



National Aeronautics and  
Space Administration  
Goddard Space Flight Center

# GODDARD news

Greenbelt, Maryland/Wallops Island, Virginia

Aug. 1998 Vol. 2 No. 35

The Goddard News is published weekly by the Office of Public Affairs, Goddard Space Flight Center, Greenbelt, MD 20771

## Scientists Observe Tall Chimney Cloud in Hurricane Bonnie

By Allen Kenitzer, Office of Public Affairs

Hurricane Bonnie has given scientists recent images of a storm cloud towering like a skyscraper, 59,000 feet into the sky from the eye wall. These images were obtained by the world's first spaceborne rain radar aboard the joint NASA/Japanese Tropical Rainfall Measuring Mission (TRMM).

To realize the gigantic proportions of this storm cloud, one needs only to know the highest mountain in the world, Mt. Everest, is 29,000 feet tall and the average commercial jet flies



TRMM Image of Tall Storm Cloud in  
Hurricane Bonnie

at barely one-half the height of Bonnie's cloud tops.

"It looks like a skyscraper in the clouds," said **Dr. Christian Kummerow**, TRMM Project Scientist at Goddard. "This is the first time that TRMM's precipitation radar has seen a structure of this type in a hurricane approaching the U.S. East Coast."

According to **Dr. Bob Simpson**, former Director of the National Hurricane Center in Miami and the National Hurricane Research Project, "Clouds this tall are rarely observed in the core of Atlantic hurricanes. "This huge cloud probably happened because, at the time the data was collected, Bonnie was moving very slowly. The lack of movement kept funneling warm moist air into the upper atmosphere, thus raising the entire height of the tropopause, which is normally at around 45-52,000 feet. The tropopause marks the upper limits of Earth's densest layer of atmosphere.

"The vast amount of warm, moist air being raised high into the atmosphere, and the subsequent release of latent energy as this tropical

airmass condensed into rain drops, is thought to be the precursor of hurricane intensification, which was observed in Bonnie in the 24 to 48 hours after these data were collected," Simpson said.

Many scientists believe that towering cloud structures, such as the one observed by TRMM, are probably a precursor to hurricane intensification. This was the situation with Hurricane Bonnie, whose central pressure dropped from 977 millibars to 957 millibars in the subsequent 24 hours. Lower air pressure is associated with higher wind speeds and overall storm strengthening.

"TRMM has flown over 100 tropical cyclones since its launch in November of 1997," stated Kummerow. "This enormously enhances our database of cloud structures within tropical storms during their growth and decay phases. It also greatly improves the more restricted observations we have obtained from aircraft radar and allows for the systematic study of this hurricane behavior which appears to precede their intensification."

As the height of the hurricane season approaches, TRMM scientists are looking forward to the continuing analysis of Atlantic hurricanes.

The TRMM spacecraft fills an enormous void in the ability to measure world-wide precipitation because so little of the planet is covered by ground-based radars. Presently, only two percent of the area covered by TRMM is covered by ground-based radars or surface rain gauges. By studying rainfall regionally and globally, and the difference in ocean and land-based storms, TRMM is providing scientists the most detailed information to date on the processes of these powerful storms. This is leading to new insights on how they affect global climate patterns. More information about the TRMM project is available at:

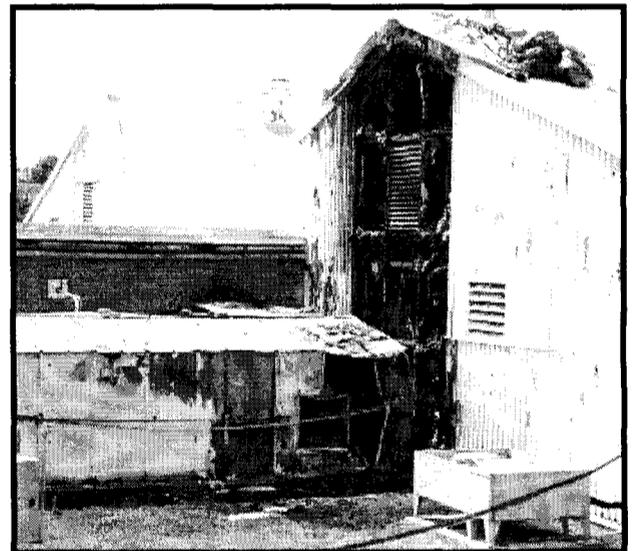
<http://trmm.gsfc.nasa.gov>

## Causes of Fire Under Investigation

By A. V. Diaz, Center Director

On August 20, 1998, we experienced a fire in a compressor located adjacent to Building 4. Fortunately there were no injuries; but the fire and resulting water used to extinguish the fire damaged the side of the building and several rooms supporting the Thermal Engineering Branch, Code 545. We are assessing cleanup and/or replacement costs for the specialized equipment housed in that area, and we expect to have the laboratory fully operational in the near future.

I have personally visited the site and it's clear to me that while the damage is serious, the results might have been worse were it not for the GSFC workforce action. I want to thank the Building 4 personnel and our Emergency Response Team for their unselfish and quick actions. I also want to thank all of our support personnel



Damage that resulted from a fire near building 4 is being assessed. Thankfully no one was injured.

in Code 220 and elsewhere for their efforts in assessing the damage and assisting in the cleanup of the facility.

In accordance with NASA Safety Policy Guidelines, I have appointed a Mishap Investigation Board to investigate this incident and report to me its findings within 60 days. **Mr. Stephen DePalo** of Code 730 chairs the Board, and in that capacity, Mr. DePalo has full authority to question witnesses, examine the accident site, and determine the probable causes, contributory causes, and lessons learned. The other members of the Board are **Mr. Raymond Pages** of Code 581 and **Mr. William Koch** of Code 224. **Ms. Gail Regan** from Code 205.2 will be the Safety Advisor to the Board and **Ms. A. Christie Grant** of Code 571 is the GESTA Observer on the Board.

I request that each of you give your full support to those involved in this investigation. The safety of our personnel as well as the safety to our facilities is my utmost concern, and through this investigation, we will find causes for this mishap and ensure that incidents such as this do not occur again in the future. I will keep you informed as the investigation proceeds.

## SFA Honorees To View Shuttle Launch

By Esther Johnson, Code 114

Fifteen Goddard employees were honored with NASA's Space Flight Awareness (SFA) award, the highest tribute paid by NASA to government and industry workers.



Back row (left to right) SFA awardees are Marco Toral (Code 567); Robert Courtney (ATSC); Yaromyr Zinkewych (ATSC); Albert Vernacchio (Code 730), William Williams (ATSC), Joel Smith (LMSMSS); Charlton Hostetler (CSC); and Kevin Carmack (OSC). Seated in front from left to right are Michael Hogan (ATSC); Craig Gray (ATSC); Jo-Ann Chernega (ATSC); Melissa Blizzard (ATSC); Ann Nicholson (CSC); Richard Strafella (Code 442); and Bruce Kamen (Code 730). The Goddard SFA's joined approximately 300 other honorees from NASA centers, contractor companies and the U.S. Air Force as they toured Kennedy Space Center, attended a reception in their honor and viewed the launch of STS-91 on June 2, 1998. The honorees were presented their awards by astronaut Lisa Nowak. The next SFA event will be the STS-93 launch scheduled for Jan. 21, 1999.

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## Magnetic "Islands" on the Moon

By William Steigerwald, Office of Public Affairs

Like small islands disrupting a great ocean current, magnetic regions on the moon are deflecting the solar wind, creating the smallest known magnetospheres in the solar system. A team of astronomers using NASA's Lunar Prospector spacecraft, led by Dr. Robert Lin of the University of California, Berkeley, Calif., announced the discovery in the September 4, 1998 edition of the journal Science.

Magnetospheres are regions of space occupied by a coherent magnetic field. They are frequently found around celestial objects with significant magnetism, especially planets. The magnetospheres found on the moon are unusual in that they only cover a local area, rather than surrounding the entire planet as the Earth's magnetosphere does. Two lunar magnetospheres have been found, each with an average diameter of only 300 miles.

The Sun continually emits a stream of electrically charged gas called the solar wind. Electrically charged subatomic particles in the solar wind interact with the Earth's magnetosphere, compressing it to within approximately 40 thousand miles of the Earth's surface in the direction of the Sun and stretching it to about four million miles in the direction opposite the Sun, forming a vast, teardrop shaped region around the Earth.

The lunar magnetospheres were detected as magnetic "turbulence" by lunar prospector as it orbited the moon about 63 miles above the surface. Instruments on board lunar prospector detected variations in magnetic field strength and direction as the spacecraft flew through shock waves formed in the solar wind as it is forced aside by the lunar magnetospheres.

For more information, visit the Goddard Homepage at <http://www.gsfc.nasa.gov> and choose **HOT TOPICS**.

## Education Events on Diversity Planned This Week

The following educational events are being sponsored to compliment Celebrate Goddard Day III on Thursday, Sept. 10. Don't miss the opportunity to experience creative learning about diversity and engage in discussions with fellow Goddardites!

### September 8, 1998, 11:30-1:00pm, B. 3 Auditorium

HBO Video: "Without Pity, A Film About Abilities" The special profiles Americans with a variety of disabilities who seek independence as well as access to society...without pity. The individuals featured represent a cross-section of disabled people struggling to gain control of their lives, and who face daunting obstacles every day. Session includes viewing video and discussion.

### September 9, 1998, 12:30-4:00pm, B. 8 Auditorium

Film: "The Color of Fear" Presented by: Lee Mun Wah. The Color of Fear is a film by award-winning director and therapist Lee Mun Wah. It depicts struggles of racism in the lives of eight North American men of Asian, European, Latino, and African descent. Lee Mun Wah said, "I decided to do this work to create an environment where people could come together and speak about their fears and prejudices of each other in a peaceful, face-to-face and intimate way." He continued, "My goal is to illustrate the type of dialog and relationships that are needed if we are to have a truly multicultural society based on equality and trust." Session includes film viewing and an exciting and intensely interactive program.

### September 10, 1998, 8:30-9:45am, B. 3 Auditorium

"The World of Diversity" Presented by: Robin Hailstorks Ph.D. and Paul Van Cleef. Did you ever wonder about what diversity really is and how it connects with the world around us? These two scholars will introduce a concept called, "Cultural Pluralism," and demonstrate its usefulness to promote just and meaningful connections between people of different colors, genders, and physical abilities. Session includes a lecture and interactive dialog between participants.

### September 10, 1998, 1:00-3:00pm, B. 8 Auditorium

"Diversity in the Work Place" Presented by: Edwin J. Nichols Ph.D. Nichols and Associates focus their efforts on a method of dealing with diversity that helps organizational administrators and employees to effectively cope with personal and group factors. These factors can produce an environment that is both productive and pluralistic. The speakers will demonstrate a philosophical paradigm that is necessary to wed administrative technologies to a diverse workforce, which may effect a learning environment that motivates persons to become organizational change agents. Session will include a lecture and an interactive question and answer period with Dr. Nichols.

These events are free of charge and everyone is welcome and encouraged to attend. Visit the Celebrate Goddard Day Homepage at <http://arioch.gsfc.nasa.gov/MCAT/CGD98.html> for more information.

## Celebrate NASA's 40th Anniversary at Community Day

Goddard and the Visitor Center are celebrating NASA's 40th Anniversary and you're invited! Join your friends at the Visitor Center on September 27 for a day of out-of-this-world fun. Activities will include tours, space suit demonstrations, children's programs/activities, presentations, model rocket launches and a variety of activities to commemorate NASA's 40th anniversary. For more information, go to the visitor center homepage at <http://pao.gsfc.nasa.gov/gsfc/vc/vc.htm> or call (301) 286-8103.

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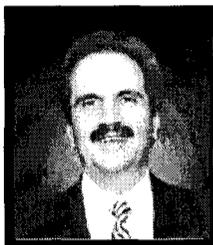
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## Goddard Enhances Its Approach to ISO 9001

By Al Diaz, Center Director



Director, Al Diaz

In July, we invited senior personnel from other NASA centers to review our ISO 9001 certification effort in light of their own experiences. They not only assessed our progress toward certification but how we are approaching the effort. As a result of this external review, I have taken the following actions to ensure that we make the commitments, decisions, and actions necessary to

meet our April 1999 certification goal:

- Brian Keegan, Jim Moore and Charlie Vanek will oversee the Center's development and implementation of a Quality Management System that complies with the ISO 9001 standard. As our Management Representatives, they will make the decisions, track our progress, and define any corrective actions necessary to ensure our success.

- I have asked all the Directors Of to review their designation of a representative to the Quality Management System Council to ensure that these people are charged and empowered to represent their organizations to our Center effort and to direct formulation of the approach within their organization.

- To ensure that we are aware of what is happening in our certification effort, I have set aside a block of time each Monday for a report from the Management Representatives. This time will be used to present information on progress, resolution of specific issues and required actions.

As we move closer to the important milestones in our certification effort, I want each of us to recognize the importance of having an effective Quality Management System at the Center. I want to emphasize that the April date of 1999 is only one of our goals in obtaining ISO 9001 certification. I also want each of us to see that the Quality Management System is a value-added approach to our work and that it is a baseline and an effective approach to continuous improvement of our processes. This effort is not simply to meet a requirement for us to have an ISO 9001 certificate but for the continuing health and vibrancy of the Center as an organization and a place to work.

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## NASA, NOAA & USGS Measuring Hurricane Bonnie's Impact to Beaches

By Betty Flowers, Office of Public Affairs

Wallops Flight Facility, the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey are currently assisting state officials in determining changes to North Carolina beaches following Hurricane Bonnie.

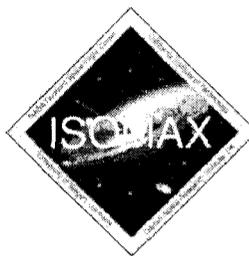
In early September, a NOAA Twin Otter aircraft equipped with a NASA laser topographic mapping instrument and Global Positioning System receiver flew along the shoreline affected by Hurricane Bonnie taking measurements to develop detailed maps of the beach. This data will then be compared to baseline data collected during a similar 1997 mission.

"This method should prove to be the fastest and most economical way to determine shoreline change after a storm and on an annual basis," said NASA project scientist, **Bill Krabill**. Laser beach mapping also is being used to study the coastline of the Delmarva Peninsula and along the California, Oregon and Washington shorelines due to changes caused by El Niño.

For more information, visit the Goddard homepage at <http://www.gsfc.nasa.gov> and choose **Hot Topics**.

## ISOMAX: Discovering the Age of the Universe

By Andy Dantzler, Lab. for High Energy Astrophysics



The ISOMAX, "ISotope MAGnetic eXperiment" recently had its first successful launch. ISOMAX, a balloon-borne magnetic spectrometer, designed to measure high energy isotopic spectra of the light elements in the cosmic radiation, launched on August 4 from Lynn Lake, Manitoba, Canada. The payload flew for

33 hours and landed near Peace River in Alberta Canada.

The purpose of this first ISOMAX flight is to measure the rare Beryllium isotope. This radioactive isotope has a half life of 1.6 million years. By measuring both the stable isotope and the radioactive isotope, scientists will learn about the propagation lifetime of the cosmic radiation and the matter density in the galaxy. Theories of cosmic ray propagation are sensitive to such isotopic abundance measurements.

Dr. Robert Streitmatter, the ISOMAX principal investigator stated that ISOMAX Project staff was very pleased with the success of this first launch. "We are looking forward to analyzing the data, which will tell us about the age and galactic travels of the cosmic rays."

ISOMAX is a collaboration between Goddard's Laboratory for High Energy Astrophysics, Caltech Space Radiation Laboratory, and the University of Siegen, Germany, and is a continuation of the IMAX (Isotope Matter-Antimatter eXperiment) collaboration. The ISOMAX instrument weighs approximately 2 tons and stands roughly 2.5 meters high. In the current configuration, it carries 390 liters of liquid Helium, which keeps the magnet superconducting for up to 4 days. A total of four ISOMAX flights are planned for the next few years.

## Help Celebrate NASA's 40th Anniversary Be a Volunteer at Community Day

Sunday September 27th is Goddard Community Day and the Visitor Center is recruiting you to help out at this exciting event. Volunteers are needed as the following:

- Bus Tour Escorts
- Children's Activities Assistants
- Greeters
- "Ask Me" Hospitality Persons (NASA Subject Area Information and Resources)
- Literature Distribution Assistants
- Welcome Table Assistants
- Activity Sign-up Assistants
- Communications Assistants

If you are interested in volunteering at Community Day, please contact the Visitor Center Operations Desk at (301) 286-9041. Volunteers must attend at least one of the training sessions listed below:

**General volunteering/customer service for all volunteers:**  
September 19, 1:00-5:00 p.m.

**Space Science & Technology Project Area Greeters & Hospitality:** September 25, 2:00 - 5:00 p.m.

**Bus Tour Escorts/Children's Activities/Tables:**  
September 26, 2:00 - 5:00 p.m.

*All training sessions are to be held at the Visitor Center.*

## Bowie State Students "In Control"

By Greg Frazier, Mechanical Engineering Branch

The Bowie State University Satellite Operations and Control Center (BSOCC) is a joint venture between Bowie State University and Goddard Space Flight Center. This unique model program, supported by AlliedSignal Technical Services Corporation, creates an orbiting satellite operation and control center on a university campus staffed primarily by undergraduate students.

The BSOCC provides the requisite operational support of the SAMPEX spacecraft through a combination of professional and student controllers. It also functions as a live laboratory where the students take a real role in the daily communication and commanding of an active satellite collecting science data from the four instruments on board. Students participate in the evaluation of the housekeeping data that is required to ensure the health and safety of the spacecraft proper and the science payload. Indeed, the performance of SAMPEX has been so successful that its useful mission lifetime has been extended. It has been included in the Solar Max Campaign to continue to provide its scientific data through the next period of maximum solar activity in the years 2001-2003.

The current program provides training of six students at a time through two levels of spacecraft controllers, Command Controller and Spacecraft Analyst. They spend 15 hours per week training in the BSOCC, while pursuing a full academic workload through the academic year. As of this date and within a period of 18 months, six students have been certified as Command Controllers and three have been fully certified as Spacecraft Analysts.

Plans are underway to expand the program by acquiring new missions, being able to train more students simultaneously, offering a curriculum concentration as a part of a baccalaureate degree program, and being able to serve as a training and educational facility in space technology to students at other institutions.

Through BSOCC, the University is able to develop a number of outreach activities to raise awareness in its community and the public sector on various aspects of aeronautics and space technology. At the same time, while ensuring the health and safety of the spacecraft, the main focus of the BSOCC partnership will always be on providing training and enrichment activities to students and to offer them opportunities to study and pursue careers in new science and technology fields

## New TOMS Instruments Measure Ozone and Aerosols

By Lynn Chandler, Office of Public Affairs

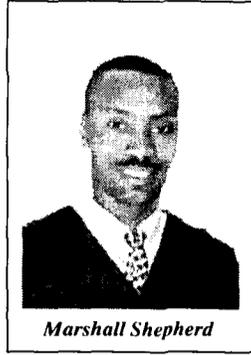
In 1996, NASA launched two Total Ozone Mapping Spectrometer (TOMS) instruments. The Earth Probe (EP) satellite launched in July 1996 carrying one TOMS instrument. A second TOMS instrument flew on the Japanese Advanced Environmental Orbiting Satellite (ADEOS), known as "Midori," which launched in August 1996 from Japan. These instruments continue a 16 year record of TOMS measurements.

The EP satellite was launched into an orbit chosen to complement the 800 km altitude of the ADEOS spacecraft by providing improved horizontal resolution for viewing aerosol sources. Unfortunately, the ADEOS spacecraft failed in June 1997. In order to restore the global coverage lost with the ADEOS failure, the EP spacecraft was boosted to a higher orbit.

Though similar to previous instruments, the new TOMS instruments are designed to detect a 1% per decade trend in total ozone by using in-flight instrument calibration techniques. They provide better information about ozone distribution, sulfur dioxide concentrations following large volcanic eruptions, the distributions of ultraviolet-absorbing aerosols in the troposphere, and the flux of ultraviolet radiation reaching the Earth's surface. The instruments have gathered important data on ozone depletion for two years. More information on TOMS can be found at: <http://toms.gsfc.nasa.gov>

## TRMM Education Outreach Scientist Returns to the Classroom

By Cynthia O'Carroll, Office of Public Affairs



Marshall Shepherd

As students go back to school this fall, Goddard Research Meteorologist Marshall Shepherd finds himself returning to the classroom as well. As the Tropical Rainfall Measuring Mission (TRMM) Education Outreach Scientist, he has been invited to join the JASON X research program as a Host Researcher as they embark on a thrilling journey to study rainforests.

"I am excited to be a part of JASON's rainforest mission," stated Shepherd. "One of the science objectives of TRMM is to understand how interactions between the sea, air, and land masses produce changes in global rainfall and climate. The rainforests owe their existence to tropical rain and also affect the global climate system, so TRMM and the JASON rainforest expedition is a perfect relationship."

The JASON project is the premier interactive distance learning program of the world, touching millions of seventh and eighth-grade students and teachers each year. Dr. Robert Ballard founded the JASON Project in 1989 after receiving thousands of letters from school children wanting know how he discovered the RMS Titanic. The JASON Project is now in its tenth year and is fulfilling Ballard's goal of exciting and engaging students in science and technology while motivating and providing professional development for their teachers.

Communications centers called Primary Interactive Network Sites (PINS), and web sites that showcase the latest web technology, are the primary methods used to reach JASON students. Students are empowered with advanced technology allowing them to research, collaborate, and communicate with other students around the world in their quest for knowledge, while cultivating a desire for life-long learning. JASON programs facilitate students' creative and analytical exploration of our planet through online systems, innovative curricula, classroom programming, and live, two-week broadcasts.

This year's JASON program will explore the tropical, temperate and fossil rainforests, using a research team comprised of scientists, students, teachers, researchers and technology experts. They will examine global climate change on both a temporal and spatial scale. Since the team will compare rainforests through the lens of "change," the work Shepherd and his colleagues are doing with TRMM to improve weather and global climate change models provides an important link within JASON's comparative rainforest program.

In his role as a Host Researcher, Shepherd provided an interview for the Expedition Prolog, a video that is included with materials sent out to educators participating in the program. Shepherd has also assisted in the development of a curriculum focused on how weather and climate models work and how TRMM data may improve them.

JASON students will also learn how to collect rain gauge data in the rainforest. Shepherd will provide educational insight as to how TRMM relies on ground-based measurements to validate its space-based measurements. An upcoming internet "Ask-A-Host Researcher" session will enable Shepherd to respond to questions submitted by JASON students concerning the rainforest weather and climate.

More information about the JASON and TRMM Projects can be found at <http://www.jason.org> and <http://trmm.gsfc.nasa.gov>

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## NASA & ESA Controllers Successfully Regain Control of SOHO

By William Steigerwald, Office of Public Affairs

Spacecraft controllers successfully regained control of the Solar and Heliospheric Observatory (SOHO) spacecraft on Wednesday, September 16, after sending a series of commands directing the spacecraft to fire thrusters and turn its face and solar power panels fully towards the Sun. Contact with SOHO, which had provided scientists with two years of spectacular images of the sun, was lost on June 24.

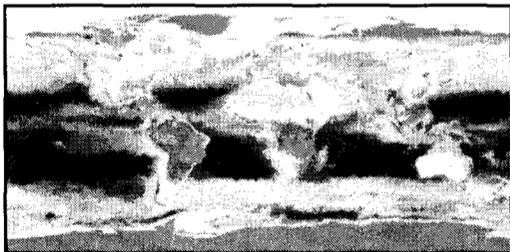
"This is the best news we've had from SOHO in a long time," said Dr. George Withbroe, Director of the Sun-Earth Connection science theme at NASA Headquarters, Washington, DC. "Despite the gloomy early days after the loss, we always stayed hopeful that the resourceful people on the team could save the day. We're not there yet -- we still have to see if the scientific instruments survived. But this gives us reason to hope."

"Now we start a comprehensive check of all the spacecraft's systems and scientific instruments," said Dr. Bernhard Fleck, ESA's project scientist for SOHO. "We shall take our time and go step by step, in consultation with the 12 scientific teams in Europe and the United States who provided the instruments. In some cases the instruments have been through an ordeal of heat or cold, with temperatures approaching plus or minus 100 degrees Celsius (212 degrees Fahrenheit). But I'm cautiously optimistic that SOHO can win back much of its scientific capacity for observing the Sun."

SOHO operates at a special vantage point 1.5 million kilometers (about one million miles) out in space, on the sunward side of the Earth. The spacecraft was built in Europe and it carries both American and European instruments with Goddard having responsibility for operations. More details about SOHO, can be found on the Web at: <http://sohowww.estec.esa.nl> and <http://sohowww.nascom.nasa.gov>

## SeaWiFS: A Year of Remarkable Observations

By Lynn Chandler, Office of Public Affairs



This image highlights the life and death of the Earth's plant life which seem to pulse with each change in the seasons.

For the first time in history, NASA is releasing dramatic images documenting the Earth's changing biology, both on land and in the oceans, as observed from space for one continuous year. This is possible because the changing seasons of life, the "pulse of the planet," are being monitored by the Sea-viewing Wide Field-of-view Sensor (SeaWiFS).

"Although originally designed to observe the oceans, SeaWiFS provides a unique capability to study the land and atmospheric processes as well," said **Dr. Gene Feldman**, oceanographer, who heads SeaWiFS' data processing team at Goddard. "As a result, we can monitor changes in the global biosphere with a single sensor over land and ocean." Among the highlights of SeaWiFS' first continuous year of observation were new insights into the impact of the El Niño climate anomaly on ocean life, fires in Florida, Mexico, Canada, Indonesia and Russia; floods in China; dust storms in the Sahara and Gobi Deserts; and the progress of hurricanes, such as Bonnie and Danielle.

Remarkable images from this mission are available on the World Wide Web at URL: <http://seawifs.gsfc.nasa.gov/SEAWIFS.html>

## Ribbon Cutting At Wallops



Above, Administrator Goldin joins Virginia Governor Jim Gilmore and other dignitaries at Wallops at the Sept. 14 ribbon cutting for the Virginia Space Flight Center spaceport launch pad. The launch pad, located on the south end of Wallops Island, will support a variety of expendable launch vehicles. The pad is expected to be completed in October 1998 and the service tower by the year 2000.



## Project Goddard Considers Adoption of Electronic Meeting System Technology

By Gail Williams, Office of CFO

Goddard has a meeting culture. We all spend a significant amount of our work time in meetings. I have often heard my co-workers express an interest in improving their meeting management so they can spend less time in meetings, yet be more effective when they do have a meeting. With that goal in mind, several people at the Center were recently introduced to Electronic Meeting System (EMS) technology. EMS is a special purpose set of collaborative groupware tools designed to improve productivity and creativity in meetings and other group activities. Using networked computer workstations, EMS participants engage in concurrent electronic dialogues with each other, but with purpose and under the guidance of a skilled facilitator. EMS is designed to assure anonymity, offering everyone an equal opportunity to participate, while generating, organizing, prioritizing and documenting ideas quickly and with minimal effort.

EMS includes a variety of tools that can be used with other application software, like Microsoft Office, such as electronic brainstorming, categorizer, vote, topic commenter, group outliner, shared whiteboard, record keeping, and report writer tools. EMS has been used within NASA for brainstorming, task force deliberations, proposal development, conflict resolution, retreats, strategic planning workshops, and requirements definition. In fact, EMS was successfully used at several NASA project managers seminars and for the Agency-wide review of the recently updated NPG 7120.5A titled NASA Program/Project Management Processes and Requirements.

Marshall Space Flight Center holds an Agency-wide license for a Windows version of EMS, a product of Ventana. Release of a web-based version of EMS is planned for the near future. Several NASA installations have established a permanent EMS capability. The NASA Headquarters Office of Human Resources and Education, Code F, plans to implement a dedicated EMS capability at the Wallops Flight Facility's Education Center next spring for use by participants in Agency-wide education programs. When the education programs are not in session, other groups, such as intact work teams, may also use EMS at the Education Center.

Two intact Goddard work groups recently learned about EMS and its capabilities by using the groupware to resolve issues of concern to their teams. Additionally, two hands-on demonstrations were attended by other Goddard employees. Feedback solicited from these participants will be evaluated and used to determine if Goddard should establish a permanent MS capability. Dot Zukor, leader of Project Goddard's Processes Activity Track, is the focal point for this assessment.

## Professional Development Program Participants Honored

Goddard employees, *J.C. Duh* and *John Lynch* recently graduated from NASA's Professional Development Program (PDP). The PDP program provides competitively selected NASA professional personnel with developmental work assignments, usually lasting 4 to 12 months, away from their home installation. The goal of the program is to provide future NASA leaders with a broader perspective of the Agency and the impact of NASA programs upon developing technology.



Left to Right: Admin. Daniel Goldin, J. C. Duh and John Lynch

This year's PDP class included 21 participants from 8 centers. In his remarks to the graduating class, Goldin urged the graduates to become effective leaders through advanced planning which accommodates professional and personal responsibilities.

J. C. Duh was the graduating class's spokesperson. He challenged his classmates and Administrator Goldin "to continue to inspire future generations with bold visions, daring to take on questions that have occupied so many intellectual minds since the dawning of civilization."

## Goddard to Celebrate Agency's 40th Anniversary

Community Day is Sunday, September 27. In addition to all the exciting events and activities that go hand in hand with this bi-annual event, Goddard will be celebrating NASA's 40th anniversary with a multitude of commemorative attractions. Join your co-workers and friends in celebrating 40 years of NASA history. There will be Goddard Jeopardy, NASA Trivia, a "NASA Through the Years" video, as well as a fantastic display calculating NASA's age as it would be on other planets.

There will be special attractions including musical entertainment, a showcase of NASA and Goddard projects, Prince George's County's inflatable Starlab, control line model aircraft demonstrations and more. Kids will find their own niche at this event with the "Puppets in Space" puppet show, space bingo, and balloon rocket races. Special presentations on Earth science, space science and technology are scheduled and there will be 40th anniversary bookmark, poster and lithograph giveaways to celebrate the Agency's anniversary.

Come to the Visitor Center on September 27 and celebrate 40 years of "Pioneering the Future." For a full schedule of events, visit the visitor center's homepage at <http://pao.gsfc.nasa.gov/vc/vc.htm>

### Editor's Note:

Last week's article titled "Bowie State Students in Control" was submitted by Greg Frazier and written by John Behuncik and Nagi Wakim.

## Goddard Showed its True Colors at Celebrate Goddard Day

If you weren't able to make it to the Celebrate Goddard Day festivities, you missed a spectacular event. Chartered to celebrate Goddard's diverse workforce, this special day boasted displays, booths, food, and entertainment of all kinds. One look at the huge Goddard crowd drawn from their busy offices, and it was obvious this was a memorable day for everyone.

The sun was bright and a gentle breeze blew as visitors strolled the mall grounds, perusing the various displays. Many organizations had giveaways and raffles and there were also booths that sold merchandise from different cultures. Many Goddard employees gave folks a glimpse of their talents, including Wendy McGill, of Eurest Dining, who sang the National Anthem. When lunchtime came, it was pleasing to see all the people eagerly sampling cuisine different from their own cultures.

Center Director Al Diaz gave a moving speech at the beginning of the day, saying, "The real secret to Goddard's success in the past and the key to its future success lies in its workforce. We are a talented and highly motivated, diverse group of individuals who operate in teams to make dreams become reality. Celebrate Goddard Day provides an occasion to celebrate the achievements of that workforce and to reflect upon the value of diversity in those achievements."

### Caption for Photos:

**TOP:** "People Fuel the Future." This poster captured the positive spirit of the celebration;

**MIDDLE:** Jackie Mims of Code 586, dazzles all with her lovely voice;

**BOTTOM:** Children of Goddard employees brighten the day with songs.



## Logistics Awareness Day is Coming!

Join the Logistics Management Division on Sept. 29 as they host the first Goddard Logistics Awareness Day in the bldg. 8 auditorium, from 9:00 a.m. to 2:00 p.m. The day will be filled with lots of great vendor giveaways, including office supplies, and furniture. There will also be an auction of "must-Have" ADP equipment and accessories. Mark your calendars for this event!

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National Aeronautics and  
Space Administration  
Goddard Space Flight Center

# GODDARD news

Greenbelt, Maryland/Wallops Island, Virginia

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## MAP Seen as Top Priority for NASA

By Lynn A. Jenner, Office of Public Affairs

In early 1996, a 50-member panel convened by the National Research Council (NRC) urged NASA to refine the map of the microwave background radiation initially revealed by the Cosmic Background Explorer (COBE) in 1992. The August of 2000 launch of the Microwave Anisotropy Probe (MAP) will do just that. MAP is a follow-on project to COBE and has been eagerly awaited since its selection in 1996. Goddard, with Chuck Bennet as the Principal Investigator, won the right to produce MAP in conjunction with Princeton University over at least 60 other competitors. MAP's mission is to continue to refine the work done by COBE by producing an ever more detailed map of the difference in sky temperatures by measuring fluctuations as small as .000001 degrees across the expanse of the sky. The result hopefully answers some questions surrounding the Big Bang theory, heralded as one of the great scientific achievements of the twentieth century.

Once scientists concluded the Big Bang theory was correct, other questions arose due to the fact that the map created by COBE wasn't detailed enough. Some scientists theorized that the Big Bang resulted in a universe that expanded rapidly at first and then slowed. Others suggested the opposite. Some theorized that the universe has been expanding at a constant rate since the initial Big Bang. Then there is the problem of the rubber band effect. Will the universe expand indefinitely or will it ultimately get stretched to its limits and "rubber band" back into a small extraordinarily dense mass? And although you might not have to enter the date the universe will stop expanding into your daytimer, it is one of the biggest questions in cosmology today—one that scientists want answered as echoed by the NRC's report.

The "New Science Strategy for Space Astronomy and Astrophysics" report published by the Space Studies Board of the NRC in 1997, clearly states that the number one priority should be the "determination of the geometry and content of the universe by measurement of the fine-scale anisotropy [temperature measurement] of the cosmic background radiation." In one word, MAP.

Albert Einstein proposed the theory of relativity in 1916. Arno Penzias and Robert Wilson of the Bell Telephone Laboratories won the Nobel Prize for their 1965 discovery of the cosmic microwave background. COBE made front page headlines around the world for its discovery of its tiny temperature variations in 1992. MAP will map the variations in detail in the year 2000. The Big Bang Theory, now hazy in part, will be forever defined in the year 2001.

Look for articles on MAP and its technologies in future issues and visit the MAP website at <http://map.gsfc.nasa.gov>

## Goddard's Role in STS-95

Goddard will play a major role in the historic return to flight of astronaut and Ohio Senator John Glenn. Goddard will be involved in the deployment and retrieval of the Spartan free-flyer payload, and operations with the HST Orbiting Systems Test (HOST), the International Extreme Ultraviolet Hitchhiker (IEH), the Space Experiment Module (SEM) and Get Away Special (GAS) payloads being carried in the payload bay.

To learn more about Goddard's unique role, go to url:  
<http://pao.gsfc.nasa.gov/GSFC/Missions/STS95/sts95.htm>

## First UNEX Missions Selected

By Keith Koehler, Office of Public Affairs

NASA has recently selected small spacecraft to study the vast region between our Sun and nearby stars and the interaction of Earth's radiation belts with the solar wind. These have been selected as the first missions in NASA's University-class Explorers (UNEX) program.

The UNEX Program is designed to provide frequent flight opportunities for highly focused and relatively inexpensive science missions whose total cost to NASA is limited to \$13 million. The program is managed by Goddard, for the Office of Space Science.

The Cosmic Hot Interstellar Plasma Spectrometer (CHIPS) spacecraft will use an extreme ultraviolet spectrograph during its one-year mission to study the "Local Bubble," a tenuous cloud of hot gas surrounding our Solar System that extends about 300 light-years from the Sun.

The second mission, the Inner Magnetosphere Explorer (IMEX), will study the response of Earth's Van Allen radiation belts to variations in the solar wind.

"This selection is another step in NASA's efforts to provide increased autonomy and responsibility to the university community in the pursuit of new scientific knowledge," said Dr. Wesley T. Huntress Jr., Associate Administrator for NASA's Office of Space Science.

## Goddard's Orbital Launch Services Project Bids Farewell

By Susan Hendrix, Office of Public Affairs

Goddard is bidding a fond farewell to the Orbital Launch Services (OLS) Project, a project that has been around for forty years. Effective Oct. 1, 1998, the OLS Project will transfer much of its responsibility to Kennedy Space Center (KSC), Fla. Some project personnel will remain at Goddard to provide expertise and assistance to KSC during the project's transition period, which is expected to last approximately 12 to 18 months.

The OLS Project's mission has evolved from its early days of procuring expendable launch vehicles to procuring high-quality and reliable small and medium class expendable launch services. Goddard's OLS Project successfully managed diversified launch services under five separate Expendable Launch Vehicle (ELV) service contracts: Medium Expendable Launch Vehicle Services (MELVS); Medium-Lite Expendable Launch Vehicles Services (MED-LITE); Small Expendable Launch Vehicle Services (SELVS); Ultra-Lite Expendable Launch Vehicle Services (UELVS); and a Memorandum of Agreement with the U.S. Air Force for the TITAN-II Space Launch Vehicle (SLV).

According to Bruce Clark, OLS project manager, they will be transferring the MELVS, MED-LITE and UELVS contracts to KSC on Oct. 1. Management of the last two launches (WIRE and SWAS) under the SELVS contract, one launch (Deep Space I) under the MELVS contract and three launches (QuickSCAT, NOAA-L and NOAA-M) under the TITAN-II SLV Memorandum of Agreement will remain at Goddard.

"The Center should be very proud of the accomplishments made by both Delta and OLS project personnel over the past five decades. We have accomplished everything we set out to do and did it well," Clark said.

For more information, visit the Goddard Homepage at <http://www.gsfc.nasa.gov> and choose Hot Topics.

## Meet the People that Make It Happen

By Christina Mulhern, Summer Intern, Susquehanna College

Goddard has established an outstanding tradition of excellence in science and technology. To sustain and build on the Goddard tradition of excellence, the continued creativity, dedication and integrity of every member of the Goddard Team is required. This is the first in an occasional series of articles about people that "Make it Happen."

Dr. Peter Shirron grew up in Riverdale, Md., near Goddard, but he never would have guessed that someday he'd be working here.



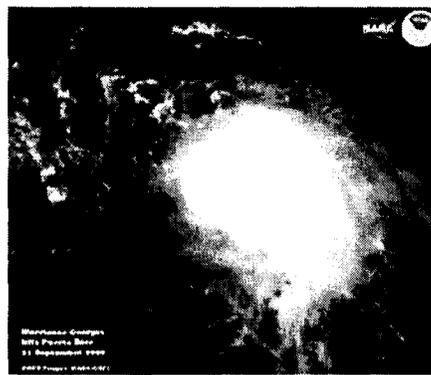
**Dr. Peter Shirron, Aerospace Engineer in the Cryogenics and Fluid Branch**

"I was always aware of Goddard although I had no idea what really went on there," said Shirron. In 1980, Shirron enrolled in Catholic University in Washington, D.C., as an undergraduate physics major. He was very busy during his time at Catholic University. Aside from getting his bachelor's and master's degrees in only four years, Shirron also married Karen M. Tintle.

He kept busy when he went on to study for five years at the University of Illinois at Urbana.

At Urbana, Shirron specialized in low-temperature physics which gave him the background for the work he does today as an aerospace engineer in Goddard's Cryogenics and Fluids Branch. To learn more about Dr. Shirron and other fascinating people at Goddard check out the webpage "Meet the People Who Make It Happen" at <http://pao.gsfc.nasa.gov/gsfsc/people/meet.htm>

## What's Up With GOES?



**Hurricane Georges hits Puerto Rico, 21 September 1998, Photo courtesy of GOES Project NASA/GSFC**

GOES takes the pictures of clouds used by the National Weather Service to watch for severe storms. The most important job GOES has is to watch hurricanes developing in the ocean. The GOES pictures are widely used by TV weather broadcasters.

GOES is currently busy tracking Hurricane Georges. This tropical storm is named for French "Georges" and

pronounced ZHORZH. Under international agreement, tropical storm names reflect the national cultures bordering the western Atlantic. Tropical Storm Georges was named on Sept. 16, 1998.

GOES is an acronym that stands for "Geostationary Operational Environmental Satellite." "Geostationary" means "it doesn't move with respect to the earth." The geostationary orbit is the key feature of the GOES satellite: it can watch the western hemisphere for unpredictable weather. "Operational" distinguishes it from "experimental" satellites. GOES works around the clock so forecasters do not miss seeing storms developing. "Environmental" is in the acronym because GOES also measures atmospheric temperature, moisture, and winds. It even echoes back data from ocean buoys and radio collars on roving bears. "Satellite" at the end of the GOES acronym needs no explanation.

Visit the GOES homepage at url:

<http://rsd.gsfc.nasa.gov/goesb/chesters/web/goesproject.html>



### The Smiles say it all for the SOHO Recovery Team

**Top row:** Bernard Mena, MMS-Fr; Steve Hall, ATSC; Nick Piston, ATSC; Ed Nace, ATSC; Steve Andrews, MMS-GB; Ingo Kalsch, ESA; Guido Coupe, ESA; Frederick Teston, ESA; Mark Underdown, GSFC; Bernhard Fleck, ESA; Ared Schnorhk, ESA; Luis Sanchez, ESA; Jean-Philippe Olive, MMS-Fr; Kelly Miller, ATSC; Kimberly Lare, ATSC; Horst Fiebrich, ESA (top); Robert Cantrell, ATSC (middle); Francis Vandembussche, ESA; Francis Dufreschou, MMS-Fr; Carrie White, ATSC; John Credland, ESA; Ton vanoverbeek, ESA; Bill Worrall, GSFC; Helmut Sweitzer, ESA; Alan Reth, GSFC. **Bottom row:** Philippe Temporelli, MMS-Fr; Peter Vanderham, CSC; Michel Janvier, MMS-Fr; Harold Benefield, ATSC; Herman Williams, GSFC; Philippe Ayache, MMS-Fr; Ben Berner, ATSC; John Roe, CSC; Leigh Gatto, GSFC. [ESA-European Space Agency; MMS-Matra Marconi Space, Fr (France); GB (Great Britain); ATSC-Allied Signal Technical Services Co.; CSC-Computer Sciences Corp.]

Goddard and ESA Engineers have SOHO pointing at the sun again, and SOHO is power positive — Congrats SOHO Team!

Spacecraft controllers successfully regained control of the Solar and Heliospheric Observatory (SOHO) spacecraft Sept. 16 after sending a series of commands directing the spacecraft to fire thrusters and turn its face and solar power panels fully towards the Sun.

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## Lockheed Martin Space Operations Co. Awarded Contract to Manage NASA's Space Operations

NASA has awarded a \$3.44 billion contract to Lockheed Martin Space Operations Co., Houston, TX, to manage the Agency's space operations activities.

The Consolidated Space Operations contractor will manage all of NASA's data collection, telemetry and communication operations supporting its Earth-orbiting satellites, planetary exploration, and human space flight activities. The contract shifts management responsibility from five NASA centers to a single entity, which is an unprecedented step for an operation of this magnitude. This effort is being closely observed by other government agencies that also are reviewing consolidating their operations.

"Since becoming NASA Administrator I have committed myself to reviewing the way NASA does business and challenging the NASA team to look at ways to streamline operations and make them more efficient. This contract is projected to save the American taxpayers approximately \$1.4 billion over 10 years," said Daniel S. Goldin.

The Lockheed Martin Space Operations Co. team includes Allied Technical Services Corp. with Computer Sciences Co., Booz-Allen & Hamilton, Inc., GTE Government Systems, GHG Corp., Cimarron, and more than 40 other subcontractors.

For further details visit Goddard Homepage at url: <http://www.gsfc.nasa.gov>

## Goddard's Mission to the Iturralde Structure

By Tom Albert, Educational Programs Office

Learn more about NASA Goddard's Mission to the Iturralde Structure. The adventure begins October 14 through 23. Teachers and students will have a unique educational opportunity to participate in the mission to investigate a possible impact crater. This "structure" as it is defined now lies in the northern regions of the country in an area previously unexplored. Scientists, **Compton Tucker** and **Peter Wasilewski**, including a communication specialist and a science teacher makeup the Goddard team.

Together with scientists from the Bolivian University, the team will hike into the site to gather data of the structure for 7 to 10 days in order to determine if it is indeed an impact crater. Interested schools will be able to see live visual and audio feed from the site and participate in daily education interaction with the team from October 19 thru 22 through the NASA Mission to Iturralde homepage at <http://pao.gsfc.nasa.gov/gsf/bolivia/bolivia.htm>

## Cal Ripkin-like Accomplishment for IMP-8

by Joe King, Project Scientist for IMP

The Goddard built and operated Interplanetary Monitoring Platform (IMP) 8 spacecraft was launched 25 years ago and continues to provide important in situ cosmic ray, energetic particle, plasma, and magnetic field data.

Over the past 25 years, more than one thousand scientific papers have been published in the refereed scientific literature in which IMP 8 data were the sole data used or were important adjuncts to data from other missions also used in those papers.

A great many Goddard luminaries were associated with this IMP/AIMP series over the years, **Frank McDonald**, **Norman Ness** (pre-launch and launch-phase Project Scientist for IMP 8), and **Paul Butler** to name just a few of many.

It has been satisfying to exploit new technologies to expedite, and make less costly, IMP data flow. However, IMP has had no choice but continue to use the now largely obsolete VHF telemetry frequencies. (IMP is not Shuttle-accessible, as is the Hubble Space Telescope, whereby onboard technologies can be swapped out by new ones.) The GSFC Space Flight Tracking & Data Network (STDN) was largely disestablished many years ago. One of the key challenges to the IMP Project over the past 15 years has been to define and evolve an ad hoc IMP 8 VHF telemetry capture network.

Anchoring this network over the years has been the GSFC facility at Wallops Island. The other two key stations have been, for about 10 years, an ESA (European Space Agency) station at Redu, Belgium, and, for almost a year now, an IMP-dedicated facility on the grounds of NASA's Deep Space Network facility at Canberra Australia. The latter replaced a station that had been operational at McMurdo Sound, Antarctica, for about three years as the result of NASA-NSF collaborations. Many Goddard people and others have contributed to the definition and evolution of this ad hoc IMP ground network. Deserving special recognition is **Mike Comberiate** who recognized the McMurdo potential upon informal discussions with this author (and IMP 8 Project Scientist) in the cooling down phase of a Goddard "fun run" some years ago.

The IMP 8 home page on the WWW is maintained by NSSDC at <http://nssdc.gsfc.nasa.gov/space/imp-8.html>. It links to IMP 8 network-accessible data at NSSDC and at PI sites and to IMP positional and other descriptive data.

The IMP 8 spacecraft, which in its later years has come to be valued, perhaps more than any other NASA space science mission. This is due to IMP being the prime source of uniquely important data for use by a broad scientific constituency. As correlative to other missions and data sources, the Project Scientist for IMP, since months after launch, has been the person also charged as NSSDC Head with ensuring the archiving and public availability of data from all or most of NASA space science missions.

## Fire Prevention Week: October 4-10

Time is critical during an emergency. Goddard and the Prince George's County Fire Department have a network of highly trained personnel available to respond to the emergency needs of the Goddard community. By properly activating the Goddard emergency response system, you can ensure that these resources are quickly and efficiently dispatched.

On the ROLM phone system, you must dial **112** to activate the emergency response system. On non-ROLM phones (i.e., construction sites, analog lines, off-site phones, and cellular phones) the emergency number is 286-8080. The appropriate emergency number should be prominently displayed on or near your phone. These numbers may be used at any time on any day.

When you call to notify the Emergency Console of an emergency, be prepared to give your name and the phone number of the phone from which you are calling as well as the nature and location of the emergency. You may be asked to stay on the phone unless you feel it is unsafe to remain.

You are encouraged to call the Safety and Environmental Branch with your questions at X6-6295.

**In ANY Emergency**

**DIAL 112**

Police	Ambulance
Fire	Chemical

# Clip-n-Save

## Earth & Sky radio series

These are the air dates for the first batch of 90-second radio features on NASA Earth Sciences. The programs are produced by the Earth & Sky radio series for a measured audience of 3.8 million listeners (weekly).

In the Washington area, the programs can be heard on WETA at 8:15 am weekdays, 90.9 on the FM dial. Other stations carrying the program are listed on the E&S web site.

Date/Subject	Featuring
October 1 Sea Ice	Claire Parkinson
October 29 Satellite to the Rescue	Dennis Chesters
October 30 Satellite Limits	Claire Parkinson
November 9 Tropical Rainfall	Marshall Shepherd
November 17 Cloud Cores	Marshall Shepherd
November 25 Snow	Jim Foster
November 26 Snow White	Jim Foster
December 7 Ride to Earth Orbit	Mary Cleave
December 8 View From Earth Orbit	Mary Cleave
December 9 Small World	Mary Cleave
December 18 Landsat	Jim Irons

The Earth & Sky radio series and the NASA Earth Science Enterprise forged a strategic partnership in the summer of 1998, in order to create a fellowship for radio broadcast. Radio fellow, Beverly Wachtel was sent by Earth & Sky to Goddard to produce a series of radio shows on current research in the Earth sciences.

The series of twenty, 90-second radio pieces will air on approximately 700 radio stations in the U.S. — and more throughout the world — in late 1998 and early 1999. Covering topics ranging from algae to volcanoes, these shows stress the study of Earth as an interconnected system as well as new approaches to studying changes in global climate.

For more information, and advertised links to NASA sites as the programs are aired, please look to the E&S web site: <http://www.earthsky.com>

## CFC Campaign Begins Oct. 12 --Nov 6

### WHAT IS THE CFC?

The Combined Federal Campaign is a great opportunity for federal employees to contribute towards helping improve the quality of life for thousands of people who need our help.

You created the CFC to show that you care. By the early 1960's, the number of charitable campaigns had increased so that federal employees began looking for a way to have just one campaign each year.

The CFC was the perfect solution. It has evolved as ONE campaign, ONCE a year, and gives federal employees the opportunity to give generously through payroll deduction to hundreds of charities. An executive order made it possible, and though it started as an experiment, it proved to be a very effective way for federal employees to help those in need.

**WHY SHOULD I GIVE THROUGH THE CFC?** There is no better way to give to a charitable cause or program of your choice than through the CFC. Here's why the CFC way is the smart way:

**COST!** By having one organization administer the campaign for many charitable organizations, administrative costs decrease dramatically. In fact, 96 cents of every dollar goes directly to the agencies.

**CONFIDENCE!** All agencies participating in CFC have met eligibility standards established by the Office of Personnel Management (OPM). Therefore, you can feel confident that your gift is being used efficiently and effectively.

**CONVENIENCE!** One pledge card and one signature help your gift last all year long with the convenience of payroll deduction. Payments through payroll deduction begin in January (payroll period 2).

**CHOICE!** No other charitable giving campaign offers you so many choices. There are hundreds of voluntary agencies from which to choose. You decide which agency/agencies best address your concerns.

For a list of your Directorate Representatives and other details see Goddard's CFC homepage at url: <http://internal.gsfc.nasa.gov/cfc/cfc.html>

## Students Go Back to School with Goddard Computers

Students at Kramer Middle School in Washington, DC, showed NASA Administrator Daniel S. Goldin how computers donated by Goddard are used in their classroom on Sept. 22



Goddard's team of *Sara Jensen/235*, *Art Wade/235*, *Mike Eaton/239*, *Brian Caden/239* and *James Plummer/255.8* work tirelessly to prepare 25 complete computer systems and 5 laserjet printers as part of this event.

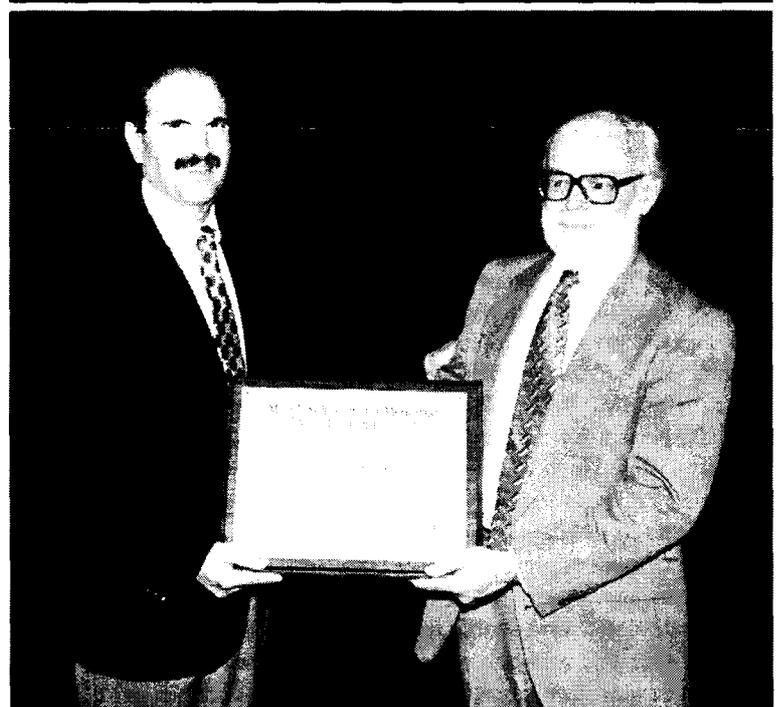
In just one year, NASA has donated over 36,000 excess computer items with an original

cost of \$75 million to public, private and parochial schools serving students in pre-kindergarten through 12th grade. Working with the federal Computers for Learning program, established by Vice President Al Gore in 1997, Federal agencies can now streamline the transfer of excess computer equipment to those U.S. schools with the greatest need.

A new website funded by the U.S. Department of Energy has made it even quicker and easier for schools to request and obtain free equipment that includes shipping by private companies. The web address is: [www.computers.fed.gov](http://www.computers.fed.gov)

U.S. schools or educational nonprofit organizations seeking additional information or assistance in accessing the computer upgrades should visit the website. A toll-free Computers for Learning hotline — 1-888/362-7870 — is available from 1-5 p.m. EDT, Monday through Friday.

NASA's Education Division, working with schools like Kramer, is committed to increasing student interest in mathematics, science and technology.



Center Director, Al Diaz, presents Dr. F. Landis Markley the Moe I. Schneebaum Award for Engineering during the Sept. 21 Engineering Colloquium in building 3 Auditorium

### Markley Wins Moe I. Schneebaum Award for Engineering

**Dr. F. Landis Markley** of the Guidance, Navigation, and Control Systems Engineering Branch - Guidance, Navigation, and Control Center Applied Engineering and Technology Directorate wins the 1998 Moe I. Schneebaum Award for Engineering for his pioneering contributions to spacecraft Guidance Navigation and Control (GN&C) and his innovative, low cost spacecraft systems designs that have enabled revolutionary science paybacks for NASA and the Nation. For nearly two decades, his innovative reasoning, novel spacecraft systems concepts, elegant attitude determination algorithms and theoretical research have made Markley a key resource to NASA, the aerospace community, and to academia. Markley's most substantial contribution to the agency was his efforts to improve the safety, reliability and performance of the Hubble Space Telescope (HST).

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## Training Begins for Next Hubble Servicing Mission

A team of veteran astronauts will soon begin training to install new instruments and upgrade systems to enhance the scientific capabilities of the orbiting Hubble Space Telescope.

Crew members Steven L. Smith; C. Michael Foale, Ph.D.; European Space Agency astronaut, Claude Nicollier; and John M. Grunsfeld, Ph.D., will conduct a record six space walks for the STS-104 mission, scheduled for launch in May 2000 on board Columbia.

The crew will rendezvous with and capture the orbiting Hubble Space Telescope, and secure it in Columbia's payload bay using the Shuttle's robot arm. Then, working in teams of two, the veteran astronauts will venture into the payload bay performing a variety of tasks that will improve the productivity and reliability of the telescope.

To enhance Hubble's scientific capability, the astronauts will remove the Faint Object Camera and replace it with the Advanced Camera for Surveys. With its three electronic cameras and complement of filters, this camera is expected to improve the telescope's sensitivity in the ultraviolet range by a factor of ten.

Other primary tasks to be accomplished during the flight include

the replacement of Fine Guidance Sensor #2, one of three such devices that help to accurately point the telescope; replacement of the existing solar arrays with rigid, high efficiency arrays; and replacement of a tape recorder with a solid state recorder.

The Hubble Team, while working toward the third servicing mission is working double time as it prepares to fly the HST Orbital Systems Test (HOST) platform on the Space Shuttle Discovery during the upcoming STS-95 mission. HOST will provide an on-orbit test bed for the third servicing mission hardware.

The primary objective of the HOST mission is to verify that actual electronic and thermo-dynamic equipment scheduled to be installed into Hubble during the third servicing mission performs acceptably in the radiation and zero gravity environment of space. The third servicing mission components to fly on HOST include the following: HST 486 computer, Solid State Recorder, Fiber Optics, NICMOS Cooling System, Pulse Height Analysis Instrument, and the Space Acceleration Measurement System for Free Flyers.

For more information on the Hubble Space Telescope, go to: <http://opposite.stsci.edu/>

## Obenschain and Perkins Selected for Two Key Management Positions

Al Diaz has recently announced two new key appointments in the management of critical center activities.



Rick Obenschain

**Mr. A. Rick Obenschain** will become the first Center Chief of the Electrical Systems Center (Code 560) in the Applied Engineering and Technology Directorate (AETD). "As one of the largest of the engineering centers within AETD, this assignment will bring

Obenschain's experience and capability to bear in a role which will have a very positive impact on a broad scope of the Center's engineering activities," stated Diaz.

To fill behind Obenschain in the Earth Science Data Information System (ESDIS) Project area, **Ms. Dorothy (Dolly) Perkins**, currently the Deputy Director of AETD, has been appointed to serve in the recently reformatted role of Deputy Associate Director of Flight Projects for EOS Operations. Perkins has previously been responsible for information and operation systems at Goddard. She will work with Chris Scolese, the Associate Director of Flight Projects for EOS, to manage the entire scope of the EOS program activity at the Center. These appointments will be made effective as soon as possible.



Dolly Perkins

## SOHO Responds to Signals from Scientists

By Bill Steigerwald, Office of Public Affairs

Following six weeks of silence, contact has been re-established with the European Space Agency (ESA)/NASA Solar and Heliospheric Observatory (SOHO) spacecraft.

"This is an excellent sign," said **Dr. Joe Gurman**, NASA SOHO Project Scientist at Goddard Space Flight Center. "It means the spacecraft still has a heartbeat and gives us added optimism that we may be able to restore SOHO to scientific operation. Our next step, already underway, is to continue the careful process of attempting to re-establish control of the spacecraft. We will be attempting, in the near future, to begin data transmissions in order to get an assessment of SOHO's condition."

Signals sent on August 3 through the NASA Deep Space Network

(DSN) station at Canberra, Australia, were answered by SOHO at 6:51 p.m. EDT in the form of bursts of signals lasting from two to ten seconds. These signals were recorded both by the NASA DSN station and the ESA station at Perth, Australia.

Contact is being maintained through the NASA DSN stations at Goldstone, CA; Canberra; and Madrid, Spain. Although the signals are intermittent and do not contain any data information, they show that the spacecraft is still capable of receiving and responding to ground commands.

Additional information, images and status reports from SOHO can be found on the Internet at:

<http://sohowww.nascom.nasa.gov/>

## Student Balloon Launch to Post Real-Time Images

By Betty Flowers, Office of Public Affairs

Wallops Flight Facility and college students from Virginia and New Jersey will join forces this week to launch two scientific balloons carrying atmospheric measurement experiments designed and built by the students.

The payloads are part of the NASA Student Balloon Program which provides students the opportunity to develop balloon launched experiments that will produce valid scientific results. The students are responsible for all technical and managerial aspects of the project.

Experiments are being conducted by students from the New Jersey Institute of Technology and four member institutions of the Virginia Space Grant College Consortium. The first of the two scientific balloon experiments is scheduled for launch from the Wallops Flight Facility during the early morning of Aug. 11.

The flight for the Virginia students will last three to four hours and reach a maximum height of 90,000 feet (17 miles). An onboard imaging experiment will provide live videos of the flight and high resolution digital photos. These images may be viewed real-time on the Internet at: <http://ixcab2.larc.nasa.gov/~killough/vsgc>

## Safety Awareness Day (Aug. 14) To Focus on Emergency Preparedness



Safety Awareness Day is August 14 and this year's theme is "Emergency Preparedness." Here's your chance to learn how to equip and prepare yourself to handle an emergency situation should one arise.

The event will begin at 9:00 a.m.

in the building 8 auditorium. Center Director Al Diaz will give a presentation on the Center's initiative to make Goddard Number One in the area of safety. Guest speaker Fred Gregory, Associate Administrator, Safety & Mission Assurance will discuss the safety initiative for the entire agency. Also, Mr. Tom Carr, an



established expert in Urban Search and Rescue who leads Montgomery County's Fire and Emergency Rescue Services, will address employees. His team was one of the primary units dispatched to the Oklahoma City bombing, and he will discuss the incident and promote application and preparation issues for Goddard.



Later during the day, there will be a demonstration of the Goddard/Baker Life Safety Evacuation System for high-rise buildings. The Baker Life Safety Evacuation



System is a chute attached to the building which people located in high-rise buildings slide through to the ground. Also, there will be all kinds of emergency apparatus on display on the mall: a squad engine, an ambulance, a command unit, a sprinkler trailer, an emergency



response lab, and the Goddard Emergency Response Team truck. Come out to this event to learn how being prepared for an emergency can benefit you, your co-workers and your family.

### THE BIG THREE OF ACCIDENTS

Didn't think...Didn't know...Didn't ask. Safety Awareness Day is your chance to think, to know, and to ask about safety.

### NASA Selects NationsBank As Next Credit Card Provider

NASA has selected NationsBank, Charlotte, NC to be its next credit card provider for fleet, travel and purchase cards. NationsBank is one of six banks awarded master contracts by the General Services Administration (GSA). NASA will issue a task order agreement for all three card types through GSA, to be effective Nov. 30, 1998, for up to ten years, including options.

The Agency spends approximately \$100 million per year through credit card services. This no-cost agreement with NationsBank for all three card types will allow NASA to pursue integrated services that will streamline processes and gain efficiencies.

NASA currently uses three different GSA card providers: American Express for travel cards, Rocky Mountain Bank for purchase cards, and Wright Express for fleet cards. The existing card agreements expire on November 29, 1998.

## The African American Awards Committee Honors Four

by Dennis Small and Mablelene Burrell

The African American Awards Committee recently held its first celebration luncheon to honor the achievements of four of Goddard's outstanding African Americans who have received awards through nominations submitted by the African American Awards Committee. The event consisted of a bountiful meal and a program honoring the following guests: **Cynthia Adams** - National Technical Association Top Women in Science Award 1997; **Allora Goode** - National Technical Association Top Women in Science Award 1997; **Robyn King** - Space Flight Awareness Award 1997; and **Aprille Ericsson-Jackson** - Women In Science/Engineering (WISE) Award For Engineering Achievement 1997 and Black Engineer of the Year Special Recognition Award 1998.

Also honored at the luncheon were the dedicated committee members for their outstanding support and service, **Kim Butler**, **Darlene Mayo**, **Veronica Stubbs**, **Carl Taylor**, Chairperson **Dennis Small**, and founder of the Committee, **Cyn Hadnott**. The Chair's Honor Award was presented to **Mablelene Burrell**. This award is the highest honor given to a committee member. The award honored her extraordinary support, dedication and commitment to the committee.

Also in attendance at the celebration were Center Director, **Al Diaz**, Equal Opportunity Program Office Chief, **Dillard Menchan** and Awards Office Manager, **Pat Greco**.

The mission of the African American Awards Committee is to serve its community by nominating qualified African Americans for internal and external (outside of NASA) awards. Our goal is to promote the awareness of contributions of African Americans at Goddard Space Flight Center. The committee is motivated by the motto "We have not, because we ask not."

The African American Awards Committee would like to thank all those who helped in their efforts to make the NASA community aware of the achievements of the Center's African American employees.

### Goddard to Celebrate the Accomplishments of its Diverse Workforce

By Denise Konopka, Customer Service

Center Director **Al Diaz** has called upon each of the directorates to participate in Celebrate Goddard Day III on Thursday, Sept. 10. Diaz is asking each directorate to set up booths or displays to promote the accomplishments of their diverse organizations that contribute to a greater Goddard. Diaz emphasized that diversity in the workforce is critical to Goddard's current and future success. Celebrate Goddard Day III, sponsored by the Goddard Multi-Cultural Advisory Team and co-chaired by **Dennis Small** (584), **Merle Robbins** (221) and **Sharon Johnson** (210), was first held in 1996.

This year's third annual event will highlight cultural and other types of diversity at Goddard while celebrating the Center's accomplishments. The day's activities will include entertainment (featuring Goddard talent), culinary delights from around the world, and a variety of educational events. Additional entertainers are needed, so if you have a flair for the performing arts, please contact Entertainment Co-Chairs **Pat Greco** (6-6118) or **Ashok Desai** (6-1286).

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## Update on Project Goddard: Goddard's Plan for Enabling the Reality of Tomorrow

By Mary Kicza, Director of Space Science Programs

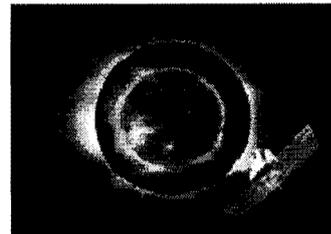
Project Goddard was initiated this past spring to address the issues highlighted in last year's culture survey and the recommendations made by a Goddard supervisory management team. This management team was established after the first supervisory all hands meeting in February 1998. Project Goddard's objective is to fulfill the Goddard Strategic Implementation Plan by:

- (1) Providing unified leadership to steer Goddard through the current period of change;
- (2) Translating the top-level Goddard Strategic Implementation Plan into lower level operational plans for all organizational elements and into individual performance plans;
- (3) Focusing attention on defining and achieving a desired future state for the year 2003, while prioritizing and integrating a manageable number of activities required to achieve this desired future state;
- (4) Establishing processes that integrate this type of strategic analysis and action into the way we do business;
- (5) Aligning Center resources with the Center's core business base and other priority work;
- (6) Communicating change initiatives effectively so employees can both understand the reason for the change and how they can participate in the change effort.

In May 1998, through two articles published in the Goddard News,

## SOHO Rescue Team Making Progress

NASA and ESA scientists continue to make progress with SOHO. On August 8, six days after receiving the first signal from the dormant spacecraft, several blocks of telemetry data giving the spacecraft's current on-board status were acquired.

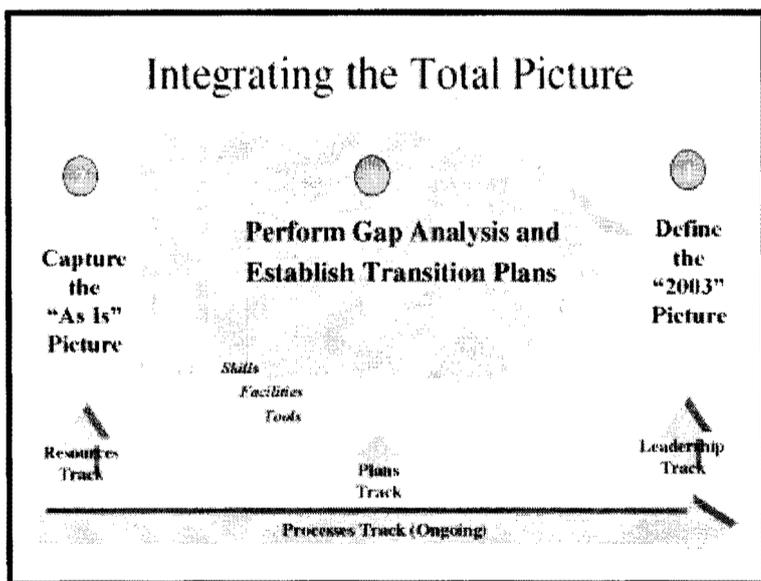


Following analysis of the expected on-board conditions by engineers from the European Space Agency and Matra Marconi Space (builders of the SOHO spacecraft), a series of command sequences, designed to divert the available solar array power into a partial charging of one of the on-board batteries, were up-linked through NASA's Deep Space Network (DSN) station in Goldstone, California.

After 10 hours of battery charging, the telemetry was commanded on and seven full sets of data of the on-board status were received. After one minute, telemetry was switched off from ground controllers in order to preserve on-board resources.

With the battery charging technique proven successful, the team has requested a full 24 hour coverage of SOHO to attempt a more complete charging. The NASA DSN has accepted this request as a "Spacecraft Emergency" giving it priority over other DSN scheduled activities. The procedure is currently on-going. ESA's Francis Vanderbussche, in charge of the SOHO Recovery Team at GSFC, said "I am truly satisfied with the information the data we acquired gives us. Conditions on-board are as good as we expected them to be."

At the moment, the team is working on the next series of procedures which will be aimed at thawing the on-board hydrazine fuel, currently at 0 degrees Celsius to allow attitude control of the spacecraft to be re-established. This will be attempted once full charge can be established in both on-board batteries. More information on SOHO is available on the internet at <http://sohowww.nascom.gsfc.nasa.gov>



## news tidbits

- Concern over the deployment mechanism for the high-gain communication antenna on the Mars Global Surveyor spacecraft has NASA managers considering postponing the antenna's deployment in order to maximize the probability of mission success.
- NASA's remotely piloted, solar-powered Pathfinder-Plus flying wing reached a record altitude of more than 80,000 feet during a developmental test flight Aug. 6 in Hawaii. The altitude is the highest ever achieved by a propeller-driven craft and surpasses the official record altitude of 71,530 feet for a solar-powered aircraft set by an earlier version of the Pathfinder last summer.

For information on the latest happenings around NASA, visit Today At NASA at <http://www.nasa.gov/today/index.html>

Dot Zukor, Deputy Director of Earth Sciences, Code 900, and I introduced you to Project Goddard and the four activity tracks designed to focus and integrate Project Goddard actions: Leadership, Plans, Processes and Resources.

On the theory that a picture is worth a thousand words, the above graphic illustrates the integration among the four Project Goddard activity tracks.

Effective communication is key to Project Goddard's success and, as reflected in the Culture Survey, is one of the Center's greatest challenges. To partially address this challenge, the Goddard News will regularly include a Project Goddard news column. Next week's issue will feature the first article in the series which will provide you with an update on Project Goddard activities since May.

## Performance Based Contracting: Leaving Out the "How-To"

By Michael Lodomirak, Associate Director for Acquisition



Michael J. Lodomirak

If you don't work in procurement, chances are that you may not have heard of Performance Based Contracting, or may have heard the term but aren't clear on exactly what it means. I'd like to shed some light on this new and effective procurement strategy.

Performance Based Contracting, or PBC, means taking all parts of an acquisition and structuring them around the purpose of the work or the

desired outcome. It does not specify how the work is to be performed. Historically, NASA's use of level-of-effort contracts often has led to unnecessarily vague statements of work, inadequate cost control, a lack of measurable performance standards, and a resource intensive contract administration burden. PBC is intended to reduce wasteful practices on the part of the government by leaving the "How To" to the contractor and holding the contractor accountable for performance. PBC emphasizes quantifiable, measurable performance requirements and quality standards.

Each NASA center is implementing PBC where it makes sense to do so. Most of the agency's contractual requirements can be written in performance based terms. In 1996, Goddard developed a PBC conversion and implementation plan for its service contracts. To date we have converted a total of 62 service contracts and all new solicitations are reviewed to ensure that, where appropriate, PBC work statements are used. Currently, 46% of Goddard contracts are performance based and 85% of all obligations go to performance based contracts.

PBC has been an effective approach because it allows NASA to realize savings both in cost and time through more efficient contractor management, control, and accountability for performance. The old "level of effort" approach required substantial involvement of the Contracting Officer and Contracting Officer's Technical Representative in the day to day work direction. PBC eliminates this government intervention in how work is performed and stresses that government involvement is directed at measuring performance and adherence to the requirements.

For more information on Performance Based Contracting, visit the following web site:

<http://www.hq.nasa.gov/office/procurement/pbc.html>

## Goddard Experiments To Track Cyclone Development



Four Goddard and one Wallops experiment are flying aboard the Convection And Moisture Experiment (CAMEX)-3 payload. This experiment began on August 6 and is scheduled to run through September 23.

CAMEX-3 is a series of research investigations that will study tropical cyclone development, tracking and intensification using NASA's Earth Science Enterprise's aircraft and remote sensing instruments.

The Goddard instruments flying on CAMEX-3 are the Millimeter-Wave Imaging Radiometer (MIR); the Airborne Multi-channel Microwave Radiometer; the ER-2 Doppler Radar; and the Scanning Raman Lidar. Wallops is participating through the Upper Air Instrumentation Research Project, an experiment which will send 20 balloons carrying radiosonde packages to perform meteorological studies.

For more information, visit the CAMEX web site at <http://ghrc.msfc.nasa.gov/camex3/>

## Goddard Scientists to Study Jet Contrails Using Polarization Lidar

By Lynn Chandler, Office of Public Affairs

Cirrus clouds affect Earth's climate by reflecting incoming sunlight and inhibiting heat loss from the surface. Ordinarily, cirrus clouds are only slightly influenced by most ground-based human activities, due to their high altitude. However, increasing levels of high-altitude jet air traffic may alter the regional climatic effects of cirrus because aircraft condensation trails (contrails) often produce new cirrus, which could differ in their radiative properties. Therefore, it is important to study how contrails form, as well as their radiative properties, using experimental and modeling techniques.

Polarization lidar is a promising tool for characterizing contrail particles. It consists of a laser and a receiver. The laser transmits a narrow, fully polarized beam of light in which light waves all oscillate in the same plane. The receiver measures the polarization of light scattered in the backward direction by cloud particles. For a cloud of spherical water droplets, the backscattered light is fully polarized in the same direction as the transmitted beam; i.e., it has only a "co-polarized" component. However, for a cloud composed of non-spherical ice crystals, the backscattered light can be partially depolarized; i.e., it can have a "cross-polarized" component which vibrates perpendicularly to the transmitted polarization.

Goddard scientist Michael Mishchenko is part of a team that has been using the polarization lidar to study the formation of contrail particles. Their findings agree with results of microphysical and chemical modeling of contrail evolution and demonstrate that depolarization measurements can be successfully employed to determine the physical characteristics of contrail particles. In view of the strong dependence of depolarization on the ice particle size, dual-wavelength lidar systems may be especially useful for studying how contrail ice crystals grow with age.

## Visit From Major General Richard Paul



Al Diaz, Brian Keegan and General Richard Paul discuss collaboration possibilities between Goddard and the Air Force Research Laboratory

Major General Richard Paul from the Air Force Research Laboratory (AFRL) visited Goddard on August 12. The purpose of his visit was to review the progress of existing areas of cooperation between Goddard and the AFRL and to provide insight into other emerging technology areas that might be of benefit to both. Some of the technological areas discussed were mechanical cooling, balloon missions and artificial intelligence for satellite control.

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By Gail Williams, Office of the Chief Financial Officer

Over the last few months, Leadership Activity Track accomplishments have focused on developing a comprehensive Project Goddard Strategy and beginning the implementation phase. Executive Council agreed to the proposed approach in late June. The "desired 2003 future state" was initially defined and feedback on its completeness and accuracy was solicited from the Directorates in late July. This picture is presented in the following Earth Science and Space Science perspectives and highlights:

- Research and analysis and supporting activities, including technology development
- Program formulation and supporting activities, including technology development
- Program/Project management activities in terms of what we are committed to manage and other projects/programs we anticipate NASA will want us to manage
- Program implementation activities, including anticipated in-house work

The 2003 picture will soon be refined based on Directorate input and subsequent discussions among the workforce.

Activities under the Plans Activity Track have focused on the generation of a Center-level Performance Plan that establishes links between the NASA Performance Plan and the Goddard Strategic Implementation Plan. The Goddard Performance Plan is also designed as a tool for linking employees' individual performance plans to either the NASA Performance Plan or the NASA Strategic Plan.

The current Employee Performance & Communication System already requires designating a link from an employee's job elements to the NASA Strategic Plan, the Goddard Strategic Implementation Plan, or the organization's operating plans or goals. The Office of Human Resources has developed a worksheet to facilitate the linkage of individual performance plans with the NASA and Goddard Performance Plans. The presentation discussing this linkage and the worksheet are available on the Office of Human Resources Web Page at <http://ohr.gsfc.nasa.gov/Hot/epcs.htm> Included in this presentation is a suggested approach and schedule that ensures this linkage is reflected in all individual performance plans by the October 10, 1998, the deadline established by the Center Director.

Recent efforts under the Processes Activity Track have centered on mapping our existing processes, as required by ISO 9001, and identifying and improving our core processes. Following an external assessment of our ISO 9000 readiness, Al Diaz appointed himself champion for ISO 9000 implementation to assure the Center meets the April 1999 certification date.

The Resources Activity Track is currently focused on understanding our existing resource base, core competencies, and how they need to change over time. The short-term goal is to respond to the NASA Administrator's requirement for a core competency review by December 1998. The "as is" picture was defined consistent with the current complement of skills, tools, and facilities. After finalizing the 2003 desired future state, we will identify the skills, facilities and/or tools we need to position the Center to assure accomplishment of the 2003 mission.

Be on the lookout for future articles in Goddard News and for a Project Goddard Homepage, currently under development, to keep you abreast of the status of Project Goddard.

## NASA Selects 25 Innovative Small Business Projects

NASA has selected 25 research proposals for negotiation of Phase I contract awards for NASA's 1998 Small Business Technology Transfer (STTR) Program.

STTR is designed to stimulate technological innovation, help small businesses become better-qualified to assist NASA in its research and development, and increase private commercialization of federally funded research. The program also requires small businesses to conduct cooperative research and development by partnering with a research institution. Seven NASA field centers reviewed the proposals for technical merit, feasibility and relevance to NASA research and technology requirements. The selected firms will be awarded fixed-price contracts valued at up to \$100,000 each to perform a one-year Phase I feasibility study.

The combined award total for the 25 Phase I contracts is expected to be \$2,495,046. Companies which successfully complete the Phase I activities are eligible to compete for Phase II selection the following year. The Phase II award allows for a two-year, fixed-price contract up to \$500,000.

The 1998 solicitation closed on May 14, 1998. NASA received 130 proposals submitted by small, high technology businesses from across the country.

The NASA STTR Program Management Office is located at Goddard with executive oversight by NASA's Office of Aeronautics, NASA Headquarters, Washington, DC. Individual STTR projects are managed by the NASA field centers.

A printed list of companies selected for the program can be accessed on the Internet at URL: <http://sbir.nasa.gov>

## NEWS tidbits

• **Goddard Community Day: "Celebrating NASA's 40th Anniversary"** On Sunday, September 27, Goddard will hold Community Day from 9:00 a.m. to 4:00 p.m. at the Visitor Center. As part of the event, we will be celebrating NASA's 40th Anniversary. Join your friends and neighbors for a day of out-of-this-world fun. Activities include tours, spacesuit demonstrations, children's programs/activities, presentations, model rocket launches and much more. Food and souvenirs will be available for purchase. For more information, visit the Visitor Center Homepage at <http://pao.gsfc.nasa.gov/VC/VC.htm> Be sure to also check out NASA's 40th Anniversary homepage at <http://www.hq.nasa.gov/office/pao/History/40thann/40home.htm>

• **Goddard Web Site Makes Top 50 List:** Goddard's Hot Topics web site, (previous called Flash) was recently named by Popular Science Magazine as one of 1998's top 50 web sites in the nation. Popular Science was quoted as saying this collection of NASA News Releases was a "must for space junkies." To visit this web site, go to the Goddard Homepage at <http://www.gsfc.nasa.gov> and choose **HOT TOPICS**.

Customer focused organizations — take a bow!

Future issues of Goddard News will use this space to highlight customer focus successes of our Center. More importantly, these successes will be contributed by you, the reader community. Change is happening all around Goddard. And in recent times many Goddard organizations have made great strides toward improving processes and procedures to greet changing times and challenges that lie ahead.

So why is it important that “customer focused” behaviors are recognized? The concept of being “customer focused” is more than a trend of the 90s. Increasingly, public and private sector industry is embracing a customer focused approach to strategically lead their businesses into the 21<sup>st</sup> Century.

And Goddard is no exception. Here on Center there are numerous examples of good customer focused practices that make Goddard a great place in which to work and do business. Being customer focused includes more than “smiles service” or the mantra that the “customer is always right.” Rather, customer focus is underpinned by an attitude in everything we do that prompts us to ask “How do I add value for the customer?”

Simply, customer focus is a combination of strategies, initiatives, activities, skills, behaviors, and attitudes of an organization driven by the desire to understand customers’ needs and to effectively meet those needs.

For more than one year, a Goddard team has looked closely at the Center’s existing customer focused organizations and has offered suggestions to Center management for increasing the presence of customer focus in all Goddard organizations. Celebrating and sharing successes is one way to pass along useful and creative strategies for fully integrating customers appropriately into Goddard’s business processes. This team has prepared a handbook for becoming a customer focused Center and has other resources available for consideration by any Goddard organization.

These materials can be found on the GSFC Workforce Web Site at <http://workforce.gsfc.nasa.gov/a3.html> under the Customer Focus Section. Also on that web site are nomination criteria and a form to submit names of customer focused organizations that will be highlighted here. If your organization or an organization that you know of has exhibited a level of focusing on the customer that is progressive, creative or effective, please tell us about it! You may use the web-based form or contact Dave Rosage directly, at x6-5226.

## Voluntary Early Retirement Authority Expires September 30

NASA’s voluntary early retirement authority expires September 30, 1998. The early out authority permits eligible employees to retire at age 50 with 20 years of creditable Federal service or 25 years of creditable Federal Service, regardless of age. Many of the NASA Centers, including Goddard, have been successful in their downsizing efforts, and OPM has indicated it will not approve early retirement extensions for Centers whose downsizing is complete. Therefore, Goddard’s early out authority will not be extended past the September 30, date. The Office of Personnel Management (OPM) has extended the voluntary early out authority through September 30, 1999, for KSC, MSFC, JSC, and Code M at Headquarters. The early out window for Goddard will expire on September 30, 1998. Employees hoping to take advantage of the opportunity to retire under the early retirement authority must be off the Center’s rolls by that date. If you have any questions, please contact your Human Resources Management Specialist.

## Goddard Celebrates its Diversity With Multicultural Event and Educational Programs

By Denise Konopka, Customer Service

Celebrate Goddard Day III is fast approaching and the committee has put together a wonderful schedule of events to help celebrate the accomplishments of our diverse Goddard workforce. Here’s a schedule of educational opportunities and other events in store for the week of Sept. 7:

*Clip-n-Save Clip-n-Save Clip-n-Save Clip-n-Save*

**Tuesday, Sept. 8, 1998**

“Without Pity: A Film about Abilities”

B. 3 Auditorium, 11:30 a.m. - 1:00 p.m.

**Wednesday, Sept. 9, 1998**

“The Color of Fear, Stir Fry Productions”

Presented by Lee Mun Wah

B. 8 Auditorium, 12:30 p.m. - 4:00 p.m.

**Thursday, Sept. 10, 1998: Celebrate Goddard Day III !!**

“Diversity 101”

Dr. Robin Hailstorks, Prince George’s Community College

B. 1, Rm. E100C, 8:30 to 9:45 (concurrent session)

Meet and Greet Dr. Edwin Nichols

Keynote speaker - Nichols and Associates

B. 1, Rm. E100A, 8:30-9:45 a.m. (concurrent session)

Invited Keynote Address - Dr. Edwin Nichols

Mall - 10:15a.m. -10:45 a.m.

Entertainment/Performances - representing a wide range of Goddard talent. Entertainment Mall - 11:00 a.m.- 2:00 p.m.

Multicultural food and beverages, as well as arts and crafts for sale. Exhibits by GSFC directorates, clubs, and other organizations. 11:00 a.m.-3:00 p.m.

“Diversity in the Workplace” - Dr. Edwin Nichols

B. 8 Auditorium, 1:00 p.m. - 3:00 p.m.

## Visit from Associate Administrator for Earth Science



On August 13, Dr. Ghassem Asrar, Associate Administrator of NASA Headquarter’s Office of Earth Science visited Goddard.

During his visit, Dr. Asrar was briefed by Peter Shu and

Dr. Jim Abshire on Earth Science Instruments and Sensor Technology and Space Lidar Technology for Earth Science. In addition, he toured the NASA Center for Computational Science and the High Performance Computing Center as well as the Scientific Visualization Studio. Pictured above is Ellen Salmon of the Science Computing Branch and Dr. Milt Halem of the Space Data Computing Division talking with Dr. Asrar (right).

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## NASA Technology Instrumental in Locating Downed Balloonist

By Allen Kenitzer, Office of Public Affairs

SARSAT search and rescue communications packages, conceptualized and developed at Goddard recently played a vital role in alerting the world that U.S. hot-air balloonist Steve Fossett, was in trouble after his balloon the "Solo-Spirit," fell into the southern Pacific Ocean during a severe storm as he was attempting to travel around the world.

On Aug. 18, a distress message from an Emergency Position Indicating Radio Beacon (EPIRB) was received via the search and rescue repeater package on the GOES-10 satellite shortly after activation at 1423 Greenwich Mean Time (3:23 a.m. local time at drop zone). The message was relayed via a ground station in Trenton, Ontario to the NOAA U.S. Mission Control Center (USMCC) in Suitland, Md. After a check of its registration database to determine the owner of the beacon, the USMCC notified the U.S. Coast Guard which alerted the Solo Spirit ground team.

The U.S. portion of the international program that made this possible is known as "SARSAT," for Search and Rescue Satellite Aided Tracking. The system, known Internationally as COSPAS-SARSAT, includes Russian satellite

instruments that operate in the same manner as the SARSAT ones. The SARSAT instruments are carried aboard the NOAA Polar and Geostationary-Orbiting series of environmental satellites, known as POES and GOES. When an EPIRB is activated by a marine vessel on the open sea, the SARSAT instruments receive the alert and transmit it to the appropriate search and rescue authorities, who then undertake rescue operations.

"Although they knew the approximate position of the balloon at the time of the alert, it could not be pinpointed until about an hour and a half later when NOAA-14, a satellite of the POES constellation, also supplied by Goddard, flew over within view of Fossett and captured a "Doppler" fix on his location," said Ron Wallace, Search and Rescue Mission Manager at Goddard.

"Fossett's location was first found by the U.S. tracking station on Guam and the Australian station at Bundaberg, north of Brisbane. The location was quickly supplied to Australian search and rescue authorities who coordinated the search. Aircraft and ships from France, New Caledonia, Australia and New Zealand were involved in the operation," he said.

In the early 1970s, Goddard performed experiments to determine whether or not it was possible for satellites to accurately locate transmitters on the ground. The theories were verified using data buoys and ground radio beacons transmitting to a NASA Nimbus-3 satellite receiver, and the principle later was applied to search and rescue.

Some twenty-nine nations are now participating in the program providing both ground and space segment equipment, and it is used worldwide. A constellation of low polar-orbiting and geostationary satellites are used to detect and locate emergency beacons on aircraft and vessels in distress. Since the first space instrument was launched in 1982, more than eight thousand people have been saved because of the satellite system, in both aviation and maritime incidents.

NASA Goddard is responsible for the construction, integration and launch of NOAA satellites. Operational control of the spacecraft is turned over to NOAA after it is checked out on orbit, normally 21 days after launch. The NOAA satellites carry seven scientific instruments and two for search and rescue.

### Arming Yourself Against the Dangers of Hurricanes



Well, the Hurricane Season has arrived, and Bonnie and Danielle are breaking in the southeastern United States in typical hurricane fashion. Because hurricanes can be dangerous and life-threatening, it is important to learn how to read hurricane warning signs and plan ahead to minimize your chance of injury and property damage. Below are some tips and tidbits, provided by the Federal Emergency Management Agency (FEMA), to help you plan ahead to avoid emergency situations:

- Plan an evacuation route
- Learn safe routes inland
- Have disaster supplies on-hand
- Make arrangements for pets
- Make sure family members know how to turn off gas, electricity and water
- Protect your windows (permanent shutters or plywood)

- Trim back dead or weak branches from trees

- Check with your insurance agent about obtaining flood insurance

- Develop an emergency communication plan

When a hurricane is expected, make sure you know the signals. A hurricane watch is issued when there is the threat of hurricane conditions within 24-36 hours. A hurricane warning is issued when hurricane conditions are expected in 24 hours or less.

During the watch, you should check emergency supplies; fuel your car; bring in outdoor objects; secure buildings. During a warning, constantly listen to battery-operated television or radio instructions; store valuables in water-proof container on the highest level of your home; and stay inside, away from windows, skylights and glass doors.

For more information, visit the FEMA web site at: <http://www.fema.gov>

### An Answer to the Question of Global Warming?

Scientists may have finally found the answer to a long asked question on the subject of global warming: If the planet is warming, as many experts contend, why do satellites indicate that the Earth's atmosphere is cooling?

Two scientists from Remote Sensing Systems in Santa Rosa, California believe they have the answer. Frank Wentz and Matthias Schabel have recently discovered a technical flaw in satellite data, a flaw that has indicated a slight cooling in atmospheric temperatures over the past two decades.

The error in the temperatures occurs when NASA's orbiting satellites lose altitude as they circle the globe. The drop in the satellites altitudes can interfere with their ability to accurately measure temperatures near the Earth's surface.

"Until now the data have been the principal refuge for those who deny the reality of global warming," stated Jim Hansen of Goddard's Institute for Space Studies. "We believe that warming trends of both the surface and troposphere are now sufficiently clear," he said.

## Goddard Hosts Kids in Science and Technology Collaborative Forum

By Nancy Neal, Office of Public Affairs

The Kids In Science and Technology (KIST) Collaborative Forum was held at Goddard on Aug. 21. KIST is a Goddard sponsored and funded program designed to create partnerships between both public and private organizations with the goal of inspiring children in science and math. The program is dedicated to Kindergarten through 8th grade students.

The Collaborative Forum was designed to bring service providers and school officials within Baltimore, Washington, D.C. and Prince George's County, Md. together to give teachers access to educational resources they presently do not have. It's purpose is to create a regional alliance between children, educators, NASA, high-tech industry, and other federal agencies. The Collaborative also serves to identify existing math and science educational resources available to schools. A short and long range action plan will be developed to enhance existing resources or create new ones so as to ensure access to all kids.

This Collaborative will be a permanent group which will provide to teachers, a list of mentors; a guide to available resource; assistance in writing grants; and connections to the donors of equipment. It also will provide a vehicle for resource providers to donate their resources. Hands on working groups were the focus of the forum. Some of the working groups focuses on the leadership and infrastructure of the Collaborative; resource guides; mentor and teacher services; assessment tools; technology support, outreach; and future products and services.

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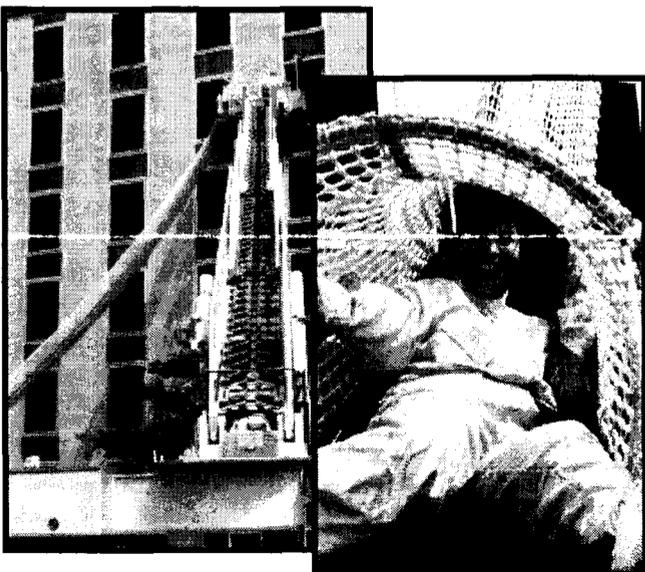
## Safety Awareness Day Was A "Blast"

By Deanna Adams, Office of Public Affairs

August 14 was Safety Awareness Day and the Center was alive with activities to alert employees to the importance of and to demonstrate ways of implementing good safety practices and and preparing for emergencies.

Amongst various emergency apparatus on display, the highlight of the day was the Baker Life Chute which snaked up the side of building 8. This chute, a tubular net constructed of heavy duty braided nylon cords, allows for rapid, mass evacuation of tall and high-rise buildings during left-threatening emergencies.

After a few demonstrations from emergency personnel, some eager employees were ready to try the chute themselves. Among those was Angela Conley of Code 200, an above the knee amputee, who demonstrated the necessity of having in place, safety evacuation routes that are accessible by all employees.



Left: The Baker Life Chute is secured to building 8 via the aid of a fire truck. Right: Nina Harris, one of the brave volunteers tests the efficiency of the chute.

## Far-Flung Galaxy Clusters May Reveal Fate of Universe

By Bill Steigerwald, Office of Public Affairs

The Hubble Space Telescope recently has surveyed a cluster of galaxies which could be some of the most distant clusters ever seen. If the distances and masses of the clusters are confirmed by ground-based telescopes, the survey may hold clues as to how galaxies quickly formed into massive large-scale structures after the Big Bang, and what that may mean for the eventual fate of the universe.

According to theoretical models, if the clusters turn out to be massive and very distant, it could imply that the cosmos does not contain enough matter for gravity to stop the expansion of the universe. These models predict that such a low-density universe would have built most of its galaxy clusters long ago.

About 10 to 20 of the farthest clusters in the Hubble survey may be over seven billion light years away, which means that the clusters, and their populations of tens or perhaps hundreds of galaxies each, were fully assembled early in the history of the universe. Present distance estimates are based on the colors of the galaxies in each cluster. The redder the overall cluster appears, the more distant it is, an assumption based on the apparent reddening of light — known as red shift — as stars and galaxies move away from us at high speeds. The distances can be more accurately measured using a spectrograph attached to a ground-based telescope.

The Hubble survey contains 92 new clusters uncovered during a six-year sky survey known as the Medium Deep Survey, led by a team of astronomers now at Carnegie Mellon University, Pittsburgh, PA. For more information, go to the Goddard Homepage at <http://www.gsfc.nasa.gov> and choose **HOT TOPICS**.

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## Goddard Talent To Celebrate Diversity

Talented Goddardites are stepping up to help celebrate the accomplishments of our diverse Goddard workforce at this year's Celebrate Goddard Day III. The Entertainment schedule below includes talent that is exclusively Goddard's! Don't miss the show or the festivities on Thursday, Sept. 10, beginning at 10:00 a.m. on the Mall.

- 10:00 a.m. *National Anthem, performed by Wendy Magill*
- 11:00 a.m. *Opening - Randy Barth, Master of Ceremonies*
- 11:05 a.m. *Goddard Child Development Center Kindergarten Class*
- 11:15 a.m. *Sharon Osuna- Vocalist - 60's/70's Music*
- 11:30 a.m. *Bridging the Gap - Contemporary/Gospel/jazz*
- 11:45 a.m. *Hispanic Dance Duo - Juan Rivera and Serena Fernandez.*
- 12:00 p.m. *Trivia - Jeff Bolognese*
- 12:15 p.m. *Kenny Reed Quartet featuring Jackie Mims*
- 12:45 p.m. *Michael Kelly - Original music*
- 1:00 p.m. *Hispanic Dance Duo*
- 1:15 p.m. *Trivia - Jeff Bolognese*
- 1:30 p.m. *Jazz Duo - John McCloskey and Patricia Lyles*
- 1:45 p.m. *Hispanic Dance Duo*

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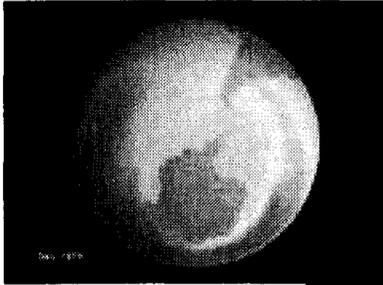
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## ANTARCTIC OZONE DEPLETION SETS NEW SIZE RECORD

by Lynn Chandler,  
Office of Public Affairs



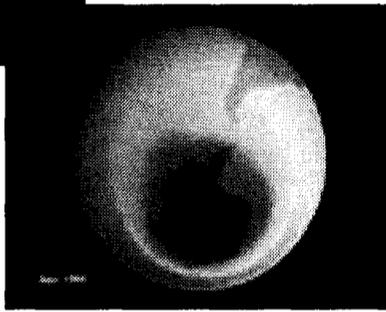
Antarctic Ozone Sept. 79

of territory since the depletion developed in the early 1980s. The measurements were obtained this year between mid-August and early October using the Total

Ozone Mapping Spectrometer (TOMS) instrument aboard NASA's Earth Probe (TOMS-EP) satellite and the Solar Backscatter Ultraviolet Instrument (SBUV) aboard the NOAA-14 satellite.

"This is the largest Antarctic ozone hole we've ever observed, and it's nearly the deepest," said **Dr. Richard McPeters**, Principal Investigator for Earth Probe TOMS. Preliminary data from the satellites show that this year's ozone depletion reached a record size of 10.5 million square miles (27.3 million square kilometers) on Sept. 19, 1998. The previous record of 10.0 million square miles was set on Sept. 7, 1996.

TOMS ozone data and pictures are available on the Internet at <http://toms.gsfc.nasa.gov> or through links off the Goddard Homepage at <http://www.gsfc.nasa.gov>. TOMS-EP and other ozone-measurement programs are key parts of a global environmental effort of NASA's Earth Science enterprise, a long-term research program designed to study Earth's land, oceans, atmosphere, ice and life as a total integrated system. Goddard developed and manages the operation of the TOMS-EP for NASA's Office of Earth Science.



Antarctic Ozone Sept. 98

## Explorers Program Celebrates 40 Years Evolution of the Explorer Missions

by Don Margolies, MDEX Mission Manager

The Explorers Program was honored on its 40th Anniversary at the Oct. 6 Space Club Reception at the Visitor Center. The first Explorer mission was launch January 31, 1958.

From the days of the early explorers like Christopher Columbus and Magellan, there has always been an inherent desire in humanity to explore his surroundings. From the exploits of those early knowledge seekers, many incredible discoveries were made. So it is fitting and understandable that the first spacecraft launched by the Army Ballistic Missile Agency on Jan. 31, 1958 was named "Explorer."

Since the first mission, more than 70 U.S. and cooperative international scientific space missions have been part of the much celebrated Explorer program. Explorer satellites have made impressive discoveries: Earth's magnetosphere and gravity field; the solar wind; micrometeoroids; ultraviolet, cosmic, and X-rays; ionospheric physics; solar plasma; energetic particles; and atmospheric physics. They've also investigated air density, radio astronomy, geodesy, and gamma ray astronomy. Some Explorer spacecraft have traveled to other planets, and some have monitored the Sun.

The mission of the Explorers program is to provide frequent flight opportunities for scientific investigations from space. The Explorers program enables the definition, development and implementation of mission concepts through a variety of modes to meet the needs of the scientific community and the NASA space science enterprise.

The Explorers Program Office at Goddard provides management of the multiple scientific exploration missions in the Explorer space flight program. The missions are characterized by relatively moderate cost, and by small to medium sized missions that are capable of being built, tested and launched in a short time interval compared to the large observatories.

For further details visit the Explorers website at <http://fpd.gsfc.nasa.gov/projects.html>, then choose from the visit site project bar--Code 410 Explorers Program.

## Rollout of NASA's Program Guideline Handbook on Program/Project Management



Associate Deputy Administrator, General John Dailey and Associate Administrator for Earth Science, Dr. Ghassem Asrar

A Town Hall was held on Tuesday, October 6. The subject of the meeting was Rollout of NPG 7120.5A—NASA's Program Guideline Handbook on Program/Project Management. Presentations were made by General John Dailey, HQ Deputy Administrator; Dr. Ghassem Asrar, Associate Administrator for Earth Science; Ms. Carolyn Griner, Deputy Director of Marshall Space Flight Center; Dr. Ed Hoffman, HQ Manager for Program/Project Management Initiative;

and our Center Director, Mr. Al Diaz.

If you would like to obtain a copy of the handout please send an email request to [gsfcpa@listserv.gsfc.nasa.gov](mailto:gsfcpa@listserv.gsfc.nasa.gov) with Town Hall Handout in the subject line and your mail code.

## Employee Viewing of STS-95 Launch

Are you wondering where you can view the launch of STS-95 on October 29? Wonder no more. Goddard employees are invited to view this historic launch via NASA TV in the Building 8 auditorium. Pre-launch activities begin at 1:30 p.m. The launch is currently scheduled for 2:00 p.m. Employees attending the launch will receive special handouts and refreshments will be served.

Goddard plays a major role in this mission. The primary objectives of this flight are to conduct a variety of science experiments being carried in the pressurized Spacehab module, the deployment and retrieval of the Spartan free-flyer payload, and operations with the HST Orbiting Systems Test (HOST) and the International Extreme Ultraviolet Hitchhiker (IEH) payloads being carried in the payload bay.

For detailed information please visit Goddard's internal webpage at <http://internal.gsfc.nasa.gov> and click on Goddard's role in STS-95.

## NASA Contributes Technology to War Against Cancer

by Terri Hudkins, NASA Headquarters

In observance of October as Breast Cancer Awareness Month, NASA will release information on new ways aerospace research and technology is helping in the understanding, detection and treatment of all types of cancer.

A NASA fact sheet available on the Internet highlights diagnostic technology currently available and features NASA research and technology that may improve cancer diagnosis, surgical procedures and drug therapies in the future. The website address is: <http://www.nasa.gov/women/welcome.html>

Five critical cancer experiments will be conducted on the upcoming Space Shuttle mission, STS-95, currently targeted for launch on Oct. 29. A fact sheet describing these experiments will be available closer to launch.

Cancer is the second leading cause of death for Americans. According to the National Cancer Society, 564,800 Americans are expected to die of the disease this year -- more than 1,500 people a day. Men have a one in two lifetime risk of developing cancer and for women the risk is one in three. The National Cancer Institute estimates overall annual costs for cancer at \$107 billion.

## October is the National Disability Employment Awareness Month

In recognition of President Clinton's proclamation that October is the National Disability Employment Awareness Month, the People with Disabilities Advisory Committee, PWD, has invited Mr. Claude Grant to be the keynote speaker to discuss the challenges of the 30 million working-age adults with disabilities. Mr. Grant is the Project Manager for the President's Committee on Employment of People with Disabilities and was the first visually impaired law graduate in the history of the Catholic University of America, Washington, D.C. Come out, support and learn about inclusion in the work place and in the educational arena on October 13, 1998, building 3, from 11:30 to 1:00 pm.

To keep abreast of what the PWD is doing subscribe to their listserv at [pwd\\_community@listserv.gsfc.nasa.gov](mailto:pwd_community@listserv.gsfc.nasa.gov)

## 1998 NASA Honor Awards

The due date for the 1998 NASA Honor Awards has been extended to Wednesday, October 21, 1998. If you plan on making a submission, the transmittal sheet for the awards can be found on the OHR Home Page: <http://ohr.gsfc.gov>



## New or Redesigned Webs

### The Training Tribune

Liz Saniga of Sanad Support Technologies, Media/Training Specialist for the Goddard Library, has recently "webbed" her internal newsletter, The Training Tribune. The newsletter compiles the many training opportunities for Information Professionals and staff into an easy to access format. The webpage is available monthly at <http://library.gsfc.nasa.gov/Tribune/Trib.htm>.

### CNE

The Center Network Environment (CNE) web site has a new look! Take a peek at <http://cne.gsfc.nasa.gov/>



## Goddard's Fall Community Day Celebration a Smashing Success

by Cherice Simmons, Visitor Center

Goddard's Community Day on Sunday, September 27, drew a record crowd of over 9,000 visitors. There was something for everyone. In the children's' activity tent every hour on the hour kids played space



Just a few of the many activities enjoyed by the children at Goddard's Community Day

bingo; made space helmets, balloon rocket and pop rockets; and were involved in arts and crafts. Another hot item was the Project Showcase where over 20 of NASA current projects set-up displays and provided information on what really happens at NASA daily behind the scenes. Prince Georges County made available their starlab-an inflatable planetarium. The younger age kids were dazzled with the "Puppets in

Space Show." The Eleanor Roosevelt High School clarinet chorus entertained the public. Goddard Jeopardy and Trivia provided game fun for young and old alike.

Some of our old faithfuls- Living in Space" Presentation, center tours, control line-model aircraft demonstrations, the radio club and the model rocket launch drew excitement and large numbers of participants. The day was filled with informative lectures as well. Waleed Abdalati, Dr. David J. Thompson and Dennis Andrucyk gave presentations in the areas of earth science, space science and technology respectively.

Comments about Community Day ranged from "There is so much to do," and "I just did not have enough time." However, we at the Goddard Visitor Center do not find this as a complaint, but as a complement that we are doing the right thing and the public was really pleased. We look forward to repeat performances.

## Goddard's Rossi X-ray Timing Explorer Satellite Detects X-Rays Coming from Tremendous Gamma-Ray Flare

Dr. Tod Strohmayer and his colleagues at Goddard, and a team of scientists led by Dr. Chryssa Kouveliotou of NASA's Marshall Space Flight Center in Huntsville, AL, used NASA's Rossi X-ray Timing Explorer satellite and NASA's Compton Gamma Ray Observatory respectively to detect faint X-rays and a series of about 50 flashes from the star a type called a Soft Gamma Repeater (SGR), known as "SGR1900+14" in the constellation Aquila.

A magnetar forms from the explosion, or supernova, of a very large, ordinary star. The star's heavy center collapses under its own gravity into a dense ball of super-compressed matter 12 miles across. This "neutron star" consists mostly of neutrons in a dense fluid, but the outer layers solidify into a rigid crust of atoms about 1 mile deep, with a surface of iron.

Even with this solid crust, a magnetar is incredibly unstable. Almost unimaginable magnetic fields, about 800 trillion times that of Earth's, cause the crust to crack and ripple in powerful starquakes. The energy released in these explosive starquakes streams out into space as intense flashes of gamma-rays. In the August 27 flare, pure magnetic energy was also released, as the star's entire crust was broken to bits.

"A magnet this strong could erase the magnetic strip on the credit cards in your wallet or pull the keys out of your pocket from a distance halfway to the Moon," said Duncan.

Find out more by visiting <http://www.magnetars.com/> on the Internet.

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