



National Aeronautics and
Space Administration
Goddard Space Flight Center

GODDARD news

Greenbelt, Maryland/Wallops Island, Virginia

May 1998 Vol. 2 No. 18

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Project Goddard: A Five-Year Plan for Our Center

By Mary Kicza



Mary Kicza

Now that the reorganization is reaching completion, and as a result of the recent culture survey, Al Diaz has asked me to lead "Project Goddard." The objective of Project

Goddard is to more specifically outline where we want this center to be within the next 5 years, in sufficient detail to allow all aspects of the center to develop and implement the plans needed to get us there. I think we all have a good idea, in general, about what's on the horizon for Goddard, and how Goddard contributes to the Agency's Strategic Plan. Goddard's Strategic Implementation Plan does an excellent job of outlining this. Now we need to refine this picture in enough detail to allow each employee at the center to understand how they individually contribute to achieving the Goddard Strategic Implementation Plan goals and objectives.

The Center's supervisors recently provided recommendations to the Executive Council as a follow-on to the supervisory retreat held in February. They highlighted several areas that need focused attention in the near term: unified center leadership, improved communications, operational planning and alignment of resources to core business processes. These areas will be addressed as an integral part of Project Goddard. My goal is to keep the combined set of activities associated with Project Goddard well organized, well integrated, and manageable in terms of the workload that the center takes on with respect to implementing change at Goddard.

There is a pretty large number of activities associated with Project Goddard. With the Executive Council's blessing, I've organized the activities to fall within four major categories, or "Activity Tracks:" Leadership, Plans, Processes and Resources. I'll be leading the Leadership and Resources Tracks. Dot Zukor will lead the Plans and Processes Tracks. To keep the workload manageable within each Activity Track, we've established a set of criteria for prioritizing activities, and with the Executive Council's agreement, have begun to tackle the top priority activities identified within each Track.

In the Leadership Track, we're now actively engaged in defining what we expect this center to look like in 2003, particularly with respect to the work we believe it makes sense to do in-house at Goddard. This is a necessary first step for Project Goddard, because so much of what we need to do in terms of plans, processes and resources depends on having this clearly understood. Once that's in place, we can begin to establish the operational plans, business plans, individual performance plans and the processes that must be in place to allow needed changes to occur.

In the Plans area, our initial activity is focused on reviewing and providing comments on NASA's yearly Enterprise metrics. These measure NASA's progress towards meeting Agency strategic goals. As part of that effort, we're also defining the Goddard metrics that specifically contribute to the higher level Agency metrics. We'll re-issue the Goddard Strategic Implementation Plan to reflect these metrics, and then update the metrics yearly, in concert with

the Agency's metrics update. These activities should be completed in relatively short order. Then we'll get down to the business of developing the operations and performance plans needed to get us to our desired 2003 state.

In the Processes Track, our initial emphasis will be in two areas: completing Goddard's ISO 9000 certification; and working across the center to identify what processes most need improvement. Then, as soon as it makes sense to do so, we'll begin to systematically tackle the top priority process improvement efforts.

Finally, in the Resources area, we're identifying where our resources are currently allocated — in terms of people, tools and facilities. We have to understand specifically where we are now. Then, with the 2003 picture in hand, we can understand the extent of transition necessary to get from where we are to where we want to be in 2003. A big part of this will be developing the right tools to allow us to rapidly and accurately assess what our current workforce commitments are — we need to make sure we're maintaining our commitments to our current customers — and then to be able to understand the implications of taking on new work as we fulfill existing commitments and are ready to move on to new challenges.

In implementing Project Goddard, the important thing is to work each issue in the proper order, and not allow ourselves to get so bogged down in the myriad of activities that we lose sight of where it is we're trying to go. We need to take incremental steps in a systematic, manageable fashion to achieve our strategic implementation goals and objectives.

(Continued on Page 2)

The Center Outdoes Itself at Spring Community Day

By Eraina McCoy, Office of Public Affairs

How lovely was the day that the Goddard Visitor Center hosted Community Day. Nearly six thousand people from the Washington Metropolitan area were in attendance.

With new Community Day features such as the Earth Science Gallery, the children's activities tent, the puppet show and scavenger hunt, visitors were able to experience Goddard like never before.

In the activities tent, children constructed their own space helmets, kites, pop rockets and balloon cars, coloring, painting or applying space stamps to their creative artwork. Puppets, Jeff and Jenny, were well received with four "standing room only" puppet show presentations.



Some Astronauts Model Their Homemade Space Helmets

Other activities folks really seemed to enjoy included watching the control line model aircraft and model rocket demonstrations. Our featured presenters,

Dr. Ronald Parise, Payload Specialist Astronaut, and Mr. Marshall Sheppard, Goddard Research Meteorologist, did an outstanding job. They truly intrigued both the young and old as was demonstrated by the many questions which followed the presentation.

The various Community Day exhibits staffed representatives from Goddard's Earth Sciences Directorate, Goddard's Technology Commercialization Office, Computer Information Systems, Inc., Boeing, Jackson &

Tull, the Visitor Center and the High School High Tech Program.

Sincere appreciation goes out to all ninety-five volunteers: the tour guides, exhibitors and the Girl Scouts of America, all

who helped to make this Community Day the best ever.

Keep your eyes open for details about the next Community Day which is scheduled for September 27.



Some Community Day Visitors Meet Puppet Show Puppets, Jeff and Jenny



One of the Many Model Airplanes Gets Ready for Take-off

Reflections on Earth Day

by Darlene Walter, Safety & Environmental Branch

Goddard's Earth Day Celebration kicked off at lunchtime on Wednesday, May 29 with a beautiful day. This event was designed to help us remember our home planet and determine what we as



Earth Day Visitor Examines the SeaWiFS: the Living Sea Display

individuals can do to protect our only home. Our theme this year was "The Chesapeake Bay: How do we fit into this picture?" We all live in a watershed of the bay which means what we do at work and at home affects the bay in some form. We all fit into the bay.

Earth Day had a diverse group of exhibitors including displays from Goddard's Earth science organizations, the fishing club, the environmental and facilities group, community commuter promoters and even the Vegetarian Society. The Chesapeake Bay Foundation was our featured guest and they exhibited their information along with the Environmental Fund for Maryland for which the Chesapeake Bay Foundation is a member organization. All exhibitors shared a common bond in protecting our Earth.

And there was food, food, food. Our own Eurest Dining Service provided a grill menu and our Farmer's Market and seafood vendor sold food as well. The Vegetarian Society brought out some specialties and Polar Water shared some fresh spring water.

There was a fun activity after lunch of putting puzzles of the Chesapeake Bay together. It was a team competition to

see who could get it together first.

At noon, Director *Al Diaz* introduced the keynote speaker, William Baker, President of the Chesapeake Bay Foundation. Diaz pointed out that Earth Day has special significance to the Center since Goddard has overall responsibility for NASA's Earth Science Enterprise, the Agency's long-term, coordinated research effort to study the Earth as a global environmental system.

Will Baker presented the "State of the Chesapeake Bay" in his usual jovial manner. But, it was no joking matter when it came to the seriousness of the issues surrounding the bay. He stated that the bay is sick and has been telling us that for many years now. We have experienced a significant loss of bay wetlands which provide natural habitats to many species and the oyster population is nearly depleted. Oysters provide a natural filtering system and their population is often an indicator of the health of the water.

What can we do as individuals? One important step is to incorporate the three R's into our daily living habits: Reduce, Reuse, Recycle. REDUCE everything that we use from fuel to household chemicals. REUSE what we can and RECYCLE what can't be reused. It is important to conserve our forest areas which provide a natural filter to our environment and we need make a conscious effort to reduce pollution. The bay is not only important to us environmentally, it is important to our economy as well.

The event ended with a very satisfied Earth Day Committee.

Thanks go to all who contributed as committee members, exhibitors and participants. It was a fantastic event.



William Baker, President, Chesapeake Bay Foundation

Mary Kicza (Continued From Front Page)

One of the things we elected to do in light of the Project Goddard initiative is to step down from an immediate submittal for the President's Quality Award. Our intent is to be in a position to prepare a very strong, solid application in year or two. Meanwhile, as we implement Project Goddard, we'll continue to be mindful of how our activities address the organizational attributes of Goddard we'd like to see strengthened, given what we learned from our last PQA application.

I hope to have Project Goddard essentially complete by the end of 1999. I'm particularly pleased by all of the inputs I've gotten from around the center regarding the effort. A lot of people have indicated their interest in helping make it happen. As a Center, we face many challenges to get us to where we need to be in 2003, but it's clear we have the talent here to get the job done successfully.

Most Powerful Explosion Since The Big Bang Challenges Gamma Ray Burst Theories

By Bill Steigerwald, Office of Public Affairs

A recently detected cosmic gamma ray burst released a hundred times more energy than previously theorized, making it the most powerful explosion since the creation of the universe in the Big Bang.

"For about one or two seconds, this burst was as luminous as all the rest of the entire universe," said Caltech professor George Djorgovski, one of the two principal investigators on the team. The team measured the distance to a faint galaxy from which the burst originated, about 12 billion light years from Earth.

The burst, designated GRB 971214, was detected by the Italian/Dutch BeppoSAX satellite and NASA's Compton Gamma Ray Observatory satellite. The Compton Observatory provided detailed measurements of the total brightness of the burst while BeppoSAX provided its precise location.

"The energy released by this burst in its first few seconds staggers the imagination," said Caltech professor Shrinivas Kulkarni, the other principal investigator on the team. The burst appears to have released several hundred times more energy than an exploding star, called a supernova, which until now has been the most energetic phenomenon in the universe known to scientists.

Finding such a large energy release over such a brief period of time is unprecedented in astronomy, except for the Big Bang, the primordial explosion believed to have created the universe.

"In a region about a hundred miles across, the burst created conditions like those in the early universe, about one millisecond (1/1,000 of a second) after the Big Bang," said Djorgovski.

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

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May Colloquia Schedule

• Engineering Colloquium - Victor Wouk "Hybrid Electric Vehicles" (Bldg. 3 Aud.)	May 11 3:30 p.m.
• Scientific Colloquium - Mario Acuna "Magnetic Mars" (Bldg. 3 Aud.)	May 15 3:30 p.m.
• Engineering Colloquium - Andrea Prosperette "Single-Bubble Sonoluminescence and Liquid Fracture" (Bldg. 3 Aud.)	May 18 3:30 p.m.
• Scientific Colloquium - William Ditto "Experimental Chaos Control" (Bldg. 3 Aud.)	May 22 3:30 p.m.
• Scientific Colloquium - John Blondin "Supercomputer Simulations of Gas Flow in Binary Star Systems" (Bldg. 3 Aud.)	May 29 3:30 p.m.

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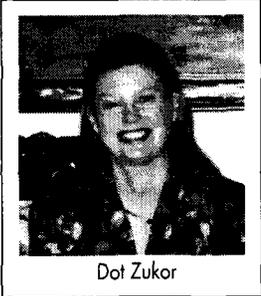
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Project Goddard Defines a Clear Path for Our Future

By Dot Zukor



Dot Zukor

Last week, Ms. Mary Kicza addressed Project Goddard, a plan for our Center whose objective is to more specifically outline where we want to be within

the next five years and to outline it in enough detail that will allow us to get there. It is vitally important for Goddard to do this if we are to serve as a national resource and be recognized as a leader in Earth and space science research now and in the future.

A couple of years ago, I worked with a cross-Directorate team to create the Goddard Strategic Implementation Plan. There were a number of things we envisioned for Goddard's future in order to situate us as a first class organization, both technically and from a business point of view. That is where the six goals came from. We distributed the plan with some performance measures, however, these were not incorporated into action plans, nor implemented systematically at that time.

We have since reorganized and added many other activities to our plate, such as, ISO 9000, the IFMP System, and Full Cost

Accounting. It appears that everything is coming at once and everything has to be done immediately.

The message that we've gotten from employees is that over time, we've added so many things to our plate, that they don't know where to focus their time and are spending too much time trying to figure it out or simply worrying about it.

The leadership of the Center is now taking action to orchestrate all of these activities better and the activities naturally fell into roughly four areas: Leadership, Resources, Plans and Processes. Mary Kicza will lead two of the tracks: Leadership and Resources; I'll be leading the Plans and Processes tracks. Together we are prioritizing the activities under each track with the intent to tackle each track's top issues first. We plan to publicize this information so the entire center knows what we are doing and in what time frame.

Under Processes, my number one priority is to implement ISO 9000. ISO 9000 is a set of standards and guidelines that defines the requirements for an effective quality system. Essentially it says "Say what you do--do what you say--and be able to prove it." While this is all good and well, an additional aspect that we'd like to incorporate is built-in mechanisms to

continuously improve our processes.

Under the Plans area, the first priority is to reissue Goddard's Strategic Implementation Plan and also release, as sort of an addendum, a series of Goddard metrics for implementing the plan. These will form the backbone of Goddard's FY 1999 Performance Plan. This Plan is Goddard's commitment to NASA Headquarters for what it will accomplish in FY 1999.

These metrics are important because they will measure our Center's progress towards meeting NASA's strategic goals and Goddard's institutional goals. We are defining these metrics now and it is critical that they be true measures of what we are trying to accomplish, rather than just items easy to measure. I'd like to also be sure, that the plan, once issued, will roll down through the entire organization, so each employee can be clear on where we're going and how their work fits in.

Communication--up, down and throughout the organization--remains the key to success in all our endeavors. When asked for input on the work taking place in the four tracks, please make thoughtful contributions. Through the efforts of all of our employees working within Project Goddard, we hope to get everyone on a clear and well-defined path into the future.

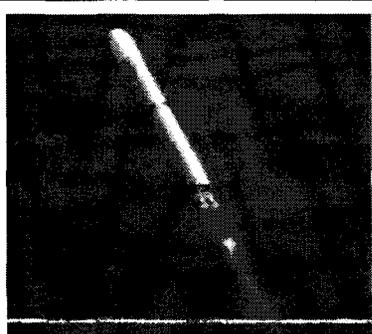
Successful Launch of NOAA-K Satellite

By Allen Kenitzer, Office of Public Affairs

A new satellite that will improve weather forecasting and monitor environmental events around the world, soared into space, on Wednesday, May 14, during a picture-perfect launch from Vandenberg AFB, Calif. The National Oceanic and Atmospheric Administration (NOAA) - K spacecraft, lifted off at 8:52 a.m. PDT, aboard a Titan II rocket.

Approximately, one half hour after launch, controllers had successfully verified deployment of the solar array and a power positive condition on the satellite.

NOAA-K is the first in a series of five polar-orbiting satellites with improved imaging and sounding capabilities that will operate over the



A Titan II Rocket, carrying NOAA-K, soars into space

next twelve years.

"We're off to a good start," said Goddard's **Harry McCain**, the POES project manager. "The spacecraft is now in orbit and all data indicate we have a healthy spacecraft.

"The next three weeks will be spent activating the scientific instruments. Then, we will begin our detailed checkout," he said.

NASA will turn operational control of the spacecraft over to NOAA after a comprehensive on-orbit verification period, which is expected to last approximately 60 days.

NOAA-K was built by Lockheed Martin Missiles and Space and launched for the National Oceanic and Atmospheric Administration under technical guidance and project management by Goddard.

News rabbits

Lt. Gen. Spence M. (Sam) Armstrong (USAF, Ret.) has been named to head NASA's Aeronautics and Space Transportation Technology Enterprise at NASA Headquarters, effective May 11.

In recognition of Asian Pacific American Heritage Month, Goddard is hosting two upcoming events:

- **May 22** - Luncheon celebration with keynote speaker
- **May 30** - Brown bag career seminar.

For more information, visit the following url:

<http://daac.gsfc.nasa.gov/acapae>

Cafeteria Grand Opening

The building 21 cafeteria will host a ribbon-cutting ceremony on Tuesday, June 2 at 10:45 a.m. Visit the following url:

<http://internal.gsfc.nasa.gov/cafe/go.html> for a full schedule of week-long activities.

Kummerow Named Maryland Distinguished Young Scientist

Dr. Christian Kummerow, a research meteorologist in Goddard's Laboratory for Atmospheres, has been named the Distinguished Young Scientist of Maryland for 1998. This award is bestowed annually on a single individual for distinguished service in science.

Kummerow joined Goddard as a postdoctoral fellow in 1987 to support the TRMM Mission and has served as the TRMM Project Scientist since 1997.

He is an expert in researching problems dealing with the transfer of radiation through non-uniform cloud systems as well determining rainfall rates from spaceborne sensors, including the three TRMM primary rainfall instruments. He has authored over 25 journal articles on subjects of radiative transfer and rainfall retrievals. He has spent considerable time in the development of the TRMM data and information system as well as the visualization of TRMM products.



Thompson to Receive Nordberg Medal

Dr. Anne M. Thompson of the Earth Science Directorate is the recipient of the 1998 Committee on Space Research (COSPAR) William Nordberg Medal for her "outstanding contribution to the application of space science."

The award will be presented during the inaugural ceremony of the 32nd Committee of Space Research Scientific Assembly, July 13 in Nagoya, Japan. Thompson was recognized for her outstanding contributions in understanding the chemistry of tropospheric ozone with innovative applications of satellite data.

COSPAR is an interdisciplinary scientific organization concerned with the progress on an international scale of all kinds of scientific research carried out with space vehicles, rockets and balloons. The William Nordberg Medal commemorates the work of the late William Nordberg and is awarded every two years to a scientist who has made a distinguished contribution to the application of space science in a field covered by COSPAR. Dr. Thompson is the sixth recipient of this medal since it was first introduced in 1988.

Space Day - A Day to Embrace Space

By Nancy Neal, Office of Public Affairs

The Space Experiment Module (SEM) and the Get Away Special (GAS) flight programs will be participating in the upcoming Space Day activities on the National Mall in Washington, DC. SEM and GAS are two of Goddard's premiere educational flight programs. Both projects originate from Goddard's Small Shuttle Payloads Project Office.

Organizers for the event have targeted Space Day activities for students up to 18 years of age. Based on this, the SEM and GAS displays will be both colorful, and interactive. The displays will include video, website, a slide show, models, decals and actual flown flight experiments. A virtual experiment activity will be on hand to allow students to create their own experiments on paper that will fly on a future SEM Shuttle flight.

Space Day will take place on May 21 from 10 a.m. to 6 p.m. Dr. Ruthan Lewis, SEM manager, Lee Shifflett, Gas payload manager, Cathy Dankewicz, SEM mechanical engineer, and Charlene West, SEM logistics organizer, will all be on hand for the activities. For more information on the SEM and GAS program, please refer to the following URL's: <http://sspp.gsfc.nasa.gov/sem/sem.html> and <http://sspp.gsfc.nasa.gov/gas/gas.html>

Education Workshop Encourages Engineering Careers

By Kevin Boone, Office of Public Affairs

Project CAREER, (Children and Research Engineers Enjoy Rocketry), kicked off its activities at Kingsford Elementary School on Sat., May 2. Twenty-five students and parents attended the Project CAREER workshop supported by Goddard's Equal Opportunity and Education Offices and the GSFC Black History Club.

The goal of CAREER, which is in its sixth year of existence, is to encourage minority youngsters to consider careers in engineering through model rocketry. The objectives of CAREER are to introduce students to Goddard engineers; teach students about the contributions of minorities to

aviation and space flight; and allow students to participate in a hands-on engineering activity simulating the building and launching of rockets.

Goddard Volunteers, **Herman Hines, David Carter, and Darian Spruill**, provided career



Herman Hines Helps CAREER Kids Get Ready for Model Rocket Launch

information and an inspirational message of keeping up the mathematics and science scores as well as maintaining good attendance, positive attitudes, communication skills, and perseverance.

The volunteers worked side by side with the students coaching and assisting them with the construction and launching of the model rockets which took place on the grounds of Goddard's Visitor Center.

NASA Administrator Goldin and First Lady Participate in TransAtlantic Classroom Activity

NASA Administrator, Daniel Goldin, First Lady Hillary Rodham Clinton and students at the Ecole Nationale de Chimie, Physique et Biologie in Paris recently participated in an international demonstration that linked classrooms in the U.S. and France together in order to study clouds.

The American and French space agencies connected the students in Washington, DC, New York, and

Paris on Wednesday, May 13. The students shared groundwater and vegetation data collected using the CERES satellite and led each other on tours of their respective cities.

Building on extensive cooperation in space research, NASA and the Centre National d'Etudes Spatiales (CNES) are forging an international educational program that capitalizes on the wonder and excitement of space.

SEM Gives Students A Week to Remember

By Keith Koehler, Office of Public Affairs

High school students from four states recently traveled to Virginia's Eastern Shore to see their experiments launch on a suborbital rocket mission from Goddard's Wallops Flight Facility.

The experiments were part of the Suborbital Student Experiment Module which is a pilot program to develop a payload system that allows students in primary school through high school to propose experiments for flight and launch them aboard a NASA sounding rocket within one school year.

Keith Koehler, the Wallops

project coordinator, said, "The students coming to Wallops and participating in the launch process is a major part of this program. We want to give the students the opportunity to participate and gain an understanding of all aspects of a rocket mission from experiment design through data analysis."

During the week of the launch, the students participated in the final payload preparations, took an active part in the launch countdown and presented their preliminary results. "This will be a week they will always remember," stated Koehler.

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Data Obtained from TRMM Exceeding Expectations

By Lynn Chandler, Office of Public Affairs

Through its host of scientific instruments that provide rainfall data measurements, the Tropical Rainfall Measuring Mission (TRMM) spacecraft is giving scientists unprecedented insights into rainfall producing cloud systems over tropical land masses and oceans.

"We're extremely excited about these new images and the quality and quantity of the data we're receiving. In several instances, the data resolution is much better than we had anticipated," said **Dr. Christian Kummerow**, TRMM Project Scientist. "Previously, it was not possible to gather radar precipitation data over the oceans and TRMM has changed all that," he stated, referencing TRMM's Precipitation Radar (PR) instrument.

The PR is the first rain radar ever launched into space. It measures precipitation distribution over both land and sea areas. TRMM fills an enormous void in the ability to calculate world-wide precipitation because so little (only about 2 percent) of the planet is covered by ground-based radars.

Recent and dramatic images taken with the PR include those taken back in March

of a severe line of thunderstorms over Melbourne Fla. and more recently, of a severe thunderstorm over Houston, Tx.

represents energy conversion.

Other instruments aboard TRMM include the Microwave Imager, which provides exceptional resolution of storm

systems; the Lightning Imaging Sensor (LIS), whose data indicates that 90 percent of lightning occurs over land; the Clouds and the Earth's Radiant Energy System (CERES) instrument, which measures how much sunlight the planet's atmosphere, surface and clouds reflect; and the Visible Infrared Scanner (VIRS) instrument which uses visible and infrared data to

provide temperature and cloud measurements.

By studying rainfall, regionally and globally, and the difference in ocean and land-based storms, TRMM is providing scientists the most detailed information to date on the processes of these powerful storms, leading to new insights on how they affect global climate patterns. For more information on TRMM, visit:

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

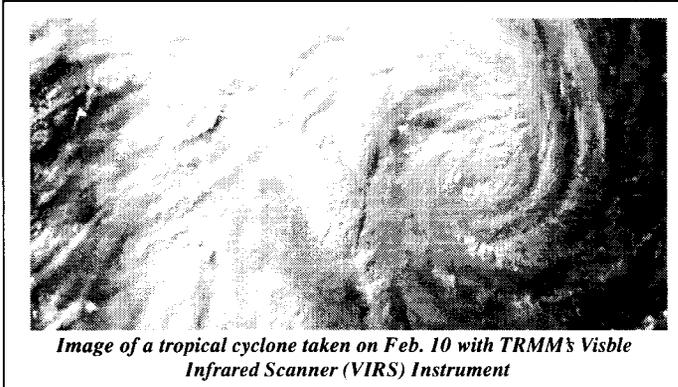


Image of a tropical cyclone taken on Feb. 10 with TRMM's Visible Infrared Scanner (VIRS) Instrument

Global rainfall is the primary distributor of heat through atmospheric circulation. The recent El Niño serves as a perfect example of the atmospheric circulation changes that can result from a displacement of the normal precipitation patterns in the central Pacific. More precise information about this rainfall and its variability is crucial to understanding and predicting global climate and climate change. In addition, hurricane researchers are eager to use the rainfall data as input to hurricane forecast models since rainfall

Upcoming Events

A variety of science results will be released at the upcoming American Geophysical Union Conference to be held in Boston during the week of May 25 - 28. Data and results to be released include those obtained from the Solar and Heliospheric Observatory (SOHO), the Transition Region and Coronal Explorer (TRACE), the Advanced Composition Explorer (ACE), the Polar spacecraft as well as the MOLA instrument on the Mars Global Surveyor.

An all hands meeting is scheduled for May 26 from 1-3 p.m in the building 8 auditorium to discuss the culture survey's background, its results and how the information it provides is being used. If you have an interest in learning more about this process, you are encouraged to attend.

There will be a Center Director's Colloquia on Wednesday, June 3 from 10:00 a.m. - 11:30 a.m. in the building 3 auditorium. Maggie Medrosian will speak on "Life is More than Your To Do List." In addition, she will lead a workshop from 2:00 p.m. - 3:30 p.m. in building 1, room E100D.

Hubble Shows Astronomers A Case of Galactic Cannibalism

The Hubble Space Telescope has recently given astronomers an unprecedented look at a massive black hole hidden at the center of a nearby giant galaxy that is feeding on a smaller galaxy in a spectacular collision. Stellar fireworks such as these were common in the early universe, as galaxies formed and evolved, but are rare today.

Although the cause-and-effect relationships of this phenomena are not yet clear, the views provided by complementary images from two instruments aboard NASA's Hubble Space Telescope are giving astronomers new insights into the powerful forces being exerted in

this complex maelstrom. Researchers believe these forces may even have shifted the axis of the massive black hole from its expected orientation.

The Hubble wide-field camera visible image of the merged Centaurus A galaxy, also called NGC 5128, shows in sharp clarity a dramatic dark lane of dust girdling the galaxy. Blue clusters of newborn stars

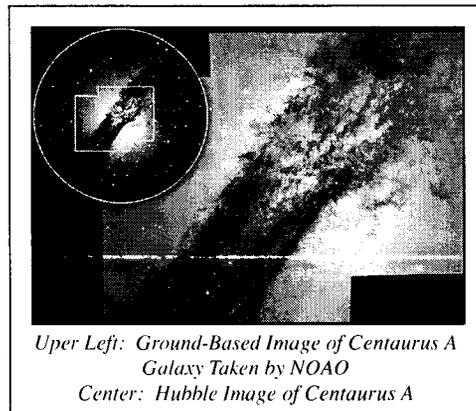
are clearly resolved, and silhouettes of dust filaments are interspersed with blazing orange-glowing gas. Located only 10 million light-years away, this peculiar-looking galaxy contains the closest active galactic nucleus to Earth and has long been considered an example of an elliptical galaxy disrupted by a

recent collision with a smaller companion spiral galaxy.

Using the infrared vision of Hubble, astronomers have penetrated this wall of dust for the first time to see a twisted disk of hot gas swept

up in the black hole's gravitational whirlpool. The suspected black hole is so dense it contains the mass of perhaps a billion stars, compacted into a small region of space not much larger than our Solar System.

For more information, visit the following URL: <http://opposite.stsci.edu/pubinfo/pr/1998/14>



Upper Left: Ground-Based Image of Centaurus A Galaxy Taken by NOAO
Center: Hubble Image of Centaurus A

Dr. Mather Elected to American Academy of Arts and Sciences



Dr. John C. Mather

Dr. John Mather is among 146 fellows, recently elected for membership into the American Academy of Arts and Sciences.

The Academy was established in 1780 by

John Adams as a learned society to "cultivate every art and science which may tend to advance the interest, honor, dignity and happiness of a free, independent and virtuous people." For more than two centuries, the Academy has brought together the Nation's leading figures from universities, government, businesses and the creative arts to exchange ideas and promote knowledge in the interest of the public.

This year's 146 inductees will join a distinguished membership of approximately 4000 Fellows nationwide at a ceremony to be held on October 3 at the House of the Academy in Cambridge, Massachusetts.

Dr. Mather, an astrophysicist in the Infrared Astrophysics Branch, Code 685, is the first NASA employee to be elected to the Academy.

The Goddard Space Flight Center Wants You!

Did you know you can be a Goddard Space Flight Center Volunteer or a Goddard Speaker?

Through the Visitor Center (VC) Volunteer Program, people volunteer their time to make the intriguing worlds of Earth science, space science and technology accessible to the public. Volunteers assist the VC staff by serving as tour guides; working in the Educator Resource Center; answering mail queries; and assisting in special events, such as Community Day. Any U.S. citizen who is over 18 years of age and willing to volunteer at least 4 hours a day, 1 day a week, can apply.

The Goddard Speakers' Bureau is an organization comprised of Goddard employees who voluntarily represent the Center by speaking to civic, professional, education and other organizations on a variety of topics, including Earth science, space science, technology and careers.

Both the VC Volunteer Program and Speakers' Bureau are excellent avenues through which Goddard employees can conduct community outreach. If you would like more information on the VC Volunteer Program, please contact **Eraina McCoy** at (301) 286-7646. For more information on the Speakers' Bureau, contact **Rebecca Elliott** on (301) 286-8956.

Recently, Goddard hosted a reception at the Visitor Center to honor these two special volunteer groups.

Goddard to Host Mathematics Workshop for Top "Mathletes"

By Elaine Lewis, Office of Public Affairs

As part of the annual MATHCOUNTS Competition, Goddard will host a mathematics workshop from June 23-25.

Each year, the MATHCOUNTS competition invites the nation's top seventh and eighth-grade students to compete against each other to become the number one junior high school "mathlete." As part of the competition, coaches of the highest scoring teams and individuals are awarded an all-expense-paid mathematics workshop to be conducted at a NASA field Center. Goddard was chosen for this year's workshop.

During the workshop, Goddard scientists and engineers will demonstrate state-of-the-art mathematics applications, and aerospace education specialists will present mathematics-

oriented activities.

MATHCOUNTS is the only program of its kind that promotes mathematics at the seventh and eighth grade level by building students' skills, strengthening their ability to do strategic problem solving, exposing them to career options, and giving them an opportunity to experience success in mathematics.

The MATHCOUNTS program is open to all public, private and parochial schools. It is one of the country's largest and most successful education partnerships that is implemented by a cadre of volunteers, educators, and students. Sponsorship for the program is provided by a host of industry, government, and educational organization sponsors. NASA Headquarters has sponsored the MATHCOUNTS program since its inception in 1983.

101 Reasons To Explore Space

As part of the Space Day '98 Celebration, Goddard has been

asking students to submit their number one reason for exploring space. Here's a few of their ideas:

1. To go ice skating on Pluto and Neptune
2. To see the stars all day without the atmosphere in the way
3. To find a new place to go on vacation
4. To be able to see the Martian's view of Earth

5. To learn how we could prevent rain from falling on Saturdays so we can play soccer

6. To get an alien's autograph

7. To make sure we don't miss something important that could help us live better

If you would like to see everyone's response, visit the following url: <http://pao.gsfc.nasa.gov/vc/101.htm>

Who knows? Some of their ideas just might spark a new NASA project.

Technical Information Services Branch (TISB) Demonstrates Document Management Capabilities

By Susan Hart, Technical Information Services Branch

Goddard's Technical Information Services Branch (TISB) recently had the opportunity to demonstrate its document processing capabilities when a group of executives, representing Japanese firms like Fuji, Xerox and Nissan Motor Company, visited our Center to learn how NASA conducts document management.

As part of the visit, to demonstrate total electronic publishing, the TISB transferred a document file to the DocuPrint printer in the Duplicating Facility of building 16W. The guests then visited the facility where they watched the Duplicating Technician,

Debbie Mitchell, retrieve the document and add cover and binding specifications. Within seconds, she printed the file and gave each visitor a copy. This demonstration showed how the TISB has streamlined the process of full electronic

publishing to allow for better service to their customers.

Also during the visit, Goddard's Photography Department had the opportunity to show its areas of expertise. Photographer, **Mark DeBord**, used a digital camera to photograph the group. He then enhanced the images via a desktop computer and printed hardcopy photographs on a thermal-dye printer. Before the representatives left, he presented each visitor with a photo to take with them.

The representatives expressed genuine enthusiasm and appreciation of being given this insight into our document processes and were quite impressed with our document management capabilities. This demonstration served as a prime example of the improved and expedited workflow that is a result of working in a total electronic environment.

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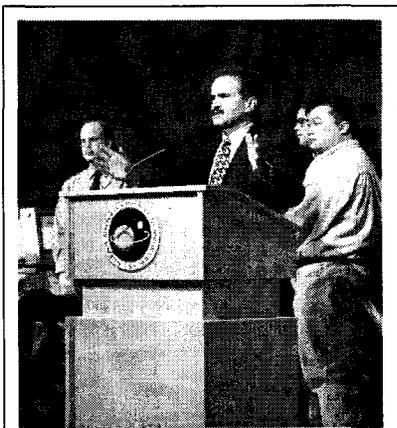
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TECHNOLOGY SHOWCASE - A HUGE SUCCESS

By Lara Clemence, Technology Commercialization Office

On March 25 and 26, Goddard held its second Technology Showcase. Building on the 1996 showcase, Technology Showcase '98 had an expanded audience that included Goddard employees as well as members from industry, academia, and other government organizations.

Entitled "Advancing Science Through Partnerships With Industry," the showcase was developed with the idea that Goddard has technology, expertise and facilities that are of interest to other organizations. Conversely, these same organizations could have technology or expertise that would be of benefit to Goddard. Hence, the Technology Showcase '98 was intended to



Al Diaz talks about the necessity of sharing technology in order to advance Goddard's tradition of excellence.

exhibit our cutting edge technologies and encourage dialogue.

Over 135 exhibits focusing on Goddard's Earth and space science enterprises and Goddard's new organizational structure were displayed in buildings 8, 28 and 32. Topic areas included Management Operations, Flight Assurance, Flight Projects, Mechanical Systems, Instrument Technology, Electrical Systems, Guidance, Navigation and Control, Information Systems, Space Sciences, Earth Sciences, and Suborbital Projects and Operations.

The weather for the showcase event was very pleasant with Spring really showing her colors. Center Director, *Al Diaz*, and Deputy Center Director, *Bill Townsend*,

were on hand to tour the showcase and interact with the exhibitors and Goddard's visitors. Approximately 500 people visited the showcase each day and the American Institute of Aeronautics and Astronautics (AIAA) National Capital Section held their

Small Satellite Symposium in conjunction with the showcase.

Enthusiastic comments heard around the halls confirmed that this was a worthwhile venture. A number of partnerships are already being discussed and most feel this is just the beginning!

Congratulations to all for a successful

showcase and many thanks to all the exhibitors and volunteers who worked hard to made it happen.



One of the many fine technology exhibits

Goddard Gets Ready for Spring with Community Day

Goddard will be holding its semi-annual Community Day on April 26 from 9:00 a.m. to 4:00 p.m.

Bring your family and come out to get a look behind the scenes at one of NASA's leading centers for Earth and space science research. See Mission Operations, the control center for the Hubble Space Telescope, the world's largest clean room and much more. Explore the Visitor Center's exciting new Earth Science Gallery! Meet and greet NASA Space Shuttle Payload Specialist Astronaut, Ron Parise, and NASA scientist, Marshall Shepherd.

Kid of all ages will have a great time too! Join us in our new Activities Tent and sign up for hands-on craft and science activities. Youngsters will enjoy a space-themed puppet show and demonstrations featuring control-line model airplanes and model rocketry.

Also new this year is the inaugural "Space Technology Benefits US All" school science fair. See the hard work and dedication of the area's best and brightest science students. For further information on this event as well as information on other Visitor Center activities, visit the following url: <http://pao.gsfc.nasa.gov/vc/vc.htm>

NASA's TDRS-1 Satellite Celebrates Fifteen Year Anniversary

By Susan Hendrix, Office of Public Affairs

Just like the Timex commercial, NASA's first Tracking and Data Relay Satellite (TDRS-1) spacecraft took a licking and keeps on ticking. Designed to operate for up to ten years, TDRS-1 is at T+15 years and still going strong.

TDRS-1 overcame numerous post-launch anomalies to become quite a success story. Sent into a rapid tumble by a problem with the second stage of the Inertial Upper Stage booster, TDRS-1 temporarily lost all communications with the ground stations. Communications were

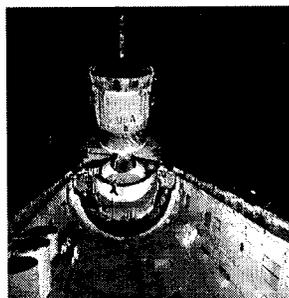
re-established with the spacecraft within three hours and the tumble was brought under control, but TDRS-1 was in an orbit far too low to perform its intended mission. NASA engineers managed to deploy the spacecraft's solar arrays, space-to-ground link antenna, and Single Access antennas. Over the next three months, NASA engineers boosted TDRS-1 into its proper orbit. By June 1983, the spacecraft once thought to be severely damaged, initiated customer support services with NASA's Landsat-4 satellite and STS-9 Spacelab mission.

Fifteen years later, TDRS-1 continues to provide excellent communication services for NASA's Space Shuttles, Hubble Space Telescope, Gamma Ray Observatory, and numerous other NASA satellites.

"TDRS-1 is the only NASA satellite providing data relay service to and from the South Pole," said *Dick Schonbachler*, Mission Manager for the Operations Management Group at Goddard. "During a daily three-hour window, the spacecraft is able to provide two-way, high speed communications with the South Pole. Data coming

from the South Pole via TDRS-1 is downlinked to NASA's ground station located in White Sands, N.M., and then transmitted to scientists located at Goddard and around the world."

Since the launch of TDRS-1 in April 1983, NASA has successfully commissioned five other TDRS satellites, thus creating a communications capability to serve NASA and the scientific community well into the twenty-first century. Not too shabby for a satellite many feared would never reach its intended orbit.



The TRDS-1 Satellite

A Rockin' High Energy Tour of the Universe

They're mild-mannered scientists, engineers and accountants by day; they're rockin' hoppin' a cappella singers by night. They're The Chromatics, a nine-member vocal band made up of Goddard employees and some outside folks too. You've seen them at events such as Focus on Our Future Day and Multicultural Day 1996.

Now, The Chromatics have married aspects of their favorite hobby to create a project called "AstroCappella." "AstroCappella" is a collection of original songs written and arranged by group members to teach middle and high school-age children about astronomy, and it's an educational tool free to educators across the country.

The idea for "AstroCappella" originated with Chromatics members *Dr. Padi Boyd* and *Dr. Alan Smale*, both of Goddard's Laboratory for High Energy Astrophysics. As scientists committed to their jobs, Drs. Boyd and Smale wanted to contribute to the Center's push toward educational outreach, and decided to combine their love of astronomy with their love of music. In early 1997 they were awarded a NASA IDEA grant to record and distribute

"AstroCappella." Since that time, The Chromatics have been writing, arranging and recording songs about astronomy, covering the spectrum from radio astronomy through optical observations with HST, to the black holes and quasars of high-energy astrophysics.

Their CD is now available, along with

an accompanying book of hands-on classroom activities that teachers can use to teach students about the concepts and topics presented in each song.

The Chromatics often perform their "AstroCappella" songs live. Their next opportunity to do



Back (l-r): Paul Kolb, Angie Russo, Alan Smale, Karen Smale, Deb Nixon
Front (l-r): Steve Leete, Lisa Kelleher, John Meyer, Padi Boyd

so is as featured entertainers is on May 1 at the Howard B. Owens Science Center, 9601 Greenbelt Road, Lanham, during their Open House (6pm - 9pm). The Chromatics will also be singing "AstroCappella" songs on the Mall in downtown DC on Thursday May 21st, as part of the National Space Day Celebration.

To learn more about AstroCappella, see their Web pages at <http://www.pagecreation.com/astrocappella/>

HST Project Manager for Flight Systems & Servicing to Receive Technology Award



Mr. Frank Cepollina, project manager for the Hubble Space Telescope's Flight Systems and Servicing Project will receive the Excellence in Technology Transfer Award from the Federal Laboratory Consortium at the Consortium's annual meeting in San Antonio, Texas on May 14.

This award recognizes federal employees whose outstanding efforts have resulted in technology transfer to outside partners, primarily those in the private sector.

Mr. Cepollina collaborated with Hubble contractors to identify applications of Hubble-driven technology in the medical, semiconductor, industrial tool, electric utility and oil drilling industries.

Goddard Earth Day Celebration

By Darlene Walter, Safety and Environmental Branch

On Wednesday, April 29th Goddard will celebrate Earth Day from 11 a.m. to 2 p.m. on the mall area by Bldg. 3. The focus this year will be "The Chesapeake Bay: How do we fit into this puzzle?"

We all impact the Bay just by our mere presence in this region. To help us understand our impact as citizens and employees, the Chesapeake Bay Foundation will be our invited guests, and at noon, the President of the Chesapeake Bay Foundation will be our keynote speaker to tell us about the health of the Bay and how we can all pitch in to help. There will be lunch packages available through our cafeteria vendor along with the farmers market and seafood market. There will be environmental displays on topics such as global Earth science research being done on center to local conservation groups. There will be Earth Day activities and entertainment. We are looking forward to seeing you there.

Key Appointment in the Applied Engineering and Technology

Ms. Dorothy Perkins was appointed as the Deputy Director of the Applied Engineering and Technology Directorate (Code 500), effective February 15.

As the Deputy Director, Ms. Perkins is responsible for overall planning, coordinating, organizing and conducting programmatic activities within the roles and mission of AETD at the Center.

April 14 - SEWP Computer Technology Seminar

A seminar on data warehousing concepts, data movement functionalities and analysis and reporting tools will be held at Goddard on April 14. This is the first in a series of SEWP (Scientific/Engineering Workstation Procurement) presentations and workshops by leading computer technology companies.

The April 14th seminar is sponsored by Platinum Technology. No pre-registration is required. Attendees may come for all or any part of the seminar. The morning session will be held in Building 28, Room E210. The afternoon session will be held in the SEWP BOWL (Building 28, Room W-290).

Learn more about the concepts and benefits of Data Warehousing. Discover effective ways to manage large enterprises of data by understanding what data is and how to effectively query that data for simple reporting or complex On-Line Analytical Processing (OLAP).

The Agenda is as follows:

9:00 a.m. - 10:30 a.m. Data Warehousing Overview (Concepts and Benefits).

10:45 a.m. - 12:00 p.m. Web-Enabled Reporting, Ad-hoc Querying, Decision Support, and On-Line Analytical Processing (OLAP).

1:00 p.m. - 2:00 p.m. Product Demonstrations (Data movement and transformation, metadata management (metadata repository), enterprise impact analysis, and web-enabled metadata browsing).

2:15 p.m. - 3:15 p.m. Product Demonstrations (Integrated Web-Enabled Reporting, Querying, and On-Line Analytical Processing Tools).

For more information on the SEWP Seminar Series, contact: Joanne Woytek, SEWP Manager, (301) 286-7695

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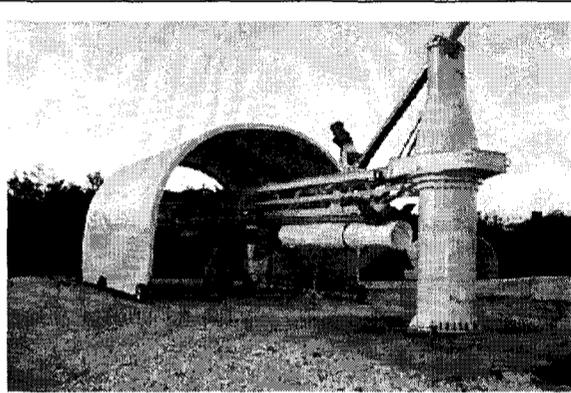
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Wallops Concludes Coqui Dos Campaign

By Betty Flowers, Office of Public Affairs

Goddard's Wallops Flight Facility has recently completed the Coqui Dos sounding rocket campaign. Under the Coqui Dos campaign, Wallops successfully launched a total of eight sounding rockets over a period of six weeks.

Coqui Dos has provided a unique set of atmospheric observations that could only be obtained from Puerto Rico due to available support from unique instrumentation at the



The Terrier Orion Rocket

Arecibo Observatory. The Arecibo radar systems provided measurements needed to determine when ionospheric conditions were appropriate for launch.

Scientists involved in the campaign have said that the main scientific objectives of the campaign were met. In-depth analyses of the measurements taken during the campaign will be performed at various universities that participated in the

campaign, at the Arecibo Observatory and at Goddard Space Flight Center. The results will be presented at the bi-annual American Geophysical Union meeting.

Preliminary results indicate that winds, wind shears and turbulence at high altitudes

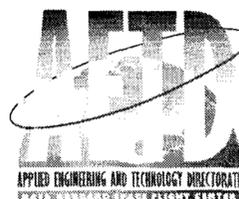
near 62 miles are of critical importance in generating and maintaining the naturally occurring layers that were studied in Coqui Dos. Wind measurements in the range of interest are not possible with techniques

other than the sounding rocket chemical tracer technique that was used in the observations. The information provided by the launches is important to an understanding of the natural atmospheric phenomena that occurs in the mid-latitude ionosphere.

For information on the Coqui Dos Campaign, visit the following url:

<http://www.wff.nasa.gov/~web/PRCampaign/CoquiDos.html>

New AETD Logo



The Applied Engineering and Technology Directorate (AETD) recently sponsored a contest for the development of a new directorate logo.

The winner of the contest was **Mary Pat Hrybk-Keith** in Code 253.

For information on the AETD Directorate, visit the following URL:

<http://misspiggy.gsfc.nasa.gov/reorg/aetd/index.htm>

Volunteers Needed - Would you like to share with the outside community what we do at Goddard? Well, Sunday, April 26, 9 a.m. to 4 p.m., is the day to do just that. The Visitor Center management is looking for Goddard civil service and contractor employees that are willing to help out on Community Day. Volunteers are needed as greeters, information station staff, bus escorts and to help with Children's activities. Volunteer 4 hours or all day. If you're interested, please contact **Bill Robinson-Parks** at the Visitor Center on x6-9041. Come join this day full of fun.

NASA-Wide Computer Security Testing

The General Accounting Office (GAO) has initiated a "Penetration Study of NASA Systems." They intend to have "penetration tests" conducted on various NASA computing and network systems. These tests will begin within the next few months. The duration of these tests and other protocols are being developed jointly by the GAO and the NASA Chief Information Officer (CIO). These tests may occur on any system that is either government-owned or government-funded. Use of these government-owned or government-funded systems by NASA government or contractor or other workforces constitutes consent to have their keystrokes and data content monitored for the duration of the "penetration test" should it occur on a system on which an individual works. The local points-of-contact for this activity are:

Hank Middleton, Information Technology Security Manager, Code 205, and **Mark Walther**, CIO, Code 200.

Increasing Greenhouse Gases May Be Worsening Arctic Ozone Depletion and May Delay Ozone Recovery

By Lynn Chandler, Office of Public Affairs

A team of scientists, consisting of researchers from Goddard's Institute for Space Studies (GISS) and Columbia University, believe that increasing levels of ozone depletion observed over the Arctic are related to greenhouse gases. The team used climate models to conduct a study which suggests that not only is the increase in greenhouse gas emissions one possible cause of the observed trends in Arctic ozone losses, but that this may also delay recovery in the ozone layer

The team investigated the response of ozone to projected future emissions of greenhouse gases and ozone-depleting halogens over time, using the GISS climate model. This is the first time ever that the interaction between ozone chemistry and the gradual buildup of greenhouse gases has been studied in a climate model.

"The buildup of greenhouse gases leads to global warming at the Earth's surface, but cools the stratosphere. Since ozone

chemistry is very sensitive to temperature, this cooling results in more ozone depletion in the polar regions," said Dr. Drew Shindell of Columbia University, the lead author of the study. NASA will continue research in this area to determine if these models are accurate.

The "greenhouse effect" is defined as the warming of climate that results when the atmosphere traps heat radiating from Earth toward space. Certain gases in the atmosphere, such as water vapor, carbon dioxide, nitrous oxides and chlorofluorocarbons, act like glass in a greenhouse, allowing sunlight to pass into the "greenhouse," but blocking Earth's heat from escaping into space.

Ozone, a molecule made up of three atoms of oxygen, comprises a thin layer of the upper atmosphere which absorbs harmful ultraviolet radiation from the Sun and protects people, animals and plants from too much ultraviolet sunlight.

KUDOS

DuVal High School recently was awarded the Program Excellence Award for its Aerospace Technology Education Program. This award, given by the International Technology Association, was received by Dan Caron and Lynn Hardin of DuVal. Both Dan and Lynn are actively involved in various programs with Goddard scientists and engineers.

The Aerospace Technology Program at DuVal consists of several facets which involve scientists and engineers at Goddard. **Dick Tagler**, Code 500, has been Chairperson of the DuVal Aerospace Advisory Board since its inception in the early 1990's. The Advisory Board members consist of Goddard employees, contractors, and representatives from several local colleges.

An upcoming shuttle launch (STS-88) will carry a GAS Can experiment which will be conducted by DuVal. There has been continued support for this project from Goddard, Boeing and Swales. DuVal students are also involved with the Cooperative Satellite Learning Project (CSLP) through the TRACE Project and Allied Signal. They are also involved with the Scientific and Educational Endeavors Group, Studying Earth's Environment from Space. This is a program funded by Earth Sciences Enterprise Project and the Goddard DAAC, through the support of Carla Evans, Co-PI and Corinne Egner.

Thanks for a Great Job

It's that time again, time to say thanks to the center's secretaries for doing such a wonderful job supporting their organizations. Secretary's Week is April 20-24, with Secretary's Day falling on Wednesday, April 22.

So, make sure you take a little time to show your appreciation to your secretaries for a job well done throughout the whole year.

Take Our Daughter's To Work Day

Thursday, April 23 is Take Our Daughters to Work Day. Through this event, girls spend time in the work place with a parent or mentor. This program provides an opportunity for girls to explore some of their interests and think about their career choices.

Security will badge Take Our Daughters to Work Day participants who are accompanied by an adult with a Goddard badge at the Visitor Center's Auditorium from 8:00-9:00 a.m.

For the latest information on events, please check the Women's Advisory Committee homepage at <http://arioch.gsfc.nasa.gov/wac/> If you have questions, please contact Lynne Slater at x6-7770.

Earth Day To Help Educate About the Chesapeake Bay

Don't miss Goddard's Earth Day celebration to be held on April 29 from 11:00 a.m. to 2:00 p.m. on the mall area by building 3. This year's focus is "The Chesapeake Bay: How Do We Fit into This Puzzle?" Below are some interesting tidbits about the bay that you may not know:

- Trash, though ugly, is not the biggest form of pollution for the Bay--excess nutrients are. These come primarily from animal waste, fertilizers and from the air.

- Pollution runoff (including that from fertilizers and other nutrients) causes algae blooms which can destroy the bottom of the bay for small fish, submerged vegetation, crabs and other shellfish.

- Algae blooms in the bay (often caused by pollution runoff) deprive aquatic animals and plants (below 30 feet of water) of oxygen, and thus of their life.

- Submerged aquatic vegetation (SAV) is the basis of much of the life of the Chesapeake. These plants produce food and oxygen which is the basis for many microscopic plants, fish and waterfowl from the bay. SAV also filters water and traps sediments to help keep the bay clean

- Maryland's governor has pledged to plant trees on 600 miles of streams in Maryland by the year 2000.

- The 10 Top Ways You Can Help Save the Bay:

- Get Involved
- Save Water
- Dispose of Household Products Carefully
- Care For Your Lawn Cautiously
- Practice Sensible Pest Control
- Control Run-Off From Your Yard
- Control Soil Erosion
- Maintain Your Septic System
- Use Car Care Products Wisely
- Contain Chemical Spills.

GODDARD SPACE FLIGHT CENTER PRESENTS

A NEW COMMUNITY DAY

NEW FEATURES:

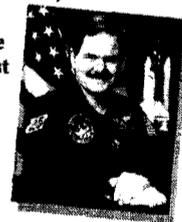
- ★ Earth Science Gallery
- ★ Space Technology Science Fair
- ★ Scavenger Hunt
- ★ Children's Activities Tent
- ★ Puppet Show



Sunday, April 26, 1998
9am - 4pm

Presentations by:

Dr. Ronald Parise
Payload Specialist
Astronaut



Mr. Marshall Sheppard
Goddard Research
Meteorologist

For more information,
contact the
Goddard Visitor Center
at 301/286-8981 or
TDD: 301/286-8103
or Internet:
<http://pao.gsfc.nasa.gov/>

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tours, demonstrations, model rocket
launches, presentations, activities,
and much more!

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Bill Townsend, Deputy Director

Bill Townsend Talks About His First Month At Goddard

What issues have you been focusing on since you've been here?

In these first few weeks, there are three main

things I have been focusing on.

First, I've been having what I call "Getting to Know You" sessions with each of the Code 100 functional offices and each Directorate. These get-togethers have afforded me the opportunity to understand better what all is going on at Goddard, what the current issue set is and what the future directions look like.

Secondly, I have been serving as Acting Associate Director for Earth Science since Bob Price passed away. In this capacity, I have been dealing principally with the launch delays in the EOS AM-1 and Landsat-7 programs, the confirmation of the Vegetation Canopy Lidar (VCL) mission, and the upcoming launch of NOAA-K. I'm also involved in an effort that will improve the Center's Earth science program's performance in the uncosted arena.

Finally, I've been involved in a number of day-to-day project activities across the center, including many institutional activities, such as workforce planning. It's been a very busy first month, but one that I have enjoyed immensely.

Last month you mentioned that one of your first priorities would be to learn more about the Center's functions outside of Earth science. Is there anything going on that has particularly intrigued you in the space science arena?

What has amazed me is the depth of thought that has gone into the planning efforts regarding space science technology development and advanced mission definition. These are driven by the need to answer important new questions in the Structures and Evolution of the Universe (SEU) and Sun-Earth Connection (SEC) areas, as well as Goddard's piece of the Solar System Exploration (SSE) area. The future of these areas has been laid out quite nicely, and it's a very exciting future, indeed, one that Goddard can be very proud of.

How about the Technology and Institutional areas?

In the area of Technology, I was struck by the enthusiasm exhibited by the Center's employees for the projects they're working on. At the Technology Showcase, I spent a good amount of time talking to the exhibitors. This was an excellent way for me to learn a lot about the technology development activities currently underway at Goddard in a very short period of time. I discovered that there's some really neat stuff going on here that will definitely enable the many new measurement capabilities that will be needed to move Goddard smoothly into the future.

In the institutional arena, I would have to say I was quite impressed by the different ways folks are striving to do business differently. There is a level of "out-of-the-box" thinking going on that I never would have anticipated in this area. One example is what is referred to as "360 degree performance appraisals" wherein people of all levels of the organization are rated by not only their supervisors, but also their subordinates and/or peers. While there are clearly many issues to work out before such a system could become a reality, Code 200 has initiated a voluntary pilot program that is aimed at addressing such issues.

Now that the reorganization is in place, where do you see Goddard heading in the future?

While the Center currently appears to be operating at very near its maximum capacity, we must take action now to insure our future. The recent Centerwide reorganization was certainly just such an action. Beyond that, the other thing that has us well prepared for the future is the people who work here. Not only is everyone extremely enthusiastic about their work and dedicated to doing a good job, they're also extremely competent. I believe, above all else, it's the abilities of our workforce that keep the Center's future looking bright for quite some time.

Goddard Supercomputer to Help Scientists Study El Niño

By Cynthia O'Carroll, Office of Public Affairs

NASA's Seasonal to Interannual Prediction Project (NSIPP) will use Goddard's upgraded CRAY T3E-600 supercomputer to support scientific and computational efforts to predict seasonal to interannual climate variations. The augmented CRAY T3E will enable NSIPP to run models capable of predicting weather phenomena such as El Niño and its associated atmospheric effects.

The NSIPP and a team of investigators will have access to 512 new processors in the upgraded CRAY supercomputer at Goddard. The total system of 1,024 processors, 131 billion bytes of memory and 1.2 trillion bytes of online ranks it among the world's five most powerful supercomputers. The CRAY T3E can do in one second what would take every person in the United States using hand-held calculators over 40 years to perform.

For the full story, visit the Goddard Homepage at <http://www.gsfc.nasa.gov> and choose **FLASH**

NASA and NOAA Ready to Launch New Weather Satellite

By Deanna Adams, Office of Public Affairs

Through a partnership with NOAA, Goddard will launch a new Polar-Orbiting Operational Environmental Satellite (POES), the NOAA-K spacecraft, on May 13, 1998.

NOAA-K will be launched from Vandenberg Air Force Base, aboard a Titan II launch vehicle at 11:52 am EST.

The POES satellites monitor the entire Earth using a host of instruments that measure temperature, humidity, ozone, and clouds. Through these measurements, the POES spacecraft provide full global data for short and long-range forecast models and climate modeling.

The current operational system consists of two polar-orbiting satellites: NOAA-12, launched in May 1991; and NOAA-14, launched in December 1994. NOAA-K will replace the NOAA-12 spacecraft, and after

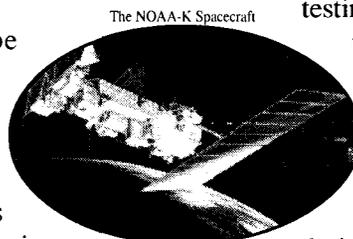
achieving orbit, will be renamed NOAA-15.

Goddard is responsible for the construction, integration, and verification testing of the spacecraft, as well as the instruments and unique ground equipment.

NOAA is responsible for operation control of the satellites, determining the need for satellite replacement, designing and developing the ground system needed to acquire, process and disseminate the satellite data as well as program funding.

The POES spacecraft serve as complementary satellites to the Geostationary Operational Environmental Satellites (GOES) System which provides near-term data from the continental U.S. and Hawaii to NOAA's forecasters.

More information on the POES program can be found at <http://poes2.gsfc.nasa.gov>



Goddard Manager Awarded Science and Technology Award

Dr. George Alcorn, Manager of the Commercial Technology Office, was recently honored at the 20th Salute to Black Achievers Luncheon sponsored by the Howard University's Undergraduate Student Assembly. The theme for this year's luncheon was "A Heritage of Greatness."



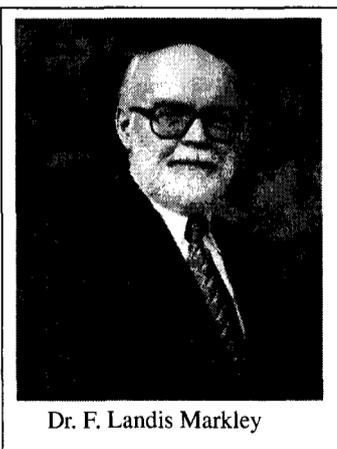
Dr. George E. Alcorn

Dr. Alcorn, who received the Science and Technology Award, was honored for his contribution as a Professor (over 25 years teaching college physics and E.E.), as an innovator (over 20 patented and published inventions) and as a researcher and manager (IBM, Perkin Elmer, Philco Ford and NASA).

Throughout his career, Dr. Alcorn has worked as a researcher at IBM, developing state of the art particle and plasma methods for the fabrication of high speed semiconductor devices. He was a second plateau inventor, rapidly approaching third plateau, when he left IBM to join NASA 19 years ago. While at NASA he continued to be innovative by producing several new inventions. He was awarded the Inventor of the Year Award for his Imaging X-ray Spectrometer using thermomigration of aluminum. Later, he held several technology management positions.

Dr. Alcorn has served as an original mentor to the Meyerhoff Program, whose goal is to produce minority Ph.D's in science and math. For the last 17 years he has spent his Saturdays teaching inner city kids computer science and math.

Among the others honored were Univ. of MD artist and professor, Dr. David Driskel; National Urban League President, Hugh Price; TV personality, Dr. Julianne Malveaux; Ms. Debbie Smith, Executive Director of the National Association of Urban Bankers; Mrs. Ruth S. Owens, wife of Jesse Owens; and Thomas Dortch, the National President of 100 Black Men of America, Inc.



Dr. F. Landis Markley

GSFC Engineer Named AIAA Fellow

The American Institute of Aeronautics and Astronautics has elected *Dr. F. Landis Markley*, a staff engineer in the Guidance and Control Branch at Goddard, to the position of Fellow.

Dr. Markley has received this rank in honor of his exceptional contributions in the development of new techniques for spacecraft attitude determination and control.

Selection of AIAA Fellows is limited to those individuals who distinguish themselves in the field of aerospace and who show strong potential for leadership.

Goddard Emphasizes the Importance of Safety With the Annual Safety Award Ceremony

By Linda Osborne, Safety and Environmental Branch

Goddard recently celebrated the annual Safety Awards Ceremony. *Mr. Charles Vanek*, Director of the Office of Flight Assurance, was the Master of Ceremony. Center Director *Mr. Al Diaz* was the keynote speaker who kicked off the ceremony with a challenging message that encouraged the Center to set its safety goals high in an attempt to reach the cutting edge in the area of safety.

The award recipients were as follows:
John Henninger, Code 752.2 - Award of Honor
Robert Dedalis, Code 302 - Award of Merit
Quinton Barker, Code 585 - Facilities Operations Manager Award
Phillip Nessler, Jr., Charlie Papadimitris and Phillip Tapper, Code 205 - Humanitarian Award
Stephen Monk, Stephen Trepanier, Sandra Vanderweit-Whit, RMS, John Slagle, Jr., Terrence Butler and Michael Wedge, CORTEZ - Safety Honorable Mention Awards
Mike Miller, NHS, Elizabeth Allen, ATSC, and the MILA Spaceflight Tracking and Data Network Station, ATSC - Contractor Safety Awards

Congratulations and thanks to all the recipients for their efforts to maintain our Center's safe work environment!

Goddard Science To Help Diabetes Research

By Joseph Famiglietti, Office of Commercial Outreach

Dr. Michael Krainak, Code 554, recently gave a presentation on his technology entitled, "Laser Diode Based Spectrometer Using Fiber Gratings," at a joint NASA/Juvenile Diabetes Foundation workshop. This workshop was designed to explore and develop enabling technologies to allow for noninvasive and minimally invasive biochemical measurements for glucose monitoring without requiring blood sampling.

Diabetes is a leading cause of death in the United States, and over 16 million Americans are believed to have the disease. It is estimated that 1 out of every 5 or 6 health care dollars is used to treat diabetes and its complications.

Dr. Krainak's technology was originally developed for the specific application of remote sensing of water vapor, but has been identified to have commercial potential in a wide variety of industrial, medical, and environmental applications. Specifically, he is developing widely tunable, single frequency laser diode transmitters to enable the measurement of glucose concentration through the skin.

Dr. Krainak has committed to work with the Technology Commercialization Office to transfer his technology to industry in order to make a difference in this major health care problem.

Earth Day: April 29

Don't miss Goddard's Earth Day Celebration to be held Wednesday, April 29 from 11:00 a.m. to 2:00 p.m on the mall area outside of building 3. This is your chance to learn all about the Chesapeake Bay and how we affect it.

Visit Goddard's New Library Web Site

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

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Goddard Space Flight Center

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Center Director, Al Diaz

NEWS from the CENTER DIRECTOR

Last year, as part of a multifaceted communications strategy, Goddard conducted a center-wide culture survey. Since then, the results have been compiled and analyzed as a first step towards understanding better what concerns employees have in a number of areas. Below I have tried to answer some questions concerning the survey.

What was the reason for conducting the survey?

In any organization, especially a large organization, the key to success is the performance of the workforce. Two important aspects crucial to employee performance is their understanding of what the objectives of the organization are and their reaction to the environment they are operating in. This survey was designed to get a sense of how well Goddard employees understand the Center's objectives and also to get a sense of what their feelings are about their work environment. It's those feelings that lead to the motivation, or lack thereof, that's key to the productivity of the workforce.

What did you personally learn from the survey?

What I learned from the survey was that our center's employees are extremely dedicated to the work they're doing. While I had some sense of this before, the survey reinforced my conviction that the Goddard workforce does care deeply about the organization's goals and objectives.

In addition, I was pleased to discover that our employees do not hesitate to communicate their feelings about the environment they are operating in. This is very important because unless we all communicate how we feel about our environment, we cannot take action to correct our deficiencies. It goes without saying that even if there are negative aspects to that communication, the fact that communication is occurring is a very positive thing.

I'd like to also mention that I was very pleased with the overall participation in the survey. A significant portion of the workforce participated in the survey, and as a result, we had a good demographic representation of the organization. Therefore, most minority groups were represented at the levels they populate the organization. We do believe, therefore, that the results of the survey are significant with respect to indicating differences in attitudes as well as indicating attitudes of the workforce overall.

What significant findings were gathered from the survey?

There were several distinct areas of findings. One was the area of leadership. The survey's results indicated that the population does, in fact, understand the external environmental reasons for the changes that have been taking place. However, they are unclear as to the significance of each and every initiative that they see taking place and its relationship to the drivers that we've identified. Thus, the survey indicated that there is a need to provide some integrated leadership for the overall change process.

Another major finding relates to the organization's understanding of the intended effect of the individual initiatives that are going on, e.g., the recent reorganization. There's some sense that while there has been a good deal of anxiety over the reorganization, generally people are ready to move out and operate in the new organization. It's not yet clear whether they completely understand the differences between operating under the old organization and the new, so there is a need for some continued communication and leadership.

Most of the findings were positive, however. They did indicate a need for some work, but it is work that we have anticipated doing.

There is one area where some issues were identified that will require focused attention throughout our activities. This area has to do with the issue of inclusion and diversity. The survey results indicated that there is a sense of separation among women and minorities and a lack of inclusion that is causing some skepticism about the value of each individual's participation within the organization. This is inconsistent with the value of "Respect" which was one of those identified in the recent Goddard strategic planning activity. Clearly, we are going to have to take some actions to make it apparent that we do value everyone's contribution and we are taking specific actions to make sure everyone is included.

Therefore, the three issues that will be addressed immediately are increased communications, integrated leadership, and inclusion of all employees.

What will be the next course of action?

The next course of action will be to address the leadership and integration activities that were mentioned above. In that regard, I have asked Mary Kicza to take the lead in integrating all of our various activities in providing leadership from the Director's Office to ensure that everything we do is integrated and can be communicated in a way that shows the interrelationship of each and every activity.

I have also asked Dorothy Zukor to serve on a quality council that will address individual efforts related to the overall change process. This will include establishing a set of metrics to measure GSFC performance in meeting the goals and objectives of all of our enterprises'

customers. This is a logical outgrowth of Dot's efforts which led to the development of "Goddard's Plan for Implementing NASA's Strategies."

Finally, we are taking some initiative to increase communications. These efforts include general communication to all employees on the results of the survey to be released on May 8 and sessions with supervisors. We also plan on informing minority groups of the steps that are being taken to address the issues of diversity in the workplace. In addition, we are looking at some new ways to improve overall communication around the Center. Some of these mechanisms will include quarterly meetings with supervisors and my attending meetings with individual organizations on a regular basis.

Goddard Scientists Use Model to Simulate Dual Cyclones

By Lynn Chandler, Office of Public Affairs

In the West Pacific and Indian Oceans, there are occasions of nearly simultaneous formation of two tropical cyclones straddling the equator at about the same longitude and between 10 degrees N and 10 degrees S. These storms are called twin tropical cyclones, reflecting their symmetry about the equator. Since the low-level flow around the northern cyclone is counterclockwise and that around the southern cyclone is clockwise, strong westerly winds, called westerly wind bursts, can be produced at the equator between the twin cyclones. Often two or three consecutive pairs of such twin cyclones exist with the easternmost pair the youngest. Thus the westerly wind bursts can be as wide as 60 degrees in longitude. As the western pair decay or move into the middle latitude a new pair is generated to the east giving rise to an envelope of convective activity, called super cloud cluster, moving eastward. Often the background conditions are not symmetric about the equator, thus cyclones are found only in one hemisphere. But that is sufficient to give rise to the westerly wind bursts. Also the intensity of the vortices in the super cloud cluster may not always reach tropical cyclone intensity.

In the March 1st, 1998 issue of the Journal of Atmospheric Sciences, *W. C. Chao* and *L. Deng* of the Climate and Radiation Branch report that they have simulated, to a remarkably good degree, these phenomena using a high resolution version of the Goddard Laboratory for Atmosphere general circulation model. They have found that successful simulation of these phenomena depends crucially on the way cumulus convection is treated in the model. This finding points out that improvement in the way cumulus convection is treated can lead to improvement of the simulation.

Goddard Scientists Use Remote Sensing to Study the Spread of Disease

By Cynthia O'Carroll, Office of Public Affairs

Using remote sensing data, scientists **Penny Masuoka** and **Brian Montgomery** from Goddard's Laboratory for Terrestrial Physics, are involved in a study to investigate the spread of disease. Remote sensing provides information on environmental factors, such as climate, floods, changes in vegetation and population distribution that may affect the spread of disease. When this information is displayed with digital terrain data and statistics of disease location using geographic information systems, scientists can determine what conditions cause the outbreak of a particular disease and how it may spread.

Masuoka and Montgomery have been studying a long-standing bacterial disease prevalent in the Andes of Peru, called bartonellosis. Working with other colleagues in a joint program with the Uniformed Services University of the Health Sciences (USUHS), their goal is to determine whether there is any correlation between outbreaks of the disease and the environment.

Earlier this year, the NASA team traveled to Caraz, Peru, a small tourist city occupying a narrow valley in the Andes mountains, to map the study site. The study area was located outside Caraz where the people tend to be relatively poor and live

mostly on small farms without electricity and running water. Tourists, although rarely seen here, are welcomed by the locals.

A variety of scientists participated in the study. Medical personnel questioned the local population about past and present symptoms and performed blood tests. Entomologists collected sand flies, mosquitoes and fleas from houses that have had outbreaks of the disease. A team took blood samples from both domestic and wild animals. The U.S. Naval Medical Research Institute Detachment in Lima

provided logistical support and scientific collaboration, and the hospital in Caraz provided information on local cases and personnel to assist them in the field.

Approximately 500 houses, some inhabited by bartonellosis patients, were mapped. The tools used to study the area included Landsat data and aerial photographs provided by the U.S. National Imagery and Mapping Agency (NIMA) office in Lima, Peru.

To accomplish their research, Masuoka and Montgomery rode bicycles to houses accessible by roads or hiked to others that were not. They created maps which plotted patient versus non-patient houses and which

compared the environmental factors near those houses. Tentative conclusions indicate that the disease is more prevalent in agricultural rather than in urban areas, and also that the disease is not related to the Rio Santa river which runs through the area.

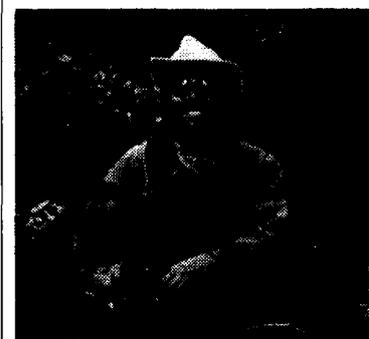
This bartonellosis research will have a direct benefit to the people of the Andes by ultimately defining risk areas and suggesting ways to prevent the disease. This research may also shed light on a disease in the U.S. related to bartonellosis, called "cat-scratch fever." "As new diseases emerge in the U.S., such as Lyme disease, we will be in a stronger position to fight them from the experience gained by studying diseases in other countries," said Masuoka.

Both Penny and Brian were personally touched by the culture of the Peruvian people, some who were descendants of the Quechua Indians. Many of the women still wear traditional dress, with colorful, flared skirts, and carry their babies, food, or other necessities in woven baskets. In her free time, Penny enjoyed entertaining the children by making colorful balloon animals.

"One thing that really amazed me was that even in the poorest, most remote areas, when we were introduced as working for NASA, people recognized the name of NASA. We work for an organization with a truly international reputation," stated Masuoka.



Penny Masuoka and Robert Fernandez (NAMRID), armed with flashlights, collect nighttime insects



Brian Montgomery smiles for the camera after he sets mosquito traps on the banks of the Rio Santa River

SEWP Computer Technology Seminar Series

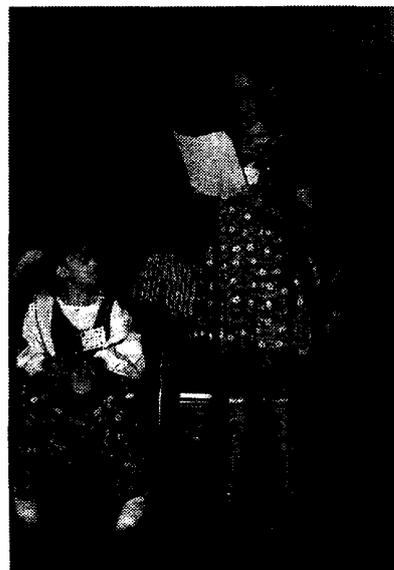
Goddard will be hosting a seminar sponsored by Sybase on high-performance, open, end-to-end computing solutions on Tuesday, May 12. Learn about the latest in dynamic web development, data warehousing and spatial query tools. This is part of the SEWP (Scientific/Engineering Workstation Procurement) Computer Technology Seminars. Pre-registration is not required. Attendees may come for all or any part of the seminar.

Morning Sessions - Building 28 Room E210:

- 9:00a.m. - 12:00p.m. Web Technology
- 9:00a.m. - 10:00a.m. PowerJ: Java RAD tool used to build enterprise-wide, N-tiered, client-server, data-driven, browser-based, or standalone applications
- 10:00a.m. - 10:45a.m. Jaguar Component Transaction Server (CTS): Supports on-line transactions over the World Wide Web and multi-threaded deployment of remote objects or components
- 10:45a.m. - 11:15a.m. PowerDynamo: Supports dynamic web sites including disconnected, mobile computing web sites
- 11:15a.m. - 12:00p.m. PowerSite: RAD tool used for the development and management of dynamic web sites

Afternoon Sessions - Building 28 Room W290 (SEWP BOWL):

- 1:00p.m. - 3:30p.m. Data Warehousing: A complete set of software products that address four key areas necessary for building successful data warehouses
- 3:30a.m. - 4:00p.m. Spatial Query Server (SQS): A server-based processor for geospatial data



At Take Our Daughters To Work Day, girls ranging from ages 8-17, came to Goddard with their moms or dads to get a sampling of the kinds of careers available to them.

Left: One of the many young visitors reads a whole alphabet during one of the exercises called "When I Grow Up."

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Results from the American Geophysical Union Meeting

During the American Geophysical Union (AGU) spring meeting held in Boston the week of May 25-28, Goddard scientists unveiled a wealth of Earth and space science results. Highlights of the AGU meeting included results provided by the ACE, TRACE and SOHO spacecraft, as well as the MOLA instrument on board the Mars Global Surveyor.

The Advanced Composition Explorer (ACE), which launched last August, has provided scientists with results that are challenging the current understanding of the acceleration of particles by explosions on the Sun. ACE sampled matter ejected from the Sun during solar flares and found the elemental isotope abundances to be different than what were predicted.

Since the majority of the material of the solar system is contained in the Sun, studying the solar composition can tell researchers about the history and evolution

of the Solar System.

Also unveiled at AGU were the first images from the Transition Region and Coronal Explorer (TRACE) spacecraft. These images have revealed activity in the solar atmosphere in stunning detail and include the first detailed observations of a magnetic energy release called a magnetic reconnection. A magnetic reconnection can release vast amounts of energy and is responsible for explosive events on the Sun, such as flares.

Other results on solar flares presented were obtained with the Solar and Heliospheric Observatory (SOHO) spacecraft. With SOHO, scientists have shown for the first time that solar flares produce seismic waves in the Sun's interior that resemble those created by earthquakes. SOHO also provided a solar "cat scan," which provided the most detailed look of the Sun's corona to date.

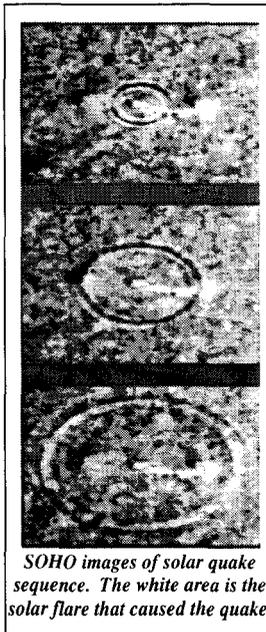
The Mars Orbiter Laser Altimeter (MOLA) has collected exciting new observations on the north polar regions of Mars. This data reveals such striking surface features as canyons and spiral troughs, some which plunge to depths as great as 3,600 feet. The MOLA instrument

also provided data on the presence of clouds. These measurements will be used to better understand Mars climate and weather.

Another highlight in the area of Earth science included a presentation on the phenomenon known as "La Niña."

Dr. John Gipson talked about how the occurrence of La Niña, which coincided with global changes in the currents of the oceans and the atmospheric winds, resulted in a shorter day.

For more information on these results, visit the Goddard Homepage at <http://www.gsfc.nasa.gov> and choose **FLASH**



SOHO images of solar quake sequence. The white area is the solar flare that caused the quake.



TRACE image taken on April 25, 1998 of plasma loops (hot, electrically charged gas) contained by strong magnetic fields. Fifteen Earths, placed side by side would fit in the larger loops.

CURRENT NEWS

NASA SCHOLARSHIP FUND RECIPIENTS NAMED: The NASA Scholarship Fund, Inc., Board of Directors has selected the five 1998 scholarship recipients and congratulations are in order to **Mr. Anthony B. Comberiate**, Code 585. Anthony's son, Joseph, was selected from a group of highly qualified applicants, as one of this year's recipients. Other selected recipients' parents are employees at Marshall Space Flight Center, NASA Headquarters, Langley and Lewis Research Centers. This brings the total number of scholarship recipients to 78 since inception of the Scholarship Fund in 1982.

RED CROSS BLOODMOBILE: The American Red Cross will be here on June 3, from 8:30 a.m. to 2:15 p.m., in the Building 8 Auditorium to accept blood donations. To schedule an appointment in advance, please call x6-6185 or on the day of, call x6-7180. The blood supply in our country is extremely low. Consider donating blood to help others! You could help save a life!

Could Airplanes Change the Atmospheric Temperatures?

By Lynn Chandler, Office of Public Affairs

Two major aircraft companies, Boeing and McDonnell Douglas (which recently merged), foresee growth in passenger demand. For example, during the period of 1990 - 2000, air traffic in North America-Asia routes, is expected to increase by over 10 percent. To meet future passenger demand, the aircraft industry is considering building a larger subsonic fleet by the year 2015. This fleet could generate exhaust at 2.3 times the current levels.

Because concern now exists that the increased exhaust, i.e., water vapor, nitrous oxides, carbon dioxide and aerosols, could have an affect on our health and living conditions, scientists have conducted an experiment to test this theory.

Water vapor, which is the most interactive effluent and would have a strong impact on atmospheric temperatures, was added to cruise corridors in a NASA/GISS computer climate model.

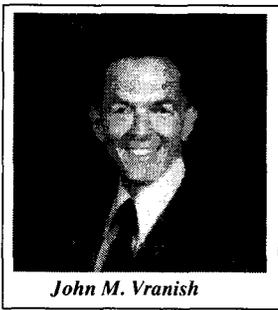
Microwave maps of the resultant model atmosphere were calculated to get snapshots of the water vapor's impact on atmospheric temperatures. These maps were then compared with real data. If the added water vapor caused changes greater than twice the observed microwave noise, then that water vapor addition was labeled significant and detectable.

During the experiment, detectable signals only appeared when extreme, unrealistic amounts of water vapor were added to the climate model. An addition of 15 times the expected 2015 aircraft water vapor or 35 times 1990 aircraft water vapor was needed to create significant changes.

Therefore, realistic amounts of water vapor expected from a larger 2015 subsonic fleet did not appear to change climate model temperatures to any notable degree.

Vranish Gets Award for Technology Transfer

By Deanna Adams, Office of Public Affairs



John M. Vranish

John M. Vranish, of the Electromechanical Systems Branch, Code 554, is a recent recipient of a 1998 Federal Laboratory Consortium Award for Excellence in Technology Transfer. This award is given to individuals in recognition of the outstanding work they have done in transferring technology. Mr. Vranish was recognized for his technology transfer efforts for the Space Robotic Capaciflector and 3-Dimensional Roller-Locking Sprag.

The Capaciflector was initially developed as a sensor for robot collision avoidance and offers promise in the automotive, industrial robotics, self-sensing diagnostic tools and security industries. The 3-D Sprags have improved a fundamental, mechanical component which has great importance in roller-locking devices and bearings. This technology is currently being investigated by industry for applications in bicycles, hand tools, and auto components.

For both technologies, Mr. Vranish has received Goddard Inventor of the Year Awards. He has 6 issued patents and one pending for the Capaciflector and 1 issued patent and 4 pending for 3-D Roller Locking Sprags. Currently, there are 11 companies that have either licensed or are investigating the incorporation of the Capaciflector technology in their products. Five companies are looking into using the 3-D Sprag technology.

EDITOR'S NOTE: Previously highlighted in an April issue of Goddard News was **Mr. Frank J. Cepollina** of the Hubble Space Telescope (HST) Flight Systems and Servicing Project, who also received a 1998 Award for Excellence in Technology Transfer. He was recognized for various applications of HST-driven technology in the medical, semiconductor, industrial tool, electric, utility and drilling industries.

SEWP Computer Technology Seminar Series

(Edgemark Systems Maya & Media Base Workshop)

As part of the SEWP Computer Technology Seminars, Goddard will hold a seminar on 3D animation/rendering and streaming media, Tuesday, June 9. There will be an Open House aboard the Silicon Graphics Magic Bus located in the parking lot outside of Building 28. Pre-registration is not required and attendees may come for all or any part of the seminar.

Sessions - Building 28 Room E210:

- 8:00 a.m. - 9:30 a.m. Refreshments/Media Base
- 9:30 a.m. - 9:45 a.m. Break
- 9:45 a.m. - 10:00 a.m. MAYA
- 10:00 a.m. - 10:20 a.m. Break (Magic Bus)
- 10:20 a.m. - 12:30 a.m. MAYA continued

The Magic Bus will be open from 8:00 a.m. to 11:30 a.m. (back of Bldg. 28.) Demonstrations will include COTS satellite system analysis; IDEX level image processing; quick tools to design, simulate, test and manufacture products; creating and converting information into web-served interactive format; intelligent media streaming for internet/intranet; and software tools to revolutionize the way you use information technology.

For more information on the SEWP Seminar Series, contact Joanne Woytek at (301) 286-7695.

Goddard Night With the Bowie BaySox

By Rebecca Elliott, Office of Public Affairs



Ready for Summer? Nothing says summer like a picnic and a baseball game. Bring your family and friends and join Center Director **Al Diaz** on

Friday, June 26 for a Bowie BaySox game and a pre-game picnic.

The picnic begins at 4:00 p.m. at the Goddard Rec Center and ends promptly at 5:30 p.m. The game begins at 7:05 p.m. at the Baysox Stadium, off Route 301. Mr. Diaz will throw out the first pitch of the night. Tickets are available at the GEWA store and the prices are: children under 5 years are free;

children 6-12 years old wearing a little league jersey (baseball, football, etc.) are free; children 6-12 without jersey, price is \$5.00; and 12 years old to adult are \$5.00. This price includes the picnic and game.

Only 200 picnic/game tickets are available, so hurry and purchase your ticket for an evening of fun for the entire family. If you prefer not to attend the picnic, tickets must be purchased directly through the Baysox Ticket Operations, 301/805-6000. Ticket pricing will be different. Goddard's group is requested to sit together on the 1st base side of General Admission (upper level orange seating).

The Oceans: Society & Science A Public Lecture Series

In conjunction with the 1998 Graduate Student Summer Program (GSSP), the Earth Sciences Directorate and the Universities Space Research Association (USRA) have organized a lecture series to be held at Goddard, June 8-12 in the Bldg. 3 auditorium.

This series is designed to provide a comprehensive introduction to the science and techniques of remote sensing and satellite observation,

and to foster scientific understanding of the challenges being addressed by national programs in global change and NASA's Earth Science Enterprise. The lectures will begin around 9:30 a.m. and end at approximately 4:00 p.m.

If you would like a copy of the Lecture Series agenda, please contact Georgia Flanagan at 301-286-2080 or at georgia@cesdis.usra.edu

Students Use Engineering Process to Solve Real-Life Hubble Problems

On Saturday, June 6, Goddard will conduct the final segment of the Hubble Space Telescope (HST) engineering competition where middle school students will compete for prizes using their knowledge and use of the engineering process to solve real-life issues with the Hubble Space Telescope.

Six finalist teams from middle schools including G. Bardener Shugart, Corkran, Takoma Park, Roberto Clementine, Thomas Johnson, Owen Brown and Severna Park were chosen to participate.

As part of the June 6 competition, a problem will be presented to all competition teams. Each team will then have two hours

to create a model that will demonstrate how to solve the problem. The models will be judged on technical validity; creativity and originality; organization, clarity and appropriate references; and suitability design.

Prizes for the winners will include savings bonds for the students and computer workstations capable of being utilized for pre-engineering programs for the schools. The following companies are providing the workstations: Lockheed Martin, Allied Signal, Computer Sciences Corporation, Jackson and Tull, QSS, and EER.

The students will also be given a tour of the Hubble areas of Goddard Space Flight Center.



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