's announcement on the direction of NASA, and the Mars landing news.

Overall, the meeting made for a great venue to show NASA-oriented Earth science research in the weather/climate area.

The following releases or web features were issued for the meeting, and included are the websites related to the stories, for images and captions.

1) Note to Editors: AMS News Tips
http://www.gsfc.nasa.gov/topstory/2004/0109ams.html

2) Release: A "Hot Tower" Above the Eye Can Make Hurricanes Stronger (with video)
http://www.gsfc.nasa.gov/topstory/2004/0112towerclouds.html



This 5 kilometer resolution image of the Houston area shows the differences in Leaf Area Index (LAI) as an average for August between 2001 and 2002. MODIS LAI measurements show, that on average for August between 2001 and 2002, leaf area in some areas within Houston decreased, likely associated with development in the metropolitan area. Non-urban areas to the northwest and west of the city show higher LAI values compared to the 2001-2002 average, indicating more vegetation. (Credit: NASA/ Land Information Systems.

3) Web Feature: From Neighborhoods to Globe, NASA Looks at Land
http://www.gsfc.nasa.gov/topstory/2004/0113landair.html

4) Web Feature: NASA Satellite Surface Wind Data Improve 2-5 Day Weather Forecasts
http://www.gsfc.nasa.gov/topstory/2004/0114scatterometer.html

5)Future Release: Pacific Ocean Controls West Coast Rain and Temperatures
http://www.gsfc.nasa.gov/topstory/2004/0116westcoast.html

6) Future Release: NASA Satellites Help See the Ocean in 3D and Improve Forecasts
http://www.gsfc.nasa.gov/topstory/2004/0113forecastca.html ■

Elizabeth Patton explains services to another Goddard employee.

Team Will Assist You Balance Home and Work Life Demands

Members of the Awards, Benefits and Work-Life Initiatives Team in the Career Development and Employee Work-Life Office, Office of Human Resources are ready to assist you in a variety of activities that are important to all of us. The thread that connects these activities is you.

There is plenty of printed material to assist you.

Team members include (left to right) Brenda Ritch, awards assistant, Khrista White, Human Resources Specialist; Theresa Wirth, awards assistant; Dianne Hagerty, Team Lead; and Esther Johnson, Human Resources Specialist. Photos by Chris Gunn/293

This team concept was developed for employee advocacy, managing programs and initiatives that improve the work experience and foster work-life balance. Since our health, families, and future financial security are important to all of us, it is good to know that we can call or visit the team's Retirement Officer or benefits counselor with questions and concerns.

While NASA's mission is a great motivator, recognition is important too. The team regularly seeks to improve Goddard's expansive awards program to make it more pertinent to you and your accomplishments.

To assist in balancing our work and home-life demands options such as the Leave, Alternative Work Schedule and Telework Programs offer options for greater flexibility. Amenities such as Goddard's referral service and lactation facilities offer further opportunities to ease the work-life connection.

Many of you met team members at the Quality of Worklife (QWL) Expo's both at Greenbelt and Wallops. Team members were responsible for conducting the QWL Expo's as well as informing you about the many "QWL" amenities that Goddard has to offer.

The Awards, Benefits and Work-Life Initiatives Team welcomes you to visit the Employee Services Center in Building 1, room 139 or call 301 286-7918 to find out more about these programs. Your feedback is critical to our success and is always welcomed. ■ By Dewayne Washington

Swift (cont'd)

"The Swift mission is ideally suited to study gamma-ray bursts, said Dr. Gehrels. "With the powerful BAT instrument, rapid autonomous slews and superb XRT and UVOT afterglow telescopes, it will give the first detailed understanding of what causes these intense flashes. I can't wait for Swift to be on orbit!"

This Medium Class Explorer will be launched this summer into low-Earth orbit from Cape Canaveral, Fla. aboard a Delta rocket. The observatory has a nominal lifetime of two years. During this time, Swift should observe over 200 bursts and afterglows. Swift is expected to yield the most comprehensive study of gamma ray bursts to date.

Swift, the mission, is an international collaboration involving institutions in the US, Italy and the United Kingdom. Joe Dezio is the Project Manager and Dr. Nicholas White is Chair of the Science Working Group, both are from Goddard. The mission is managed by Goddard as part of NASA's Explorer Program.■

February Observance, Reflection Upon Past Successes for Positive Social Change

By Dewayne Washington


Dr. Carter G. Woodson

The Goddard community will once again have the opportunity to join our Nation for a month of activities in observance of black achievements that have contributed to making America great. February 2004 is designated for reflection upon the 50th anniversary of the landmark "Brown vs. Board of Education, Topeka, KS" Supreme Court decision. This is the cornerstone theme for this year's African-American History Month.

According to **Leonard Brown**, African-American Programs Manager for Goddard, "February offers a tremendous opportunity for us to reflect upon the historic significance, power and ongoing positive social influences that some major Civil Rights legislation and activism have had for the United States. A lot has happened since 1954 when Thurgood Marshall argued and won the public school desegregation Supreme Court case of little Linda Brown in Brown vs. the Topeka, Kansas Board of Education," said Brown.

"What a historic decision that was - one that changed our schools and our lives! The power and importance of these decisions and this era are captured for study and posterity in sets of books, several first-person accounts, all of which are still available depicting the drama, trauma, and triumph during this difficult time in America's civil rights history," Brown added.

"Topeka, Kansas was not the only legal battlefield; the story of the "Little Rock Nine" (Arkansas) integrating a high school is told in **Warriors Don't Cry**. Let's not forget Ruby Bridges, who was only six years old when she integrated an elementary school in New Orleans (Louisiana), with her memoirs and convictions as recounted in **Through My Eyes**. Her child psychologist, Robert Coles, remembers and wrote about this brave little girl in his book, **The Story of Ruby Bridges**," said Brown.

"It certainly wasn't that these pioneers, some of them mere children, were not afraid; I'm sure that they were. They just did not let their fear paralyze them from action! These young warriors took that 'long walk' so that today we can sit and learn together as equals," Brown concluded.

Dr. Carter Godwin Woodson is considered by many as the founder of this annual observance of African-American contributions. In 1915, Dr. Woodson founded The Association for the Study of Negro Life and History. Later he was able to establish Negro History Week as a way to bring national attention to the accomplishments of African Americans.

His hope was to neutralize the apparent distortions in Black history and to provide a more objective and scholarly balance to American and World history. In 1926, Dr. Woodson's dream became a reality. He chose the second week in February for the observance because of its proximity to the birthdays of Abraham Lincoln and Frederick Douglass; two individuals whom Dr. Woodson felt had dramatically affected the lives of African Americans. In 1976, the Association succeeded in expanding the observance, which then became Black History Month.

President Bush wrote of last year's observance, "African Americans reflect a proud legacy of courage and dedication that has helped to guide our Nation's success and prosperity. Visionary leaders like Frederick Douglass, Thurgood Marshall, and Martin Luther King, Jr., possessed a clarity of purpose and were instrumental in exposing and addressing the issues that threatened our founding principles. The battle for freedom, equality, and opportunity was fought on the front lines by strong figures such as Harriet Tubman and Fannie Lou Hamer, as well as many other everyday heroes who helped to lead this Nation to a more hopeful and just society."

Scheduled activities during the month of February at Goddard include: **Mr. Carroll R. Gibbs** presents, "Journey To Justice: The Civil Rights Movement Yesterday and Today", February 11, beginning at 11 am, building 8 auditorium; **Professor Larry S. Gibson** presents, "Maryland: Brown's Launch Pad", February 18, beginning at noon, building 8; and **Dr. Dorothy Hayden-Watkins**, NASA Associate Administrator for Code E, February 25 beginning 11 am, in building 8.

Other significant events in Black History that have occurred this month: **February 1, 1960:** A group of black Greensboro, N.C., college students began a sit-in at a segregated Woolworth's lunch counter: a civil-rights movement milestone. **February 3, 1870:** The 15th Amendment was passed, granting blacks the right to vote. **February 12, 1909:** The National Association for the Advancement of Colored People (NAACP) was founded by a group of concerned black and white citizens in New York City. **February 21, 1965:** Three Black Muslims shot Malcolm X to death. **February 23. 1868:** W.E.B. DuBois co-founder of the NAACP was born. **February 25, 1870:** The first black U.S. senator, Hiram R. Revels took his oath of office.■

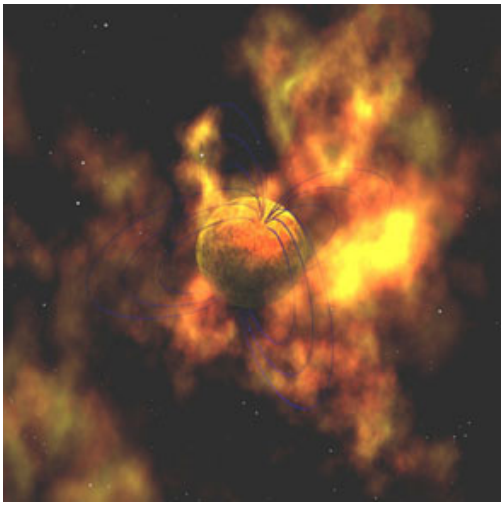
Goddard Scientists Prominent at AAS Meeting

By Bill Stiegerwald

Goddard had a strong presence at the recent American Astronomical Society meeting held January 4 – 8 in Atlanta. The discovery of a remote but immense string of galaxies, the largest ever seen at such a distance, was billed as the "top newsmaker of the meeting." Goddard's **Dr. Bruce Woodgate** and an international team presented the results at a press conference January 7. This new structure, discovered using telescopes in Chile and Australia, defies current models of how the Universe evolved, which can't explain how a string this big could have formed so early.

"We are seeing this string as it was when the Universe was only a fifth of its present age," said Woodgate. "That is, we are looking back four-fifths of the way to the beginning of the Universe as a result of the Big Bang."

The discovery was picked up by the major news services, Reuters and the Associated Press, and stories ran in the New York Times and other media outlets, including internet news sites like Astronomy Picture of the Day (January 20) and Space.com.



An Artist's concept of a magnetar. The blue lines emanating from the magnetar's pole represent its powerful magnetic field, strong enough to make it glow in X-rays. Credit: Dr. R. Mallozzi, University of Alabama, Huntsville.

Goddard scientists appeared in other press releases and media events as well. **Dr. Alaa Ibrahim** of George Washington University and Goddard and **Dr. Jean Swank** of Goddard were featured in a press release about the discovery of a neutron star in the act of changing into a class of extremely magnetic objects called magnetars. No such event has been witnessed definitively until now. This discovery marks only the tenth confirmed magnetar ever found and the first transient magnetar.

The unusual star was discovered in July 2003 with NASA's Rossi X-ray Timing Explorer, and may ultimately fill in important gaps in neutron star evolution. A neutron star is the core remains of a star at least eight times more massive than the Sun that exploded in a supernova event. Neutron stars are highly compact, highly magnetic, fast-spinning objects with about a Sun's worth of mass compressed into a sphere roughly ten miles in diameter.

A magnetar is up to a thousand times more magnetic than ordinary neutron stars. At a hundred trillion (10^14) Gauss, they are so magnetic that they could strip a credit card clean at a distance of 100,000 miles. The Earth's magnetic field, in comparison, is about 0.5 Gauss, and a strong refrigerator magnet is about 100 Gauss.

Dr. Debra Wallace reported on her observations with the Hubble Space Telescope that the majority of massive and brilliant but dying "Wolf–Rayet" stars have company – a smaller companion star orbiting nearby. The result will help astronomers understand how the largest stars in the Universe evolve. It may also resolve the mystery of impossibly massive stars, and calls into question a certain kind of distance estimate that uses the apparent brightness of starlight.

Wolf-Rayet (WR) stars begin life as cosmic titans, with at least 20 times the mass of the Sun. They live fast and die hard, exploding as supernova and blasting vast amounts of heavy elements into space for use in later generations of stars and planets. "I tell people I study the stars that made a lot of the carbon in their bodies and the gold in their jewelry," says Wallace. "Understanding how Wolf-Rayet stars evolve is a critical link in the chain of events that ultimately led to life."

Because cosmic distances are so great, what appears as a single star even when viewed through large telescopes may in fact be two or more stars orbiting each other. In the new research, Wallace and her team used the superior resolving power of the Planetary Camera in the Wide-Field Planetary Camera 2 instrument on board Hubble to identify new potential companion stars for 23 of 61 WR stars in our galaxy. "The portion of Wolf-Rayet stars having visually identified companion stars zoomed from 15 percent before Hubble to 59 percent with our observations, which included a quarter of the known WR stars in our galaxy," said Wallace. "I wouldn't be surprised if future observations reveal companions around an even greater percentage of them."

The presence of a companion star should significantly influence how these stars evolve, according to the team. Possible influences include altering orbits, rotation rates, or

Continued on page 10

Goddard Scientists at AAS (Cont'd)

mass-loss rates through the pull of their gravity, and the impact of stellar winds. "Astronomers assumed Wolf-Rayet stars were single when trying to calculate how they evolve, but we are finding most have company," said Wallace. "It's like thinking married life will be the same as life as a bachelor. A companion star has got to change the life of these stars somehow."

Dr. Koji Mukai was featured in a press release about the discovery with the European Space Agency's orbiting XMM-Newton observatory of a previously hidden source of very energetic X-ray light in a special type of double (binary) star system known as "deeply eclipsing cataclysmic variables."

Cataclysmic variables are binary star systems in which a regular star (often smaller and cooler than our Sun) tightly orbits around a tiny, extremely dense, compact star called a white dwarf whose gravity pulls stellar material from its companion in a process called accretion. The systems are "deeply eclipsing" if, by our planet's chance alignment with the binary system, the companion (secondary) star swoops in front of the white dwarf (primary) star, thus periodically blocking light coming from the accretion disk, as seen from Earth.
The discovery of an especially energetic form of light called "hard" X rays coming from this well-known star system "UX Ursae Majoris" (UX UMa) will now offer astronomers a powerful new tool for probing the extreme conditions of stellar material flow off of one star and onto another, known as an accretion disk. The results also confirm the idea that streams of electrically charged particles, such as electrons, blowing off accretion disks scatter a less energetic form of light called "soft" X rays.

Paper co-author Mukai said the dire-sounding name "cataclysmic variable" refers to a class of objects that undergo occasional dramatic brightening when enough material accretes onto the primary star to set off nuclear fusion on its surface.

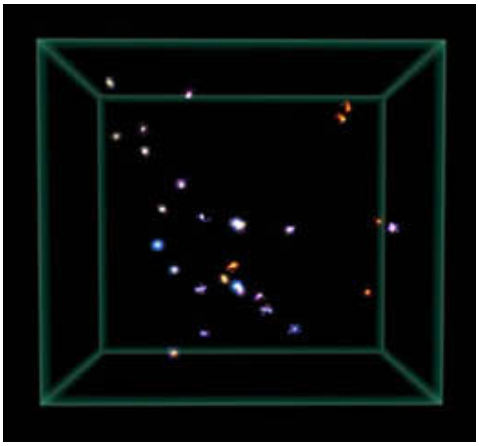
"This brightening is what is meant by a classical 'nova' as opposed to the much more catastrophic 'supernova' that marks the deaths of massive stars," Mukai said. "The UX UMa system undergoes such an outburst perhaps every 10,000 to 100,000 years, although the exact frequency is based on how much and how quickly material from the secondary star accretes onto the primary star."

At present, UX UMa has a magnitude of +12.7, far below naked-eye visibility. But Mukai estimates that were it to nova, the system would be about as bright as Mars or even Venus.

"That would change the look of the Big Dipper, at least for a while," he said.

Goddard's eclipse expert, **Fred Espenak**, and Astronomer **Dr. Sten Odenwald** participated in a presentation on an upcoming, extremely rare celestial event - the Venus Transit. On June 8, Venus will appear to cross in front of the Sun as seen from Earth. The last transit occurred more than a century ago, in 1882. Espenak discussed the circumstances and visibility of the transit and Odenwald presented NASA's educational and public outreach for the transit.
During the 19th century, the events were essential for astronomers to fathom the scale of the heavens, because they were used to give a relatively accurate distance from the Earth to the Sun. Once that distance was known accurately, astronomers could determine the size of our solar system, and calculate the distances to nearby stars by measuring how much they appeared to shift against remote background stars as the Earth progressed in its orbit around the Sun.

So critical was this measurement that, beginning in 1761, leading nations sent expeditions to remote corners of the globe to time exactly when Venus appeared to begin its transit of the Sun. The precise timing of the transit depended on location because different places on the globe saw the event from different angles. The times were compared and the distance to the Sun calculated using the known distances between expedition locations on the Earth and trigonometry.



A computer artist's image of a giant but remote galaxy string discovered recently. The fuzzy, bright areas in the cube represent galaxies discovered about 10.8 billion light-years away in the direction of the southern constellation Grus (the Crane).

Images and more information, visit:

Galaxy String:
http://www.gsfc.nasa.gov/topstory/2004/0107filament.html

Magnetar:
http://www.gsfc.nasa.gov/topstory/2004/0106magnetar.html

Wolf-Rayet Stars:
http://www.gsfc.nasa.gov/topstory/2004/0105wrstar.html

Venus Transit:
http://sunearth.gsfc.nasa.gov/eclipse/transit/TV2004.html ■

Children get an up-close view of Mars Rover mock-up

Mars Landing Brings Crowd to Goddard Visitor Center

by Rani Chohan

At 8:30 pm Saturday evening a bus full of young explorers rolls into the circular drive in front of the Goddard Visitor Center and unloads fifty preteens.

“Am I really at NASA?” asked one shivering 10-year-old girl. “Yes,” a volunteer responded.

“Wow, this is a dream come true. Where are the rockets?”

More than 350 people attended the evening’s program entitled *A Night of Exploration on the Red Planet*, Jan 24, where they had the opportunity to learn more about Mars and our Universe, glimpse Saturn’s rings, and operate a robot.

“We wanted to create a memory,” says Maurice Henderson, program manager at the Visitor Center. “Something where people would remember where they were when Opportunity landed.”

When the doors opened at 7:30 pm, the newly installed Hubble Exhibit greeted visitors, a new sight for many of them. On the floor, under the arch of monitors displaying spectacular Hubble images, a movie played, showing the animation of the Mars rover leaving Earth and bouncing onto Mars.

The festivities began in the auditorium with an awards ceremony for the Mission to Mars Art Contest. Kids, kindergarten through eighth grade, were asked to produce art that minimally included some portion of Mars, and at least one of the current or previous Mars missions, accompanied by a brief written description of their artwork. The artwork was judged on creativity, scientific knowledge of Mars and the Mars missions, and artistic merit. Winners received a collage of space science images signed by Dr. John Grunsfeld, astronaut on the 1999 and 2002 Hubble servicing missions.

The kids’ artwork is on display inside the theater and online at the Goddard Visitor Center website.

From there, the night featured two talks about Mars, robot demonstrations, stargazing and the highlight, successful landing on Mars. Simultaneous activities and numerous volunteers kept everyone busy. “It never felt over-crowded,” Henderson said.

Freezing temperatures did not deter outdoor activities. Goddard “polar bear” Astronomy Club set up several telescopes in the rocket garden. Dry, icy-cold air provided a clear night for stargazing. Attendees ran out into single-digit temperatures to get a glimpse at Saturn’s rings, Jupiter’s moons and the Orion Nebula. Members of the club stayed outside for almost four hours to give kids and adults a closer look at the stars and planets.

Back inside in the theater, **Mike Wade**, Goddard coordinator of FIRST (For Inspiration and Recognition of Science and Technology), introduced parents and kids to the FIRST Robotics Competition. FIRST was created to inspire an appreciation of science and technology in young people, their schools and communities. Kids got a real taste of the competition when they were allowed to play with and operate a robot.

Photos by Chris Gunn/293

Dr. Frey speaking to interested audience about Mars.

In the Earth Science Gallery, Dr. Herbert Frey from Goddard’s Earth Science Directorate gave a talk titled *Mars: More than the Moon; Less Than the Earth*. Frey compared features of the Moon and the Earth, showing that they represent two extremes, a dead planet and a living planet. Frey showed characteristics of Mars that were similar to both the Moon and Earth, placing the red planet in the middle of the spectrum. “This was really a fun crowd to present to,” Frey said. “I got some really good questions from the kids and the adults.” In the auditorium, Dr. Harley Thronson and Dr. Marilyn Lindstrom, from NASA headquarters, gave a talk titled *Mars Rocks!* They showed how new technology was driving further space exploration. Thronson explained how robotic exploration of Mars rocks will provide windows into the past, giving details of when the surface was made and clues to if and when water was present at the surface. A model, a quarter of the size of the real Mars rover, formed a spectacular backdrop.

As touchdown approached over 100 visitors remained. They gathered in the auditorium to watch NASA-TV coverage of

Continued on page 12

Employee Spotlight

By Tomeika Blackwell

Dan Krieger's 14 years of love and dedication towards his work makes him stand out among a crowd. His journey at NASA began as a contractor for the Office of Human Resources where he read literature for a blind employee. He was later offered a Co-op position within the office, which has led him to his current location working in the Equal Opportunity Programs Office (EOPO).

Krieger is an Equal Employee Opportunity Specialist where he is in charge of three areas: human resources, education and legal issues. His duties include but are not limited to targeting and recruiting prospective interns, facilitating outreach services for the Hispanic communities, and handling informal discrimination complaints and providing alternate dispute efforts.

One of Krieger's most interesting aspects of his job is recruiting and managing the summer internship program. The recruiting cycle begins in September and ends in February. Once a year he visits Puerto Rico and recruits the best and the brightest students to work at Goddard over the course of ten weeks. Krieger says, "This is a way for students to receive quality experience and see what type of work we do." In 1991, 75 of the summer interns where converted into full-time employees. "It is a great feeder program for the workforce. The employer knows the work history and experience of the employee and the employee understands what is expected of them," he adds.

The national demand for professionals trained in mathematics, science and technology fields is increasing as student interest has seen a decline. "We have a responsibility to enlighten and inspire a new generation of scientists, engineers and technologist," says Sean O'Keefe about NASA's mission.

For Goddard the Summer Internship Program is a great example of a continuing effort, not only to understand our planet, and explore the universe but also to inspire the next generation of explorers as only NASA can.

"My experience allowed me to see one aspect of engineering, and in turn, shaped my idea of what I want to do with my degree," said Kelly Meyers, 2002 intern participant.

In addition, he organizes and facilitates the agenda for the summer interns. It is Krieger's goal to fuse different colloquiums into the agenda to reach a broader crowd. "You don't know which speaker will resonate with the inters, therefore, it is imperative to incorporate a diverse cadre of speakers into the program. These colloquiums permit the interns to interact with the NASA community," he says.

When asked the question, "What makes your job so special?" He responded with much enthusiasm, "It is rewarding and fulfilling to have an impact on people lives and outcome. NASA is truly my home and I live to show what we have to offer and to make people feel welcome."

Krieger was born and raised in Greenbelt, Maryland. He received his undergraduate degree in Maryland at College Park and is currently pursuing a doctorate program in Human Resource Development at George Washington University in the District of Columbia. He is married with one child and another on the way.

Visitor Center (cont'd)

the Mars Opportunity Rover Landing. The audience clapped and cheered with every Rover bounce as scientists at the Jet Propulsion Laboratory mission control confirmed each milestone in Opportunity's descent to the Red Planet.

At the end of the night, the 10-year-old girl turned to her teacher and said, "Thank you for bringing me here tonight and thank you for teaching me science."■

Remaining visitors view activities of Mars Opportunity Rover landing.

Photos by Chris Gunn/ 293

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
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04058.html

Family Dollar Services Inc. Announce Recall of Extension Cords
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04056.html

Mr. Christmas Inc. Announce Recall of Christmas Candleholders
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04059.html

Crate and Barrel Announce Recall of Hanukkah Menorah
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04055.html

Warns of Hazards from Heaters and Fireplaces.
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04069.html

CPSC, SCG Miyairi Announce Recall of Liquid Propane Overfill Protection Devices.
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04070.html

Lang Candles Announce Recall of Thematic Candles
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04061.html

Browning Announce Recall of Flashlight Batteries
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04067.html

Emerson Tool Company Announce Recall of Wet/Dry Vacuums
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04053.html

Offers Tips to Prevent Home Fires from Space Heaters
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04054.html

Kyocera Wireless Corp. Announce Recall of Batteries in Smartphone Cell Phones
http://www.cpsc.gov/cpscpub/prerel/prhtml04/04068.html

Introducing: The New IFMP Portal

Frustrated by all the different websites you need to keep track of for IFMP? Now you can bookmark one central homepage for the program at http://ifmp.gsfc.nasa.gov.

Based on your feedback, the IFMP team has developed a single portal that serves as a central point for IFMP. Included on the newly designed page are links to each IFMP module websites, access to production log-ins, and IT information.

Also available on the new homepage:

- Frequently asked questions about IFMP
- Key points of contact for questions/comments about the program
- Integrated program schedule
- Updated communications materials

We will continually update the portal with the most recent program information in order to communicate important and timely information to everyone involved with IFMP.

Please visit the revised homepage, available to everyone within the Goddard domain, at http://ifmp.gsfc.nasa.gov.

If you have feedback about the portal, please email Hunter Keay at hkeay@pop400.gsfc.nasa.gov – we would love to hear from you!

Photos by Chris Gunn/293

FIRST Robotics 2004 Kick-off Event

By Dewayne Washington

Founder Dean Kamen explains this year's rule changes via satellite to team members across the country.

The countdown has begun for the start of the 2004 FIRST Robotics Competition season. The kick-off event was hosted Saturday, Jan. 10, in Manchester, New Hampshire and was beamed, via NASA TV, to more than a dozen sites across the United States.

For a second year, the Chesapeake Regional Steering Committee coordinated the satellite venue within the state of Maryland for the kick off event. Local teams gathered at the Computer Science Instructional Center at the University of Maryland, College Park to watch the telecast that included the announcement of this year's challenging game.

Following the telecast, nineteen local teams were issued their robot kit and now have less than six weeks to build their robot before the 2004 FIRST Robotics Competition begins. Teams must ship their robots during the last week of February.

Goddard is a major sponsor for the Chesapeake Regional Competition, which is endorsed by the state of Maryland. Last year, fifty-seven teams comprised more than 1,500 students from throughout the state of Maryland, nine other states and the District of Columbia, for the state regional.

The FIRST Robotics Competition, according to founder Dean Kamen, is an exciting, multinational competition that teams professionals and young people to solve an engineering design problem in an intense and competitive way. Kamen insist that the program is more than building robots. "It is a life-changing, career-molding experience—and a lot of fun," says Kamen.

Local team members sign in for the 2004 kick off event at the University of Maryland, College Park.

The 2004 robotic competition season will include more than 20,000 students participating on more than 900 teams in 27 competitions. Teams have been established in Canada, Brazil, Great Britain, and almost every U.S. state. The competitions are high-tech spectator sporting events, the result of lots of focused brainstorming, real-world teamwork, dedicated mentoring, project timelines, and deadlines.

This year's local regional, the Chesapeake Regional, will be held March 18-20 at the historic United States Naval Academy. A field of 64 teams will compete for honors and recognition that reward design excellence, competitive play, sportsmanship and high-impact partnerships between schools, businesses and communities. Teams can also earn a spot for the FIRST Robotics Championship to be held April 15-17 at the Georgia Dome, Atlanta, Georgia.

FIRST was founded in 1989 by accomplished inventor Kamen to inspire an appreciation of science and technology in young people, their schools and their communities. Based in Manchester, N.H., the non-profit organization designs accessible, innovative programs to build self-confidence, knowledge and life skills while motivating young people to pursue academic opportunities.

During the kick off event team members were given their first look at how the 2004 game is to be played.

"The FIRST Robotics Competition is not just about the design and building of sophisticated robots. These students also develop maturity, professionalism, teamwork and mentoring skills that enrich their lives," said Kamen. "Many of our students develop an affinity for their science and math courses, go on to study engineering, technology or science in college, and also to pursue employment opportunities with sponsoring companies," Kamen added.

Colleges, universities, corporations, businesses, and individuals provide scholarships to participants. This year's total has exceeded 4 million dollars. For volunteers, it is a great opportunity to have positive influence on the future of our country. FIRST competition allows involved engineers to again experience the excitement they felt when first entering engineering as a profession. It is also a great opportunity for companies to contribute to the community and assist in preparing a future workforce. The competition shows students that 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 becoming a volunteer for the 2004 Chesapeake Regional, contact Desiree Taminelli at 301-286-8593. For more information about the FIRST community and the 2004 competition visit www.usfirst.org or www.mitc/org/first. ■

Waking Up With NASA – Behind the Scenes of Live Interviews

By Katie Stofer

Several times a year, morning news viewers around the country may spy a NASA scientist on their local station. At the same time, NASA-TV viewers get treated to one side of an interview. That's a "live shot" – an interview conducted live via satellite by a news station, while the scientist sits in Goddard's television studio.

Live shots can be one of Goddard TV's highest-profile activities, reaching viewers thousands of miles away, from small markets such as Dover, Delaware to the top-five markets such as San Francisco, California, and everywhere in between. Scientists also appear on national networks and even larger markets in Latin America on CNN Español, thanks to Spanish-speakers like **Dr. Adolfo F. Viñas**, a plasma astrophysicist. "It's exciting to bring this work to the community," said Viñas of his first experience, a recent set of interviews on auroras.

Since morning news shows start as early as 5 a.m., that means almost 10 people are at Goddard by 5:30 a.m., working off-camera to make things happen. In the studio itself, the camera and audio operators fire up the equipment there, setting up the background images, microphone and IFB (the earpiece for the phone connection through which the news anchor talks to the scientist, just as a field reporter hears her home station). Around the corner in an editing suite, a video editor lines up animations to support the interview, played to match the answers.

Downstairs from the studio, in Goddard TV operations, the engineers make sure the satellite signal heads out clearly. The technical director checks the audio and video levels and prepares to switch the signal back and forth between the camera shot of the talent and the animations, which come directly from the edit system. A couple of other Goddard TV personnel work shifts on the phones, calling the local stations and their IFB lines, and talking to the local station's producer. Sometimes, says **Wes Owens**, a Goddard TV engineer and veteran of the live shot circuit, the stations don't know how their IFB lines work, and "you have to talk them through it."

Finally, the big moment arrives. Up until each interview actually starts, the IFB line often plays the audio from the newscast, which could be traffic in Denver, weather in Tampa, or commercials for furniture stores in Wichita. After the anchor gives a brief introduction and asks the first question, it's the scientist's turn. The NASA producer, technical director and video editor listen to the questions and answers carefully so they can play the appropriate video to support the answer.

After a few interviews, the answers come fairly easily, and the visuals synchronize perfectly. Through a morning of twenty or more interviews, some will come back-to-back, every six minutes, and some will come with breaks in between to allow further refinements

Dr. Beth Brown tells morning news viewers about new ultraviolet auroras.

of answers and visuals as the team sees how the interviews go. By the time the talent hits West Coast stations starting at around 9 a.m. Eastern, even the first-timer has become nearly a pro."I've never had experience before in this type of interview," Viñas said. Though he has done both English- and Spanish-language interviews before, none were live. "It really forces you to come down and find a common language to express yourself," he says.

Behind the Scenes

What ends up as one or two minutes of airtime takes a lot more behind-the-scenes preparation. The interviews start out as a NASA news story based on research or major late-breaking event, such as last fall's Hurricane Isabel. When the story comes with widespread interest and good visual potential, it can blossom into a larger media campaign, with a press release and video news release or "video file," plus the live interview campaign.

Three Weeks to Airtime

Typically, three weeks before the release or the press conference, the live interview producer goes to work. The live shot producer scripts the whole interview and arranges video to tell the story to the bleary-eyed early morning public. This becomes a document called either the "run sheet," since it eventually lists the run-through order of the questions and visuals, or the "one sheet," since it lists everything – a blurb about the story, the questions, the satellite and contact details – that a local morning TV producer needs to know in one page.

Writing the questions and anticipating the interviewee's answers for live shots is often the trickiest part. The producer wants to entice local TV stations to do the interview but at the same time restrict topics to the subject at hand and show off the video that Goddard's visualizers and animators produce. To keep the viewing public interested, complicated science topics have to be explained in about 20 seconds, and the answers ideally also synchronize with the video for ultimate clarity.

Continued on page 16

Live Shots (cont'd)

One Week to Go
A few days before the interviews, the producer sends out the finalized one sheet to every local television news station in the country. Then, the she sits back and waits for the calls to roll in from local stations eager to carry our NASA interviews. Thanks to some regular stations with whom Goddard TV has built a relationship, often the producer can book at least 10 interviews without making a single phone call.

In the business of media coverage, more is more, so about three days before show time, the producer starts calling stations. Pitching the story to any news station she can get hold of often leaves the producer "feeling like an unwanted telemarketer calling at dinnertime," says **Rani Chohan**, an associate producer for Goddard TV. Everybody wants the local news to cover his own story, and the NASA producer competes for the news show's attention with the newest weight-loss fad's public relations people and the lady with a cat stuck up in a tree.

Since local morning show producers work expect calls to roll in either when their shifts start around 11 p.m. or as soon as their morning show ends, as early as 7 a.m., the NASA live shot producer has a string of early mornings. She calls newsroom after newsroom, leaving voicemails and sending more faxes and emails in order to net more interviews for her talent. These calls can last well into the morning, as some West Coast stations have shows running until 9 a.m. Pacific time.

One Day and Counting
The day before the interviews means rehearsal time. For new talent, rehearsal provides a chance to see the studio and get wired up with the microphone and IFB. The talent gets to see the video and hear the anticipated questions, preparing their succinct answers and matching them to the visuals. The producer can coach the talent on how to eliminate jargon and to stress important points. The video editors tweak the video sequences to fit the answers more precisely, and the production team checks the satellite, sound, and background visuals in the studio.

Very few people come naturally prepared to be morning show talent, so the producer spends some time coaching scientists on demeanor and presentation style. Morning show audiences listen with half an ear while they eat breakfast, get dressed, and get the kids ready for school, so the interviewee needs to be enthusiastic, friendly and engaging at 6:00 a.m. to get people's attention.

Often, a scientist with general knowledge can serve just as well as a scientist with intimate details on a particular study, because the public wants the big picture, how the melting ArPhoto by Chris Gunn/293ctic ice or the solar flares will impact them. It was an eye-opening experience for Viñas, finding the "proper language to communicate with the non-expert," and on top of that, translating that language into Spanish. He watched **Dr. Nicky Fox,** a solar physicist and regular live shot interviewee, and tried to learn from her responses how to best phrase his answers.

To doubly and triply prepare the interviewee, the producer throws out some "curveball" questions, and gives some tips on handling such questions. That way, when the news anchor asks if humans really landed on the moon, the talent has an appropriate answer and isn't completely thrown. The producer gives some final information on what to wear to look good for television, takes any requests for breakfast items or beverages for the morning, and sends the talent off with instructions to return at 5:45 a.m.

The Big Day
When the interviews finally begin, things generally go smoothly, except for the occasional station that has to drop out last-minute because they have a breaking news situation, or a producer who doesn't realize he's supposed to be doing an interview that morning (yes, it has happened). Technical issues can be a problem, too, such as the time the lights in the Goddard studio went down mid-interview due to a computer glitch. That interview was lost, but a backup computer allowed the show to go on.

Even though the stations generally ask the suggested questions, everyone remains alert. Viñas found that some of the Spanish-language stations were surprised to see a Hispanic scientist in the United States doing interviews. He became even more of a role model when the stations asked him some unexpected questions about his career path and asked what he could say to encourage students.

Owens says it's the challenge of the nearly non-stop interviews and the complexity of the process where everything must run smoothly, which keeps him coming back in the wee hours of

Dr. Nicky Fox talks to local television stations about auroras in December, 2003.

the mornings. If you screw up a live interview, he notes, "Well, you've blown it." There are no second chances. "I always like to catch the reactions [of the news anchors] after we do some especially great graphics," Owens adds. Those comments really reward the effort that the whole team puts in. The Office of Public Affairs and Goddard TV constantly look out for upcoming research that will interest the general public. If you have news, great images, a hankering to be on camera, and especially if you speak Spanish, you or your story could be part of an upcoming live shot campaign. ■

GEWA Activities

Fall/Spring Session
January 27, 2004 - April 29, 2004

Body Toning Class
Began January 27, 2004 in Building 1 Cafeteria on T/TH 4:30 p.m. to 5:30 p.m.
COST - $57 Body Toning and $3 Annual Dues

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.

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

The Goddard Slow Pitch Softball Association (GSPSA) leagues are preparing for the upcoming season, and would like to extend an invitation to any new teams or players to join the GSPSA. 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 GSPSA 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 (GSPSA President) at 301-614-5188, William.J.Guit@nasa.gov or Walt Moleski (GSPSA Treasurer) Walt Moleski 301-286-7633 or Walter.F.Moleski@nasa.gov

So, whether you imagine yourself to be a Barry Bonds-like star, or just someone who likes to play softball, this is your opportunity to get back on the fields in organized games. Whether you've dreamed of hitting that walk-off home run or making the great defensive play to end the game, or just want some fun/entertainment and a chance to run and play like you did as a kid, please contact either Bill or Walt.

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.

MAD Winter Show "You're a Good Man, Charlie Brown"
This year MAD will present it's first ever Winter Show Musical, "You're a Good Man, Charlie Brown". This show based on the comic strip Peanuts, is aimed at an adult audience, but is suitable for all ages. Performances dates are February 13, 14, 15, 20, 21, 22, 27 and 28.

Ticket sales will begin with a on-site sale in the bldg 1 cafeteria from 11 am - 1pm on **February 4, 2004.** Tickets are $18 per person; $17 each for groups of 8 or more. You can call (240)475-8800 for ticket information, or visit the MAD web site at http://www.madtheater.org/orderform.htm

13th Spring Craft Fair-Registration
This year's Fair will be held on **Tuesday, March 30**, in the Bldg. 8 Auditorium from 10 a.m. til 2 p.m. Registration is only $15 per space and is open to all GSFC and NASA HQ government and contractor employees, retirees, family members and friends. Items must be handmade. Cutoff for registration is **March 19** — check out GEWA's webpage (http://gewa.gsfc.nasa.gov) for details and registration form, or contact Tasha Davis (tadavis@pop200.gsfc.nasa.gov).

Goddard Islamic Study Group
For Muslims, the month of February brings Hajj and Eid Al-Adha. In carrying out this obligation, they fulfill one of the five pillars of Islam. Please join the GSFC Islamic Study Group to view a showing of the ABC News Nightline (April 18, 1997) video entitled The Hajj, on **Thursday, February 26** in Bldg 8, MCC Conference Room, from 12pm - 1pm. A video journal of a Muslim's pilgrimage to Makkah; A wonderful explanation of the spiritual and physical journey involved in performing the Hajj to Makkah- hosted by an American Muslim journalist.

The Goddard Fitness Center is at Your Service

By Trusilla Steele

Photo by Chris Gunn/293

Fitness staff from lt: Troy Brown, Joyce DiTomasso, Sonja Young and Mike Ochranek.

If your resolution for 2004 is to get fit and/or to lose weight, let the Goddard Fitness Center assist with reaching your goals.

Located in building 97 and open to all Goddard civil servants, the Goddard Fitness Center is not only convenient but also offers a variety of fitness equipment and programs that will help you de-stress, get in shape and lose weight.

In order to become a member of the Goddard Fitness Center, civil servants must receive a medical clearance from the Goddard Health Unit. This free examination is dependent upon available appointments. It is also sound to check with your personal medical physician before beginning any new exercise regimen.

Once you receive your clearance, it's off to the Fitness Center! One may want to begin with a fitness assessment, a functional exam that evaluates your current physical capacities. Measurements such as body composition, blood pressure, strength, flexibility, endurance and aerobic capacity are used to establish and quantify your present level of fitness. This information is then used to formulate an exercise program fit for each individual.

You can receive your fitness assessment and orientation about the facility from Mike Ochranek, Troy Brown, Joyce DiTomasso, Sonja Young or Shaun Mason. These fitness professionals have several levels of health related degrees and training certifications to provide you with helpful instructions on how to properly use the exercise equipment, leading you to your fitness goals.

Mike Ochranek is president of Body Shapers Ltd., personal training business and is currently training a Maryland state power lifting record holder in the 75-79 year old category.

Joyce DiTomasso has a fitness background that includes a bachelor's degree in education, an associate's degree in physical fitness technology and is certified by the American College of Sports and Medicine as an exercise test technologist and health and fitness instructor. DiTomasso has over 18 years of fitness experience, which includes serving as director of a circuit weight training program and fitness coach.

Shaun Mason is a certified aerobic instructor and was a physical education teacher and athletic coach for five years.

Athletic ability was recognized in Sonja Young at an early age. Young says, "I became active in various team and individual sports when I was younger. Throughout high school my participation in volley, track and field and weight lifting afforded me the distinguished honor of receiving many awards and accolades from high school athletic officials in the community." Young continued to excel athletically and academically by teaching aerobics in numerous private health clubs while receiving a bachelor's degree in sociology from Indiana University and a master's degree in health education and promotion from Trinity College, Washington, D.C.

Young adds, "My most recent accomplishments includes being featured in *Today's Black Woman* magazine as a fitness model for the Nov/Dec 2000 'Shape Up' issue. I also was a fitness participant in the *Still Steppin, Just for Fun* video," produced by Christi Taylor, a noted fitness trainer. Additionally, Young was featured in the Anti-Aging fitness documentary as a personal fitness consultant on the National Discovery Health Channel. Her work experience is comprised of working at NASA HQ/Goddard Fitness Centers, Bally Total Fitness, World Gym Health and Fitness Center and Bowie Athletic Fitness Club.

Troy Brown has been involved in the fitness industry for over 10 years. Brown has always been athletic in his earlier years, playing such sports as basketball, football, lacrosse and swimming. Brown studied kinesiology at Cheyney and Morgan State Universities and is certified by the National Council on Strength and Fitness, the American Council on Exercise, the Aerobics and Fitness Association of America for kickboxing and is a certified water safety instructor.

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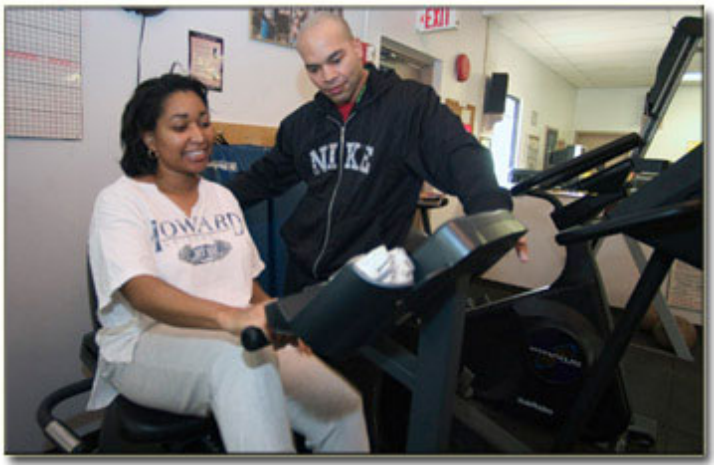
Fitness Center (cont'd)

Brown coached youth swimming teams at the YMCA and the Baltimore Recreation and Parks. In 2000, Brown began working as a personal trainer at Bally's Total Fitness while building his own business. In 2001, he was recognized as personal trainer of the month for five consecutive months at the Ellicott City, Md. Ballys club and was then promoted to operations manager at the Gaithersburg, Md. Ballys club. Brown later became fitness director for the Rockville and Greenbelt, Md. Bally's clubs and was recognized as manager of the month in March 2003.

Troy Brown explains the importance of incorporating strength and muscle training in a exercise routine. "Muscle is what fuels your body's metabolism. As you get older you lose muscle and burn fewer calories and begin to gain fat. Strength training, replaces that precious metabolism-revving muscle tissue. That, combined with your aerobic exercise and smart eating habits, will help you lose unhealthy fat. The important thing to remember is that muscle tissue is denser and heavier than fat tissue, which means it takes up less space (so you lose inches), but it weighs quite a bit more (so you don't lose as many pounds as you would expect)."

Photo by Chris Gunn/293



Brown looks on to ensure proper use of stationary bike.

Now, that you have received your assessment from the well trained staff you are ready to use the cardiovascular and strength training equipment.

The Fitness Center houses treadmills, stair steppers, upright and recumbent bicycles, rowers, cross-country skiers and a versa climber for aerobic conditioning. Also available are two multi-use Universal stations, for performing such exercises as shoulder and bench presses. In addition, there are numerous free weights, benches, stability balls and resistance tubing to meet your strength and muscle toning needs.

There is absolutely no reason to miss out on the abdominal classes that are offered at the Fitness Center five days a week. Grab a friend and join one of the classes on Monday, Wednesday and Friday from 11:45 a.m. to 12 noon or Tuesday and Thursday from 5:30 p.m. to 5:45 p.m.

The Fitness Center is open Monday through Friday from 6:00 a.m. to 7:30 p.m. and is closed on all Federal holidays. Let 2004 be the year you open the door to the Fitness Center and to a new you.

Human Capital Legislation

On November 24, 2003, the NASA Flexibility Act (S.610) passed in the Senate with unanimous consent. House passage of the bill could occur in the current session of Congress.

BACKGROUND: Over the last year, NASA has been working with Congress to obtain human capital incentives that will enable NASA to compete successfully with the private sector in attracting and retaining a world-class workforce, as well as authorities that will enable NASA to reshape and redeploy its workforce to support the Agency's mission more effectively. These provisions include increased maximum rate of pay for NASA Excepted (NEX) Employees, enhanced recruitment, relocation, and retention bonuses, expanded use of term appointments, pay authority for critical positions, extension of IPA assignment period, Distinguished Scholar hiring authority, enhanced travel benefits for new hires, enhanced annual leave benefits for new hires, expanded SES Limited hiring authority w/eligibility for bonuses, superior qualifications pay for current federal employees and a new Scholarship for Service Program.

For detailed information, please visit the HR Hot Topics link at http://ohr.gsfc.nasa.gov/hot/HCLegislation.htm.

Supervisor Announcements

Supervisors who have not registered for or attended the mandatory EO training, are requested to please sign up immediately at http://ohr.gsfc.nasa.gov/eotraining
In addition all supervisors must attend a 3 hour training on Alternative Dispute Resolution (ADR).

Sessions will be held on **February 11, 12** and **25**.
Register at http://ohr.gsfc.nasa.gov/adrtraining

Announcements

Volunteers Needed for Educational Programs/Fairs:

Calvert County Science Fair will be held at Calvert High School on **Saturday, February 28, 2004** from 8am-11am. The judging process has been an effective tool in increasing student understanding of science and subsequent achievement. If you are available contact Dr. Glen Moulton, Supervisor of Science at 1305 Dares Beach Road, Prince Frederick or call Mrs. Gloster at 410-535-7339.

Charles Carroll Science Fair will be held on **March 11 or March 12, 2004** at the Charles Carroll Middle School 6130 Lamont Drive, New Carrollton, MD 20784. You can contact Donna Polite at 301-918-8640. if you are available to participate and for further information.

Anne Arundel County Public Schools 2004 Regional Science and Engineering Fair will beheld **Saturday, March 13, 2004** from 1:30pm - 3:30pm at South River Senior High in Edgewater, MD. If interested, contact Rochelle Slutskin at 410-222-5451 (rslutskin@aacps.org) or Valerie Wesner at 410-222-5447 (vwesner@accps.org) by February 20, 2004 to be a judge in this years science fair or to gather further information.

4) Career Fair at Western School Technology and Environmental Science on Wednesday, **March 31, 2004** at 100 Kenwood Avenue, Baltimore, MD 21228 from 8 am - 1pm. For further information contact Lynn C. Bogash at 410-719-7024.

Hands On Science Program Needs Volunteers in Montgomery County

Be an Adult Leader teaching after school enrichment science classes in Chemistry and Earth Science starting in January! Gain experience helping children become aware of how the world works. Learn about the schools near your home as you lead 'Hands On Science' classes that take place in the schools. Meet other parents in your community and in the Hands On Science program. Learn safe, simple science activities appropriate to your child's age and be a part of a team while you help your school and community. If you have previous experience working with groups of children in any setting, a college degree in any field, or equivalent professional experience and are available after school for at least one hour a week for eight weeks, get involved in Hands on Science! Course curriculum and all supplies necessary to teach the class are provided. If this sounds like something you'd like become a part of contact Kimberly Jackson at 301-929-2330.

The ODIN's December Issue of Newsletter is Available

The **December** issue of the **ODIN Interchange Newsletter** is available on our Website at http://www.acs-odin.com/gsfc/newsletters/GSFCDec03.pdf. This issue features CNE services, USB portable storage device, Windows XP rollout, and more.

EEO Mandatory Training

Mandatory EEO Training continues through February. This training is a requirement for all supervisors and managers as required by the Class Action Settlement Agreement. We view this training as an opportunity that will provide a number of benefits. It will:

(1) examine the roles, responsibilities and expectations for Goddard's management personnel;

(2) analyze problems you face or could face as a supervisor and provide tools and techniques to help you recognize and resolve workplace issues before they grow into larger problems; and

(3) enable us to identify and provide better management practices and decision making in support of our efforts to strengthen our workforce and accomplish the NASA Mission.

This eight-hour activity will examine these areas by eliciting opinions and reactions of management officials in an environment that promotes discussion and understanding. The training has been designed to avoid mere lecture, but instead to involve thoughtful assessment and interaction about the Center's EEO program that is necessary for Goddard management to be fully engaged in providing equal opportunity for all employees.

We have developed an on-line registration process, available at http://ohr.gsfc.nasa.gov/EOTraining/. Please register now to confirm a date that is convenient for you. All sessions will be held during January and February 2004. Most sessions are one full day, but you will note that there are a couple sessions spread over 2 days (4 hours per day). In addition, there will be one session held at Wallops Flight Facility on **Feb. 6, 2004**.

If you have any questions, please feel free to contact Kathy Dinsmore from the Office of Leadership and Organization Development in Code 110 at Kathryn.L.Dinsmore@nasa.gov or Pam Guzzone, Special Assistant for Class Action Settlement Implementation in Code 110 at Pam.Guzzone@nasa.gov.

EVENTS

Director's Colloquia
Who: Ms. Loretta LaRoche is returning by popular demand! For over 30 years, Ms. LaRoche helps people deal with everyday stress with irreverent humor and an innate sense of the absurd. She helps us see how needlessly complex and stressful our lives can become and discover how thoughts, feelings, and behaviors can affect work performance, relationships, success, and self worth. An international consultant and lecturer in the field of stress management, Loretta is widely known as the star of six award-winning specials on PBS, including *The Joy of Stress* and *Relax! You Only Live Once*. She's been a guest-expert on CNN, ABC, CBS, and NBC.

When/Where: Wednesday, Feb 3 at 10 a.m. in the bldg 8 auditorium.

For more information, visit: http://centerdircolloq.gsfc.nasa.gov/

Systems Engineering Seminar
Who: Ken Dolan, Director Space Operations Institute and Pat Smit, Academic Dean of Capitol College will the Space Operations Institute created jointly by Capitol College and GSFC. In the fall of 2002, Capitol College received a 3-year grant from Goddard to establish a Space Operations Institute (SOI) to manage satellite operations and develop a program preparing students for careers in space mission operations. The SOI is responsible for the operation of 4-NASA satellites, training students in mission operations and related fields, and establishing a consortium of educational institutions, industrial partners, and government agencies. The SOI is focused on increasing the number of students going into engineering and science and funneling these students into positions in the space industry with government agencies and industrial partners in the area. All employees and visitors with a Goddard badge are welcome.

When/Where: Tuesday, Feb 3 at 1 p.m. in the bldg. 3 Goett auditorium

For more information call Tom Bagg, 301-867-0063, email at Thomas.C.Bagg.1@gsfc.nasa.gov, or visit: 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.asx

Property Management Branch - Auction Sale
What: Aucttion items include, Misc. Equipment; Testing and Electronic; and Mics. Office Furniture; Many other Misc. Items.

When/Where: Wednesday, Feb 4 in Bldg. 16W Excess Warehouse
Inspection: Feb 4 from 8 a.m. to 9:45 a.m.
Sale Time: 10 a.m.

Scientific Colloquium (All of the Scientific colloquiua will occur in the bldg 3, Goett Auditorium at 3:30 p.m.)
Who: Moustafa Chachine, Jet Propulsion Laboratory will discuss "AQUA, AIRS, and the Earth's Water Cycle." Chachine will expalin how the Aqua satellite will provide information with unprecedented accuracy on the water cycle. From this data, it will reveal if our planet's water cycle is intensifying and if so, where. We also want to be able to predict months in advance where and how much rain will fall and correlate how the observed changes in weather statistics relate to global climate variations. Finally, we hope to utilize this better understanding of our own planet's water cycle to interpret the role water plays elsewhere on other planets.
When/Where: Friday, Feb 6

Who: Former NASA Headquarters employee, Alan Bunner will discuss, "Reflections on the Anthropic Principle"; the idea that the Universe is to some degree designed around us as a huge selection effect. Bunner will offer a light-hearted opportunity to explore the arguments, the bits of evidence and the implications that we might live in a universe dominated by anthropic selection effects, a universe in which we have perhaps unwittingly survived a minefield of improbable escapes in order to be here today.
When/Where: Friday, Feb 13

Who: Stephen Suomi, National Institutes of Health will discuss "Nature vs. Nurture in Monkeys."
When/Where: Friday, Feb 20

Who: James Starrs, George Washington University will explore the "Science of Grave Site Identification."
When/Where: Friday, Feb 27

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 next lecture will be held from 11:30 a.m. - 12:30 p.m. in the Bldg. 8 Aud. Bring your lunch and a

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First Annual NASA Project Management Conference

Slots are filling up quickly for the First Annual NASA Project Management Conference, so you should act quickly if you want to take advantage of this opportunity.

The First Annual NASA Project Management Conference is a unique opportunity to:

- ❑Enhance understanding of the integration of the cost, schedule, risk, safety, and technical aspects of projects.
- ❑Introduce the latest project management tools and technique.
- ❑Provide a team building forum for learning.
- ❑Promote professionalism in project management.
- ❑Hear expert speakers from government and industry.
- ❑Address management implications of the Columbia Accident Investigation Board Report.

When/Where: March 30-31, 2004, University of Maryland's Inn and Conference Center, College Park, MD

Web Site for Detailed Information http://pmchallenge.gsfc.nasa.gov/index.htm

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