



National Aeronautics and  
Space Administration  
Goddard Space Flight Center

# Goddard News

Greenbelt, Maryland / Wallops Island, Virginia

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## Hubble uncovers new clues to the universe's evolution

by Jim Elliott

Astronomers using NASA's Hubble Space Telescope as a "time machine" have obtained the clearest views yet of distant galaxies that existed when the universe was a fraction of its current age.

A series of remarkable pictures, spanning the life history of the cosmos, are providing the first clues to the life history of galaxies. The Hubble results suggest that elliptical galaxies developed remarkably quickly into their present shapes. However, spiral galaxies that existed in large clusters evolved over a much longer period — the majority being built and then torn apart by dynamic processes in a restless universe.

Astronomers, surprised and enthusiastic about these preliminary findings, anticipate that Hubble's observations will lead to a better understanding of the origin, evolution, and eventual fate of the universe. The Hubble observations challenge those estimates for the age of the universe that do not allow enough time for the galaxies to form and evolve to the maturity seen at an early epoch by the Space Telescope.

"These unexpected results are likely to have a large influence on our cosmological models and theories of galaxy formation," says Duccio Macchetto of the European Space Agency and the Space Telescope Science Institute (STScI). "These Hubble telescope images are sufficient to provide a first determination of the properties of these very young and distant galaxies."

"This is compelling, direct visual evidence that the universe is truly changing as it ages, as the Big Bang model insists," emphasizes Alan Dressler of the Carnegie Institutions, Washington, DC.

"Though much of the quantitative work can be done best with large Earth-bound telescopes, Hubble Space Telescope is providing our first view of the actual forms and shapes of galaxies when they were young."

"These initial results are surprising," adds Mauro Giavalisco (STScI). "Hubble is giving us, for the first

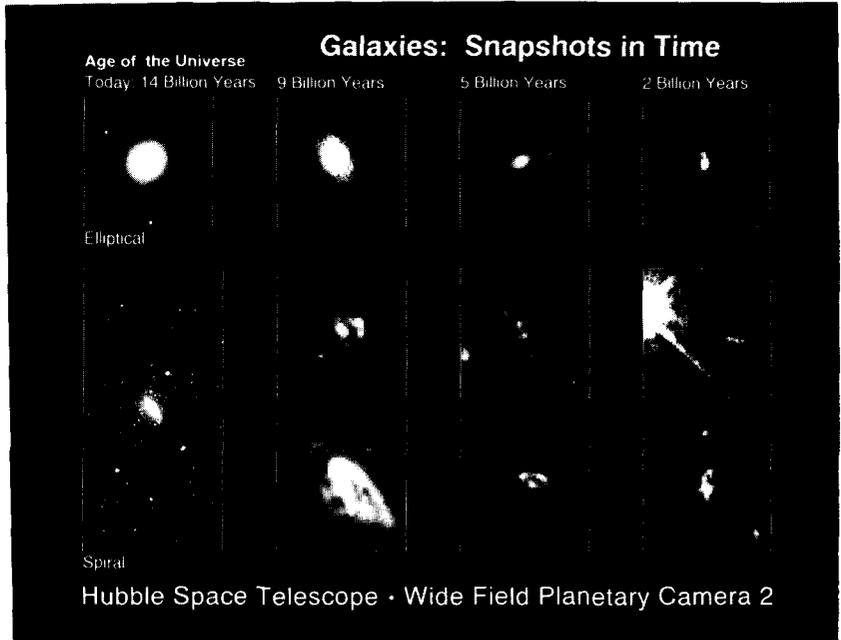


photo by: NASA

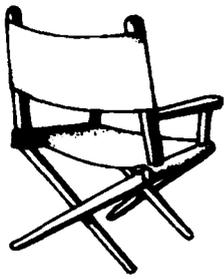
time, a chance to study in great detail the properties of very young galaxies and understand the mechanisms of their formation."

A series of long exposures, taken by separate teams led by Macchetto, Dressler, and Mark Dickinson (STScI) trace galaxy evolution in rich clusters that existed when the universe was approximately one-tenth, one-third, and two-thirds its present age. Their key findings:

- Scientists identified the long-sought population of primeval galaxies that began to form less than one billion years after the Big Bang.
- One of the deepest images ever taken of the universe reveals a "cosmic zoo" of bizarre fragmentary objects in a remote cluster that are the likely ancestors of our Milky Way Galaxy.
- A series of pictures, showing galaxies at different epochs, offers the most direct evidence to date for dynamic galaxy evolution driven by explosive bursts of star formation, galaxy collisions, and other interactions that ultimately created and then destroyed many spiral galaxies that inhabited rich clusters.

Continued on page 3

SEASONS GREETINGS



# Director's Dialogue

**Q:** The sign at the Goddard entrance from the Baltimore-Washington Parkway reads "employees only," which I've always thought meant employees with a valid GSFC sticker on their windshields. Can you please clarify who is included in "employees only," because for the past two weeks I've had to sit at the gate and wait for a visitor to complete the necessary form to enter the Center. Not only does it cause traffic to back up at the gate, it also causes me (and probably other employees) to arrive at work a couple of minutes late. If contractors come on Center to work for the

day, they should enter through the main gate after obtaining the necessary visitor's pass and security should enforce the "employees only" rule at the Parkway Gate.

**A:** The terminology "employees only" refers to both civil servants and contractors assigned to the Center on either a permanent or temporary basis. Temporary employees are issued paper, non-picture badges and vehicle passes marked with an expiration date. Permanent on site employees are issued plastic, picture badges (NASA or GSFC) and decals for a maximum of three vehicles: off-site

contractors are issued one decal. When operating a non-decaled vehicle, a permanent employee is issued a "one-day" vehicle pass after displaying a valid picture badge and signing in at any of the Center's gates. Delays experienced due to this procedure should be minimal. However, to reduce queuing at the gates and thus inconveniencing fellow employees, the GSFC Security Office encourages all employees to use this service on a strictly limited basis.

**Sherry Foster, director  
Management Operations  
Directorate, Code 200**



Dr. France Cordova, NASA's chief scientist, speaking to a standing room only audience at Goddard in mid-November. Dr. Cordova visited Goddard for two days meeting with Dr. Klineberg, scientists and researchers, touring the facility and addressing employees on science policy for the agency.

Dr. France Cordova

President Leonid Danilovych Kuchma of Ukraine being greeted by Center Director Dr. John Klineberg. While on a State visit, President Kuchma toured Goddard's Spacecraft & Integration and Spacecraft Development and Integration Facilities. He had a chance to see the actual construction or models of some of the projects managed by Goddard: the Tropical Rainfall Measuring Mission, the Fast Auroral Snapshot Explorer, the Hubble Space Telescope and the X-ray Timing Explorer.



Dr. John Klineberg and President Kuchma

The cargo bay payloads for Mission STS-63 are being transferred into the payload canister for transfer from the Operations and Checkout Building to the Orbiter Processing Facility at the Kennedy Space Center, Fla. Shown is Goddard's Hitchhiker crossbay carrier holding several experiments. The Space Shuttle Discovery is currently scheduled to lift off on Mission STS-63 in early February 1995.

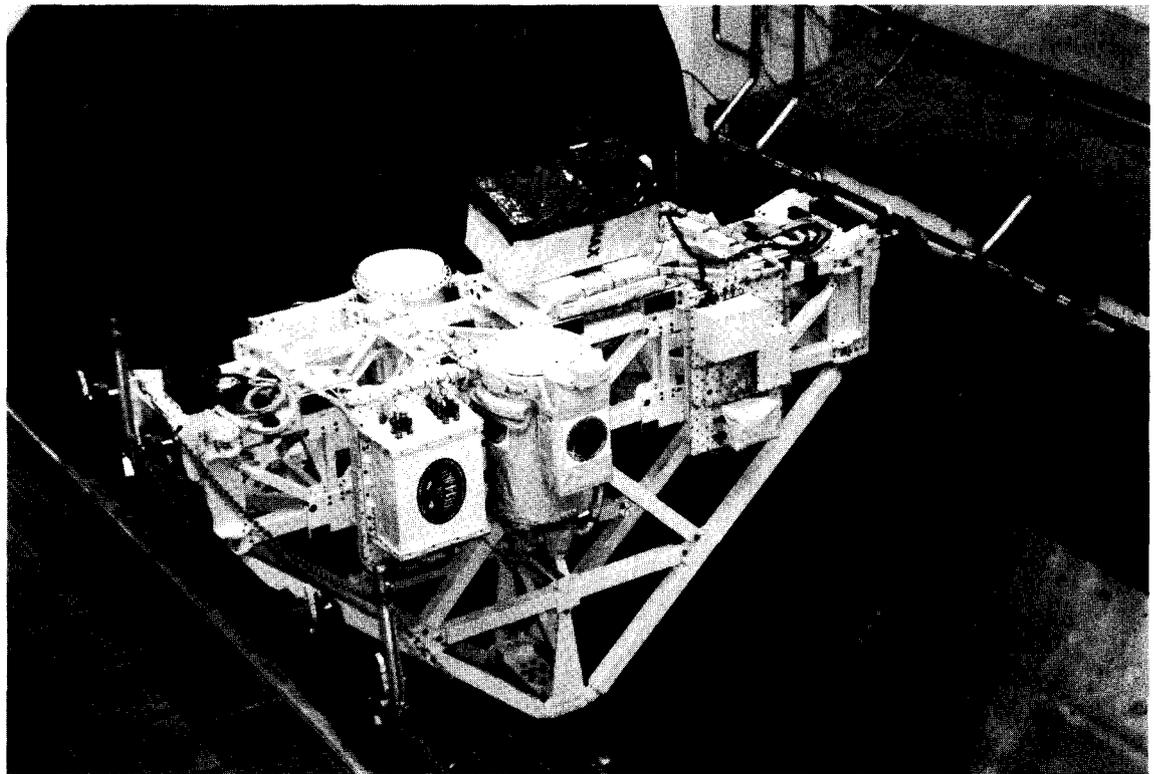


Photo by: NASA

## What's Up?

December 1994

### International Ultraviolet Explorer (IUE) *Days in orbit 6,216*

During November, IUE made a number of spectroscopic observations of the stellar system HD 5980, which is believed to consist of three massive stars located in the Small Magellanic Cloud. The Small Magellanic Cloud is a dwarf galaxy about 180,000 light years away. The combined visual brightness of the three stars is about 115,000 times that of our own Sun, and this has increased by about 50% over the last 15 years. IUE has obtained over 60

spectra of this system during this period.

These observations, together with ground-based observations, have taught the observers a great deal about the nature of this system. They have concluded that at least one of the stars is in a very advanced stage of stellar evolution and has a large and irregular mass outflow. This one star has apparently tripled in brightness since 1978, and is now 60,000 times as bright as our Sun.

In addition the IUE observations show that the velocity of the outflow has

decreased by approximately 20%, to about 4 million miles per hour. The density of the outflow has apparently increased and the total mass loss rate has probably increased.

It is currently unclear if these changes originate within the star itself, or because of a periodic interaction with another, as yet unconfirmed, companion star. The ongoing observations by IUE and ground based observatories will allow the continuing changes in the star to be monitored, and should lead to further insights as to their causes.

### New clues

*Continued from page 1.*

#### Postcards from Edge of Space and Time

The researchers used Hubble as a powerful "time machine" for probing the dim past. The astronomical equivalent of digging through geologic strata on Earth, Hubble peers across a large volume of the observable universe and resolves thousands of galaxies from five to twelve billion light-years away. Because their light has taken billions of years to cross the expanding universe, these distant galaxies are "fossil evidence," encoded in starlight, of events that happened long ago.

These long-exposure Hubble images will help test and verify ideas about galaxy evolution based on several decades of con-

jecture, theoretical modeling, and ground-based observation. Ground-based observations have not been able to establish which of several competing theories best describe how galaxies formed and evolved in the early universe.

Though the largest ground-based telescopes can detect objects at great distances, only Hubble can reveal the shapes of these remote objects by resolving structures a fraction of the size of our Milky Way Galaxy.

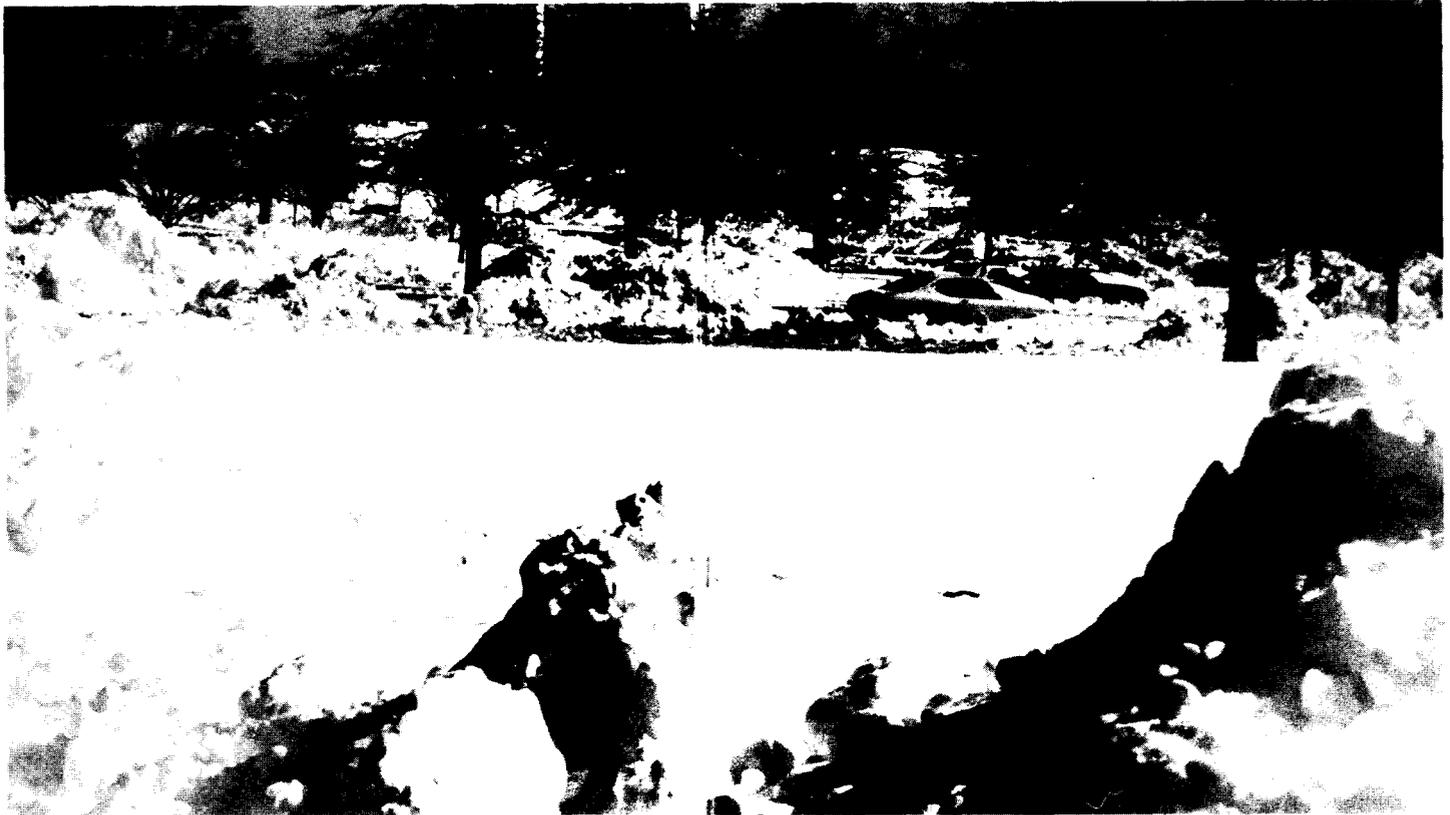
This is allowing astronomers, for the first time, to discriminate among various types of distant galaxies and trace their evolution. Like watching individual frames of a motion picture, the Hubble pictures reveal the emergence of structure in the infant universe, and the subsequent

dynamic stages of galaxy evolution.

Now that Hubble has clearly shown that it is an exquisite time machine for seeking our cosmic "roots," astronomers are anxious to push back the frontiers of time and space even further. "Our goal now is to look back further than twelve billion years to see what we are sure will be even more dramatic evidence of galaxies in formation," says Dressler.

The STScI is operated by the Association of Universities for Research in Astronomy, Inc., for NASA, under contract with Goddard. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency.

# With Winters arrival Center organizations ready for snow



The campus of GSFC during one of the Washington area's major snow storms.

The weather may get frightful, but Goddard employees don't need to worry, at least when on Center. Several Center organizations are prepared to deal with snow, ice, sleet, and the freezing temperatures often characterize winter in the mid-Atlantic region. This year, several new procedures and practices are in place to help the Center better respond to weather emergencies. They also are designed to provide employees and visitors with information as soon as possible.

In years past, plowing and shoveling were conducted by an all-volunteer, overtime workforce made up of civil service and contractor employees in Codes 220 and 230. The equipment operated was owned and maintained by Goddard. Last year's severe winter weather meant extremely high costs to keep the Center open and operating. Expenses included labor, supplies, fuel, vehicles and equipment and salt/sand mixtures. Like all Center organizations, the institutional element has a smaller budget this year, and it is projected that we could not respond to a winter like last year's with the current funding available. As a result, an alternative plan was developed that is

more cost-efficient and will be responsive to the needs of the Center.

Snow removal operations will be conducted under incentivized contract, by a company familiar Goddard. The firm cuts the grass on Center during spring and summer. Company representatives are on call 24-hours a day, and will report to the Center within one-hour of our decision to plow. Its payment will be based upon the depth of snow to be removed. The contractor will provide nearly all of the snowplows and vehicles necessary to clear the Center of snow and will follow predetermined priority routes in order to maintain access to mission-critical areas.

You already may have noticed color-coded maps of the Center posted in buildings; identical maps will be used by the snow-removal crews to clear the campus' vehicle and pedestrian routes. The terms of the contract call for the entire campus — regardless of priority code — to be cleared in eight hours. This includes roads, parking lots, sidewalks, and loading docks.

GSFC is unique for a Federal agency in that it must conduct 24-hour-a-day operations, monitoring and controlling

orbiting spacecraft, sending and receiving data to and from satellites, and conducting plant operations. Employees who support these mission-critical activities are considered "essential personnel," and the areas they work in are plowed first.

We would like to make improvements to snowfall itself, but nature doesn't seem to respond well to new procedures and practices. For example, our snow events do not always have a perceptible, dramatic end — flurries continue, and ice melts and refreezes on sidewalks.

In order to respond to this "secondary" precipitation, the Center will maintain an on-site crew to clear it. Regardless of who is plowing and shoveling, crews will be dispatched via radio from the 24-hour emergency console, located in Building 24. If you are aware of an area in need of attention, call the service desk 286-5555.

Snowstorms also don't cooperate by falling in the early evening, leaving eight-hours to plow before the majority of employees arrive for the day shift. By the time you hear an early-morning Center's status announcement on the radio several people have spent a num-

ber of hours assessing weather and driving conditions in locations around the D.C. and Baltimore metropolitan areas.

Throughout the night, crews drive local routes, including the Baltimore-Washington Parkway and Greenbelt Road, canvass many other Federal agencies (including the Office of Personnel Management, which determines status for Federal offices in downtown Washington), and monitors the National Weather Service and Accu-weather forecasts before recommending operating status to Goddard's Deputy Director Tom Huber, who makes the final decision on whether GSFC's operating schedule.

Then comes the task of rapid dissemination of our status message, so that early-arriving employees have adequate time to change their plans, if necessary. This aspect of snow removal operations has been significantly improved to help avoid misinformation, "non-information", and confusion.

Following the lead of local jurisdictions and school districts, the Center will use a color-code scheme for status announcements. Weather announcements tend to occur early in commercial broadcasts, and are less likely to be misinterpreted. Many employees are confused about the difference between liberal leave and delayed reporting (administrative leave). Using Code Blue and Code Yellow ensures a distinction between them, and hopefully, should reduce misunderstandings.

A wallet size card listing radio and television stations that broadcast the Center's operating status, as well as color code definitions have been printed and distributed. Extra copies are available from the Security Office at the Building 9 gatehouse, and by calling 286-0896. If you expect visitors or are hosting a meeting or conference during the winter months, feel free to call and request these cards.

Many employees rely on the Goddard Audio News Service (286-NEWS) to obtain operational status. In the past employees have had to call a number of times to get through. This year the Office of Public Affairs, Code 130, is providing 24 phone lines and this should significantly improve your chances of getting through the first time. The Center's Phonemail system also will carry status messages. It takes about one hour for a message to be distributed to all Phonemail boxes once it has been recorded. Employees who arrive early may want to concentrate on media announcements or 286-NEWS for current information.

### *Plowing scheme color-code:*

**Priority Code RED** — Roads: Explorer, Goddard (Greenbelt to Nimbus), Delta (Explorer to Building 4), Tiros, Nimbus, access to Building 25, Building 16W loading dock; Parking lots adjacent to Buildings: 3/13/14, 8 West, 4, 28 East, 29, 23 North, 25 Northeast, 9 VC, 9 Rear.

**Priority Code YELLOW** — Roads: Delta (COBE to Building 4), Aerobee, IUE, Minitrack, COBE, Goddard (COBE to Nimbus), access from Building 25 to GOES trailer pad, Areas 100-400; Parking lots adjacent to Buildings: 6/11/30, 21, 97, 26, 28 North, 5 West, 7/10/15 North, 16 North, 17 North, 25 Southeast, 32 West, 3/13/14 East (partial).

**Priority Code GREEN** — access from SCS to Building 31, VC entrance, Building 3/14 loading dock, Building 13 west parking lot, Building 2 east parking lot, VC parking lot (partial), entrance driveways to Buildings 6, 11, 21, 28, 5, 7, 22, 23, 8, 12. All other areas on Center will be plowed subsequent to these areas.

### *Operational scheme color-coded:*

**CODE GREEN: There is a normal work schedule.**

Despite current weather conditions, a normal work schedule is in effect for all GSFC employees at the Greenbelt facility. All employees scheduled to work should report at their normal time.

**CODE BLUE: There is a liberal leave condition.**

A normal work schedule is in effect for all GSFC employees at the Greenbelt Facility, and all employees who are scheduled to work are expected to report for duty. However, annual leave will be granted by the supervisor without prior approval upon request of a non-essential employee who, because of weather conditions, wishes to delay his/her arrival or to stay home for the entire day. Essential employees are expected to report on time.

**CODE YELLOW: There is a delayed reporting time.**

Because of hazardous weather conditions, the reporting time for all non-essential employees at the Greenbelt facility who were otherwise scheduled to work their normal work tour, has been delayed (1 or 2 hours will be specified, depending upon the status of plowing and shoveling operations). Administrative leave up to the number of hours specified will be granted to those employees who report to work and who, but for the weather conditions, would have reported at their usual time. Absence beyond the number of hours specified must be charged to the employee's annual leave or other appropriate leave category. Employees who do not report at all must account for their entire absence with annual or other appropriate leave and should make reasonable efforts to telephone the supervisor as soon as possible to inform him or her of their intentions and to request leave. Essential employees are expected to report on time.

**CODE RED: Non-essential employees are excused.**

Because of extremely hazardous weather conditions, all non-essential employees at the Greenbelt facility who are scheduled to work are excused from duty. Administrative leave will be granted to non-essential employees who, but for the weather conditions, would have otherwise reported for duty. Essential employees are expected to report to work on time.

**CODE YELLOW** and **CODE BLUE** also will be used for early dismissals at the Facility, when hazardous conditions develop during the workday. **CODE BLUE** is used when the Center continues normal operations but individual employees, with supervisory approval, choose to leave earlier than their normal departure time. **CODE YELLOW** is used when the Center dismisses non-essential employees early because of adverse conditions. Those non-essential employees who remain on duty at the time specified for early departure will be granted administrative leave for the remainder of the work tour. Employees who choose to leave earlier than the specified departure time must account for their absence through annual leave or other appropriate leave.

# The art of communication

by Karen W. Davis

She was a six-year-old watching television when she witnessed the crew of Apollo 11 complete a successful mission. It was at that moment Haydee Maldonado realized what she wanted to do in the future. Maldonado, now a communications systems engineer recalls the wonder of that moment. "I remember being so excited and asking my parents how could that guy talk from the moon? There were no phones and I could not see him but I could hear him. From that moment on I became fascinated with communication," said Maldonado.

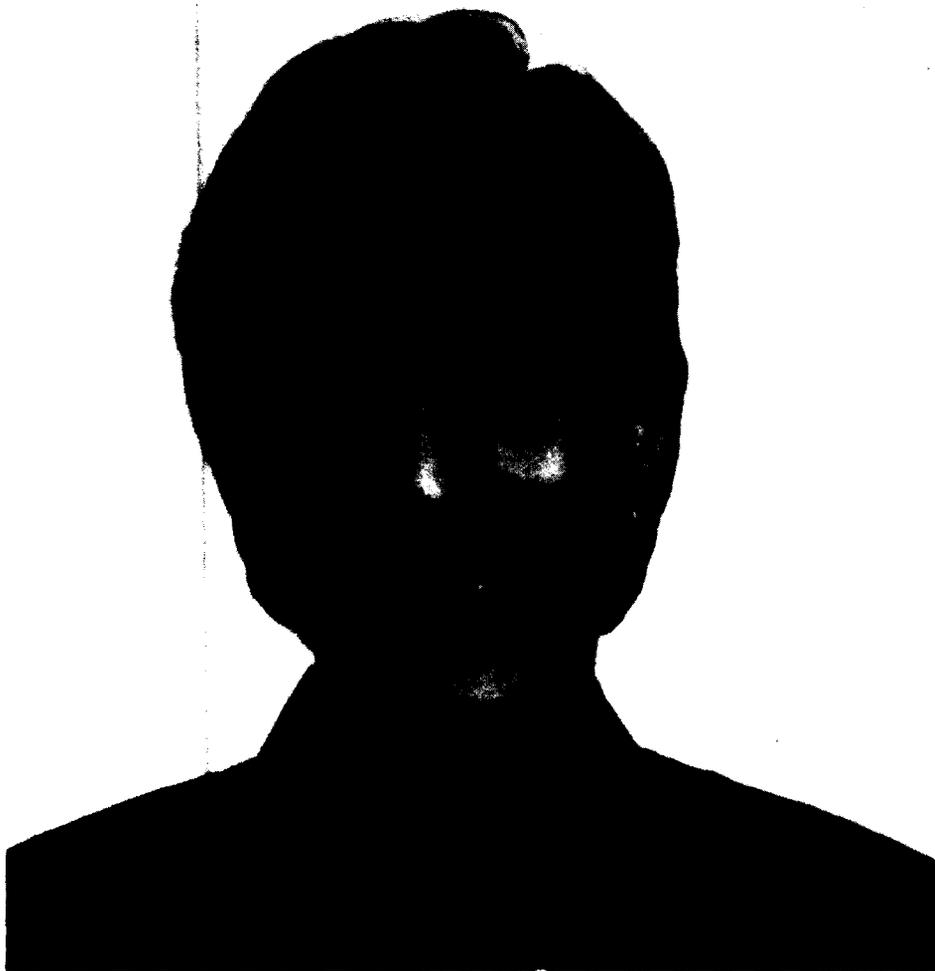
With a strong desire to explore the unknown, Maldonado, Code 737.7, began her journey to learn the art of radio frequency communications. "I wanted to know how things like phones, TV., planes, and radio worked. I knew that I wanted to explore the physics that supported this phenomena. I still get goose bumps when I think back to the day I watched Apollo 11," said Maldonado.

Born in San Juan, Puerto Rico, Maldonado received a bachelor of science degree in electrical engineering from the University of Puerto Rico, School of Engineering, Mayaguez Campus. After graduating in 1986 she began working for the Navy.

She began her Goddard career in 1988 joining the Pegasus project as a communications engineer. Her responsibilities included designing and building antennas, qualifying the transmitter for flight and writing programs to automate spacecraft tracking. "The Pegasus group was a small, tightly knit community where everyone interacted with one another. It was one of my most enjoyable experiences here at Goddard because it was almost like playing a game and trying to fit all of the pieces together," said Maldonado.

Maldonado worked as a radio frequency communications engineer for the Solar Anomalous Magnetospheric Particle Explorer (SAMPEX) project until 1992. "We were like a family, everyone worked together towards a common goal — to get the spacecraft in orbit on time. If there were problems, we all worked to solve them together. Whatever worked, we put into practice," Maldonado said.

Maldonado also has worked on the Fast Auroral Snapshot Explorer (FAST) doing integration and testing. She was



Haydee Maldonado

responsible for performing functional tests to check system readiness. Maldonado designed all the tests performed on the transponders, as well as integration and procurement services associated with the transponder.

Maldonado's expertise lies specifically in the communication component, which is a vital part of the entire spacecraft because it allows the spacecraft to receive and transmit commands from air to ground.

According to Maldonado, she wants to grow within the Flight Communications Systems group. "Even though you feel that you know a lot about something, there will always come a time when you don't know everything. Therefore, you should take advantage of every opportunity to learn more," said Maldonado.

Presently, Maldonado works for the X-Ray Timing Explorer (XTE) Project. She is the radio frequency communica-

tion system lead engineer. Her duties include the delivery, integration and testing of the XTE radio frequency communication system; this includes four antennas, two TDRSS transponders and an RF distribution network. "My main responsibility is to insure the XTE radio frequency communication system flight readiness. This is a very dynamic job in which something new happens everyday. It feels great to be able to contribute with ideas to the process of solving problems," she said.

"I am very proud to be a NASA engineer. I know the value of communication, discipline and education. One does not have to be a genius to work here, you simply have to try hard. I enjoy sharing my experiences with others, especially young people. I want them to understand that what we do here is not impossible. The only limitation to our development is ourselves," said Maldonado.

Photo by: Debbie McCallum

# Tony D, 27-year GSFC veteran dies

Long-time Goddard employee, Anthony C. DiBartolo died last month of a heart attack. DiBartolo, known to many as "Tony D", was 69. Before retiring, DiBartolo served as branch chief in the plant operations and maintenance division here at Goddard.

DiBartolo lived in Hyattsville, but was a Washington native and St. John's College High School graduate. He served with the Army in Europe and the Pacific during World War II.

DiBartolo worked for local plumbing and heating concerns before beginning his career with the General Services Administration in 1948. He later trans-

ferred to the Defense Department and then the Atomic Energy Commission, where he became a plumbing and heating supervisor. He worked for NASA from 1960 until retiring in 1987.

DiBartolo played the trumpet and for many years led the Golden Tones band. He also played with church, university and boys music groups and the Redskins band.

DiBartolo is survived by his wife, Elsie of Hyattsville; three sons, Anthony Jr., of Bowie, and John and Mark, both of Hyattsville; a daughter, Rosemarie Batista of Mount Airy, Md.; a sister Rose M. Tayman of Largo, Fla.; and four grandchildren.



Photo by Margie Small

Anthony (Tony D) worked in GSFC's plant operations & maintenance division.

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## Former GSFC nurse is killed

Maxine Replane, a former Goddard employee, was struck and killed by a car in a Prince George's County grocery store parking lot last month. Replane, who was 60-years-old, had worked at the Health Unit here at Goddard for seven years.

Replane was struck by a car being driven by a 76-year-old woman in the parking lot at Magruder's grocery store at Hilltop Plaza. According to the Blade News,

Replane parked in a parallel space in front of the store. As she started walking toward the lane between her car and the store, a woman in a Ford came up another lane and ran into Replane, who stumbled and fell beneath the Ford. Replane was dragged several feet because the driver reportedly did not realize she had struck Replane. She died two hours after being taken to Prince George's Medical Center.

A funeral service was held at Stein's Hebrew Funeral Home in Washington and the burial was at Mount Lebanon Memorial Cemetery in Adelphi. Replane is survived by her husband, William; daughters, Robin McDonough of Accokeek, Bambi Lowry of Chevy Chase, and Ginger Replane of Duncansville, Pa.; her mother, Goldie Charlip and a sister, Joyce Golding, both of Niskayuna, N.Y.

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## NASA scientist receives award for achievement

by Allen Kenitzer

Dr. JoAnne Simpson, chief scientist for meteorology in the Earth Science Directorate, Code 900 is the first recipient of the newly-created William Nordberg Memorial Award.

This award is bestowed upon a Goddard employee who exhibits qualities of a broad scientific perspective, enthusiastic leadership on both national and international levels, a wide recognition by peers and substantial research accomplishments in understanding Earth system processes.

Simpson's work exemplifies that of Dr. William Nordberg, who was an employee at the Center from its very beginning. Nordberg was a true pioneer in using remote sensing to investigate Earth and its environment. His work led to the development of the very first series of remote Earth-sensing satellites.

Simpson began her Goddard career in 1979 as a meteorologist in the Severe

Storms Branch, Laboratory for Atmospheres, Code 910. She has specialized in using satellite observations to study changes in Earth's global climate and possible global consequences of change.

Simpson received the NASA Exceptional Scientific Achievement Medal in 1982 for her pioneering work on clouds and storms. In 1983, she won the highest American Meteorological Society award, the Rossby Research medal, for her contribution to the understanding of tropical rain systems and hurricanes. She was elected to the National Academy of Engineering in 1988. In 1989, she was appointed as a NASA/Goddard Senior Fellow. She is the author of more than one hundred-seventy scientific and technical publications. In 1994, she was elected Fellow of the American Geophysical Union and given the highest honor of the American Meteorological Society, Honorary Membership.

In addition to her duties as chief scientist for meteorology, Simpson serves as

the project scientist for the Tropical Rainfall Measuring Mission (TRMM), currently scheduled for launch in late 1997. TRMM is a joint project between the United States and Japan and is the first mission dedicated to measuring tropical and subtropical rainfall through microwave and visible infrared sensors, including the first spaceborne rain radar.

Born in Cambridge, Mass., Simpson attended the Buckingham school. She went on to attend the University of Chicago, where she received three degrees in meteorology: a bachelor of science degree, 1943; a masters of science, 1945, and a Ph.D. in 1949. In addition, she completed post-doctoral work at both Dartmouth and the State University of New York.

Prior to joining NASA, Dr. Simpson served as a meteorologist for the Woods Hole Oceanographic Institute, the National Oceanic and Atmospheric Administration (NOAA), and professor at the University of Virginia and Illinois Institute of Technology.

# Education Briefs

## NASA Education telecasts scheduled for 1995 school year

The 1995 season schedule of "NASA... On the Cutting Edge" pre-college educational telecasts will feature presentations on the Earth's changing environment, and the diverse role of lasers in NASA technologies.

Now in its eighth season, "NASA... On the Cutting Edge" is a series of four, one-hour, live and interactive educational television programs broadcast via satellite to schools in all 50 states, Canada, Mexico and Puerto Rico between 4-5 p.m. Eastern time. Last season, over 2,000 educational institutions participated in the series.

The electronic field trips are one of NASA's major telecommunications projects, providing educators with resources for teaching mathematics, science and technology subjects. Participants learn about NASA programs through discus-

sions with scientists and engineers. Aerospace education specialists demonstrate classroom activities and announce new education programs, products and activities available to teachers. The live broadcasts are interactive via telephone and NASA Spacelink — NASA's computerized library for educators.

The 1994-95 season schedule includes:

- The GEE! in Microgravity: Feb. 2, 1995
- Environmental Change: Earth Observing System: March 16, 1995
- Lasers: Learning with Light: May 4, 1995

Elementary and secondary school faculty as well as other educational institutions such as planetariums, science centers, libraries and organized youth groups receive the signal through school satellite antennas and through participating cable television systems.

NASA TV, the agency's video distribution system, will transmit the programs live on Spacenet 2, transponder 5, channel 8, 69 degrees west with horizontal polarization, frequency 3880.0 MHz, audio on 6.8 MHz.

There is no charge to participate in this program, however, schools must register in advance to receive announcements, publications and other materials for teacher-participants. To register, write NASA Education Videoconference Producer, 308-A CITD, Oklahoma State University, Stillwater, OK 74078-0422, or call (405) 744- 6784.

The educational broadcast series is produced for NASA by the Teaching From Space Program at Oklahoma State University's Educational Television Services.

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## Local college receives NASA award

NASA has selected ten organizations to receive a total of \$6.8 million to help develop applications and technologies as part of the agency's efforts to stimulate public use of Earth and space science data over the Internet. This is the final selection for the current competition and follows the awards announced in August of this year.

These awards are made by the NASA Information Infrastructure Technology and Applications (IITA) program, a part

of the federal initiative to stimulate a U.S. National Information Infrastructure, commonly called the "Information Superhighway." The IITA program is administered from NASA Headquarters with technical management and coordination provided by Goddard.

The IITA program aims to provide broad public access to remote sensing data, including Earth and space science data, for general purposes such as educa-

tion, environmental emergency response and agriculture.

"We're especially pleased by the diversity of institutions and users represented by this set of projects," said Paul Hunter, IITA program manager at NASA Headquarters, Washington, DC. "We'll reach museum visitors in six states, plus the District of Columbia; farmers in Wisconsin; flood emergency managers in the southeast; Native Americans in the Great Plains and many, many students nationwide.

The developer community includes both large and small universities such as the University of California at Berkeley and Bowie State University in Bowie, Md., as well as large and small businesses."

Museums participating in this selection round include the Gulf of Maine Aquarium, Portland; Smithsonian Astrophysical Observatory, Cambridge, MA; Hands On Museum, Ann Arbor, MI; Lawrence Hall of Science, Berkeley, CA; Cranbrook Institute of Science, Bloomfield Hills, MI; Boston Museum of Science; The Exploratorium, San Francisco; National Air and Space Museum, Washington, DC; New York Hall of Science, Flushing Meadows Corona Park; and the Science Museum of Virginia in Richmond.

Schools and school districts under this selection include the Yarmouth, ME, school district and Pioneer High School, Ann Arbor, MI. Several of the projects will identify additional schools and school districts for collaborative efforts.



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