

NASA's "Great Earth Observatory" Marks Five Years Of Climate Discoveries

By David Herring

Five years ago last month, NASA's Terra satellite began measuring Earth's vital signs with accuracy, precision, and resolution the world had never seen before. This great Earth observing satellite was launched to look at many aspects of Earth's changing climate. Terra has been very successful in its mission to advance our understanding of Earth's climate system to help improve our quality of life.

Launched on December 18, 1999, Terra's five onboard instruments began science operations in February 2000. Terra's goal is to assess the health of the planet by providing comprehensive information about Earth's land, oceans and atmosphere. Terra orbits the Earth more than fourteen times a day and observes nearly the entire globe.



Much of the information contained in this image came from a single remote-sensing device-NASA's Moderate Resolution Imaging Spectroradiometer, or MODIS. Flying over 700 km above the Earth onboard the Terra satellite.

"Terra is Earth science's first great observatory," said Bruce Wielicki, Senior Scientist for Earth Science at NASA's Langley Research Center, Hampton, Va. who uses Terra data to monitor how much of the Sun's energy is being absorbed and reflected by Earth. "Terra has provided the most comprehensive and the most accurate global view of the Earth's climate on record. And it has pioneered the first comprehensive, multi-instrument approach to climate change research."

Sending home roughly 1 million megabytes of data per day, Terra is helping scientists all over the world tackle important questions about the causes and effects of environmental changes. While the mission is still in the process of fulfilling its main science objectives, Terra's portfolio of achievements to date already makes the mission a resounding success.

Terra monitors movements of carbon through Earth's climate system. Humans annually release more than 7 billion tons of carbon into the atmosphere through the burning of fossil fuels. Yet, scientists cannot account for where all this carbon ends

Continued on page 6

Table of Contents

Terra Celebrates Five Years Front Women's History Month	Pg 2
One NASA Peer Award Recipients	Pg 3
Goddard in the News	Pg 4
Safety Alerts	Pg 5
Goddard on Outdoors MD.....	Pg 5
Goddard Memorial Symposium	Pg 5
2005 Diversity Theme	Pg 6
Employee Spotlight	Pg 7
Managing the Unexpected ...	Pg 8
GEWA Activities	Pg 10
Announcements	Pg 11
Events	Pg 13



NASA's Mission:

- *To understand and protect our home planet
- *To explore the Universe and search for life
- *To inspire the next generation of explorers as only NASA can

For further detail of the NASA mission, go to:
http://www.nasa.gov/missions/solarsystem/explore_main.html

Editor: Trusilla Steele
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Their Influence for Change, 2005 Theme of Observance

'Women Change America' is the 2005 theme for the national recognition of Women's History Month throughout March. The theme honors and recognizes the role of American women in transforming culture, history and politics as leaders, writers, scientists, educators, politicians, artists, historians, and informed citizens.

The purpose of Women's History Month is to increase consciousness and knowledge of women's history: to take one month of the year to remember the contributions of notable and ordinary women, in hopes that the day will soon come when it's impossible to teach or learn history without remembering these contributions," said Donya Douglas, chairperson for the Women's Advisory Committee at Goddard.

"We, at Goddard and Wallops, will recognize and celebrate women who have contributed to science, mathematics, and engineering in general and the mission of NASA in particular," Douglas added. She encourages everyone to check the Women's Advisory Committee web site often, for updated information about the 2005 theme and celebration activities.

Women's History Month observance began modestly in 1978 when the Education Task force of the Sonoma County (California) Commission on the Status of Women initiated a "Women's History Week." In March of 1980, President Jimmy Carter issued a Presidential Message encouraging the recognition and celebration of women's historic accomplishments. The observance became National Women's History Week in 1981, with the first Joint Congressional Resolution declaration co-sponsored by Representative Barbara Mikulski (D-MD) and Senator Orrin Hatch (R-UT).

In 1980, the National Women's History Project (NWHP) was founded in Santa Rosa, California, as a non-profit corporation. The goal was to provide a national clearinghouse for general information about women's history and for specific information about National Women's History week celebrations.

The week of national observances became a month of activities in 1987. It was at the request of women's organizations, museums, libraries, youth leaders, and educators throughout the country, that the NWHP successfully petitioned Congress to expand the national celebrations to the entire month of March.

Since 1992, a Presidential Proclamation has carried the directive for what is now a major national and international celebration.

For 2005, President Bush writes; "We celebrate those who have broken down barriers for women, such as Jacqueline Cochran, who was the founder and director of the Women's Air Force Service Pilots during World War II and the first woman to break the sound barrier. Gerty Theresa Radnitz Cori was the first American woman to receive a Nobel Prize in the sciences, and her research significantly advanced the treatment of diabetes. In 1926, Olympic Gold Medalist Gertrude Ederle became the first woman to swim the English Channel. Marian Anderson, a Presidential Medal of Freedom recipient, opened doors in music as the first African American to perform with the New York Metropolitan Opera. Juliette Gordon Low encouraged community service and the physical, mental, and spiritual development of America's young women as founder of the Girl Scouts of the United States of America. As we work to advance freedom and peace and fight the war on terror, American women in uniform are serving at posts at home and across the world, at great risk."

As we commemorate Women's History Month, I encourage all Americans to celebrate the extraordinary contributions and accomplishments of American women and to continue our progress in making our society more prosperous, just, and equal.

Other celebrations at Goddard for the month include: March 24, Goett Auditorium, 9:30 am, 'How Much You Don't Know About Women's History,' a retrospective of how women have contributed to the world we live in today, by Ann Stone, Vice President, National Women's History Museum. Date TBD, Science Exploration Directorate presents 'Knowledge Sharing Event' at the Recreation Center, 8:30 am - 1:00 pm, featuring three of Goddard's scientists: Dr. Claire Parkinson, Dr. Amy Simon-Miller and Dr. Caroline Kilbourne. Catered networking lunch to follow, tickets \$8.00. Contact Pam Millar for more information. Date and time TBD, 'Raise Your Hand If You're A Woman In Science,' is a Flight Programs and Projects Directorate discussion of Virginia Valian's Washington Post (January 30, 2005) article on Harvard President Lawrence Summers remarks of the scarcity of women in science and mathematics.



One NASA Peer Award Recipients

By Esther Johnson

Photo by Pat Izzo/293

The One NASA Peer Award program affords everyone in our NASA Family the ability to recognize peers who demonstrate One NASA behaviors in one of the following three theme areas:

- Making decisions for the common good
- Collaborating to leverage existing capabilities
- Standardization that demonstrates efficiency

Goddard awarded three more individuals and one team award since the beginning of the pilot period starting October 1, 2004.



Left, Richard Katz receives One NASA award from Dr. Michael Ryschkewitsch, Applied Engineering and Technology director



Alice Rew receives One NASA award from Deputy Center Director, Chris Scolese.

On Dec., 17, 2004, at Wallops' Annual Awards ceremony, Alice E. Rew, was recognized by her peers for the coordination of UAV training operations in support of the Aviation Safety and Security Program milestones. She received a special "One NASA" lanyard, given only to recipients of this award, along with a certificate indicating her contributions to the Agency.

Jan., 3, 2005, at the Code 500 Staff meeting, Mr. Richard B. Katz and Mr. Clifton Jackson, were awarded the "One NASA Peer Award." Mr. Katz was recognized by his peers for constantly striving to ensure that NASA's spacecraft avionics are the best they can be. Mr. Jackson's contribution has played a major role to develop the working relationship between JPL and GSFC on TPF-C. Both Mr. Katz and Mr. Jackson received the special "One NASA" lanyard along with a certificate.

Feb., 15, 2005, the NASA Technology Inventory (NTI) Team was recognized by their peers for sustained dedication to providing a comprehensive, reliable, up-to-date description of NASA's overall technology investment, encouraging sharing and communication of information across all centers and with other government agencies. The Team lead Mary Reph accepted for the team. The team consisted of 30 members from multiple NASA centers.

In addition to receiving the "One NASA Peer" Individual/Team Award, recipients are re-evaluated and one is awarded the Center Best Award.

If you would like information about the One NASA Peer Award or if you would like to submit a nomination, please visit www.onenasa.nasa.gov, or contact Esther Johnson at 301-286-0023 or Ronald Mink at 301-5324. ■

Credit: NASA/500



Left, Clifton Jackson receives One NASA peer award from Dr. Michael Ryschkewitsch, Applied Engineering and Technology director

Right, NASA Technology Inventory (NTI) Team lead Mary Reph accepts One NASA peer award

Photo by Pat Izzo/293



Goddard in the News

Looking to learn more about the weather? Turn to the pages of *Weatherwise* magazine, where NASA research meteorologist Jeff Halverson explains some of the most recent outstanding meteorological events...without the jargon. See below for a sampling of Halverson's columns and be sure to check out *Weatherwise* at the Goddard Library.

Texas-Sized Rains (Mar.-Apr. 2005):

Halverson discusses how heavy and prolonged rains can be fueled by a variety of atmospheric conditions, as was the case for nearly a week in Nov. 2004 over much of Texas, with devastating results.

The Coast is Not Clear (Mar.-Apr. 2005):

While many winter storms bury the Northeast urban corridor under heavy snowfall and bring only rain to the immediate coastline, occasionally these communities are not so lucky, as was the case in late December 2004, when parts of southeastern Virginia and northern North Carolina received a foot of snow. Halverson examines the unique mechanisms at work within this once-in-a-decade storm.

MEDIA HITS:

By Rob Gutro
Various news releases and web stories highlighting the space and Earth research and technology at Goddard was featured in major media networks for the month of February, 2005:

Earth Gets A Warm Feeling All Over or NASA Finds 2004 Fourth Warmest in Over A Century: 2/8/05

Last year was the fourth warmest year on average for our planet since the late 1800s, according to NASA scientists. To determine if the Earth is warming or cooling, scientists look at average temperatures. To get an "average" temperature, scientists take the warmest and the coolest temperatures in a day, and calculate the temperature that is exactly in the middle of those high and low values. This provides an average temperature for a day. These average temperatures are then calculated for spots all over the Earth, over an entire year. **For the full story**, please see: http://www.nasa.gov/vision/earth/lookingatearth/earth_warm.html

Worldwide news coverage: This NASA.gov web story attained global news coverage in newspaper, internet, television and radio coverage. News media in various countries including Australia, Canada, Germany, India, Iran, Iraq, New Zealand, Pakistan, Saudi Arabia, South Africa, South Korea, Turkey, the U.K., the U.S., and others carried the story.



Image showing 2004 as the fourth warmest year around the world, since the late 1800s, according to NASA scientists

Credit: NASA GSFC/LARC and SVS

Web Story: Satellites See Siberian Fires Most Common Near People: 2/3/05

While Siberia may be one of the last expanses on Earth where human presence is relatively scarce, scientists are finding some surprising connections between humans and fires in these frigid, northern forests. Until now, most researchers assumed that lightning caused most of the fires that burned in Siberia. But a new study by NASA scientists and others used a NASA satellite to map where and when fires lit up over a three year period. The satellite showed that Siberian fires burned mostly near people. **For the full story**, please see: http://www.nasa.gov/vision/earth/lookingatearth/siberian_fires.html **News coverage** included a variety of websites around the world, such as EIN News, Headliner (U.K.), Physorg, Sci-Central and Science Daily.

Release and Web Story: NASA Research to Aid Federal Invasive Species Council Efforts: 2/5/05

Invasive species of plants and insects now have a new enemy - NASA satellites. Recently, NASA accepted an invitation to join the National Invasive Species Council (NISC) to assist 12 other Federal agencies combat invasive species across the country by providing information from satellites. **For the full**

Credit: InvasiveSpecies.gov and Donna R. Ellis, U of CT



Giant Hogweed or Cartwheel-Flower is a relative of the carrot and parsley family.

story: http://www.nasa.gov/home/hqnews/2005/feb/HQ_05036_Invasive_Species.html and http://www.nasa.gov/vision/earth/environment/invasive_agreement.html

News coverage: This story received heavy Internet news coverage, including ENS newswire, Medical News Today, Moreover.com, ScienceDaily, SciencePages, SpaceDaily, and many more.

Web Story: Scientists Studying Wintry Ice in Summer Clouds: 1/28/05

During a Florida-based research campaign, scientists showed that their instruments can identify the ice crystals and now they can begin to classify the crystals. By learning to classify the ice crystals in clouds, these scientists hope to contribute to improving weather and climate models, the complex computer programs used to show future atmospheric conditions. **For the full story:** http://www.nasa.gov/centers/langley/science/ice_crystals.html

News Coverage: This web story received a lot of attention on Internet science websites, and was picked up by sources in Canada, France, Germany, Japan, France, the U.K., and U.S. ■

Safety Alerts

The Center receives information from the Government-Industry Data Exchange Program (GIDEP) concerning product recalls. In an effort to keep employees informed of recalls that may affect you at work and at home, Code 300 will provide alerts or recalls that have been issued by the Consumer Product Safety Commission (CPSC) along with web site links for retrieving further information on the recalls or alerts.

New Federal Web Site for Agency Recalls: <http://www.recalls.gov>

CPSC, American Standard Companies Announce Recall of Gas-Electric Heating/Cooling Units
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml05/05104.html>

CPSC, Stihl Inc. Announce Recall of Multi-Task Tools
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml05/05105.html>

CPSC, Head USA Inc. Announce Recall of SCUBA Diving Computers.
<http://www.cpsc.gov/cpsc/pub/prerel/prhtml05/05118.html>

Goddard on Outdoors Maryland This Month

By Sarah Dewitt

When most people dream of working for NASA they think of speeding rockets, spinning planets, and distant galaxies. Producers at Maryland Public Television have discovered a group of scientists here at Goddard who have a slightly different vision of what it means to work at NASA.

While much of the Goddard workforce spends their days in front of a computer screen or in a laboratory, some of our fellow employees can be seen exploring a different aspect of Goddard... the outdoors.

Maryland Public Television's 'Outdoors Maryland' takes a closer look at the relationship that Goddard employees have to their natural surroundings here on center. The program focuses specifically on earth scientists whose global scale research often translates to local issues like weather, air quality, and ecology.

Dr. Gene Feldman looks at ocean color and how it relates to the sensitive biology of the Atlantic coast, the Chesapeake Bay watershed, and Goddard's very own pond. Dr. David Adamec talks about El Nino and La Nina and how these large-scale Pacific Ocean phenomena can have a pronounced effect on local Maryland weather patterns. Dr. Anne Thompson demonstrates how weather balloons can help measure local pollutants in the air, and when combined with satellite data, map their transport around the globe. Dr. Marshall Shepherd takes a look back at 2003's devastating Hurricane Isabel and the effect of its heavy rain and winds on the Maryland region.

Each of these Goddard scientists tells the story from his or her own personal experience in the Maryland outdoors. These stories are accompanied by state of the art animations from Goddard's Scientific Visualization Studio. The director of the studio, Dr. Horace Mitchell, shares his unique perspective on bringing global science to a local level.



Tune into Maryland Public Television on Tuesday, March 22 at 7:30 PM for the premiere of 'Outdoors Maryland' featuring NASA's Goddard Space Flight Center. The program will repeat on Saturday March 26 at 5:30 a.m. and 5:30 p.m. ■



All Goddard employees are invited to attend the technical sessions for the 43rd annual Goddard Memorial Symposium, to be held **March 29 and 30** at the Greenbelt Marriott. This year's theme 'Earth and Space Science: Exploring the Possibilities' leads way to another informative symposium with welcoming remarks by John Malay, AAS President, Lockheed Martin and keynote address by NASA Chief Scientist, James Garvin.

Goddard civil servants are not required to pre-register. Just come to the symposium, show your badge and sign in at the GMS desk. On-line, advanced registration is available for Goddard contractors and HQ employees interested in attending this event.

For more information and to register, visit:
<http://www.astronautical.org> ■

Women's History (cont'd from page 3)

Additionally on March 29, the Greencastle-Antrium's Women in Science students from Greencastle, Pa. will spend the day at Goddard. During their visit, they will tour some of our facilities and meet with our women scientists. All women are encouraged and invited to participate in this fun-filled day of learning with this group of ambitious young women. We hope that you can take part in this exciting journey with the girls from the Women In Science course as they Explore their vision for the future. For more information or to participate, contact John Leck of the Education Office at (301) 286-7504 or jleck@pop100.gsfc.nasa.gov

For further updates check out the web site at: <http://wac.gsfc.nasa.gov>

2005 Diversity Theme



Congratulations to David Moulton (retiree), winner of the 2005 Diversity Theme Contest! The 2005 Diversity Theme is "Diversity: Making Space For Everyone".

This year's theme specifically suggests taking action toward inclusiveness, an obvious tenet of diversity programs. In a more general sense, it enjoys the added benefit of promoting NASA's mission statement by encouraging space exploration and inspiring the next generation of explorers.

The Goddard Diversity Action Team (GDAT) solicits and selects the annual Diversity Theme. Selection of the theme is based on meeting the criteria of focusing on diversity, reflecting GSFC's Workplace Vision and the Diversity Strategic Plan and must be 10 words or less. The winning theme will be used in all promotional material for Diversity Awareness and Celebrate Goddard activities for 2005. ■

Terra Celebrates (cont'd from front page)

up. Between 1 and 2 billion metric tons of carbon per year are "missing" from the global carbon budget. Terra is providing scientists with some important clues to help them solve the mystery of the missing carbon.

Terra data have also helped improve weather prediction. Terra's ability to track the speed, direction, and height of clouds allows scientists to accurately measure how strong and which way the wind is blowing over areas where they had little data before, such as over oceans.



Artist concept of Terra satellite

Two years ago meteorologists at the European Centre for Medium-Range Weather Forecasts (ECMWF) began using Terra MODIS data to track clouds over the Arctic Circle. The result is a 3-hour advance in the accuracy of forecasts in that region.

Terra provides scientists with much more accurate information on Earth's albedo (or reflected sunlight) over areas where before they could only make educated guesses. The end result is improved weather forecasts in Northern Africa, the Arabian Peninsula, and across great expanses of the mostly uninhabited northern boreal forests of North America and Asia.

The mission's unique combination of sensors allows scientists worldwide to monitor fires, floods, severe storms, and volcanic activity in near real time. Today organizations all over the world are using data from four different instruments aboard Terra as part of their ongoing efforts to monitor the causes and effects of natural hazards.

The U.S. Environmental Protection Agency (EPA) uses Terra data to help monitor air quality. EPA scientists found that Terra's combined precision and big picture perspective far exceed their ability to measure aerosol and carbon monoxide pollution from individual locations all across the United States.

Terra also watches cloud and tiny pollutant particle (aerosol) concentrations in the air; snow and ice cover on the surface, and gives scientists an eye on areas of expanding deserts and cities, and deforestation.

Terra's view of Earth from space is one that is critical in understanding all of the changes occurring in Earth's land, oceans, atmosphere and overall climate.

For more information about Terra, please visit on the Internet: <http://terra.nasa.gov/> ■

Employee Spotlight

New EOPO Chief Believes Goddard's the Place For Her

By Dewayne Washington



Lori Simmons, the newly selected Chief of the Equal Opportunity Program Office (EOPO), believes that Goddard is the place for her, "When I first applied for this position I was excited about the possibility to work for NASA," said Simmons. "I think most people are impressed with the NASA mission. Having served as an EEO Director before and working for another science organization, this position seemed like a perfect fit for me."

Before beginning her NASA career on January 3, Simmons served as the Equal Employment Opportunity (EEO) and Diversity Manager for National Oceanic and Atmospheric Administration's (NOAA) Satellite and Information Service (NESDIS). She managed the NESDIS EEO and Diversity programs and served on the NOAA EEO and Diversity Councils.

According to Simmons, this position is just what she was looking for. "This position combines the skills of leading people and managing programs that I've developed through my experience with NOAA and the Defense Security Service (DSS)." From October 1998 until August 2003, Simmons served as Director of Equal Employment Opportunity for DSS, where she managed the agency's EEO and Diversity Management programs.

Simmons spent 17 years at DSS. She started her DSS career in 1986 as an Industrial Security Specialist, where she conducted security inspections at classified contractor sites. While she performed her security duties, she also served as a collateral duty EEO Counselor and later as an EEO Officer. In 1993, Simmons left her security work behind to become a full time EEO Specialist at the agency's Headquarters. As an EEO Specialist, she processed the agency's formal EEO complaints and served as the Disability Program Manager and the Federal Women's Program Manager. While Simmons served as the Disability Program Manager, and later as the office chief, DSS received the Secretary of Defense Affirmative Action Award for Outstanding Disability Program six times in seven years.

"My position here at Goddard is very similar to the one I had at DSS. I left DSS when the Department of Defense decided to transfer most of its investigative workforce to OPM and significantly reduce its Headquarters personnel. I am happy to be back in a position with similar responsibilities and challenges," said Simmons. "My tenure at NOAA Satellites and Information Service exposed me to the unique EEO issues facing a science organization. Wherein at DSS, we had a lot of EEO complaint work, science organizations differ in that they struggle

with the under representation of minorities, women and people with disabilities."

Simmons said her new position at Goddard has energized her, and she hopes to help make a difference. She is delighted to inherit a great staff with lots of potential. She also spoke of how well EEO principles have been integrated into the NASA organizational structure. "Goddard does a really good job of

incorporating EEO into strategic planning. At other agencies, EEO is often an afterthought, but here it is recognized as a vital part of the team," said Simmons. Simmons added, "I believe my role here with Goddard is to ensure that we continue to strive for a work environment that is free from discrimination and harassment and a workforce that reflects the demographics of our diverse society."

When asked what has impressed her most about Goddard, she spoke of the student programs that NASA uses as an employment pipeline for obtaining the future's best and brightest. She is also impressed with the relationship between the advisory committees and upper management at Goddard. "I had some prior knowledge of the student programs because I had talked with Goddard personnel in the past about them. I am also impressed at the number of advisory committees and how well connected and respected they are with senior management," added Simmons.



Lori Simmons

Photo by Chris Gunn/293

During her down time, the Rockville, Maryland native loves to spend time at the beach and serves on the board of a local animal rescue organization as that group's Cat Coordinator. She also readily admits that she is a baseball fanatic: "I am probably Cal Ripken's biggest fan; you will see that when I have an opportunity to do some decorating in my office," she said with a big grin. "I believe Cal was an excellent ball player and I really admire and respect his character and work ethic," said Simmons. She also enjoys visiting the Pacific Northwest where she can fly stunt kites, go kayaking, sample local wines, and watch whales in their natural environment.

Simmons earned a Bachelor of Arts degree from York College of Pennsylvania and attended the University of Maryland at Baltimore County for her graduate coursework.

"I think most people are intrigued by space and believe NASA has an exciting mission. I am happy to be a part of it and look forward to the challenges and responsibilities of my new position," Simmons said with a beaming smile. ■

Managing the Unexpected

By NASA Academy of Program and Project Leadership (APPL) *ASK Magazine*

About a year and a half ago, I sent all of my people -- the support contractors and the civil servants alike -- to risk management training. It was part of an ongoing commitment to manage risk effectively on my weather satellite program at the Goddard Space Flight Center. -Marty Davis

They broke into groups for a full day of training, and then they all got together for a workshop to create a list of the risks we faced. When I came into the workshop, I told them that they were free to suggest any risk they wanted, but they needed to understand that our senior management team was going to review all the submissions to decide what was relevant.

"Your imaginations could go wild," I explained to them, "and you could generate hundreds of risks -- that you get run over by a car, or other things like that. We can't plan for situations like that. So don't submit ridiculous things to us like, 'We're going to crush an instrument,' or 'We're going to drop the spacecraft.' Those just aren't credible." At the end of the day, we collected all the risks they came up with, and we entered the credible ones into our system for tracking. We reviewed some of these risks every other week and revisited the entire list periodically. We were doing what we could to manage risk on the program -- or so we thought.

You're Not Going to Believe What Happened

On September 5, 2003, my wife and I left to go on vacation. We planned to spend two weeks wandering around New York State seeing all the sights. When we left the house, I turned off my cell phone, but kept my pager on -- in case anyone needed to get hold of me. We had a wonderful weekend. Then, bright and early on Monday morning, my pager went off. It was the Project Manager for one of our spacecraft. She had been trying to reach me on my cell phone since Saturday to tell me that the day after I left, Lockheed-Martin had dropped one of my spacecraft.

You can go through your whole career and never have someone drop one of your spacecraft. I think that would have been nice. So, one of the first things I did when I got back, was to inquire

whether I could retire retroactively to Friday, so it wouldn't have been on my watch. They just laughed that off.

Then we got to work. Almost immediately, four investigation teams were formed -- two by Lockheed-Martin and two by NASA. Each was tasked to investigate a different aspect of the accident. These aspects included not only finding out what happened, but also looking for systemic problems in the program, determining next steps, and assessing liability.

What Went Wrong?

The "what happened" investigation didn't take long to report its findings. To begin with, the procedure called for eleven people to be present for this operation. There were only six there. The Lockheed-Martin people had decided some time earlier that three of them weren't really needed -- but they had never redlined the procedure and notified us. The other three hadn't been scheduled. The safety guy wasn't even notified, even though he was listed in the procedure.



Most spacecraft are safe on their dolly: workers separate Cassini's upper equipment module from its dolly.

The operation was scheduled to begin at 6:00 a.m. They also should have had a NASA QA guy there, but when they called him, he said he'd be in later and to proceed without him. When the contractor's QA person arrived at about 6:30 a.m., they were on step six of the procedure, and he said, "Oh, you're on the sixth step. Let me sign off on the first five." And he stamped them, without bothering to look at anything.

One of the procedure steps involved inspecting the cart to make sure it was ready to take the spacecraft. The test conductor said he used the cart a week ago; so what could have happened since then? He didn't inspect it.

Then one of the technicians went over to the cart as they were lowering down the spacecraft. He told them something looked different, but the test conductor didn't go over to look. He just said to go ahead. Turns out, there was a ring of bolts missing. That's what looked different.

There were many steps bypassed that day, any one of which would have caught and avoided the problem. They ignored them all. They went on. They mounted the spacecraft. Then they went to turn it over on their dolly, and it hit the ground. A 3,000-pound spacecraft dropping three feet onto a concrete floor gets damaged. How damaged was a bit more complicated, but estimates ran up to \$200 million.

Continued on page 9

Managing Unexpected (cont'd from page 8)

Pointing Fingers

After the Mishap Investigation Board (MIB) draft report came out, the test conductor and two other people got fired. It was Lockheed-Martin's response to show that they wouldn't tolerate this kind of activity. The way I saw it, the people who got fired weren't necessarily the people who should have been blamed, because they weren't the root cause of the accident. I felt the blame really should have gone higher in the organization. The Project Manager was replaced six months later.

There were several MIB conclusions with which I took issue. For instance, they put some of the blame on the government, because we didn't have our own QA person there at the time of the occurrence. I believe that I should have reviewed all of the procedures and to have made certain that things were in place for the contractor to do the work properly and safely -- safely for the people, and safely for our equipment.

They suggested that we needed to have a civil servant in residence at a plant for every project like this. But I don't think it matters what badge someone wears. He or she just needs to have the right dedication, the right training, the right experience, the right everything. Being civil service doesn't mean a damn thing. I have actually used civil servant leads and contractor leads at one time or another in the past. Either will work as long as you have the right person in the right situation.

But I was told by my management, "You will implement everything that is in the report." No discussion, no exceptions.

Around that same time, I got my copy of the Columbia Accident Investigation Board (CAIB) report. After reading it, I called my deputy center director. I said that the CAIB Report tells me not to blindly do things that I think are stupid. So, I said we needed to talk about the MIB report. He started to laugh. Then he said that he would have to think about that one.

So, we had a little standoff. Since that time, I have spoken with the chairman of our investigation board. I found out that the MIB team didn't unanimously agree to the things that I had problems with. The next time they meet in Washington, as a complete team, I'm going to get to talk to them.



Another safe transition, the Apollo Spacecraft 017 Command Module is lowered onto a dolly.

An Incredible Risk Repeated

A risk (dropping a spacecraft) that I had summarily dismissed as "not credible" at our risk management workshop actually has real-world precedence -- both before and after our own event.

In mid-2000, another contractor, let's call them Contractor-B, dropped a spacecraft. You didn't hear too much about that, because it wasn't a government contract; it was a commercial contract. They dropped it because of bolts that were missing in the dolly. (Sound familiar?) We knew they dropped it, but the details never came out.

The same Contractor-B dropped another spacecraft in the middle of December 2003. That made it into the Space News without much detail. They had just run a thermal vacuum test on the spacecraft in Seattle, Washington, and then dropped it while putting it back into the shipping container. Someone was hurt in that accident.

None of these are simple cases where a team missed one step and so the accident happened. It's always a combination of skipped steps or miscommunications or dangerous assumptions. So, how do we mitigate this sort of risk?

First, we need to properly identify the risk. In our case and the two I cited above, the real risk wasn't necessarily "dropping the spacecraft," even though that was the end result. The risk in our case would more accurately be called "complacency."

We had a long-term project with our contractor. Their attitude was that a spacecraft lift was not a risky thing. After years of doing this work, they saw it as very low-risk. But, in truth, it's always a hazardous operation. It should never be considered low-risk. It always requires the full attention they gave it the first time they did it.

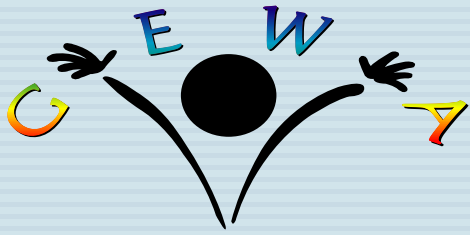
I've come to realize that, no matter how long you work in this business, new experiences will keep coming along. Each one broadens your horizon and helps you do better.

Lessons

- Safety requires strict adherence to procedures. Period!
- However, adherence to procedures in repeated operations also requires the careful attitude typical of "first-timers."

Question

To what extent is adherence to procedures -- coupled with the right attitude, but unsupported by the proper experienced-based judgment -- sufficient to prevent known risks, but insufficient in preventing the unknowns? ■



GEWA Activities

Goddard Bible Club

The Goddard Bible Club meets on Tuesdays at noon in building 21, room 242. We have both speakers and videos, details may be found in Dateline. You are welcome to eat your lunch during the meeting. If you have questions, please call Bill 6-7756.

14th Annual Spring Art Craft

The 14th Annual Spring Art Craft Fair will be held on Tues, March 15, 2005 in the Bldg. 8 Aud from 10 a.m. til 2:30 p.m. Items must be handmade. Cutoff for registration is March 8, 2005. There is space for only 38 tables and an overflow plan is in place. The cost is \$18 per table. Interested participants can completed the attached registration form, security list, and make the payments at the GEWA store in Bldg 1. Additionally, GEWA has enhanced the Arts Craft events by placing the items on the GEWA website for continuous advertising. Browse <http://gewa.gsfc.nasa.gov/SpecEvents/> to see the previous years' Craft Fair photos and to get information on upcoming activities.

Any questions, then please call Kenny at 301-286-3003 or kdearth@pop500.gsfc.nasa.gov.

Goddard Slow Pitch Softball Association (GSPSA) New Teams and New Players Welcome!

The softball leagues are preparing for the upcoming season, and would like to extend an invitation to any new teams or players to join the GSPSA. The leagues are open to all civil servants and contractors working on a NASA contract, and/or their immediate family members (spouse, siblings, or children, in-laws).

The games are played at the old Antenna Test Facility, located off of Beaver Dam Road, on Monday through Wednesday evenings, immediately after work. The games are officiated

by Goddard umpires. All skill levels are represented on the various teams, and the games are competitive, but fun. The GSPSA is interested in any new teams that would like to join, or individuals who might want to play as the existing teams may need a few players. Interested new team representatives, or individuals, should contact Bill Guit (GSPSA President) or Walt Moleski (GSPSA Treasurer),

Bill Guit 301-614-5188 or William.J.Guit@nasa.gov
Walt Moleski 301-286-7633 or Walter.F.Moleski@nasa.gov

So, whether you imagine yourself to be a Barry Bonds-like star, or just someone who likes to play softball, this is your opportunity to get back on the fields in organized games. Whether you've dreamed of hitting that walk-off home run or making the great defensive play to end the game, or just want some fun/entertainment and a chance to run and play like you did as a kid, please contact either Bill or Walt.

Wanted: Slow-pitch Softball Umpires

The Goddard Slow Pitch Association (GSPSA) is looking for new umpires to fill out our existing roster. Even if you have never officiated before, if you are willing to learn, I can teach you the rules and how to umpire. If you are experienced - all the better. League play starts in late April and goes thru August. You need to be able to commit to either a Monday/Tuesday/Wednesday night for most of the season. The games are played at the Beaver Dam complex off Soil Conservation Road starting at 5:30 p.m. Pay is \$18/game payable at the end of each month. If you are interested, contact:
Frank Stocklin 301 286 6339 or Frank.J.Stocklin@nasa.gov.

Please go to <http://gewa.gsfc.nasa.gov/SpecEvents/> for more information.

Announcements

Wallops Flight Facility Intranet Now Available

The NASA's Wallops Flight Facility (WFF) has an internal Web site available for all employees' use. This Web site is designed to provide a "one-stop portal" that includes many professional and administrative references throughout the government, agency, and facility for employees. It includes quick links, internal facility and employee news, as well as links to employee services, a facility event calendar and other NASA intranets, among the many other informational links. Also available at this site are very useful search tools for acronyms and for employee/organizational information (both NASA-wide and internal to Wallops). The WFF Intranet should allow users to reduce those long lists of bookmarks, and you can access this throughout the agency internally at: <http://internal.wff.nasa.gov/> Visit the site today!

Feedback is welcome and may be directed to any of the following: Sandy Kleckner, x7-1929, Lisa Bass, x7-1202, or Rayce Shelton, x7-1757

Looking for Goddard's Internal Page?

The Goddard internal page still exists and can be found at <http://internal.gsfc.nasa.gov>. The internal page is a good source of the latest happenings at Goddard. Links are accessible to colloquia's, seminars and events. In addition, there are useful links to Goddard's organizational chart, employee services, NASA Initiatives and much more. Bookmark this site for easy access in the future.

Dateline Newsletter

The Dateline Newsletter is a daily bulletin that highlights current GSFC events and announcements. The newsletter is e-mailed daily to subscribers only. To subscribe to Dateline send an e-mail message to Majordomo@listserv.gsfc.nasa.gov in the text area type subscribe dateline_daily_copy and within a few days you should start receiving dateline. To submit announcements direct e-mails to dateline@listserv.gsfc.nasa.gov For more information, contact Natalie Simms at x6-8955.

The screenshot shows the Wallops Flight Facility Intranet homepage. At the top, there is a NASA logo and the text 'Wallops Flight Facility Goddard Space Flight Center Intranet'. Below this, there is a search bar labeled 'Find a Person' and a 'Quick Links' section. The main content area is titled 'Wallops Flight Facility News' and contains several news items with dates and 'Read More' links. To the right, there is a 'Calendar' section for February 2005 and a 'Service Links' section. The bottom of the page features 'WENA/MAC Events' and 'Travel' information.

Image of new Wallops Intranet

Want To Challenge Students to Focus On Their Futures?

The Maryland Business Roundtable for Education needs volunteers from the working world to participate in its nationally renowned Speakers Bureau. The Bureau is part of a comprehensive program that informs and motivates middle and high school students about the rigorous coursework they will need to take and complete while in high school in order to succeed in the future, whether they go on to college or directly Chapel Hill Elementary School, located in the northeastern part of Baltimore County. I sent you an email last week, but thought I would try again this week. I would like to ask if you have anyone there who is willing to volunteer to serve as a science fair judge at our Second Annual Science Fair this year. The fair is to be held on March 18th, from 9:00 a.m. -- 12:00 p.m. We

Volunteer speakers are asked to commit to making 3-5 classroom presentations. Before entering the classroom, they are equipped with a lesson plan and receive 3 hours of training on facilitating the Achievement Counts presentation. The messages they deliver are based on their own personal and work experiences, with each speaker bringing his or her own unique perspective. If you are interested please contact Charles Mercer at 301-286-7478 or by email at cmercer@pop100.gsfc.nasa.gov so we can set-up a training session for employees here at Goddard.

To sign up to be a speaker visit our website: <http://www.mbrt.org/speak> or contact LaTara Harris at 410/727-0448 or latara@mbrt.org.

Highlighting Technology Transfer at GSFC - Awards

The Office of Technology Transfer (OTT) manages several awards available to innovators here at Goddard. To be eligible for these awards individuals must first report them by completing the NASA Form 1679 - Disclosure of Invention and New Technology (Including Software). Individuals reporting new technology developments are eligible for the following awards that are exclusive of one another:

NASA Software of the Year Award (Annual Award - Spring - Up to \$100,000) is awarded for software that has significantly enhanced the Agency's performance and helped American industry maintain its world-class technology status. Software must be innovative, user friendly and must have made an impact on the NASA program.

NASA Invention of the Year Award (Annual Award - Winter - Up to \$100,000) is awarded for inventions that have been worked on by at least one NASA employee, issued United States Patent, reduced to practice and a NASA owned invention.

NASA Space Act Board Award (Ongoing Award - Up to \$100,000) recognizes inventions and other significant scientific and technical contributions that have helped NASA achieve mission goals through efficient means and have had an impact on NASA's scientific and technical business practices.

The coordination and recommendations for these awards vary, but the process starts with technology being reported to the OTT. The reporting of new technology can be done online by accessing "eNTRe" at the Office of Technology Transfer website <http://techtransfer.gsfc.nasa.gov>.

Science Fair Judges Needed

Judges are needed for the Science Fair at Chapel Hill Elementary School located in the northeastern part of Baltimore County at 5200 E. Joppa Rd., Perry Hall, Md. on **Mar 18**, 2005 from 9:00 a.m. to 12:30 p.m. If you are interested in being an judge for this event please contact Anne Bloom at 410-887-5119 or by email at ebloom@bcps.org.

Prince George's Area Science Fair is looking for volunteer science fair judges for **Sat, March 19**, from 8 a.m. - noon at Prince George's Community College. Scientists, technicians, contractors, faculty, retirees, spouses, graduate and undergraduate students are invited to become judges. If interested, register at <http://www.freewebs.com/pgareasciencefair/judge.htm>. Refreshments will be served before judging and after. For questions, contact Glenn Hanes at 301-504-8137.

Davidsonville Elementary School is having a science fair on **April 4**, 2005 from 8:30 to 11:30 a.m. For more information see the URL: http://www.aacps.org/aacps/DAVES/science_fair.htm

Science Fair Speaker wanted at Barrie School on **April 29**, 2005. Located at 1300 Layhill Road; Silver Spring, Md. For further information contact Velma Anderson at 301-805-3442 or by email at Velma.Anderson@Honeywell-TSI.com

Career Day and Career Expo for Greencastle Schools. On **March 22**, 2005 for the Middle School and **April 19**, 2005 for the High School. Also they looking for a luncheon speaker as well on April 19th after the Expo. If interested please contact Kate White-Deater at kedeater@greencastle.k12.pa.us.

NASA GSFC/WFF's Chapter of BIG Announces Scholarship Program for High School Seniors

The NASA GSFC/WFF Chapter of Blacks in Government (BIG-GSFC/WFF) Scholarship Program is now underway! BIG is currently accepting applications from high school seniors who are graduating this spring. Eligibility requirements include a 2.0 cumulative GPA, students having applied for admission to at least one (1) accredited institution of higher learning for the Fall 2005 school term, and a written essay. Application packages are due Friday, March 25, 2005. Scholarship applications hand-delivered or postmarked after March 25, 2005 will NOT be eligible. For complete details of the application process and other eligibility requirements, please contact Mr. Michael White, BIG-GSFC/WFF's Programs and Education Chairperson, on ext. 6-8448 or via e-mail at Michael.J.White@nasa.gov or contact Ms. Merle Robbins, BIG-GSFC/WFF's Chapter President, on ext. 6-7819 or via e-mail at Merle.E.Robbins@nasa.gov.

Goddard Referral Service

Looking for information on issues such as adult care, child care, legal or financial assistance, health & wellness, or education, but don't know where to start? Let Goddard's Referral Service do the work for you! This service includes a website as well as specialists available 24 hours a day/7 days a week - whenever the need arises. Check it out at: www.worklife4you.com, and enter the following information: Agency Code: GSFC; password: last name + last 4 digits of SSN. Don't worry - the site is very secure & you're information remains confidential. Please contact Khrista White at X6-9059, khrista.n.white@nasa.gov, or <http://ohr.gsfc.nasa.gov/family/home.htm> for assistance.

Events

Scientific Colloquia

All colloquia are held on Fridays in building 3 Goett Auditorium at 3:30 p.m. unless otherwise noted.

Who: Sean Brennan, U.S. Geological Survey will discuss *Origin of Seashells*

When: March 11

Who: Dr. Susan Kieffer, Univ. of Illinois Champaign-Urbana will speak on *Geologic Nozzles: Mount St. Helens, Old Faithful Geyser, and the Rapids of the Colorado River*

When: March 18

Who: Volker Bromm, Univ. of Texas will examine *The First Sources of Light*. Bromm will present simulations of the formation of the first stars and quasars, discuss their impact on the intergalactic medium, and describe ways to probe their signature with the WMAP and JWST missions. The first supernovae are responsible for the initial metal enrichment of the cosmic gas. Also Bromm will describe the properties and statistics of high redshift Gamma-ray Bursts. The Swift satellite is ideally suited to test these ideas.

When: April 1

Engineering Colloquia

All Engineering Colloquia are held in Bldg 3 Goett Auditorium at 3:30 unless state otherwise

Who: Brian Appel, Chairman and Chief Executive Officer of Changing World Technology, Inc. will give insight on *Changing Garbage to Oil - Eliminating Landfill with a New Technology*. Changing World Technologies, Inc. (CWT) has developed the Thermal Conversion Process (TCP) which converts organic waste residuals and low value materials into marketable high quality clean fuels and specialty chemicals. The TCP provides a solution to many health, environmental and economic issues which result from waste disposal, animal disease, food contamination and natural disasters.

When: March 7

Who: Dr. Stanley Schmidt, editor *Analog Magazine* will discuss similarities and differences in how science fiction writers and scientists view and use science, and how science fiction and real science and technology influence each other.

When: March 14

Who: Jim Maser, president and general manager of Sea Launch Company, LLC will speak on *Shining Sea to Silent Space: Sea Launch* providing insight on the history, partnership and operations for this ten-year-old company that has seen many successful commercial launches, such as satellites for XM Satellite Radio.

When: March 21

Who: Dr. Dana Mckenzie, noted free-lance science writer based in Santa Cruz, Calif. will discuss *The Big Splat or How our Moon Came to Be*. Dr. Mackenzie will review the history of the theories of the Moon's origins, the ways in which all three of the pre-Apollo theories failed to pass physical tests, and how a fourth theory -- the giant impact theory -- has superseded them. The giant impact theory, in which the Moon was formed in the aftermath of a collision between Earth and a Mars-sized planet named Theia, fits in very well with our current understanding of the dynamics of the early solar system, which was a much more chaotic place than the theorists of previous generations realized.

When: April 4

The Property Management Branch Auction

What: Property auction items include ADP equipment; misc. testing and electronic equipment; mainframe systems; and many other misc. items.

When/Where: Thurs., March 10 at the Goddard's Bldg. 16W Excess Warehouse at 10 a.m. Inspection will from 8 to 9:45 a.m.

Can We Talk

All are welcome to the next "Can We Talk" discussion scheduled for **Thurs., March 10** at 11:30 a.m. in Bldg. 32, Room N202. These informal dialogue sessions are held each month with the Center Director Ed Weiler. There's no agenda, no set topics, no notes, just an opportunity to tell the Center's leadership what is on your mind. Sessions are on a first-come, first-serve basis. To register, visit <http://internal.gsfc.nasa.gov/canwetalk.cfm> or call the Office of Public Affairs at x6-8955.

Center Director's Colloquium

All of the Center Director's Colloquia will held in the building 3 Goett Auditorium from 10 a.m. to 11 a.m. with afternoon group discussion at 2 p.m. in the bldg 1 training facility.

Who: Ms. Ann McGee-Cooper, Founder, Ann McGee-Cooper & Associates, Inc. and Ms. Christina Johnson, Marketing Manager, Southwest Airlines (SWA) will discuss the principles of servant-leadership and how SWA responded to one of the worst tragedies of our time, Sept. 11, 2001

When: Wed, April 6

Continued on page 14

Drug Free Workplace Training

What: Mandatory Drug Free Workplace Program training for supervisors has been rescheduled. For more information please contact Linda Breeze on X-64249.

When/When: Tues., March 29, 1 p.m., in the Bldg 8 Auditorium

Evening Scientific Colloquium

What: NASA's Goddard Space Flight Center will host the first of a series of free public lectures and discussions on cosmology and astrophysics, entitled *Eyes on the Sky: Peeking into the Universe's Past, Fathoming the Future*. In celebration of World Year of Physics 2005, the centennial of Einstein's miraculous year of discoveries, this event will feature some of the world's leading scientists and showcase NASA's cutting-edge scientific endeavors. Admission is free but on-line reservations must be made at <http://university.gsfc.nasa.gov/eyesonthesky/>. This colloquia series is appropriate for high school and college level participants.

Who: Dr. Al Kogut, Goddard's Exploration of the Universe Division will discuss *A Great Time Machine in the Sky*. Dr. Kogut will give insight on how the light emitted at the Big Bang still permeates the universe and carries imprinted in it a fossil record of the earliest moments of the universe. Analyzing this ancient light answers fundamental questions about the shape, content, and perhaps even the ultimate fate of the universe.

When/Where: **Thurs., March 10** at 7pm in NASA's Goddard Space Flight Center's Visitor Center Auditorium

Information & Science Technology Colloquia

Who: Dr. Norman Schneidewind, professor of Information Sciences and Director of the Software Metrics Lab in the Department of Information Sciences and the Software Engineering Group at the Naval Postgraduate School and is a member of the IEEE USA Congressional Fellowship. Dr. Schneidewind will provide an *Overview of IEEE P1633/AIAA Standard for Software Reliability*.

When/Where: **Wed, Mar 9** in the Bldg. 3 Goett Auditorium at 3:30 p.m. (Refreshments at 3 p.m.)

For more info, visit: <http://isandtcolloq.gsfc.nasa.gov/spring2005/speakers/schneidewind.html>

Who: Walt Brooks, Chief, NASA Advanced Supercomputing Division, NASA Ames Research Center

When/Where: **Wed, Mar 23** Bldg 3 Auditorium at 3:30 p.m. (Refreshments at 3 p.m.)

For more info, visit: <http://isandtcolloq.gsfc.nasa.gov/spring2005/speakers/breitman.html>

Mark Your Calendars for the Eleventh Space Communications Customer Forum

The Customer Commitment Office, Code 451, is sponsoring the Space Communication Customer Forum (SCCF). This forum presents an opportunity for Space Communications Program (Code 450) representatives to discuss with our customers, available Space Network and Ground Network services and plans, as well as issues of concern to them and the service providers.

When/Where: **Thurs, March 17**, from 1 to 4 p.m. in Bldg 3, Goett Auditorium

Please visit the SCCF website <http://scp.gsfc.nasa.gov/sccf> to pre-register. Requests for specific agenda items, or any other issues related to your participation, may be directed to the SCCF host, Mr. Al Levine/Code 451 Service Planning Manager, at x6-9436, via email Allen.J.Levine@nasa.gov.

Fitness For Life - Health & Fitness Seminar

The biggest excuse for not exercising is that people don't have enough time. Come join Scott Dunroe, Physical Therapist, Sports Performance Specialist and lecturer as he presents ways to help incorporate exercise into everyday activities to live a more active lifestyle, improve individual energy levels, mental state, and physical health.

When/Where: **Tues., March 22**, at 1p.m. in Bldg 8 Rm 121

Please call the Fitness Center on 286-8404 to register.

Upcoming Training

Please visit <http://ohr.gsfc.nasa.gov/DevGuide/Catalog.htm> for a complete listing of the OHR Course Catalog.

You may also contact Tracey White at x6-7823 or [Tracey C. White.1@gsfc.nasa.gov](mailto:Tracey.C.White.1@gsfc.nasa.gov) to enroll in any of the listed courses.

One-On-One Career Coaching...

Whether you are contemplating a career change, in need of assistance with resume writing, interviewing techniques, or trying to develop an Individual Development Plan (IDP), a career coach can help. To schedule a confidential one-on-one appointment, contact Tracey White at x6-7823. This service is provided to civil servants only.