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Goddard Space Flight Center

GODDARD news

Greenbelt, Maryland/Wallops Island, Virginia July 1997 Vol. I No. 10

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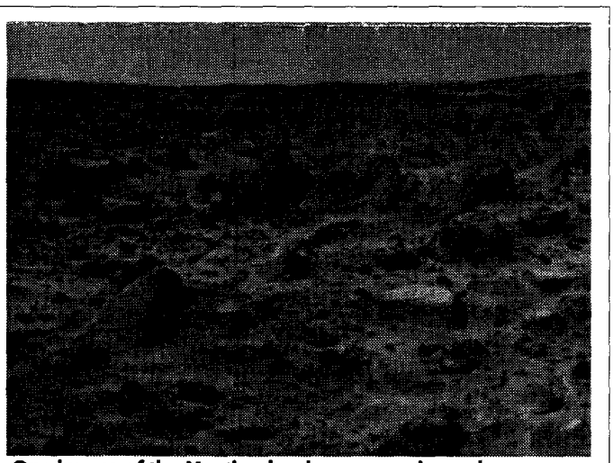
SOJOURNER FINDINGS ON MARS CLIMATE AND TERRAIN

Moderate weather yesterday, temperatures hovering around minus 76 degrees Fahrenheit. The forecast for today: 10 degrees Fahrenheit, cooling overnight to about minus 105 degrees Fahrenheit.

A little extreme for an Earthly weather report? Perhaps, but with that, scientists on the Mars Pathfinder mission presented on Monday, June 7 the first Mars weather report from Ares Vallis, an outflow channel on the surface of Mars.

Four days into surface operations, the Mars Pathfinder lander, rover and instruments are performing perfectly and returning a wealth of new data on the rocks, soils and atmosphere of Mars. "The site is everything we hoped it would be," said Dr. Matthew Golombek, Pathfinder project scientist. "We are finding more and more surprises as we look in detail at the rocks and terrain."

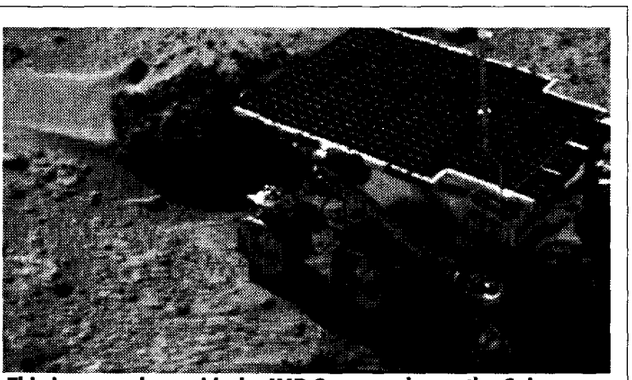
Images presented included the first photograph of the lander taken by the rover. The image showed final retractions of the airbags in a very high, puffy clump that blocked most of the lander from view. Meanwhile, the lander's Imager for Mars Pathfinder (IMP) camera has provided a new perspective on rocks and hills on the Martian horizon now that it is deployed on its mast and photographing the site at an elevation of 1 meter (3.2 feet) above the lander, according to Dr. Peter Smith, IMP principal investigator from the University of Arizona.



One image of the Martian landscape--to view others, go to http://pao.gsfc.nasa.gov/gsfc/mars/mars.htm

Another new image showed Sojourner Truth, the 23-pound rover that has begun to explore rocks around the landing site, as it was gathering data overnight of "Barnacle Bill." This rock, which was about 36 centimeters (1.2 feet) from the rover after it exited the lander, is thought to be about 8-to-10 inches tall and has a very distinctive surface, appearing to be covered with barnacle-shaped objects. "Here we have proof that Sojourner sort of nestled up and kissed Barnacle Bill," Golombek said as the photograph was presented.

Scientists also received data from the rover's first soil experiment. Color variations in the soil allow scientists to identify different types of minerals that are present in the environment. For example, the bright reddish color of the soil indicated that iron oxide is present in the surface minerals. "The surface of Mars is rusting," Dr. Jim Bell of Cornell University said. "We don't know when or how fast it's rusting, but we hope to find these things out. Not all of the surfaces are the same though. There's lots of diversity and variation in the landscape. We can see some surfaces that are much less red, for example, and more consistent with volcanic rocks."



This image taken with the IMP Camera shows the Sojourner Rover conducting its examination of Barnacle Bill

Building on comments made by Dr. Ronald Greeley of Arizona State University about the evidence of floods in this region, Dr. Michael Malin, an interdisciplinary scientist, said the floods were so catastrophic that they would have filled up the Mediterranean basin here on Earth. Evidence, he said, can be seen in the variety of rocks, sediments and "puddles" left in the Martian soil, that materials from the highlands were swept into this flood basin.

A full color, 360-degree panorama of the Pathfinder landing site and data about the composition of the Martian soil and Barnacle Bill were presented at a press briefing on Tuesday, July 8.

NASA LICENSES AIR QUALITY MONITORING TECHNOLOGY

A technology originally developed for monitoring atmospheric air quality is now being used to help U.S. industries reduce smokestack pollution. A remote gas sensor with NASA technology could detect industrial pollution at or near the ground with a "fence" system that would allow the sensor to see around an area with the help of mirrors.

NASA is working with MERCO, Incorporated, Golden, CO, to jointly develop and commercialize the technology through a patent license agreement. Under the agreement, NASA's Langley Research Center, Hampton, VA, will transfer its fast-response, nonmechanical, remote gas-sensing technology for monitoring gaseous pollutants emitted from petroleum refineries and chemical manufacturing facilities to MERCO.

Although originally developed to measure gases in the Earth's atmosphere from aircraft and satellite platforms, the technology's improved design makes it attractive for many Earth-based monitoring applications. The device possesses many distinct advantages over conventional gas sensors, such as the capability for remote sensing, area source monitoring, higher reliability, faster response and a more compact design.

news

- **The American Red Cross will accept blood donations in Building 8 Auditorium on August 6, from 8:30 a.m. to 2:15 p.m. To schedule a donation appointment, please call Nita Curry on x6-2041 by C.O.B on August 5. To contact the Bloodmobile directly for a cancellation or appointment on August 6, please call x6-7180.**
- **The upgraded Cray 512-processor T3E Supercomputer ranks 1st in NASA, 11th in the world among systems open to the NASA science community. The Cray T3E was dedicated in honor of Dr. Joanne Simpson, Chief Scientist for Meteorology, Code 900, in May of this year.**

To read more about other exciting news stories check out the Goddard Homepage at ***http://www.gsfc.nasa.gov***

NASA CONDUCTS BALLOON FLIGHT

Larger than a football field and flying approximately 120,000 feet above Earth, a NASA scientific balloon has completed the first nearly around-the-world flight in the northern hemisphere. The primary purpose of the flight was to test balloon technologies that will allow scientists to fly payloads for long durations in the northern hemisphere.

The unmanned, helium-filled balloon departed Fairbanks, AK, flying west at 10:22 a.m. EDT and landed nearly 13 days later at 3:47 a.m. EDT, July 6, in northern Canada, 300 miles east of Inuvik. The flight took the balloon over several countries including Russia, Sweden and Norway. Recovery of the balloon payload is expected to be completed by July 9.

NASA Scientific Balloon Program personnel are ecstatic with the results of the flight. Robert Nock, from the scientific balloon program office at the Wallops Flight Facility, Wallops Island, VA, said, "The flight was excellent. It gave us a thorough test of the balloon systems. In addition, the international cooperation required to allow the flight to proceed through the airspace of various countries went very well."

The mission went so well, with extremely small variances in the planned flight, according to Joel Simpson, Balloon Solar Pointing System Project Manager at Wallops, that testing of automatic systems had to be initiated from the ground. These systems included a ballast system that would drop ballast automatically to correct for a decrease in flight altitude and a solar pointing system which is designed to keep solar arrays continuously pointed at the Sun.

JAPANESE ADEOS SATELLITE DECLARED LOST BY NASDA

The Japanese Advanced Earth Observing Satellite (ADEOS) spacecraft, with two NASA instruments aboard, Total Ozone Mapping Spectrometer (TOMS) and NASA Scatterometer (NSCAT), was declared lost by the National Space Development Agency of Japan (NASDA) on June 30.

"The failure of ADEOS is a real blow to NASA's science program," said Mike Mann, NASA Headquarters, Deputy Associate Administrator, Mission to Planet Earth. "Fortunately, much of the ozone data provided by the TOMS science instruments aboard ADEOS can be provided by instruments on another spacecraft. However, the sea-surface winds data provided by the NSCAT will be harder to replace and were opening essentially new opportunities for research and operational users worldwide. NASDA has performed in an exemplary and open manner in the development of the spacecraft and in dealing with us. However, space operations is a risky business; those of us involved in the business strive to limit the risk but sometimes mishaps do occur," Mann said.

The full text of the Press Release announcing the loss of ADEOS can be found on the Goddard Homepage under "FLASH" at ***http://www.gsfc.nasa.gov***

VISITOR CENTER PROGRAM FOR JULY 4TH MARS PATHFINDER LANDING A SUCCESS

Well received were the Mars Pathfinder activities offered at the Goddard Visitor Center (VC) on the 4th of July. Over 500 adults and children came out to Goddard on the holiday to participate in the activities. The Mars rover model, which children enthusiastically manipulated over a simulated Mars landscape, was a big hit. Jim Garvin gave a presentation to a standing room only crowd in the VC's auditorium with many audience members lingering afterwards to ask questions. Each of the six computer terminals continually had a user stepping up to try some of the hand-on activities, and the large screen coverage of the landing was viewed by many. Many thanks to the VC staff and all those who helped make the event a success.

GODDARD SCIENTIST PUBLISHES BOOK

Dr. Claire L. Parkinson

One of Goddard's very own, ***Dr. Claire Parkinson*** of Code 970, recently published a book titled "*Earth From Above: Using Color-Coded Satellite Images to Examine the Global Environment.*"

Dr. Parkinson, a climatologist at Goddard, uses satellite data and numerical modeling to examine the Earth's climate, with particular emphasis on polar sea ice. "*Earth From Above*" studies the Earth-atmosphere system using these satellite observations and data. In addition to emphasizing how satellite data provide information about the Earth-atmosphere system, important topics on the environment such as the Antarctic ozone hole, El Nino, deforestation, and the effects of sea ice, snow cover, and volcanoes on atmospheric temperatures are also discussed.

"*Earth From Above*" will be available for purchase from the Visitor Center Gift Shop towards the end of July at a discount price. Dr. Parkinson will give the Discover Goddard presentation at the Visitor Center for the Fall Community Day in September.

TO ALL NASA EMPLOYEES

NASA's 40th anniversary is little more than a year away and we need your help! We are looking for a slogan to be used in conjunction with activities and programs to commemorate NASA's founding on October 1, 1958. Please submit your idea in writing to Steve Garber at NASA Headquarters, Office of Policy and Plans, Code ZH, or via e-mail to steve.garber@hq.nasa.gov. The deadline for entries is July 31, 1997. The winner will receive a special illustrated book about space exploration. We look forward to hearing your good ideas!

http://www.gsfc.nasa.gov

UPCOMING PROJECT GODDARD EVENTS

Lunch & Learn Series - Two Lunch & Learn sessions were held for employees to learn about current job postings within the new Directorates. The sessions were well received and well attended. Additional Lunch and Learn sessions are planned for July and August.

After Hour Social - Each of the new centers within AETD and STACC will host a social as an informal means of communication between managers and new employees. Watch for upcoming dates.

Project Goddard Fest - An event is planned for late August which will provide employees an informal opportunity to meet AETD and STACC division and branch management as well as the transition team members. Transition teams (Training, Space, Resources, Contracts, Human Resources and Communications) will have information on how the Center's transition is going.

Check this space and the URL above for updated information on Project Goddard.

http://www.gsfc.nasa.gov

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MARS PATHFINDER SOJOURNER ROVER CONTINUES INVESTIGATIONS

"Yogi" is pictured on the bottom right

After a week of activities, the Mars Pathfinder Sojourner Rover is still hard at work, checking out the Martian terrain. Currently, Sojourner is positioned against the rock in the photo to the left. Sojourner will study the elemental composition of this rock, nicknamed "Yogi," with its alpha proton X-ray spectrometer (APXS) instrument. Data from the APXS will influence the science team's decision of whether to move the rover. In addition, the Pathfinder's lander is continuing to send data to Earth, including portions of a 360 degree color panorama image.

MIR STATUS REPORT

An internal spacewalk practice session to repair damages to the Spektr module of the MIR Spacestation was postponed due to a health issue concerning one of the Russian cosmonauts, Vasily Tsibliev. During regular medical tests, Russian officials detected an irregular heartbeat in Tsibliev. Additional medical tests will be performed to further assess Tsibliev's health.

Russian officials have asked NASA to assess the possibility of having U.S. astronaut, Mike Foale, perform the internal spacewalk with the second cosmonaut, Alexander Lazutkin, instead of Tsibliev, who would remain in the Soyuz capsule. Foale, who is in his nineth week aboard the MIR, trained at the Gragarin Cosmonaut Training Center in Star City, outside Moscow, and is fully trained in the Russian spacesuit and Russian airlock systems. He is scheduled to be replaced by astronaut Wendy Lawrence in September. A decision by NASA, regarding Foale's participation in the spacewalk, is expected at the end of this week.

news

- **Veteran astronaut, Jeff Hoffman, leaves the Astronaut Corps after 19 years of service to become NASA's European representative in Paris, France.**

- **Upcoming Goddard Launches:**

  SeaWiFS - August 1
  ACE - August 25
  TRMM - October 31

- **Landsat's 25th Anniversary is July 23.**

To read about other exciting news stories check out the Goddard homepage at ***http://www.gsfc.nasa.gov***

MYSTERIOUS "DARK CLUSTER" FOUND

By Bill Steigerwald, Office of Public Affairs

Astronomers have discovered a strange and unexpected object, a "dark cluster of galaxies," which appears to be unique among known celestial phenomena. This discovery was made with the aid of the Advanced Satellite for Cosmology and Astrophysics (ASCA), a joint Japanese-US satellite whose telescopes were developed at Goddard, and the Roentgen Satellite (ROSAT), a German-UK-US satellite. This finding may force a revision in the models of galaxy and massive star formation during the early history of the universe.

The international science team reporting the discovery is led by Dr. Makoto Hattori of the Astronomical Institute, Tohoku University, Japan and includes ***Dr. Toshiaki Takeshima***, a Universities Space Research Association researcher at Goddard, Dr. Yasushi Ikebe of the Institute of Physical and Chemical research, Japan, and Dr. Hans Boehringer of the Max Plank Institute for Astrophysics in Garching, Germany.

The remarkable new object appears to have the size and mass of a cluster of galaxies, yet only one large galaxy and several "dwarf" galaxies have been found in its vicinity. A cluster of galaxies normally contains hundreds or even thousands of galaxies, with each typical galaxy containing billions to hundreds of billions of stars. "This object has the mass of a large cluster of galaxies, but very few apparent galaxies, so we called it a 'dark cluster'," said Dr. Hattori. "It's normal for a galaxy cluster to shine with intense X-rays from very hot gas in the cluster," said Dr. Ikebe. "What's very strange is that so few galaxies are seen in the cluster, yet two independent methods of observation indicate that this cluster may have over 300 trillion times the mass of our sun.

The mystery deepened when the researchers discovered that iron atoms are an important component of the hot gas producing the X-rays from the "dark cluster". According to Dr. Takeshima, "Iron is made inside exploding stars, called supernovae, and our ASCA observations show that enormous numbers of supernovae were needed to produce all the iron in the "dark cluster." Yet, the vast majority of stars reside in galaxies, and we do not find enough galaxies in this cluster. This is very surprising."

Also, the NASA-funded High Resolution Imager on ROSAT show that the object has the dimensions of a cluster. "We clearly see that the object is cluster-sized," said Dr. Boehringer. The distance of the "dark cluster" is only roughly known, due to uncertainties in the distance scale of the universe. Nevertheless, "It is surely more than 10 billion light years away," said Goddard's ***Dr. Richard Mushotzky***, an expert on X-ray astronomy who wrote a commentary on the new discovery. "The X-rays received by ASCA and ROSAT left the "dark cluster" when the universe was only half its present age. Thus, the "dark cluster" is an astronomical fossil, preserving a record of galaxy formation early in the development of the universe. Our current theory of galaxy cluster formation indicates that the galaxies formed first, then later grouped into clusters. Here, we have a cluster nearly devoid of galaxies. If this is not a unique example, we may have to rewrite our theory."

17TH ANNUAL MODEL ROCKET CONTEST

Come celebrate the 29th anniversary of the Apollo 11 moon landing by entering your own rocket at the 17th annual model rocket contest at the Goddard Visitor Center on Sunday July 20 from 10:00 a.m. - 3:00 p.m. Register on the day of the event to compete for prizes in Altitude and Parachute/Streamers Spot Landing. Bring your family!

GODDARD RECEIVES THE PRESIDENTIAL QUALITY ACHIEVEMENT AWARD

Members of the Presidential Quality Award Teams pose with Joe Rothenberg and General John Dailey

On July 10, at the 10th Annual National Conference on Federal Quality, Goddard received a Quality Achievement Award for its "outstanding quality management implementation." The award was presented by James Lee Witt, Director, Federal Emergency Management Agency, and John Dailey, Deputy Administrator of NASA, during the ceremony held at the Sheraton Washington Hotel in Washington, D.C.

The award citation read: "Goddard has a long standing commitment to instilling quality values and a customer focus orientation into the accomplishment of their mission. Strategic planning has been employed since 1986. In response to a significantly changing environment, the Center developed and is implementing a Strategic Roadmap to enhance Goddard's posture during these changing times. This roadmap outlines seven steps: (1) Develop a new Strategic Plan; (2) Focus and integrate new Center initiatives in alignment with the new Agency and Center Strategic Plans; (3) Refocus Goddard's workforce as necessary; (4) Increase cooperation and collaboration with all partners; (5) Increase and promote outreach with customers; (6) Develop a strategically aligned 'New Business' process in a full cost accounting environment; and (7) Identify and implement a Center organizational structure to enable strategic plan implementation."

The Quality Achievement Award will be displayed in the bldg. 8 lobby

The Quality Achievement Award is part of the 1997 President's Quality Awards (PQA) Program. The PQA Program recognizes organizations that have improved their overall performance and capabilities while providing high quality products and services to customers.

"As a first-time applicant, Goddard Space Flight Center has been selected to receive such a prestigious award and, for that, we are proud," said Goddard Center Director ***Joseph H. Rothenberg***. "We are improving our responsiveness to our customers' needs. We have changed the way we work by learning to do more with less, by leveraging our efforts with partners, and by transferring the technology that we develop to other users. Ultimately, these changes will allow the nation to achieve more world-class science at lower costs and will establish Goddard's leadership role in this new environment."

From Left to Right: Al Diaz, John Baniszewski, Joe Rothenberg, Sherry Foster, and General Dailey

Over the past 35 years, Goddard has established an outstanding tradition of excellence in science and technology. This excellence is demonstrated through a wide range of recent scientific discoveries and technological advancements: first mapping of the Antarctic ozone hole; understanding how the Earth works as an integrated system; determining the very early structure of the universe; imaging the birthplaces and death struggles of stars like our Sun; and developing and applying advanced laser altimetry to planetary science, as well as Earth Science.

news

- **Goddard's Safety Awareness Day is July 23.**
- **Employees attending the Goddard Night Baysox game on August 1 should arrive between 6:00 and 6:30 p.m. Don't forget, Joe Rothenberg is throwing out the first pitch and there will be fireworks after the game.**

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Lunch & Learn Series Continues

The next Project Goddard Lunch & Learn session will be held on Tuesday, July 22 from 12:15 p.m. to 1:30 p.m. in Building 3 Auditorium. This session will be hosted by the Transition Training Subteam. The purpose of this lunch & learn will be to gather input on employee's training needs for the Center's transition. Everyone is welcome, so bring your lunch and join us.

Check this space and homepage at the URL above for updated information on Project Goddard.

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CENTER SADDENED BY LOSS OF SCIENTIST

Gene and Carolyn Shoemaker at STScI on July 16, 1994

Dr. Eugene ("Gene") Shoemaker, age 69, died tragically in a car accident near Alice Springs, Australia, on July 18. His wife, Carolyn Shoemaker, suffered broken bones, and reportedly is hospitalized in stable condition.

A geologist by training, Shoemaker is best known for discovering, along with his wife Carolyn, and colleague David Levy, Comet Shoemaker-Levy 9 which collided with Jupiter in July 1994. Together, the Shoemakers were the leading discoverers of comets this century.

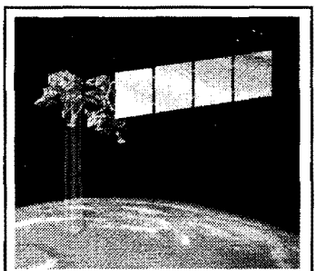
Shoemaker's signature work was his research on the nature and origin of the Barringer Meteor Crater near Winslow, AZ, which helped provide a foundation for cratering research on the Moon and planets. This work led to the establishment of a lunar chronology, allowing the dating of geological features of its surface. Shoemaker also chaired key NASA working groups on surveying near-Earth objects in 1981 and 1994. Most recently, he served as science team leader on the planned Clementine 2 mission.

"Gene was one of the most renowned planetary scientists in the world, and a valued member of the NASA family since the earliest days of lunar exploration," said NASA Administrator Daniel S. Goldin. "His work on the history of meteor impacts and the role that they play in the evolution of the Solar System is a fundamental milestone in the history of space science."

NASA CELEBRATES LANDSAT'S 25TH ANNIVERSARY

By Lynn Chandler, Office of Public Affairs

July 23 marked the 25th anniversary of the launch of the first of the Landsat satellites which have continuously supplied the world with global land surface images since 1972. Landsat data constitute the longest record of Earth's continental surfaces as seen from space. It is a record unmatched in quality, detail, coverage and value.



The Landsat 7 satellite

Landsat's 25-year collection of land images serves those who observe and study the Earth, who manage and utilize its natural resources, and who monitor the changes brought on by natural processes and human activities. "The instruments on the Landsat satellites have recorded millions of images," said ***Dr. Vince Salomonson***, Chief of the Earth Sciences Directorate at Goddard. "These images, archived in the United States and at Landsat receiving stations around the world, are a unique resource for global change research and other applications.

"These data have been used to monitor timber losses in the U.S. Pacific Northwest, estimate soil moisture and snow water equivalence, and measure forest cover at the state level," Salomonson said. Landsat spacecraft have also been used to monitor strip mining reclamation and population changes in metropolitan areas, to measure water quality in lakes, by law firms to gather legal evidence and by fast food restaurants to estimate community growth sufficient to warrant a franchise. Goddard is currently preparing a seventh Landsat (Landsat-7) spacecraft which is scheduled for launch by a Delta rocket in 1998.

"The Landsat-7 mission, the latest in the Landsat series, is part of NASA's Mission to Planet Earth (MTPE) program and is being built to continue the flow of global change information to users worldwide," said ***Dr. Darrel Williams***, project scientist for Landsat 7. "Scientists use Landsat satellites to gather remotely sensed images of the land surface and surrounding coastal regions for global change research, regional environmental change studies, national security uses and many other civil and commercial purposes."

RESEARCHERS MEASURE POLAR WIND

Researchers from Los Alamos National Laboratory and other institutions, using data from the POLAR satellite, have discovered one way through which water and other materials leave the Earth's atmosphere. This discovery should improve models of how the atmospheres of Earth and other planets evolve.

Using a unique instrument to reduce electrical interference from the satellite, the team took the first accurate high-altitude measurements of the so-called polar wind. The polar wind is charged gas or plasma escaping from Earth and its ionosphere through the poles, like the charged gases from the sun's corona that make up the solar wind. Plasmas from Earth and the sun are trapped and flow along Earth's magnetic field lines, or magnetosphere, and make up such spectacular electrical phenomena as auroras.

By measuring the polar wind, the research team proved that the polar wind is one mechanism by which the atomic constituents of water vapor and other atmospheric gases are dragged outward from the ionosphere and spiral along the planet's magnetic field lines. Sunlight breaks the water into ionized hydrogen and oxygen gases in the upper atmosphere.

"We know that planetary atmospheres evolve, and we have models of that evolution, but this is the first time we've observed this particular evolutionary mechanism at high altitudes," said Los Alamos physicist Beth Nordholt. "This gives us a look at the cutting edge of atmospheric evolution and the dynamic way material flows from Earth into space, contributing significantly to Earth's space weather."

Their measurements of the hydrogen and oxygen plasmas along the POLAR satellite's orbit - ranging from 7,000 to 35,000 miles above the poles - imply that roughly 1,000 gallons of water leave Earth's atmosphere every day.

In order to detect the diffuse flow of charged gases from Earth, the team designed two instruments for the POLAR satellite: the Plasma Source Instrument and the Thermal Ion Dynamics Experiment (TIDE). The Plasma Source Instrument spews out low-energy ions of xenon gas that flood the outside of the POLAR spacecraft, effectively neutralizing it and allowing the TIDE instrument to detect the energies and masses of ions flowing into it. The TIDE instrument has seven large apertures that give it high sensitivity in identifying and measuring charged hydrogen, helium, oxygen and other heavier ions from the ionosphere, along with helium from the solar wind. "The contribution of ionospheric gases to the polar wind has been predicted for a long time, but since they hadn't been measured before, there was no way to incorporate them accurately into atmospheric evolution models," Nordholt explained.

Data collected by the team indicate that hydrogen plasmas are flowing faster than predicted by theory, and that oxygen plasmas are hotter and more plentiful than predicted. Additional research will be needed to understand why, but Nordholt said the success of the two instruments will help greatly in the design of future research missions.

POLAR is part of the International Solar-Terrestrial Physics program, a collaboration of NASA, the European Space Agency and the Japanese Institute of Space and Aeronautical Science.

CONGRESS MEMBERS VISIT WALLOPS TO UNVEIL WALLOPS 2000 PLAN

U.S. Senators Barbara Mikulski and Paul Sarbanes, along with Congressmen Herb Batemen and Wayne Gilchrest, joined NASA Administrator, Daniel Goldin and Goddard Center Director, ***Joseph Rothenberg***, at Wallops Flight Facility on Monday, July 21, to unveil the Wallops Mission 2000 Plan.

The Wallops Mission 2000 Plan outlines the workforce and workload responsibilities for Wallops Flight Facility well into the 21st century. The plan is aimed at making Wallops a unique national resource for providing low-cost integration, launch and operations of suborbital and small orbital payloads. ***Ms. Judith Bruner*** of Goddard has been selected as the Wallops Mission 2000 Manager. She will be responsible for the implementation of the plan.

"This plan means jobs today and jobs tomorrow at Wallops," said Senator Mikulski. "It means that Wallops will not only survive, but thrive well into the next century. This is good news for Maryland and all the outstanding workers at Wallops."

Senator Paul Sarbanes, Dan Goldin and Joe Rothenberg look on as Senator Barbara Mikulski congratulates the Wallops workforce for their contributions to the space program.

As lead democrat on the panel that funds NASA, Senator Mikulski led the effort to protect the missions and workforce of Wallops. Working with Senators Paul Sarbanes, Chuck Robb, and John Warner, Senator Mikulski crafted the language that directed NASA to develop a plan to "maintain sufficient agency investment to ensure stabilization and full utilization of the Wallops workforce." This language resulted in the Wallops Mission 2000 plan.

Expressing his approval of the plan, Senator Sarbanes said, "This initiative not only provides stability to the Wallops Flight Facility, but also moves Wallops into the twenty-first century and allows its top-notch employees to continue their outstanding work."

Some new projects for Wallops were announced at the presentation, including new launch facilities for commercial payloads such as communications satellites and a helium-filled balloon, 400-foot in diameter, which will be sent 120,000 feet above sea-level to measure the Earth's atmosphere and track climate and weather conditions. It is expected that the plan will add jobs to the lower Eastern Shore area.

DO YOU KNOW HOW THE MARS PATHFINDER SOJOURNER ROVER GOT ITS NAME?

In 1995, a team of judges from NASA Headquarters, NASA's Jet Propulsion Laboratory and the Planetary Society, conducted a year-long, worldwide competition for the naming of the Mars Pathfinder rover. An essay written by Valerie Ambroise, age 15, was chosen out of 3,500 entries. Her essay was written on the Civil War era African-American woman, Sojourner Truth, who traveled throughout the country supporting the rights of all people to be free.

NASA TECHNOLOGY MAY HELP ASSESS RISK OF BONE PROBLEMS

A portable device developed for the space program to examine how physical activity relates to bone density may someday serve as a way to assess a person's risk of osteoporosis. The device, developed by researchers in the Life Sciences Division at NASA's Ames Research Center, Moffett Field, CA, provides a record of the major forces people apply to their bodies throughout the day. It does this by measuring and recording the interaction between the foot and the ground during daily activity. This "loading" of the body plays an important role in maintaining muscle and bone strength in the lower limbs.

"This device was designed to quantify daily physical activity and daily musculoskeletal loading by measuring the ground-reaction force," said Dr. Robert Whalen, head of the Musculoskeletal Biomechanics Laboratory in the Gravitational Research Branch at Ames. The device measures the force that occurs on the foot during each step. The force can reach one and one-half times a person's body weight during walking and two to three times body weight during running. "It's very important to monitor this force throughout the day because it also is responsible for high muscle and bone forces in the legs and critical bone regions such as the hip and pelvis," Whalen explained.

The force exerted on the body when it meets the ground is what keeps muscles and bones in the lower body strong. If muscles and bones aren't used, they become significantly weaker, a problem encountered by astronauts during space flight, particularly by astronauts who do not exercise vigorously in space. "Maintaining muscles and bones during long duration space flight is primarily a biomechanical problem," Whalen said. "With current in-flight exercise devices, it is difficult to achieve force levels equivalent to levels achieved during normal daily activity on Earth. We are investigating new ways to counteract these changes with devices capable of imposing Earth-equivalent levels of force on the body in space."

Whalen and Dr. Gregory Breit, researchers at Ames, are studying the relationship between the mechanical forces humans put on the skeleton every day and the structure of the skeleton. "Bone is highly responsive to mechanical forces," Breit said. "That may be the key to understanding why bone is lost gradually with age and why certain exercise programs can't build bone mass," Whalen added.

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Check out the updated AETD and STAAC Management biographies and photos now available on the Project Goddard web site at the URL listed above. In addition, you will find the latest information on the Center's reorganization: job postings, presentations, organization functional statements, and much more.

Also, check this space for upcoming events such as the Lunch & Learn Series, Town Meetings with Center Management, After Hour Socials with new Divisions, and the Project Goddard Fest.

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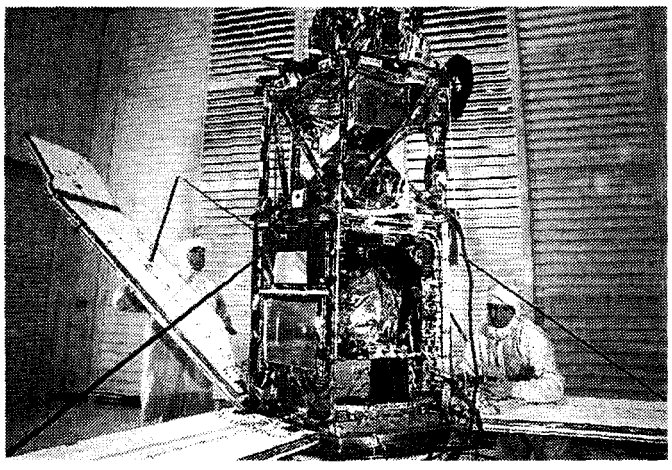
LAUNCH OF OCEAN-VIEWING SENSOR SET FOR AUGUST 1

By Allen Kenitzer, Office of Public Affairs

The launch of the Sea-viewing Wide Field-of-View Sensor (SeaWiFS) is scheduled for Friday, August 1, from Vandenberg Air Force Base, California. SeaWiFs will be launched onboard the Orbital Sciences Corporation's (OSC), Dulles, VA, SeaStar spacecraft. The launch window opens at 4:17 p.m. EDT (1:17 p.m. PDT), with a ten-minute window available. The spacecraft will be launched from a modified Lockheed L-1011 aircraft aboard an OSC Pegasus XL expendable launch vehicle.



Pictured is the SeaStar Spacecraft on which the SeaWiFs instrument (top of photo) is boarded

The SeaWiFS project is part of NASA's Mission to Planet Earth Enterprise, a long-term, coordinated research effort to study the Earth as a global system. Using the unique perspective available from space, NASA is observing, monitoring and assessing large-scale environmental processes, such as the oceans' productivity, focusing on climate change. In line with Mission to Planet Earth's commercial strategy, government-industry partnerships such as SeaStar provide NASA with needed data and may lead to practical commercial data use such as the development of fishing maps and estimation of crop yields for farmers and commodities markets. "We're looking forward to this upcoming launch," said ***Dr. Mary Cleave***, SeaWiFS Project Manager, at Goddard. "The data from SeaWiFS will be of great benefit to our understanding of global carbon cycling."

Understanding the role of the oceans in the global carbon cycle -- the process by which carbon travels through the Earth's atmosphere, oceans, land and living organisms -- is essential to understanding climate change. Phytoplankton, microscopic marine plants, remove carbon dioxide from the atmosphere for internal use. Scientists are eager to understand this exchange of carbon dioxide and the role it plays in the global climate.

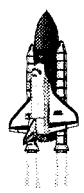
The SeaWiFS instrument will study the carbon cycle by observing the world's oceans from space and measuring "ocean color." The color of most of the world's oceans varies with the concentration of phytoplankton, which contain chlorophyll, a green pigment. Near coastlines, the color of the ocean is affected by chlorophyll, dissolved organic material, and suspended sediment from rivers and lagoons. By observing the color of different parts of the oceans, scientists can measure the amount of these materials in ocean water. "A SeaWiFS launch at this time will be particularly important given what appears to be a very intense El Nino event developing in the equatorial Pacific Ocean," said ***Dr. Charles McClain***, SeaWiFS Project Scientist, of Goddard. "SeaWiFS data will allow us to assess the global impact of the El Nino on marine ecosystems, including coastal waters off the U.S. West Coast."

SeaWiFS represents a new way of doing business for NASA. Rather than building, launching and controlling a satellite to study an important aspect of the Earth's environment, NASA will purchase commercially available data from a privately built satellite and use the data for environmental research.

The SeaWiFs Team has developed, and will operate, a data system that will process, calibrate, validate, archive and distribute SeaWiFs data for research. All other aspects of the mission, satellite construction, launch, command and control, and tracking are the responsibility of OSC. OSC has integrated the SeaWiFs instrument, built by Hughes Electronics and the Santa Barbara Remote Sensing, Goleta, California, into its SeaStar satellite and will market the data for commercial and operational use following launch.

SeaWiFS can view the world's oceans every two days. Since oceans cover 70 percent of the Earth's surface, SeaWiFS will provide information on a large part of the global biosphere. SeaWiFS also will provide important information for fisheries and coastal zone management. SeaWiFS data, which also are useful for viewing plants on land, can be combined with plant productivity data from other satellites, such as Landsat and other operational weather satellites, to measure the role of the biosphere in the total global carbon exchange.

NASA's Mission to Planet Earth Program Office, located at Goddard, manages the SeaWiFS contract and is developing and will operate the research data system for NASA's Office of Mission to Planet Earth, Washington, DC.



STS-85 SPACE SHUTTLE MISSION LAUNCH

August 7 has been set as the launch date for the next Shuttle mission. Two Get Away Special (GAS) payloads and various Goddard-managed, Hitchhiker payloads will fly on STS-85. The Goddard Mission Managers/ Principal Investigators for the Hitchhiker payloads are ***Neal Barthelme***, Technology Applications and Science (TAS-01); ***Jim Garvin***, Shuttle Laser Altimeter (SLA); ***Jim Spinhirne***, Infrared Spectral Imaging Radiometer (ISIR); ***Laura Ottenstein***, Two Phade Flow (TPF); ***Tom Dixon***, International Extreme Ultraviolet Hitchhiker-2 (IEH-2), and ***Ruthan Lewis***, Space Experiment Module (SEM).

The launch window for Space Shuttle Discovery extends for one hour, 39 minutes from 10:41 a.m. to 12:20 p.m. EDT. The length of the mission is 10 days, 20 hours, 24 minutes, putting the landing on Monday, August 18, at 7:05 a.m. EDT.

Discovery's crew will deploy the CRISTA-SPAS spacecraft for nine days of free-flying atmospheric studies and demonstrate the operational capability of the Japanese Remote Manipulator System and its Small Fine Arm. This robotic arm is identical to the one that will be used on the International Space Station's Japanese Experiment Module.

STS-85 will be Discovery's 23rd flight in space, tying it with Columbia as the Orbiter with the most missions. It also will be the 86th Shuttle flight in the program's history.

EMPLOYEE achievements

On July 25, Center Director, ***Joe Rothenberg***, presented ***Dr. John Mather, Code 685,*** with a framed copy of the Congressional Record on the testimony given by Senator Paul Sarbanes on June 26, 1997. In his testimony, Senator Sarbanes recognized Dr. Mather for his achievements and contributions to space science.

Dr. John Mather and Joe Rothenberg

WALLOPS PROVIDES COMMUNICATIONS BETWEEN U.S., RUSSIA AND SPACE

Back in 1994, Goddard asked Wallops Flight Facility to conduct a best effort, no- or low-cost demonstration of their capability to provide two-way radio communications between Moscow, the U.S., and the orbiting Mir Space Station. The purpose of this was to provide direct communications during Shuttle/MIR docking missions, which were planned to begin in 1995. To accomplish this, unused antenna equipment from Code 833 and Mobile Range communication equipment from Code 822 were assembled, tested, and shown to be usable for this purpose. The system was then modified and moved to the Wallops Orbital Tracking Station for continued operation. With the recent problems on the Mir emphasizing the need for this system, a more powerful system was supplied by Code 530 and installed by Allied Signal and NASA personnel. This system is currently in operation and provides daily communications between Moscow, Houston, and the Mir during periods that it is in view. Wallops is one of three stations providing this support in the United States. Others are located at Dryden and White Sands.

Recently, in recognition of Wallops' efforts, NASA Administrator, Dan Goldin, expressed his appreciation in a letter to ***Mr. Robert Wessells*** and Code 833 thanking them for their responsive actions taken as a result of the Mir/Progress docking incident. "Your contribution in providing vital communications services was instrumental in ensuring crew safety and resolution of the Mir Status. Your 'can do' response was in the finest tradition on NASA's communications services," stated Goldin in his letter to Mr. Wessells. Goldin's letter also conveyed appreciation from General Director Koptev of the Russian Space Agency.

Now Available at Visitor Center Gift Shop and Gewa Store

- "Earth from Above: Using Color-Coded Satellite Images to Examine the Global Environment." The book will be sold at a discount price for Goddard employees. The author, ***Dr. Claire Parkinson, Code 971,*** will give the Discover Goddard presentation at the Visitor Center for the Fall Community Day on September 28.

ADVANCED COMPOSITION EXPLORER SET TO STUDY MATTER FROM SUN, MILKY WAY AND BEYOND

By Lynn Jenner, Office of Public Affairs

The Earth is constantly being bombarded by a stream of accelerated particles arriving not only from the Sun, but also from interstellar and galactic sources. The study of these energetic particles by NASA's Advanced Composition Explorer (ACE) observatory will contribute to the understanding of the formation and evolution of the solar system as well as the astrophysical processes involved. The ACE observatory is scheduled for launch on a Delta II rocket at 10:39 a.m. EDT August 25, from Launch Complex 17 at the Cape Canaveral Air Station, FL.

"The Advanced Composition Explorer observatory is designed to sample the matter that comes near the Earth from the Sun, from the apparently, but not actually, empty space between the planets, and from the Milky Way galaxy beyond the solar system," said ***Don Margolies***, ACE Mission Manager at Goddard. "While previous missions have studied these particles, the instruments on ACE have a collecting power 10 to 1,000 times greater and will be at least 100 times more sensitive than anything we've ever flown," Margolies said. "We will be able to study known phenomena in much greater detail than previously possible, and discover new ones to give us a better understanding of the interaction between the Sun, the Earth, and the galaxy."

The ACE observatory was built by the Johns Hopkins Applied Physics Laboratory, Laurel, MD, where its instruments were integrated. ACE was tested at the Applied Physics Laboratory and at Goddard. The ACE mission is managed by the Explorer Program at Goddard for the Sun-Earth Connections Program in the Office of Space Science, NASA Headquarters, Washington, DC.

http://www.gsfc.nasa.gov

Orlanda Figueroa, Director designee, recently announced the following key appointments with the new Systems, Technology and Advanced Concepts Directorate (STAAC):

Jim Andary has been selected as the Chief of the Systems Engineering Division, Wayne R. Hudson has been selected as the Chief of the Technology Commercialization Office, and Thomas J. Magner has been selected as the Chief of the Mission Integration and Planning Division.

Biographies and photos of these new Directorate managers will be available soon under Project Goddard via the Goddard Homepage at the URL listed above.

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