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Goddard News

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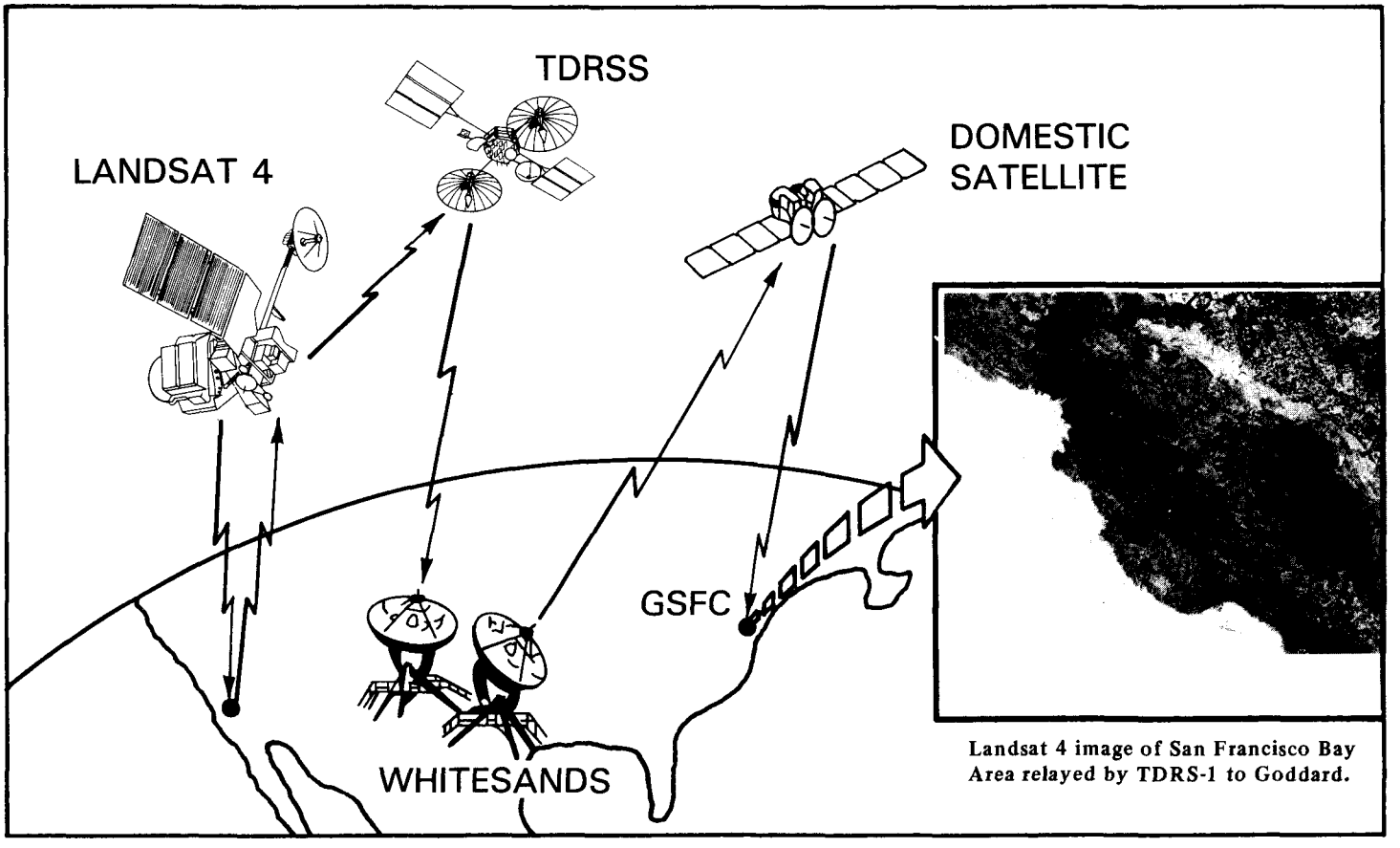
Landsat 4, Shuttle Challenger "talk" to TDRS-1



Landsat 4 image of San Francisco Bay Area relayed by TDRS-1 to Goddard.

The first successful imaging data tests of the Tracking and Data Relay Satellite (TDRS-1) were conducted August 12 using Landsat 4 and additional communications tests between TDRS-1 and the Shuttle Challenger were conducted during STS-8 after Challenger was launched August 30. The tests verified the data transmission capabilities of TDRS-1 and the health of Landsat 4's Thematic Mapper (TM) instrument. Moreover, enough STS-8/TDRS-1 communications tests were conducted to assure support for the STS-9, Spacelab-1 mission, scheduled for October 28.

Several scenes using Landsat 4's TM were relayed from the earth resources satellite via TDRS-1 to Goddard. Landsat 4 has been unable to downlink TM scenes since the direct X-band system failed last February.

The Landsat 4/TDRS-1 test was the first successful use of TDRS-1's high data rate Ku-band capability. Previous tests of the relay satellite's S-band system have been successful with continued transmission of Multispectral Scanner (MSS) images. Shuttle Challenger/TDRS-1 communications testing was also conducted on S-band. The Ku-band is the highest data rate transmission system aboard NASA's new data relay satellite.

Scenes acquired from the August 12 test include Central Oklahoma, the coast and inland area around San Francisco, and portions of Argentina. These scenes were processed through the recently completed Thematic Mapper Image Processing System (TIPS) at Goddard. The new TIPS enhances image quality and increases dramatically the number of TM scenes processed each day.

TDRS-1 failed to reach proper orbit after being deployed from the Shuttle Challenger on STS-6 last April. It was boosted into proper geosynchronous orbit June 29 following 58 days of maneuvers.

Inside

September 12-19, 1983

National Hispanic Heritage Week is being observed this year by the Federal Government from September 12, 1983 through September 19, 1983. This annual observance is the result of a joint resolution, approved by the Congress on September 17, 1968, which requested and authorized the President to annually proclaim the week which includes September 15 and 16 as National Heritage Week.

Hispanic men and women continue to make significant contributions to the social, cultural and economic growth of our nation. Their accomplishments in science, technology, the arts and other important fields have greatly contributed to our way of life. I urge all employees to join in recognizing the significance of National Hispanic Heritage Week.

Noel W. Hinners

Noel W. Hinners
Director

U.S. satellite used for first time as part of international program

Two Canadians whose canoe overturned in rapids on the Winisk River and left them stranded in wilderness below Hudson Bay in Ontario were rescued recently when their distress signals were heard by an American satellite.

The distress signals were heard by the NOAA-8 environmental monitoring satellite, launched from Vandenberg Air Force Base in California last March 28, which also is equipped with search and rescue equipment. The rescue marked the first time the American satellite has been instrumental in a rescue.

The satellite is part of an international search and rescue program in which Canada, France, the Soviet Union, and the United States are partners. The Soviets have two search and rescue-equipped satellites in orbit. The satellites receive distress signals from planes and ships and relay them to stations on the ground where officials alert and dispatch rescue forces.

The rescue of the two Canadians, Allan Berry and Jeff Hyatt, was among six incidents in which 10 lives were saved recently through the use of the life-saving satellites. The 10 lives bring to 58 the number of people who have been saved since satellite-aided rescues were started through the international program in September, 1982.

Berry and Hyatt, who live in Ottawa, were tossed from their canoe on August 1 as they were making their way through the Tashka Rapids, according to Canadian rescue officials. Ashore, the men activated their Emergency Locator Transmitter (ELT), and the signals were heard by the American satellite in orbit 517 statute miles above Earth. The first signal was picked up by the satellite at 11:40 a.m. EDT and a second signal was picked up on its next pass over the area at 1:35 p.m. EDT, officials reported.

Canadian rescue forces launched a twin-engine Buffalo aircraft to search for the pair later in the day, but because of the distance involved, the plane did not reach the vicinity until slightly after midnight on August 3.

On the search plane's second pass over the area, the two canoeists were spotted, and the plane's crew dropped a portable radio and supplies. A helicopter, provided by the Ministry of Natural Resources for Ontario Province, was dispatched to pick them up.

The two men, who had received minor injuries, were flown to a hospital in Moosonee, according to Canadian authorities.

Other rescues which have taken place recently include:

May 31 — One person rescued in an aircraft accident on a remote airstrip in the District of Mackenzie in Canada. No other details available.

June 3 — One person rescued from a plane that crashed at the 5,300 foot level of a mountain in British Columbia, Canada. Survivor was pilot, M. Kostiuk. One unidentified passenger died.

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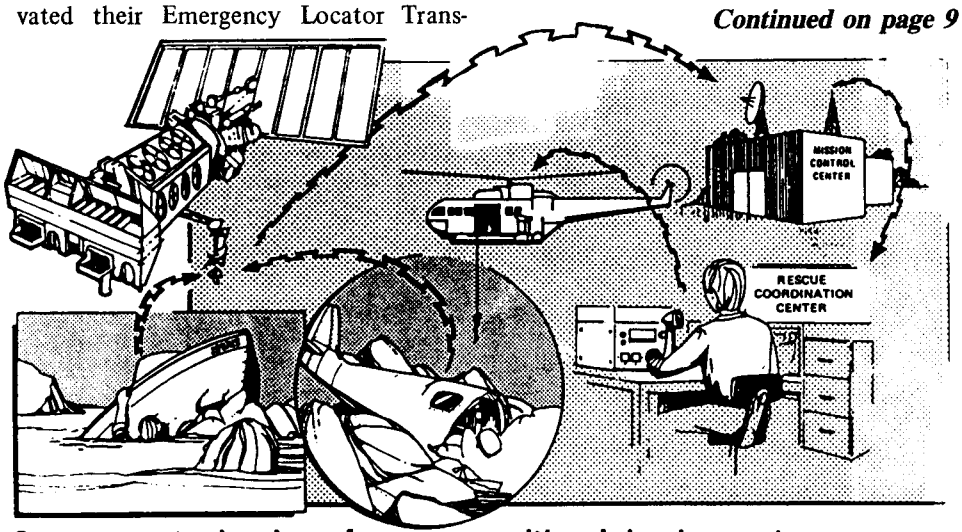
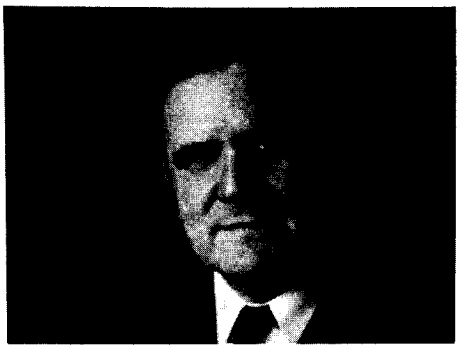


Space-age technology for rescue with minimal search

Former NASA Administrator honored with $500,000 grant



Former NASA Administrator James E. Webb

1961 NASA photo

NASA's second administrator, James E. Webb, has been honored with a $500,000 grant from the Kerr Foundation to the National Academy of Public Administration (NAPA) for his dedication and service to the welfare of government organizations. NAPA officials responded by establishing the Fund for Excellence in Government, with an immediate goal of $2.5 million. Contributions to the fund will be invested to provide income in support of specific NAPA initiatives to increase the effectiveness of state, local and national government.

Webb, now retired, founded NAPA in 1967 as a source of advice and counsel to governments and public officials on problems of public administration. NAPA's service to public administration is much like that of the National Academy of Sciences' and the National Academy of Engineering's service in science and engineering.

Webb's career combines a highly successful record as a business executive with distinguished public service in a variety of key posts in the federal government. As Director of the U.S. Bureau of the Budget, Undersecretary of State and NASA Administrator under presidents John F. Kennedy and Lyndon B. Johnson, Webb demonstrated not only his understanding of government, but also his deep interest in establishing institutions outside the government that are dedicated to improvement of government organization, management and operations.

Continued on next page

Goddard training center to be upgraded

Joe Walters photo

Walter Flournoy is shown here with a student in the M&DOD Training Center. The center will be upgraded soon with the addition of two PLATO terminals. PLATO will enable access to a vast resevoir of self-study courses and information.

PLATO is coming. Not the Greek philosopher, but a unique and widely used computer-based instructional system that will bring the latest in self-study courses to one of Goddard's training centers.

Walter Flournoy (code 500) started the Mission and Data Operations (M&DOD) Training Center in 1974 with only a TV monitor, a cassette player and two courses. The monitor and the cassette player were borrowed from a vendor as a pilot program.

"I started with a very small room and about two courses," Flournoy said. "Later we moved the center to a conference room which had to be re-designed by installing cabinets, desks and chairs. I ordered TV monitors, video tapes and related course materials, and checked other learning centers to get ideas."

In nine years it has grown to three monitors and cassette players and offers 84 data processing courses for computer programmers to systems analysts in fields from finance to spaceflight tracking.

In another three to four months, when PLATO arrives and is combined with the recently acquired 4300 Series of self-study courses, M&DOD's Training Center will be on the brink of becoming a total learning environment, which uses computer course-ware as its focal point. More than 8,000 hours of course-ware on a variety of subjects are available.

"The training center has an enormous growth potential. Current plans call for us to receive two more PLATO terminals, which will enable us to tap into a vast reservoir of training/educational material. PLATO's catalog contains a list of more than 1200 course and curriculum titles, running the gamut from data processing to arcade games," Flournoy said.

According to Flournoy, the system will continue to grow and never become antiquated, because "I can clear the library out and put new stuff in . . . I can also modify anything in there," he said.

PLATO's uniqueness is its ability to provide more accessible and less costly education and training. It organizes and manages the learning process in an individualized, self-paced manner — providing more rapid progress than is possible either with books alone or in a conventional classroom.

PLATO definitely will be an asset to M&DOD's Training Center, which works in conjunction with Goddard's personnel training center, serving over 3,000 students, employees, and contractors. Six government agencies have sent employees to the M&DOD Training Center and many interns and co-ops are sent to the center. For the completion of each course, a certificate is awarded and placed in the individual's personnel file.

"When the training center is upgraded, it will address the training and educational needs of everyone, regardless of their respective areas," Flournoy said. "I'm looking forward to upgrading the center for the benefit of all interested parties."

Interested persons should call Flournoy, 344-8717, or contact him in building 3, room 113.

Webb

Continued from page 3

Some of his numerous private sector roles include service as president and board chairman of Republic Supply Co., director of Kerr-McGee Corp., McDonnell Aircraft Co., McGraw-Hill, Inc., Gannett Co., Inc., Sperry Corp. and Computer Data Systems, Inc.

"NAPA does me great honor to link my name with its increased drive to achieve excellence in government," Webb said. "That the National Academy of Science and the National Academy of Engineering will now have a stronger sister organization seeking excellence in public administration bodes well for our future."

Webb, 76, lives in Washington, D.C. His many awards include the Presidential Medal of Freedom, the NASA Distinguished Service Award, the Sylvanus Thayer Award of the West Point Graduates Association, the Langley Gold Medal of the Smithsonian Institution and the Hubbard Gold Medal of the National Geographic Society.

Slow Down, Mr. Driver! I'm Going Back To School!

Balloons launched to select ozone measurement instruments

As part of NASA's Upper Atmosphere Research Program (UARP), which assesses the performance of different measurement techniques, most flights of the 1983 Balloon Ozone Intercomparison Campaign (BOIC) were launched successfully this summer from the National Scientific Balloon Facility in Palestine, Texas. Remaining tests will be conducted next month. The BOIC is managed by Goddard.

Project Scientist for the BOIC Ernest Hilsenrath (code 963) said the Triplets series of launches, 16 balloons each carrying three operational ozone instruments (normally carried by weather balloons to 18 mi.), worked "quite well."

"Each of the 16 balloons carried the three instruments to heights exceeding 23 miles," Hilsenrath said. "This was an excellent test of the precision of balloon ozone instruments used world-wide and of their performance at altitudes where ozone depletion could be a serious problem."

The BOIC's goal is to select an ozone instrument which can be used routinely in a balloon up to 24 miles with an accuracy of better than five percent. The instrument would then be used on a series of research balloon flights to measure atmospheric gases important in ozone photochemistry. The instrument would also be used for comparison with satellite ozone measurements.

Although the UARP's overall goal seeks to compare theory with an accurate set of observations, the BOIC is dedicated to evaluate ozone measurements only. Accurate ozone measurements are necessary to understand variations of the ozone layer. Present theory predicts a possible decrease in ozone due to man's activities. The ozone layer is important to life on earth since it helps filter harmful solar rays.

The BOIC is set up as a three-flight mission consisting of The Multiple Instrument Gondola, the Mass Spectrometer Gondola and the Triplets.

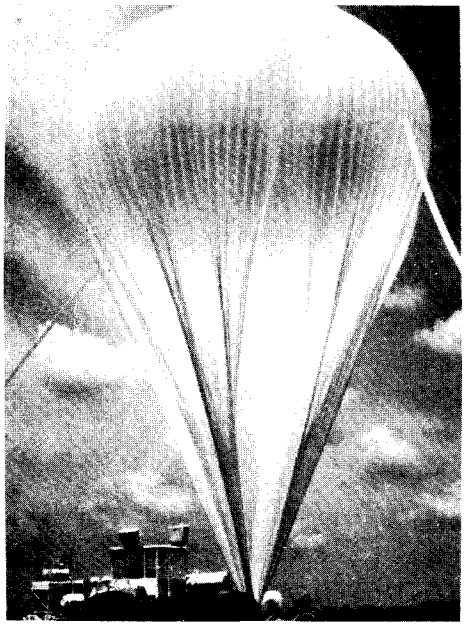
The Multiple Instrument Gondola was flown this summer but failed to reach the desired height because of a balloon leak — a reflight is scheduled for next month. This gondola includes operational instruments and other instruments under development from Harvard University, NOAA's Environmental Research Lab (ERL) and NASA's Goddard Space Flight Center and Johnson Space Center (JSC). Of the developmental instruments, two are remote sensors, six are in-situ sensors and are all potentially capable of measuring ozone very accurately, according to Hilsenrath.

The Mass Spectrometer Gondola carried the University of Minnesota's mass spectrometer, another JSC instrument and a high altitude operational ozone instrument. This gondola ascended 26 miles and all three instruments obtained good data.

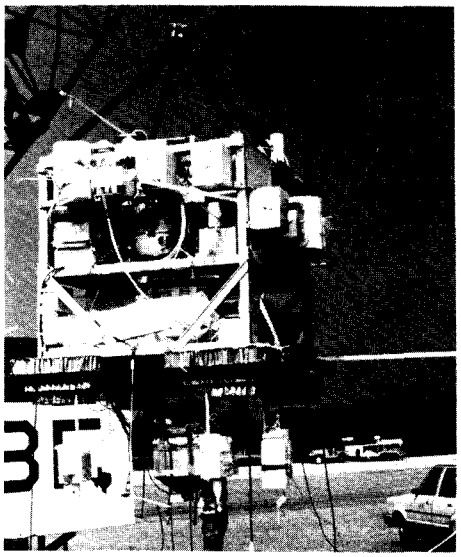
The Triplets contained instruments from the German Weather Service (Deutscher Wetterdienst), the Canadian Atmospheric Environment Service, NOAA's ERL and Goddard's Wallops Flight Facility.

Goddard investigators were: John Ainsworth, Alfred Holland and James Mentall all from code 963; and Arnold Torres, 971. Balloon payload integration engineer was Walter Nagel, 745.2. Other participants involved in the calibrations and data analysis are from NOAA's National Meteorological Center and the National Bureau of Standards.

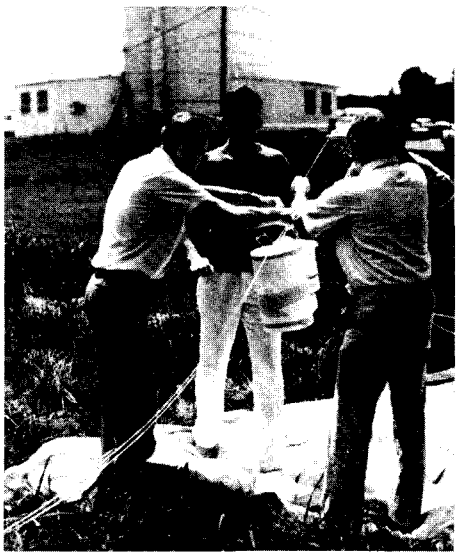
NASA's Balloon Program is managed by Goddard's Wallops Flight Facility, Wallops Island, Virginia. Wallops' involvement in this program in the last four years has resulted in about 200 balloon missions, representing 16 universities and 18 other scientific groups.



A balloon is filled with helium prior to launch in the Balloon Ozone Intercomparison Campaign (BOIC).



Instruments are prepared for flight on Triplets series of launches.



Final checkout of Goddard's gondola (payload) as it sits on the launch crane. The payload contained 11 experiments; four were Goddard's.

Are you putting me on?

In April 1982, President Reagan announced a highway safety campaign aimed at increasing the use of safety belts nationwide.

Reagan pointed out in his announcement that approximately half of all those who die in accidents involving passenger cars, light trucks or vans could have been saved if they had been wearing safety belts.

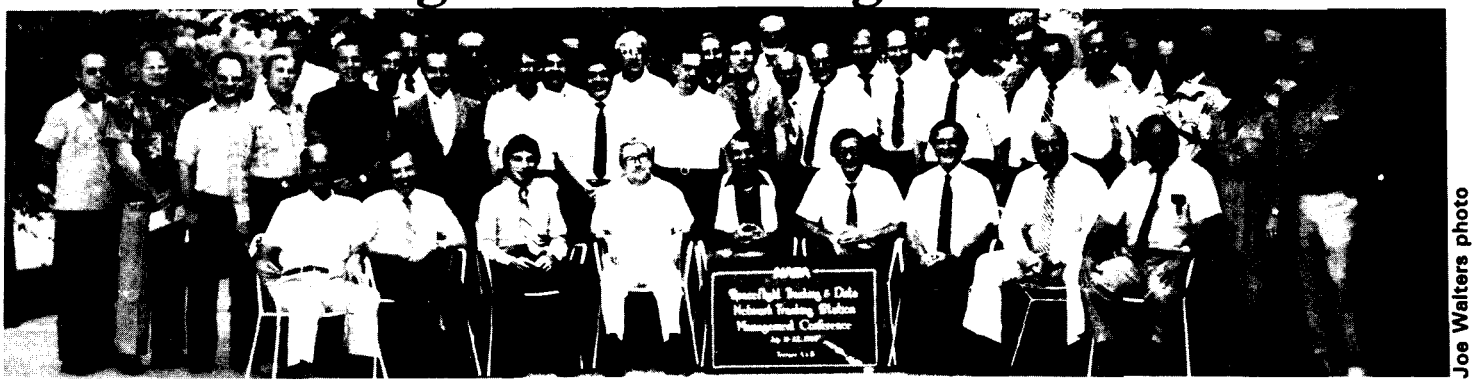
NASA is participating with other government departments and agencies in a national campaign to increase safety belt usage, not only on the job but off the job as well.

The Center director and all senior management personnel at GSFC encourage each employee to get into the habit of using seat belts.

Seat Belt Safety

PEOPLE

STDN Tracking Station Management Conference



Joe Walters photo

Government and Bendix station directors of the Goddard-managed Spaceflight Tracking Data Network (STDN) met in Columbia, Md. recently for the STDN Management Conference. From l-r standing: M.E. Briggs, STDN Operations Group Manager; D.E. Smith, Bendix vice president and STDN program director; I. Grant, Orroral Station Director (STADIR); P. Smor, Vandenberg AFB (GSFC Rep); B.L. Crouch, assistant to mgr., tracking station operations; S. Stompf, Bermuda STADIR; G. Jenkins, MILA STADIR; J.P. Gale, STDN deputy program manager (DPM); V. True, White Sands STADIR; L. Woodward, Buckhorn (BUC) STADIR; W. Edeline, Goldstone (GDS) STADIR; C. Shaddeau, Greenbelt STADIR; P. Schlosser, senior mgr., Ascension (ACN); E. Diaz, Santiago STADIR; E. Eisele, Alaska STADIR; C. Myers, senior mgr., Botswana; J. South, Santiago (GSFC Rep); M. Henderson, Johnson Space Center; W. Koselka, SPACECOM; W.K. Wells, senior mgr., White Sands (NGT); W. Bodin, associate chief, Networks Operations Division (NOD); D. Spintman, chief, NOD; P.H. Johnson, DPM, TDRSS; J.J. Jobes, senior mgr., Greenbelt; G.D. Smith, senior mgr., Alaska; P. Weitz, STS-6 astronaut; W.M. Herndon, senior mgr., Dakar; J.G. Killip, senior mgr., MILA; A.J. Begenwald, STDN program administrator; J.M. Lacewell, senior mgr., BUC; J.P. Obloy, senior mgr., Guam; G. Karras, Guam STADIR; C.M. Hutto, senior mgr., GDS; N. Desmond, administrative officer (GSFC); G. Zink, ACN STADIR; L. Gopequi, Madrid STADIR; Sitting l-r: F. Alcaraz, senior mg., Madrid; D. Kemp, senior mgr., Orroral; G. Morse, Network Director, Goddard; L. Bello, senior mgr., Santiago; F. Ful, STADIR in Residence, Goddard; G.A. Hunsicker, executive assistant, Bendix; J.J. Miller, senior mgr., Laser Subnet; M. Weingarten, president Bendix; and W.F. Way, senior mgr., Bermuda.

Randy Frisch photo

John C. Lemke

John C. Lemke has been appointed chief, Health, Safety and Security Office, Management Operations Directorate (code 205). Lemke replaces Levin B. Gray, who has taken a position at NASA Headquarters (HQ).

Lemke comes to Goddard from HQ, Air Force Systems Command, Andrews Air Force Base, where he was chief, System Safety for three-and-a-half years. Prior to that he worked with HQ, USAF, Wright Aeronautical Laboratories, as director of safety and established a comprehensive safety program for four independent laboratories. Lemke received a BS degree in Industrial Engineering from the University of Wisconsin in 1970 and a Masters degree in Industrial Engineering in 1971 from Texas A&M University.

Deborah McCallum photo

INDIAN STUDENTS VISIT GODDARD – Two winners of a national essay competition in India on "25 Years of Space Flight" visited Goddard recently as part of their reward. They are shown here with Goddard Deputy Director John J. Quann. L - Sumita Trivedi, r - Ashish Khosla. During their 13-day stay in America the students also visited the National Air and Space Museum and COMSAT, both in Washington, D.C., where they collected materials and documented space science related activities. The two will present student seminars on "Space and Mankind" upon their return to India.

NASA begins major research effort in continuing study of global troposphere

NASA has begun a major research effort in its continuing study of the global troposphere's chemistry and interaction with the stratosphere and with the earth's land and oceans.

More than 20 scientists from 16 research organizations recently gathered at NASA's Wallops Flight Facility on Virginia's Eastern Shore to conduct an intercomparison of several relatively new, high technology instruments for monitoring atmospheric trace species.

Called the Global Tropospheric Experiment, the program is expected to expand through the next decade to include global monitoring missions to learn more about the troposphere and, assess the susceptibility of the globe atmosphere to chemical change.

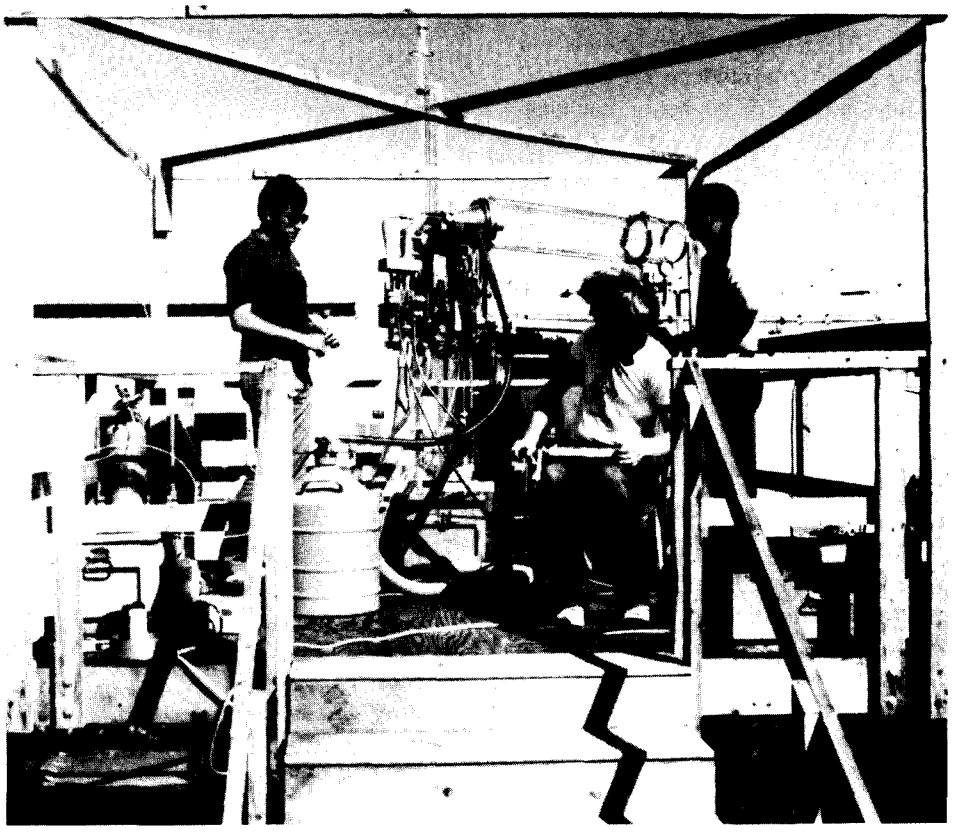
The experiment is managed by NASA's Langley Research Center as part of the Tropospheric Chemistry Program of the NASA Office of Space Science and Applications in Washington, D.C.

Human activities have a strong effect on the global atmosphere. Prime examples are the increasing level of carbon dioxide, caused mainly by the widespread burning of fossil fuels, and the probable depletion of ozone in the stratosphere through photochemistry based on nitrogen and halogen compounds. Other gases, which may have an impact on atmospheric chemistry such as methane and nitrous oxide, are also believed to be increasing.

The Global Tropospheric Experiment reflects growing concern about the atmosphere's lower region. While measurements have been made of specific urban pollution areas, no global study has yet been initiated.

The first phase of the experiment is to develop, test and evaluate techniques that will achieve, under a variety of field conditions, the extreme sensitivity required to measure concentrations of key chemical species in the lower atmosphere. These trace species can have extremely low concentrations, yet still exert great influence on the composition and radiation balance of the atmosphere.

During this intercomparison of measurement techniques special attention is being given to the measurement of hydroxyl, nitric oxide and carbon monoxide.



Scientists and technicians conduct measurements during the recent Global Tropospheric Experiment at Goddard's/Wallops Flight Facility on the north end of Wallops Island.

Other meteorological and atmospheric constituent data will be analyzed to help interpret any differences between the techniques being tested.

The Wallops-based instrument intercomparisons will last about one month. The instruments will then be installed aboard an aircraft for a series of airborne intercomparisons. Flights are planned from the island of Barbados in the West Indies, flying in the tropical boundary layer over the ocean and over tropical forests. The tropical climate will expose the instruments to a wide range of water vapor, marine and continental aerosol, and natural hydrocarbon concentrations.

A third series of instrument and technique intercomparisons will be conducted over the mid-continental United States. Again installed aboard an aircraft, the instruments will be flown in the upper troposphere, where irregularities in the boundary between the troposphere and the stratosphere provide a wide range of concentrations of ozone and other key species.

At the end of the three series of intercomparisons, leading atmospheric scientists will carefully analyze the results, which will provide guidance as to what techniques and measurement strategies to use in later phases of the program.

Long-range plans call for global aircraft sampling in the late 1980s, followed by space-based measurements in the early 1990s.

Both of these phases of the experiment will focus on wide-spread and systematic investigations of the principle processes that govern the key chemical cycles in the global troposphere.

SHARP students finish terms

Summer High School Apprenticeship Research Program (SHARP) students finished their terms here last month and nearly half of the 24 students are currently freshmen at some of the nation's universities. SHARP enables qualified students to be placed with mentors for two months each summer and exposes the students to new learning experiences in science and technology. SHARP is a NASA-wide program geared to prepare the nation's high school students for further study in science and technology and seeks to cultivate today's youth into tomorrow's scientists and engineers.

Two returning students, now freshmen in college, said their experiences this summer were highly rewarding.

"I really enjoyed this year's assignment, even better than last year's," said David Hudgens, now a freshman at Boston University. "I learned to use the Tektronix 7904 oscilloscope, which comes from a new series that has highly sophisticated instrumentation. I used the oscilloscope to put together logic circuits, to test logic components, and to set voltage, amperage and resistance in a bread board system."

Rufus McCrea, now attending the University of Maryland, said his job was equally gratifying.

"I worked in the photography lab of the National Space Data Center. I assisted other employees and completed jobs just as they did. The lab's main function is to develop, print, copy, contact print, enlarge and reduce satellite photos on request from scientists and the public everywhere. The experience was very rewarding and I was even given the chance to do some enlarging on my own," McCrea said.

Many of Goddard's SHARP students have won awards and recognition: John Paul Jones was featured in SOURCEBOOK Magazine last year as one of seven students selected from thousands of high school seniors across the nation as a "super senior" of the Class of '82; Sophia Robinson won the 1982 Olin E. Teague Award for her academic achievements and her performance in the 1981 SHARP program; Frank Gomez Jr. was the 1982 Maryland Chess Champion and several students have won science fair awards and other scholastic recognitions.

Deborah McCallum photos

Summer High School Apprenticeship Research Program (SHARP) students Stacy Barnum (top) and Juanda Andrews (bottom) explain their respective assignments carried out this summer. Each SHARP student gave similar presentations during closing ceremonies.

This year's SHARP coordinator at Greenbelt was Pat Brooks, coordinator of programs for talented and gifted students in the Prince George's County School System. At Wallops, Joyce Milliner coordinated the program for five students.

GAS experiments selected

Eight scientific experiments designed by students of the Prince George's County Public Schools in Maryland have been selected to fly aboard a shuttle in 1985. The selections were made following seven months of intensive research and proposal development by teams of students and teachers at six Prince George's (PG) high schools. The announcement was made on the selections at a recent press conference at Goddard.

The experiments will be constructed during the next ten months and ultimately placed inside a five-cubic foot "Get Away Special" (GAS) canister. The GAS canister was donated to the PG and Montgomery county public schools by Orbital Systems, Ltd., an aerospace engineering firm in Glenn Dale, Maryland.

From a field of 61 original proposals designed by PG students, the eight finalists were selected on the basis of the merits of their investigation, the probability of getting success and their suitability for limited space and power inside the GAS canister. The finalists' projects were submitted by students at Bowie, Eleanor Roosevelt, Friendly, Northwestern, Oxon Hill and Suitland High Schools.

Following the construction of the experiments during the next school year, the eight separate projects will be integrated into the canister. Once integrated, the canister will be sent to Cape Kennedy, Florida, where it will undergo further stress testing. The anticipated launch date is early to mid-1985.

OPEN HOUSE

In celebration of NASA's 25th anniversary, Goddard will host open houses at both Greenbelt and Wallops in October. The Greenbelt Open House, scheduled for Saturday, October 1, is open to Goddard employees and contractors and their families and guests. The Wallops Open House, scheduled Sunday, October 9, is open to Goddard employees, contractors and the public. Make plans to attend!

Congressman Hoyer visits

Joe Walters photo

Congressman Steny Hoyer (D-MD) talks to Goddard employees about pending legislation in the Office of Personnel Management that will affect government workers. Congressman Hoyer, from Maryland's fifth district, spoke at a colloquium recently sponsored by the Goddard Engineers, Scientists and Technicians Association (GESTA) and the Washington Area Metal Trades Council.

Satellite save

Continued from page 3

June 22 One person rescued from a plane crash in Dawson City, Yukon Territory, Canada. No other details available.

August 6 Three persons rescued when plane crashed at 3,600 foot-level of Mt. Katandin in Maine, about 15 miles northeast of Millinocket. Distress signals were heard by both the Soviet and U.S. satellites. Canadian rescue forces brought survivors to hospital in Millinocket.

Pilot Dale Brooker was in serious condition. One passenger suffered broken arm, and the other passenger was in good condition.

August 8 Two persons rescued in Canada's British Columbia. Type of aircraft and other details not available. Distress signals were picked up by Soviet satellite.

The United States' part of the international program, known as COSPAS/SARSAT (acronyms for Search And Rescue Satellite-Aided Tracking) is managed by the Communications Division of NASA's Office of Space Science and Applications. NASA Program Manager is Thomas E. McGunigal. NASA's Goddard Space Flight Center, in Greenbelt, Maryland, is responsible for the execution of the program. Bernard J. Trudell is the SARSAT Mission Manager at Goddard.

Think about it . . .

"A Manager can "Push" a few to achieve modest goals; a Leader can "Inspire" thousands to achieve impossible dreams."
— — — Elva Bailey

There is a difference between leadership and management. Leadership is of the spirit, compounded of personality, vision and training. Its practice is an art. Management is a science. Managers are necessary; Leaders are indispensable — — —
Author unknown

NASA National Aeronautics and Space Administration

Headquarters
Washington, D.C.

25

National Aeronautics and Space Administration

Twenty-fifth Anniversary
1958-1983

WHAT'S YOUR *"PAIN IN THE NECK?"*

- RED TAPE?
- DUPLICATIONS?
- DELAYS?
- POOR PLANNING?
- WASTE OF MATERIAL?
- INFERIOR PROCEDURES?

Suggest A Better Way!

Causes Accidents
(and it hurts, too.)

NASA National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

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