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Goddard Space Flight Center

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Greenbelt, Maryland/Wallops Island, Virginia

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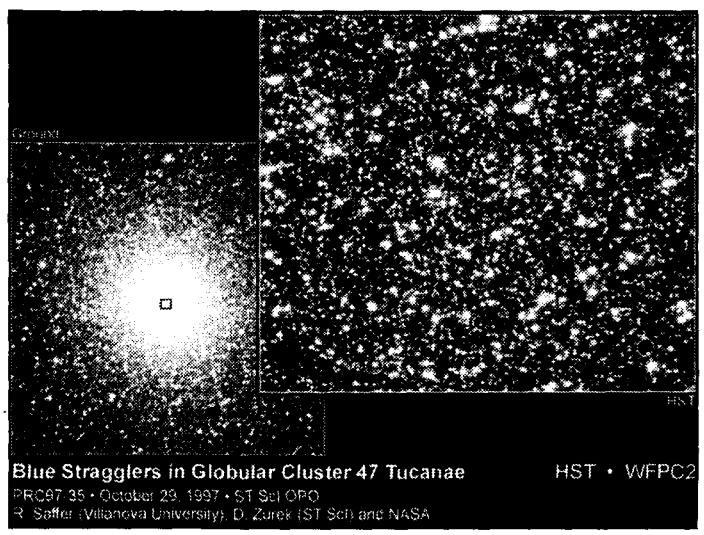
Hubble Catches Up With a Blue Straggler Star

By Tammy Jones, Office of Public Affairs

Astronomers have long been mystified by observations of a few hot, bright, apparently young stars residing in well-established neighborhoods where most of their neighbors are much older.

With the help of the Hubble Space Telescope, astronomers now have evidence that may eventually help solve the 45-year-old mystery of how these enigmatic stars, called blue stragglers, were formed. For the first time, astronomers have confirmed that a blue straggler in the core of a globular cluster (a very dense community of stars) is a massive star spinning 75 times faster than the Sun. This finding provides proof that blue stragglers are created by collisions or other close encounters in an overcrowded cluster core.

Astronomers studied a blue straggler in the tumultuous heart of the nearby globular cluster 47 Tucanae, located 15,000 light-

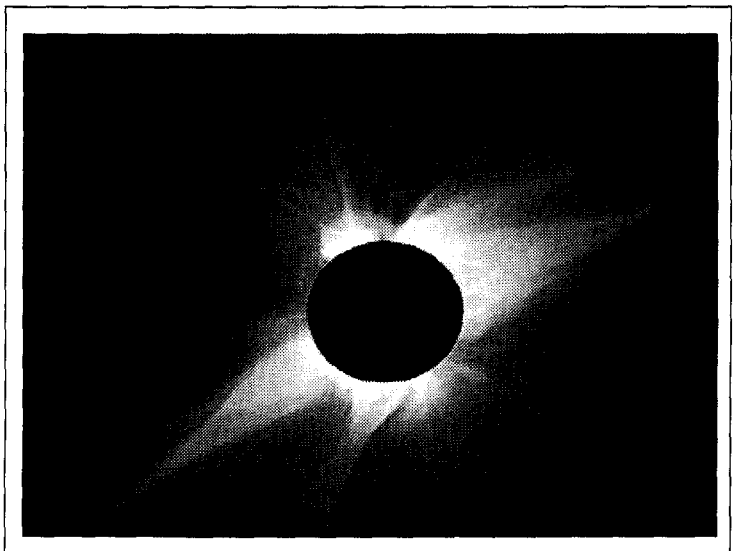


Ground-Based Image (left) and HST Image (right) of Globular Star Cluster 47 Tucanae containing Blue Stragglers

years away in the constellation Tucana. The observation was made by astronomers Michael M. Shara of the Space Telescope Science Institute, Baltimore, MD; Rex A. Saffer of Villanova University, Villanova, PA; and Mario Livio, also of the Institute. "This is an extremely exciting result," Saffer said, "because it may help distinguish between competing theories of blue straggler star formation and evolution. Since their discovery 45 years ago, blue stragglers have been assumed to be stars much like the Sun, although their bluer color and greater brightness imply that they are more massive and much younger than normal globular cluster stars. Our analysis confirms that, but without having to make any assumptions about the state of blue straggler star evolution."

CONTRACTOR EXCELLENCE AWARD WINNERS

Goddard has four winners for The 1997 Goddard Contractor Excellence Award. The four winners are: The Boeing Company, Huntington, CA., AlliedSignal Technical Services Corporation, Seabrook, MD., Computer Sciences Corporation, Lanham, MD., and Swales Aerospace, Beltsville, MD. The winners of this year's award were chosen because of their continuous improvement and contributions to Goddard's mission. The other finalists for the 1997 Contractor Excellence Award were Bristol Aerospace Limited, Winnipeg, Canada; Hughes STX Corporation, Lanham, MD.; Unisys Federal Systems, Hanover, MD.; Unisys Information Management Services, Lanham, MD.; SSAI, Lanham, MD.; and Hernandez Engineering Inc., Seabrook, MD. **Congratulations to all.**



SOLAR CORONA IMAGE: This image was taken from Mauna Kea, Hawaii during a total solar eclipse in 1991 by the High Altitude Observatory group of the National Center for Atmospheric Research. This image as well as the Magnetic Carpet image was featured at the SPACE SCIENCE UPDATE. The Space Science Update (SSU) was held Wednesday, Nov. 5, at NASA Headquarters. It featured new data from the joint European Space Agency-NASA Solar and Heliospheric Observatory (SOHO) mission. Scientists have found a rapidly changing magnetic carpet covering the solar surface which changes on a time scale of approximately 40 hours. To learn more about the results go to Goddard Homepage and choose **FLASH**.
http://www.gsfc.nasa.gov

PGCC presents Mr. Rothenberg with award for outstanding contributions in bringing science to the general public

The Science and Technology Resource Center (STRC) at Prince Georges Community College (PGCC) in Largo, Md, presented an award to Center Director ***Joe Rothenberg***, Oct. 31, for the Center's outstanding contributions in bringing science to the general public. Goddard is being recognized for working with STRC in their Space Technology Program, supporting PGCC-NASA Collegiate Scholarship/Intern Program, initiating a high technology course at the college and much more.

CURRENT news

- The Federal Employees Health Benefits Open Season is from November 10, 1997 - December 8, 1997. The Annual Health Benefits Fair will be held on November 19, 1997 in the building 8 auditorium from 11:00 a.m. - 2:00 p.m.
- TRMM Launch Viewing: The launch of the Tropical Rainfall Measuring Mission (TRMM) is currently scheduled for Tuesday, November 18 at 3:49 p.m. EST. Employees may view the launch in the building 8 auditorium beginning at 3:00 p.m. EST and information on TRMM will be distributed. To learn more about the TRMM mission go to url: **http://trmm.gsfc.nasa.gov/**
- 1997 William Nordberg Memorial Award for Earth Science will be presented to ***Dr. Robert A. Langel***, formerly with the Geodynamics Branch, Laboratory for Terrestrial Physics, Earth Sciences Directorate, on Friday, November 7, at 3:30 in building 3 auditorium. There will be a reception in the lobby immediately after the colloquium.
- NASA Releases the Fourth installment of its yearly strategic plan. To view the plan go to **http://www.hq.nasa.gov/office/nsp/**

Frank Cepollina Presented Top Tech Transfer Award

by Ann Jenkins, Code 442

Frank Cepollina, Project Manager of the Hubble Space Telescope Flight Systems & Servicing Project, recently received the top GSFC award for technology transfer efforts. The James J. Kerley Award was presented by Goddard Center Director ***Joe Rothenberg*** at the Sixth Annual New Technology Reporting Luncheon, sponsored by the Office of Commercial Programs, held October 1, at the Greenbelt Marriott.

The annual award, named in honor of the late, legendary GSFC engineer and inventor, recognizes innovation and exceptional contributions toward GSFC's tech transfer and commercialization efforts.

Proud and Happy - Joe Rothenberg (left) presents the James J. Kerley Award to Frank "Ceppi" Cepollina (right)

Recipients of the James J. Kerley Award must meet all of the following criteria: report outstanding technology spinoff opportunities; participate in outreach activities; contribute articles to Tech Briefs magazine; display an innovative approach to outreach and technology reporting; and work closely with the Office of Commercial Programs in technology transfer. With his passion for promoting the technology spinoffs of Hubble Space Telescope, Frank Cepollina clearly demonstrated each of these qualifications.

A fine example of an HST spinoff was provided by the Keynote Speaker, Morley Blouck, Director of Technology for Scientific Imaging Technologies, Inc. His presentation, "Commercialization of STIS Technology: An Example," discussed the commercial uses of the sophisticated charge coupled device (CCD) technology developed for HST's Space Telescope Imaging Spectrograph, one of the next-generation instruments installed on Hubble in February 1997. Long before STIS ever flew, the CCD technology developed for it had found its way into doctors' offices and hospitals across the United States as part of a non-invasive procedure for biopsying suspicious breast tumors. This Hubble technology received national attention during October, which was National Breast Cancer Awareness Month.

Goddard mourns the loss of
Andrew Gerasimos Michalitsianos,
Scientist and author

Michalitsianos, Chief of the Laboratory for Astronomy and Solar Physics, Deputy Project Scientist for the International Ultraviolet Explorer, and an astrophysicist at Goddard, died of brain cancer on October 29. Steve Holt had this to say "Andy was THE key individual in the gloriously successful operations of IUE for most of its lifetime, and was just beginning a new phase of his career as a lab chief when this tragedy struck. All of his friends and colleagues inside and outside of Goddard will miss him very much."

PDP Program Helps Employees Achieve Career Goals

The Professional Development Program (PDP) was established in 1987 as a means of providing a mechanism for transferring highly-refined skills and talents to a new situation which has broader potential for developing an individual and enhancing performance of the Agency's missions.

A twelve-month developmental program, the PDP enables NASA professionals, GS-13 and above, to work at other NASA Centers. The program is designed to broaden the participant's knowledge and understanding of NASA as an agency, and includes many opportunities to learn about the host organization's operations. This is done through a combination of developmental work experiences and formal training. More specifically, the program provides experiential learning in new tasks and functions, supplemented by briefings from heads of Headquarters office and other Federal agencies.

The 1996-97 PDP class consisted of 15 participants from eight centers, including ***Gail Wade*** from Goddard Space Flight Center. In NASA Administrator, Dan Goldin's, remarks to the graduating class, he challenged the participants to have a vision, take risks, push the envelope, and to not always be concerned with "playing it safe." "This approach," he told the graduates, "will ensure that the Agency continues to lead the world in space exploration."

Goddard currently has one employee participating in the 1997-98 PDP class, ***John Lynch*** of Code 552. He is detailed at the Johnson Space Center in the Mission Operations Directorate, Flight Design and Dynamics Division. His assignment involves Space Shuttle ascent/entry, trajectory analysis, and design. In addition, he is serving as a liaison between Goddard and Johnson in two areas: a proposal to transfer functions performed by the Goddard Flight Dynamics Facility in Support of the Space Shuttle Program to Johnson, and evaluation of software used by Goddard for interplanetary trajectory analysis and design for possible use in Mars mission planning.

http://
internal.gsfc.nasa.gov

NOW LIVE

Goddard's Intranet - Employee Homepage

In response to the Center Director's desire to enhance communications, a secured website just for Goddard employees made its debut on Monday, November 3rd. Access to the page is provided to the following offsite domains: *gsfc.nasa.gov; *wff.nasa.gov; *nascom.nasa.gov; *hst.nasa.gov; *sewp.nasa.gov; *eos.nasa.gov; *giss.nasa.gov; *ggao.nasa.gov; and *wstf.nasa.gov. For those dialing in from home, if you use the annex, you'll be able to see the pages. The homepage includes such exciting features as G-Whiz (a browse feature for Goddard services, organizations, and websites); links to a new Cafeteria Homepage; GEWA; Credit Union; Visitor Center; Goddard Directives; Daily Announcements; the Weekly Goddard Newsletter; listing of news groups at Goddard; and so much more. The URL for the Internal Homepage is: http://internal.gsfc.nasa.gov We'd like to hear from you - contact us with comments or suggestions at *gsfcpao@pop100.gsfc.nasa.gov*

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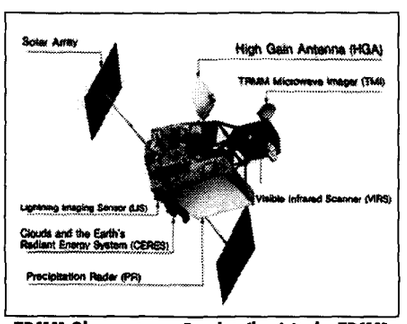
TRMM Launch scheduled for Nov 18 in Japan - Goddard has big role

As Goddard readies for the launch on Nov. 18, ***Tom LaVigna,*** TRMM Project Manager, had this reflection: "TRMM has been a very exciting and challenging project, it includes the largest observatory ever done in-house at Goddard. The project was accomplished by a dedicated team of civil servants and support contractors that did an outstanding job".



TRMM Observatory. For details visit the TRMM homepage at http://trmm.gsfc.nasa.gov

The Tropical Rainfall Measuring Mission (TRMM) is a joint mission between NASA and the National Space Development Agency (NASDA) of Japan designed to monitor and study tropical rainfall and the associated release of energy that helps to power the global atmospheric circulation shaping both weather and climate around the globe.

The TRMM Observatory carries five instruments as depicted in above graphic: the first spaceborne Precipitation Radar (PR), the TRMM Microwave Imager (TMI), a Visible and Infrared Scanner (VIRS), a Cloud and Earth Radiant Energy System (CERES), and a Lightning Imaging Sensor (LIS).

Why we need TRMM

Heard of the threat of global warming? Is the threat real? Computer models that predict the future climate still differ in some very substantial ways with some models predicting little or no warming while others predict temperature increases that would substantially alter our way of life. TRMM is a research satellite designed to help our understanding of the water cycle in the current climate system. TRMM's science objectives are as follows: to obtain and study multi-year science data sets of tropical and subtropical rainfall measurements; to understand how interactions between the sea, air and land masses produce changes in global rainfall and climate; to improve modeling of tropical rainfall processes and the influence on global circulation in order to predict rainfall and variability at various time scale intervals; to test, evaluate and improve the performance of satelitte rainfall measurement techniques.

Tropical rainfall affects the lives and economics of half the Earth's population-residents of developing countries on or near the Equator. Rainfall variation in the tropics can affect the weather in locations thousands of miles away, impacting the lives and livelihoods of populations worldwide.

Data from TRMM sensors will be processed at Goddard. Data also will be processed at the Earth Observation Center (EOC) in Japan. It will be distributed to scientists in the fields of climatology, metrology, hydrology and other disciplines in Japan and the United States.

Goddard's key individuals for information regarding spacecraft, science, or general issues: ***Mr. W. Allen Kenitzer***, Office of Public Affairs; ***Dr. Joanne Simpson***, TRMM Project Scientist, Code 900; ***Mr. Thomas LaVigna***, TRMM Project Manager, Code 490

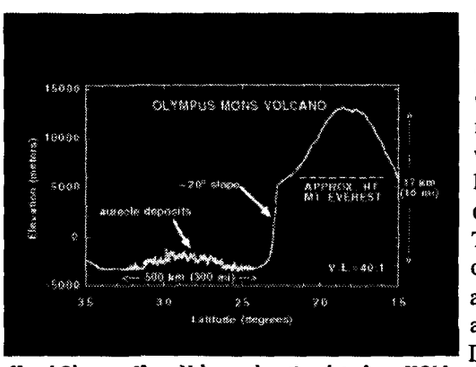
Employees may view the TRMM Launch Tuesday, Nov 18 at 3:40 p.m., building 8, auditorium. Come at 3:30 to get your information packet on TRMM.

http://internal.gsfc.nasa.gov
Goddard has a new Internal Homepage for employees only.
Visit it for the latest on news and announcements just for employees. Check out G-Whiz our cool browse feature - also available - a full web search tool

Goddard's Dave Smith presents Fascinating Data from MOLA

NASA's Mars Global Surveyor spacecraft has successfully resumed aerobraking through the upper atmosphere of Mars.

Global Surveyor's orbit into the Martian atmosphere will be lowered more gradually than originally planned, which will lead to a new mapping orbit that preserves all of the original scientific objectives of the mission. Mapping will begin one year later than originally planned. The new mapping orbit will take an additional year to achieve.



Mars' Olympus Mons Volcano-elevation data from MOLA

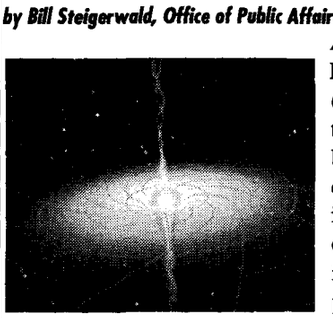
During next year's hiatus, Mars Global Surveyor will remain in a fixed, elliptical orbit in which it will pass much closer to the surface of Mars during each periapsis — or closest part of its orbit around Mars — than it will in the final mapping orbit.

At a recent briefing held for reporters at the Jet Propulsion Laboratory, Goddard's ***Dave Smith***, principal investigator for the Mars Orbiter Laser Altimeter, discussed the results of topographic profiles obtained by the instrument.

Smith drew a comparison to Mount Everest, the highest mountain on Earth, he noted that it is less than half the height of Olympus Mons. For further details visit the MOLA homepage at url http://ltpwww.gsfc.nasa.gov/tharsis/mola.html

FRAME DRAGGING

by Bill Steigerwald, Office of Public Affairs



"Frame Dragging" NASA's Rossi X-ray Timing Explorer (RXTE) spacecraft

Astronomers using NASA's Rossi X-ray Timing Explorer (RXTE) spacecraft reported today that they have observed a black hole that is literally dragging space and time around itself as it rotates. This bizarre effect, called "frame dragging," is the first evidence to support a prediction made in 1918 using Einstein's theory of relativity. The research team, led by Dr. Wei Cui of the Massachusetts Institute of Technology, announced their results during the American Astronomical Society's High Energy Astrophysics Division (HEAD) meeting in Estes Park, CO. Collaborators in the research include ***Dr. Wan Chen*** of Goddard and Dr. Shuang N. Zhang of Marshall Space Flight Center. For further details go to url ftp://pao.gsfc.nasa.gov/pub/pao/releases/1997/97-148.htm

Current news

- Health Benefits Fair, Wednesday, Nov. 19, 11:00-2:00pm, building 8, auditorium
- Goddard is at $222,050 for CFC contributions. This is 51% of its goal of $435,000.
- Nov. 19 - 3:00-4:30 p.m. Director's Colloquium, in building 3 auditorium. Dr. Phil Smith speaks on a new model for funding science and technology.
- Space Research Shines a Light on Tumors to Save Lives - for details go to ftp://ftp.hq.nasa.gov/pub/pao/pressrel/1997/97-259.htm

Are you working with our international partners and/or traveling overseas on official government business?

by Sheryl Goddard, Code 200

If you answered yes, it's important you read on.

NASA has an agency-wide requirements contract with Schreiber Translations, Inc. (STI) to provide translation, interpretation, visa processing and overseas logistical support.

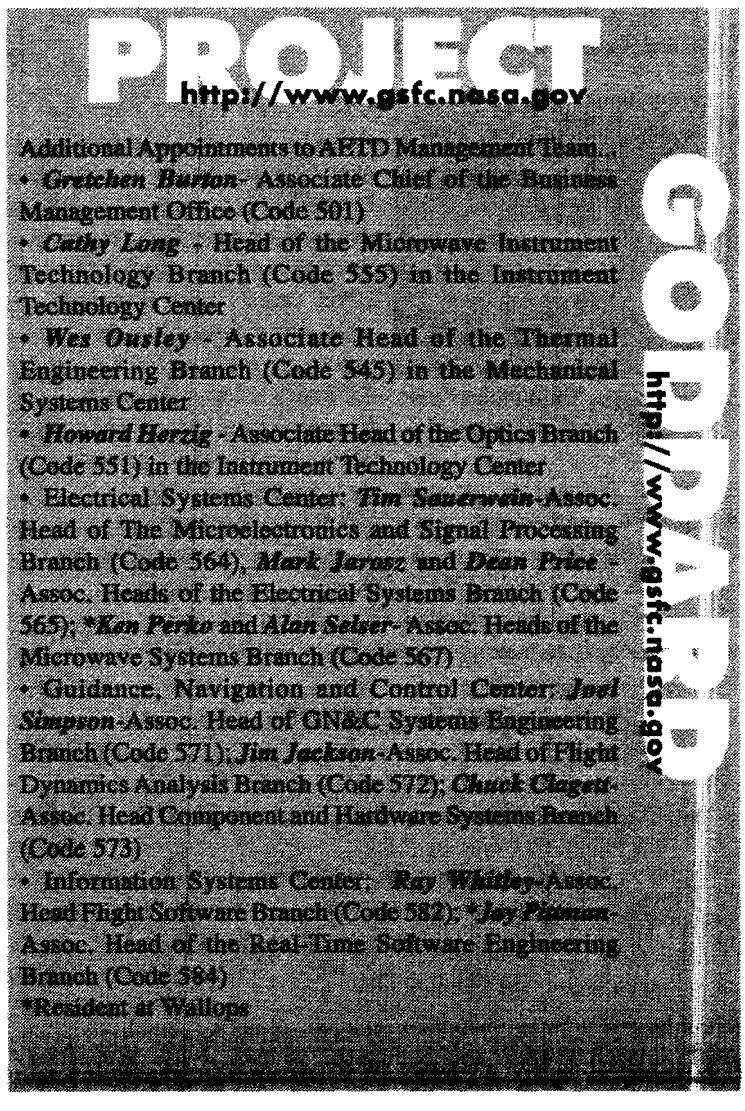
Technical and non-technical interpretation and translation is available in all languages. Interpreters are required to have backgrounds in engineering, aeronautical science, space science, earth science, microgravity, or life sciences so they are thoroughly knowledgeable in scientific terms. All interpreters and translators are certified or accredited by a recognized certifying organization. Documents can be electronically transmitted to the requester and copies of the translated documents are forwarded to CASI. Slides can also be prepared in Russian or Japanese.

Visa processing and coordination is provided for government and contractor employees and includes instruction in application preparation, visa application coordination, resolution of problems incurred when visas have been previously obtained, pick up and delivery of visas.

Overseas logistical support is provided in the form of administrative, clerical and in-country transportation services to NASA personnel conducting official business in certain countries where it is expected that logistical and transportation services are not readily available or reliable. This is primarily intended for the Newly Independent States of the former Soviet Union and China. Administrative and clerical support includes advanced preparation and support of official meetings and high-level visits, including special official tours, trip logistics, taking notes, answering telephones, documentation, reports and copying.

If you receive a requirement for these services, the services must be ordered under this contract. Schreiber is entitled to damages if the Government breaches this obligation by acquiring these services elsewhere.

Should you have any questions, please contact the Contracting Officer (***Ms. Carol Bleile***, 301-286-0792) or the Contracting Officer's Technical Representative (Ms. Shirley Perez, 202-358-1619).



Additional Appointments to AETD Management Team...

- ***Gretchen Burton*** - Associate Chief of the Business Management Office (Code 501)
- ***Cathy Long*** - Head of the Microwave Instrument Technology Branch (Code 555) in the Instrument Technology Center
- ***Wes Ourley*** - Associate Head of the Thermal Engineering Branch (Code 545) in the Mechanical Systems Center
- ***Howard Herzig*** - Associate Head of the Optics Branch (Code 551) in the Instrument Technology Center
- Electrical Systems Center: ***Tim Sauerwein***-Assoc. Head of The Microelectronics and Signal Processing Branch (Code 564), ***Mark Jarosz*** and ***Dean Price*** - Assoc. Heads of the Electrical Systems Branch (Code 565); ***Ken Perko** and **Alan Seiser***- Assoc. Heads of the Microwave Systems Branch (Code 567)
- Guidance, Navigation and Control Center: ***Joel Simpson***-Assoc. Head of GN&C Systems Engineering Branch (Code 571); ***Jim Jackson***-Assoc. Head of Flight Dynamics Analysis Branch (Code 572); ***Chuck Clagett***-Assoc. Head Component and Hardware Systems Branch (Code 573)
- Information Systems Center: ***Roy Whitley***-Assoc. Head Flight Software Branch (Code 582); ***Jay Pittman***-Assoc. Head of the Real-Time Software Engineering Branch (Code 584)

*Resident at Wallops

Lossless Data Compression

by William B. Poland, Jr. Code 730.4

The Consultative Committee for Space Data Systems (CCSDS) has just released an international Recommendation (effectively a standard) for lossless data compression.

Basically, this lossless compression technique consists of two parts, a Preprocessor and an Adaptive Entropy encoder. The Preprocessor performs two basic functions: prediction and mapping. Prediction is performed by taking input data blocks and successively subtracting the value of the "n-th" input data block from the value of the previous data block. The resultant "prediction error" is passed to the mapping function, where it is mapped into an n-bit integer value based on the predictor value.

The preprocessed samples are then delivered to the Adaptive Entropy Encoder, where some 12 parallel encoding options are available. When operating on the series of preprocessed samples, each with varying entropy, different encoding options will successively produce the greatest compression ratio. In each given instance, the option used is given an identification (ID) number that is attached to the code block being delivered to the data user.

When the code blocks are received at the user's site, the decoder/decompressor can use the ID to reverse the coding process, restore the removed redundancy, and reconstruct the original data without introducing any distortion.

This new international standard will provide benefits in the transmitting and storing of science data as well as in many other applications, such as medical imaging, where it is already being considered. The technique embodied in this standard yields the following characteristics:

- it is easily applied to packet-based systems without a priori information;
- it establishes the data statistics for each packet;
- it is therefore able to track changes in data statistics in real time;
- it operates in real time with few processing steps and a small memory requirement.

This CCSDS standard and its accompanying report, together with all other CCSDS standards, are available on the Web at the following URL: http://www.ccsds.org/ccsds/ccsds_document_access.html.

Alternatively, hard copies or a CD may be obtained by calling 6-8592. The document numbers are, respectively, CCSDS 121.0-B-1 (listed under CCSDS Recommendations) and CCSDS 120.0-G-1 (listed under CCSDS Reports).

This document is largely the work of two Code 700 employees, ***Dr. Pen Shu Yeh*** and ***Mr. Warner Miller***. The Exceptional Engineering Achievement Medal was awarded to Dr. Yeh in part because of her theoretical analysis performed in this area.

Access the MODIS Document Archive (MODARCH)

by Bob Kanneberg, MAST Technical Writer, Code 922

The Moderate Resolution Imaging Spectroradiometer (MODIS) Document Archive (MODARCH) is an electronic imaging system that allows documents to be archived and retrieved electronically. MODARCH provides MODIS team members worldwide with access to MODIS-related information from their desktop computers (Mac, PC or UNIX).

The archive includes, but is not limited to, the MODIS Specifications; minutes from Science, Technical and Support Team meetings; contract deliverables and technical memoranda; Science Team members' quarterly and semi-annual reports; journal articles; and other reports, plans and presentations (such as ATBDs).

To access MODARCH, point your Web browser to:
http://modarch.gsfc.nasa.gov/MODARCH/modarch.html
Direct questions and comments to Kevin Ward, MODARCH System Administrator: kevin.ward@gsfc.nasa.gov

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Goddard Payloads Flying on STS-87 Mission

The STS-87 Mission successfully launched on Wednesday, November 19 at 2:40 EST aboard the Space Shuttle Columbia. STS-87, the eighth and final shuttle mission for 1997 will conduct experiments to study how the weightless environment of space affects various physical processes, will make observations of the Sun's outer atmospheric layers and will conduct a spacewalk to rehearse future Space Station operations.

Several Goddard payloads will be flying aboard STS-87. The Spartan 201-04 free-flyer will be deployed and retrieved using the Shuttle's mechanical arm and will investigate physical conditions and processes of the hot outer layers of the Sun's atmosphere, the solar corona. Other Goddard payloads flying in Columbia's cargo bay include several hitchhiker payloads. The Shuttle Ozone Limb Sounding Experiment (SOLSE), Principal Investigator, ***Dr. Richard McPeters***; the Limb Ozone Retrieval Experiment (LORE), Principal Investigator, ***Dr. Ernest Hilsenrath***; the Loop Heat Pipe Sodium Sulfur Battery Experiment (LHP/NaSBE), Mission Manager, ***Dr. Ruthan Lewis***. SOLSE and LORE will be gathering vertical profiles of Earth's ozone layer. The LHP experiment will investigate a unique thermal energy management system and the NaSBE will study the microgravity operation of sodium and sulfure liquid electrodes.

Also flying on STS-87 is a Get Away Special (GAS) Payload. GAS-036 contains four separate experiments, including the Cement Mixing Experiment (CME); the Configuration Stability of Fluid Experiment (CSFE); the Computer Disc Evaluation Experiment (CDEE); and the Asphalt Evaluation Experiment (AEE). The mission is scheduled to last nearly sixteen days.

Global Land Precipitation Increases

By Lynn Chandler, Office of Public Affairs

Global land precipitation has increased during this century, especially at the mid and high latitudes, according to a paper published in the Nov. 1997 issue of the Journal of Climate. The paper, written by Goddard Institute for Space Studies (GISS) scientists, ***Drs. Inez Fung***, ***Anthony Del Genio***, and ***Aiguo Dai***, is based on a recalibrated compilation and analysis of data from 1900-1988 and confirms previous speculation that land precipitation is increasing. The new research shows a global land trend of a 2.4 mm per decade increase in annual precipitation amounts. Multiplied by almost nine decades, this means that there is about 22 mm more rain falling now each year than there was at the turn of the century -- rainfall as a global mean has risen by slightly more than two percent.

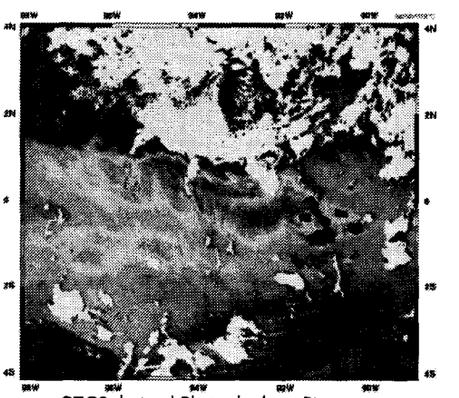
"Though much speculation remains as to the cause of this increase, further long-term study is needed to help ascertain the reasons for this change. The research does show, however, that both the spatial pattern and rate of precipitation increase are reminiscent of global climate model predictions of the atmosphere's response to an increase in greenhouse gas concentrations," said Dr. Anthony Del Genio, research scientist at GISS.

Data from the Tropical Rainfall Measuring Mission (TRMM), scheduled to launch this month should greatly enhance researchers' understanding and prediction abilities of global climate change. More information is available on the Internet at: ***http://www.giss.nasa.gov/data/adai/***

SeaWiFs Eyes Dramatic Changes in Galapagos Sea Life

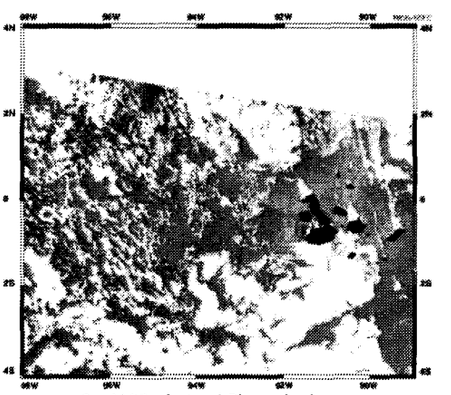
Below are two images taken of the Galapagos Islands in the Pacific Ocean. The image sequence illustrates the dramatic biological changes in the marine ecosystem in these islands.

The first image shows a large plankton bloom as ocean conditions return to normal after the 1982-83 El Niño. This image was taken with the Coastal Zone Color Scanner (CZCS) instrument.



CZCS-derived Phytoplankton Pigment Concentration (10/31/83)

The second picture shows an image of the current El Niño. This image taken with the Sea-viewing Wide Field-of-view Sensor (SeaWiFs) instrument shows how the abnormally warm waters associated with El Niño act like a lens which greatly restrict the upwelling of nutrient-rich waters, essentially choking off the ecosystem. The consequences from El Niño for marine mammals and birds is likely to be very severe. To view the above images in color, go to the Goddard Homepage at ***http://www.gsfc.nasa.gov*** and choose ***FLASH***.



SeaWiFs-derived Phytoplankton Chlorophyll Concentration (10/31/97)

CURRENT news

- **UPDATE ON TRMM:** The Tropical Rainfall Measuring Mission (TRMM) launch has been delayed until at least Friday, November 21 (at the time of this printing.) Call 286-NEWS for the latest launch info.

- NASA's Mars Pathfinder mission is winding down after operating on the surface of Mars three times longer than expected and returning a wealth of new information about the Red Planet.

- Goddard is at $312,023 for CFC contributions. This is 72% of its goal of $435,000.

The National Technical Association Salutes a Few of Goddard's Best Women Engineers

by Dennis Small, Code 511

The National Technical Association's (NTA) 69th national conference saluted its Top Minority Women in Science and Engineering. Three Goddard employees, ***Cynthia Adams,*** Code 511; ***Carline Cazeau***, Code 598; and ***Allora Goode***, Code 704; were selected through nominations from around the country. This year's conference's honorary chairperson was ***Joe Rothenberg***.

Cynthia Adams

Carline Cazeau

Allora Goode

The awards were presented at the awards banquet on November 8. Mrs. Adams and Ms. Goode were nominated by Goddard's African American Awards Committee.

The committee is dedicated to the promotion of African American contributions by submitting qualified African American candidates for internal and external awards. The Goddard's Top Minority Women Award winners can be seen in the 1997 Summer Edition of the Journal of the NTA.

The International Society For Optical Engineering (SPIE) Milestone Volume Published

by Cynthia O'Carroll, Office of Public Affairs

We are entering an era of unprecedented acquisition of remote sensing observations. Modern remote sensing emerged about a half century ago as a product of aerial photointerpretation. Back then, it was a qualitative, subjective tool of considerable value but limited in its scope and application. Due to the research, publications and interactions of many scientists concerned with the physics of remote sensing, there are now methods to monitor global change and the means for earth-surface assessments.

The International Society for Optical Engineering (SPIE) Milestone Series are selected reprints of key papers from the world literature covering important discoveries and developments in optics. At the request of SPIE, ***Dr. James A. Smith***, Staff Scientist in Goddard's Laboratory for Terrestrial Physics, recently completed the SPIE Milestone Volume on Optical Remote Sensing Theory and Measurements.

The milestone volume recognizes contributions to improving our understanding of the interaction of optical wavelength energy with the Earth's land surface. The volume is a collection of 59 "milestone papers" published over the past 30 years and totals 684 pages together with the preface, introduction, subject and author indices. It includes several papers from current and former GSFC employees and associates.

Dr. Smith is a Fellow of the Institute of Electrical and Electronics Engineers, and former editor of the IEEE Transactions of Geoscience and Remote Sensing.

http://internal.gsfc.nasa.gov

Goddard has a new Internal Homepage for employees only. Visit it for the latest on news and announcements just for employees. Check out G-Whiz our cool browse feature - also available - a full web search tool.

1997 Fall Fun Run

Fun run participants take off at the starting

Nearly 500 Goddard employees participated in the 1997 Fall Fun Run. The top ten male finishers were Dave Castro, Brian Tresp, Thomas Winkert, Timo Saha, John Walker, Eric Nielsen, Paul Nelson, Carmen Kocinski, Mark Cerniglia, and Richard Fitzgerald. The top ten female finishers were Julie Deutschmann, Stephanie Yom, Krista Paquin, Meg Largo, Cristina Bories, Mary Di Joseph, Lorraine Breedon, Carylon Dent, Nancy Chanover, and Barbara Pfarr.

The Fun Run Teams with the most participants were: the Facility Mds (85); The Seimss Team (58); the Infomanics (46); the Friends of Sara & Hillary (32); HST-Focused on the Finish (31); and Out to Launch (21).

Goddard's Snow Plan

The '97-'98 Snow Plan for GSFC-Greenbelt remains the same as last year's. Delayed openings and closings will be announced on Code-a-phone (310-286-NEWS), local TV and radio stations, GSFC.PAO newsgroup, and phonemail. To find the operating status codes, go to FMD's website at *http://panza.gsfc.nasa.gov/220/newfmdhm.html*
The '97-'98 Snow Plan Announcement will be distributed next week.

PROJECT GODARD

http://www.gsfc.nasa.gov

The proposed System Technology and Advanced Concepts (STAAC) Directorate will be holding a Lunch & Learn Session to discuss the new proposed directorate and how it will operate. These sessions are open to all Goddard employees, both contractor and civil servant. The Lunch & Learn is scheduled for Dec. 3, at 12 noon to 1 p.m. in Bldg. 23, Rm S300.

http://www.gsfc.nasa.gov

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HAPPY THANKSGIVING!!

Goddard's IDIQ Contracts Used for Quick Scatterometer Mission

The first delivery order under Goddard's Indefinite Delivery/ Indefinite Quantity (ID/IQ) contracts for rapid-delivery of satellite core-systems went to Ball Aerospace Systems Division, Boulder, Co., as part of a recently approved immediate new start for the Quick Scatterometer (QuikSCAT) mission.

Goddard developed the ID/IQ procurement process to provide NASA with a faster, better, cheaper method for the purchase of satellite systems through a "catalog," allowing for shorter turnaround time from mission conception to launch.

The QuikSCAT mission will fill in the ocean-wind vector data gap created by the loss of the NASA Scatterometer (NSCAT) on the Japanese Advanced Earth Observing Satellite (ADEOS). The NSCAT instrument ceased functioning when ADEOS failed on June 30, 1997. The follow-on scatterometer for monitoring ocean winds, called SeaWinds, is scheduled for launch on the Japanese ADEOS-II spacecraft in 2000. QuikSCAT is planned for launch in November 1998, reducing the data gap by about one-half.

QuikSCAT represents a unique collaboration between Goddard and NASA's Jet Propulsion Laboratory, Pasadena. Goddard has been given responsibility to procure the satellite under the newly-instituted ID/IQ contracts, which enables quick acquisition of a science bus to support NASA's space science, Earth science, and technology needs. This is the first of two spacecraft delivery orders expected to be placed in the first quarter of Fiscal Year 1998.

JPL's NSCAT/SeaWinds program office has been assigned the QuikSCAT management responsibility and will provide management, ground systems, and a Seawinds-type scatterometer instrument. Goddard developed the ID/IQ approach to provide scientific customers an opportunity for far quicker and cheaper access to space. Demand for this service is expected to be high and the ID/IQ catalog is open for use by all NASA Centers and other Government agencies.

Spartan 201 Mission Dedicated to Goddard Employee

Jay Soistman
June 27, 1950 -
June 22, 1997

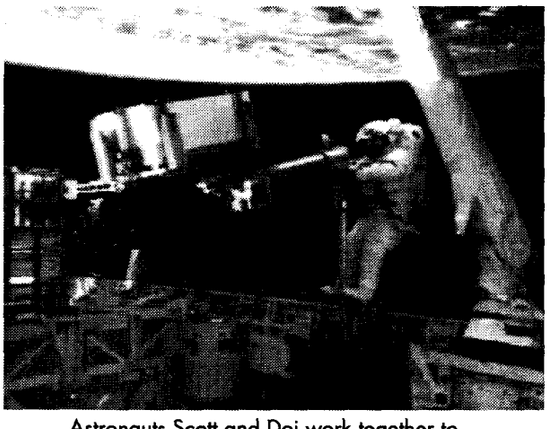
The Spartan 201-04 mission that recently launched on STS-87 is being dedicated to Jay Soistman, a Goddard Contractor who worked for the Hammers Company, Inc. Jay passed away this summer after fighting cancer.

"Jay lived and breathed NASA/GSFC and enjoyed every task he was ever assigned," said Stephan Hammers of the Hammers, Co., Inc. "His joy at work came from being an integral part of the team. He would be truly honored to receive this recognition."

Jay, who had worked at Goddard for fifteen years, was responsible for operating and maintaining the ground support equipment for the Spartan 201 spacecraft. He also coordinated the integration and testing of the various Spartan payloads. He was involved in the TRACE and WIRE projects and supported the Hitchhiker/Shuttle operations crew in Goddard's Payload Operations Control Center (POCC).

Astronauts Rescue Wandering Spartan Satellie

U.S. astronaut, Winston Scott and Japanese astronaut, Takao Doi safely recaptured the Spartan satellite on Monday, November 24 at 9:09 p.m. EST, which had been in a slow spin



Astronauts Scott and Doi work together to retrieve the Spartan satellite,

since its release Friday, November 21. The Spartan team is currently reviewing the payload status to determine the possibility of a second deployment attempt during this mission. Spartan would then perform an abbreviated mission based on consumables. Follow the mission by visiting the following URL: ***http://shuttle.nasa.gov/index.html***

Update on TRMM

The Tropical Rainfall Measuring Mission (TRMM) successfully launched on November 27 at 4:27 p.m. EST from the Japanese Space Center in Tanegashima, Japan. "We're very pleased with the launch," said ***Tom LaVigna,*** TRMM project manager at Goddard. The observatory is in good shape with all systems performing well. The mission is going according to plan." The next several days will be spent turning on instruments and moving the observatory to its proper orbit. TRMM is the first space mission dedicated to studyig tropical and subtropical rainfall.

CURRENT news

- Goddard has reached $381,364 for CFC contributions. This is 88% of its goal of $435,000. A final report on the Center's CFC contributions will appear in an upcoming issue.

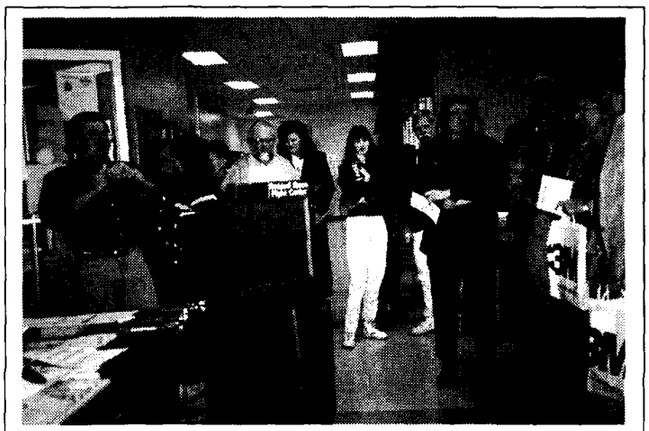
- Goddard is providing three pieces of hardware for the Equator-S launch, scheduled for Tuesday, December 2 at 7:40 p.m. EST from Kourou, French Guiana, on an Ariane IV rocket.

- A web page is now available on Claire Parkinson's book "Earth From Above" Please visit the following URL: ***http://mirage.usra.edu/esse/earthabove.html***

Goddard Celebrates America Recycles Day

By Darlene Walter, Code 205

Goddard recently held an America Recycles Day celebration, a day of recognition, education and commitment to recycling both at work and home. The event was split between exhibits by recyclers and store stock vendors promoting "buying recycled" keeping with this year's theme of "Keep Recycling Working: Buy Recycled." ***Sherry Foster*** kicked off the event and brought attention to a certificate signed by ***Joe Rothenberg*** encouraging employee participation in Goddard recycling programs. An auction



"And the highest bidder is . . . "

was held at noon led by Code 230 auctioneer, ***Brian Cadre***. Goodie bags of recycled content products were auctioned off with participants paying with real (monopoly) money.

An on-line recycling pledge form was set up for employees to make a pledge to recycle and by doing so, the pledge was automatically entered into a national contest to win an "American Green Dream House" for a three bedroom, 2 bath home built primarily with recycled-content and energy-efficient materials. You can visit the official America Recycles Day homepage at the following URL: ***http://www.americarecyclesday.org***

As a prelude to the event, a logo contest was held for a Goddard-specific recycling logo. Twenty-two logo suggestions were made by eleven employees. They were judged by 43 employees varying in job functions and the winner of the logo design was ***Florence Patten*** who is a Safety Engineer in the Safety and Environmental Branch office, Code 205.2. You can visit events from the day and the logo design on the Safety and Environmental web page at ***http://panza.gsfc.nasa.gov/205/SESOHOME.HTM***

This was part of a first national celebration with the official America Recycles Day designated as November 15, 1997. The national recognition was a government/private sponsorship to promote recycling as a national priority.

American Red Cross Blood Drive

The American Red Cross will accept blood donations in the building 8 auditorium on December 10, 1997, from 8:30 a.m. to 2:15 p.m. To schedule a donation appointment, please call Janice Gelder on x6-5025 by the close of business on Tuesday, December 9, 1997. **Note:** This is a change in the normal schedule of the first Wednesday every other month due to scheduling conflicts.

For each donation the American Red Cross receives during the holidays they will give a hospitalized child a plush teddy bear along with a personal note from you. The donation process takes approximately one hour. Any healthy person at least 17 years of age and 110 lbs. can donate every eight weeks. The process of giving blood is always under the supervision of a Medical Unit Supervisor. The procedure includes a medical check, actual donation and some time for relaxation and refreshments. Please be sure to get sufficient rest the night before and eat a well balanced breakfast and lunch the day you donate. Your blood donation will give a sick child a bear hug this holiday season!

Remote Sensing of Land Surface Temperature: The Directional Viewing Effect

By Lynn Chandler, Office of Public Affairs

Land surface temperature is an important parameter in understanding global environmental change because it controls many of the underlying processes in the energy budget at the surface and heat and water transport between the surface and the atmosphere. The measurement of land surface temperature at a variety of spatial and temporal scales and extension to global coverage requires remote sensing means to achieve these goals. However, remotely sensed observations are obtained at fixed view and sun angles. This, coupled with atmospheric effects and the mixed pixel problem resulting from horizontal and vertical spatial heterogeneity, makes the accurate estimate of land surface temperature a formidable problem.

Land surface temperature and emissivity products are currently being derived from satellite and aircraft remote sensing data using a variety of techniques to correct for atmospheric effects. Implicit in the commonly employed approaches is the assumption of isotropy in directional thermal infrared exitance. In a recently published paper on remote sensing land surface temperature, Goddard scientists, ***J. A. Smith, N. S. Chauhan, T. J. Schmugge, and J. R. Ballard***, Jr. discussed the thermal exitance from a dense (spruce forest) and a relatively sparse (corn) canopy and estimate directional viewing effects. Theoretical analyses indicate angular variations in apparent infrared temperature will typically yield land surface temperature errors ranging from 1 to 4 degrees C unless corrective measures are applied. The paper was published in IEEE Transactions Geoscience Remote Sensing.

Release of Fourth Annual National Performance Review Report

Vice-President Al Gore recently released the fourth annual National Performance Review Report, entitled "Businesslike Government: Lessons Learned from America's Best Companies." The report focuses on how America's leading companies have helped the government reinvent itself.

In releasing the report, Al Gore praised the nearly two million Federal employees who have worked hard to save American taxpayers $37 billion and reduced the Federal workforce by 310,000, making the current civil service workforce the smallest since the 1960's. In addition, the report includes two success stories from NASA, the first dealing with the Mars Sojourner's use of an adapted off-the-shelf Motorola modem, and the second referencing NASA's partnership with FAA, DOD, and industry to make commercial air travel safer and more efficient. The report is available at the following URL: ***www.npr.gov***

http://internal.gsfc.nasa.gov

Goddard has a new Internal Homepage for employees only. Come see a demonstration of the page and its cool features on December 2 in the building 3 auditorium from 10:00 - 11:30. Anyone who provides services or has a webpage on Center should attend to see how to register their information in G-Whiz, our new browse feature.

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