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Countdown to GLAST Launch

By Rob Gutro

There’s just 7 weeks to go. The Gamma-ray Large Area Space Telescope (GLAST) launches May 16 from Cape Canaveral Air Station, on Florida’s east coast. GLAST will explore the most extreme environments in the universe, where nature harnesses energies far beyond anything possible on Earth!

GLAST is a collaborative mission with the U.S. Department of Energy; international partners from France, Germany, Italy, Japan and Sweden; and numerous academic institutions from the U.S. and abroad. The spacecraft will answer questions about supermassive black hole systems, pulsars and the origin of cosmic rays. It also will study the mystery of powerful explosions known as gamma-ray bursts.

Keep your eyes on this space for more updates and the latest countdown to GLAST launch. See the story on Page 10 to learn more about the GLAST team.

For more information, visit: http://www.nasa.gov/glast.
Sun-Loving Spacecraft is Go for Environmental Test
By Rani Gran

The Solar Dynamics Observatory (SDO) passed its preliminary environmental review and is ready for environmental testing. SDO will help scientists zoom in on solar activity such as sunspots, solar flares, and coronal mass ejections. This new view on the Sun will help increase understanding of the causes of these phenomena, thus improving forecasts of solar storms.

Environmental tests will begin in about two weeks. Engineers are attaching the solar arrays in preparation for the Electromagnetic Interference (EMI) test and vibration tests. The EMI test checks the operation of the spacecraft when subjected to its expected electromagnetic environment. Electromagnetic fields can interfere with the performance of sensitive electronics and cause noise in devices such as cell phones. Engineers want to make sure that the SDO spacecraft operates as designed with no degradation in performance.

The vibration test makes sure the spacecraft can handle the rigors of launch. Elizabeth Citrin, SDO Project Manager, says the observatory is on target for a December launch.

SDO is the first mission to be launched for NASA’s Living With a Star (LWS) Program. This program is designed to understand the causes of solar variability and its impacts on Earth. SDO is designed to help us understand the Sun’s influence on Earth and near-Earth space by studying the solar atmosphere on small scales of space and time and in many wavelengths simultaneously.

For more information about SDO, visit http://sdo.gsfc.nasa.gov.

Construction Update #2 on New Science Building
By Rob Gutro

This is the second in a recurring series of articles chronicling the construction of Goddard’s Exploration Sciences Building.

Caption: Finishers place and finish the third floor deck for Area B.

Caption: Area C–2nd floor concrete pour. Placement of the concrete using a pumper truck.

Caption: Concrete is continuously pumped through a hose and placed ahead of the concrete finishers.

For more information about NASA’s Green Building, please visit the Web site: http://www.nasa.gov/centers/goddard/news/green_building.html.
The Latest on the Lunar Reconnaissance Orbiter

By Keith Opperhauser

Much has been happening in Building 7 as the Lunar Reconnaissance Orbiter (LRO) mechanical team prepares for launch in just a few months.

In just the last week, the team has mechanically integrated the Star Trackers, the Ka-band modulator, and the Lyman-Alpha Mapping Project (LAMP) instrument onto the Orbiter. In parallel, the High-Gain Antenna System team has made good progress on integration and preparation for environmental testing. The Solar Array System team has started assembling the hardware on to the solar array panels. The mechanical team also completed the modal survey of the Structural Verification Unit. The modal survey is used to correlate the structural model with reality, and the model is used to predict the loads that structural and electronic components will see in flight.

On March 13, the LRO mechanical team integrated the +Y panel on the Orbiter. This panel supports the instrument module. The team also confirmed compatibility with the Universal Space Network, ensuring that ground stations will be able to communicate with the Orbiter. This week, electrical integration of the propulsion module and the reaction wheels was completed. The team performed the end-to-end test of the propulsion system, blowing gas from our tanks out through the latch valves and the thrusters, using the spacecraft electronics to control everything.

The Lunar Exploration Neutron Detector (LEND) instrument is on its way to Goddard Space Flight Center. The LEND instrument measures the flux of neutrons from the Moon, which are produced by the continuous cosmic ray bombardment of the lunar surface. The cosmic rays are sufficiently energetic to break apart atoms in the soil releasing high-energy neutrons that are then slowed down and absorbed by nuclei of elements in the soil. Not all the neutrons are captured by the soil, many escape, creating a leakage flux of neutrons, which the LEND instrument will observe.

LRO is the first mission in NASA’s Vision for Space Exploration, a plan to return to the Moon, and then to travel to Mars and beyond. LRO will launch in late 2008 with the objectives of finding safe landing sites, locate potential resources, characterize the radiation environment, and demonstrate new technology.

Keep checking here for more LRO updates. For more information on LRO, please visit http://lunar.gsfc.nasa.gov.

Caption: The mechanical team carefully moves LAMP into position on the instrument module during mechanical integration. The red cover over the LAMP aperture is visible in the center of the photo.

Caption: The mechanical team poses in front of the Orbiter after installation of the +Y panel.

Caption: The mechanical team attaches the instrument module panel.
A BIG Renaming—The Emmett Chappelle Chapter

By Dewayne Washington

It was most befitting that during the national celebration of Black History Month, Goddard community members chose one of their own to receive a most prestigious honor. During an official renaming ceremony on February 27, the NASA GSFC/WFF Chapter of Blacks In Government (BIG) became the Emmett Chappelle Chapter of BIG.

“Chapter members, with the consensus of chapter president Joyce Brooks, decided NASA’s GSFC/WFF Chapter was just too long and cumbersome, and that renaming was necessary,” said Merle Robbins, African-American Program Manager. “We decided on Emmett Chappelle because he was one of our own with incredible achievements and he was still alive to receive this honor,” said Brooks.

During his 34-year career at Goddard, Chappelle’s innovative research led to 14 U.S. patents and recognition as 1 of the top 100 African-American scientists and engineers of the 20th century. This is documented in the Museum of Black Innovations and Inventions. “I would like to thank all of the people at Goddard for assisting me throughout my career here,” said Chappelle in his remarks during the renaming ceremony.

Chappelle was inducted into the National Inventors Hall of Fame in May 2007 for his work with Lyophilized Reaction Mixtures. The Hall of Fame is the Nation’s preeminent center for the recognition of men and women who have worked to change the world. The recognition honors prestigious innovators who have changed society and improve the way we live.

Morgan State University School of Engineering Professor Arthur Willoughby was the invited guest speaker for the renaming ceremony. Willoughby spent a portion of his career working at Goddard at the same time as Chappelle. During his presentation, Willoughby recalled an environment that lacked many of today’s modern conveniences, but was steeped in accomplishments. “It was not easy for our ancestors such as Mr. Chappelle, but they persevered and succeeded. We owe a lot to those who have cleared the way and we must keep it moving,” said Willoughby.

During his presentation, Willoughby also spoke to the audience about the importance of an education and the many opportunities made possible because of the contributions of Chappelle. “Without exposure to role models, you don’t know what your options are,” said Willoughby.

The BIG organization was established in 1975 and incorporated as a non-profit organization under the District of Columbia jurisdiction in 1976. BIG has been a national response to the need for African-Americans in public service to organize around issues of mutual concern, and use their collective strength to confront workplace and community issues. BIG’s goals are to promote equity in all aspects of American life, excellence in public service, and opportunity for all Americans.

The Emmett Chappelle Chapter, under its present charter, has been in existence since 1997. Some of the chapter’s community work includes the “Christmas in April” program with Prince George’s County, house repairs for low-income and senior residents, and the awarding of more than $11,000 in scholarships. Other chapter activities include mentoring and Christmas baskets for needy families. Brooks said the chapter will be partnering with local churches to provide additional mentoring.

According to Robbins, future endeavors for the chapter also include partnering with the African-American Advisory Committee and the National Society of Black Engineers to increase sponsorship of community support programs.

For more information about the Emmett Chappelle Chapter of BIG, contact Brooks at 301-286-5912 or Cynthia Jones Savoy for membership at 301-286-7149. All are welcome to join. For more information about BIG visit the national Web site at http://www.bignet.org.
A worldwide collaboration using data from many sources, both ground-based and space-based, has led to the publication of a spectacular book, *Our Changing Planet: The View from Space.* Brought together by four editors, the volume contains incredible imagery from an array of satellites. Two of the book's editors are scientists here at NASA Goddard. Michael King is the Senior Project Scientist for the Earth Observing System (EOS), Code 610. Claire Parkinson is a Senior Research Scientist and Climatologist with the Cryospheric Sciences Branch, Code 614.


The Goddard editorial team was supported by a production team at Goddard that worked with the editors for about seven years to assemble this impressive work. The production team ensured quality and consistency throughout the publication. Published in October of 2007, the book got all the way up to number 75 on Amazon.com.

More than just a coffee table book, *Our Changing Planet: The View from Space* also contains informative substance along with charts and graphs. “I think it is pretty accessible. This has actually a lot of scientific information content, but in a way that’s communicable to the man on the street, and I think that was always our goal and I think we achieved that,” said King. Claire Parkinson added that, “Another aspect that we stressed was writing it to make it readable for the general public and most of our authors were good about doing that.”

Unfortunately for NASA, Dr. King is retiring after 30 years of service. He started here at Goddard Space Flight Center in January 1978 as a physical scientist. Besides serving as the Senior Project Scientist for EOS, King is also head of the MODIS-Atmosphere Discipline Group on *Terra* and *Aqua*. He also served as Project Scientist of the Earth Radiation Budget Experiment (ERBE) from 1983–1992.

King was, in the words of his colleague and co-editor Claire Parkinson, “Essential to so many programs. Michael has been such a critically important person at Goddard. He’s headed up the entire EOS. Under Michael come all of the project scientists for the individual missions . . . a huge variety and personalities . . . Michael deals with everybody well. Praise could go on and on and on.”

King is a recipient of the Space Systems Award from the American Institute of Aeronautics and Astronautics (2006) for the EOS project. He is also an Elected Member of the U.S. National Academy of Engineering (2003).
GEWA’s 17th Annual 2008 Spring Craft Fair
Warm ‘Tiger Stripes’ on Geyser Moon Raise Hopes for Life

By Bill Steigerwald and Carolina Martinez

The most detailed temperature map to date of the “Tiger Stripe” region on the south pole of Saturn’s moon Enceladus reveals that the area is even warmer than previous measurements indicated. Jets resembling geysers are erupting from cracks in the icy crust of this region, so named because the fissures look like the stripes of a tiger.

The temperature measurements were made by the Cassini spacecraft’s Composite Infrared Spectrometer (CIRS) during the spacecraft’s close flyby of the moon on March 12, 2008. The warmth suggests the possibility that there might be liquid water beneath the ice. Liquid water, together with abundant organic material detected by Cassini as it flew through the jets, would make Enceladus a promising place to search for extraterrestrial life.

“Enceladus has got warmth, water and organic chemicals—some of the essential building blocks needed for life,” said Dennis Matson, Cassini Project Scientist at NASA’s Jet Propulsion Laboratory, Pasadena, Calif. “We have quite a recipe for life on our hands, but we have yet to find the final ingredient—liquid water, but Enceladus is only whetting our appetites for more.”

“This latest flyby is the closest we have been to Enceladus while mapping its temperatures,” said CIRS Principal Investigator Michael Flasar of NASA’s Goddard Space Flight Center in Greenbelt, Md. “Seeing them as high as 180 Kelvin (minus 136° F) in the surface cracks near the south pole is amazing, because the temperatures expected on a quiescent Enceladus are only 60 K (minus 352° F). Some very energetic process below the surface is generating a lot of heat and spewing out the molecules and particles that are seen by the other Cassini instruments when the spacecraft passes over the south polar region. Enceladus continues to surprise and fascinate.” The CIRS team is based at NASA Goddard.

This new view shows that at least three of the south polar fractures are active along almost their full lengths—the fourth one, on the right, was only partially covered by this scan. The infrared radiation was mapped by CIRS at wavelengths between 12 and 16 microns. The infrared data, shown in false color, are superimposed on a grayscale image mosaic of the south pole obtained by Cassini’s cameras on July 14, 2005, during the previous close Enceladus flyby. The warmest parts of the fractures tend to lie on locations of the plume jets identified in earlier images. Numbers on the map indicate latitude and longitude.

“These spectacular new data will really help us understand what powers the geysers. Plus, the surprisingly high temperatures make it more likely that there’s liquid water not far below the surface,” said John Spencer, Cassini scientist on the CIRS team at the Southwest Research Institute in Boulder, Colo.

Cassini flew through the jets during this flyby of the moon, and the spacecraft’s Ion and Neutral Mass Spectrometer saw a much higher density of volatile gases, water vapor, carbon dioxide and carbon monoxide, as well as organic materials, some 20 times denser than expected. Organic materials contain carbon and are necessary for life as we know it. Mission scientists say the organics “taste and smell” like some of those found in a comet. The jets themselves harmlessly peppered Cassini, exerting measurable torque on the spacecraft, and providing an indirect measure of the plume density.

This map was made by scanning the south pole during the period from 16 to 37 minutes after closest approach to Enceladus, at a distance between 14,000 and 32,000 kilometers (about 8,700 and 20,000 miles) as Cassini rapidly receded from its close (50-kilometer or 32-mile) flyby.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency, and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA’s Science Mission Directorate in Washington, D.C. The Cassini orbiter was designed, developed, and assembled at JPL. The Composite Infrared Spectrometer team is based at NASA’s Goddard Space Flight Center in Greenbelt, Md.
Dr. Jim Hansen Wins Two Awards

By Leslie McCarthy

Dr. Jim Hansen, Director of NASA’s Goddard Institute for Space Studies (GISS), in New York City, recently won two prestigious awards. In February, he was presented with the 2007 American Association for the Advancement of Science (AAAS) Award for Scientific Freedom and Responsibility. He was also recently selected as the recipient of the 29th Annual Common Wealth Award of Distinguished Service in the field of Science.

Since the mid-1970s, Hansen has focused on studies and computer simulations of the Earth’s climate for the purpose of understanding the human impact on global climate. He is best known for his testimony on climate change to Congress in the 1980s, which helped raise broad awareness of the global warming issue. In recent years, Hansen has drawn attention to the danger of passing climate tipping points, producing irreversible climate impacts that would yield a different planet from the one on which civilization developed.

The Scientific Freedom and Responsibility Award is presented annually by the AAAS to honor individual scientists and engineers or organizations for exemplary actions that help foster scientific freedom and responsibility. The award recognizes outstanding efforts to protect the public’s health, safety, or welfare; to focus public attention on potential impacts of science and technology; to establish new precedents in carrying out social responsibilities; or to defend the professional freedom of scientists and engineers. It carries a $5,000 prize.

The AAAS award citation credited Hansen for “His outspoken advocacy on behalf of scientists’ responsibilities to communicate openly and honestly with the public on matters of importance to their health and welfare.” In a memo supporting Hansen’s selection, the award committee wrote that he “has faced pressure, and sometimes outright opposition, from highly placed individuals in the past four administrations” who have urged him to alter his message in one direction or another. The memo added, “…in consistently fighting to keep his scientific opinions free from political influence and revision, Dr. Hansen has drawn attention to the broader issue of political interference in scientific communication, a process that he warns is ‘in direct opposition to the most fundamental precepts of science.’”

The Common Wealth Awards were created by the late Ralph Hayes, an influential business executive and philanthropist. PNC Bank in Delaware, where Hayes served on the Board of Directors, has been trustee and administrator for the Common Wealth Awards since their inception. The 2008 Common Wealth Awards also recognized actress Glenn Close, for Dramatic Arts; John Howard, four-term prime minister of Australia, for Government; and Ann Curry of NBC for Mass Communications. “The 2008 Common Wealth Award winners are among the most accomplished and admired men and women of our time,” said Connie Bond Stuart, president of PNC Bank. “Through their work and their achievements, these individuals have influenced the way we think, live, and feel. In the spirit of the Common Wealth Awards, we honor these remarkable achievers for the legacy they have contributed and the possibilities yet to be realized.” The honorees share a $200,000 prize.
Meet the Faces at Goddard Behind GLAST: Dr. Neil Gehrels

By Rob Gutro

Neil is responsible for overseeing the GLAST Science Support Center. He is also a co-investigator on the Large Area Telescope (LAT) GLAST instrument team and an associated scientist on the GLAST Burst Monitor (GBM) team. He’s a research scientist in gamma-ray astronomy active in instrument development and data analysis. His interests include gamma-ray bursts and supernovae.

Neil has been interviewed by reporters from all over the world on a variety of astrophysics topics. That’s because he’s been involved in many missions over the years. One such mission is the Swift mission, for which he is the Principal Investigator, and which continues to bring amazing science findings on such phenomena as supernovas and gamma-ray bursts. He was also the Project Scientist for the Compton Observatory (1991–2000), and Mission Scientist for the European Space Agency’s INTErnational Gamma-Ray Astrophysics Laboratory (INTEGRAL).

Neil has organized six major conferences and has been an editor on the proceedings books. He has over 200 articles in science journals and magazines, and has given many invited talks. He has been on 13 working groups and committees in various positions. His committee positions include Chair of the American Astronomical Society High Energy Astrophysics Division, and Chair of the American Physical Society Division of Astrophysics.

Dr. Gehrels received his Ph.D. in 1982 from the California Institute of Technology (Caltech), in Pasadena, Calif. He graduated from the University of Arizona in 1976 with a bachelor’s degree in physics and music.

Numerous awards have been bestowed upon Dr. Gehrels, including the American Astronomical Society’s Bruno Rossi Prize in 2007, the Popular Science “Best of What’s New” award for Swift satellite research in 2006, and two awards in 2005—the NASA Exceptional Scientific Achievement Medal and the Goddard Space Flight Center Lindsay Award. In 2000, the American Astronautical Society awarded him the Randolph Lovelace Award. He was named a Fellow of the American Physical Society in 1993, won a NASA Outstanding Leadership Medal that same year, and in 1992, received the Discover Magazine Award for Technological Innovation.

For more information about GLAST, visit: www.nasa.gov/glast.
For more information about Swift, visit: http://www.nasa.gov/swift.
For more information about INTEGRAL, visit: http://sci.esa.int/science-e/www/area/index.cfm?fareaid=21.
March is Women’s History Month and a time to reflect on the many contributions women have made to all disciplines of science. Despite many barriers, women around the world have been active participants in the quest to unravel the many mysteries of our world and beyond. Women’s contributions to science, mathematics, and technology have not always been recognized, and historians have begun to investigate historical women in science, the obstacles they faced, and the strategies they implemented to have their work accepted. While these disciplines are still largely dominated by men, there is a growing appreciation of cultural and gender diversity in the workplace. In 2008, women are an impressive force in the scientific world, and as our understanding of our home planet grows and changes, new applications for science abound. One NASA scientist is contributing to cutting edge research of critical concern to inhabitants of planet Earth: Dr. Cynthia Rosenzweig, of the Goddard Institute for Space Studies.

Dr. Rosenzweig studies global environmental change. Her interest in the subject was sparked by a stint in Italy in her early 20s. “I was living on a farm in Tuscany, and I was learning about the interactions of climate and soil and crops for the first time. I still study these interactions today,” explains Dr. Rosenzweig. Today, she investigates the potential impacts and adaptations associated with our changing planet. She integrates impact models with global climate models to predict future outcomes of both land-based and urban systems under altered climate conditions.

Dr. Rosenzweig recognizes that global environmental change is complex, and is best understood by coordinated teams of experts. She has organized and led large-scale interdisciplinary, national, and international studies of climate change and adaptation. Dr. Rosenzweig is the Co-Leader of the Metropolitan East Coast Regional Assessment of the U.S. National Assessment of the Potential Consequences of Climate Variability and Change, sponsored by the U.S. Global Change Research Program. She leads the Climate Impacts research group at the Goddard Institute of Space Studies, in New York, N.Y. The group’s mission is to investigate the interactions of climate (both variability and change) on systems and sectors important to human health.

Dr. Rosenzweig was a contributor to the Intergovernmental Panel on Climate Change (IPCC), which shared the 2007 Nobel Peace Prize with former Vice President Al Gore. She describes the IPCC as the result of the efforts of many hundreds of scientists who have worked on assessments since the panel was first formed 18 years ago. She feels honored to have participated in the panel. “It was thrilling to be part of the Nobel Peace Prize for the Intergovernmental Panel on Climate Change,” notes Dr. Rosenzweig.

Dr. Rosenzweig’s dedication and achievements are well noted in the global scientific community, and she is one outstanding example of the acceptance and impact of today’s women in various disciplines of science. What about her work continues to inspire her? “I’m always learning something new. That’s really what being a scientist is about. It’s just tremendously rewarding and exciting.” As for the pitfalls that accompany a life in science? Dr. Rosenzweig laughs, “I never have time to respond to all of my e-mails! Scientists are always in touch about so many important and fascinating topics. I can’t do them all and I wish I could!” Dr. Rosenzweig’s contribution to climate science is significant, and the scientific community here at Goddard and beyond is quite proud of all she has accomplished in her career.

On Earth Day, April 22, Goddard Space Flight Center will celebrate and recognize the outstanding scientists at Goddard and GISS who were honored with the 2007 Nobel Peace Prize for their involvement with the Intergovernmental Panel on Climate Change. The Center will host a reception and panel discussion with several contributors to this important scientific body. For more information about Earth Day at Goddard Space Flight Center, please visit: http://earthday.gsfc.nasa.gov.
Questions For Jerome Bennett

By John Putman

Jerome Bennett is currently the Associate Chief of Computational and Information Sciences and Technology Office, Code 606. He was recently certified into the Senior Executive Service. Jerome is the first African-American SES who started his career at Goddard, stayed at Goddard, grew his career at Goddard, and achieved SES status as a Goddard employee. Jerome is a “home grown” success story.

How did you get to NASA?
“I came to Goddard through a co-op program through my university (in 1985), which was Towson State University.”

What led you to NASA?
“I knew I wanted to come to NASA when I was probably 10 or 11 years old. My desire to be part of the NASA family was fueled by news of the Apollo missions and aerial shows with the Blue Angels and the Thunderbirds. One of my favorite shows as a kid that reminded me of the Agency was ‘I Dream of Jeannie.’”

Where are you from?
“Born and raised in Maryland. Basically 99.9% of my family is here.”

The SES qualification process is pretty arduous
“It’s definitely that and it was an honor to actually get in the program because you’re told that … it’s not unusual to submit your application two or three times. I was one of the few to get in the first time around.”

What kind of challenges did you face?
“I took the four-week course up at the John F. Kennedy School of Government up at Harvard. That was a very humbling experience due to the intense training, collaboration with international classmates, and the targeted topics discussed during open forums that included world leaders, both past and present.”

What did you think of Boston?
“I have new respect for the Charles River. Once the weather broke, it’s really a beautiful city.”

Did you get a lot of support from Goddard?
“My mentor, which was Dolly Perkins, from day one, has been very, very supportive. She’s been remarkable as a mentor to me. My organization, Code 600, was very supportive of everything I needed to do to go through the program.”

What do you like about Goddard?
“Support comes from every corner of the Center. People are trying to enable your success. The only way you’re going to fail is if you want to fail. Nobody is going to put roadblocks in your way to hinder your success. They are going to do whatever they can to enable it.”

What’s next?
“When you enjoy what you do it’s sometimes hard to call it work. I’ve had a lot of fun in my career. If I can work for the Agency for 60–70 years, I can see myself doing that. They’re going to have a hard time getting rid of me.”