



National Aeronautics and Space Administration

GODDARD NEWS

Greenbelt, Maryland/Wallops Island, Virginia

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

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July 23, 1999

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Safety – Our Number One Value

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Woman at South Pole Is Helped Thanks to a High-Bandwidth Satellite Link

A 47-year-old female member of the U.S. Antarctic Program who discovered a suspicious lump in her breast in May received aid from doctors thousands of miles away thanks to NASA's South Pole Tracking and Data Relay Satellite Relay (SPTR).

The communication capability provided by SPTR and TDRS F1 proved invaluable to the female researcher wintering at the South Pole. Data relayed from TDRS F1 to a ground terminal at White Sands, N.M. enabled voice contact between the woman, her cytologist and a medical team thousands of miles away.

A data link provided by SPTR supplies a high quality Internet connection to the South Pole for a period of 4.5 hours each day, via NASA's Tracking and Data Relay Satellite – TDRS F1.

Based on information the doctor obtained via the TDRS link, the National Science Foundation approved an airlift of medical supplies to the remote site. However, due to extreme weather conditions at the South Pole during this time of year, airplanes cannot land and

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people at the station cannot get out until winter ends in October. Confronting high winds and extremely cold temperatures, an U.S. Air Force C-141 aircraft carrying a 22-member crew carefully air dropped medical supplies to the site on July 10.

NASA considered terminating the F1 link, but decided against it because use of TDRS F1 is the only viable way to accomplish valuable science at the South Pole.

During a joint meeting in February, representatives from NASA and the National Science Foundation produced an agreement to develop the White Sands Complex Alternative Resource Terminal, or WART, which will serve as the new resource to control TDRS F1 and provide the South Pole communications.

"NASA's decision in February to continue supporting F1 in its Pole-viewable orbit made all these consultations possible," Office of Polar Programs Director Karl Erb wrote in a recent thank you message to the Goddard team.

SPTR was designed and implemented by Goddard's Space Networks Project, Code 451, in December 1998. Goddard also is responsible for SPTR operations and engineering.

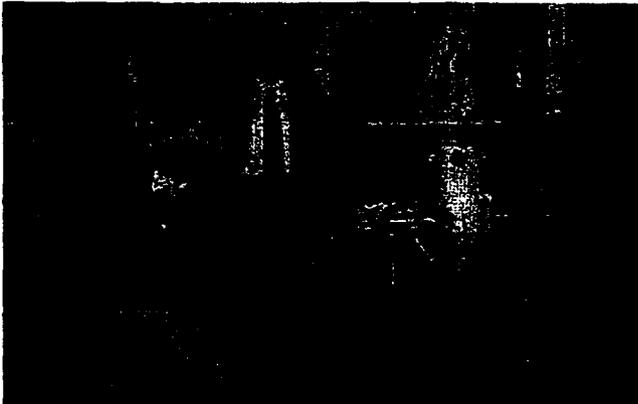
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GOES-L Launch Scheduled for October

The launch of Goddard-managed GOES-L spacecraft has been delayed until October. The launch was originally delayed to allow NASA and NOAA time to review recent launch failures. Those investigations are not expected to be completed in time to support a GOES-L launch before the next eclipse season, which runs from late August until mid October. During that time, the Earth would be between the sun and the satellite for a maximum of 72 minutes each day. The solar arrays would not be in sufficient sunlight for the planned orbit-raising sequence. After the launch constraints are resolved, NOAA and NASA will explore the first launch opportunity after Oct. 5 with Lockheed Martin.

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NASA Chief Scientist Visits the Center



Dr. John Campbell points out different parts of the Hubble Space Telescope to NASA Chief Scientist Dr. Kathie Olsen during a July 13 visit to Goddard. Standing to Olsen's left is Center Director Al Diaz.

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Chandra to Reveal Secrets of the Universe to Goddard Scientists

Launch Update: Space Shuttle managers have rescheduled the launch of STS-93 for July 23 at 12:24 a.m. EDT. Launch managers postponed the launch of Space Shuttle Columbia July 22 due to unacceptable local weather conditions.



(Below is Part 2 of a two-part story featuring Goddard scientists' intentions for Chandra.)

Dr. Steve Holt, Director of Space Sciences at NASA, will use Chandra to observe a number of supernova remnants, including SNR 1987a. A supernova remnant is the expanding shell of gas from a star explosion. These explosions happen somewhere in the universe every day, but SNR 1987a -- which, as the name implies, blew apart in 1987 -- was the first explosion visible to the naked eye since 1604.

An interesting thing about SNR 1987a is that the X-rays from the material that was ejected in the supernova explosion itself are not yet visible to any telescope, even the mighty Chandra. The expanding shell glows brilliantly in optical light and even in X-ray from the gas (already present in the region) swept up by the supernova shock wave. Yet we can't see the explosion itself in X-rays.

"The X-rays are trapped in a shell of opaque matter that gradually gets more transparent as it expands, just like a balloon gets thinner as it gets bigger," Holt said. "The theory is that it takes 10 or 15 years for the shell to get thin enough for the X-rays to emerge. Well, it's been 12 years so far. When they burst out, Chandra will be ready."

Holt is planning this ambitious X-ray observation with researchers at Penn State. Another observation that he will undertake -- and one of the first for Chandra -- is that of supernova remnant Cas-A. This explosion in the constellation of Cassiopeia happened 400 years ago, but there are no historical records of it. Holt said that Chandra's superior angular and spectral resolution will help astronomers zoom in on the remnant's X-rays, which are generated by the 10 million-degree gas. Collaborating with Holt on several Chandra observations is Dr. Una Hwang, a member of Goddard's X-ray Branch.

Dr. Steve Snowden is interested in point-source and diffuse X-ray emission in galaxy M101, also known as the Pinwheel galaxy because of its lovely spiral shape. Chandra's excellent angular resolution, therefore, will be perfect in differentiating between point sources (one star system emitting X-rays) and extended emission (a group of stars all contributing to a localized X-ray emission).

Snowden said he couldn't help but enter the field of astronomy. "I read too many science fiction books as a child."

Dr. Jane Turner will use Chandra to study the Seyfert galaxy Ton S180. Seyfert galaxies have extraordinarily bright centers, called "active" nuclei, where copious X-rays are produced from material falling onto a supermassive black hole. These energetic X-rays will illuminate the gas clouds shrouding the black hole.

The X-rays have so much energy they lift electrons to higher energy levels within the atoms of these gas clouds. When the electrons "relax" and return to a less energetic state, the excess energy is re-emitted from the atoms as X-rays and other radiation. The re-emitted radiation has specific energies, and can be observed using the Chandra transmission gratings in conjunction with the imaging spectrometer, which allows us to distinguish the individual lines. Different lines correspond to X-rays with different energies.

Turner expects to see many X-ray lines from the gas around the black hole in Ton S180. "The transmission gratings on Chandra will allow us to separate these X-ray lines, which has never been possible before," said Turner. "The detailed line measurements from Chandra can tell us about whether the gas is flowing into or away from the black hole, as well as valuable information about the physical conditions in the gas. The observations will help us understand the relationship between the black hole and its immediate surroundings."

Dr. Ken Ebisawa hopes to resolve the mystery of the Milky Way's so-called diffuse X-ray emission, a ubiquitous cloud of X-rays that blankets our galactic plane and whose origin is unknown. To do so, Ebisawa will look at a region of space where this cloud varies in X-ray brightness but where there seems to be no distinct energy sources to produce it.

Diffuse emission means that the hot gas emitting the X-rays is floating in the space between stars. Maybe this gas came from billions of years of star explosions. Non-diffuse emission, or point-source emission, comes from specific sources, such as very large stars. Astronomers have not been able to tell whether the X-rays in the galactic plane are truly diffuse or merely a composition of numerous dim point-sources. Essentially, X-ray images taken by earlier X-ray telescopes aren't sharp enough to tell. But images from Chandra will solve the mystery.

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Either way, the answer will be intriguing. Chandra may reveal that the Milky Way is densely populated with dim, white dwarf stars – a population that we never knew about. Or, if there really is a diffuse emission, astronomers will be inspired to solve the mystery of the origin of this energetic X-ray emitting hot gas.

So for Ebisawa, space is where it's at: "One of the reasons I chose X-ray astronomy in graduate school in Japan is that it satisfies my interests in both astronomy and space technology. In X-ray astronomy, we must go out of the atmosphere, so we use artificial satellites. Another great thing in astronomy is that it is truly international. I have colleagues from many nationalities, and go to many foreign countries for scientific meetings and collaborations. In studying astronomy, practically there are no borders between countries."

Visit Goddard's Chandra website at: <http://pao.gsfc.nasa.gov/gsf/SpaceSci/chandra/chandra/Chandra.html>

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Kodiak Test Flight

Shown here is a Vegetation Canopy Lidar spacecraft mockup being backed into an U.S. Air Force C-5 Galaxy aircraft at Andrews AFB, Md. The purpose of the July 9 flight was to simulate flying the NASA payload to the new Kodiak Launch Complex on Kodiak Island, Alaska. VCL's launch is scheduled for Summer 2000. VCL will be the first orbital launch to low Earth orbit from the Alaska Aerospace Development Corporation's new commercial launch facility.



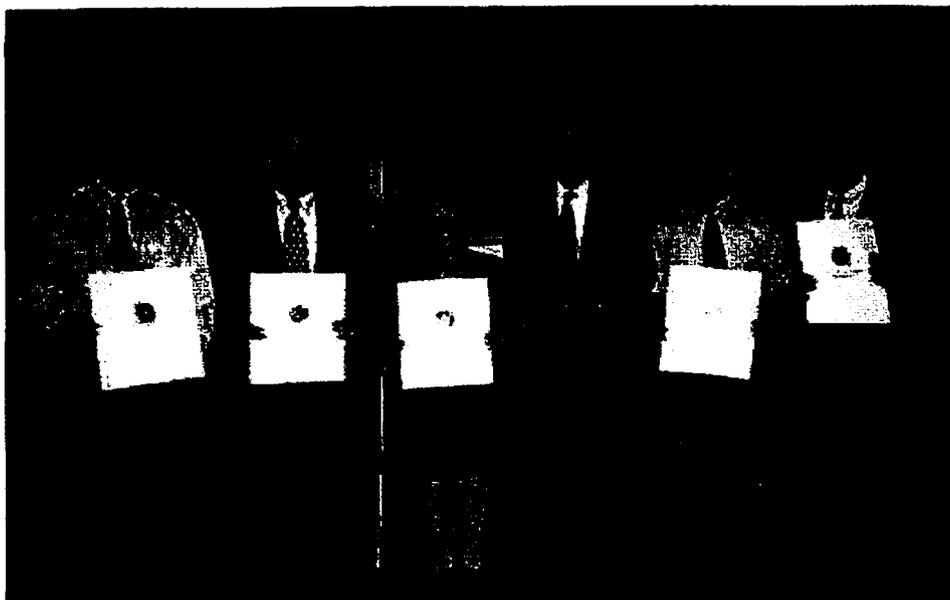
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Earth Science Colloquium Scheduled for July 26

Dr. Fritz Hassler of Code 912 will be hosting an Earth Science Colloquium on Monday, July 26 in the Building 3 Auditorium. The program will run from 2 p.m. until 3:30 p.m. Hassler, known for his cutting edge visualizations, will focus on visualizations of Earth Science Systems. The program is specifically geared for visiting teachers, co-ops and interns, but employees are welcome.

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Y2K People Recognized



Five individuals were presented with certificates of appreciation in recognition of the work that they have done in supporting the Agency's Y2K Program. The individuals shown here are (left) Charles Sanders, Tony Maione, Mali Hakimi, Center Director Al Diaz, William Duffy and Joe Valenti.

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Scholarship Winner Honored

Minghan Leo Tsay, son of Dr. Si Chee Tsay (Code 913), was one of this year's winners of the NASA College Scholarship Fund. He is shown here receiving a plaque in recognition of this honor from Center Director Al Diaz. Tsay will graduate from Mt. Hebron High School this month and plans to attend Johns Hopkins University this fall and major in biology or biomedical engineering.

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ODIN Newsletter Is Now Online

The June/July ODIN Customer Newsletter "InterChange" is now available. This edition is featuring a crossword puzzle with prizes offered to the first five customers responding with the correct solution. The newsletter also features an ODIN Tip on managing your Eudora mailbox. Hard copies of the newsletter can be found in both GSFC/Greenbelt cafeterias and in the GSFC/Greenbelt library. The newsletter is on the ODIN web site at <http://www.odiniis.com> under the Customer Outreach link.

<http://pao.gsfc.nasa.gov/gsfcc/gnews/072399/072399.htm>

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Wildlife Web Site Now Operational

The Goddard Safety and Environmental Branch has a new web site that explains how it is managing the wildlife on Center. The site is designed for an educational purpose to supplement the Center Announcement No. 99-29. Check out the site at the following address:
<http://gsfc-artemis.gsfc.nasa.gov/205/wildlife.htm>

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Schneebaum Memorial Award for Engineering Nominations Being Solicited

Nominations are due in the Awards Office, Code 114, by close of business, Friday, July 30. This annual award is presented to a Goddard employee for an outstanding personal contribution toward advancing and extending technology of space flight. All Goddard employees are eligible for the award regardless of their occupation or of the organization in which they serve. The contribution may be for a single or continuing significant engineering achievement or for a recent professional paper or a research project. Please contact Pat Greco at Ext. 6-6118 if you need additional information.

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Health Fair Scheduled for August

The Fitness Center invite employees to attend the 1999 Goddard Health Fair, 'Join us on Tuesday, Aug. 10, between 10 a.m. - 2 p.m. in the Building 8
 ons: Men are from Mars, Women are from Venus, Assault Awareness, and
 tics and Economics of Smoking, Stress Reduction Techniques, Women's
 information, please feel free to call Ext. 6-6666.

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Death of Congressman George Brown

NASA Administrator Daniel Goldin had the following comments after the recent death of Congressman George Brown. The congressman was the ranking member on the House Science Committee.

"Congressman Brown was a remarkable individual, who helped inspire and lead our nation and our youth. He was passionate about science, as he was passionate about making sure our children have the science, math and technical skills necessary for the 21st century.

His professional training in industrial physics and his love of science made his tenure as chairman of the House Science Committee one of the most productive in our nation's history. As we celebrate the 30th Anniversary of the moon landing on July 20, we should never forget that it was the vision and support of leaders like George Brown that made it all possible.

<http://pao.gsfc.nasa.gov/gnews/072399/072399.htm>

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George Brown was a great supporter of NASA and was there for us in every way; he challenged us, he held us accountable, and he helped bring out the best in our Agency.

He was a wonderful man, a great friend, and his death is a loss to the U.S. space program and to the science community that benefited so greatly from his leadership."

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New Goddard Traffic Management Policies and Security/Safety Measures Update

Last week's Goddard News did not have all the current information on the recently approved new traffic management policies and procedures for Goddard that will take effect Aug. 2. Listed below are two changes that were made since last week's issue. For a complete listing of the new policies check you mailbox for GSFC announcement 99-38 which came out this week.

Point assessment for traffic violations on Center are as follows:

VIOLATION	POINTS ASSESSED
Parking in Reserved Spaces	3 Points
Parking in Spaces Reserved for Persons with Disabilities	5 Points

Employees are reminded to yield the right-of-way to pedestrians in crosswalks, to observe Center speed limits, stop signs, parking restrictions, mandatory seat belt use and the display of NASA/GSFC badges.

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Press Releases from the past week can be found here: [Hot Topics](#)

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Mission Success Starts With Safety

If you would like to make comments or ask questions concerning the content of the Goddard News for this week please address your email comment to: James.Sahli.1@gsfc.nasa.gov

If you would like to make comments or ask questions regarding the HTML (on-line) version of Goddard News for this week please address your email comment to: Lynn.A.Jenner.1@gsfc.nasa.gov