



National Aeronautics and
Space Administration
Goddard Space Flight Center

GODDARD news

Greenbelt, Maryland/Wallops Island, Virginia

Aug. 1997 Vol. I No. 14

The Goddard News is published weekly by the Office of Public Affairs, Goddard Space Flight Center, Greenbelt, MD 20771

LEWIS SATELLITE READY TO DEMONSTRATE FINER SPECTRUM OF EARTH VIEWS

Outfitted with Earth-imaging instruments intended to push the state-of-the-art in scientific and commercial remote sensing, NASA's Lewis satellite is scheduled for launch at 2:51 a.m. EDT on August 10 from Vandenberg Air Force Base, CA, aboard a Lockheed Martin Launch Vehicle (LMLV-1). The satellite was built by TRW Space & Electronics Group, Redondo Beach, CA, under NASA's Small Spacecraft Technology Initiative.

The Lewis payload features two remote-sensing instruments, the Hyperspectral Imager (HSI) instrument built by TRW and the Linear Etalon Imaging Spectral Array (LEISA), built by Goddard. The HSI and LEISA instruments are designed to split up the spectrum of light energy reflected by Earth's land surfaces into as many as 384 distinct bands. In addition, Lewis carries the Ultraviolet Cosmic Background astrophysics instrument built by the University of California at Berkeley.

"Lewis has proven to be an invaluable groundbreaker in our efforts to infuse fast-track procurement methods and industry-driven technology development into all of NASA's future spacecraft," said Samuel Venneri, Chief Technologist at NASA Headquarters. "This philosophy has since helped spawn the Agency's New Millennium program and, more importantly, has fostered a mindset of innovation and partnership with industry across all of NASA's technology field centers."

"The sensors on Lewis will allow environmental scientists to discriminate between different types of vegetation, and determine their health, with a fine precision only hinted at by previous space- and aircraft-based measurements," said

Dr. Diane Wickland, program scientist in NASA's Office of

Mission to Planet Earth. "It also will enable much more accurate estimates of the run-off from spring snow melts, the distribution of surface minerals, and the composition of sedimentary discharges into coastal waters."

NASA's Stennis Space Center, will be the Agency's focal point for commercial applications and technical support on Lewis, and will help distribute and archive its data. Stennis also will work with TRW on spreading the results of Lewis into secondary school



Scientists securing Lewis to the launch vehicle payload adapter

classrooms and will support validation of Lewis data via an aircraft-borne hyperspectral instrument flown on a NASA Learjet.

Named for the 19th century U.S. explorer, Meriwether Lewis, the mission incorporates approximately 40 new technologies and state-of-the-art components, including several developed at Goddard. These new technologies include miniaturized cryocoolers, new composite material structural components with an integrated thermal and structural design, faster data processors, lightweight propellant tanks, miniaturized star trackers, and exploitation of the Global Positioning System (GPS) for space timekeeping, navigation and attitude control.

Further technical details on the Lewis spacecraft and some color image files of the spacecraft being prepared for launch are available on the Internet at the following URL:

<http://www.trw.com/seg/sats/SSTL.html>

WORLD'S MOST POWERFUL TELESCOPES TEAM UP WITH A LENS IN NATURE TO DISCOVER FARTHEST GALAXY IN THE UNIVERSE

An international team of astronomers has discovered what is so far, the most distant galaxy found in the universe. The discovery was made by combining the unique sharpness of the images from NASA's Hubble Space Telescope and the light-collecting power of the W. M. Keck Telescopes, with an added boost from a gravitational lens in space.

The results indicate the young galaxy is as far as 13 billion light years, based on an estimated age of the universe of 14 billion years. This places the galaxy far back in time, during

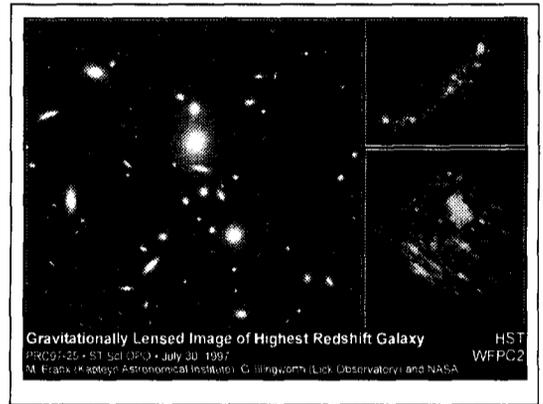
the years of galaxy birth and evolution. The detailed image shows that bright dense knots of massive stars power this object. Due to the firestorm of starbirth within it, the galaxy is intrinsically one of the brightest young galaxies in the universe.

"We are fascinated to be witnessing the very early stages of the construction of what could well become a massive galaxy like our own Milky Way," says Garth Illingworth of the University of California, Santa Cruz. "This object is a pathfinder for deciphering what is happening in young galaxies, and offers a rare glimpse of the powerful events that transpired during the formation of galaxies."

"We were excited by the possibility that we may have found a unique example of a galaxy in formation at the time of the earliest quasars," said Marijn Franx of the University of Groningen in the Netherlands.

Predicted by Einstein's theory of general relativity, gravitational lenses are collections of matter (such as clusters of galaxies) that are so massive they warp space in their vicinity, allowing the light of even more-distant objects to curve around the central lens-mass and can be seen from Earth as greatly magnified. The galaxy is so far away, observing it in such detail would tax the capabilities of both Hubble and Keck without the magnification of the gravitational lens, provided by a foreground cluster of galaxies that is much closer to us at five billion light-years.

For the full text of this press release, go to the Goddard Homepage at <http://www.gsfc.nasa.gov> and choose **FLASH**.



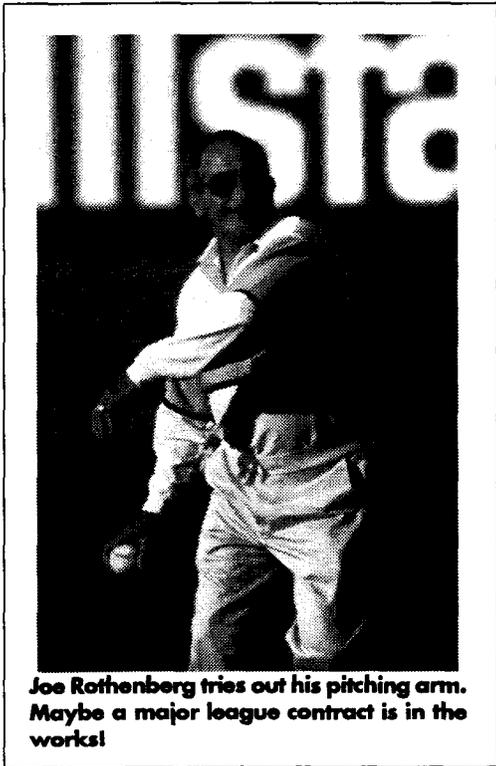
Gravitationally Lensed Image of Highest Redshift Galaxy HST
PRC97-25 • ST ScI OPD • July 30, 1997
M. Franx (Astrophysical Institute, Groningen), G. Illingworth (Lick Observatory) and NASA/WFPC2

LAUNCH info

- The Sea-viewing Wide Field-of-view Sensor (SeaWiFS) instrument launched successfully aboard a Pegasus launch vehicle on Friday, August 1, at approximately 4:20 p.m. EDT. SeaWiFS will measure "ocean color," to determine levels of marine plant life.
- STS-85 is scheduled to launch on Thursday, August 7 at 10:41 a.m. EDT. In support of the mission, Wallops Flight Facility will launch 67 meteorological balloons and rockets and a sounding rocket. The rockets and balloons will take atmospheric measurements during the mission.

GODDARD NIGHT WITH THE BAYSOX

Friday night, August 1, was Goddard Night with the Bowie Baysox at Prince George's Stadium. Over 600 Goddard employees came out to the ballpark to see the Bowie Baysox play the Harrisburg Senators and watch the post-game fireworks.



Joe Rothenberg tries out his pitching arm. Maybe a major league contract is in the works!

Judging by the smiling faces, everyone had a good time. The weather was great, the fireworks were brilliant, and the Baysox won the game, 4 to 1. Many familiar faces were seen including Sherry Foster who brought her family along, and Joe Rothenberg, also with his family and baby granddaughter who came to see him throw out the first pitch. (Rumor has it that he was spotted practicing his fast curve earlier in the week.) Also at the game were "The Chromatics," Goddard's acapella choral group, who sang the National Anthem.

GET SET TO "CELEBRATE GODDARD"

By Denise Konopka, Code 220

Goddard's "culture" will be in full bloom early this Fall as the second "Celebrate Goddard Day" is launched on Thursday, September 11.

This event, a celebration of the diversity that makes Goddard great, will be a festival of ethnic foods and cultural entertainment that will also showcase talent from artisans and crafters exhibiting customary gifts and merchandise that span the globe.

This year's mall activities will feature culinary treats representing West African, Caribbean, German, Greek, Italian, American, Traditional Tropical, Chinese, Mexican, and Soul Food traditions. The lunchtime event will also include a variety of entertainers to amuse lunchgoers, contests for fun, and a national origin map to show Goddard's scope of race and ethnic diversity.

As an added attraction, educational sessions about race, color, gender, and physical ability diversity issues will run in the early morning and afternoon. Joe Rothenberg, Center Director, will kick off the celebration after the morning session, and his introduction will be followed by a keynote speaker.

Look for schedule details and event updates in future Goddard News issues, GEWA newsletter announcements, Dateline Goddard, and a forthcoming web site and telephone hotline. Don't miss the chance to celebrate the diversity that makes Goddard great!

CONGRESSMAN CUMMINGS VISITS GODDARD

On Monday, August 4, Congressman Elijah Cummings made a visit to Goddard, to be briefed on Center roles and missions by Center Director, Joe Rothenberg, and get a tour of the Center.

Cummings came to the U.S. House of Representatives in April 1996 after winning a special election for the 7th District of Maryland. He also serves on the Committee on Transportation and Infrastructure and its Surface Transportation and Aviation subcommittees. In addition, he serves on the Committee on Government Reform and Oversight and its Civil Service and National Security, International Affairs, and Criminal Justice subcommittees, and is a member of the House Democratic Policy Committee.



Congressman Cummings introduces himself to summer students Sonia Gay and Isaac Mason

REMOTE CONTROL ROBOT BREAKS ROUGH TERRAIN TRAVEL RECORD, PAVES WAY FOR FUTURE ROBOTIC MISSIONS

A hardy traveler named "Nomad" recently set a record by traveling farther than any remotely controlled robot has before over rough territory. The robot's four wheels logged more than 133 miles (215 kilometers) across Chile's rugged Atacama Desert from June 15 to July 31, during a field experiment designed to prepare for future missions to Antarctica, the Moon and Mars.

Scientists from NASA's Ames Research Center, Moffett Field, CA, and Carnegie Mellon University's Robotics Institute in Pittsburgh performed experiments with Nomad for 45 days, conducting both technology demonstrations and scientific activities. Nomad often worked on its own to avoid obstacles and, in a clear foreshadowing of the future duties of similar robots, it recognized meteorites planted in the desert as a test and may even have found a fossil.

Further information and images about the Atacama desert trek, can be found at the following URL:

<http://img.arc.nasa.gov/Nomad>

Goddard's Annual Report is On-Line - The 1996 Goddard

Annual report has been placed on the web at <http://ann-rpt.gsfc.nasa.gov>

The annual report covers events, science achievements, programs, exceptional personnel, awards and the fiscal position of the Center for 1996. Take the time to check it out, hard copies of the report may be picked up from the Office of Public Affairs, Building 8, room 150.

staff

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Wallops Launching Balloons and Rockets to Support Space Shuttle Payload

A flurry of launch activity is occurring on the Eastern Shore of Virginia as personnel from the Wallops Flight Facility launch 67 balloons and rockets taking atmospheric measurements in support of the STS-85 Space Shuttle mission.

Beginning August 4 and concluding August 22, Wallops' personnel will launch, 33 each, meteorological balloons and rockets, and one sounding rocket in support of the primary payload on mission STS-85, the Cryogenic Infrared Spectrometers and Telescopes for the Atmosphere-Shuttle Pallet Satellite-2 (CRISTA-SPAS-2).

Space Shuttle Discovery and a 6-person crew began a 10-day mission on August 7. These daytime rocket and balloon launches will be conducted to coincide with orbital passes of Discovery over the Wallops area. The majority of the launches will occur twice daily during a critical data gathering period from August 8 through 15. Wallops scientist Frank Schmidlin, a co-investigator of the meteorological rocket and balloon missions, said the temperature, ozone, pressure and wind data gathered by these systems are very important to calibrate the atmospheric measuring systems on Shuttle Pallet Satellite (SPAS).

The German-built SPAS, deployed from Discovery's payload bay once the Shuttle was in orbit, will spend over 200 hours in free-flight. The CRISTA-SPAS system will use three telescopes and four spectrometers to gather data to help investigators from 15 countries understand how small-scale tracer "filaments" in the stratosphere contribute to the transport of ozone and chemical compounds that affect the distribution of ozone.

The SPAS carrier, a battery-powered free-flyer is carrying the CRISTA and the U.S. Middle Atmosphere High Resolution Spectrograph Investigation (MAHRSI) into space for the second time. To follow STS-85's progress, check out the homepage at the following URL:

<http://www@shuttle.nasa.gov>

NGST Holds 1st Annual Technology Challenge Review at Goddard

By Tammy Jones, Office of Public Affairs

The 1st Annual Next Generation Space Telescope (NGST) Technology Challenge Review was recently held at Goddard in the Building 3 Auditorium. Over 160 attendees, representing 35 companies, 5 universities, and 14 government laboratories and agencies, participated in the meeting.

NGST is one of the major missions comprising the Origins Program of the NASA Office of Space Science and is planned for a new start in the 2003/2004 time frame. In the planning for NGST, NASA is seeking to aggressively promote the development and incorporation of new technologies which will enable it to deliver the maximum science return in a cost effective and timely manner. The objectives of the meeting were (1) to inform and advise the NGST Study and potential system contractors regarding existing emerging and potentially feasible future technologies relevant to the design, development, launch and operation of large space telescope systems, and (2) to enable networking of potential future collaborators.

The meeting was opened with a welcome from Al Diaz, Deputy Director of Goddard, followed by a Plenary Session describing Origins and NGST Science and Technology. Technical sessions included the following areas: (1) Lightweight Mirror, Optical Materials and Actuator Technology, (2) Large Optical Systems and Optical Control Technology, (3) Precision Deployable Structures and Operations Technology, and (4) Sensor Instrument Technology. A total of 3 oral presentations and 14 posters were presented.

Further information on the meeting, including the agenda, speaker list, attendee list, and copies of presentations (as available) can be found on the 1st Annual Next Generation Space Telescope Technology Challenge Review Homepage at

<http://ngst.gsfc.nasa.gov/~ngst/Hardware/meetings/techchall.html>

update on

Goddard launches

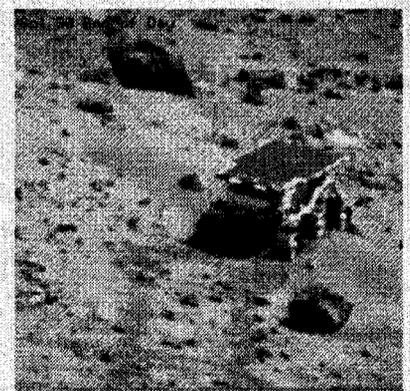
Lewis - The Lewis experiment which was scheduled to launch Saturday, August 9 has been delayed due to a processor fault with the Lockheed launch vehicle. The exact nature of the problem is still being investigated. As of yet, a new launch date has not been set.

SeaWiFS/SeaStar - The first series of orbit-raising burns, carried out earlier this week was a success. The orbit-raising process is required to raise SeaStar from the insertion orbit of approximately 305 kilometers to its final operational orbit of 705 kilometers. This process should take approximately one month, after which time final spacecraft and sensor (SeaWiFS) checkout will be performed. If everything checks out, SeaWiFS data should start flowing during the third week of September.

ACE - Scheduled to launch on August 24. The launch window is 10:41 a.m. EDT to 11:06 a.m.

update

NASA's Mars Pathfinder spacecraft has concluded its primary mission, fulfilling all of its objectives and returning a wealth of new information about the red planet. The robotic lander, which continues to explore an ancient outflow channel in Mars' northern hemisphere, completed its 30-day mission milestone on August 3, capturing far more data on the atmosphere, weather and geology of Mars than scientists expected. In all, Pathfinder returned 1.2 gigabits of data and 9,669 tantalizing pictures of the Martian landscape.



Sojourner perched atop Mermaid Dune

"The data returned by the Sagan Memorial Station and Sojourner has been nothing short of spectacular, and it will help provide a scientific basis for future Mars missions, including a sample return, for years to come," said Dr. Wesley Huntress, NASA's Associate Administrator for space science.

Global Oceanic Precipitation: A Joint View by TOPEX and TMR

By Lynn Chandler, Office of Public Affairs

Measuring the occurrence and rate of rainfall from space is a key component in studying our global climate. Using the TOPEX/POSEIDON satellite ocean altimeter, scientists are exploring a new satellite-derived rain data product.

It has recently been shown that measurements from the two-frequency TOPEX radar altimeter and the TOPEX Microwave Radiometer (TMR) can be combined to provide a robust detector of rainfall events over the ocean. Strong points of this new type of rain detection product include high spatial resolution (< 10 km) and simplicity of the technique. The rainfall detection capability is used to map out the frequency of rainfall events over the global ocean. Several years of TOPEX data are used to generate seasonal and annual rainfall climatologies, and the results indicate that the global TOPEX/POSEIDON data can augment rainfall measurements from satellite microwave radiometers such as the Special Sensor Microwave/Imager (SSM/I). The measurements also provide some insight into expected signal behavior for NASA's upcoming satellite rain radar mission, the Tropical Rainfall Measuring Mission (TRMM).

NASA Selects Replacement Instrument for Hubble Space Telescope

NASA has selected a proposed scientific investigation that includes the development of a new spectrograph for the Hubble Space Telescope (HST). The estimated cost of the new instrument is about \$25 million.

NASA will work with Dr. James C. Green, University of Colorado, Boulder, to negotiate a contract for the new instrument, called the Cosmic Origins Spectrograph (COS). The new spectrographic instrument is planned for installation on the HST by Shuttle astronauts during the fourth servicing mission scheduled for late in 2002.

"The new instrument's capabilities will be a major enhancement to Hubble's spectrographic capabilities at ultraviolet wavelengths," said Dr. Edward Weiler, HST Program Scientist, Washington, DC. "This state-of-the-art spectrograph will be a premier Hubble instrument for most of the first decade of the next century. It will allow astronomers to study the very early Universe and the creation of the heavy elements during the first period of star formation billions of years ago.

"Plans call for the COS to be installed into the HST instrument bay in place of COSTAR, the instrument that was successfully installed in 1993 and provided corrective optics for the telescope's spherical aberration. Newer instruments include the correction in their design and COSTAR no longer will be needed.

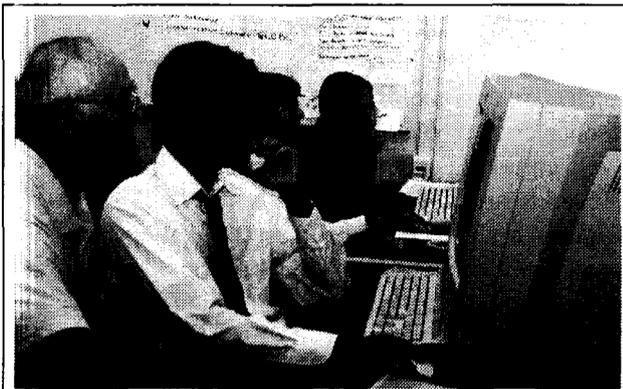
Upcoming Goddard Events

Director's Lobby Mtg. (bldg. 11)	Aug. 27
Celebrate Goddard Day	Sept. 11
Employee Colloquium (J. Mather - bldg. 3 aud.)	Sept. 16
Employee Colloquium (STS-85 Crew - bldg. 8 aud.)	Sept. 23
Community Day	Sept. 28

Students Experience the Allure of Satellites

Using low cost, but very high-tech satellite realtime data acquisition and image processing systems, coupled with the Internet, students are developing critical technical skills required for the next century.

In a new effort to reach students at the level of their need, Goddard has developed an exciting "video-game" and hypertext course that will attract kids and teach them marketable skills while they're having fun! This is a "student-oriented" course where they receive realtime weather data from the GOES and NOAA satellites right on their desktop



Students getting a taste of satellite technology

computer. The learning potential has been verified this summer with a dozen kids from area schools working in building 16 under the sponsorship of the EOS-PM Project. It was developed at GSFC this summer under the Summer Intern program initiatives.

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

Brian Keogan, Director designee recently announced the following selections within the Applied Engineering and Technology Directorate:

Ms. Marti Szczur has been selected as Chief of the Information Systems Center. Previously Acting Chief of the Data Systems Technology Division, Marti is already actively engaged in the process of interviewing candidates for the Associate Chief and Branch Head positions within that critically important part of AETD.

Dr. Richard (Dick) Freeman will be reassigned as the Chief Engineer of AETD. Dick now serves that function for Code 700 although the scope will expand to encompass the increased breadth of technical involvement associated with AETD responsibilities.

Mr. Mitch Brown will be reassigned as the Assistant Director for Engineering Support. In this capacity, he will have directorate responsibility for facility and equipment planning and development, overall office/laboratory space planning, and engineering processes, including direction of the AETD effort to become ISO 9000 compliant as part of the overall GSFC initiative in this arena.

Marti Szczur, Dick Freeman, and Mitch Brown have been appointed to the AETD Advisory Board.

Ms. Sandy Hare has been selected as the Directorate secretary. Sandy is currently secretary to Art Fuchs, the Director of Code 500.

Decisions have also been made with respect to organization codes for AETD. The Directorate will become Code 500, the Business Management office will be 501, the Mechanical Systems Center will be 540, the Instrument Technology Center will be 550, the Electrical Systems Center will be 560, the Guidance, Navigation and Control Center will be 570, the Information Systems Center will be 580, and the network and Mission Services Center will be 590, if it remains an element of the AETD.

staff

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Hubble Separates Stars in the Mira Binary System

Although the giant star Mira has been known for 400 years, astronomers have had to wait for NASA's Hubble Space Telescope to provide the first ultraviolet images of the extended atmosphere of the cool red giant star and its nearby hot companion. By giving astronomers a clear view of the individual members of this system, Hubble has provided valuable insights into other types of double star systems where the stars are so close they interact with one another.



Photo of Mira Star System
Credit: ST ScI, M. Karaovski
(Cr. for Astrophysics) & NASA

The distance between Mira and its companion is about 70 times more than that between Earth and the Sun. Using the European Space Agency's Faint Object Camera aboard Hubble, Margarita Karovska and John Raymond of the Harvard-Smithsonian Center for Astrophysics, Cambridge, MA; Warren Hack of the Space Telescope Science Institute, Baltimore, MD; and Edward Guinan of Villanova University, Villanova PA, obtained both ultraviolet and visible light images and spectra of the two separate stars in the Mira system.

In ultraviolet light, Hubble has revealed a small, hook-like appendage extending from Mira in the direction of the com-

panion. This material may be either gravitationally-drawn material from Mira to the smaller star or it could be material in Mira's upper atmosphere being heated due to the companion's presence. Hubble's

visible-light images show that Mira has an odd, asymmetrical shape resembling a football. This may be tied to dramatic changes occurring during its expansion-contraction cycles, or to the presence of unresolved spots on its surface. Astronomers have measured the star's size to be some 700 times larger than

our Sun. If Mira were at the center of our solar system, it would extend out more than 300 million miles, well beyond Mars' orbit and nearly two-thirds of the way to Jupiter.

The Space Telescope Science Institute is operated by the Association of Universities for Research in Astronomy, Inc., for NASA, under contract with Goddard. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency. For the full text of this press release and to view the above image in color, go to the Goddard homepage at <http://www.gsfc.nasa.gov> and choose **FLASH**.

In Memory

Rosalee Price, wife of Dr. Robert Price, Head of Goddard's Mission to Planet Earth Office, passed away on Wednesday, August 13 after fighting cancer for a year. Ms. Price worked at Goddard for 8 years and was a Resource Analyst on the HST Project, Code 442. She is survived by two children and four grandchildren. Anyone wishing to may send a donation to the American Cancer Society, the Hospice of Anne Arundel Medical Center, or the US Tennis Association Senior Program.

New Manufacturing Method Could Lower Air Travel Costs

NASA and Boeing have demonstrated a new composite manufacturing method - using an advanced NASA-developed stitching machine -- that is expected to have a major impact on the way aircraft wing structures are fabricated.

By replacing large metal structures on airplanes with composite materials, the aeronautics industry expects to achieve large savings on weight and production that should translate directly into lower airfares for the public in the near future.

Composite wing structures are expected to cost less and weigh less than aluminum wings while remaining as damage-tolerant and carrying the same loads from weight and pressure. Part of the weight and time savings come from the elimination of many of the 80,000 metal fasteners found on an aluminum wing.

Technology 2007

"Technology Transfer - Today for Tomorrow"

The Eighth Annual National Technology Transfer Conference and Exhibition, sponsored by NASA, is set to take place in Boston, Mass., September 22 - 24 at the Hynes Convention Center. Over 250 exhibitors from government, public and private industry, and academia will be in attendance.

Major topic areas that will be highlighted include advanced manufacturing/prototyping/materials; computers and communications; energy; environmental technology; information technology systems; medical and biotechnology; microelectronics; optics and lasers; sensors/instrumentation; and telecommunications and networks. The agenda includes a Plenary Session titled "Windows on the Future" and Concurrent Sessions on various technology areas. Goddard presenters and their topics include **Matthew McGill** - "Holographic Detection System for Environmental Remote

Sensing;" **Fritz Hasler** - "Visanalysis of Earth and Space Science Hyper Data Sets;" **Dr. E. James Chern** - "Eddy-Current Deflection Measurements of Buildings, Bridges, and other Structures;" **Michael Krainak** - "Low-Cost Active Spectrometer Based on a Fiber Grating;" **Patrick Coronado** - "Freewing Unmanned Aircraft;" **John Borden** - "Modular Offshore Data Acquisition System;" **William Campbell** - "Low-Cost, State-of-the-Art Satellite Information Management System;" **Donald Cornwell, Jr.** - "High-Power One-Watt Semiconductor Laser for Pumping 3D Displays;" **Mark Stirling** - "Using Java and the Internet to Support Satellite Monitoring;" and **Christopher Rouff** - "Requirements Generation System."

For more information or to register for this event, visit the Technology 2007 website at <http://www.abptuf.org/T2007>.

ACE Launch



Goddard's Advanced Composition Explorer (ACE) is scheduled to launch on Sunday, August 24 at 10:41 a.m. EDT from Cape Canaveral Air Station Florida from a Delta Rocket. Employees may view the launch from the building 3 auditorium beginning at 10:00 a.m. and may also call the Goddard Audio News Service (286-NEWS) for updated launch information. The ACE launch is dedicated in memory of Mr. Robert Baumann, Goddard's former Director of Flight Assurance, who passed away this spring after contributing nearly 40 years of service to NASA. The scientific goal of the ACE instrument is to help scientists understand the origin of all matter in the universe. For more information on ACE, go to the following URL: <http://www.gsfc.nasa.gov/ace/ace.html>

CELEBRATE GODDARD at Festival of Fun and Food

Food will be a major attraction at Celebrate Goddard Day II on Thursday, September 11. To date, 13 food vendors representing cuisine from 13 different ethnic traditions will participate. Food and beverages will be served on the mall from 11:00 - 2:30 pm.

This year, culinary delights from China, Mexico, Greece, Peru, Germany, West Africa, the Middle East, Italy, the Caribbean, traditional American fare and Soul Food, will be available.

During lunchtime, the food festival will be complemented by a variety of entertainers boasting cultural music and dance from around the world, including Hawaiian dancers, Jewish folk dancers, Caribbean steel drums, and German, Appalachian, Chinese, Hispanic, and Gospel entertainers. As a special treat, the Goddard Day Care kindergarten class will perform musical selections.

The day will begin with an educational session that will precede Joe Rothenberg's Welcome address just before 10:00 a.m. Following the welcome will be a special address from Dr. Robin Hailstorks, a local diversity expert and consultant who chairs the Psychology Department at Prince George's Community College and has a solid academic standing in the university arena.

During mid-afternoon, a key activity centering around issues of color diversity will be led by the well known diversity educator, Jane Elliott, adaptor of the "Blue Eyes, Brown Eyes" experiment.

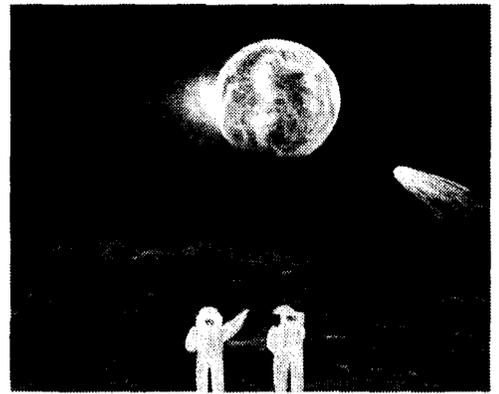
Call the Celebrate Goddard Day hotline at 6-2716 for weekly updates and check our web page at:

<http://kariach.gsfc.nasa.gov/MCAT/CGD97.html>

Where Some Young People Travel with Their Imaginations

If you were traveling in space, what would you see from your spacecraft? What would the Earth look like if you were on the Moon? How brilliant are the colors of Jupiter?

Imagination is a spectacular tool. When used to develop concepts and explore the unknown, it can take you to limitless boundaries. In the NASA-sponsored Intergalactic Art Competition, students use their creative, artistic skills to depict scenes from intergalactic space, known or unknown.



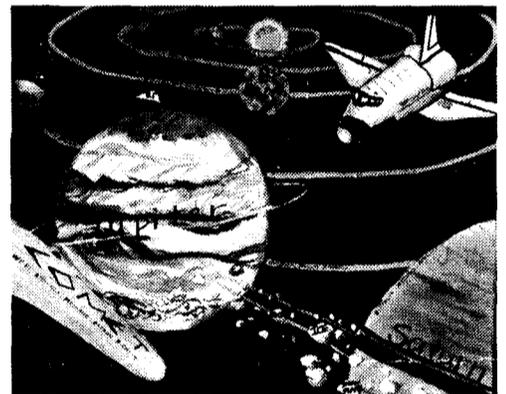
Artist: Grace Ma, Grade 9
Winston Churchill H.S., Potomac, MD



Artist: Brian Goldstein, Grade 4
Green Acres School, Rockville, MD

can include, but is not limited to planets, moons, asteroids, meteoroids, comets, nebulae in our solar system and beyond. Pictured here is a sampling of what some students saw as their minds journeyed through space.

Keep your eyes open for these pictures and more (state winners) which are being displayed on Center in various buildings (currently in building 8). If you have enjoyed the student's work and would like to write a note of encouragement, the respective school address can be found with the pictures.



Artist: Emiko Watanabe, Grade 11
Richard Montgomery H.S., Rockville, MD

"FOCUS ON OUR FUTURE" DAY POST-EVENT SURVEY

By Gail S. Williams, Event Coordinator

"Focus On Our Future" Day was held on May 20 at Greenbelt and May 21 at Wallops. The day was designed to provide people the opportunity to learn from experts about change management, customer service, individual and organizational development, and work-home balance. Whether you were able to attend or not, your input would be helpful.

A web-based survey was designed for this purpose -- to solicit information from a post-event perspective. Survey questions include, for example: What did you most/least like about the day? Did the activities help you deal more effectively with change? How could the day be improved? Would you be interested in attending similar activities in the future? The web address for the survey is:

<http://cne.gsfc.nasa.gov/project/fofi/>

The survey includes site specific versions tailored to reflect the different programs at Greenbelt and Wallops and responses may be anonymously submitted.

Please take a few minutes to complete this survey. Completion of the web version is encouraged. Should you need or desire a hard copy version, you may obtain one from Laura Potler at extension 6-4853. Hard copy surveys should be mailed to Laura at Code 114.

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

CENTERWIDE TOWN MEETING, AUGUST 28

All Goddard employees are invited to attend a Town Meeting on Thursday, August 28th to hear the latest on the Center's Reorganization activities. The Town Meeting will be held in Building 8 Auditorium beginning at 9:00 a.m.

Director designees Brian Keegan and Orlando Figueroa will present a status on the progress of Project Goddard. Representatives from each of the Transition Management teams will also be on-hand to talk about the status in each of their areas (Human Resources, Space, Contracts, Resources, Training and Communications). There will be time allotted for questions and answers.

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

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Data from Mars Pathfinder Helping Goddard Scientists Study Earth

The recent discovery of andesite on Mars by the Sojourner rover, which according to *Science* magazine "stunned" geologists, had been anticipated by Goddard scientists as long ago as 1972.

Mariner 9 carried a Goddard infrared interferometer spectrometer, developed by a team lead by Dr. Rudy Hanel, (retired Principal Investigator for the instrument) which found the Martian dust to be highly siliceous, about 60% silica. Using these results and other evidence, Goddard geologist

Paul Lowman, in a 1989 Precambrian Research paper, proposed a general theory for formation of the Earth's continents. The basis for the theory was Lowman's belief that the terrestrial planets, including the Earth, had undergone parallel crustal evolution paths. Mars is an intermediate planet in this concept, halfway between the primitive Moon and the highly evolved Earth.

In this theory, the continental crust had been formed very early in Earth's history, by massive andesitic volcanism. But about 4 billion years ago, impact bombardment by planetesimals, like

those that hit the Moon at that time, broke up this crust and formed the first ocean basins. (This proposal was published in *Precambrian Research* by



Paul Lowman, Goddard Geologist, showing a Stone Age tool found with the help of 1981 NASA Shuttle Imaging Radar Mission (SIR-A)

Dr. Herbert Frey, Geodynamics Branch Chief, in 1980.) Several billion years of mountain building and igneous activity have of course greatly modified the original continental crust.

The "most significant" test of this theory, according to Lowman's 1989 paper, would be "determination of the composition and age of the Martian highland crust." Because Mars is known to have retained considerable water, igneous activity should have followed "an andesitic trend." There was, accordingly, considerable excitement in the Geodynamics Branch when the first rock analyzed by Sojourner, "Barnacle Bill," was reported by JPL as an andesite with 58% silica. This was followed by a second rock analysis ("Yogi") which, when corrected for surface dust, also appeared to be andesite.

"Two rocks are not enough to give a good sample of the average back yard, much less of an entire planet," warns Lowman. "But when the first two rocks ever analyzed on Mars turn out to have a composition predicted from comparative planetology, it may be time to open the refrigerator door if not to break out the champagne. In any event, the surprising results from Pathfinder suggest that we can make fundamental discoveries about the Earth by studying other planets."

Goddard Supporting Maryland in Pocomoke River Pfiesteria Research

Goddard's Wallops Flight Facility, Wallops Island, VA, is supporting the Maryland Department of Natural Resources by providing meteorological equipment to assist in the investigation into fish lesions and the recent fish kill in the Pocomoke River.

Wallops received the request for a weather station to be placed at Shelldown, MD, on Aug. 14 from John Griffin, Secretary of the Department of Natural Resources, to aid in on-site experiments. The equipment was installed on Aug. 18.

Pete Jensen, Deputy Director of Fisheries Service for the Department, said the weather equipment provided by NASA is very important in their research. Researchers are looking into a variety of factors that may contribute to the outbreak of the toxic Pfiesteria-like microorganism. One of these factors is weather, he said.

The nearest weather station to the

research site at Shelldown is the Wallops Flight Facility, nearly 12 miles away. The portable NASA weather station has been located on the bank of the Pocomoke River, which will give researchers up-to-date, accurate information in the area.

The NASA weather station consists of instruments providing wind speed and direction, temperature, relative humidity, barometric pressure and precipitation. The data from the instruments are sent to an on-site computer which provides a user-friendly graphic presentation of the data and is updated every five minutes. In addition, the data are archived in the computer for retrieval by the researchers.

The NASA weather station is expected to remain on site until November when the Department of Natural Resources completes its research.

Congratulations Launch Teams!!!!



Launch of the ACE Spacecraft

ACE - On Monday, Aug. 25, Goddard's Advanced Composition Explorer (ACE) successfully launched from Cape Canaveral Air Station, Florida at 10:39 a.m. EDT on a Boeing Delta II rocket. Goddard ACE and Orbital Launch Services personnel

participated in the launch. The launch of the spacecraft was delayed one day due to two commercial fishing vessels located offshore from launch Pad 17A. The boats were within the Delta's launch danger area, a location where the solid rocket motors would drop into the sea after being jettisoned from the Delta's first stage. ACE will travel about 900,000 miles from Earth to a point in space where the gravitational pulls of the Earth and the Sun balance out. From there, the spacecraft will spend the next 2-5 years measuring solar particles and other solar phenomena and provide early warnings of solar storms.

Lewis - A Lockheed Martin Launch Vehicle carrying a half dozen Goddard payloads on board NASA's Lewis satellite successfully launched on Saturday, Aug. 23, from Vandenberg Air Force Base in California. The launch occurred at 2:51 a.m. EDT. Lewis is the first of NASA's Small Spacecraft Technology Initiative satellites.

GSFC Organizational Survey Set for Roll-Out

By Matt Jarvis, Office of Human Resources

On September 9, Goddard's Organizational Survey will be made available to civil servants on the World Wide Web at: <http://panza.gsfc.nasa.gov/culture/cslogin.html>. The survey is designed to assess employees' understanding of current changes in the Center's mission and structure and the impact of these changes on Goddard's workforce. The survey will take approximately 45 minutes to complete; responses will be anonymous and confidential. Surveys must be completed no later than September 19. For those who are unable to access to the World Wide Web or wish to complete a paper version of the survey, hard copies may be obtained from Michele Hillman, Code 110, x6-5026, mhillman@pop100.gsfc.nasa.gov.

Why Conduct a Survey? During the past five years, changes in Goddard's external environment have led to widespread changes in the Center's workforce, mission, strategies, systems, budgets, and work processes. To help manage these changes, the Center's Strategic Implementation Plan calls for the biennial administration of "culture" surveys. These surveys will track employee perceptions of organizational activities and policies affecting performance and the quality of work life. This year's survey will establish a baseline for determining how employees in different codes, grade levels, professions, and other demographic units are perceiving the Center and its changes.

Some of the important areas that the survey is designed to cover are: What are employees' perceptions of the Center as a place to work? How effectively is the Center working in support of its current mission and strategies? What do employees see as some of the defining characteristics of its culture, its leaders, and its management practices? How is the work climate? To what extent do Goddard's systems, work processes, and organizational structures support its mission? Do the needs and values expressed in Goddard's Strategic Implementation Plan complement the needs and values of its employees? Are employees motivated? Are their skills and talents being utilized effectively? Are they performing to their world-class potential?

How Will the Information be Used? Data from the survey will be analyzed and distributed to all Center employees. Joe Rothenberg and the Executive Council have expressed their commitment to using survey findings in planning and policy making activities. The survey will benefit employees in a number of ways, by helping to: *Identify issues and problems impacting performance and the quality of work life; *Improve and simplify work systems and processes; *Clarify training and development needs; *Develop better measures of performance and evaluation; *Enhance the rewards and recognition process; and *Allocate Center resources more effectively.

Celebrate Goddard Day Scavenger Hunt Team Quota Filled

The call for teams to participate in the Celebrate Goddard Day '97 Scavenger Hunt, was overwhelming! The Contest Committee filled the requirement for the maximum number of teams in record time. Unfortunately no additional teams can register for this year's event. However, if your group wants to unofficially participate in the Scavenger Hunt, you may stop by the information booth at Celebrate Goddard Day '97, on Thursday, Sept. 11 and pick up the contest questions. Come out and cheer on this year's participants!

Special Guests at Celebrate Goddard Day

Two guest speakers, well-trained in diversity issues, will join Goddard in celebrating its own diverse workforce at Celebrate Goddard Day '97 on Thursday, Sept. 11. The variety of food, entertainment, crafts, and fun, representing traditions and cultures from around the world will be complemented by a visit from Dr. Robin Hailstorks and Ms. Jane Elliott who will deliver pointed messages about gender, ethnic, cultural and ability diversities.

Dr. Hailstorks is currently the chair of the Department of Psychology at Prince George's Community College and an adjunct faculty member of the Department of Human Development and Psycho-Educational Studies at Howard University. She has held faculty appointments at Howard University, the University of Tennessee-Knoxville, and Perdue University. In addition to serving as a diversity consultant for area community colleges, universities and professional organizations, Dr. Hailstorks designed a graduate level seminar entitled "Understanding Cultural Pluralism." Hailstorks completed her training in cultural diversity at the National Multi-Cultural Institute at George Washington University. She is an active member of the American Psychological Association and the National Association for Multi-Cultural Education.

Chosen as one of ABC TV Peter Jennings' "Person of the Week," Jane Elliott is the adaptor of a sensitizing exercise in which participants are labeled on the color of their eyes. The experiment began in an all-white, all-Christian, Riceville, Iowa, third grade classroom, immediately after the assassination of Dr. Martin Luther King, Jr. Since then, it has been repeated throughout the country. Several television documentaries have covered Jane Elliott's award winning work and she is a recipient of the National Mental Health Association Award for Excellence in Education. She has lectured at numerous colleges and universities and has been a guest on *The Today Show*, and of well known television hosts, including Johnny Carson, Phil Donahue, and Oprah Winfrey. Elliott is a veteran presenter who has addressed groups ranging from colleges and universities, to civil service organizations, elementary schools, corporations and businesses.

Dr. Hailstorks will moderate an 8:30-9:45 am session in the training facility of bldg. 1 and she will speak on the mall at 10:30, following Director Rothenberg's kick-off at 10:15. Food vendors will open at 11:00 a.m. and live entertainment will begin then and continue until 3:00 p.m.

Ms. Elliott will lead a concurrent 8:30 a.m. session and deliver a presentation about her experiment from 1:00- 4:00 pm, in the bldg. 8 auditorium. No reservation is necessary, but seating is limited.

The session topics will include diversity issues of color, gender and physical ability. Call the Celebrate Goddard Day hotline at x6-2716 or visit the web site at:

<http://arioch.gsfc.nasa.gov/MCAT/CGD97.html>

Upcoming Events

Employee Colloquium (J. Mather - bldg. 3 aud.)	Sept. 16, 1:00 p.m.
Employee Colloquium (STS-85 Crew - bldg. 8 aud.)	Sept. 23, 3:00 p.m.
Community Day	Sept. 28

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