NATIONAL SPACE SCIENCE DATA CENTER

NEWSLETTER

NSSDC No. 1 April 1985

Volume 1

NSSDC Looks Forward

To some of our readers, the National Space Science Data Center (NSSDC) needs no introduction. On behalf of the readers who are not familiar with the functioning of NSSDC, and for those who are not fully aware of its recently-expanded scope, we offer this overview. Many facets briefly mentioned in this overview are more fully described in other articles in this *Newsletter* or will be highlighted in subsequent issues.

NSSDC primarily exists to assure continuing accessibility and utility of data produced by NASA spaceflight missions. For most of its nearly 20-year history, data were primarily held off-line in the form of magnetic tapes, microforms, photographic film, and hardcopy. In this off-line environment, NSSDC typically acquired reduced and analyzed data from individual scientists, archived these data, retrieved data in response to requests with the aid of an automated information system, duplicated tapes or film, and mailed data along with a documentation package to requesters.

We have entered an era when data will be held and transmitted in both off-line and on-line forms. For off-line data, NSSDC is beginning to move to higher density storage media, optical disks for digital data, and videodisks for analog images. With respect to on-line data and electronic data communications, NSSDC is bringing some of its archive on-line to allow access from remote terminals. Moreover, as a node on the DECnet-based Space Plasma Analysis Network (SPAN), some users will have computer-to-computer access to on-line data. NSSDC has recently assumed the role of providing a central Directory/Catalog service, whereby users can determine characteristics of data possibly relevant to their current needs, including data location and access procedures. Data described may be held on-line or off, at NSSDC or elsewhere.

In addition to these activities oriented toward data accessibility, NSSDC pursues other activities. For instance, NSSDC personnel have developed systems to facilitate the use of data, including the Coordinated Data Analysis Workshop (CDAW) and Pilot Climate Data System (PCDS) software packages. Value-added data sets have been created by appropriately synthesizing

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SHUTTLE IMAGING RADAR YIELDS POPULAR DATA

The Shuttle Imaging Radar-B (SIR-B), recently flown on the STS-41G shuttle mission, has collected images of the Earth's surface that will be useful for a wide range of investigations in areas of geography, hydrology, oceanography, and vegetation studies.

The imaging radar first flew as SIR-A on STS-2 in November 1981. Much excitement was generated among scientists when the analysis of SIR-A data collected over the Eastern Sahara Desert revealed that the radar signals had penetrated deposits of dry, windblown sand. The images showed evidence of a previously unknown river system beneath Egypt and Sudan, which was believed to be 5 to 40 million years old.

Reflected signals were received by a radar antenna that had been modified from a fixed position to a fold-and-tilt capability so that target areas can be viewed from different incidence angles between 15° and 60° in 1° steps. These and other system characteristics of SIR-B are listed in the table on page 10.

SIR-B was originally designed to provide imagery of many areas of the Earth between 57° north and south latitudes. Because of problems with the Tracking and Data Relay Satellite System (TDRSS), some data were lost over the Amazon River Basin, the Indonesian Islands, and the treacherous seas off the Cape of Good Hope.

SIR-A image of southern California coastal area (part of data take 24C) with oil platforms appearing as bright spots southeast of Santa Barbara. The tick marks represent ground intervals of 7.1 km.

SIR-B is an advanced version of SIR-A. The major improvements in hardware include better range resolution, controllable incidence angle, and the addition of the digital data recording capability. The radar transmitted millions of horizontally-polarized microwave pulses at an L-band frequency of 1.28 GHz and a wavelength of 23 cm.

Unlike SIR-A, which provided only optically-recorded data, SIR-B collected both optical and digital data. The optical data are being processed at the Jet Propulsion Laboratory (JPL). The digital data are transmitted from the shuttle through TDRSS to New Mexico, relayed to Goddard, put on high-density tapes, and sent to JPL to be processed.

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ON-LINE DATA DIRECTORY/CATALOGS

A user-friendly system for finding the data needed for specific scientific studies is in early development at NSSDC. The system consists of one directory and many catalogs. The location, access procedures, and other characteristics of data sets in their entirety are described in the directory. Individual data set granules are characterized in the catalogs. Such granules may be images, time spans, files on a tape, etc. Characterization of granules may differ significantly among data set catalogs. Not all data sets will have catalogs, and the existence and characteristics of a data set catalog will be described in the directory entry for that data set.

The system describes data held on-line and off-line, at NSSDC and elsewhere. The data described will be primarily, but not exclusively, spacecraft data. It is possible that some catalogs may be maintained at sites other than NSSDC where the data sets being cataloged are also held. It is also envisioned that this on-line catalog system will eventually form the nucleus of a distributed data access and utilization system. It is not likely, however, that such an effective distributed system will be in place in the immediate future.

Work, thus far, has focused on the directory and on the solar-terrestrial discipline. Extensions to the catalog level and to other disciplines will be initiated shortly. A steering committee of scientists at several universities is providing input to the effort. A demonstration of a prototype system was given to several attendees of the Data Systems Users' Working Group meeting on December 1, 1984. Reaction was very favorable.

The directory is built as a relational database managed by the ORACLE Database Management System running on the NSSDC VAX. The user-friendly menu interface is based partly on the Transportable Applications Executive (TAE) and partly on code developed by the NSSDC

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First PCDS Workshop

The first Pilot Climate Data System (PCDS) Workshop was held on October 17, 1984, at Goddard. PCDS is a scientific information system designed to provide support to climate researchers in their investigations of climate-related data sets. Participation included over 100 scientists from Goddard and other NASA facilities in addition to representatives from several major universities around the country.

Speakers included Dr. Caldwell McCoy of NASA Headquarters Information Systems Office, Mr. John Theon of NASA Headquarters Atmospheric Dynamics and Radiation Branch, Dr. Milton Halem, Chief of the Space Data and Computing Division, and Dr. Paul Smith, Head of the Data Management Systems Facility. NSSDC staff discussed system software and capabilities and gave a demonstration. Dr. Ferdinard Baer of the University of Maryland led a lively discussion of user requirements. Several scientists participated in hands-on tutorials the following day.

A questionnaire was circulated among the participants querying their area of study, computer facilities, user needs, and suggestions for system enhancements. This survey will be used in determining the best methods of expanding services to the PCDS user community.

A brief overview of PCDS is given in the article *NSSDC Data Analysis Systems*. (See pages 4 and 5.) An expanded look at PCDS will be given in the next issue of this *Newsletter*.

L. Treinish

GOES Request Processing May Cease

Between the summer of 1974 and the end of September 1980, NASA collected a virtually continuous archive of 1-km resolution visible and 7-km resolution infrared (11-m window) imagery from the eastern Geosynchronous Operational Environmental Satellite (GOES). There are a few gaps in the coverage, the largest being 3 months. Data were taken every 30 min and covered the entire portion of the Earth that was

(Continued on page 5)

NSSDC DATA ANALYSIS

The following are brief descriptions of data analysis systems in different stages of development at NSSDC. Future issues will focus on the purposes and capabilities of each system, as well as how the system is and can be utilized by the science community. The next issue will feature the Pilot Climate Data System.

PILOT LAND DATA SYSTEM
New Initiative

The PILOT LAND DATA SYSTEM (PLDS) is a new NASA initiative that will provide the land science community with a powerful, friendly, and cost-effective computer environment for conducting land related research. The system will offer a full spectrum of distributed processes and analytical services such that the land scientist can focus on research rather than on computer processes and data management. The design and development of PLDS is envisioned as being a multicenter cooperative NASA development. The data management facility at Goddard was chosen as project office and lead center with Ames Research Center, the Jet Propulsion Laboratory, and the National Space and Technology Laboratories participating. Several universities will also be actively involved.

The goal of this pilot program is to develop a system design and the supporting technologies, both hardware and software, that will be needed for a limited-scale demonstration system in the next 4 to 6 years. In the long-term, this overall effort will form the basis for the NASA Land Data System, which is envisioned as an operational system that can support scientists and other users worldwide in the most technically demanding research and operational efforts.

W. Campbell

COORDINATED DATA ANALYSIS WORKSHOP SYSTEM

The COORDINATED DATA ANALYSIS WORKSHOP (CDAW) system was developed to enhance the study of collaborative data sets by individuals, large groups meeting in a workshop setting, and small groups communicating via a network. Data from numerous spacecraft and ground-based experiments are collected and processed into a database in a consistent format such that individual parameters may be manipulated and displayed. A display may contain up to six parameters on a common time scale for easy intercomparison. At runtime, the user may specify a variety of display format parameters as well as data manipulation specifications.

The CDAW system may be accessed remotely and is currently being utilized in this way by four major universities and research facilities. In addition, user requests are satisfied with graphic outputs and time-ordered data (to user specifications) in the form of magnetic tapes, hardcopy, and microforms.

Including CDAW 1.0, held in December of 1978, seven distinct databases have been constructed. After initial construction, the databases are modified as required to add, delete, or change the contents at the investigators' directions and are frequently used for more than one workshop, as well as before and after the workshops. CDAW 8, focusing on ISEE 3 deep magnetotail periods and using SPAN, is planned for 1985.

The selection of the scientific problems, the data submissions, and the conduct of the workshops are accomplished by a committee of scientists utilizing the services of the NSSDC staff. Numerous papers in major scientific publications have resulted from the use of the CDAW facilities. The February 1985 issue of the *Journal of Geophysical Research* features 19 papers resulting from the analysis of the CDAW 6 databases.

E. Stemmer

SYSTEMS

PILOT CLIMATE DATA SYSTEM

The PILOT CLIMATE DATA SYSTEM (PCDS) offers a valuable new tool for researchers using climate-related data. PCDS provides a focal point for managing and providing access to a large collection of actively used data for the Earth, ocean, and atmospheric sciences. PCDS provides uniform data catalogs, inventories, and access methods for selected NASA and non-NASA data sets. Appropriate data manipulation capabilities have been developed to enable scientific users to preview and analyze the data sets using graphical and statistical methods.

PCDS is an easy-to-use, generalized scientific information system, which is presently supporting researchers in the aforementioned disciplines. It has evolved from its original purpose as a climate database management system in response to a national climate program into an extensive package of capabilities to support many types of data sets from both spaceborne and surface-based measurements with flexible data selection and analysis functions.

L. Treinish

GOES Request Processing

(Continued from page 3)

seen from a geosynchronous orbit. Most of the time, the subsatellite point of the eastern GOES was at 75° W.

Goddard Space Flight Center has the capability to generate digital tapes formatted for use on most standard computer facilities. Also, black-and-white imagery is available for the same areas that are included on the tapes. An area of 4000 by 4000 km (at nadir) is contained on each tape.

When NSSDC receives a request for these data, the GOES project office at Goddard processes the requested data and provides them to NSSDC for archiving and distribution. During the past year, requests for these data have diminished. If more requests are not received soon, the processing capability will have to be terminated.

Therefore, persons with further interest in these data should contact the Request Coordination Office at NSSDC quickly so that we may continue this service. An inventory list of the data already archived will be made available upon request.

C. Ng/W. Shenk

FEATURED IN THE NEXT ISSUE:

- **Meet the New Director of NSSDC**
- **The Pilot Climate Data System**
- **The NSSDC Computer Facility**
- **The Astronomical Data Center**
- **The UARS Data System**

AMPTE — A THREE-SATELLITE PROJECT

This is the first in a series of articles featuring the ground data system approaches taken by present and planned spaceflight missions. The series is intended to give the reader a sense of the spectrum of approaches to project data management and the ways NSSDC interacts with these projects to assure long-term data accessibility to the national and international scientific community.

The AMPTE (Active Magnetospheric Particle Tracer Explorers) mission consists of three spacecraft (German, U.K., and U.S.) that were launched on August 16, 1984. The primary objectives were to trace the flow of ions from the solar wind and the outer magnetosphere into the middle and inner magnetosphere, and to measure the composition and energy spectra of naturally-occurring magnetospheric radiation.

Two lithium releases were made in the upstream solar wind by the German Ion Release Module (IRM) spacecraft (apogee 19 R_e); evidence of the transported ions was sought in the data from the U.S. Charge Composition Explorer (CCE) spacecraft (apogee 9 R_e). The IRM also released a large barium cloud beyond the dawnside bowshock, which was subsequently stretched by the solar wind to resemble a small comet and was photographed by cameras onboard two NASA aircraft. Using electronic links and the realtime data system described below, the Investigators monitored the ambient conditions in space to determine release times. More ion releases are scheduled for 1985.

Science data from the spacecraft are processed and stored at three national Science Data Centers (SDCs). Each SDC can access the reduced data from the other two SDCs through commercial dial-up lines or by mail, as needed. Figure 1 is a schematic of the two-way data flow.

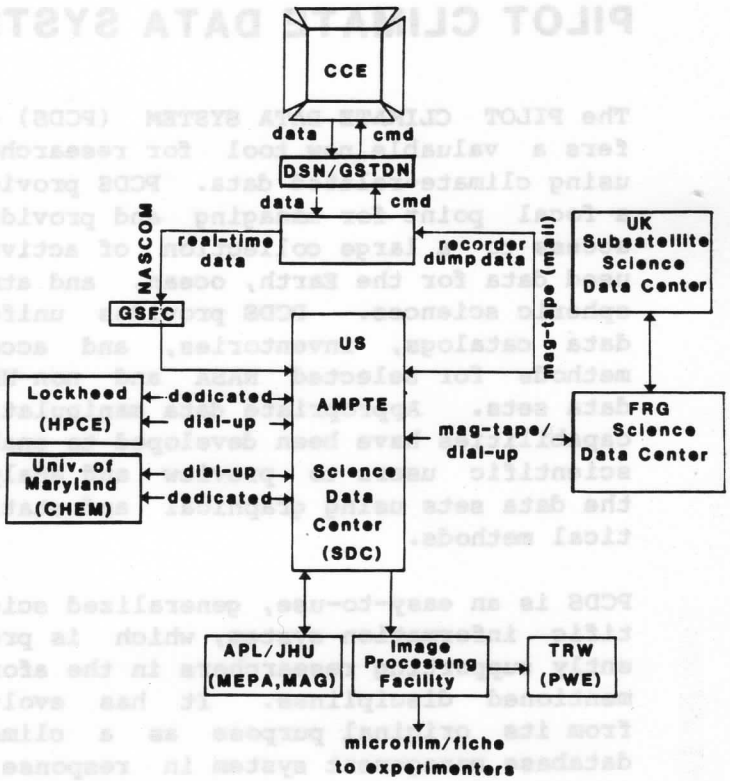


FIGURE 1: *CCE FUNCTIONAL DATA FLOW - An illustration of the availability of data between SDCs.*

In the case of the CCE, which carries five instruments (three ion composition instruments, a magnetometer, and a plasma wave instrument), the 3 kb/s data are captured by the Jet Propulsion Laboratory (JPL) Deep Space Network (DSN) antennas. Most of the captured data are taped at the DSN and mailed to the U.S. SDC, along with the ephemerides. Alternatively, the data may be transmitted to Goddard via NASCOM lines. After error correction, the data are electronically forwarded to the U.S. SDC located at the Applied Physics Laboratory (APL) of the Johns Hopkins University (JHU) for processing. At the SDC, the data are decommutated and then coupled to the ephemeris data by the main VAX 11/780 computer. The data are then reduced to physical units using algorithms supplied by the Investigators. The Investigators use dedicated lines (9600 baud) or dial-up lines (1200 baud) to access the reduced data (their own or, when appropriate, those of other experimenters) for further analysis and correlative studies.

...WITH A UNIQUE DATA SYSTEM

The VAX maintains the most recent 60 days of reduced data on-line, and older data can be brought on-line within minutes. Fig-ure 2 shows the architecture of the computer facility, on-line storage capability, etc. The Datatrieve-32 database management system is utilized, which enables rapid access to the data of interest. In addition, the software developed at the SDC enables the Investigators to browse the data in graphic form.

The reduced data from the European spacecraft, available at the European SDCs, are also procured through commercial dial-up lines or by mail, when appropriate, and are stored at the U.S. SDC for browsing or correlative analysis by the U.S. Investigators. Likewise, the European SDCs procure the CCE data from the U.S. SDC for similar use.

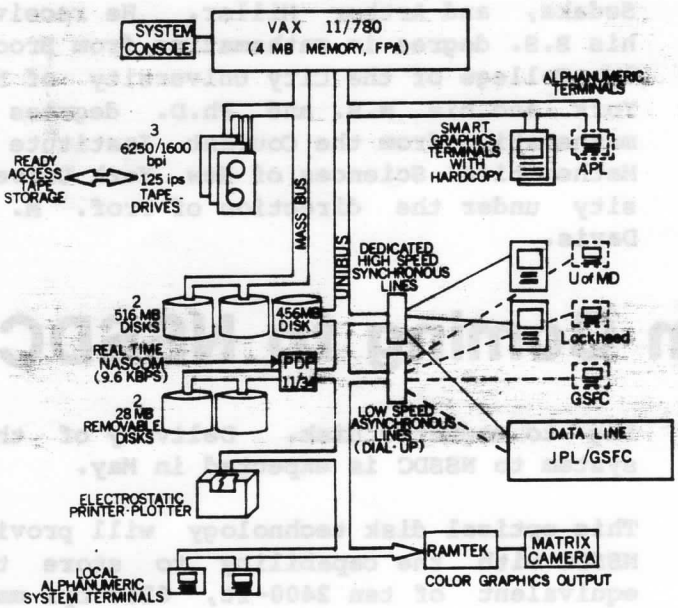


FIGURE 2: *HARDWARE AND LINK-UPS AT THE U.S. SDC - The role of the auxiliary computer, PDP 11/34, and its attached disk drives is to enable realtime procurement of raw CCE data via NASCOM/GSFC.*

The data from the Federal Republic of Germany (FRG) IRM and the United Kingdom Subsatellite (UKS), which are received by the European ground stations, are routed to the Investigators' laboratories for decommutating, processing, and reduction. The reduced data are then sent to their respective SDCs which, in turn, make them available to the U.S. SDC. Thus, all reduced data from the three spacecraft are available at each SDC.

The U.S. SDC will supply to NSSDC copies of all reduced data in their possession from all three spacecraft about a year after the raw data were acquired. This will facilitate accessibility to the entire scientific community. The data will be in the forms of high-time resolution and 6-min averaged digital tapes and 35-mm film containing survey plots of 6-min averaged data.

R. Parthasarathy

ON-LINE DATA DIRECTORY/CATALOGS

(Continued from page 3)

staff. The interface enables users to frame their queries in terms of specific sources (e.g., 1979 Voyager 1 magnetometer data) or in terms of physical parameters (e.g., 1979 deep space magnetic fields). Future versions of the directory will be managed on a Database Machine now being procured by NSSDC.

One of the "tables" in the directory data base contains persons' names, mailing addresses and telephone numbers, and SPAN and Telenet node addresses. A separate and very simple interface has been developed in which a person's address, etc. is returned when his/her name is specified.

Future issues of this *Newsletter* will give updates on the development of this on-line directory. Details of functions, operation, and contents will be discussed.

J. King

BARRY JACOBS Joins NSSDC Staff

Barry E. Jacobs recently joined the staff of NSSDC in the position of senior research Computer Scientist. Dr. Jacobs is continuing his development of a system for uniformly accessing distributed heterogeneous databases. Distributed Access View Integrated Database (DAVID) is a database management system built atop already existing database and file management systems. Dr. Jacobs is leading this effort with investigations being conducted by eight institutions of higher learning, four government agencies, and five private corporations. He hopes to have a demonstration system completed by this summer.

Before coming to Goddard, Dr. Jacobs was an Assistant Professor of Computer Sciences at the University of Maryland in College Park. He has published in the area of mathematical logic; particularly, in generalized recursion theory and abstract computational complexity theory. Jacobs has written over 20 papers generalizing and extending database research from the relational to the heterogeneous case using database logic as a framework. In addition, Dr. Jacobs has written a textbook entitled, "Applied Database Logic I: Fundamental Database Issues," which is the first in a series of three textbooks by Jacobs to be published by Prentice Hall.

Dr. Jacobs was born in Brooklyn, New York in 1947 where he attended Lincoln High School, which boasts among its alumni Mel Brooks, Lou Gossett, Neil Simon, Neil Sedaka, and Arthur Miller. He received his B.S. degree in mathematics from Brooklyn College of the City University of New York and his M.S. and Ph.D. degrees in mathematics from the Courant Institute of Mathematical Sciences of New York University under the direction of Prof. M. D. Davis.

Optical Disk System Coming to NSSDC

A contract has been awarded to the University of Texas at Dallas for delivery of an integrated optical disk system with write once/multiple read capability, with interfaces to the PDP 11/23 and to the VAX 11/780 at NSSDC. The integrated system will consist of a Shugart Optimem 1000 optical disk system for storage of large quantities of digital data; a magnetic disk for temporary storage of bit map information that keeps track of data stored on the optical disk; and a device driver and hardware interface, which allows the user interface for writing to the optical disk to be identical to that for writing to magnetic disk. Delivery of this system to NSSDC is expected in May.

This optical disk technology will provide NSSDC with the capability to store the equivalent of ten 2400-ft, 6250-bpi magnetic tapes on a 12-in diameter optical disk that can be read by users on a relatively low-cost (approximately $15,000) optical disk drive. The potential for this technology can be realized by the vast quantities of data that can be distributed to users in a small package, a reduction in the amount of required tape handling, and an increased on-line access capacity.

V. Thomas

NSSDC Looks Forward

(*Continued from page 1*)

various data sets. Solar-wind magnetic field and plasma compilations and models of geomagnetically-trapped energetic particles are notable examples.

In the past, NSSDC has been responsible for archiving and disseminating data from all NASA scientific missions, across the full range of space and Earth sciences, with the exception of Landsat data. Recent recommendations from NASA advisory groups, particularly the Committee on Data Management and Computation (CODMAC) of the National Academy of Sciences, have stressed the merit of a distributed data archiving system. For instance, Space Telescope data are to be archived and disseminated by the Space Telescope Science Institute in Baltimore. The details of the implementation of the CODMAC recommendations remain to be determined. However, it is likely that NSSDC will be the principal archive in some disciplines; may do long-term archiving in most disciplines; will provide the central Directory for the whole system; and will provide overall leadership in the development and implementation of the hardware, software, and communications approaches needed for effective data management in this distributed environment.

NSSDC is one of the principal Centers within the Space Data and Computing Division of the Space and Earth Sciences Directorate at Goddard. (The other Centers are the NASA Space and Earth Science Computing Center and the Goddard Image and Information Analysis Center.) The Division and Directorate are headed by Drs. Milton Halem and Frank Martin, respectively. Dr. James L. Green has been selected for the position of Associate Division Chief and NSSDC Director. We will feature the new Director in the next issue of this *Newsletter*.

Internally, NSSDC consists of the Central Data Services Facility (CDSF) and the Data Management Systems Facility (DMSF), headed by Drs. Joseph King and Paul Smith, respectively. The functions of the old NSSDC are located within the CDSF, which is primarily responsible for the NSSDC interface to the scientific community and for NSSDC operations. The DMSF was part of the Information Management Branch, Applications Directorate. This facility has and will develop systems supporting NSSDC objectives of data accessibility and use. PCDS was developed by this group. Paul Smith is the Project Manager for the multi-NASA-Field-Center effort to design and develop a Pilot Land Data System (PLDS). In addition, this facility pursues computer science research in areas that are likely to contribute to effective data management. Overall, NSSDC consists of about 25 civil servants and close to 100 onsite contractors. The temporary residence of Goddard and other scientists at NSSDC is viewed as a likely way to bring needed discipline expertise to NSSDC.

After a brief gestation period, the modern NSSDC was born in early 1967, when Dr. James I. Vette was named Director. The childhood of NSSDC spanned about 10 years, while an archive of off-line data and associated documentation was built along with an effective, homegrown information system to permit internal operations and the generation of data catalogs. The adolescence of NSSDC spanned the late 1970s and early 1980s, also under the direction of Jim Vette, as the design and implementation of the CDAW system epitomized the expansion of the NSSDC role from data archiving and disseminating to the development of tools to exploit the data archive. Jim Vette remains at NSSDC as Chief Scientist and continues as Director of WDC-A for Rockets and Satellites. With the recent community recommendations to NASA regarding data management, the recent NSSDC restructuring, and the technology explosion, NSSDC may be said to be entering its adulthood; not a staid and conservative era, but one of wisely exploiting rapidly-evolving hardware and software technologies to promote the accessibility and utility of space and Earth science data.

J. King

The MODCOMP is Dead...Long Live the MODCOMP

NSSDC has acquired a MODCOMP Classic CLII/45 minicomputer to replace the 9-year-old MODCOMP IV/25 in its tape processing facility. The new computer has 32 asynchronous channels, a 256-MB hard disk, and the latest release of MAX IV operating system software (rev H.20).

Virtually all functions of the old NSSDC were performed on the MODCOMP IV. The MODCOMP Classic, however, will mainly be utilized for tape processing, while other activities are being transferred to the VAX that came into NSSDC with the DMSF. (See *NSSDC is Coming of Age*, page 1.) Thus, the needs of the upscoped NSSDC and the CDSF can be better satisfied. In the next issue of the *Newsletter*, the NSSDC computer facility will be discussed in detail.

The MODCOMP IV has outlived the six tape drives that were orginally acquired with it but will be survived by four replacement tape drives, eight disk drives, a line printer, a card reader, and an electrostatic printer/plotter. All the surviving peripherals are scheduled to be connected to the new machine. Two tape drives and the printer/plotter are already connected and working well.

Therefore, both systems are presently operational, providing a smooth transition with minimum impact on the user community. The software from the MODCOMP IV can be easily transported to the MODCOMP CLII where it can be debugged, the results compared, and the MODCOMP IV will be retired. The applications programs moved thusfar (Assembly and Fortran) have required no changes in order to compile properly.

A considerable reduction in the maintenance costs is anticipated with the demise of the MODCOMP IV. This machine will be surplused with its 32-channel asynchronous subsystem and an I/O interface subsystem. The memory planes, core stacks, power supplies, and asynchronous channel cards may be welcome spares at some other NASA facility if the system cannot be used intact.

The new machine is configured with 512 kB of memory, which is only one quarter capacity; the old machine, at 512 kB, was at its full capacity.

The CLII/45 stands in one 19-in. rack as opposed to the two 24-in. racks required for the MODCOMP IV. The new machine uses significantly less power and air conditioning and cycles almost four times faster than its predecessor.

P. Astill/B. Kramer

SHUTTLE IMAGING RADAR

(*Continued from page 2*)

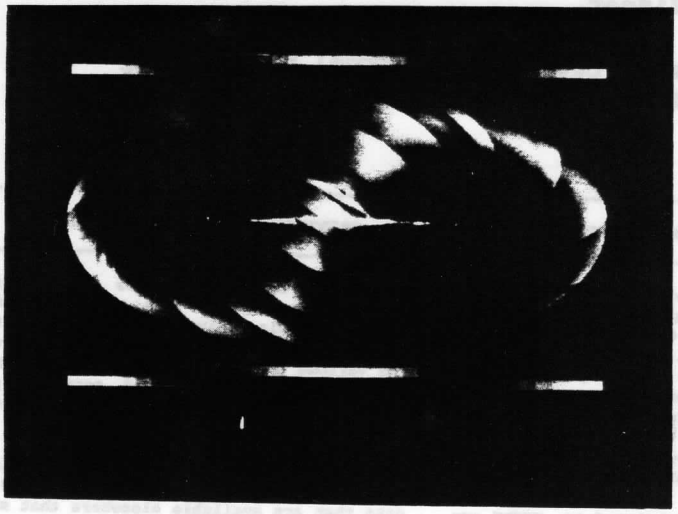
At present, SIR-A imagery is available from NSSDC in the form of photographic prints, negatives, and transparencies. There is also a 16-mm color SIR-A movie produced by JPL and featuring Dr. Charles Elachi, Principal Investigator, as narrator. The movie, which contains a discussion of image examples, is available on a loan basis to NSSDC requesters, and video tapes are for sale. Uncertainty as to location of the SIR-B data archive arises from the Land Remote-Sensing Commercialization Act of 1984. A decision is anticipated in May, and the data should be available in July.

C. Ng

SIR-A AND SIR-B CHARACTERISTICS		
Parameter	SIR-A Value	SIR-B Value
frequency	1.23 GHz	1.23 GHz
wavelength	23 cm	23 cm
polarization	HH	HH
incidence angles	50 ± 3	15 - 60
swath width	50 km	30 - 60 km
azimuth resolution	50 m	25 m

IRAS Data Arrives

The Infrared Astronomical Satellite (IRAS) was a joint US/UK/Netherlands spacecraft containing a telescope of 0.6-m aperture cooled to below 10 K by a liquid helium cryostat. There were 62 infrared detectors at the telescope focal plane that were sensitive in four wavelengths from 12 to 100 micrometers. IRAS also contained a low-resolution spectrometer (LRS), sensitive in the range 8 to 25 micrometers, which produced spectra of 5,000 IR point sources brighter than 5-10 Janskys at 12 to 25 micrometers. IRAS was launched January 26, 1983, into a 900-km near-polar orbit. It ceased scientific operations on November 22, 1983, when the coolant was exhausted.



A SAMPLE IRAS DATA PRODUCT - An all-sky (all IRAS survey scans) print at 1/2° angular resolution.

The main scientific objective of IRAS was to perform an all-sky survey at infrared wavelengths. No such survey existed before 1983 because of the difficulties imposed by infrared absorption in the Earth's atmosphere and by emission from the ground environment at 300 K, which falls in the infrared. If the experience gained by earlier surveys at new wavelengths is a guide, the IRAS survey should yield much new information and even, perhaps, reveal whole new classes of objects. Early results from IRAS have already generated much interest. Among the early results are the discovery of excess IR emission from several nearby stars, thought to be due to surrounding dust shells, and the discovery of infrared-bright external galaxies emitting 50 times more infrared than visible light.

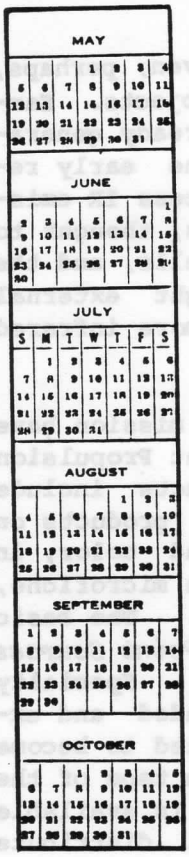
Some data products from this mission have arrived at NSSDC from the Jet Propulsion Laboratory (JPL). The products include magnetic tapes, prints, and products on film, both black-and-white and color, in addition to source catalogs on microfiche, hardcopy, and magnetic tape. The basic catalog is the *Catalog of Point Sources* containing 245,839 sources. Specialty catalogs covering small extended and extragalactic sources are expected to become available soon. In addition, a tape of the spectral atlas from the LRS is available for distribution. NSSDC will distribute IRAS data products in the form of magnetic tapes, photographs, microfiche, and hardcopy along with documentation for using these products. A Data Announcement Bulletin, available from NSSDC on request, provides further details.

E. Scott/G. Stonesifer/W. Warren

NEWSLETTER SURVEY

This first issue of the *NSSDC Newsletter* was sent to a large distribution including most U.S. college and university science departments, all investigators of science-intensive satellite missions, all NSSDC personnel, and most of our recent user community. The next issue of the *Newsletter* will contain a survey card that will ask you if you wish to be kept on the mailing list. It will also ask for additions and corrections. Unless we receive a response from you, your name will be taken off the mailing list for the *Newsletter*. We will be pleased to send the *Newsletter* to any person who would like to receive it.

So, LOOK FOR NEWSLETTER SURVEY IN THE NEXT ISSUE!



Calendar of Upcoming Events

May	*The Report on Active and Planned Spacecraft and Experiments*, NSSDC/WDC-A-R&S 85-01, available for distribution by NSSDC.
May 9	Pilot Climate Data System (PCDS) Users' Group Meeting at Goddard Space Flight Center.
May 27-31	American Geophysical Union (AGU) Spring Meeting in Baltimore, Maryland.
June 4-6	Fifth Annual Transportable Applications Executive (TAE) Users' Conference at Goddard Space Flight Center.
June 12-14	NASA ISO Data Catalogs and Directories Workshop in Washington, DC.
August 20-22	Tenth William T. Pecora Memorial Remote Sensing Symposium in Ft. Collins, Colorado.
September 11	International Cometary Explorer (ICE) encounter with Comet Giacobini-Zinner.
October 16-17	Second Pilot Climate Data System (PCDS) Workshop at Goddard Space Flight Center.

REQUESTING DATA, PUBLICATIONS, OR SERVICES

The services provided by NSSDC are available to any individual or organization resident in the United States and to researchers outside the United States through the World Data Center A for Rockets and Satellites (WDC-A-R&S).

For information on availability, costs, and ordering procedures, researchers residing in the U.S. should contact:

National Space Science Data Center
Code 633.4
Goddard Space Flight Center
Greenbelt, Maryland 20071
Telephone: (301) 344-6695
Telex No.: 89675 NASCOM GBLT
TWX No. : 7108289716

Researchers who reside outside the United States should contact:

World Data Center A for Rockets and Satellites
Code 630.2
Goddard Space Flight Center
Greenbelt, Maryland 20771 U.S.A.
Telephone: (301) 344-6695
Telex No.: 89675 NASCOM GBLT
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SUBMITTING DATA TO NSSDC

NSSDC invites members of the scientific community involved in spaceflight investigations to submit data to the Data Center or to provide information about data sets that they prefer to handle directly. The Data Center assigns a discipline specialist to work with each Investigator or Science Working Team to determine the forms of data that are likely to be most useful to the community of users that obtain data from NSSDC.

The formats of data submitted to NSSDC are flexible, and usually no special processing is required.

For information on submitting data to the Data Center, please contact:

Dr. H. K. Hills
National Space Science Data Center
Code 633.8
Goddard Space Flight Center
Greenbelt, Maryland 20771
Telephone: (301) 344-8105

Researchers residing outside the U.S. may write to Dr. James I. Vette using the address of WDC-A-R&S given on left.

OBJECTIVES OF THE NSSDC NEWSLETTER

The primary objective of this *Newsletter* is to inform and expand our user community. Through regular columns and special features, the reader may become acquainted with the various data analysis systems at NSSDC, our computer facilities and services, popular and new data acquisitions, and major scientific satellite systems.

We will not only feature what is available at NSSDC, but will explore some systems and data that are available elsewhere that might be of interest to our readers.

Each issue will contain a calendar of upcoming events and a profile of some of the people who work at NSSDC. Information about requesting data from NSSDC and submitting data to NSSDC will be contained in every issue.

We welcome all comments and suggestion that you might have. Please forward them to the Editor:

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