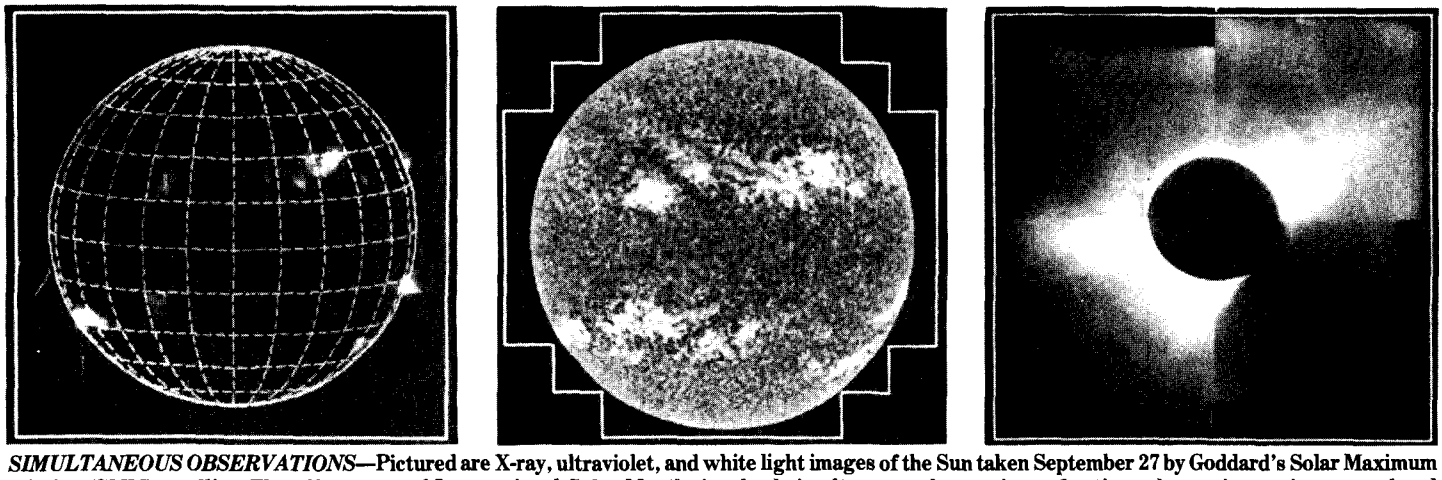
NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

Eighteen Countries Participate in International Solar Month



***SIMULTANEOUS OBSERVATIONS*—Pictured are X-ray, ultraviolet, and white light images of the Sun taken September 27 by Goddard's Solar Maximum Mission (SMM) satellite. The effort, part of International Solar Month, involved simultaneous observations of active solar regions using ground and space-based observatories. The X-ray image (left) was made by SMM's X-Ray Polychromator (XRP). The active regions appear bright. SMM's ultraviolet instrument, the Ultraviolet Spectrometer and Polarimeter (UVSP), simultaneously produced the center image. Note how the active regions appear to line-up for both images. The images show locations and relative strengths of active regions on the solar disk where flares erupt. Neither of these images can be made from the ground because the Earth's atmosphere is opaque to these wavelengths. The third picture, made by SMM's Coronograph/Polarimeter (C/P) used an occulting disc to create an eclipse-like image to study the corona. The number of active regions varies with the 11-year solar cycle. The Sun is currently in the rapid rise phase of the cycle which will peak in 1990.**

Participants from 18 countries are studying data gathered during International Solar Month conducted during September 1988. Endorsed by NASA, the Soviet Space Research Institute, and the International Science Committee on Solar-Terrestrial Physics, this worldwide campaign was the largest solar study of its kind.

Countries participating included Australia, Canada, People's Republic of China, Czechoslovakia, Federal Republic of Germany, German Democratic Republic, Great Britain, France, Hungary, India, Italy, Japan, Poland, Spain, Sweden, USA, USSR and Yugoslavia.

The goal of this effort was a coordinated study of solar structures and activity at many wavebands across the electromagnetic spectrum, from radio to gamma rays, during the rapid-rise phase of the 11-year solar cycle.

The collaboration was organized by Dr. Joan Schmelz, a scientist with Goddard's Solar Maximum Mission (SMM) project and an employee of Applied Research Corp., Landover, MD.

Multi-band Observations

"Most solar physicists agree that what we need to understand more about solar flares and active regions are simultaneous, multi-waveband observations," said Schmelz.

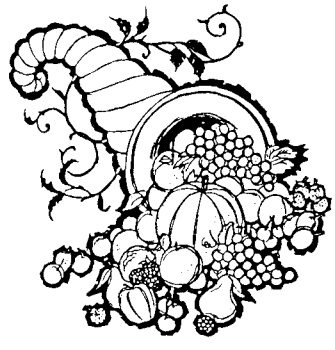
The multi-band campaign insured that the Sun would be observed routinely in the radio, infrared, optical, ultraviolet, X-ray and gamma-ray bands. This is because a solar flare—an explosion in the Sun's atmosphere—does not release all its energy in a single waveband.

"We can't see everything if we observe only with a single instrument; things are happening across the electromagnetic spectrum," Schmelz explained.

Instruments on the SMM were used, including X-ray and ultraviolet imagers and a coronagraph that routinely obtains images of the Sun's corona (the extended atmosphere of the Sun that we see from the Earth only during a solar eclipse). Also used were a host of ground-based observatories, which provided coverage of the different layers of the solar atmosphere (the photosphere, chromosphere, and corona) in the optical, infrared and radio bands.

Almost 100 hours of solar observing time was allocated at the Very Large Array (VLA), a radio observatory in Socorro, New Mexico, operated by the National Radio Astronomy Observatory. Time was divided among five different groups of solar scientists. These observations provided radio images of solar flares, active regions and the full solar disk.

Continued on page 2



HAPPY THANKSGIVING

INSIDE

Pete Serlemitsos: X-ray Interpreter

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Talk from the Top

John W. Townsend Jr

Q: Pedestrian walkways are well marked but also disregarded by personnel in cars. JSC [Johnson Space Center] uses signs in the middle of the walkways to warn drivers to slow down or stop for pedestrians. This procedure seems to work for JSC, why not here?

A. The addition of signs in the middle of the roads and walkways is not a recommended traffic management practice. It actually introduces obstructions to vision and traffic flow. We do remind the Center from time to time that pedestrians have the right of way at GSFC and will do so again in the near future.

Center Director Dr. John W. Townsend, Jr. wants to hear from you! Send your questions to: TALK FROM THE TOP, Code 130.

International Solar Month

Continued from page 1

Coordinated observations focused on the following:

The changing structure of several large, complex active regions were monitored as the Sun's rotation carried them across the solar disk;

Detecting coronal bright points near Sun center–tiny regions of activity in the solar atmosphere which are bright at X-ray wavelengths;

Three full solar disk surveys by the X-ray and ultraviolet imagers on SMM were executed successfully. At least 10 different active regions were observed on different days. In each case, these composite coronal and chromospheric images of the Sun will be compared with the ground-based data taken on the same day.

Large Flare

A large flare was observed on the last day of the campaign from the target active region. VLA radio images at several wavelengths, as well as X-ray, optical and ultraviolet images, will be available for the study of flare development and energy release.

Formal results will be presented at the International Committee on Space Research meeting in the summer of 1990.

Frontiers '88 Brings Crowds to George Mason University

***MPP APPLICATIONS*—Goddard recently co-sponsored a symposium on massively parallel computer systems at George Mason University. Pictured are some current scientific applications of the Massively Parallel Processor (MPP) at Goddard. Cellular Automata (left): This application to magnetohydrodynamic simulation was implemented on the MPP and closed at .85 billion site-updates per second. The work is a collaboration between Dr. John Dorband, Code 635; Dr. Melvyn Goldstein, Code 692; and Ed Seiler, Science Applications Research, Code 635. Solution to Boolean Delay Equation (middle): This function used to study climatology was paralleled and executed on the MPP in eight minutes. This is 100-8,000 times faster than similar work done on other computers. This work is a collaboration between Dr. John Dorband and New Mexico State University. Conservative Image Registration (right): This image of Halley's Comet was registered on the MPP using an algorithm designed and implemented by Dr. Dorband.**

Users, developers, and vendors of massively parallel computer systems–those capable of applying 1,000 or more processing elements to a single job–converged on George Mason University, Fairfax, VA, recently for Frontiers '88: The 2nd Symposium on the Frontiers of Massively Parallel Computation.

The conference, sponsored by Goddard, the Computer Society of the Institute for Electrical and Electronic Engineers (IEEE), the IEEE-National Capital Area council and George Mason University, focused on the increasing importance of massively parallel computer systems and the data parallel programming techniques used to program them.

Papers about applications, architecture and theory by users and developers from industry, academia and government were presented. The 413 registered attendees came from every state in the U.S., as well as five foreign countries; 76 major universities, 81 corporations and 37 other government organizations.

One highlight of the meeting was a keynote address by Nobel Laureate Dr. Kenneth Wilson, who challenged the audience to develop faster, larger supercomputers that can model more effectively and predict complex dynamic systems ranging from Earth science phenomena to the simulation of compound molecules.

The Frontiers conference series began two years ago with the first symposium on massively parallel computation, held at Goddard. Frontiers '88 was much larger with parallel sessions, a poster session, a tutorial and exhibits added.

The Frontiers conference series will continue on a biennial basis at rotating university sites in the greater Washington/Baltimore area.

***LAGEOS 2 ARRIVES AT GODDARD*—The Italian-built Lageos 2 laser geodynamics spacecraft reached Goddard recently and now is undergoing tests. Shown checking the spacecraft on its arrival are Roberto Ibba (left), Italian project manager, and Jim Murphy, the deputy project manager at Goddard. The spacecraft, designed to study crustal dynamics, is scheduled for launch aboard the Space Shuttle (STS-50) in August 1991.**

Launch in Canada Concludes Successful Cosmic Ray Campaign

NASA's 1988 Cosmic Ray Balloon Campaign concluded recently with the successful launch of a 28.4-million-cubic-foot balloon from Prince Albert, Saskatchewan, Canada, carrying an experiment designed to probe cosmic rays for anti-nuclei.

The observed anti-nuclei are expected to provide evidence for the existence of galaxies made completely of antimatter. Scientists believe this discovery could prove to be extremely useful for understanding the annihilation process between matter and antimatter in the creation of galaxies. Third in a series of balloon-launched cosmic ray experiments, this balloon, and the overall campaign, was part of NASA's Balloon Program, managed by Wallops Flight Facility.

Reaching an altitude of 118,000 feet for more than 8 hours, the balloon performed nominally, carrying 5,591 pounds of suspended weight. Principal investigator for this experiment was Dr. Steve Ahlen, Boston University.

The other two experiments, one designed to measure the isotopic composition of cosmic rays, and the other designed to measure the mass of these super-high-energy charged particles, were launched successfully in August to flight altitudes of more than 120,000 feet. The principal investigators for these experiments were Dr. Steve Schindler, California Institute of Technology, and Dr. Robert Binns, Washington University.

NASA Pipeline

AMES RESEARCH CENTER, Mountain View, CA—Ames has awarded Lockheed Engineering & Management Sciences Co., Houston, a five-year, cost-plus-award-fee contract with a total estimated value of $37.5 million. This contract will provide continuation of on-site services to support the Ames' Space Life Sciences Payloads Office for development of life sciences experiments and payloads for flight aboard the Shuttle, use on the Space Station and for international missions such as biosatellites.

JOHNSON SPACE CENTER, Houston, TX—NASA has selected Northrop Worldwide Aircraft Services, Inc., to begin final contract negotiations for the Aircraft Maintenance and Modification Program. Total proposed cost of the five-year effort, beginning March 1, 1989, is approximately $72 million. The contracted work will be performed at the JSC facility at Ellington Field in Houston; Forward Operating Locations in El Paso, TX; and Edwards Air Force Base, CA.

LEWIS RESEARCH CENTER, Cleveland, OH—Lewis and the Argonne National Laboratory, Chicago, IL, have signed an agreement to begin joint research in the development of high-temperature superconductive materials and technology. The program is regarded by both parties as having the potential to provide significant economic benefits and a world leadership role for the United States.

JET PROPULSION LABORATORY, Pasadena, CA—An infrared remote sensing system employing specialized data-processing techniques is being developed at JPL to provide forest fire mapping for fire fighters. The work is being accomplished in conjunction with the Forest Service. Called Firefly, the new project calls for a compact, computerized flight system mounted in a Forest Service Aircraft that will produce simple, precise map information on the fire's perimeters and associated hot spots.

HEADQUARTERS, DC—NASA Administrator Dr. James C. Fletcher announced the appointment of Dr. Noel W. Hinners as Associate Deputy Administrator effective October 24. Hinners most recently served as NASA's Associate Deputy Administrator (Institution). The former Goddard director succeeds Willis H. Shapley, who is retiring but will continue to serve as a consultant to the Administrator. As Associate Deputy Administrator, Hinners will be the third ranking official of NASA and the principal senior assistant. He will continue to serve as NASA chief scientist and to exercise his present functions of supervising institutional management in NASA.

Goddard Employees Get First Hand Look at Big Bang Explorer

Scores of GSFC employees and contractors, their families and friends, got a first-hand look at a "made-at-Goddard" spacecraft on Sunday, October 30, during the Cosmic Background Explorer (COBE) open house at Building 7.

The COBE spacecraft, now undergoing testing in the Building 7 Clean Room, was on display for the visitors to see, along with exhibits—including a project videotape describing the COBE's instrumentation.

The COBE—spacecraft and instrumentation—was designed and built at Goddard.

Due for launch by a Goddard-managed Delta rocket from Vandenberg Air Force Base, CA, in June 1989, COBE will explore the theory that the expansion of the universe began with a cataclysmic explosion— the Big Bang.

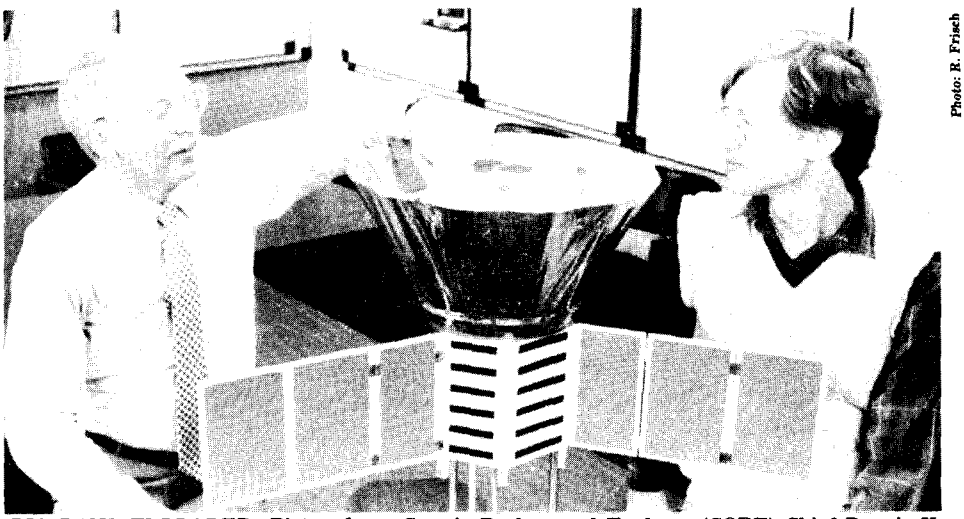
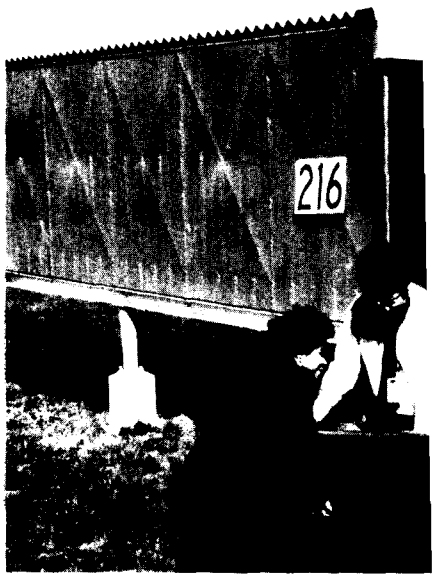


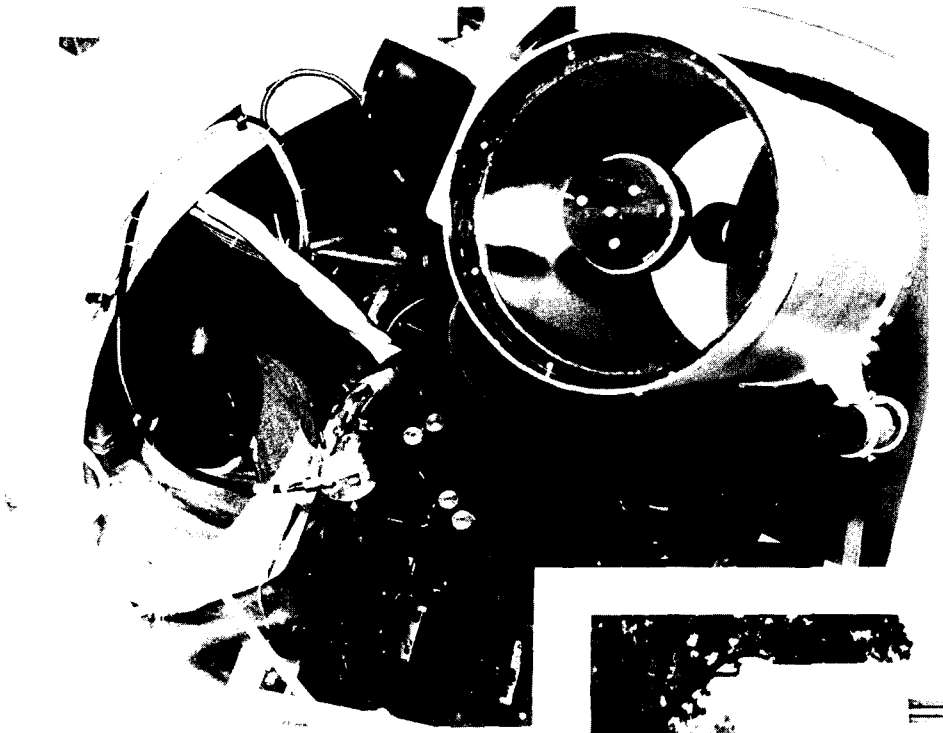
Photo: R. Frisch

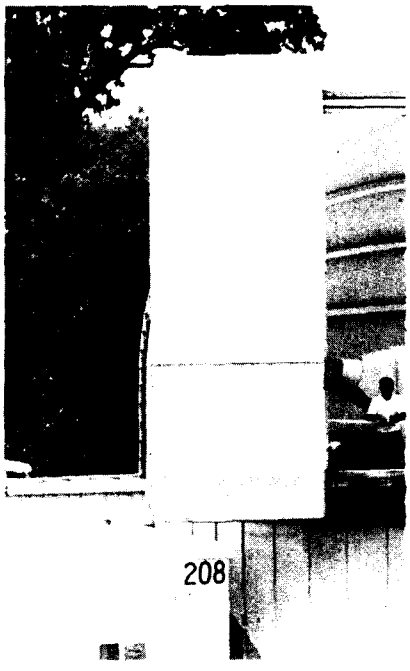
***BIG BANG EXPLORER*—Pictured are Cosmic Background Explorer (COBE) Chief Dennis K. McCarthy (left) and COBE Project Scientist Dr. John Mather with a model of COBE, an in-house Goddard project.**

The World According to GORF



YOUTH TRAINING—**GSFC Explorers (left to right) John Krokes, Charles Meade, Elizabeth Cain, and Elizabeth Meade, photograph Mars as it passes closer to the Earth than it has in more than 50 years, using the Post's 12-inch Cassegranian telescope. The Explorer Post 1275 uses Observatory Building 205 as part of its youth training program, which allows youths between 14 and 21 to explore career opportunities in astronomy, physics and related fields.**





TRANSPORTABLE LASER RANGING SYSTEMS—**Maceo Blount, Senior Systems Electrical Technician, Bendix Field Engineering Corporation (BFEC), adjusts one of the four Transportable Laser Ranging Systems (TLRS), a new generation of portable laser evolved from MOBLAS 7 (Mobile Laser) technology developed at the GORF as part of the Crustal Dynamics Satellite Laser Ranging Network. The other three TLRSs are deployed to remote parts of the world such as Easter Island, French Polynesia; Cabo San Lucas, Mexico; and Turkey. This fourth TLRS is now being upgraded and should be tested against MOBLAS 7 later this year. Like their parent laser, MOBLAS 7, these TLRSs perform vital functions in crustal dynamics, making precise measurements for the determination of the movement of the Earth's tectonic plates.**

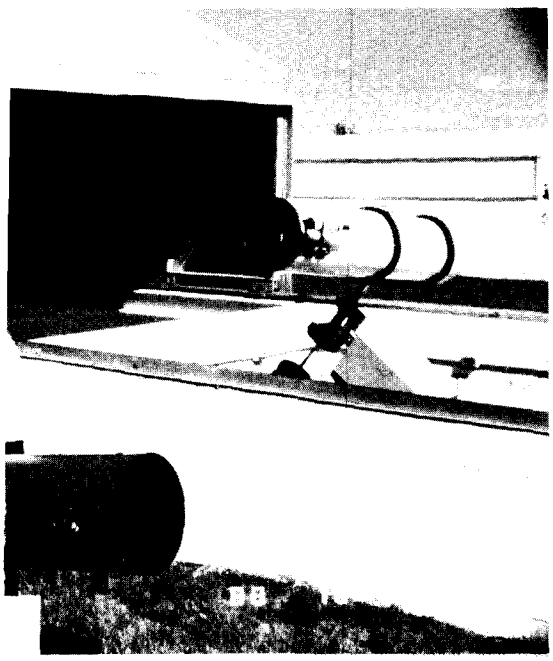
Where can you find laser beams slicing through the night sky? Telescopes aimed at distant celestial objects? On board the Starship Enterprise, perhaps–but definitely at the Goddard Optical Research Facility (GORF).

A 210-acre facility located just four miles from GSFC on Springfield Road, GORF is the home of pioneering research in lasers, astronomy, and solar physics.

The site originally was chosen to provide a lower light background level for the development and observation of optical instrumentation.

About 45 people work at the GORF, which operates almost 24 hours a day. Because their equipment functions best when pointed towards the night sky, many of the scientists, engineers and technicians who work at the GORF are just going to work as most employees are leaving.

Activities at the GORF range from the testing of advanced laser ranging technology, to research and development on telescopes for use in space and on Earth, to youth training programs in astronomy and physics like the one for the GSFC Explorer Post 1275.



SLIDING ROOF OBSERVATORY—Francine Crum, Bendix Field Engineering Corporation (BFEC), and Tom Bryant, Lockheed Missiles and Space Company (LMSCO), of Goddard's Astronomy Club, adjust the club's 13-inch Dobsonian telescope. In the background, the club's 12-inch Newtonian telescope is visible in the sliding-roof observatory.

The Search is Over!

Here are the answers to last month's Shuttle Puzzle.

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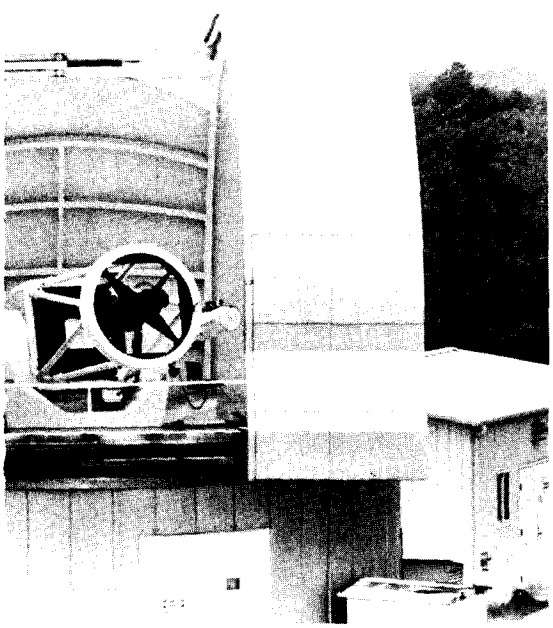
LASERS AND CAMERAS—**The massive 48-inch telescope dwarfs Arnold Abbot, Electrical Technician, Code 723. The Instrument Electro-Optics Branch is using this multi-user telescope facility to develop the next generation of satellite laser ranging systems, using quick-response lasers and cameras to make absolute corrections for atmospheric refraction at the few-millimeter level. From this facility, the University of Maryland has successfully ranged, with few-centimeter accuracy, to retroflectors placed on the Moon by Apollo astronauts.**



Launch Update: Hubble Space Telescope Mission Moves Up to 1989

Launch of the Hubble Space Telescope has been moved up to December 1989 after a reassessment of payload requirements and Space Shuttle assignments, NASA announced recently.

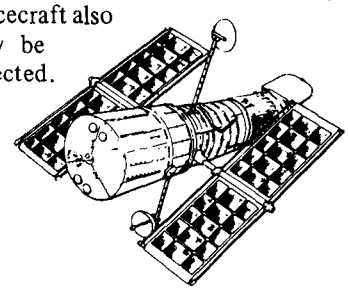
The crew of STS-31—Commander Loren Shriver, Pilot Charlie Bolden, and Mission Specialists Steve Hawley, Bruce McCandless and Kathy Sullivan—is now scheduled to deploy the telescope from *Discovery* in mid-December 1989. The crew had been scheduled to deploy the satellite from *Atlantis*, but that orbiter will now be used to fly STS-36, a Department of Defense mission that will assume the February 1990 launch date.

The telescope, which fills the orbiter cargo bay, will be deployed with the aid of the remote manipulator system.

The Hubble Space Telescope, a cooperative project with the European Space Agency, is the first spacecraft designed for routine on-orbit servicing by Space Shuttle crews. In the mid-1990s, a Shuttle crew is expected to revisit the telescope to replace onboard scientific instruments with new instruments incorporating advanced technology now under development.

Astronomers hope that from its position 320 nautical miles above the Earth, the telescope will provide new visual clues about the origin of the universe. From high above the atmospheric distortion that plagues conventional telescopes, the reflecting Cassegrain telescope will use its 94.5-inch primary mirror to see objects 50 times dimmer than anything previously seen. It will make observations across a wide spectral range and beam the data back to Earth via the Tracking and Data Relay Satellite System (TDRSS).

The Astrophysics Division of the Office of Space Science and Applications at NASA Headquarters and Marshall Space Flight Center will establish a new shipping schedule for the spacecraft, presently at the Lockheed Missiles and Space Company facility in Sunnyvale, CA. The schedule for a final ground systems test involving the spacecraft also may be affected.



INSIDE

In 1966, physicist Pete Serlemitsos became the second member of Goddard's newly-formed X-ray group. Today, more than 20 years later, he is the principal investigator for the Broad Band X-Ray Telescope (BBXRT), a primary shuttle experiment which will provide the first X-ray spectroscopy of some of the most interesting sources and regions in the Milky Way and beyond.

Pete Serlemitsos is a casual, friendly man, who likes to talk about his work. Sitting back in his office chair in a casual sports shirt (he only wears a tie for photographs!) Serlemitsos explains why the X-ray data from his telescope will be so important.

Photo: D. McCallum

PETE SERLEMITSOS

"It's difficult for me to really tell you the excitement [of the BBXRT], because there has been a long dry period for the kind of X-ray experiments we're doing," explained the amiable astrophysicist. "The last U.S. X-ray experiment in this discipline went up in 1978."

That was the same year that Serlemitsos first proposed BBXRT. Since then, he's seen the project grow and shrink over the years as a result of budget cuts and programs being reconfigured. The BBXRT is now scheduled for launch in March, 1990, as one of four experiments collectively known as Astro-1.

The March launch is three years earlier than originally planned, so that Serlemitsos and the other scientists involved with Astro can study X-rays from Supernova 1987A, an exploding star that astronomers first noticed in February 1987.

"The Supernova gave us the impetus to push hard for flying the experiment as soon as possible," he said eagerly. "Here we have this interesting object, a very rare phenomenon, and essentially nothing up there right now to study it in X-rays. SN 1987A provides us with an incredible opportunity for scientific discovery with the BBXRT."

X-ray Clues

X-rays–both from supernova remnants and from other types of sources–provide information to help scientists understand, among other things, how stars are born, and how they eventually explode and die.

"The way I see it," he said, "The ultimate goal is to find out something about our universe–how things started, how they're progressing through time, and what are the indications as to how things are going to go in the future. Piecing the puzzle together is an ongoing project that requires major contributions from theoreticians in the form of models. It is experiments like BBXRT that provide the needed clues."

Serlemitsos is modest about his role in the invention of a new X-ray mirror, a breakthrough which helped make the BBXRT possible. As part of the proposal that led to development of the BBXRT, Serlemitsos and the technical staff of the X-ray group built an X-ray mirror in their own laboratory at Goddard.

"The way I see it, the ultimate goal is to find out something about our universe — how things started, how they're progressing through time, and what are the indications as to how things are going to go in the future."

According to Serlemitsos, X-ray mirrors are extremely heavy and expensive, both very important factors when considering them for spaceflight. The new concept introduced by Serlemitsos was to greatly relax the requirement for resolution in order to increase efficiency while greatly reducing weight and cost. The two mirrors for BBXRT are actually made of specially prepared aluminum foil.

High resolution is necessary when optically observing stars, for example, because there are so many of them. But X-ray sources are much more rare so that many observations can be done with "sloppier" low resolution (arc minute) mirrors.

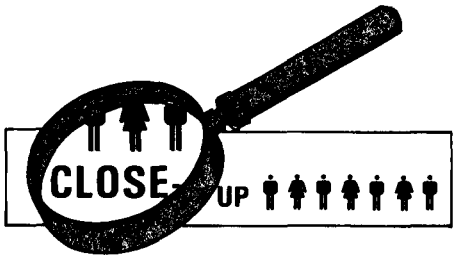
Dr. Serlemitsos was born in Samos Island, Greece, and came to the United States at the age of 18. While working part time at Goddard, he received his M.A. in physics from the University of Maryland. One of the first graduate students at Goddard, he received his doctorate in 1966, using data from the early Explorer satellites to write his thesis.

Throughout the great X-ray "dry spell" of the past 10 years, the only new data in X-ray astronomy has come from satellites in Japan and Europe. In spite of this, however, Serlemitsos says that NASA is the place for him.

NASA Opportunity

"NASA has always been for me a very rewarding career ... Sure, there are limitations at times with funds and other resources, but as long as you stay reasonable, I have always found it possible to do what I wanted to do at Goddard. Our technical staff is very hard-working, which helps make my research possible," he explained. "And that's really important. For somebody who wants to do something, having the opportunity to do it is rewarding."

The excitement of the potential wealth of data the BBXRT will return keeps Serlemitsos excited above and beyond his hours in the lab. "I think the excitement has to be there. I can get excited about it and think of it while I'm sleeping, or sitting home relaxing. Excitement is necessary, absolutely necessary, and this is providing the kind of excitement that we need–for our young scientists, and for the space program."



Dr. Rudolph A. Hanel Awarded Kuiper Prize

Dr. Rudolf A. Hanel, Senior Scientist for Goddard's Laboratory for Extraterrestrial Physics, has been awarded the 1988 Gerard P. Kuiper Prize by the Division for Planetary Sciences of the American Astronomical Society. The Kuiper Prize is awarded annually to a scientist whose achievements have most advanced the understanding of planetary sciences.

Dr. Hanel is recognized for his role in the development of sensitive infrared spectrometers to determine the structure, composition, and thermal characteristics of planetary atmospheres. The first of these instruments were flown on Nimbus 3 and 4 meteorological satellites. They provided the first global measurements of the radiant energy emissions of the Earth.

Later instruments developed by Dr. Hanel were flown on Mariner 9 to Mars, where the properties of global dust storms and water clouds were measured, and on the two Voyager spacecraft which have provided fundamental atmospheric compositional information for Jupiter, Saturn, and Uranus. Their atmospheric thermal structure has been mapped and measurements have been made of the internal heat sources on these planets.

The prize is named in honor of the late Gerard P. Kuiper, of the University of Arizona, who played a leading role in astronomical observations of solar system objects and in NASA's lunar exploration program.

DR. RUDOLPH A. HANEL

Goddard Managers Receive Presidential Recognition

JON R. BUSSE

ROBERT C. BAUMANN

J. WARREN KELLER

Three Goddard managers, nominated by NASA Administrator James C. Fletcher, have received 1988 Presidential Rank Awards. Director of Engineering Jon R. Busse received the Rank of Distinguished Executive. Director of Suborbital Projects and Operations J. Warren Keller and Director of Flight Assurance Robert C. Baumann received the rank of Meritorious Executive.

Jon R. Busse

Engineering Director Jon R. Busse's Federal service career spans three decades. In sounding rockets he consistently found means to improve systems performance, simplify field and launch and reduce costs. He carried this way of doing business into flight project management where, as Landsat-D project manager he delivered the systems ahead of schedule and below the predicted cost. As Deputy Director of Engineering, he continued to push the low cost approach to flying experiments on the Space Shuttle with Spartan, Hitchhiker, and the Get-AwaySpecial bridge.

As Chairman of the Atlas Centaur Review Board and as a member of the Delta 178 Review Board, he distinguished himself by his technical knowledge, leadership, and integrity in the pursuit of the cause of the failures and the identification of the corrective actions required. Most recently, he was appointed to chair the Magellan Investigative Review Board.

Robert C. Baumann

Flight Assurance Director Robert C. Baumann is a true space pioneer. His 41 years of Federal service began at the Naval Research Laboratory, where he designed and developed space hardware for captured German V-2 rockets, Viking rockets, Aerobee rockets, and the Vanguard launch vehicle. Some of the first high altitude photos of the Earth were obtained under his direction, and he received the first U.S. patent on a satellite design. Baumann has been with Goddard since its beginning, and, over the

Continued on page 8

Retirees

Best wishes to the following Goddard employees who retired recently!

	Code	Years
Beaver, Gloria A.	284.3	25
Coleman, Roy	733.2	23
Flatow, Fred	480	22
Short, Nicholas M.	622	21
Schuler, Bernard	745	30
Smith, William J.	301	22
Stewart, George O.	513	32
Sullivan, John C.	513.2	47
Tetrick, Roger	500	31
Viehmann, Walter	313.3	30
Wood, Frank M.	623	30

Information Technology Center Open House

Goddard civil service and contractor employees are invited to attend the Information Technology Center (ITC) open house on December 14-16, 1988 from 8 a.m. to noon. During this time, Goddard employees can stop by the ITC and preview new courseware purchased for the Self-Paced Learning Center (SPLC), attend special orientations and product demonstrations, and meet the ITC staff. Look for flyers that will be distributed to all Goddard employees describing the open house schedule. For more information regarding the ITC, call Pam Moore on 67285.

Managers Receive Recognition

Continued from page 7

years, has been appointed to increasingly responsible positions.

Baumann organized the NASA Sounding Rocket Program and developed the methodologies still used today. In the early 1970s, when the Delta launch vehicle experienced a period of two out of three failures, Baumann was asked to redirect the project. The result of his effort was a record 43 successful launches in a row.

Baumann's expertise frequently is sought for special one-of-a-kind endeavors. In the wake of the Space Shuttle tragedy, he chaired the Payload Committee which supported the Presidential Task Force investigating the Space Shuttle Challenger accident and made valuable contributions in identifying the activities required to return the Shuttle to flight status. Also, Baumann was Chairman of the Launch Decision Process Panel of the Atlas Centaur Failure Review Committee. His recommendations will help ensure the future of the Nation's Expendable Launch Vehicle programs.

Baumann has demonstrated his management skills with the successful launch and activation of numerous satellites including the Dynamics Explorer, Landsat-D, the Tracking and Data Relay Satellite; the Active Magnetospheric Particle Tracer Explorer, the Earth Radiation Budget Explorer; numerous Space Shuttle payloads, such as Get-Away-Specials, Spartan and Hitchhiker, and the Solar Maximum Repair Mission.

As Deputy Director of Flight Projects, Baumann had managerial oversight of 18 individual projects which included 32 satellites, approximately 155 instruments, multiple Shuttle pallets and five major ground systems. He also oversees two of the four "Great Observatories," the Hubble Space Telescope and the Gamma Ray Observatory, planned for launch in 1989 and 1990, respectively.

J. Warren Keller

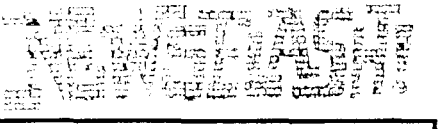
Director of Suborbital Projects and Operations is located at Goddard's Wallops Flight Facility, where he is responsible for the total management of all suborbital sounding rocket projects from mission and flight planning to landing and recovery.

Since joining NASA in 1960 at the Marshall Space Flight Center in Alabama, Keller has made significant contributions to the success of many NASA programs. At Marshall, he headed the Nuclear Physics Section carrying out in-house and out-ofhouse efforts in nuclear engineering and charged particle shielding. In 1962, he transferred to NASA Headquarters as Chief of Space Vehicle Environmental Factors in the Office of Advanced Research and Technology, where he was responsibile for NASA's research and technology programs dealing with the effects of space environments on the design of space vehicles. This included Explorers XVI and XXIII, Pegasus I, II, and III and the Radiation/Meteoroid Satellite projects.

As the Deputy Program Manager for Advanced Programs and Technology in the Planetary Division, Keller served as NASA's principal contact for planning missions to all the planets. Later, he led the effort to obtain approval for the Outer Planets Grand Tour Mission and was appointed program manager. He was instrumental in rescoping the effort into the less expensive Voyager mission to Jupiter and Saturn.

Keller chaired the Hubble Space Telescope (HST) Science Operations Management Working Group which performed an in-house study of the HST Science Institute concept.

In 1981, the Wallops Flight Facility was consolidated under Goddard. With the recent addition of Navy tenant users and the prospects of commercial users of the Wallops range, Keller is actively involved in negotiations insuring the provision of support required for success of these user programs.



Goddard's Jon R. Busse, Director of the Engineering Directorate, was appointed Chairman of the Magellan Electrical Mishap Investigation Board, created to examine the possible causes of a one-minute electrical fire in the Magellan Spacecraft at Kennedy Space Center, FL on October 17.

The Board consists of:

Members:

Chester Vaughan, Johnson Space Center
Brian Keegan, GSFC
E. Rodriguez, GSFC
William Mahoney, Kennedy Space Center

Advisors/Nonvoting Members:

Safety: Josef Wonsever, Headquarters
Counsel: Douglas Hendrikson, Kennedy Space Center
Public Affairs: George Diller, Kennedy Space Center

Observers/Nonvoting:

Charles J. Sawyer, Headquarters
Raymond L. Heacock, Jet Propulsion Laboratory
William Piotrowski, Headquarters

Appointed Experts:

Henry Price, GSFC
Robert Kichak, GSFC

Executive Secretary:

Robert Young, GSFC

NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

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