



National Aeronautics and  
Space Administration  
Goddard Space Flight Center

# Goddard News

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## Advanced weather satellite set for launch

Final preparations are underway at Cape Canaveral Air Station, Fla., for the launch of the geostationary weather satellite (GOES-J), the second in a series of next-generation weather satellites. GOES-J is scheduled to launch aboard an Atlas 1 rocket on May 19, at 1:42 a.m., EDT, from launch complex 36, Pad B, on Cape Canaveral's Eastern Test Range.

"All is ready and we're prepared to support a May 19 launch," said Marty Davis, Code 415, GOES Project Manager. "The processing has gone quite smoothly and we're in good shape. We're all looking forward to getting GOES-J on-orbit."

GOES-J is a geostationary weather satellite developed and launched by NASA for the National Oceanic and Atmospheric Administration (NOAA) and is a key element in National Weather Service (NWS) operations and modernization program. NOAA is responsible for program funding and the in-orbit operation of the system, and also determines the need for satellite replacement. Once the satellite is launched and checked out, NOAA assumes responsibility for the command and control, data receipt and product generation and distribution.

On-orbit, GOES-J will be joining GOES-8 (1), launched in April 1994. NASA Goddard is the lead center for GOES-J spacecraft, responsible for the procurement, development and verification testing of the spacecraft, instruments and unique ground equipment.

Following deployment of the spacecraft from the launch vehicle, GSFC is responsible for the mission operation phase leading to injection of the satellite into geostationary orbit and initial in-orbit satellite checkout and evaluation.

In 1983, NASA signed an agreement with the National Oceanic and Atmospheric Administration

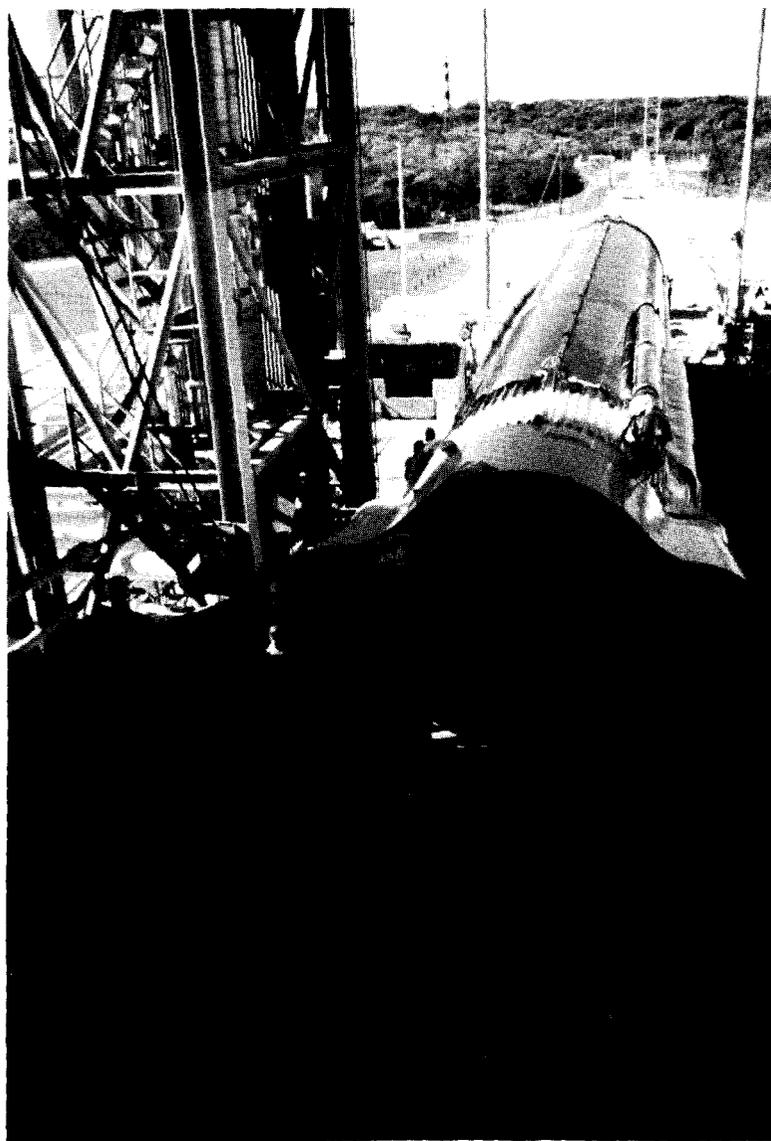


Photo by NASA

Workers at Complex 36, at Cape Canaveral Air Station, prepare for the erection of the Atlas 1 launch vehicle at Pad B. After being lifted into a vertical position, the Atlas first stage was mated to the AC-77 Centaur stage. The expendable launch vehicle will carry the GOES-J advanced geostationary weather satellite. GOES-J becomes GOES-9 after it has been checked out on orbit.

(NOAA), to design and build a new generation of weather satellites. These satellites carry instruments that will operate as never before - including half hour or near continuous observation of Earth.

"The new series of GOES satellites provides significant improvements over the previous GOES sys-

*Continued on page 7*

# Buyout review

The legislation authorizing buyouts for non-defense agencies expired on March 31, 1995. In early February 1995, the Agency decided to open another buyout period due to reductions in NASA's workforce size and requests by employees to offer additional buyouts. The buyout period opened on Feb. 6, 1995 and closed March 22, 1995. Originally, buyout numbers were allocated to each Center with priority groups designated; but, subsequently all limitations were removed.

Agencywide there were 1,703 buyout applications with 1,430 separations. At Goddard, applications totaled 332 with 249 employees actually separating. In addition, the Agency approved 60 exten-

sions to the March 31, 1995 date for mission critical needs. There were five employees approved for extensions at Goddard with the last extension ending in February 1996.

## STATISTICS:

### Skill Breakdown:

Scientists & Engineers - 109  
Professional Administrative - 56  
Technicians - 59  
Wage Grade - 1  
Clerical - 24

### Supv/Nonsupervisory Breakdown:

Supervisors - 30  
Nonsupervisors - 219

### Separation Category:

Optional Retirees - 188

Early Retirees - 40

Resignees - 21

Gender

Female - 47

Male - 202

### Grade Breakdown:

SES - 3

GS-14/15 - 74

GS-12/13 - 122

Below GS-12 - 50

### Minority/Nonminority:

Minority - 22

Nonminority - 227

Meanwhile, early outs are still being offered through Sept. 30, 1995.

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## Latest Tracking and Data Relay Satellite prepares for flight

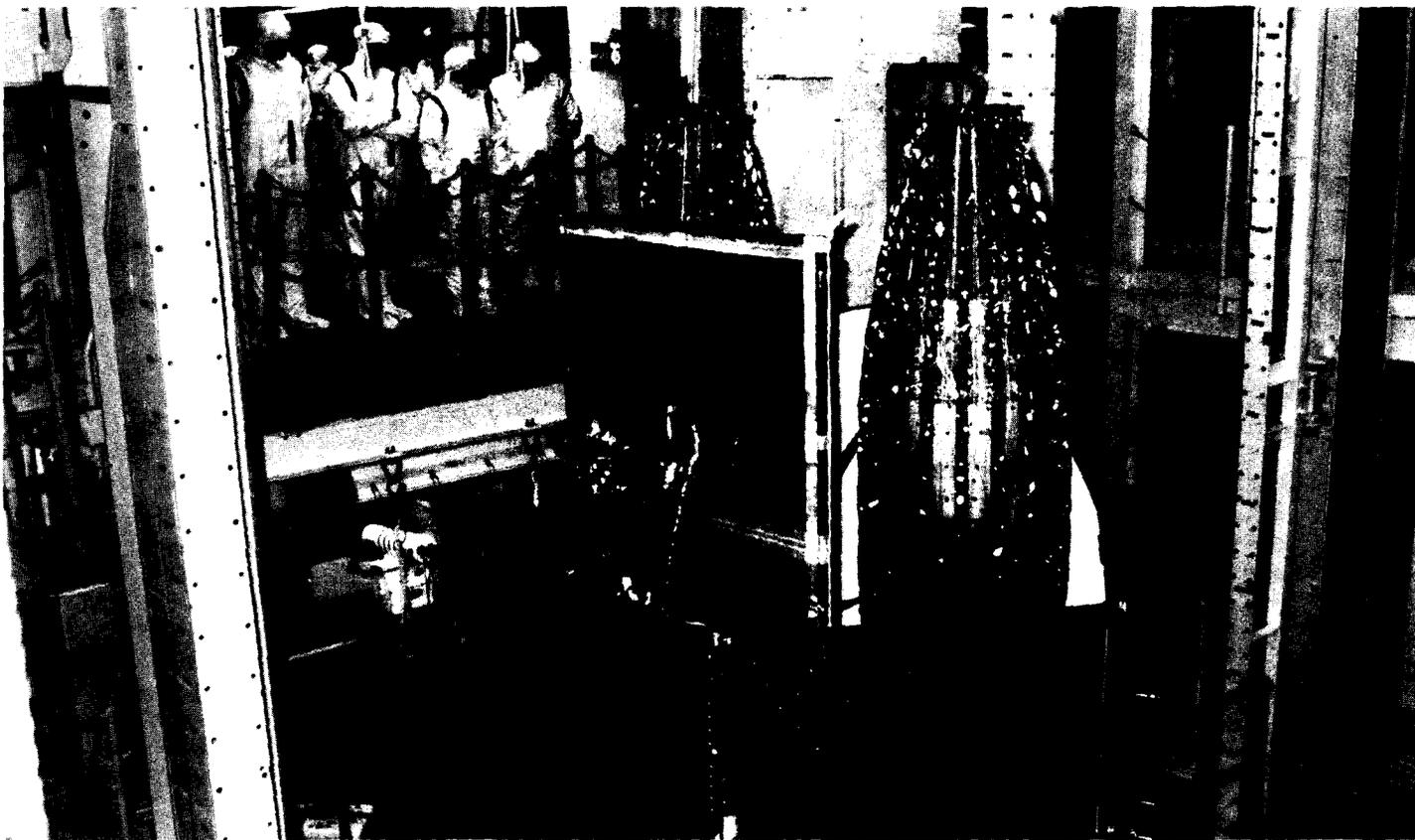


Photo by NASA

Space Shuttle Discovery crew members for Mission STS-70, Mission Specialists Donald Thomas (second from left) and Mary Ellen Weber (right) inspect the new Tracking and Data Relay Satellite (TDRS-G) while taking part in a Crew Equipment Interface Test with members of the Kennedy Space Center payloads processing team in the Vertical Processing Facility. The Goddard-managed TDRS-G is the primary payload for STS-70 and will be deployed by the five member crew early in the mission. The Tracking and Data Relay Satellite System has reduced NASA telecommunications costs by up to 60 percent while increasing data acquisition and communications with Earth orbiting satellites by as much as 85 percent for many user spacecraft, and 100 percent for some users, depending on the spacecraft orbital position. STS-70 is scheduled for launch on June 8.

# The X-ray Timing Explorer



Photo by NASA

The Goddard developed X-ray Timing Explorer spacecraft is lifted onto a test stand in Building 29. The satellite will be shipped to its Cape Canaveral launch site in Florida the end of May. After several months of preparing the x-ray observatory for flight, XTE will be launched into a 375 mile low Earth orbit by a Delta rocket August 31. Also during May engineers and scientists from the three spacecraft instrument teams will gather at Goddard for the final pre-ship mission simulation. The XTE spacecraft will gather data about X-ray emitting stars and other systems within our Milky Way Galaxy and beyond. The data will allow scientists from around the world to advance the study of the physical processes associated with the life cycle of stars, galaxies, and even the universe itself.

## What's Up?

May 1995

**International Ultraviolet Explorer (IUE)**  
*May 1, marked IUE's 6,305th day in orbit:*

During April, IUE obtained a number of observations of Jupiter's North Aurora, at Jupiter's North pole, while tracking on the Galilean moon Gany-mede. The data are part of continuing observations of the Jovian aurora and the planet's ultraviolet reflectance following the impact of fragments of Comet Shoemaker-Levy in July 1994. The IUE spectra were obtained in coordination with Hubble Space Telescope observations and will be analyzed in conjunction with IUE spectra of the Jovian auroral system and upper atmosphere dating back to 1979.

These followup observations are of particular relevance since IUE was the only telescope, either ground or orbit based, capable of observing all 21 impact events and providing nearly 24 hour coverage of the collision phase of the encounter last July. Jupiter's North and South polar aurorae are electromagnetic phenomena similar to aurorae seen on Earth: the northern and southern lights. The new and past IUE data will help in better understanding long-term changes in the chemistry, composition, and temperature of the Jovian upper stratosphere, ionosphere, and aurorae, helping us to better define these systems for all planets in the solar system, including Earth.

# Goddard's Earth week activities

What did you do to celebrate the 25th anniversary of Earth week? Goddard employees observed Earth week in many different ways.

For Goddard's younger generation there was a tree planting to celebrate Earth week. Students from Goddard's Child Development Center participated in a tree planting ceremony, emceed by Jack Hodge, Chief of the Facilities Management Division. "This will be your tree and you can watch it grow, as you grow, from your classroom window," Hodge said to approximately 40 smiling faces. The children tossed dirt on "their tree" and each child took a sapling to plant at home in their own yards.

Dr. Robert Price, Director of the Mission to Planet Earth Office, Code 170 presented a special colloquium which likened the Earth's systems to the complex workings of the human body. "Just as a doctor would use a physical exam to detect changes in a patient, NASA is using advanced technology to directly monitor the Earth's vital signs," said Price. The diagnostic tool is the Mission to Planet Earth program, with its Earth Observing System, which uses satellite, instrument, and computational technology to look into the oceans, land surfaces, and the atmosphere, and maintain a "medical history" of Earth's subsystems by monitoring the "patient" over many years.

Three lunch time seminars were held as part of the Earth week activities. Dr. Robert Bindschadler, Code 971 of the Laboratory for Hydrospheric Processes, talked about ice sheets in Antarctica, Dr. Jim Collatz, Code 923, who supports the Laboratory for Terrestrial Physics, discussed global vegetation monitoring, and the Goddard Conservation Club presented a biographical video about the life of Rachel Carson.

One of the highlights of Earth week was the opportunity for Goddard employees to preview the Earth Science Fair. Code 900 pulled out all the stops with dozens of exciting exhibits. The fair also was the featured attraction at Goddard's Community Day which was attended by more than 4,000 people visitors on April 23.

The work week ended with a Center-wide picnic at the Goddard Recreation Center. Special guest, Bob Ryan, a local television meteorologist talked about how space technology and the GOES weather satellites in particular have vastly improved forecasting.



Karl Mueller, Code 522, bikes into GSFC from Prince Frederick (80 miles round-trip) to celebrate Earth Week.



Steve Bidwell of the Microwave Sensors Branch, Code 975, explains the airborne radar instrument to Jim Abshire, Code 924.



Don Henderson, Code 441, looks on as daughter, Katie, helps plant a tree, while Goddard Child Development Center teacher, Ellie Griffin, assists Nicole Czarnecki.



Goddard Child Development Center students receive blue spruce saplings at tree planting ceremony.

Photos by Mark DeBord

# Bi-annual "Open House" ends Earth week



Bob Reese of Goddard's Model Aircraft Club demonstrates control-line models to visitors.

Future Earth scientist scopes out the hands-on display provided by the Geodynamics Branch, Code 921, at the Earth Science Fair.



The Goddard Space Flight Center celebrated its bi-annual "Open House," on April 23. The Center opened its doors from 10 a.m. - 4 p.m. for a day of special events. Approximately 4,000 visitors stopped by the Goddard Visitor Center.

The activities included bus tours of the facilities, several of which are not generally open to the public. Members from various projects and departments were available to answer questions and provide information to the public. Tours included the Spacecraft Systems Development and Integration Facility, Spacecraft Test and Integration Facility, the Goddard Machine Shop, the Hubble Space Telescope Control Center, and the NASA Communication Switching Center.

An added attraction featured the Goddard Earth Science Fair in commemoration of Earth Day. The fair highlighted some of Goddard's world renowned scientists and showcased the research and development work of Goddard's Earth Sciences Directorate, Code 900.

Family entertainment also included living in space demonstrations and a special model rocket launch. A Control-Line Model Aircraft demonstration was given by Goddard's Model Airplane Club, and the Goddard Amateur Radio Club provided a demonstration on amateur radio. A lecture on "NASA's Eye in the Sky, Observing Catastrophic Weather From Space," was given by Dr. Fritz Hasler of Goddard's Laboratory for Atmospheres, Code 912.

The Visitor Center hosted Earth Week activities that included: the "Goddard Scavenger Hunt", where visitors were provided with Earth related questions whose answers could be found inside the Visitor Center. Also included was "Goddard Jeopardy", similar to the TV game show, where Earth related answers were given to visitors who had to ask the right question to receive a prize. Also featured was an Earth art contest for children ages 12 and under. The Visitor Center provided an art table, paper and art supplies. All drawings were Earth related and with the one judged the best one receiving a prize.



Dad and sons investigate the Gemini capsule at the Goddard Visitor Center.

Community Day visitors check out the globe in the Building 28 atrium, while attending the Earth Science Fair.



Photos by Mark DeBord

# On the cutting edge

by Karen Davis

Born in Pakistan, Mansoor (Mooney) Ahmed, of Goddard's Thermal Engineering Branch, Code 724.3 once dreamed of being a pilot. A childhood fascination with things that flew led him to join the Pakistan Air Force Academy where he studied in hope of making his dream come true.

Unfortunately, Ahmed developed near-sightedness and was declared unfit to fly. He was given the option of staying in the academy and studying aeronautical engineering. He accepted the offer considering that to be the closest thing to flying.

Around this time, however, his parents decided to move to the United States. Ahmed decided to join them even though he thought it meant leaving his dream behind. "I never dreamed that I would end up in a career that was more challenging than any army could offer. This just proves that all things in life happen for a reason," Ahmed said.

Ahmed attended the University of Maryland, College Park, majoring in mechanical engineering, and received a bachelor's degree in mechanical engineering. Later, he attended the George Washington University, Washington, D.C., where he earned a master's degree also in mechanical engineering.

He joined the space program in 1981 when he was hired as a contractor to work on the thermal design of the science instruments used on the Hubble Space Telescope (HST). "As part of the HST program, I was fortunate enough to be involved with cutting edge technology," said Ahmed. In 1989, he became a civil servant accepting an appointment as the lead thermal engineer for the HST project, where he prepared the thermal team for the HST launch.

After a successful launch, Ahmed directed his efforts towards preparations for the first HST servicing mission. He provided leadership to a team of thermal engineers who prepared the HST replacement hardware, guided mission planning with extensive thermal analyses for planned and contingency situations, and provided around-the-clock coverage during the servicing mission.

"The most interesting part of the job was planning for the servicing mission. The majority of the analyses consisted of determining how long the HST replacement hardware could survive harsh thermal environments in the Shuttle cargo



**Mansoor (Mooney) Ahmed**

bay once taken out of their protective enclosures. It was our job to design the mission timeline and extravehicular activity procedures to maximize the survivability of the hardware during change-out," said Ahmed.

In November 1993, Ahmed was promoted to head, Shuttle Payloads Design Section of the Thermal Engineering Branch. He also continues to serve as thermal systems manager for the HST project.

"I really enjoy HST and leading the team in determining what needs to be done. I am fortunate to work with top notch, technical people who are conscientious of the importance of their job," Ahmed said. In terms of the future, Ahmed says that he wants to continue growing and learning the challenges of his supervisory position and expand his knowledge of spacecraft design from the systems perspective.

At present, Ahmed is involved in planning mission timelines for the second HST servicing mission. Two new instruments, the Near Infrared Camera and Multi-Object Spectrometer and the Space

Telescope Imaging Spectrograph are now under construction and testing is scheduled to begin in early 1996. The team is looking even further down the road to new advanced replacement instruments for the third servicing mission. "We have learned a lot from the first servicing mission and HST in general. We are reviewing the actual thermal environments experienced during the life of HST to date. We are applying the knowledge to better design the future instruments for HST and hope to make things simpler for the astronauts during future servicing missions," said Ahmed.

"I want to do the best job I can to support Goddard's goal. I want to help the general public to understand the importance of space research, as well as the risks involved. Most people are not fully aware of the complicated machinery and stringent requirements that it takes to build spacecraft. It is a slow, step-by-step process, however it's all worth it in the end with a successful mission. Hopefully the next one will be an even bigger success," Ahmed concluded.

Photo by Mark DeBord

## GOES-J Launch

*Continued from page 1.*

tem in weather imagery and atmospheric sounding information," Davis said. "This enhanced system improves weather services, particularly the timely forecasting of life- and property-threatening severe storms."

Goddard designs the satellite to operate in geosynchronous orbit 22,240 miles (35,790 kilometers) above the Earth, thereby appearing to remain stationary. In addition, Goddard developed the GOES I through M satellites with a three-axis body stabilized spacecraft design. This enables the satellite to "stare" at the Earth and provide more frequent images of clouds, Earth's surface temperature and water vapor fields, and to sound the atmosphere for its vertical thermal and vapor profiles.

"These are the first ever three-axis stabilized weather satellites," Davis said. "It certainly has had its challenges, in design, construction, and even during launch and on-orbit checkout, but we've enjoyed the challenges."

In the past, scientists from environmental service agencies have stated a need for continuous, dependable, timely, and high-quality observations of the Earth and its environment. The new series of GOES satellites provide half-hourly radiometric observations to fill the need. The instruments on board the satellites measure Earth emitted and reflection radiation from which atmospheric temperature, winds, moisture and cloud cover can be derived.

"Working with the NOAA managers and operations personnel and in the environment of the NOAA control center in Suitland, Md., adds another dimension to this effort," Davis added.

Processed data are received at the National Weather Service's National Centers for Environmental Prediction, Camp Springs, Md., and NWS forecast offices across the United States.

GOES-J data products also are used by commercial weather users, universities, the Department of Defense, NASA, and the global research community. Users of the GOES products also can be found in the air and ground traffic control, ship navigation, and agricultural sectors.

GOES-K, the third in the series, is currently scheduled for launch in 1999 or as needed to replace GOES-8.

# Goddard employees receive NASA award

NASA recently sponsored two honoree events recognizing individuals for their exceptional dedication to quality work and flight safety to the Space Shuttle payloads team.

On Feb. 3, after a 24-hour delay, Goddard Manned Flight Awareness honorees witnessed the historic night launch of STS-63. Congratulations to John Bacinski, Allied Signal Technical Services Corp. (ATSC); Brant Brockdorff, ATSC; Richard Fredo, Lockheed Technical Operations Co. (LTOC); John Hankinson, ATSC; Charles Hicks, ATSC; Patricia Mackey, 205.1; Laura March, Computer Sciences Corp. (CSC); William Miller, Hughes STX Corp.; Stephen Palm, Science Systems and Applications, Inc. (SSAI); Pepper Powers, CSC; Jo

Pulkkinen, Loral AeroSys; Gerald Repass, Code 501; Henry Sampler, Code 717.3; John Spuria, LTOC; and Timothy Thompson, CSC.

A special Manned Flight Awareness event was hosted in late March at the Johnson Space Center in conjunction with the completion of Phase 1 of the Incremental Design Review for the international Space Station. Congratulations to Holland Bell, Code 820; Robert Chapman, ATSC; Donald Colaizzi, CSC; Kenneth Griffin, ATSC; Thomas Griffin, Code 442; Denver Herr, Code 530.4; Mark Jaster, Code 442, Edward Lawless, Code 542.1; Dawn Lowe, Code 530.4; Kenneth Rosette, NSI Technology Services Corp.; Mina Samii, CSC; and Wallace Whittier, LTOC.

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## NOAA-14 investigative board formed to study anomaly

by Ernie Shannon

An investigative board has been formed at the Goddard to study a problem that developed in March with the NOAA-14 microwave sounding unit, which measures the vertical temperature of the atmosphere up to about 12 miles (20 kilometers).

On March 2, the unit suddenly stopped performing its normal scan sequence. Its motor continued to draw current causing some overheating, but engineers discovered the problem and shut down the motor before any apparent damage occurred. On March 10, the investigative board was formed with Goddard's Jim Ryan, Code 926, head of the Mechanical Engineering Branch chairing the board.

As part of the board's initial investigation, the microwave sounding unit was reactivated for short periods on March 15 and 17. These reactivations were successful and the unit was able to perform the scanning sequence.

After the initial reactivations and in an effort to avoid difficulties in the future, engineers developed a software patch designed to command the unit's motor to shut down should the scanning sequence suddenly stop as it did on March 2, Ryan said. As of now, the unit continues to function and except for an anomaly with the instrument's encoder, everything related to the microwave sounding unit is operating normally.

# Goddard's employees take part in Take Our Daughters to Work day

by Tammy Jones

The "Take Our Daughters to Work" (TODTW) day had somewhat of a different flair at Goddard this year. It focused closely on girls at the junior high school level and above. Also, girls spent more time on the job with their parent or mentor.

Much of the days' activities were planned by Lynne Slater, Equal Opportunity Program Office, Code 120; however, other divisions planned presentations and demonstrations so that the girls could get a feel for their parent's or mentor's actual work environment. Slater says the activities were geared towards girls who are in middle school or older because that's the age when some critical academic choices are being decided.

Many of the girls said they were pleased with the programs and encouraged by the diverse group of women who participated in the career panels. There were career panels in the fields of space and earth sciences, flight systems, systems testing, data systems and networks.

Namrita Kapur, Code 734, is one of the few deaf female engineers in the U.S. She says difficulty communicating with coworkers definitely has been the biggest challenge in her career, but it hasn't stopped her from pursuing her

dreams. "I don't let deafness stop me," said Kapur. "I encourage each of you to not let any disability stop you from doing anything because you are unique and special."

Kapur's message stuck with 13-year-old Detrolia Allison, who spent the day with her mentor, Michelle Mangum, Code 130. "I learned that it doesn't matter whether you're deaf or have some other disability, you can do whatever you want if you stick to it," Allison said. Allison, who is interested in pursuing a career in fine arts, did not realize that NASA could be one of her employment options until she took part in TODTW and met one of Goddard's artists.

Carol Mosier, Code 724, head of the Advanced Analytical section, spoke of how her career advanced to management



photo by Mark DeBord

Dr. Carol Crannell, an astrophysicist in Code 682, talks to students visiting Goddard during "Take Our Daughters to Work Day." Crannell investigates the sun and solar flares.

and the challenge of balancing work and family. Many of the girls asked Mosier questions about her work with cryogenics.

Hands-on demonstrations help students grasp science concepts, and that's how Aprille Ericsson-Jackson, Code 714, captured the girl's attention. Ericsson-Jackson used a space shuttle model, model rockets, toilet tissue and balloons to demonstrate propulsion and how rockets work. She talked about her interest in sports and shared her dream of becoming an astronaut. Her advice to the girls was for them not to limit themselves.

According to Slater, about 310 girls attended this year's the TODTW activities here at Goddard. She says the girls seemed very focused and said they got a lot out of the activities.

TODTW is a national program designed to provide girls with the opportunity to explore their interests and concerns about work in an environment that focuses on their needs.

While women are 52% of the total population, they represent only 18% of the science and engineering work force. Slater says girls frequently succumb to peer pressure and do not take the math and science courses in high school they need to pursue technical careers. Goddard's aim in participating in the program was to expose girls to women in science and engineering, who can serve as role models, and to give them the opportunity to learn about careers in these fields.



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