National Aeronautics and Space Administration
Goddard Space Flight Center

GODDARD news

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Goddard Scientists Report Findings at the Fall AGU

Here are just a few of the exciting science results presented by Goddard scientists at the Fall American Geophysical Union Meeting in San Francisco.

When the Sun "Sneezes," ACE Takes Its Temperature

For the first time, scientists are able to accurately determine the temperature of individual solar "sneezes," small explosions on the Sun called impulsive solar flares. The researchers used NASA's Advanced Composition Explorer spacecraft to observe a series of flares of this type in August 1998.

"These measurements are a first step to understanding how solar flares accelerate particles from the Sun to extremely high velocities," said Dr. Eberhard Moebius of the University of New Hampshire.

"These flares are relatively modest, compared to a typical solar flare. Before ACE, we had to average over a group of them to get a temperature estimate," added Dr. Joseph Mazur of the Aerospace Corporation, El Segundo, Calif., a contributor to the research. "The sensitive instruments on board ACE allow us to observe these events with a clarity and precision that has never been achieved before. As observations accumulate, hopefully we can unravel the mysteries of solar flares," said Mazur.

Laser Provides First 3-D View of Mars' North Pole

Measurements by a laser altimeter instrument orbiting aboard NASA's Mars Global Surveyor spacecraft are providing striking new views of the north pole of the red planet and the processes that have shaped it.

This first three-dimensional picture of Mars' north pole enables scientists to estimate the volume of its water ice cap with unprecedented precision, and to study its surface variations and the heights of clouds in the region for the first time.

3D Picture of Mars' North Pole taken by the MOLA instrument which was designed and built by Goddard's Laser Remote Sensing Branch of Laboratory for Terrestrial Physics

The elevation measurements were collected by the Mars Orbiter Laser Altimeter (MOLA) aboard Global Surveyor during the spring and summer of 1998, as the spacecraft orbited Mars in an interim elliptical orbit. MOLA sends laser pulses toward the planet and measures the precise amount of time before the reflected signals are received back at the instrument. From this data, scientists can infer surface and cloud heights.

During its mapping of the north polar cap, the MOLA instrument also made the first direct measurement of cloud heights on the red planet. Reflections from the atmosphere were obtained at altitudes from just above the surface to more than nine miles (approximately 15 kilometers) on about 80 percent of the laser profiles. Most clouds were observed at high latitudes, at the boundary of the ice cap and surrounding terrain.

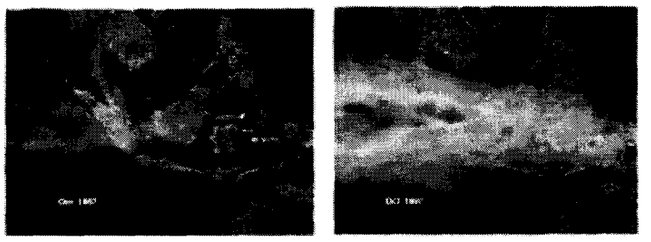
Clouds observed over the polar cap are likely composed of carbon dioxide that condenses out of the atmosphere during northern hemisphere winter. Many clouds exhibit dynamic structure probably caused by winds interacting with surface topography, much as occurs on Earth when winds collide with mountains to produce turbulence. The principal investigator for MOLA is ***Dr. David E. Smith*** of Goddard. The MOLA instrument was designed and built by the Laser Remote Sensing Branch of Laboratory for Terrestrial Physics at Goddard.

NASA Monitors Smog Pollution From Tropical Fires

For the first time, real-time maps of tropospheric ozone levels in the tropics are available to the world.

NASA researcher ***Dr. Anne Thompson*** and her colleague, Dr. Robert Hudson, University of Maryland, and their graduate student, Hua Guo have developed a new technique for retrieving near ground levels of ozone.

Using NASA's Total Ozone Mapping Spectrometer (TOMS), tropical ozone pollution from large fires now can be tracked at the same time as smoke, dust and UV exposure. "Using a single sensor for multiple products instead of piecing together data from multiple sensors is more accurate," said Thompson, an atmospheric scientist at Goddard. "TOMS already obtains images of the amount of smoke present in the atmosphere anywhere in the world. We're just adding another element by applying a new algorithm."



Left is the Indonesia Troposheric Ozone from Nimbus TOMS - Oct 87; Right is the Indonesia Tropospheric Ozone from Earth Probe TOMS - Oct 97

The NASA-developed TOMS instrument, which measures ozone indirectly by monitoring ultraviolet light scattered by the atmosphere, also produces daily maps of the global distribution of ozone in Earth's atmosphere and of the surface UV. TOMS is part of NASA's Earth Science Enterprise, a long-term research program designed to study the Earth's land, oceans, air, ice and life as a total system.

The TOMS program is managed by Goddard for NASA's Office of Earth Science.

The First El Nino Observed and Forecasted from Start To Finish: What Was Learned?

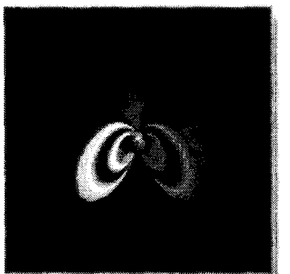
For the first time in history, scientists around the world were able to observe a major climate event from the earliest stages of development through decline. These observations have brought 1) unprecedented insight into El Nino; 2) research data that will take years to analyze and 3) the opportunity to issue valuable predictions.

The 1997-1998 El Nino "event of the century" was the best monitored and the first ever predicted El Nino on record, according to NASA and National Oceanic and Atmospheric Administration (NOAA) scientists who presented joint papers at the AGU.

Dr. Antonio Busalacchi, a Goddard scientist, reported that "the 1997-1998 El Nino will be the first time a major El Nino event and subsequent La Nina will have been observed globally from start to finish."

Earth's Own Magnetosphere, Not Solar Wind, Accelerates The Particles Of The Radiation Belts

Forty years after James Van Allen discovered the radiation belts, scientists have found that Earth's space environment is a massive particle accelerator, boosting electrons to near light speed in a matter of minutes. By using the coordinated measurements from two dozen spacecraft together with sophisticated computer models, scientists should soon be able to make "weather maps" of this acceleration, allowing predictions of the intensity of the radiation belts and the location of the most active regions. The acceleration of particles inside the radiation belts can affect the operation of satellites.



The Van Allen radiation belts are a pair of doughnut shaped rings of ionized gas (or plasma) trapped in orbit around Earth.

AGU News Continued

Goddard researchers also offered unique insights on topics ranging from Solar Variability and Climate Change; Predicting Thunderstorms; Laser Altimertry Used To Evaluate The Earth's Topography; La Nina Shortens The Day; Impact Of El Nino On Regional Hydrology; Uplifting Southern Alaska Mountains; Monitoring Oceanic Islands; and Monitoring Carbon Dioxide From Biomass Burning.

Dr. Drew Shindell reported his findings Stratospheric ozone and circulation amplify small changes in solar irradiance during the 11 year solar cycle, according to a new climate model, suggesting indirect effects of a changing Sun on climate may be more significant that previously supposed.

Dr. R. David Baker presented the results of his findings on the effects of soil moisture and wind on thunderstorm development were studied in Florida- the U.S. state with the highest number of thunderstorms. The study will provide a better understanding of thunderstorms and could lead to improved thunderstorm prediction.

Dr. David Harding reported the results on Laser Altimertry Used To Evaluate The Earth's Topography. For the first time a laser altimeter in space was used to evaluate our knowledge of the Earth's topography. Measurements from the Shuttle Laser Altimeter show that the best publicly available global topographic dataset has regional errors in elevation as large as 10's of meters. These biases may seem small, but are significant for applications involving changes in the Earth's topography over time.

Thomas A. Clark presented La Nina Shortens The Day--At the peak of El Nino, the length of day increased. As predicted at the 1998 Spring AGU, this increase has been followed by an abrupt decrease in the length of day.

Venkataraman Lakshmi presented the results of his findings on the Impact of El Nino on Regional Hydrology--El Nino brought with it a range of severe local and regional droughts, storms and floods. It is well known that El Nino/La Nina changed the continental weather patterns considerably, however the connection to local and regional hydrological phenomena needs to be made. Satellite observations and analysis data are used to establish a relation between local hydrology and large scale weather patterns.

Jeanne Sauber represented the results of her findings on the ten GPS stations in southern Alaska that have been used to estimate how fast the mountains are rising. The new measurements have been compared to the long-term expression of uplift seen in the topography of the region.

Dr. Jim Garvin presided over a special union session, Oceanic Islands and Global Environmental Change. He spoke to how RADARSAT has been used to monitor the landscape of 20 oceanic islands, including islands that extend from the Arctic, throughout the Atlantic and Southern Indian oceans and into the equatorial Pacific.

Andrew Wald presented the results of his findings about using the Earth Observing Satellite so that Goddard scientists can monitor carbon dioxide from biomass burning all over the Earth every day.

To learn more about these science results visit the Goddard homepage at **http://www.gsfc.nasa.gov** or check out the homepage for the American Geophysical Union at **http://www.agu.org/**

Goddard Tae Kwon Do Club

The Goddard Tae Kwon Do Club is offering martial arts training for employees and contractors and their families on an individual basis. The club is not in the business of commercial classes, but instead focuses on a few students at a time, working with a master instructor directly. A small fee for the professional instruction is charged in order to secure commitments. Training addresses self defense, physical fitness, and self confidence. There is also a special class for 9 to 12 year olds. If you are interested in these services, contact Mr. Michael Comberiate (x6-9828) or Dr Samuel Hetherington (6-3303), to schedule classes on Mondays and Wednesdays in building 8 auditorium 5:30pm to 7:15pm

ISO 9001

"I am convinced that ISO 9001 will take pressures off of people, will offer real cost and schedule efficiencies, will improve our practices, and will bolster our reputation of being a leader in today's cost and quality-conscious marketplace.

A. V. Diaz, Center Director

Visit ISO 9001 at **http://arioch.gsfc.nasa.gov/iso9000/index.html**

ROSAT X-Ray Telescope Mission Comes To An End

by William Steigerwald, Office of Public Affairs

The highly productive and long-lived ROSAT X-ray telescope guest observer mission, which detected a previously little-known world of pulsars, supernova remnants and galaxy clusters, has come to an end with the failure of the telescope's last working detector.

Scientists completed the two final days of observations on Dec. 8 by using reserved gas and a second X-ray detector, called the Position Sensitive Proportional Counters (PSPC). The PSPC naturally exhausted its xenon gas supply in 1994 and has been inactive ever since. The two-day reserve gas allowed the PSPC to turn on and make one last observation of a few important astrophysical objects, such as Supernova 1987a, which was ROSAT's very first target in 1990.

"ROSAT has provided us with much more scientific data than we ever hoped for," said Dr. Robert Petre, the U.S. ROSAT Project Scientist based at Goddard, "Among astronomy satellites in near earth orbit, ROSAT has had an extraordinarily long life. Clever tinkering by ROSAT engineers kept the satellite operational years beyond its expected life span — even through these past few months."

ROSAT is short for Rontgen Satellite, named after Wilhelm Conrad Rontgen, the discoverer of X-rays. It was an X-ray observatory developed by Germany, Britain and the United States; launched by NASA in 1990; operated by the Max Planck Institute for Extraterrestrial Physics (MPE) near Munich; and utilized by scientists around the world. Goddard, with collaboration from SAO, served as the U.S. center for data analysis, archiving and distribution.

Visit Goddard's homepage at **http://www.gsfc.nasa.gov** and choose HOT TOPICS for the full press release detailing ROSAT's highlights.

Astronomical Satellite Successfully Launched

by Donna Drelick, Office of Public Affairs

After a successful launch at 4:58 p.m. PST Saturday, Goddard's Submillimeter Wave Astronomy Satellite (SWAS), has been placed into an orbit approximately 400 mile above the Earth and inclined 70 degrees to the equator. SWAS was launched into orbit on an Orbital Sciences Corp. Pegasus-XL rocket that was released from an L-1011 jet aircraft at the Western Range, Vandenberg Air Force Base, Calif. The drop occurred at 39,000 feet over the Pacific Ocean approximately 100 miles off shore from Vandenberg.

The SWAS observatory will literally be looking at the universe in a new light, greatly improving our understanding of the birth of stars. The observatory will determine the composition of interstellar clouds and the means by which these clouds cool as they collapse to form stars and planets.

SWAS is the first space-borne observatory dedicated to studying the heavens in submillimeter radiation — a narrow band of cosmic emission lying between infrared and radio waves on the electromagnetic spectrum. Visit SWAS homepage for up-to-date status at **http://sunland.gsfc.nasa.gov/smex/swas/mission/**.

Small Business Technology Transfer Selections

NASA has selected 12 research proposals for negotiation of Phase 2 contract awards for NASA's 1997 Small Business Technology Transfer Program.

The technology transfer program 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.

A total of 45 Phase II proposals were submitted by contractors completing Phase 1 projects. The combined award total for the 12 Phase 2 contracts is expected to be $6 million.

The STTR program management office is located at Goddard. Individual STTR projects are managed by NASA's nine field centers. Visit SBIR website at **http://sbir.gsfc.nasa.gov** for a list of selections.

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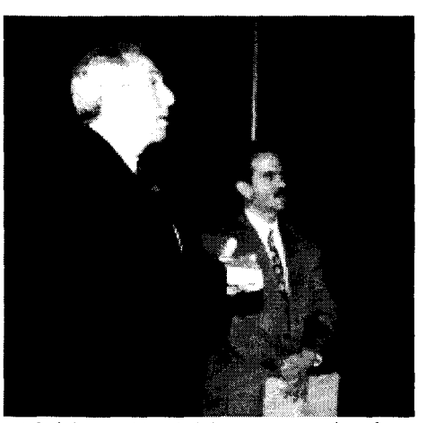
Administrator Outlines Vision For Earth Science

(This is part 1 of a 2 part series on Administrator Dan Goldin's visit to Goddard.)

NASA Administrator Dan Goldin visited Goddard on Dec. 16, delivering a powerful message to many of the Center's engineers and scientists.

Goldin told employees that, "It is a great time at NASA," citing recent events including John Glenn's return to space, construction of the first two pieces of the International Space Station.



Administrator Dan Goldin accepts questions from Goddard employees

Goldin said, "NASA got into the Earth science business because we could bring something unique to the table: the ability to obtain the global view from space. NASA could provide data on a broad range of spatial, temporal and spectral scales. We launched the first weather satellites, then the first land surface imager, the first ozone monitor, and made the first satellite-based estimates of the Earth's radiation budget."

"The view led to a vision," Goldin said, "the vision that it is possible to understand the Earth as an integrated system of land, oceans, ice, atmosphere and life. And so NASA, with the help of you and other scientists around the world, pioneered the interdisciplinary field of Earth System Science."

Goldin said we will launch the first Earth Observing System (EOS) missions "to begin an era of long term, synoptic measurements of the most important Earth system interactions, such as the atmosphere-biosphere and atmosphere-oceans."

Goldin called this year's unprecedented research on El Nino and La Nina, "one the biggest accomplishments of recent years. We have a handle on the mechanics of the El Nino / La Nina phenomenon and we can observe its waxing and waning. More work is required before we have a reliable prediction capability, but we are making incredible progress."

"Clearly, these and all of the other science results have the potential for tremendous benefit to society," he said. "That is why the view became a vision and the vision is now an imperative. Earth science from space is not a curiosity or a luxury or a pastime — it is a job that has to be done. Governments, industries and citizens need the information that Earth scientists provide."

Goldin said the growth in our understanding and the needs of economic and policy decision-makers are leading to the formulation of more pointed questions: Is climate changing in ways we can understand and predict? Can we understand and predict how terrestrial and marine ecosystems are changing? How is the chemical composition of the atmosphere changing? Can we improve our understanding of the processes and dynamics of the Earth's surface and interior, and use this knowledge to prepare for and respond to natural hazards such as volcanoes and earthquakes?

Goldin said NASA needs to engage industry in helping answer these science questions, both as providers of science data and producers of high value information products from government satellites.

Administrator Dan Goldin takes a peek through a pop-up detector fabricated in the Detector Development Laboratory here at Goddard as Christine Allen looks on.

continued on page 2

Holiday Message from the Director

As 1998 draws to a close, I'd like to take this opportunity to wish you and your loved ones a most joyous Holiday season.

Reflecting on this past year, for me it was a year marked by tremendous change, remarkable achievements, and some disappointments and losses. Becoming your Center Director was both the most challenging and the most rewarding experience of my career. I was honored to be chosen, and am committed to keeping Goddard the best place in NASA to work.

Goddard people are the brightest, most talented, most innovative and most success-oriented group of professionals I have ever had the opportunity to work with. Your successes for the year demonstrate your abilities.

I'll have more to say about this at the "All-Hands" session on January 12.

I'm proud to be your Center Director. It's the best job in NASA. The projects we build, and research we conduct at Goddard are vitally important to the health and prosperity of this country and the world. Together, we make a difference, in our community, in our country, for our planet.

To celebrate the achievements of this year and to mark the Holiday Season, Bill, Mary and I will host an Open House on the 6th Floor of Building 8 from 1 till 5 p.m. on Dec. 21.

I hope that you will stop by, enjoy some light refreshments, and to give us the opportunity to personally express to each and every one of you our sincere appreciation for your tremendous work and contributions to the successes of the Center this year.

For those of you who cannot attend, Bill, Mary and I wish you a most joyous Holiday and a healthy and happy New Year.

Visit Goddard News on the web at http://pao.gsfc.nasa.gov/gsfc/gnews/gnews.htm

Live from RXTE!

Winners from Goddard's Live from RXTE Contest shown below.

Front Row: (l/r) Mrs. Bruce Hemp, Caitlyn McAnulty, Molly Cox, Emily Painter from S. Gordon Stewart Middle School in Fort Defiance, VA; Mrs. Virginia Healy, Justin Curry, Annie Humphrey, Katie Liskey, Natasha Solomon from Thomas Harrison, in Harrisonburg, VA; Sarah. C. Chegash, Anna Lee Sims from Robert E. Lee, in Staunton, VA. Back Row (l/r) Taylor Phillips, Andrew Richardson, Mr. Eugene Blackmer from Robert E. Lee, in Staunton, VA. and Mr. Michael Curry

This Goddard project involves the Rossi X-ray Timing Explorer satellite, scientists at Goddard, and teachers and students in the Shenandoah Valley of Virginia.

The purpose was to provide students at a network of Shenandoah Valley schools hands-on experience in scientific data collection and analysis.

Students learned how to predict eclipse/egress times using a mathematical method. They determined the period of the binary system by analyzing the RXTE data provided them, and then for the 7th-8th graders Goddard provided a start time while for the 11-12th graders they had to determine a start time using real data. Students had to then predict the egresses which would occur during a certain window and the ONE egress which would occur in the window during a school day. Students results and methods were written up in a report which **Dr. James C. Lochner** and **Dr. Laura Whitlock** read and used to determine the winners. Winners were selected based not only on predicting the correct date/time, but also on writing an intelligible report.

The 11 winning students and the three teachers won a trip to Goddard on Monday December 14. The groups visit included the RXTE SOF to learn how the satellite observations are scheduled and the commands uploaded to the satellite; the Virtual Reality Lab in building 28 for a flight into a hurricane; lunch with scientists from the Laboratory for High Energy Astrophysics; a center-wide tour from the Visitor's Center along with a demo about "Living in Space".

To learn more about the project visit **http://legacy.gsfc.nasa.gov/docs/RXTE_Live/**

Clip-n-Save

GSFC Greenbelt Operating Status "Snow Plan"

It's the season for the weather to be inclement and the following stations will provide specific information about GSFC operational status.

RADIO		TELEVISION	
WMAL	630 AM	WBAL	Ch 11
WMZQ	98.7 FM	WJLA	Ch 7
WPGC	95.5 FM	WJZ	Ch 13
WTOP	107.7 FM	WMAR	Ch 2
	1500 AM	WRC	Ch 4
WBAL	1090 AM	WTTG	Ch 5
WPOC	93.1 FM	WUSA	Ch 9

Code Green: There is a normal work schedule.
Code Blue: There is a liberal leave condition.
Code Yellow: There is a delayed reporting time.
Code Red: Non-emergency employees are excused..

For operational status and further details on codes visit the Goddard Intranet at **http://internal.gsfc.nasa.gov** and choose Snow Plan or go directly to **http://gsfc-aphrodite.gsfc.nasa.gov/220/snow/snowplan.htm**

"NASA's role is as an enabler," Goldin said. "We provide technology and scientific leadership."

Goldin says he intends to drastically shrink the size, cost and development time for missions in the next decade, but never compromise on capabilities of these systems. This will be done by:

- Planning future missions with a much sharper science focus.
- Moving toward the use of commercial satellite buses rather than developing new ones for each mission.
- Changing satellite program paradigms from science - mission - technology, to science - technology - mission.
- Focusing our advanced technology development efforts on scientific instruments.

"Our role is to push the leading edge of remote sensing science and technology, Goldin said. We have an important but limited role in getting the benefits of new Earth science understanding into the hands of those who can make practical use of it. We are at the beginning of that chain."

Goldin said the Nation's current vision for operational Earth observing systems is okay as far as it goes, but said it needs to be broadened considerably.

"We need to work out a larger architecture that encompasses more than two to five day weather and climate forecasts. NASA will do its part to make this happen," Goldin said. "With a $1.4 billion annual investment in Earth Science, we will develop instrument and spacecraft technologies to make the measurements possible, and to mitigate risks to reduce the cost of operational systems."

To define and implement a broader architecture for Earth Science is a long-term endeavor, Goldin said. He proposed three immediate steps to get started.

"First, we need a national commitment to long-term, multi-decadal climate monitoring. NASA will meet its 15-year EOS developmental and pre-operational monitoring commitments. We need a community and government-wide commitment to provide them.

"Second, the existing operational satellite system must open itself to advanced instrument and spacecraft technology.

"Third, it has become clear that the Nation and the world needs an operational ocean observing system to pair with the atmospheric one now extant."

(Part 2 of the series will be continued in next week's Goddard News.)

Goddard Selects QSS Group, Inc. To Provide Engineering Services

by Nancy G. Neal, Office of Public Affairs

Goddard has selected QSS Group, Inc. of Lanham, Md. to provide engineering services to Goddard's Electrical Systems Center, Information Systems Center and Systems Engineering Division.

This award is a performance based cost-plus-incentive fee, indefinite delivery/indefinite quantity contract. The contract's minimum value for the five-year basic contract period is $275,000, and the maximum value is $275 million. No options are contained in the contract.

As part of its primary duties, QSS Group, Inc. will study, design, develop, fabricate, integrate, test, verify, and operate space flight and ground system hardware and software. The contractor also will be responsible for the development and validation of new technologies for future science missions.

ISO 9001

2 Months till pre-assessment - February 17, 1999

Visit ISO 9001 at **http://arioch.gsfc.nasa.gov/iso9000/index.html**

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Goddard's Directive Management System

by Trusilla Steele, Office of Public Affairs

(This is the first of several articles in a series about Goddard's efforts to earn ISO 9001 certification in April 1999.)

What is the role/purpose of the Directive Management System?

"The Directive Management System is a group of documents which address the policy, procedures and guidelines of the Center in compliance with what has been issued at an agency level," said **Maureen Barber**, Administrative Support Team Leader for Code 231. "So at the Center level we have the Goddard Policy Directives, which are the Center's policy. Then we have the Goddard Procedures and Guidelines, which are the how-to-documents that explain how to implement policies that are being set at the Center."

Are you responsible for Policy Directives aspect also?

"I am responsible for maintaining the Directives themselves. There are different organizations that we refer to as the OPRs (Office of Primary Responsibilities). For instance, if there is something that relates to health and safety it will come out of that particular code. If it has something to with logistics it would come out of Code 230, so 230 would be the owner. With the directive management systems, we are the OPR; we are the owning organization because we have the responsibility for directives. Whomever is responsible creates the documents, make changes, and keeps them up-to-date. My responsibility is to make sure that as folks go through this process they're following the standards that have been set at the agency level."

"I am also responsible for monitoring the electronic system which is Goddard's Directive Management System. In that system, folks can actually create their document and send it through an internal review process where some of their peers review the document for correctness. Once that happens, the document is sent to me and I forward it to each of the directorates for centerwide review. This can all be done electronically through the system. Comments can be put into the system so it's very easy for folks to have all the information in one spot. After the review is done, the initiator of the document has the responsibility for addressing each comment. If another organization makes a comment, they have to respond to it, include it, or if they don't include it they have to address why they haven't included it in the system. This can now all be done electronically. Previously, the process was done manually."

What should employees know about the directive management system?

"Unfortunately, I think what has happened in the past is that we have not done a real good job in educating the employees as to the existence of these directives. In the past, people had the documents sitting in their areas, very easily accessible. Now we get so involved in our daily process, that a lot of people have gotten away from using the documents. That's where ISO comes into play; to standardize processes and to document how we do what we do and then do what we document. So it is the responsibility of employees to learn that these documents exist and follow what is indicated or addressed in each of the documents. That is other advantage of an electronic system. Now we have an electronic library so that employees have access to the directives at all times. They can download them and, if they prefer, keep a copy at their desk. Basically, it is the employee's responsibility to become aware of

(Con't. on page 2)

The Administrator's Holiday Greeting

At this time of year, people around the world traditionally exchange gifts and well wishes. At NASA we do that year round; the gifts we gave our Nation this past year will mark 1998 as one of NASA's most triumphant.

Whether it was the Lunar Prospector exploring the moon or Mars Climate Orbiter making its way to the Red Planet, whether it was new worlds revealed from Galileo or Hubble — NASA continues to unwrap and unravel the mysteries of the universe.

Whether it was the world following the STS-95 mission, and its most famous payload specialist -- Senator John Glenn, or the First Lady Hillary Rodham Clinton announcing that astronaut Eileen Collins (Lt. Col., USAF) would become the first woman to command a Space Shuttle -- we inspire the young and old alike.

Whether it was tracking El Nino, La Nina and hurricanes, or other Earth Sciences applications or technological advances in aeronautics -- NASA does not only look to the stars, but we continue to enrich life here on Earth.

The gifts are endless, but what will prove to be the greatest gift is the International Space Station, the brightest new star on the horizon. We're on our way to building the largest laboratory ever, and you put it there.

Safely, professionally and with the pride that comes from being a part of one of the best scientific and technical organizations in history, you make it all happen.

Every day you help deliver on a promise made to the American public 40 years ago: to pioneer the future. You have served our Nation with great distinction. So, to honor our 40th anniversary, all NASA employees will receive a commemorative pin.

I am immensely proud of the work you have done this year, and wish for each and everyone the best of the season.

PHA Performs Flawlessly During STS-95

The first flight of the newly developed "High-LET Radiation Spectrometer" (HiLRS), also known as "Pulse Height Analyzer" (PHA), was a resounding success noted Goddard's principle investigator, **E. G. Stassinopoulos.**

The space certified instrument, designed on microelectronic principles by the Radiation Physics Office of the Electrical Systems Center of Applied Engineering Technology Directorate, was flown on the 9-day STS-95 mission. It was part of the HST Orbital Systems Test (HOST) cradle on the Shuttle Discovery.

The primary objective of the detector was to measure the energy deposited by galactic and solar cosmic rays and their progeny from interactions with speacecraft materials.

"The PHA performed flawlessly thoughout the entire mission," **E.G. Stassinopoulos** said. "The measurements of trapped protons were extremely close to the expected levels estimated for the low inclination orbit of Discovery on the basis of instrument calibration and environment prediction."

Principal investigator, **Stassinopoulos**, and co-investigator, **Craig Stauffer**, spent nine intense days alternating on 14-hour shifts in the Payload Operations Control Center at Kennedy Space Center to continuously monitor the performance of the detector.

With the advent of the International Space Station and the prolonged exposure of many astronauts to a radiation environment at the high inclination orbit of the Station, the PHA instrument can be used as a personnel detector by providing spectra of the high LET particles within an astronaut's space suit during EVA activities. Under these conditions, information on potential biological damage from the particles may be more important than in previous short and low inclination missions.

Con't. from page 1)
the directives and follow them whenever applicable."

Would you say that this is something all employees would need to know or just certain employees?

"The thing that is different here at Goodard then at the other Centers is that we made the decision to include the ISO documentation in the directive systemm so there is a couple different groups or types of documents. Those that are ISO related and those people that are involved with an ISO business process must follow the guidelines."

"There are other directives that are separate from the ISO world, but as an employee for instance, there may be some in the health and safety area, which I don't believe are under ISO, but yet those directives are there and they need to be followed. So there is a lot of information for employees to be aware of."

Are there any near-term milestones or specific objectives that are trying to be accomplished?

"Well yes, the electronic version of the directives management systems itself. We have had an initiative ourselves internally for automating the directives which we were working on. When ISO came along, we said we wanted to incorporate it, and it moved up our timeframe. So we had to become more aggressive in our implementation of an automated system. In terms of anything new, I really don't see anything, it would just be more of fine tuning the system. Just like any new system, there are going to be things in there that need to be changed or streamlined or maybe something doesn't work just the way it should. We are working on fine tuning the system, and are also educating the center, as far as the use of the system because every employee can use the system. They can use the library portion just to go in and look at documents. They can also use the system for creating, reviewing and commenting on new documentations. It's more in the way of the fine tuning and educating that are really the initiatives that we see right now."

Will the Directives System be incorporated into ISO training?

"We have discussed getting something out in maybe the training center. We want to get something on a larger scale going because our initial emphasis has been on the directive managers. The way that we have set up the system is that I as a center directives manager need to have a point of contact at the directorate level within each directorate and those people were identified. This was our first emphasis, to train those people first with the idea of training the trainer. Now, we see that there needs to be more emphasis on lower level employees as well. I would like to say that it's something that I would like to see in the beginning of the year."

Where should employees go to get for information about the Directive Management System?

"Employees can go to our web site at **http://gdms.gsfc.nasa.gov/gdms/** which takes you right into the directive management system web page. Another way to access the system is through NODIS which is the NASA On-line Directives Information System. This site has a library set up for agency directives and an option to link to each one of the centers to their directive syste. There are going to be links to the system from the ISO homepage, the logistics Code 230 homepage, Goddard homepage and the Goddard News. So there will be lots of avenues by which to access the system."

"We usually put out a newsletter every four to five months and we are going to use that as another avenue to get the information out to the employees. It will contain general information about the directive system and how to access it and where they can go for more information."

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Promotion Process Redesign Group Session Results

by Sandra Buffalano, Office of Human Resources

"A total of thirteen focus group sessions were held resulting in participation by more than 200 employees. In addition, we received approximately 75 responses through the Promocom mailbox and one response via regular mail," said Buffalano. "We received a lot of good ideas and thoughtful input from these sources. The feedback has been consolidated and the Promotion Redesign Team is meeting to review all feedback, incorporate changes into the redesign, develop recommendations and present to the Executive Council. All feedback has been summarized and is available on the Office of Human Resources website at **http://ohr.gsfc.nasa.gov**. After the Executive Council meeting, we will need to fulfill our bargaining obligation with the unions. The goal is to have a redesigned promotion process in place by January 1999. Thanks go out to all of you who took the time to attend a session, or to provide feedback via the mailbox or other mechanisms. We will keep you updated on our progress."

Feedback Summary

Major feedback themes were Accountability, Criteria, Allocation, Metrics, Supervisors, Diversity, and Panels with a summary of each to follow:

Accountability: There were many concerns about what we mean by accountability and what consequences or rewards there would be.

Criteria: Employees want to know what the promotion factors are that exist today and who will be responsible for developing additional factors and critiera.

Allocation: There were many comments relating to how allocations would be determined, will center and directorate allocations be publicized, what is included in a salary pool, and how will salary pool allocations deal with the limitations on senior promotions.

Metrics: Employees want to know what will be included in the metrics, how will they be collected, who will review them and how often. Additionally, employees want the metrics and results made public.

Supervisors: Some input indicated that there is a concern about delegation to supervisors due to a lack of trust. Some employees indicated that supervisors do not have enough time to take on these additional responsibilities and that they lack the necessary training to carryout supervisory responsibilities. Employees also suggested that a 360 degree system be utilized to provide feedback to supervisors.

Diversity: Questions were raised about how the new process will improve diversity.

Panels: Employees thought that the panels appeared to be another version of the MURC; they were inconsistent with delegation of authority to branch heads; and it would be difficult to constitute a diverse panel. Other comments indicated a concern about the extra time a panel would add to the promotion process.

CFC Update

In the spirit of the Holiday season we are pleased to extend a huge THANKS to all who contributed. Goddard employees made a significant contribution to the Combined Federal Campaign. With their gifts, agencies will be able to continue to provide food and shelter for needy families, care for the sick, conduct research, assist wildlife, and protect the environment. To see how well your Directorate did visit the CFC homepage at **http://internal.gsfc.nasa.gov/cfc/cfc.html**

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