



National Aeronautics and  
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# GODDARD

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## Landsat 7 Launches Successfully

A new spacecraft that will gather data from Earth's land surface and surrounding coastal regions soared into space on Apr. 15. The Landsat 7 spacecraft aboard a Delta II rocket, lifted off at 2:32 p.m. EDT from Vandenberg AFB, Calif. More than an hour later, the spacecraft separated from the Delta II second stage. Landsat is a dual-agency program between NASA and U.S. Geological Survey (USGS).

"We're off to a great start," said Phil Sabelhaus, Landsat 7 project manager at NASA's Goddard Space Flight Center, Greenbelt, Md. "The spacecraft is now in orbit and all data indicates we have a healthy spacecraft. The next couple of weeks will be spent performing calibration activities and deploying the scientific instrument. Then, we will begin our detailed checkout," he said. NASA will turn operational control of the spacecraft over to USGS on Oct. 1, 2000. The spacecraft is currently in a polar orbit 438 miles (705 kilometers) above the Earth.

Landsat 7 is the latest in a series of missions that began with Landsat 1 in 1972. This data will provide scientists with new information on deforestation, receding glaciers and crop monitoring. The data also will be available commercially for land-use planning and urban development issues.

This new science spacecraft was built by Lockheed Martin Missiles and Space in Valley Forge, Penn. The only instrument onboard, the Enhanced Thematic Mapper Plus (ETM+) was built by Raytheon (formerly Hughes), Santa Barbara Remote Sensing in Santa Barbara, Calif.

Landsat 7 is part of global program known as NASA's Earth Science Enterprise, a long-term program that is studying changes in



*A Delta rocket carrying the Earth science spacecraft, Landsat 7, lifted off from Vandenberg AFB, Calif. on Apr. 15.*

Earth's global environment. The goal of the Earth Science Enterprise is to provide people a better understanding of natural changes. Earth Science Enterprise data, which will be distributed to researchers worldwide at the cost of reproduction, is essential to people making informed decisions about their environment. Latest mission information can be found on the Landsat website at: <http://landsat.gsfc.nasa.gov>

## Goddard Sponsored Teams Have Fantastic Showing at Robotics Tournament



*Students from Southhampton Middle School in Baltimore look on as they enter the second round of the competition.*

The Washington D.C. Botball Tournament held on Apr. 10, honored several Goddard sponsored student teams who demonstrated their engineering, math and strategic abilities. Twenty five schools participated in this special opportunity to design, build and program robots.

Goddard provided mentors and funding to eleven schools across the region. The sponsored schools were Sousa Middle School in Washington, D.C., mentor, **Jeanine Shirley/423**; Northwestern High School in Hyattsville, Md., mentor, **Dr. Jacqueline LeMoigne-Stewa/935**; Springbrook High School in Silver Spring,

Md., mentor, **Samir Chetti/935**; Tilden Middle School, Rockville, Md., mentor, **Tricia Weir/740**; Southwest Academy in Baltimore County, Md., mentor, **Steve Kraft/581**; Baltimore Polytechnic Institute in Baltimore, Md., mentor, **Ken Anderson**; Southhampton Middle School in Baltimore, mentor, **Tom Taylor/740**; Southern High School in Baltimore, mentor, **Dave Martin/730**; Langston Hughes Middle School in Reston, Va., mentor, **Nick Shur/544**; Yorktown High School in Arlington, Va., mentor, **Mary Reph/586**; and Wakefield High School in Arlington, Va., mentor, **John Dowling/572**.

Springbrook High School came in second place in the overall competition and won for best use of pneumatics. Southhampton Middle School placed second in the website contest and won best seed score. Baltimore Polytechnic won for the best looking robot. Wakefield High School won the award for most innovative design. Northwestern High School took home the award for the the best defense and Tilden Middle School won for the best offense. Northwestern and Tilden shared the award for the best T-shirt design.

The robots were made up of as many as 1,300 Lego Technic pieces, a miniature computer, sensors and motors. The robots were programmed by the students to operate autonomously without the use of remote controls.

The purpose of the game was for the robots to put the most ping pong balls into a targeted cup within a certain time limit. Two robots at a time competed in the ready made Botball arena. Student team winners will go on to the national competition in Orlando, Fla. during the week of July 18-20.

Congratulations to all the schools, Goddard mentors and sponsors.

## Goddard Anniversary Symposium

The Goddard 40th Anniversary Symposium scheduled Monday, May 3 in the building 8 auditorium, from 9 a.m. to 11 a.m. brings NASA Administrator Dan Goldin and members of the Maryland Congressional delegation to talk about Goddard, the Center's contributions to the nation, the community and its future. From 1 p.m. to 3 p.m., the Symposium will continue with talks by Associate Administrator for Space Science Dr. Ed Weiler, Associate Administrator for Earth Science Dr. Ghassem Asrar, and Goddard scientists Dr. John Mather and Dr. Jim Hansen. This distinguished panel will reflect on Goddard's scientific achievements and discuss the future of space and Earth science research. More information on 40th Anniversary activities can be found at: <http://pao.gsfc.nasa.gov/gsfsc/40th/events.htm>

## Join The Visitor Center In A Day Of Out Of This World Fun As Goddard Turns 40

On Sunday, May 2, 1999, Community Day will "kick off" Goddard's Space Flight Center 40<sup>th</sup> Anniversary. This event is guaranteed to be one of the most unforgettable days that you will experience this year. There will be something for everyone. For children, we will have our childrens' activities tent that is a day long extravaganza of learning and fun which will include: paper space helmets, pop rockets, space bingo, wind socks, comet making and an arts/game table and MORE!!

Center-wide tours will take you behind the scenes to Mission Operations-Hubble Space Telescope (HST) Operations, where teams of engineers control and monitor HST around the clock; Goddard Spacecraft Fabrication Facility, where spacecraft are assembled; Spacecraft Test and Integration Facility, where spacecraft are tested; and the Spacecraft Systems Development and Integration Facility to see the largest clean room in the world. Various demonstrations will include: radio club, control line model aircraft, and radio control model aircraft. We will feature our widely acclaimed "living in space" and "puppets in space" presentations. To learn about Goddard's enterprises, there will be scientists who will facilitate presentations on space science, Earth science and technology.

Looking for "special attractions?" We will have plenty of those. Musical entertainment, living history, inflatable Space Shuttle, Goddard Trivia, Goddard Jeopardy, 40<sup>th</sup> Anniversary commemorative stamp cancellation are just a few of the special attractions.

The day's events will culminate with a model rocket launch. As always, food and souvenirs will be available for purchase.

How will all this be possible? With the help of volunteers. We need support from you to make this our best Community Day ever. We need volunteers who can commit to one of three shifts: 8:00 a.m. -12:00 p.m.; 12:00 p.m. - 4:00 p.m.; or 8:00 a.m. - 4:00 p.m. Volunteers must be able to attend one of the scheduled two-hour orientation sessions on Apr. 21-24, from 3 p.m. - 5 p.m. in the Visitor Center auditorium.

If you want to volunteer as a bus escort, building greeter, information desk assistant, presentation assistant, Earth Science Gallery attendant, children's tent activity facilitator or help in other positions, please contact William Robinson-Parks, Volunteer Coordinator at 301-286-9041 or email him at [wrobinso@pop100.gsfc.nasa.gov](mailto:wrobinso@pop100.gsfc.nasa.gov)

## NATIONAL SPACE CLUB RECEPTION

Goddard Civil Service employees are invited to attend the National Space Club Reception at the Goddard Visitor Center on Monday, May 3. This special reception recognizes four decades of Goddard's achievements and contributions with special honors to the past Center Directors.

Tickets are available for Goddard civil service employees and spouses (or significant other) for \$25.00 per person. Limited tickets are available.

If you are interested in attending the reception, you will need to complete a form requesting tickets. The forms are available in the Office of Public Affairs. After completing the form, return it to the Office of Public Affairs, Code 130 with your check or money order, for forwarding to National Space Club. Make checks payable to: National Space Club. Tickets must be purchased by Friday, April 23.

## HEAD Was Fed

Whispers from shy black holes, explosions 100 times more powerful than detonating stars, a newfound class of middleweight black holes, clues to a nearby star explosion apparently unrecorded by medieval astronomers, and pulsars with complex personalities were among the discoveries featured at the High Energy Astrophysics Division (HEAD) of the American Astronomical Society meeting in Charleston, S.C. April 12 - 15.

The full press releases can be found at the following website: <http://pao.gsfc.nasa.gov/gsfsc/newsroom/flash/flash.htm>

## Take Our Daughters To Work Day Registration Is Coming Up

Take Our Daughters to Work Day is Thursday, April 22. Pre-registration -- information packages, badges, and activity sign-up -- is available by coming to Building 8, room 445 between 9 a.m. and 4 p.m. April 15 - April 20. For further information please check the web site calendar at <http://eeo.gsfc.nasa.gov> or call Cheryl Brown Campbell at (6-7478) or Lynne Slater at (6-7770).

## Link Between Solar Cycle And Climate Is Blowin' In The Wind

Researchers have found that the variations in the energy given off from the Sun effect the Earth's wind patterns and thus the climate of the planet, according to results of a new study published in the April 9 issue of *Science*.

For decades, scientists have tried to understand the link between winds and temperature and the Sun and its cycles. There were tell-tale signs of a connection. For instance, the Little Ice Age recorded in Europe between 1550 and 1700 happened during a time of very low solar activity. But how the Sun and climate were linked continued to elude researchers.

According to **Drew Shindell**, a climate researcher from NASA's Goddard Institute for Space Studies in New York, N.Y., and lead author of the new study, a key piece of the puzzle was missing. Previous studies neglected to take into account the effects of increased solar activity on the ozone layer or the complex chemistry of the upper atmosphere where most of the high-energy radiation, including ultra-violet radiation (the kind responsible for creating the ozone layer) gets absorbed.

The complete press release can be found at the following website: <http://pao.gsfc.nasa.gov/gsfsc/newsroom/flash/flash.htm>

## Another Goddard First

OA0-2, which was launched in December 1968, determined properties of interstellar dust and hot stars in the Milky Way, and gathered basic information on comets.

## ISO 9001

### Goddard's New Quality Policy

With customer satisfaction as our primary goal:

- GSFC is committed to meeting or exceeding our customer's requirements.

- We achieve excellence in all of our efforts.



Visit ISO at <http://arioch.gsfc.nasa.gov/iso9000/index.htm>

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