NATIONAL SPACE SCIENCE DATA CENTER
NEWSLETTER

NSSDC No. 2 June 1985

Vol. 1

The PCDS Facilitates the Management and Analysis of Climate-Related Data

The following description of the Pilot Climate Data System is the first in a series of articles that will focus on each of the NSSDC data analysis systems. The purpose of these articles is to familiarize readers with the capabilities of each system, as well as the utility to the scientific community. Updates on the various systems will be found in the Newsbriefs *section of this* Newsletter.

The goal of the Pilot Climate Data System (PCDS) is to provide an understanding of and implement solutions to various technical problems involved in providing unified data management support for selected climate-related data. This system provides insight into the validity of these solutions via direct interaction between the PCDS and the user community. The PCDS will evolve to form a baseline information management system to which further climate data management support can be added.

In concept, the initial thrust of the PCDS effort was to provide comprehensive information describing selected NASA climate-related data, flexible easy access to data of interest, and delivery of data products in a readily usable form. The PCDS, implemented initially with limited climate data coverage, provides a basic capability for later expansion and augmentation. The system serves both to demonstrate the feasibility of establishing a centrally-managed NASA climate database and to test developments in evolving a comprehensive capability for providing unified, flexible access to a variety of climate parameter data sets derived from various instruments and sources.

Prior to the advent of the PCDS, climate scientists spent endless hours determining the availability, status, and location of Earth, oceanic, and atmospheric data sets before they could begin their actual research. Once they obtained the desired information and data, additional time was required to place the data into usable formats. Now, the PCDS enables researchers to rapidly locate data of interest, preview data using graphical and statistical methods, and extract subsets for further analysis at their own sites. The PCDS resides on the NSSDC DEC VAX 11/780 computer system located at GSFC. Access to the PCDS is provided via dial-up and network terminals as well as direct lines. Commercial software packages now used by PCDS are ORACLE for catalog and inventory database management and TEMPLATE for graphics.

The PCDS is comprised of five subsystems: A Catalog that provides a central source of information for more than 150 climate-related data sets; an Inventory of detailed information about those data sets available through PCDS; Data Access that permits the selection of data subsets by

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Meet the New Director of NSSDC

On July 1, 1985, Dr. James L. Green will assume the Directorship of NSSDC and will also become an Associate Chief of the Space Data and Computing Division. Dr. Green is currently at Marshall Space Flight Center where he has been instrumental in the creation and evolution of the Space Physics Analysis Network (SPAN).

Dr. Green is an active space plasma physicist with dozens of publications to his credit including those on the subjects of auroral kilometric radiation, ion composition, and magnetospheric cold plasma. He was involved in the discovery of the polar wind and nitrogen in the magnetosphere and intends to remain an active scientist, continuing his role as a Dynamics Explorer science investigator.

Dr. Green received his B.A. in Astronomy, M.S. in Physics, and Ph.D. in Physics from the University of Iowa. He has served on numerous committees and panels including chairmanship of the Data Systems Users Working Group (DSUWG) and co-chairmanship of the Spacelab End-to-End Data System (SEEDS).

"The new NSSDC will be involved in not only preserving key space science databases," states Dr. Green, "but providing rapid access to as much of those databases as possible and providing remote sites with access to capabilities and facilities at NSSDC that we develop." He points out the importance of networking technology and mass storage devices as valuable tools to promote extensive and speedy data exchange and access. "We are going to be leaders in networking and access systems, but also be involved in graphics standards and software exchange and be a clearinghouse for software. We will pursue linking other data centers onto the same network. The whole necessary cycle of information exchange has to proceed, and if we can do our part in speeding that up, we will have done well and we will have served NASA well."

Dr. Green is concerned about providing post-graduate students with easily-accessible data, thereby promoting inexpensive Ph.D.s and interest in the space sciences to assure a sound future. He points out that this is particularly important in the present environment of fewer and more complicated missions.

"The data rates are becoming huge, and the missions are farther apart. That gives the community the opportunity to go back into the databases they have and do a more thorough job or, with the knowledge they now have obtained through additional missions, go back into some of the key space science databases that we are trying to preserve as a national heritage and say, 'Now I understand what this is,' or begin to do some correlative work."

Dr. Green sums up how he sees the role of NSSDC by saying, "If we really want to advance the state of the knowledge, we need to combine databases and we need to have an in-depth understanding of a variety of data systems. This is why NSSDC plays an extremely important role, probably a more important role than it ever has before, to be the organization to coordinate correlative science in so many of the space science areas."

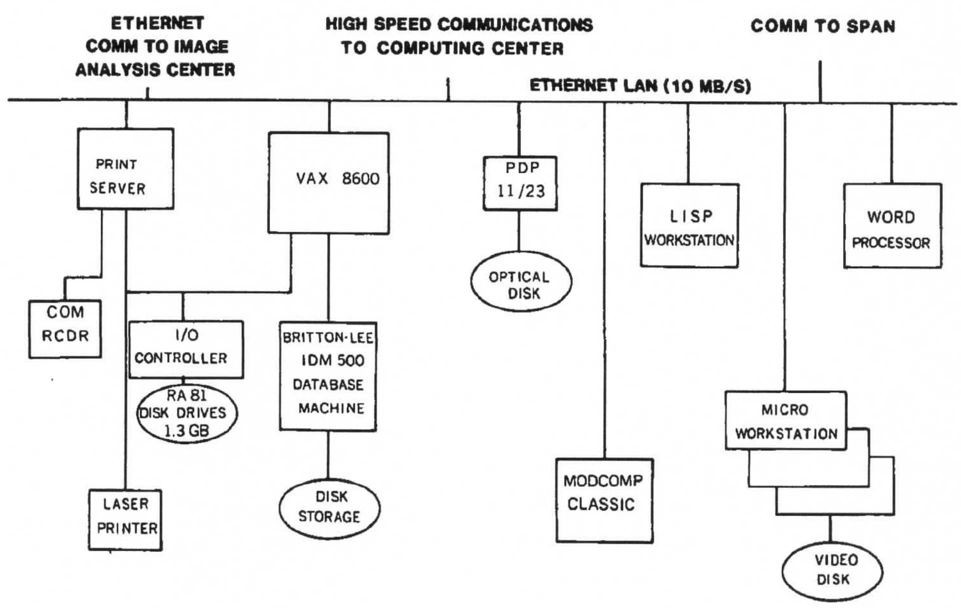
NCF IS UPGRADED TO BETTER SERVE USER COMMUNITY

The NSSDC Computer Facility (NCF) presently consists of elements in two buildings at Goddard, reflecting the locations of the two groups from which the new NSSDC was created in 1984. Before this year is out, the NCF will consist of a one-building entity with its major elements linked by an Ethernet-based local area network (LAN). The power, flexibility, and storage capacity of the NCF will be significantly enhanced to meet the growing NSSDC user requirements.

One element of the present NCF has a MODCOMP Classic II minicomputer, 656-MB disk storage, and four 1600-bpi tape drives. All these components have been acquired within the past 2 years except 400-MB of disk storage. Two new 6250-bpi tape drives will be delivered within months.

Another element of the present NCF has a VAX 11/780 computer with 4 MB main memory, 1.5-GB disk storage, and five tape drives including two 6250-bpi. Within the next few months, the main memory will be expanded to 8 MB, and a back-end database machine will be added to offload much of the database query activity. Note that this VAX is a node on the Space Physics Analysis Network (SPAN). Within weeks, an Optimem 1000 optical disk (write-once; 1 GB per platter) and a host PDP-11/23 computer will be added. Initially, Principal access is expected to be from the VAX via Ethernet.

NSSDC PROPOSED SYSTEM CONFIGURATION



Within several months, a more powerful processor will replace the VAX 11/780 as the NCF's principal machine.

Additional hardware components planned for the next year or so include additional magnetic disk drives; a second Optimem optical disk drive; an intelligent I/O processor enabling the sharing of disks among central processing units; a laser text and graphics system (printer and software) and print server cpu; terminal and router servers; and microcomputer-based workstations including one specifically for LISP artificial intelligence work.

For the longer term, likely hardware acquisitions include a much larger capacity on-line storage system (possibly optical disk-based), a larger capacity database machine, and possibly a high-performance Computer Output to Microform (COM) unit to replace the present COM unit. NSSDC will seek to incorporate increasingly versatile and cost effective computer/peripheral hardware into the NCF in ways to maximize the utility of NSSDC to its users.

Maximum access to the NCF by the scientific community will be provided by dial-in and network capabilities while the basic NCF compute/data storage capabilities are built. Maximum utility of the NCF will be promoted by acquiring and creating appropriate software packages. Both the networking and NCF software environment and plans will be discussed in future issues.

NSSDC Supports ICE Encounter with Comet Giacobini-Zinner

On September 11, 1985, the International Cometary Explorer (ICE) satellite will make history when it passes through the tail of comet Giacobini-Zinner. The first comet encounter by a man-made object is the culmination of 4 years of planning and 3 years of complicated maneuvers.

ICE was launched on August 12, 1978, and was originally named International Sun-Earth Explorer 3 (ISEE 3). From launch until June 10, 1982, ISEE 3 was in a halo orbit around the libration point between the Earth and the Sun. The primary goal of the ISEE 3 mission was to determine the properties of the oncoming solar wind, while the previously-launched ISEE 1 and 2 satellites took simultaneous coordinated measurements of the near-Earth solar wind. ISEE 3 fulfilled its mission. On June 10, 1982, it was redirected, using the onboard propulsion system, through the Earth's deep magnetotail. ISEE 3 made six passes through the tail and five swingbys of the Moon, producing valuable, new scientific data that is being studied with great interest.

ISEE 3 was renamed ICE after the last lunar flyby of December 22, 1983, when the spacecraft orbit was altered to begin the comet encounter mission phase. After the Giacobini-Zinner encounter, ICE will serve as an upstream monitor of solar wind conditions for Halley's comet for time periods around October 31, 1985, and March 28, 1986.

A strategy for the encounter has been developed and continues to be modified to maximize the scientific return from this brief opportunity. The primary consideration is the potential dust hazard from the comet's tail to the solar array. The selection of the instrument complement and the data rate as well as the actual target area of the encounter was and is dependent on this factor. Other serious considerations are telemetry reception, communications, ground-based support, and quick-look data processing.

NSSDC is supporting the ICE mission in the areas of logistics and communications. The NSSDC VAX computer of the Space Physics Analysis Network (SPAN) node at NSSDC will be utilized to permit the Investigators rapid communications with their home sites for quick data reduction and return of reduced data via the same lines. NSSDC will assist in installation and testing of the hardware and communications, upon request, and has provided for the required telephone lines. Logistics support includes providing facilities for about 40 scientists who will be at Goddard for the encounter. Most of these scientists will gather in the large workshop room of NSSDC.

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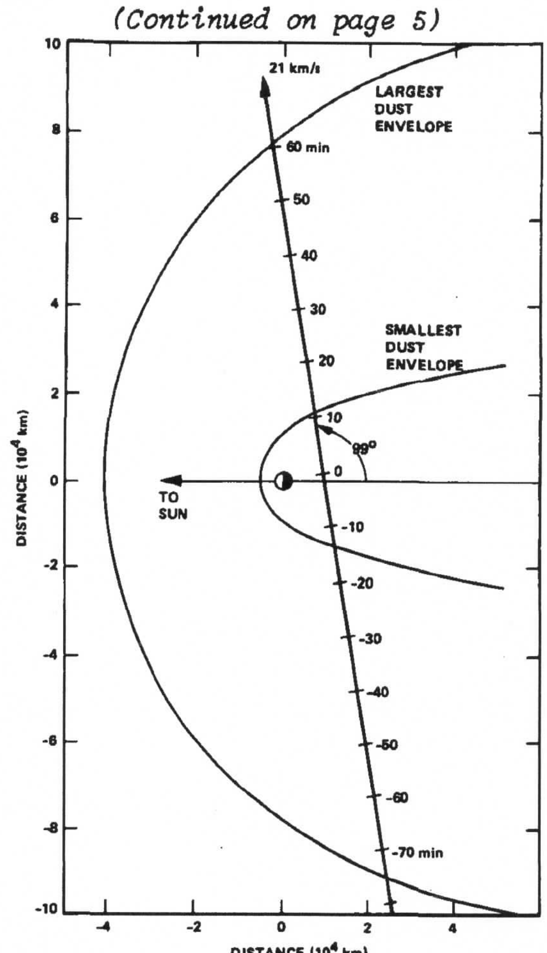


The ICE spacecraft trajectory for a tailward flyby at 10^4 km (closest approach near the nucleus of Giacobini-Zinner). The plane of this figure includes the nucleus (shown enlarged) at the origin and a 2.5-hr segment of the spacecraft trajectory. This figure is from The Comet Giacobini-Zinner Handbook, *Feb. 14, 1985.*

The Astronomical Data Center at NSSDC

The Astronomical Data Center (ADC) is an effort within NSSDC dealing with the acquisition, processing, documentation, archiving and distribution of machine-readable astronomical catalogs and other specialized data sets in various astronomical disciplines. Computerized astronomical catalogs are widely used to support basic research, telescope and spacecraft pointing and tracking, on-line data reduction, data retrieval, and analysis of new observations. The ADC effort is actually a collaboration between NSSDC and Goddard's Laboratory for Astronomy and Solar Physics (LASP), wherein both groups accept responsibility for the analysis and documenting of new catalogs. However, the LASP group is primarily involved with the development of advanced data retrieval systems, while the NSSDC group maintains the data archive and performs all distribution related activities. Through a co-operative data exchange agreement with the Centre de Donnees Stellaires (CDS) in Strasbourg, France, the ADC acquires all catalogs deposited with CDS, which was originally established by *The International Astronomical Union*. The CDS, in turn is sent all catalogs deposited with ADC.

The astronomical data centers are the only permanent archives of data in all disciplines of astronomy, and their primary role is to archive and permanently retain data for use by present and future generations of astronomers. Catalogs acquired from the scientific community are therefore not archived blindly, but are examined, restructured and/or modified if necessary, usually in collaboration with their creators. This work is done to assure that the data will be easily processable by other computers, that formats are as simple as possible and conform to standard usage, and that maximum storage efficiency is achieved. The data are then documented in detail with a paper giving historical information, literature citations and a byte-by-byte format description for each file of the catalog. A draft copy of each document is sent to the author(s) of a machine catalog for comments and suggestions before the document is printed for distribution with tapes containing the data. The close cooperation of authors and ADC personnel usually results in a better final product, because authors have more expertise with their own data than do data center astronomers. The collaboration can also be a learning experience for authors and compilers of catalogs and may result in higher quality data preparation for future catalogs.

Requested catalogs are transferred from master archive tapes onto user-supplied tapes in a user-specified format.

Additional information and a list of the approximately 450 machine-readable astronomical catalogs available for distribution may be obtained by contacting NSSDC or the ADC directly at (301) 344-8310.

W. Warren Jr.

NSSDC Supports Encounter

(Continued from page 4)

The operating procedures during the 3-day encounter period are as follows: Decommutated tapes will be generated by the GSFC Information Processing Division, which will contain data files in 4-hr intervals. The NSSDC VAX and SPAN will be used to move these data to the Investigator Teams' home sites (the Jet Propulsion Laboratory, Los Alamos National Laboratory and TRW) for rapid data reduction. The reduced data will return to the Investigator Teams at GSFC via SPAN. In addition, NSSDC is providing support for communication of data between Goddard and a co-Investigator at ESTEC (Holland) via SPAN and Telenet. Final preparations and decisions for the encounter will be made at the ICE Science Working Team Meeting to be held at Goddard the week of July 15th. Successful testing of ICE data communications between NSSDC and the remote sites began in March, and testing will continue until early September.

E. Stemmer

PLANNED GROUND DATA SYSTEM FOR UARS

The following description of the Upper Atmosphere Research Satellite (UARS) ground data system continues the series of Newsletter articles featuring the ground data system approach taken by planned and operating spaceflight missions. As noted in the AMPTE article in the first issue, this series is intended to describe to the reader the different ways taken by flight projects to handle their data management and to identify the role played by NSSDC in providing long-term data accessibility to the national and international scientific community.

(See Editorial Comment on page 11)

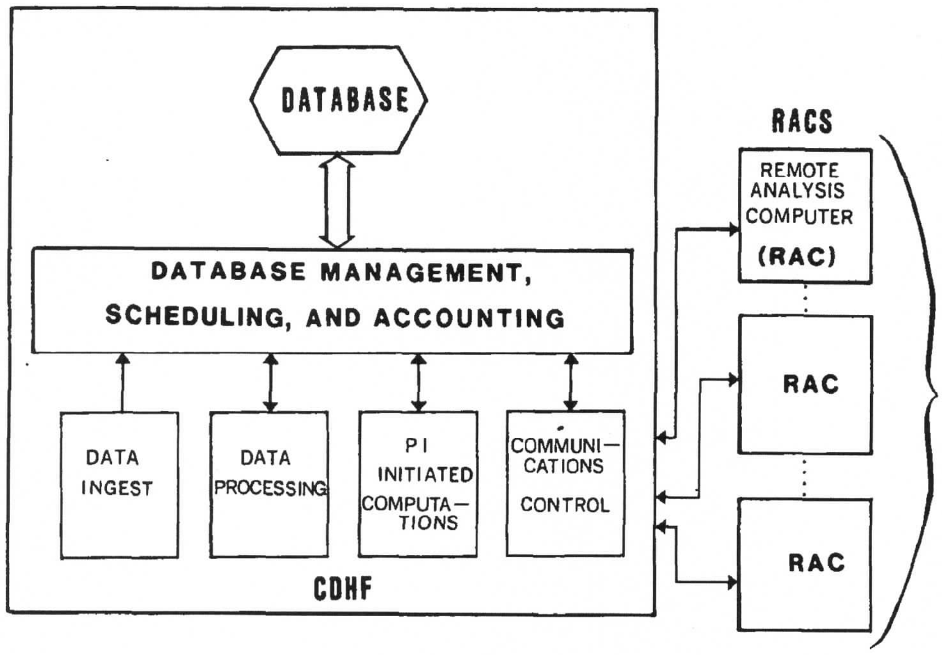
The UARS mission will conduct research in the atmosphere above the tropopause by measuring the global budget of constituent trace gases and their chemical, dynamical, and radiative behavior.

The UARS payload carries nine instruments devoted to the primary atmospheric mission plus one instrument (active cavity radiometer irradiance monitor) that is using the spacecraft as a flight of opportunity. Six of the instruments remotely sense atmospheric emissions, scattered light, or atmospheric absorption of sunlight in different spectral bands along the line-of-sight of the instruments. They provide altitude profiles of the measured radiances from which, via inversion processes, geophysical parameters such as atmospheric temperature and winds and concentrations of minor gas species will be derived. One instrument will measure the *in situ* particle environment and geomagnetic field, and two instruments will measure the solar energy input to the Earth's atmosphere. The satellite will be launched in the fall of 1989 into a nominal circular orbit of 600 km with an inclination of 57°.

The principal ground data processing and analysis elements are the Data Capture Facility (DCF), the Central Data Handling Facility (CDHF), and the Remote Analysis Computers (RACs). Tape recorded scientific data at 512 kb/s and real time scientific data at 32 kb/s are telemetered through the Tracking and Data Relay Satellite System (TDRSS) for 10-15 min per orbit, and are captured and preprocessed at GSFC at an institutional DCF. The DCF archives the raw data, performs space and ground-link quality checks, reverses the data to time-increasing order, removes redundant data, and decommutates and formats the data for transmission, via an electronic link, to the CDHF. The figure shows the interface of the CDHF with the RACs and gives the RAC locations. The CDHF will interface with 9.6-kb/s (56-kb/s for the GSFC RAC) dedicated lines to each of the RACs and use Digital Equipment Corporation's network (DECnet).

The CDHF, whose final configuration has not yet been determined, will contain a central database of processed UARS data that may be accessed by any RAC. The scientific data, definitive orbit and attitude, solar and lunar ephemerides, and correlative data will be ingested, cataloged, and placed in the on-line database. The scientific data will be processed to a form suitable for scientific analysis using programs supplied by the instrument Investigators.

Data from UARS instruments will undergo several processing steps starting at Level 0 and advancing to Level 3. Level 0 data are raw telemetry data in which the data reversal, quality check, editing, and decommutation functions have been performed. The definitions for Level 1, 2, and 3 data vary somewhat depending on the instrument. In general, the first processing step removes the instrument function so that Level 1 data are calibrated values of the instrument measurement. The next level of processing has geophysical parameters as data outputs. Finally, Level 3 processing maps the geophysical parameters into a common time base in a common format and then onto a common spatial grid. Data processing and analysis will begin at launch and will continue for at least 1 year after the termination of satellite operations.



RAC Locations

Washington, DC
Atlanta, GA
Greenbelt, MD
Boulder, CO (2)
Ann Arbor, MI
Seattle, WA
Palo Alto, CA
Suitland, MD
Hampton, VA
Toronto, CANADA
Paris, FRANCE
Pasadena, CA
San Antonio, TX
Bracknell, ENGLAND
Livermore, CA

UARS CDHF AND RACS

Included in the list of data types to be cataloged are the following: Level 0; Levels 1, 2, and 3 that have been production processed; raw engineering data; definitive orbit and attitude data; solar and lunar ephemeris data; and correlative data. All Science Team members have read privileges to all catalogs and cataloged data.

The CDHF will provide a computational capability reserved exclusively for use by the Investigators. All the RACs will present a similar interface to the CDHF, will be compatible with each other, and will belong to the VAX family. Database management software and various utility routines will be available in the CDHF. Routine processing and storage of the data will occur in the CDHF, and the analysis of the data will occur at the RACs. An Investigator can interact with the CDHF from his RAC in several ways. He can transfer files of data or software between the CDHF and his RAC. He can query a catalog that has the characteristics of the processed data held in the database. Another option is that he can use the computational facilities of the CDHF allotted to Investigators for activities such as software editing or special data processing. The CDHF is being sized to produce and provide access to scientific data and not to serve as a high-speed interactive computing center.

The current schedule shows the CDHF ready for use by December 1986. By January 1, 1989, the project plans to begin end-to-end testing of the ground data system. The Principal Investigators will provide simulated data for this system test.

The long-term archiving and access by the community of these data, as of this date, have not been adequately addressed. The UARS data management environment, to be defined by a Project Data Management Plan (PDMP), has yet to be developed. The present Project expectation is that Level 3 data will satisfy most user needs; and, hence, only Level 3 data are currently planned to be accessible to users through NSSDC after the mission life.

It is possible that the PDMP could define a more comprehensive role for NSSDC including involvement in some combination of the UARS data catalog, systems, access by the community to lower level (2,1,0) data, and during mission data access including on-line data access.

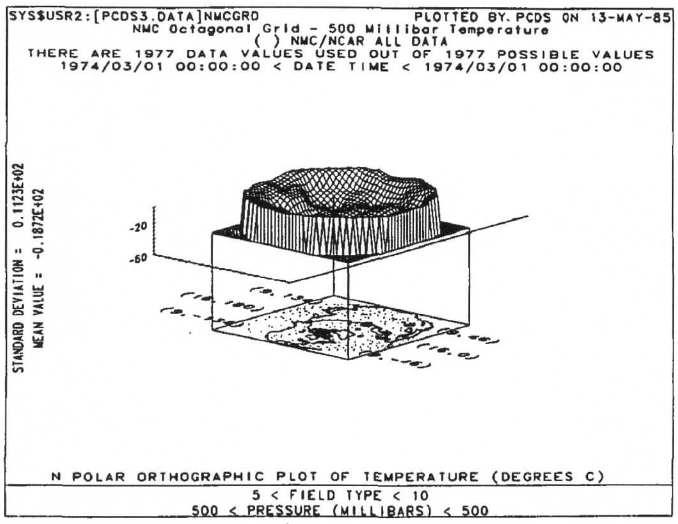
R. Horowitz

PILOT CLIMATE DATA SYSTEM

(Continued from page 1)

time, geographic area, and data type and also permits copy and transfer of data into a special data-independent storage structure called the Climate Data File (CDF); Data Manipulation that supports parallel analysis of hetero-geneous data sets in the CDF format; and Graphics that allow users to creat two- or three-dimensional representations of data in CDFs and text charts. Figures 1 and 2 are examples of PCDS graphics products. These examples are in black-and-white, but color graphics are available.

Figure 1: Typical Three-Dimensional Map Display



The PCDS maintains an archive and provides full support of all of the aforementioned functions for the following data sets:

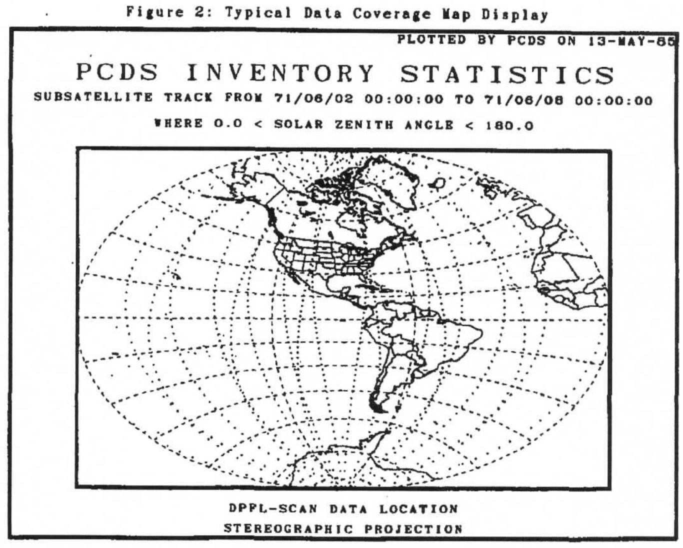
- FGGE II-b and ECMWF III-b Data Sets
- Middle Atmospheric Electrodynamics Sounding Rocket Data
- NASA/FGGE II-c SMMR, ERB, and SBUV
- NMC Octagonal Grids
- Nimbus 4 BUV DPFL and DZMP
- Nimbus 4 and 5 SCR STIT
- Nimbus 5 ESMR 3-Day Averages
- Nimbus 7 ERB MATRIX, ZMT, SEFDT
- Nimbus 7 LIMS LAMAT
- Nimbus 7 SAM II BANAT
- Nimbus 7 SBUV Ozone-S
- Nimbus 7 THIR CLDT and CLE
- Nimbus 7 TOMS Ozone-T
- NOAA Heat Budget Data
- SAGE Profiles
- World Monthly Surface Station Climatology

Researchers may use the PCDS to scan, analyze, manipulate, compare, display, and study climate parameters from diverse data sets. Data producers use the system to validate and archive data or to maintain account records and inventory. Managers find the PCDS useful for planning data processing and analysis activities. Academic researchers with limited budgets can quickly access selected portions of large data sets.

The PCDS is supporting researchers at GSFC and other NASA-funded institutions, including many universities, in the following disciplines or projects:

- Statistical Climatology
- International Satellite Cloud Climatology Project
- Solar Flux
- Global Ozone Distribution
- Earth Radiation Budget Studies
- Middle Atmosphere Electrodynamics
- Stratospheric Photochemistry
- Distribution of Gravity/Magnetic Anomalies
- Vegetation Biomass in North America
- Land Surface/Soil Moisture Distribution

Figure 2: Typical Data Coverage Map Display



There are several important innovations and accomplishments that have been achieved in the development of the PCDS to date. Some of these are:

- Development of the first self-describing, data-independent structure (the CDF) that is oriented towards the user of the data.

- Development of a flexible, easy-to-use, integrated, data-independent, and device-independent graphics system that supports many representation schemes of multi-dimensional data sets.

- Development and implementation of a plan for the management and support of several of the data products of the International Satellite Cloud Climatology Project (ISCCP).

- Development of plans for the management and support of the Earth Radiation Budget Experiment (ERBE) and the Global Solar Data Base (GSDB) via the PCDS.

- Addition of data-independent manipulaation tools for subsetting, ungridding, averaging, algebraically combining, and listing of data sets.

- Integration of data management, computer graphics, network communication and data manipulation functions with a data archive and an information database into a generalized, scientific information system.

- Development of an experimental program in collaboration with Pennsylvania State University to remotely access the PCDS for use in a graduate program in climatology.

Vital to the climate science community, the PCDS is easy to use and flexible. It frees the user from the burden of software generation. It provides state-of-the-art data management to support detailed scientific climate research, supports several large data sets from a variety of sources, and serves as a model for future information management systems in a variety of disciplines.

L. Treinish

AgRISTARS Data Arrives

NSSDC personnel are in the process of sorting and inventorying the Agricultural Resources Inventory Survey through Aerospace Remote Sensing (AgRISTARS) data. After the disengagement of the Johnson Space Center (JSC) activities from Earth observations, a formal agreement was reached between NASA Headquarters and the Directors of GSFC and JSC making NSSDC the repository for the AgRISTARS database.

AgRISTARS was a joint effort involving NASA for handling of satellite data and data analysis, USDA for ground truth data and statistics, and NOAA for weather data with support from the EROS Data Center, Department of the Interior. The technical program was structured into eight projects: Early Warning/Crop Condition Assessment, Foreign Commodity Production Forecasting, Yield Model Development, Soil Moisture, Domestic Crops and Land Cover, Renewable Resource Inventory, Conservation and Pollution, and Supporting Research. AgRISTARS utilized data from the Landsat, GOES, and Tiros satellites to study wheat, barley, corn, rice, soybean, grass, cotton, sorghum, and sunflower crops.

The 973 boxes of AgRISTARS data arrived at NSSDC from JSC on January 16. The large volume presented a difficult storage problem. Temporary storage was located at Goddard while a staging area was located and rented. The data now reside in off-site office space where they will be inventoried and organized. Useful data sets will be identified and established. It is anticipated that these data sets will include climate digital tapes, Landsat digital imagery, aircraft imagery for ground truth purposes, and the remote sensing documents. The data sets will be advertised when they are available for distribution to the user community.

G. Stonesifer

IN THE NEXT ISSUE:

- The ATMOS Ground System
- The CDAW Analysis System
- A Message from the Director
- The Crustal Dynamics Data Information System
- The NSSDC Automated Bibliographic File

SFDUs Discussed at Meeting

The Consultive Committee for Space Data Systems, an international body concerned with standards to promote improved access to space data and telemetry, held a meeting in the Washington area on June 10-13. The primary topic for consideration was the current status and development plans for the use of Standard Formatted Data Units (SFDUs) to facilitate the interchange of data between systems including agencies, archives, and individuals.

NSSDC participated in the sessions and made two presentations. One described the Pilot Climate Data System and its relationship to SFDUs. The other presentation summarized the characteristics of several tape data set formats chosen at random from different science disciplines and noted the types of data streams that SFDUs would have to describe succinctly.

The Committee is preparing a revised Red Book on SFDU Primary Label Formats and a Green Book on the concepts of operation. It is expected that these books will be available to the participating agencies, for review, this Fall.

Telescience Meeting to be Held

A conference/workshop, sponsored jointly by the Space Station program office, the Office of Space Science and Applications, and Goddard's Code 500, will be held on August 12-14, 1985, at a location near GSFC. The purpose of the conference/workshop, which is entitled, "Telescience for the Space Station Era," will be to explore the significance and implications of telescience, especially for the design of future data systems and to explore how potential users might work more closely than in the past with designers of future space and ground data systems in "hands-on" evaluation of design options to implement telescience concepts more readily.

For further information, contact E.R. Schmerling at (301) 344-6989 by telephone, at eschmerling by telemail, or on SPAN at NSSDC::SCHMERLING.

RAPSE Available for Distribution

The Report on Active and Planned Spacecraft and Experiments (RAPSE), NSSDC/WDC-A-R&S 85-01, is available for distribution.

RAPSE is a regular publication of NSSDC and contains information on current as well as planned spacecraft activity in a broad range of scientific disciplines.

The mailing of RAPSE to those people and institutions on the NSSDC RAPSE distribution list has taken place. If you would like a copy of this document contact the Request Coordination Office at NSSDC.

SDCD Assigned ROSAT SDC

Under an agreement just reached with NASA Headquarters, GSFC has been assigned overall responsibility for the design, development, and implementation of the U.S. Roentgensatellite (ROSAT) Science Data Center (SDC). The Space Data And Computing Division (SDCD) will have lead responsibility for this effort within GSFC. The Smithsonian Astrophysical Observatory (SAO) and the Laboratory for High Energy Astrophysics (LHEA) will participate as major scientific collaborators. SDCD will provide the U.S. science mission operations planning, ROSAT database management systems, and NSSDC on-line data catalogs and archives and has responsibility for a network of Regional Analysis Centers (RACs). SDCD will also be responsible for management, operation, and conduct of Level 1 (pipeline) data processing and dissemination of the ROSAT science data products; provide the communication networks for Regional Analysis Centers; and support regional ROSAT data analysis software systems.

SAO will provide for verification and monitoring of the Level 1 data products; provide Level 2 software analysis systems; develop specialized interactive IRAF X-ray image display software; and provide technical assistance in the guest observer program and mission planning.

Watch for further developments in subsequent *Newsletters*.

Directory/Catalog Issues Discussed

A workshop was held June 12-14, 1985, in Rockville, Maryland to discuss issues related to data directories and catalogs. The meeting was sponsored by NASA's Information Systems Office (ISO), Code EI, and was coordinated by Jose Urena of JPL. Attendees included representatives of the ISO-supported Pilot Data Systems (Climate, Oceans, Planetary, and Land), the Global Resources Information System (GRIS), the NSSDC on-line catalog system, and the Space Telescope Science Institute. Non-NASA representation included NOAA and USGS.

On the first day, a series of presentations was made by representatives of various projects and data systems. On the next two days, panels addressed the following issues: Informational content of catalogs, information-data model structure, query/search capabilities, user interface, standards and guidelines, and policy. A report on the meeting will be assembled by Jose Urena. Copies may be obtained from him or from NSSDC.

Dear Reader,

I would like to take this opportunity to thank the many people who responded to the first issue of the Newsletter *with letters and telephone calls. Your comments and suggestions are greatly appreciated.*

A suggestion was made, which will be implemented, to incorporate a section on "Letters to the Editor." These letters may be from anyone on any subject that he or she feels appropriate and of general interest to our 5,000 readers.

I will be happy to hear from you.

Sincerely,

Ellen J. Stemmer
Editor

CDAW 8 Planning Meeting Held

A Coordinated Data Analysis Workshop 8 (CDAW 8) planning meeting was held on May 30, in Baltimore during a lunch recess of the American Geophysical Union (AGU) Spring Meeting. Representatives of several satellites discussed final event selection for a Deep Tail Workshop that will capitalize on the location of the ISEE 3 spacecraft during the fall of 1982 through the spring of 1983. Data from the Dynaics Explorer (DE) satellites will be utilized in a CDAW for the first time. Important data contributions will be made by ISEE 1/2 and IMP 8. It is anticipated that other satellites, such as GOES, Scatha, and ESA-GEOS 2, will submit data in addition to the usually extensive ground-based data support.

A total of four event periods were isolated as those for which data will be submitted shortly, while four other time periods are still being seriously considered for additional submissions. It is anticipated that a general announcement will go out to potential participants in early July. The four primary event periods named thusfar include time periods during Oct. 20, 1982 and Jan. 28, June 4, and June 27-28, 1983.

This Workshop will be the first CDAW to be held on the NSSDC VAX computer. It is anticipated that the participants will make extensive use of the SPAN network to access the database from their home sites. The next issue of the *Newsletter* will feature the CDAW data analysis system.

UARS has taken a major step forward in developing a distributed regional approach to processing and exchanging data and algorithms among the PI teams and Guest Investigators. NSSDC is encouraged by the preliminary discussions with the UARS project to establish an equally responsive system for addressing the long-term data archiving and accessing neds of the general scientific community. We look forward to developing an operating plan with the UARS project which might serve as a model for future data management systems projects.

Editorial Comment by M. Halem

Calendar of Upcoming Events

June 24	Mid-Atlantic Oracle Users Group, hosted by NSSDC's Data Management Systems Facility (DMSF), Code 634, at GSFC.
July 1-3	Committee on Data Management and Computation (CODMAC) Review of NSSDC and other Division Activities.
July 1-3	Space Environment Workshop, Los Alamos National Laboratory, New Mexico.
July 15-17	International Cometary Explorer (ICE) Science Working Team (SWT) Meeting & Testing of SPAN Communications at GSFC.
July 15-17	Dynamics Explorer (DE) Science Working Team (SWT) Meeting at GSFC.
July 18-19	Data Systems Users Working Group (DSUWG) Meeting at GSFC.
Aug. 12-14	"Telescience for the Space Station Era" Conference/Workshop. (See *Newsbrief* on page 10).
Sept. 11	International Cometary Explorer (ICE) encounter with Comet Giacobini-Zinner.
Oct. 16-17	Second Pilot Climate Data System (PCDS) Workshop at GSFC.
Nov. 4-8	The Geosat Committee, Inc., "Goals and Directions for Research and Development" Workshop at Flagstaff, Arizona. (Rescheduled from September).

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 20771
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
TWX No. : 7108289716

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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