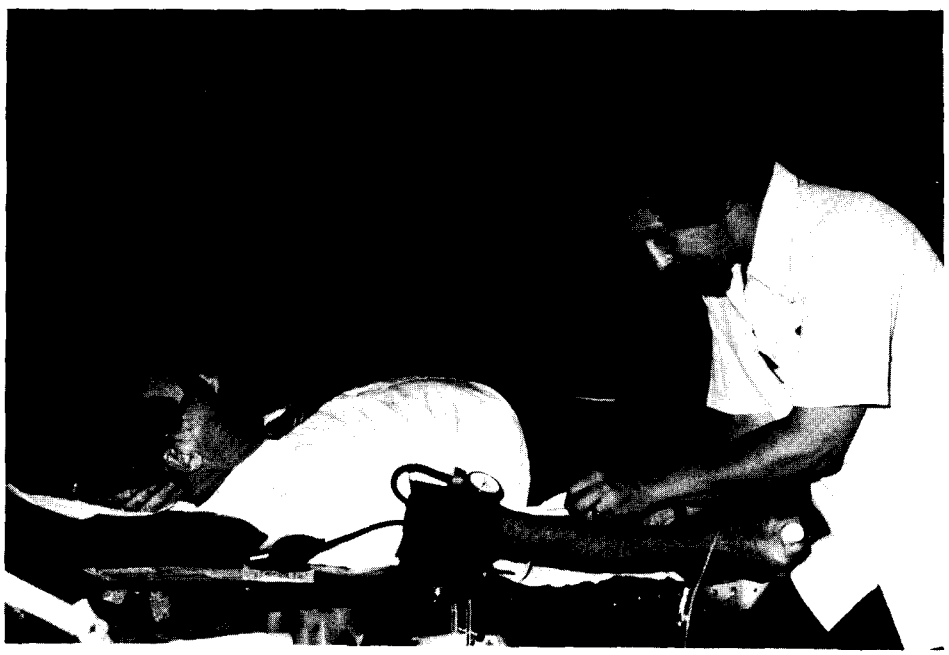
NASA
National Aeronautics and Space Administration

GODDARD NEWS

Goddard Space Flight Center Greenbelt, Md.

Vol. 27 No. 20 July 21, 1980



Director gives blood during June blood drive

Center Director, A. Thomas Young, was one of the early morning donors in the June 25 Red Cross Blood Drive. Pictured above with a Red Cross staff member, Young was one of 124 persons to give blood. The Red Cross Bloodmobile was on Center in the building 8 auditorium from 9 a.m. to 2:45 p.m. The next blood drive is scheduled for August 27. The sign-up deadline is August 22. Contact your Bloodmobile Committee Representative for further information.

Surface of Venus mapped from Pioneer data

Based on extensive radar data returned by NASA's Pioneer Venus spacecraft, scientists for the first time have mapped nearly the entire cloud-shrouded planet, and have identified huge continent-sized features – including mountains as high as Everest and deep rift valleys.

Pioneer Venus has now mapped about 93 per cent of the planet's surface. Prior to Pioneer, less than one percent of Venus' topography had been measured by ground-based radar.

Venus' surface has never been seen because of the clouds which permanently cover the planet.

Pioneer data suggest that Venus' terrain and geology have both strong similarities to and major differences from those of any known planet. According to Dr. Harold Masursky, USGS team member on the Pioneer Venus radar altimeter team, Venus' surface is gently rolling, with local dramatic highs like the North American continent. However, not counting Earth's oceans, Venus' range of elevations is somewhat greater than Earth's, ranging from 2.9 kilometers (9500 feet)

Continued to page two

Earth may have had 'Saturn-like' ring

A ring similar to the rings surrounding Saturn today may have existed around Earth 34 million years ago, according to a scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland.

Dr. John A. O'Keefe, of Goddard's Laboratory for Astronomy and Solar Physics, calculates that the ring, composed of tektites (glass meteorites), lasted one to several million years. The shadow of the rings on Earth's surface caused dramatic climatic changes in the temperate zones.

The sudden climatic change 34 million years ago has been known to geologists for many years as the terminal Eocene event.

This change is considered to be the most profound climatic event to have occurred during the entire Tertiary period between 65 million and 2 million years ago. (The Eocene era represents the earliest part of the Tertiary period in the Earth's geological history.) Through botanical studies, geologists already had found that the temperature changes occurred at the end of the Eocene, but until now, there has been no acceptable explanation for the occurrence, according to O'Keefe.

During the terminal Eocene event, he explained, winter temperatures in the northern hemisphere dropped approximately 20 degrees Celsius (35 degrees Fahrenheit).

The basis for O'Keefe's belief lies in the fact that the biological changes coincide quite accurately with a massive fall of tektites from outer space. While the precise origin of the tektites has not been established, O'Keefe thinks that they

Continued to page six

July 20, 1980

11th Anniversary of Apollo Moon Landing

Landsat data useful in urban hydrology studies

Using Landsat land use data to generate flood flow information in urban areas is not only just as accurate as conventional methods, it is also less expensive and more time efficient, according to a study by Goddard hydrologist Dr. Al Rango.

Dr. Rango used Landsat data to look at run-off in city basins over ten square miles at one half to one fourth as much as conventional techniques. The five basins' tested conventional methods costs ranged from $3,000 to $16,000 compared to Landsat method costs of $2,000 to $5,000.

Conventional methods involve detailed low altitude flights and large amounts of field surveys. A conventional survey of the Anacostia Basin near Goddard required 94 man days. A Landsat survey of the same area took only four man days.

Four of the five basins Dr. Rango studied have already sustained heavy urban development. These areas included Oakland, Austin, Dallas and Philadelphia. The fifth area near Davenport, Iowa, is now undergoing a transition from rural to urban land use.

Water run-off processes near cities differ from rural areas because of the greater amount of pavement, Rango said. This causes increased, rapid stream flow and more floods near cities and developing areas, according to Rango.

Dr. Rango studied the five basin areas in sequence between 1977 and 1979 in cooperation with the Hydrologic Engineering Center of the U.S. Army Corps of Engineers.

Significant results indicate that Landsat classification of land use over an entire watershed area has achieved accuracy from 92 to 98%. At the grid cell level (about one acre) Landsat can be expected to be accurate two-thirds of the time.

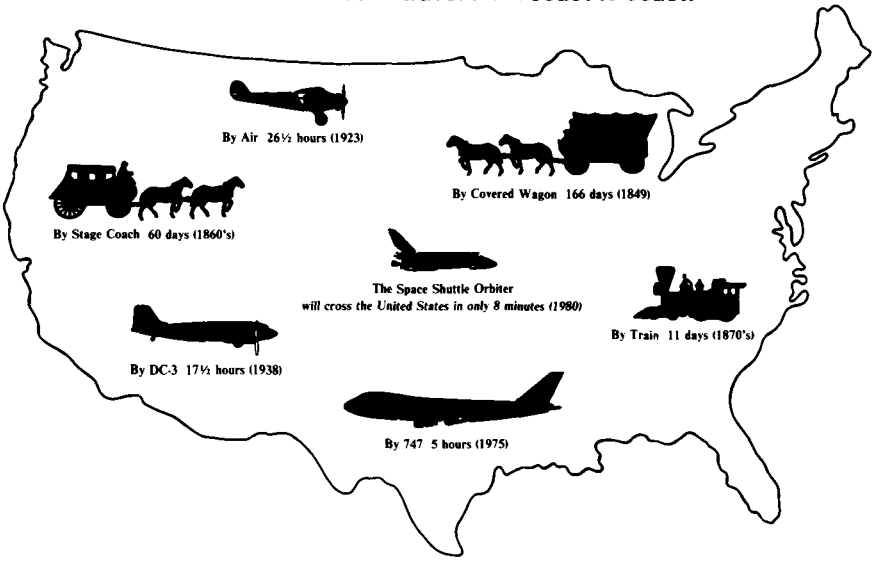
Land use data makes possible hydrologic models of a basin area which are used to predict flood flow. Such information is applicable to land use planning, flood control, dam construction and site selection.

In addition to providing reliable run off data measurements, says Rango, Landsat equals conventional methods for determining discharge frequency. Landsat data, says Rango, is adequate for this type of urban hydrologic planning.

Landsat's Multispectral Scanner (MSS) provided the hydrologic land use information which can be directly incorporated into a data bank by the Corps of Engineers to augment routine investigations. Landsat techniques are not only applicable to studies performed by the Corps of Engineers but also to related work by numerous Federal, state, and local agencies. In addition, many private consulting groups can easily make use of these data for contracted work.

PIONEER TRANSPORTATION SYSTEMS

Recorded times to travel from coast to coast.



Venus

Continued from page one

below the average radius of Venus' spherical surface to 10.8 km (35,400 ft.) above that level.

Sixty per cent of Venus' surface is relatively flat, rolling plains, varying in height by only about 1000 meters (300 ft.) between high and low points. This huge, planet-encompassing plain lies at a 6050-km radius from the center of the planet. (This 6050-km radius describes a reference sphere, much as sea level does on Earth.)

About 16 per cent of Venus' surface lies below the 6050-km mean radius. Such low-lying regions are far more common on Earth (they are the ocean basins) than on Venus, occupying nearly two-thirds of Earth's surface compared to the one-sixth of Venus.

Most of the remaining 24 per cent are only a few thousand feet higher than the plain. Only eight per cent of the planet is "true highlands," ranging in height to maximum altitudes 10.8 km (35,400 ft.) above Venus' rolling plains. These true highlands may resemble similar areas on Earth. They may be made of very light rock, and hence "float" much higher than other features.

The largest of the highland regions, tentatively named Terra Aphrodite,* is half as large as Africa. The smaller highland region, Terra Ishtar, is the size of the continental Unied States.

Although not as thick as those of Mars and the Moon, it now appears that Venus' crust is thicker than Earth's – so thick that it has choked off most crustal movement or plate tectonics. The lower layer of this crust apparently consists of heavier basalt-type rocks and wraps the entire planet. On top of this is a layer of light, granitic-type continental rock. (Russia's Venera 8 found the radioactivity of rocks in one area of Venus' plains to be like that of granite.) This ancient layer of lighter rocks may form a single huge planet-girdling continent, covering about 84 per cent of Venus' total surface. Perched on top of this giant Venusian continent are the smaller but still continent-sized highland regions.

Five of the ten experimenters on the Pioneer Venus mission are from Goddard. They are: Dr. Siegfried J. Bauer, Larry H. Brace, Dr. Hasso B. Niemann, Nelson W. Spencer, and Harry A. Taylor, Jr.

This poem is printed as a contribution by William Cooper, code 251. Published last year in Analog magazine, Cooper's poem commemorates the 10th anniversary of the Apollo moon landing.

20 July, 1969

They made it, we all made it, just a bit,
like vikings leaving runes and little more,
taking the lesser light where God placed it
to show ourselves just what a heaven's for.
They loped like diving suited kangaroos
over that sterile world of one night stands,
driving moon bugs and golf balls to amuse
the children, while the stars slipped through our hands.
They're gone now to their shrinks and shrunken space.
The praise is theirs; it's ours to wonder why
the world's still flat, and dreams are out of grace.
So I, believing less each summer, pry
open that lost last year to see the bright
earth jewel smooth and blue in velvet night.

W.W. Cooper

Key Appointments

Administration and Management

Mr. James S. Burneskis was appointed Head, Section B, Procurement Operations Branch, Procurement Management Division (Code 246.2, 344-7244), effective May 18, 1980.

Effective June 29, 1980, two branches within the Logistics Management Division are reorganized and key personnel appointed as follows:

Three sections are established within the Transportation Branch: the Traffic Management Section (Code 234.1), the Vehicle Operations Section (Code 234.2), and the Travel Section (Code 234.4). Mr Charles C. Casto is appointed Head of Code 234.1 (344-8013), Mr. Burdett W. DeVaul is appointed Head of Code 234.2 (344-8240), and Mr. Charles S. Hendrickson is appointed Head of Code 234.3 (344-7222).

Functions performed in the two existing sections of the Property Management Branch are realigned, resulting in the abolishment of those sections and the establishment of the Equipment Management Section (Code 235.1) and the Utilization, Redistribution and Disposal Section (Code 235.2). Mr Wayman P. Wilkins, currently Head of the Industrial Property Section (Code 235.1), is appointed Head of the new Code 235.1 (344-7937). Mr. Thomas V. Lee, in addition to his duties as Head, Property Management Branch, will lead the new Code 235.2 in an acting capacity pending selection of a permanent section head.

The following organization code designations and key personnel appointments are effective June 1, 1980, within the Project Support Division, Administration & Management Directorate:

280.1	Cobe/GRO	Retitled Cobe/OPEN.
280.2	Magsat	Support transferred to Code 282, SPIRE. Code and title oblished.
280.6	UARS	Support transferred to Code 285, Standard Systems. Code and title abolished.
280.8	SSUS	Established.
281	OSP/S	Support transferred to CODE 266, Sciences, Functional Support Division
281	GRO	Established.
189	GOES/SSUS	Title changed to GOES.

Mr. Robert J. Morrissey is appointed Deputy Project Manager for Resources (DPM/R) for the Spinning Solid Upper Stage (SSUS) Project (Code 280.8, 344-6117).

Mr. J. Edward Baden is appointed DPM/R for the Gamma Ray Observatory (GRO) Project (Code 281, 344-9095).

Mr. Frank L. Heddinger is appointed DPM/R for the Landsat-D Project (Code 283, 344-7493).

Mr. Melvin L. Donahoo is appointed DPM/R for the Earth Radiation Budget Experiment (ERBE) Project (Code 286, 344-8304).

Mission and Data Operations

Mr. Irving M. Salzberg, formerly Head, Orbit Operations Section, Operational Orbit Support Branch, Operations Support Computing Division (Code 572.1), was appointed Head, Operational Orbit Support Branch (Code 572, 344-5478), effective June 15, 1980. Mr. Salzberg is now located in building 3, room 217A. He will continue to lead Code 572.1 in an acting capacity pending selection of a new section head.

Engineering

Dr. Jack L. Bufton was appointed Head, Electro-optical Tracking Systems Section, Instrument Division (Code 723.3, 344-5626), effective May 18, 1980.

Effective May 18, 1980, Mr. Harry G. McCain, formerly Head, Electrical Systems Support Section, Electronic Systems Branch, Systems Division (Code 733.3), is appointed Head, Electrical Systems Interface & Requirements Section (Code 733.2, 344-8492, building 11, room E-113). Mr. McCain replaces Mr. James F. McGuire, who recently transferred to NASA Headquarters.

Effective May 18, 1980, Mr. William D. Hoggard II is appointed Head, Electrical Systems Support Section (Code 733.3, 344-7878, building 6, room S-125), replacing Mr. McCain.

Applications Directorate

Effective April 27, 1980, Mr. John C. Lyon is appointed Head, Interpretive Techniques Branch, Information Extraction Division (Code 932, 344-8744, building 16, room G-28).

Effective May 4, 1980, Mr. Gerald M. Knaup is appointed Head, Data Systems Development Branch (Code 934, 344-6034, building 16, room G-27).

Networks

Mr. Andrew J. Rolinski was appointed Head, Tracking & Acquisition Systems Section, Systems Maintenance & Operations Branch, Network Operations Division (Code 852.3, 344-5572), effective March 9, 1980.

Effective June 15, 1980, Dr. Robert D. Price is appointed Assistant Chief, Earth Survey Applications Division, Applications Directorate (Code 920, 344-8220).

Effective May 18, 1980, the Station Services Branch (Code 853) and the Network Logistics Branch (Code 854) are combined to form a new Network Support Services Branch (Code 853). The existing sections within these two Branches are tranferred to the new Branch without change in titles or functions.

New organizational structure and key personnel appointments are:

853 Network Support Services Branch
Ronald W. Bierwagen, Head
Andrew W. Huntress, Assistant Head

853.1 Network Program Operations and Staffing Section
James A. Costrell, Head

853.2 Network Facilities Section
Andrew W. Huntress, Acting Head

853.3 Logistics Management Section
David I. Kayman, Head

853.4 Material Control Section
Warren F. Adams, Head

Six ways to save your life

Every summer thousands of Americans climb into the family car and start off on a vacation trip. Some of them do most of their traveling on high-speed, multiple-lane highways; others use older roads. And each year there are vacationers who never reach their destination.

The vacationing driver faces all the problems of everyday driving plus some additional ones. He may be traveling on unfamiliar roads; he may be pulling a trailer; his car may be crowded with passengers and vacation gear. However, the driver who plans his trip carefully, taking into account these other problems of vacation travel, has done much to ensure a safe, happy holiday.

SELECTING THE ROUTE

Six Ways to Save Your Life:

- Before starting on a trip, study the route you plan to take.
- Review each day's drive before starting out in the morning.
- Don't attempt to consult a road map while driving. Let a passenger do it, or pull off the road.
- Tape a note to the dash when you will need information about an unfamiliar route.
- Be prepared to adjust speeds and driving techniques as roads and traffic conditions change.
- If possible, avoid arriving in metropolitan areas when commuter traffic is heavy.

People

GLAS gives Peer Awards

Dr. David Atlas (fourth from the left) presented the GLAS Peer Awards to (left to right:) William Skillman, Arthur Hasler, Sharon Felinski (Standing in for award winner Vivian K. Kujawski,) Edward B. Rodgers and Alfred T. C. Chang.

Personnel in the Goddard Laboratory for Atmospheric Sciences (GLAS) held their second annual Peer Awards Ceremony last month. These awards are designed to recognize people who have been identified by their peers, rather than by the usual management hierarchy, for their achievements, Leland Dubach, GLAS Awards Committee Chairman, said.

The Peer Awards are independent and very different from existing center-wide awards according to Dubach. The awards committee consists of representatives from all branches of GLAS. Committee members established the procedures for making the nominations and final selection for the awards

Awards were given in the following three catagories: outstanding paper, outstanding achievement and outstanding service. A total of $1000 was made available to be divided equally among award winners.

Rules for winning the Peer Awards stipulated that there may be more than one winner per category. Moreover, it was also possible not to have a winner in a particular category

Using a secret ballot and ranking selectees for each catagory, the awards committee gave the following peer Awards:

The recipients of the Outstanding Paper Award are:

Edward Rodgers and Alfred Chang for their co-authorship of the paper "A Statistical Technique for Determining Rainfall Over Land Employing Nimbus-6 ESMR Measurements." This peer award is made in recognition of the paper's significant contribution to the field and its representativeness of GLAS activities.

The recipient of the Outstanding Achievement Award is:

Arthur F. Hasler for his contributions to the development of an interactive technique for cloud stereo analysis using digital data from geosynchronous satellites.

The recipients of the Outstanding Service Awards are:

William Skillman for his services as manager of the GLAS Data Laboratory. He has shown a high degree of cooperation and thoroughness in his often tedious assignments. He has ordered, collected, and checked data for research, is responsive and conscientious in filling requests, and completes his tasks to meet deadlines. The laboratory operation has been a smooth operation with very little requirement for management at a higher level.

Vivian Kujawski for her performance in secretarial, clerical, and administrative support to the GLAS Modeling and Simulation Facility. Her dedication and job attitude show through clearly in her long (uncomplaining) hours spent, her courteous manner with visitors and fellow employees, and the high esteem in which she is held by other administrative support persons in the Laboratory.

Coming & Going

New Employees

Coleman, Faye T., Operating Accountant (Code 212), 06-29-80
Copeland, David W., Boilermaker (Code 292.2), 06-29-80
Garrison, Sharon M., Chemist (Code 313), 06-29-80
Gross, Leslie T., Clerk-Stenographer (Code 200), 05-29-80
Huston, James D., Fixed Industrial Equipment Mechanic (Code 292.1), 06-29-80
Moore, Larry D., Quality Assurance (Code 312), 06-29-80
Neaves, Tommy D., Pipefitter (Code 291.1), 06-29-80
Nixon, Belinda K., Secretary (Code 710), 06-29-80
Poland, Arthur I., Astrophysicist (Code 682), 06-29-80
Skinner, Barbara A., Clerk-Typist (Code 200), 06-29-80
Stylo, Regina V., Mathematician (Code 931.2), 06-29-80
Woytek, Joseph R., Mathematician (Code 933.1), 06-29-80
Donaldson, Jayne M., Clerk-Stenographer (Code 200), 06-29-80
Saulino, Mark L., Engineering Aid (Code 751.1). 06-29-80
Woodgate, Bruce E., Astrophysicist (Code 681), 06-29-80
Hunter, Candace D., Clerk-Typist (Code 200), 06-29-80
Duffy, Dean G., Meteorologist (Code 911), 06-29-80
Ferguson, Gloria J., Clerk-Typist (Code 200), 06-19-80
Bailey, Karyn M., Clerk-Typist (Code 406), 06-22-80
Boney, James Edward, Electronics Engineer (Code 801), 06-22-80
Deibler, Kenneth C., Engineering Aid (Code 752.2), 06-22-80
Gildersleeve, Shirley A., Clerk-Typist (Code 914), 06-22-80
Nixon, Victoria L., Clerk-Typist (Code 200), 06-22-80
Perry, David A., Engineering Aid (Code 752.1), 06-22-80

Continued to page six

Retirements

June

Preecs, Samuel E.	**232.2**
Hawkins, William E.	**861.2**
Wyman, Walter S.	**741.2**
Holby, Howard G.	**728.3**

Earth rings

Continued from page one

might have come from an eruption on the Moon. Studies of the tektites, he said, show that some of them have similarities with rocks brought back from the Moon by American astronauts in the NASA Apollo program. Whatever their source, these tektites crashed into the Earth, leaving a path, or strewn field, extending at least half way around the Earth, from the eastern United States westward across the Pacific to the Philippines.

O'Keefe suggests that the tektites that missed Earth went into orbit around our planet and organized themselves into a ring like the rings around Saturn. Once formed, the ring blocked out the rays of the Sun in the northern hemisphere in the winter, due to the Sun's location below the plane of the equator. The shadow cast by the ring resulted in the lowering of winter temperatures.

The ring disappeared, O'Keefe believes, when forces in space, such as the pressure of sunlight or the drag of the atmosphere, pulled the particles out of the ring. They were pulled either downward into the atmosphere, where some burned up and others fell to Earth, or upward into space away from the Earth.

O'Keefe, who has been a NASA scientist since 1958, reports his findings in the May 29 issue of the British journal, *Nature*.

Until recently, Saturn was believed to be the only ringed planet in the solar system. However, rings have been discovered around both Uranus and Jupiter over the past few years.

British correspondent studies SMM

British foreign correspondent Clive Cookson (second from left) reviews photos taken by experiments aboard the Solar Maximum Mission (SMM) spacecraft. Cookson visited Goddard for a story on British contributions and participation in the international solar observation project. Shown with Cookson (left to right) are Dr. Christopher G. Rapley, Mullard Space Science Laboratory; Bruce Woodgate, Goddard; Dr. Kenneth J. H. Phillips, Rutherford and Appleton Laboratories; and Dr. Richard J. Fryer, University of Birmingham.

Keep the Center in touch with what you are doing.

Mail your story to the Goddard News, Code 202, or call the Editor at 344- 5566

New Employees

Continued from page five

Wentz, Joan H., Clerk-Typist (Code 911), 06-22-80
Aultman, Kathleen C., Clerk-Typist (Code 212), 06-22-80
McCauley, Eileen, Clerk-Typist (Code 565), 06-22-80
Megginson, Kirk M., Summer Aid (Code 752.1), 06-15-80
Ricks, Theodore, Summer Aid (Code 234), 06-22-80
Bright, Jerome E., Summer Aid (Code 291), 06-22-80
Bright, Tyrone, Summer Aid (Code 291), 06-22-80
Harris, Timothy Lee, Summer Aid (Code 253.3), 06-22-80
Suanders, Darlene R., Summer Aid (Code 900), 06-22-80
Langford, Patrice R., Summer Aide (Code 573.1), 06-15-80.
Fields, E. Geneva, Summer Aide (Code 801), 06-15-80.
Ruth, LaTonya Y., Clerk-Typist (Code 292), 06-22-80
Bushnell, Robert E., Patent Attorney (Code 204), 06-29-80

NASA National Aeronautics and Space Administration

GODDARD NEWS

The GODDARD NEWS is published every two weeks by the Office of Public Affairs, Goddard Space Flight Center, Greenbelt, Md. 20771. Deadline for submitted material is two weeks from the date of publication. For additional information on major articles contained herein, contact the editor on (301) 344-5566

Editor: Charles Recknagel
Asst. Editors: Karen Jackson
Carlos Aranaga

Editorial Assistant: Pat Ratkewicz
Pictures: Photographic Section