NSSDC
NATIONAL SPACE SCIENCE DATA CENTER

NEWS

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Coordinated Data Analysis Workshop 9.1 Brings PROMIS to Scientists Studying Five Magnetospheric Substorms

On May 12-16, NSSDC hosted the first workshop in the ninth Coordinated Data Analysis Workshop series (CDAW 9.1). Approximately 60 participants from more than a dozen countries gathered to examine combined data that were collected during the Polar Regions Outer Magnetosphere International Study (PROMIS) campaign from March through June of 1986.

The workshop was timed to immediately follow the American Geophysical Union (AGU) meeting in Baltimore, so that scientists already making a long trip to attend the AGU conference could more easily attend.

Five periods in April and May were selected as the specific focus of the CDAW 9 series. The emphasis of the PROMIS campaign was to collect si-

see CDAW 9.1, *page 4*

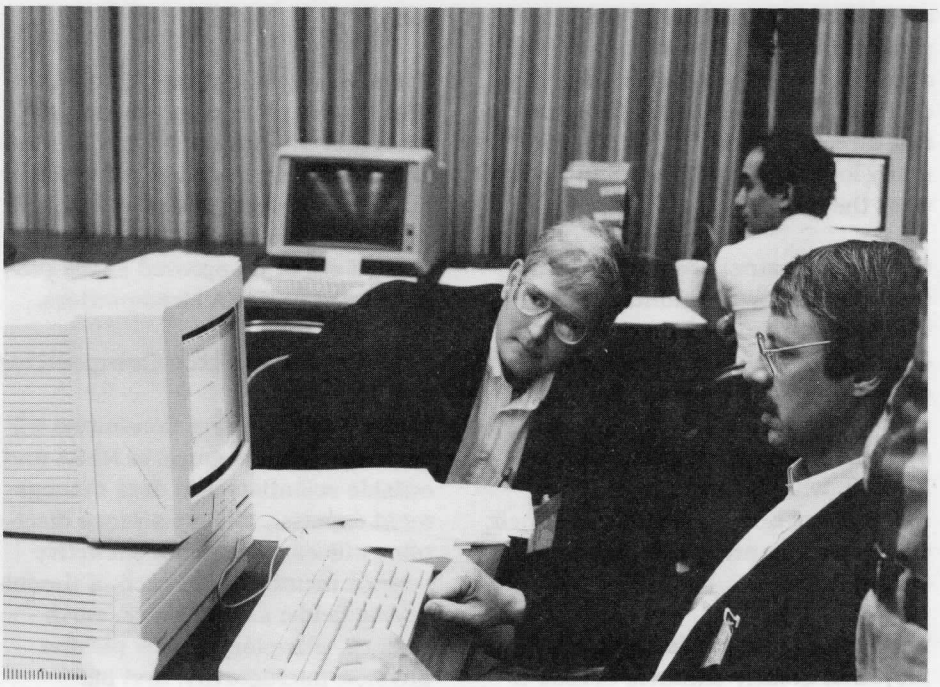

Photo by Bob Cornett

Robert Elphinstone and Joseph Fennell analyze data at CDAW 9.1, while Howard Leckner works at a terminal in the background.

IN THIS ISSUE

Message From the Director

Steering Committee To Be Established

NSSDC is involved in a wide variety of activities to serve its very diverse science user community. The Data Center has developed over 15 online data and information services while continuing to provide access to off-line data and information.

Over the next several years, the acquisition and input processing of new data sets at NSSDC will dramatically increase with the successful launch of NASA's new missions. NSSDC is part of NASA's distributed data management system and is continuing to develop the NASA Master Directory; this directory points to data held at many locations to aid users in finding what they need.

NSSDC personnel are involved with the scientific user community in developing standards for cataloging, for data formats, and for bringing some cohesiveness to software development and exchange. Pilot data base systems are under development at NSSDC, while some data analysis systems are being operated and their capabilities improved in an evolutionary manner.

The use of networks is being employed to greatly enhance access to these systems and services, thereby increasing their overall power and usefulness. Data products are being created through data synthesis. Application of new technology for storage, retrieval, manipulation, and display is a continual activity, and research into the use of artificial intelligence and expert systems for NSSDC activities is just beginning.

This brief overview illustrates that NSSDC is a complex and expanding organization. An NSSDC steering committee is essential in providing the guidance that is needed to carry the organization into the future.

The steering committee members, who are experts in their respective fields, will bring new ideas to NSSDC programs and will ensure that its services are responsive to user needs. I fully expect to have NSSDC's steering committee established over the next several months; its first meeting will convene before the end of this year.

The steering committee will review NSSDC programs on a semiannual basis and will meet at NSSDC at Goddard Space Flight Center. The following details about various aspects of the committee have already been worked out and approved at the program level at NASA Headquarters.

Steering Committee Composition

The NSSDC Steering Committee will be composed of a group of NASA and outside scientists and data management experts. NASA's science discipline offices will provide an active science member from each of the following fields: astrophysics, earth science, planetary, space plasma physics, microgravity, and life science. A non-NASA supported scientist will also be included on the steering committee.

One representative from each NSF and NOAA organization that provides data services similar to those of NSSDC will sit on the committee. In addition, since NSSDC must deal effectively with all NASA missions, three steering group members with project management, mission data systems, and project scientist backgrounds will be chosen. Also included will be a NASA Headquarters liaison member from the Information Systems Branch (Code ECI).

Committee Responsibilities

The tasks of the NSSDC Steering Committee will be to review all aspects of NSSDC services and provide recommendations for future improvements and expansion. This activity includes (but is not limited to) the following:

- Critique of the performance of NSSDC services
- General advice on data restoration and preservation across disciplines
- Data maintenance and quality control practices
- Quality of documentation (off line and on line)
- Distribution of resources among the various NSSDC activities
- Applications development and scheduling
- Project Data Management Plans (PDMP) document content and process
- Memoranda of Understanding with other government agencies and discipline data centers
- Guidance on defining the level of archive services for archived data
- Establishment of policies and procedures for assigning the level of archive services
- Review of the NSSDC program plan, which establishes future goals and priorities

The steering committee will prepare its comments and recommendations and present them to NSSDC key management staff and NASA Headquarters liaison. A written report will document the meetings.

After its initial meeting, the steering committee is expected to set its future

see Director, *page 8*

Climate Data System Staff Plans September Workshop

Registrations are now being accepted for NASA's Climate Data System (NCDS) Workshop, which will be held at the Goddard Space Flight Center in Greenbelt, MD, on September 20, 21, and 22, 1989 (Wednesday through Friday).

Representatives from other data centers will share information at the workshop, including Dr. Kenneth Hadeen from the National Climatic Data Center, Roy Jenne from the National Center for Atmospheric Research, Dr. Paul Kanciruk from the Carbon Dioxide Analysis Center, Dr. Dan Söderman from the European Center for Medium Range Forecasting, Levin Lauritson from NOAA's Satellite Data Services, Dr. Steve Patterson from the National Oceanographic Data Center, and Ron Weaver from the National Snow and Ice Data Center.

Workshop topics will focus on the importance of climatic data for studying global change, network access to NCDS, use of standard formats—in particular, the Common Data Format (CDF)—and cooperative efforts with the University of Maryland.

Speakers will give their presentations in the Building 3 Auditorium. Concurrent sessions for hands-on experience will be held in Building 26.

Special Interest Groups

The hands-on sessions will be conducted in Room 205, where terminals will be set up for participants. These concurrent sessions will focus on data sets supported by NCDS, with an emphasis on the actual access to data and metadata through NCDS in four special interest categories.

This new approach to its workshop is NCDS's first step toward a Coordinated Data Analysis Workshop (CDAW)-like event; it distinguishes climatology as NSSDC's first discipline other than the solar-terrestrial discipline to apply the CDAW methodology.

Dr. Judith Lean of the Naval Research Lab will lead a working group session on "Solar Irradiance." For this session's support, the data sets from ERBE-S2, Nimbus 7 ERB, and SMM/ACRIM will be available for online access.

A "Clouds and Radiation" working group, headed by Dr. David Starr of Goddard Space Flight Center, may access the following data sets: Max Planck Institute's Heat Flux, NOAA's Heat Budget, the FIRE Cirrus and FIRE Marine Stratocumulus, the International Satellite Cloud Climatology Project (ISCCP), the Earth Radiation Budget Experiment (ERBE) S-4 product, the Nimbus 7 THIR C-Matrix, and ERB-Matrix products. Dr. Bruce Barkstrom (ERBE), Dr. William Rossow (ISCCP), Dr. David Starr (FIRE), and Dr. Larry Stowe (THIR C-Matrix) will help participants work with these data sets.

A "Global Climatology and Oceanography" working group will be led by Dr. Charles McClain from the Laboratory for Oceans at Goddard. NCDS-supported data sets of interest in this category include Angell's Global Temperature Deviations, the Climate Analysis Center's Sea Surface Temperatures, FGGE3B Analyses, FGGE3B Reanalyses, Fleet Numerical Oceanographic Analyses, the Comprehensive Ocean-Atmosphere Data Set (COADS), Hellerman Wind Stresses, Levitus Climatologies, World Monthly Surface Station Climatology (WMSSC), NMC Winds, and the UNESCO River Discharge. Dr. Richard Reynolds (CAC-SST), Scott Woodruff (COADS), Dr. Sydney Levitus (Levitus Climatologies), Roy Jenne (WMSSC), and Dr. James Angell (Angell Global Temperature Deviations) will be present to answer questions about these data.

Dr. Paul Newman will lead an "Atmospheric Constituents" working group. NCDS-supported data sets in this category include the AEM SAGE1 Profiles, ERBS SAGE2 Profiles, Nimbus 4 CPOZ-B, Nimbus 7 CPOZ-S, SAM II BANAT, LIMS-LAMAT, and GRID-TOMS. Dr. Richard McPeters, Dr. Zia Ahmad, and several SAM II and SAGE representatives from Langley Research Center will assist participants interested in these data sets.

Other miscellaneous data sets can also be accessed through NCDS, and more data sets are planned to be incorporated into the system before the workshop.

For those who want to work on the system at their own pace, the hands-on working area will open at noon on Wednesday and remain open, except during the special interest group dedicated sessions.

A midworkshop evaluation and "suggestions" session is also scheduled. Workshop participants will be invited to make recommendations for the future of NCDS.

Lola M. Olsen

Advance registration is required for participation in the NCDS Workshop. For further information, please call Lola Olsen, (301) 286-9760, or Jim Closs in the NCDS User Support Office, (301) 286-5033.

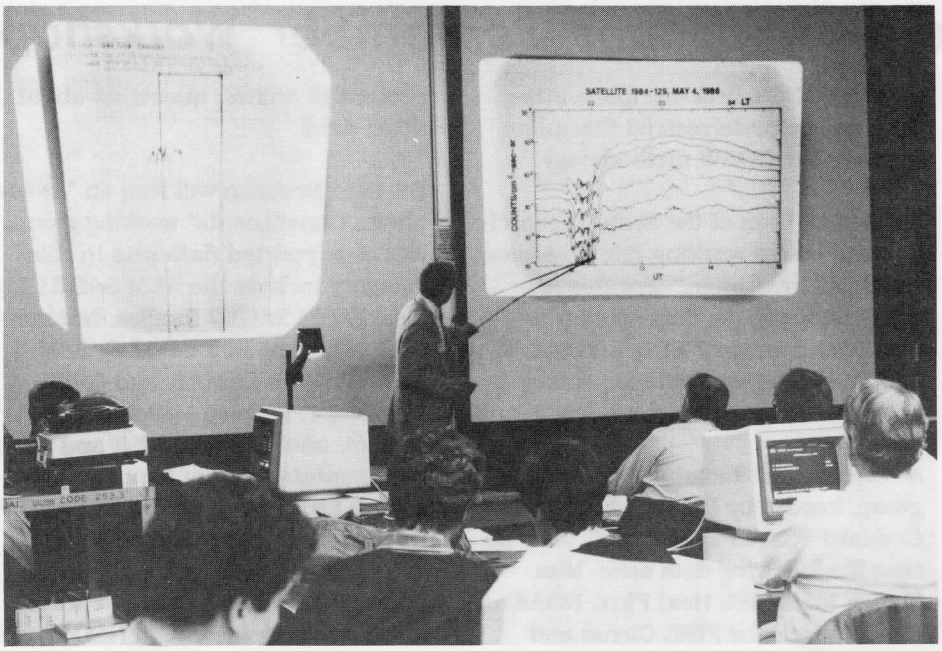

Photo by Bob Cornett

Edward Hones presents information on Event D to the participants at CDAW 9.1.

CDAW 9.1, *from page 1*

multaneous data from key spacecraft and ground stations, so these data are especially valued for their potential to spawn new discoveries about the intricate connection between polar geophysical phenomena and magnetospheric processes.

Investigators from around the world have contributed more than 60 data sets to NSSDC's CDAW 9 data collection. Most of the data sets were successfully converted into a common data format and put on line in time for this first workshop in the series, despite the fact that some of them arrived only days before the meetings began. Workshop participants planned to solicit more data from their colleagues when they returned home to "round out" the CDAW 9 collection.

The five substorm events (9A-9E) selected for CDAW 9 analysis are summarized in the table. An initial presentation on Event A was given by Dr. Gordon Rostoker of the University of Alberta, Canada; Event B, by Drs. Anthony Lui of Johns Hopkins University (MD) and Robert Manka of the National Research Council (DC); Event C, by Dr. Daniel Baker of Goddard Space Flight Center; Event D, by Dr. Edward Hones of Los Alamos National Laboratory (NM); and Event E, by Dr. Robert McPherron of UCLA (CA).

The five-day workshop began Friday morning with informal training and data access sessions, usually on a one-to-one basis. In the afternoon, subgroup meetings followed the initial event presentations. That evening, refreshments were served at a reception. On Saturday, Monday, and Tuesday, subgroup analysis continued with plenary sessions held twice each day. Sunday was scheduled for further training and data access for those wishing to participate. Throughout the meetings, NSSDC staff were on hand to answer the many questions that arose.

Twenty-two high-resolution terminals and terminal emulators were used to access data. Some 1300 interactive plots were generated during the workshop, with more than 300 printed out.

Many attendees were new to the CDAW program and process. Drs. Kristof Stasiewicz and Mats André, both from the Swedish Institute of Space Physics, study space plasma physics. They said that the "limited training time in using the system" initially slowed their access to relevant data.

Nancy Heinemann of Boston College, who studies polar orbiting particles, said that she "actually came to see how [the CDAW process] works." While she found it "sort of overwhelming," Heinemann expressed appreciation for all the work that went into the data preparation and accessibility.

Three scientists from France, Drs. Alain Hilgers, Sylvaine Perraut, and Alain Roux, were particularly inter-

CDAW 9 Events Selected for Study

No.	Date	Day	Time	Features
9A	4/1/86	91	07-23	Isolated 500nT substorm; onsets at 0900 and 1900
9B	4/2-3/86	92-93	18-10	Large substorm preceded by semiquiet period; onsets at 0100 and 0200
9C	5/3/86	123	00-12	Active, substorms at end of storm; onsets at 0130, 0430, and 0930
9D	5/4/86	124	09-17	900 nT substorm; onset at 1140
9E	5/8/86	128	10-18	Isolated 600 nT substorm; onset at 1130

ested in auroral radiations and plasma densities. "What we want to do," commented Roux, "is to be connected with the system when we are back in France—when we know how it works."

Scientists who were not already aware of the fact said they were pleased to learn that they could use the system after their return home. NSSDC is maintaining user accounts for CDAW 9 participants so that they can use SPAN or other electronic network connections for remote access to the data base.

An improved process for "ingesting" new data into the system was used during preparations for CDAW 9.1. The new method resulted in faster and more accurate ingest of contributed data. The graphics system interface and functionality were judged by participants as far superior to those of previous workshops.

When asked what improvements they would like to see in future CDAWs, the vast majority of attendees responded: SPEED! NSSDC staff members are now working to identify and implement specific improvements that are currently feasible and would enhance system performance.

According to Dr. Robert McGuire, NSSDC's director of the CDAW program, "the thrust of the overall program (which is intended to extend beyond the confines of only solar-terrestrial physics) is to bring large, multisource data bases and a program of collaborative research to bear on global-scale problems not otherwise readily attacked."

McGuire explained that a unique aspect of the CDAW program is the combination of a traditional scientific workshop format of presentations and discussions with on-the-spot computer access to a variety of digital data bases. "Participants can then interactively work directly with the data as they bounce ideas off one another during the workshop," he added.

While the CDAW concept promotes sharing data and related ideas, the scientific convenor for the CDAW program, Dr. Robert Manka, made the following point: "We want to continue to do this process in a way that each individual can feel free to follow [his/her] own interests and not feel pressured to go along with what others are doing."

The CDAW program was originally conceived as one part of NSSDC support for the International Magnetospheric Study (IMS). The first CDAW was convened in December 1978, when 48 participants from 38 institutions in 11 countries met at NSSDC to study two IMS events and to initially test and critique the CDAW concept. One result of that milestone was a publication called *An Evolutionary Approach to Group Analysis of Global Geophysical Data.*

Through the years, CDAW proponents have expressed hope that the CDAW methodology of cooperative data analysis could be extended beyond the solar-terrestrial discipline. Until now, this has not happened. In September, however, NASA's Climate Data System (NCDS) Workshop will take a first step toward a CDAW-like event (see article on page 3). This workshop will emphasize actual access to supported sets of data and metadata in four special interest categories, distinguishing climatology as NSSDC's first discipline other than solar-terrestrial to adopt the CDAW concept as one part of a larger data system.

CDAW 9.2, the next full workshop in this series, is tentatively planned for December 10-12 at Stanford University. It will be held immediately following the fall AGU meeting and in conjunction with the Fourth U.S. Finnish Auroral Worskshop. NSSDC will rely entirely on network links to provide computational support.

Carol Kanga and Robert McGuire

Photo by Bob Cornett

Robert Manka and Anthony Lui discuss their findings.

NSSDC and USGS Will Share Ideas in Several Development Areas

Dr. Theodore Albert, data administrator of the U.S. Geological Survey (USGS), and NSSDC's William J. Campbell have established an informal working agreement under the formal NASA/USGS Coordinating Committee for Data Management Memo of Understanding to share ideas, concepts, and software developments—particularly in the areas of information management, data standards, artificial intelligence, visualization, and knowledge-based geographic information systems.

One particular area of mutual research is in spatial data manipulation. A prototype system called Knowledge-Based Geographic Information System (KBGIS), which was funded by Goddard Space Flight Center and USGS, was recently constructed at the University of California's Santa Barbara campus. Although much of the system internals are well developed, the system lacks an adequate user interface and would benefit from being able to input and output imagery data in NASA formats.

NSSDC's Applied Artificial Intelligence Laboratory is currently working with this system to develop an intelligent user interface and extending KBGIS to interconnect with existing NASA systems, such as imagery from the Land Analysis System (LAS), atmosphere data in Common Data Format (CDF), and visualization of complex data with the NSSDC Graphics System (NGS). This would allow NASA to explore quickly the utility of such a system, given the ability to easily transfer data in and out of KBGIS.

KBGIS is being converted from LISP to C, which will allow the integration of KBGIS with the ongoing intelligent user interface prototype. This integration will allow a NASA scientist to query a remote, large, complex data base with a meta question (e.g., "Give me a complete list of all tectonic plate sites that had data for the period 1981 and 1984"), as well as a spatial query (e.g., "Near the San Andreas fault for the same period"), in one fully integrated system. This query will be in plain English text with the aid of graphics that will be understood by the system without the user having to know the data base structure, query language, or even the actual data content itself.

When the integration process has been completed, the system will present a major breakthrough in scientific and engineering data management that will greatly benefit the information management needs of NASA and USGS for the forseeable future. It will provide a more sophisticated understanding of the issues and required technologies in the upcoming Eos era.

William J. Campbell

Personnel Information Management System Provides Online Addresses

"I have the person's name and address, but how can I reach him right away? Maybe he's on SPAN! But how can I find out?" Does this sound familiar? In your quest for the answers, why not start with NSSDC's Personnel Information Management System (PIMS).

PIMS is a software package, developed by Nathan James, that acts as a user interface to the Data Center's 30,000-name Interactive Request Activity and Name Directory (IRAND). PIMS is designed to electronically aid science users in finding addresses of their colleagues. It also acts as a tool for populating and updating the IRAND personnel tables and helps keep the data base current.

The following essential items of information are displayed within PIMS:

- individual's full name
- workplace mailing address
- telephone number
- geographic location (city, state, ZIP, and country)
- electronic access information (SPAN, Telenet, GSFCMail, etc.)

Presently, PIMS is one of several online information mechanisms within the NSSDC Online Data and Information Service (NODIS) system, formerly known as the NSSDC public account. To access NODIS from SPAN, do the following:

(prompt) $ SET HOST NSSDCA

Username: NSSDC
or
NODIS

No password is required. After identifying yourself, you will be provided with the NODIS menu options. PIMS is option 2.

Typical users will specify the name of the person and will be provided full address information. You are encouraged to try the system and to update the information about yourself when appropriate. Should you encounter anY problems or have questions concerning PIMS, contact Nathan James at (301) 286-9789 or via SPAN at NCF::JAMES.

Nathan L. James

Dr. James L. Green Receives Arthur S. Flemming Award

Dr. James L. Green, head of NSSDC, was one of ten recipients of the Arthur S. Flemming Award at the 41st annual presentation ceremonies on April 27.

The Flemming Award is sponsored by the Downtown Jaycees of Washington, DC. It recognizes outstanding men and women under 40 years of age, with at least three years of government service, who have performed meritorious work for the federal government. Some memorable honorees from past years are Neil Armstrong, Andrew Brimmer, John Chancellor, Elizabeth Hanford Dole, Daniel Patrick Moynihan, Harrison Schmitt , and John Townsend, Jr.

Dr. Arthur S. Flemming (left) presents Dr. James L. Green (right) with federal service award at April 27 ceremony.

Green was recognized for his technical and scientific leadership in the design, implementation, and expansion of the Space Physics Analysis Network (SPAN), the first NASA mission-independent computer network, as well as for his community involvement. SPAN, which Green initiated in 1981 with three nodes, presently has more than 13,000 nodes in cooperative networks throughout the world.

SPAN provides easy, efficient access to vital data for scientists conducting research in a variety of discipline areas, including astrophysics, solar-terrestrial, climate, ocean, planetary, earth, and life sciences. Its capabilities have been well demonstrated, proving especially helpful to scientists during the ICE encounter with comet Giacobini-Zinner, the Voyager encounter with Uranus, the Giotto encounter with comet Halley, the 1987 supernova investigations, and the ozone hole studies. SPAN has also been noted for its major support role in Coordinated Data Analysis Workshops and for flight projects such as Galileo, UARS, and the Space Station.

Nimbus 7 Ozone Data Goes On Line

The data derived from the Total Ozone Mapping Spectrometer (TOMS) on board NASA's Nimbus 7 spacecraft have been invaluable to scientists studying the global distribution of ozone. One key data set from TOMS is in the form of daily world grids, which are archived at NSSDC. This entire data set has just been placed on line via optical disk technology at the NSSDC Computer Facility.

To extend the utility of these data to the research community, the data set has been stored on optical disk in the NSSDC Common Data Format (CDF) instead of the original magnetic tape format. NSSDC's support for TOMS data can now be enhanced beyond working with the original magnetic tapes through distribution of data subsets in CDF with associated, easy-to-use access software.

The Common Data Format is a computer- and data-independent mechanism that permits easy, random access to arbitrary, multidimensional data structures. It is used to store and manage data sets in all the space and earth science disciplines. CDF is also employed by NASA's Climate Data System (NCDS) and the Network Assisted Coordinated Science (NACS) software used in NSSDC's Coordinated Data Analysis Workshops (CDAW).

A daily, global contour atlas, prepared from the online version of this gridded TOMS data set, is being replicated on microfiche. The atlas was generated by the NSSDC Graphics System (NGS), which is a discipline-independent toolbox for nonprogrammers that provides a variety of data visualization techniques. The contour atlas gives researchers a powerful tool for visually browsing through the entire data set, which can help identify appropriate subsets to request for detailed analysis.

This activity has shown how disparate NSSDC endeavors can be integrated to provide improved services at a lower overall cost. Traditional archive maintenance and enhancement, optical disk development, CDF support, scientific visualization research, specific Nimbus 7 TOMS support, and the implementation of data systems (such as NCDS and NACS/CDAW) have been combined to make this innovation possible.

Lloyd Treinish

New Data Sets Are Archived at NSSDC

The accompanying list (see facing page) gives a one-line description of each data set archived at NSSDC for which data were received between June 15, 1988, and May 1, 1989, i.e., since the last listing, in the Spring 1988 issue of the *NSSDC News*. The format of the list follows that of the periodic *NSSDC Data Listing* publication, which gives a complete list without regard to date of receipt.

These data are tracked internally via two NSSDC data bases, the Automated Information Management (AIM) file and the NSSDC Supplementary Data File (NSDF). AIM contains data sets readily identifiable in a "spacecraft/experiment/data set" hierarchy; NSDF contains other data sets identified in a "discipline/source" hierarchy.

To keep the list brief, certain types of data were omitted from this listing: routine ephemeris data sets and data provided solely for the very limited time periods studied in CDAW. In some cases the listed data were the first received for that data set; in the others the data were for additional time periods.

The quantity of data entered in the list is the total quantity after addition of the new data received. Similarly, the time period given is the total time period covered after addition of the new data. Where the time interval is absent, it is either not appropriate for that data set or it has not yet been verified during processing after receipt of the data at NSSDC. In some cases the time interval shown may not include the latest data received but not processed.

In the AIM portion of the list, each data set is preceded by a one-line descriptive name of the experiment that produced it, and each experiment is preceded by a line for the spacecraft on which it was flown. An exception is that certain data sets are considered to apply to all experiments on a spacecraft, and for these there is no corresponding experiment descriptive name. These have an ID ending with "-00x."

For the spacecraft entries, the "Contact" field identifies the country and/or agency responsible for the launch. In the NSDF portion of the list there is a five-level hierarchy of headings; only the lowest level names the actual data set.

The "Form" codes for data storage media are as follows:

BI	Bound volumes
DD	Digital magnetic tapes
FR	4 x 6 inch microfiche, b/w, card
HI	8 x 10 inch pages
HT	Various sizes pages
IP	16 mm b/w negative film, feet
KA	Aquidneck optical disk
KC	CD-ROM
KF	Floppy disk
MP	16 mm microfilm reels
RO	35 mm color slides
TV	5 x 5 inch b/w positive film, feet
UG	4 x 5 inch b/w positive film, frames
UV	5 x 5 inch b/w positive film, frames
YG	4 x 5 inch b/w negatives, frames
YI	8 x 10 inch b/w negatives, frames
YM	70 mm b/w negative film, frames
YP	16 mm b/w negative film, frames
ZG	4 x 5 inch color negatives, frames

Director, *from page 2*

meeting agendas. NSSDC will respond to the written report of the previous meeting by discussing what progress has been made between meetings. This will enable the committee to study in sufficient detail any particular aspect of NSSDC and to quantify the organization's progress in meeting user requirements.

In order for the NSSDC Steering Committee to be effective, the committee will be provided with detailed information in the following areas:

- NSSDC institutional and research program funding
- Civil servant personnel activities assigned
- Annual statistics of requests, both letter and electronic
- Performance measurements/ metrics currently used at NSSDC
- The NSSDC Five Year Plan
- Current data administration policies and practices
- The Guidelines for the Development of a PDMP
- Overview of the levels of archive service supported at NSSDC
- Archiving cost model
- Code ECI data management program plan

The NSSDC Steering Committee should take guidance from the NASA Headquarters Information Systems Branch. This committee should also accept guidance from and work with the NASA Headquarters Code ECI program level advisory group.

In future issues of the *NSSDC News*, this column will discuss the results of NSSDC Steering Committee meetings. I look forward to these activities because they will provide a visible and influential mechanism for the science user to work closely with NSSDC to provide a better level of service for all.

James L. Green

NEW AIM DATA SETS

SATELLITE NAME	NSSDC ID	IDENTIFICATION	CONTACT	FORM	QNTY	TIME SPAN OF DATA
AMPTE/CCE	84-088A	AMPTE/CCE 08/16/84	GSFC			
	84-088A-00D	MAG CONJ W/VIK-SWED 3X180BNS FICH	PARTHASAR	FR	2	030186 063086
	84-088A-00E	MAG CNJ W/VIK-SWED 6X12 BNS FICH	PARTHASAR	FR	2	030186 063086
	84-088A-01	AMPTE/CCE,HOT PLASMA COMPOSITION	SHELLEY			
	84-088A-01A	COLOR SPECTROGRAMS,SLIDES	NYLUND	RD	20013	081784 123086
	84-088A-01B	6.4-MIN, MASS-ENERGY SPECTRA,POOL	NYLUND	DD	21	081684 123186
	84-088A-02	AMPTE/CCE,MED. ENERGY PART ANALYZ	MCENTIRE			
	84-088A-02A	COLOR SPECTROGRAMS,SLIDES	NYLUND	RD	20013	081784 123086
	84-088A-02B	6.4-MIN,MASS-ENERGY SPECTRA, POOL	NYLUND	DD	12	081684 123184
	84-088A-03	AMPTE/CCE,CHARGE-E-MASS SPECTROM	GLOECKLER			
	84-088A-03A	COLOR SPECTROGRAMS,SLIDES	NYLUND	RD	20013	081784 123086
	84-088A-03B	CHARGE-ENERGY-MASS SPECTRUM SFDU	NYLUND	DD	10	082784 123186
	84-088A-04	AMPTE/CCE,PLASMA WAVE EXPERIMENT	SCARF			
	84-088A-04A	SURVEY PLOTS, MICROFICHE	NYLUND	FR	180	082784 122586
	84-088A-04B	62-S AVERAGE & PEAK VALUES, SFDU	NYLUND	DD	7	082884 123186
	84-088A-05	AMPTE/CCE,CCE MAGNETOMETER	POTEMRA			
	84-088A-05A	SURVEY PLOTS, MICROFICHE	NYLUND	FR	180	082784 122586
	84-088A-05B	MAGNETIC FIELD VECTOR SFDU	NYLUND	DD	7	081884 123186
AMPTE/IRM	84-088B	AMPTE/IRM 08/16/84	DFVLR			
	84-088B-02	IRM, MAGNETOMETER	LUEHR			
	84-088B-02B	5-S AVER MAG.FIELD VECTORS, TAPE	PASCHMANN	DD	30	032185 020886
	84-088B-03	IRM, PLASMA INSTRUMENT	PASCHMANN			
	84-088B-03B	5-S AVER PLASMA PARAMETERS, TAPE	PASCHMANN	DD	30	032185 020886
	84-088B-04	IRM, PLASMA WAVE INSTRUMENT	HAUSLER			
	84-088B-04B	5-S AVER PLASMAWAVE AMPLITUDES,TP	PASCHMANN	DD	30	032185 020886
	84-088B-06	IRM,SUPRATHERMAL IONIC CHARG ANAL	HOVESTADT			
	84-088B-06A	5-S AVER SUPRATHRMAL IONS, TAPE	PASCHMANN	DD	30	032185 020886
AMPTE/UKS	84-088C	AMPTE/UKS 08/16/84	RAL/MSSL			
	84-088C-00D	REGION BNDRY TIMES, DATA FORMAT	HAPGOOD	FR	1	082384 011589
DYNAMICS EXPLORER 1	81-070A	DYNAMICS EXPLORER 1 08/03/81	NASA			
	81-070A-00H	MAG CONJ W/VIK-SWED 3X180BNS FICH	PARTHASAR	FR	4	030186 063086
	81-070A-00I	MAG CONJ W/VIK-SWED 3X80 BNS FICH	PARTHASAR	FR	3	030186 063086
ERBS	84-108B	ERBS 10/05/84	NASA-GSFC			
	84-108B-01	ERBS,EARTH RADN BUDGET EXP/ERBE	BARKSTROM			
	84-108B-01B	RAW ARCH TP(RAT) IMAGES ON OP DSK	KIBLER	KA	11	110184 073187
	84-108B-01C	PROC ARCH TP(PAT) IMAGES ON OP DK	KIBLER	KA	8	110184 103186
	84-108B-01D	TOTAL SOLAR IRRADIANCE	BARKSTROM	HI	5	102584 102584
	84-108B-01E	SOLAR INCIDENCE (S-2) ON OP DISK	KIBLER	KA	2	110184 103186
	84-108B-01F	GRIDDED EARTH RAD BUDGET OD (S-4)	KIBLER	KA	7	110184 103186
	84-108B-01G	SCAN EARTH(S9)RAD EXITANCE+ALBEDO	KIBLER	KA	7	110184 103186
	84-108B-01H	N S EARTH(S10)RAD EXITANCE+ALBEDO	KIBLER	KA	7	110184 103186
	84-108B-02	ERBS,STRATO AROSOL & GAS EXP/SAGE	MCCORMICK			
	84-108B-02A	MET,EPHEM,RAW ARCH TAPE(MERDAT)	MCMASTER	DD	105	110184 043089
	84-108B-02B	OZONE NO. DENSTY+MIX RATIO PROFIL	MCMASTER	DD	4	102484 113088
	84-108B-02C	SAGE II AEROSOL PROFIL ARCH. TAPE	MCMASTER	DD	4	100584 113088
GOES 6	83-041A	GOES 6 04/28/83	NASA-GSFC			
	83-041A-03	GOES 6,SOLAR X-RAY MONITOR	WILLIAMS			
	83-041A-03A	X-RAY MONITOR DATA	WILLIAMS	DD	49	060183 093088
IMP-H	72-073A	IMP-H 09/23/72	NASA-GSFC			
	72-073A-08	IMP-H,PART.TELE.+GM TUBES	KRIMIGIS			
	72-073A-08M	HOUR PROT FLX 1,2,4,10,30,60 MEV	ARMSTRONG	DD	1	092672 123173
	72-073A-08N	DAILY AVERAGE FLUX PLOTS, MFICHE	ARMSTRONG	FR	1	092672 103073
IMP-J	73-078A	IMP-J, EXPLORER 50 10/26/73	NASA-GSFC			
	73-078A-01	IMP-J,TRI-AXIS MAGNETOMETER	NESS			
	73-078A-01A	15 SEC AVGD MAGNETIC VECTORS,TAPE	LEPPING	DD	48	103073 060187
	73-078A-01C	15 SEC AVGD MAG FLD PLOTS, MFILM	LEPPING	MP	24	103073 060187
	73-078A-02	IMP-J,SOLAR PLASMA,FARA.CUP	BRIDGE			
	73-078A-02A	INTERPLANETARY HOURLY AVERAGES	BRIDGE	DD	6	010176 113088
	73-078A-03	IMP-J,SOL.IONS+ELECT,100KEV	GLOECKLER			
	73-078A-03C	IMP-J SUMMARY DATA TAPES	GLOECKLER	DD	35	103073 073188
	73-078A-04	IMP-J,ELEC+PROT,25EV-50KEV	FRANK			
	73-078A-04C	COLOR E-T SPECTROGRAMS, SLIDES	FRANK	RD	4282	111573 123187
	73-078A-07	IMP-J,COSMIC RAY NUCLEAR COMP	SIMPSON			
	73-078A-07A	RATE AND PHA DATA TAPES	MURPHY	DD	538	103073 091586
	73-078A-07B	5.46-MIN AVG COUNT RATES ON TAPE	MURPHY	DD	18	103073 060186
	73-078A-07C	SOL. ROT. COUNT-RATE PLOTS, MFILM	MURPHY	MD	13	103073 090886
	73-078A-08	IMP-J,PART.TELE.+GM TUBES	KRIMIGIS			
	73-078A-08G	HOUR PROT FLX 1,2,4,10,30,60 MEV	ARMSTRONG	DD	2	010174 102988
	73-078A-08H	DAILY AVERAGED FLUX PLOTS, MFICHE	ARMSTRONG	FR	1	103073 102888
IRAS	83-004A	IR ASTRON. SAT., NETH. 01/25/83	NIVR-JPL			
	83-004A-01	IRAS, IR TELESCOPE	BEICHMAN			
	83-004A-01g	SKYPLATE IMAGES, BEST OF THREE	LAUGHLIN	ZG	212	
	83-004A-01h	GALAXIES AND QUASARS, VERSION 2	CHESTER	DD	1	
ISEE 1	77-102A	ISEE 1 10/22/77	NASA-GSFC			
	77-102A-00E	MULTI-COORD PLOTS, MFICHE	RUSSELL	FR	190	102277 092687
	77-102A-00G	ATTITUDE-ORBIT LISTINGS, MFICHE	RUSSELL	FR	701	102277 092687
	77-102A-04	ISEE 1,FLUXGATE MAGNETOMETER	RUSSELL			
	77-102A-04G	24-HR MAG FLD SUMMARY PLOTS,FICHE	RUSSELL	FR	125	102277 011387
	77-102A-04R	24-HR DETRENDED SUMMARY PLOTS,FCH	RUSSELL	FR	30	011280 121783
	77-102A-10	ISEE 1,ELECTRONS AND PROTONS	ANDERSON			
	77-102A-10H	4-SECOND AVG ELECTRON+PROTON FLUX	MCCARTHY	DD	1	032886 061786
ISEE 2	77-102B	ISEE 2 10/22/77	ESA			
	77-102B-00D	MULTI-COORD PLOTS, MFICHE	RUSSELL	FR	184	102277 092687
	77-102B-00E	ATTITUDE-ORBIT LISTINGS, MFICHE	RUSSELL	FR	700	102277 032687
	77-102B-04	ISEE 2,FLUXGATE MAGNETOMETER	RUSSELL			
	77-102B-04M	1-MIN AVGD MAG. FLD.(INCLD PROMIS	ELPHIC	DD	63	102277 020687
	77-102B-04N	24-HR DETRENDED SUMMARY PLOTS,FCH	RUSSELL	FR	40	020284 020687
	77-102B-08	ISEE 2,ELECTRONS AND PROTONS	ANDERSON			
	77-102B-08F	4-SEC AVG ELECTRON + PROTON FLUX	MCCARTHY	DD	3	022183 061786

SATELLITE NAME	NSSDC ID	IDENTIFICATION	CONTACT	FORM	QNTY	TIME SPAN OF DATA
ISEE 3	78-079A	ISEE 3 08/12/78	NASA-GSFC			
	78-079A-01	ISEE 3,SOLAR WIND PLASMA	BAME			
	78-079A-01M	84-SECOND ELECTRON MOM GEOTAIL	GOSLING	DD	1	101782 122683
	78-079A-01N	SOL. WIND PLASMA MOM. INCLUD. G-Z	GOSLING	DD	2	081678 091285
	78-079A-02	ISEE 3,MAGNETIC FIELDS	SMITH			
	78-079A-02N	0.33 SEC B-FIELD DATA, G-Z ENCNTR	WOLF	DD	1	091185 091485
IUE	78-012A	IUE, INT. UV EXPLORER 01/26/78	NASA-ESA			
	78-012A-01	IUE, ULTRAVIOLET SPECTROGRAPH	NASA GSFC			
	78-012A-01A	IUE SPECTROSCOPIC IMAGE DATA, FLM	WARREN	YI	52011	062078 041189
	78-012A-01B	SPECTROSCOPIC IMAGE DATA ON TAPE	WARREN	DD	741	040178 123188
	78-012A-01C	EUROPEAN SPECT. IMAGE DATA	WARREN	DD	276	040178 123188
	78-012A-01D	EXTRACTED SPECTRA ON TAPE	WARREN	DD	292	040178 123188
NIMBUS 7	78-098A	NIMBUS 7 10/24/78	NASA-GSFC			
	78-098A-01	NIMBUS 7,LIMB IR MON STRATO(LIMS)	RUSSELL			
	78-098A-01C	TEMP,MIX RATIO,HT. MAPS (LAMAT)	RUSSELL	DD	9	102578 052979
	78-098A-06	NIMBUS 7,SAM-11,STRAT AEROSOL MEA	MCCORMICK			
	78-098A-06B	BETA-AEROSOL NO DEN ARCH (BANAT)	MCCORMICK	DD	102	110178 043087
	78-098A-07	NIMBUS 7,ERB-EARTH RADIATN BUDGET	JACOBOWIT			
	78-098A-07B	SOLAR + EARTH FLUX DATA TP(SEFDT)	STOWE	DD	106	110178 043086
	78-098A-07C	MAPPED RADN DATA MATRIX TP	STOWE	DD	100	111678 050587
	78-098A-07H	POST MAT CALIBRATION TP (DELMAT)	STOWE	DD	82	060280 060587
	78-098A-07P	8+30D AVG WFOV ALBEDO,OLR+NET RAD	KYLE	DD	1	070183 063084
	78-098A-07Q	9YR CH10C DAILY AVG SOL CONSTANTS	KYLE	KF	1	111686 043088
	78-098A-07R	SCENE RADIANCE TAPE (SRT)	KYLE	DD	39	050179 053180
	78-098A-08	NIMBUS 7,SMMR-SCNNG MICROWAVE RAD	GLOERSEN			
	78-098A-08A	ANTENNA TEMPERATURE TAPE (TAT)	GLOERSON	DD	639	102578 062988
	78-098A-08W	CALIBRATED TEMPERATURE TAPE (TCT)	GLOERSON	DD	536	102578 082087
	78-098A-08a	SMMR PARMAP DATA ON TAPE	GLOERSEN	DD	10	110383 103186
	78-098A-08d	ANTENNA TEMP TP,(TAT),OPTICAL DSK	GLOERSON	KA	1	102578 040988
	78-098A-09	NIMBUS 7,BUV/TOMS-BACKSC UV/OZONE	HEATH			
	78-098A-09C	HDTOMS TOTAL OZONE DATA TAPE	KRUEGER	DD	180	103178 110688
	78-098A-09D	SBUV TOTAL+PROFIL OZON TP(HDSBUV)	FLEIG	DD	40	103178 030188
	78-098A-09E	RAW UNITS TAPE-TOMS (RUT-T)	KRUEGER	DD	800	103178 100388
	78-098A-09F	RAW UNITS TAPE-SBUV DATA (RUT-S)	HEATH	DD	516	103178 100388
	78-098A-09K	SBUV ZONAL MEANS OZONE TP(ZMT-S)	HEATH	DD	10	103178 022988
	78-098A-09Q	SBUV CMPRES PROFIL OZONE TP(CPOZ)	FLEIG	DD	12	103178 022988
	78-098A-09R	DAILY GRID TOMS 03 TP(GRIDTOMS)	KRUEGER	DD	11	103178 033189
NOAA 9	84-123A	NOAA 9 12/12/84	NOAA-NASA			
	84-123A-05	EARTH RADN BUDGET EXP (ERBE)	BARKSTROM			
	84-123A-05C	PROC ARCH TP(PAT)IMAGES ON OP DSK	KIBLER	KA	4	040185 013186
	84-123A-05D	TOTAL SOLAR IRRADIANCE	BARKSTROM	HI	2	012385 012187
	84-123A-05E	SOLAR INCIDENCE (S-2) ON OP DISK	KIBLER	KA	3	070185 013186
	84-123A-05F	GRIDDED EARTH RAD BUDGET OD (S-4)	KIBLER	KA	4	040185 013186
	84-123A-05G	SCAN EARTH(S9)RAD EXITANCE+ALBEDO	KIBLER	KA	5	040185 103186
	84-123A-05H	N S EARTH(S10)RAD EXITANCE+ALBEDO	KIBLER	KA	4	040185 013186
PIONEER 10	72-012A	PIONEER 10, PIONEER F 03/03/72	NASA-ARC			
	72-012A-02	PIONEER 10,CHARGED PARTICLE COMP	SIMPSON			
	72-012A-02B	PULSE HEIGHT ANALYSIS DATA, TAPES	LENTZ	DD	60	030372 123187
	72-012A-02C	5-MIN AVG. COUNT RATE TAPES	LENTZ	DD	27	030372 123187
	72-012A-06	PIONEER 10,UV PHOTOMETER,200-800A	JUDGE			
	72-012A-06A	EUV EDR PHOTON EMISSION DATA	ASKEW	DD	45	031172 100386
	72-012A-11	PIONEER 10,JOVIAN CHARGED PARTICL	VAN ALLEN			
	72-012A-11C	24-HR CORRECTED CRUISE AVGS+TRAJ.	VAN ALLEN	DD	1	030372 032388
PIONEER 11	73-019A	PIONEER 11 04/06/73	NASA-ARC			
	73-019A-01	PIONEER 11,3 AXIS HELIUM MGNETOM.	SMITH			
	73-019A-01B	1 MIN, HOURLY, DAILY AVG. CRUISE	SMITH	DD	71	040673 123186
	73-019A-02	PIONEER 11,CHARGED PARTICLE COMP	SIMPSON			
	73-019A-02A	15-MIN PULSE HEIGHT TAPES	LENTZ	DD	53	040773 123187
	73-019A-02B	5-MIN SECTORED COUNT-RATE TAPES	LENTZ	DD	26	040773 123187
	73-019A-06	PIONEER 11,UV PHOTOMETER,200-800A	JUDGE			
	73-019A-06A	EUV EDR PHOTON EMISSION DATA	ASKEW	DD	46	040673 010482
	73-019A-11	PIONEER 11,JOVIAN CHARGED PARTICL	VAN ALLEN			
	73-019A-11D	24-HR CORRECTED CRUISE AVGS+TRAJ.	VAN ALLEN	DD	1	040673 032888
PIONEER VENUS 1	78-051A	PIONEER VENUS ORBITER 05/20/78	NASA-ARC			
	78-051A-00D	ORBIT PLOTS, MFICHE	RUSSELL	FR	118	120578 102488
	78-051A-00E	ATTITUDE-ORBIT LISTINGS, MFICHE	RUSSELL	FR	667	120578 061688
	78-051A-00H	EPHEMERIS, TAKEN FROM SEDR, TAPE	CRAIG	DD	62	120578 020185
	78-051A-00I	EPHEMERIS, COMPRESSED FROM SEDR	RUSSELL	DD	10	
	78-051A-01	PIO78OR,ELECTRON TEMPERATUR PROBE	BRACE			
	78-051A-01D	IONOPAUSE LOCATIONS	BRACE	DD	1	120578 122888
	78-051A-01E	BOWSHOCK LOCATIONS	BRACE	DD	1	120578 122788
	78-051A-01F	SOLAR EUV FLUX	BRACE	DD	1	010179 121388
	78-051A-02	PIO78OR, RADAR ALTIMETER (ORAD)	PETTENGIL			
	78-051A-02E	SIDE-LOOK RADAR BKSCTR QTR DEGREE	FORD	DD	1	120878 031981
	78-051A-05	PIO78OR,GAMMA-RAY BURST DETECTOR	EVANS			
	78-051A-05B	OGBD HOURLY AVERAGES	KLEBESADL	DD	1	052278 123188
	78-051A-06	PIO78OR, CLOUD PHOTOPOLARIMETER	TRAVIS			
	78-051A-06B	DIGITAL MAP IMAGES ON MAG TAPE	TRAVIS	DD	72	120878 051486
	78-051A-07	PIO78OR,RETARDING POTENTIAL ANAL.	KNUDSEN			
	78-051A-07B	RPA EXPERIMENT DATA RECORD TAPES	KNUDSEN	DD	4	
	78-051A-11	PIO78OR-NEUTRAL PART MASS SPECT	NIEMANN			
	78-051A-11C	12-S NEUTRAL GAS DENSITY PLOTS	KASPRZAK	YP	250	
	78-051A-11D	NMS ENERGETIC ION (>40EV) TAPE	NIEMANN	DD	1	120578 021484
	78-051A-11E	NMS ENERGETIC ION (>40EV) FICHE	KASPRZAK	FR	44	011282 110584
	78-051A-11F	HIGH-RES NEUTRAL DENSITY DATA	KASPRZAK	DD	1	122478 090580
	78-051A-11G	LOW-RES SAMPLED NEUTRAL DENSITIES	KASPRZAK	DD	1	122478 090580
	78-051A-12	PIO78OR-TRIAX FLUXG MAGNETOMETER	RUSSELL			
	78-051A-12E	HI-RES, 12-S, & 2-MIN B & E PLOTS	RUSSELL	FR	1780	120578 011483
	78-051A-12H	HIGH-RES, B+E FIELDS, PERIAPSIS	RUSSELL	DD	19	120578 063086
	78-051A-13	PIO78OR-ELECTRIC FIELD DET.	SCARF			
	78-051A-13C	HI-RES, 12-S, & 2-MIN B & E PLOTS	RUSSELL	FR	1780	120578 011483
	78-051A-13F	HIGH-RES, B+E FIELDS, PERIAPSIS	RUSSELL	DD	19	120578 063086

SATELLITE NAME	NSSDC ID	IDENTIFICATION	CONTACT	FORM	QNTY	TIME SPAN OF DATA
	78-051A-18	PIO78OR-SOLAR WIND PLASMA ANALYZR	BARNES			
	78-051A-18D	FULL-RES PLASMA ANALYSER DATA	GAZIS	DD	1	
	78-051A-18E	HOUR-AVGD PLASMA ANALYSER DATA	GAZIS	DD	1	
	78-051A-20	PIO78OR, RADIO OCCULTATION (OOCC)	KLIORE			
	78-051A-20B	REDUCED OCCULTATION DATA	KLIORE	DD	3	
PROGNOZ 7	78-101A	PROGNOZ 7 10/30/78	USSR			
	78-101A-01	PROGNOZ 7, PLASMA SPECTROMETER	VAISBERG			
	78-101A-01B	PLOTS OF HR AVG N,V,T ON MFICHE	VAISBERG	FR	2	110378 061079
PROGNOZ 9	83-067A	PROGNOZ 9 07/01/83	USSR			
	83-067A-03	3-AXIS FLUXGATE MAGNETOMETER				
	83-067A-03B	5-MIN AVERAGED B VECTOR	STYAZHKIN	DD	1	070383 021084
	83-067A-04	PLASMA SPECTROMETER	BEZRUKIKH			
	83-067A-04A	HR AVG N,VT PLOTS + LISTINGS,FICH	VERIGIN	FR	1	070283 022984
PROGNOZ 10	85-033A	PROGNOZ 10 04/26/85	USSR			
	85-033A-00D	ORBIT PLOTS, BOUNDARY X'NGS,FICHE	FISCHER	FR	2	043085 110585
	85-033A-06	PR10, SOLAR X-RAY PHOTOM. (RF-2P)				
	85-033A-06A	XRAYS 2-4KEV,1-MIN AVG.FLUX PLOTS	BATCHELOR	FR	1	042685 101585
SME	81-100A	SME 10/06/81	NASA-OSS			
	81-100A-01	LIMB VIEWING UV OZONE SPECTROMETR	BARTH			
	81-100A-01E	1-D + 30D AVG OZONE VMR PFL, TAPE	THOMAS	DD		121581 121886
	81-100A-01F	ORBIT NO DENSITY PFL MAG LAT TAPE	THOMAS	DD	3	010682 121186
	81-100A-01G	ORBIT NO DENSITY PFL GEO LAT TAPE	THOMAS	DD	3	010682 121186
	81-100A-03	NEAR IR(1.27-MICRON) SPECTROMETER	BARTH			
	81-100A-03E	IR ID+30D OZONE VMR PFL TAPE	THOMAS	DD	1	121581 121886
	81-100A-04	SME, VISIBLE NITROGEN DIOXIDE	BARTH			
	81-100A-04B	ORBITAL NITROGEN DIOXIDE PFL,TAPE	THOMAS	DD	2	021782 123186
	81-100A-04C	30-D AVG NITROGEN DIOXIDE PFL, TP	THOMAS	DD	1	010182 123186
STS-51F/SPACELAB 2	85-063A	STS-51F/SPACELAB 2 07/29/85	NASA-OSF			
	85-063A-03	SPACELAB 2, PLASMA DIAGNOSTICS	SHAWHAN			
	85-063A-03A	W.B. ANALOG DATA (0-30KHZ), FILM	PICKETT	YM	450	072985 080385
	85-063A-03B	SURVEY SLIDES	PICKETT	RO	812	072985 080685
	85-063A-08	SPACELAB 2, SOLAR MAG/VELOC FIELD	TITLE			
	85-063A-08A	SOUP SOLAR WHITE-LIGHT IMAGES	FRANK	DD	5	080585 080585
	85-063A-08B	SOURCE CODE TO READ SOUP DATA	FRANK	DD	1	
	85-063A-08C	SOUP WHITE LIGHT RAW DATA MOVIE F	FRANK	IP	200	081585 081585
VEGA 1	84-125A	VEGA 1 12/15/84	USSR			
	84-125A-06	HALLEY 2,NEUTRAL MASS SPECTROMET	KEPPLER			
	84-125A-06A	FULL-RESOLUTION NEUTRAL GAS MEAS.	CURTIS	KF	1	
VENERA 15	83-053A	VENERA 15 06/02/83	USSR			
	83-053A-01	VENERA 15, RADAR				
	83-053A-01A	N. HEM. QUADRANGLE MOSAICS	BOYCE	YI	26	
	83-053A-01B	N. HEM. RADAR IMAGES	BATSON	DD	17	
VIKING 1 ORBITER	75-075A	VIKING 1 ORBITER 08/20/75	NASA-JPL			
	75-075A-01	VIKING 1 ORBITER, IMAGERY	CARR			
	75-075A-01C	ORTHOGRAPHIC ORBITAL PHOTOGRAPHY	CARR	TV	16750	072376 051377
	75-075A-01F	B/W MOSAICS	MARTIN	UG	504	
VIKING 2 ORBITER	75-083A	VIKING 2 ORBITER 09/09/75	NASA-JPL			
	75-083A-01	VIKING 2 ORBITER, IMAGERY	CARR			
	75-083A-01B	B/W MOSAICS	MARTIN	UG	378	
VIKING SWEDEN	86-019B	VIKING SWEDEN 02/22/86	SWEDEN			
	86-019B-00E	MAG CONJ W/DE-1 3X180 BINS FICHE	PARTHASAR	FR	4	030186 063086
	86-019B-00F	MAG CONJ W/CCE 3X180 BINS,FICHE	PARTHASAR	FR	2	030186 063086
	86-019B-00G	MAG CONJ W/CCE 6X12 BINS FICHE	PARTHASAR	FR	2	030186 063086
	86-019B-00H	MAG CONJ W/DE-1 3X80 BINS FICHE	PARTHASAR	FR	3	030186 063086
	86-019B----	QUICK LOOK PLOTS, ALL EXPS, FICHE	HULTQVIST	FR	170	031786 051287
VOYAGER 1	77-084A	VOYAGER 1, MARINER 77A 09/05/77	NASA-JPL			
	77-084A-01	VOYAGER 1, IMAGING	SMITH			
	77-084A-01B	SYSTEMATIC MTIS IMAGES,JUPITER	WEIWALL	UV	39801	010479 111380
	77-084A-01N	SATURN COLOR PRESS RELEASE	BRISTOW	ZG	49	
	77-084A-01O	SATURN B/W PRESS RELEASE	BRISTOW	YG	62	
VOYAGER 2	77-076A	VOYAGER 2 08/20/77	NASA-JPL			
	77-076A-01	VOYAGER 2, IMAGING	SMITH			
	77-076A-01N	NEPTUNE,POLAR PRESS RELEASE	BRISTOW	ZG	1	
	77-076A-01O	URANUS COLOR PRESS RELEASE	MARTIN	ZG	19	
	77-076A-01P	URANUS B/W PRESS RELEASE	MARTIN	YG	34	
	77-076A-01Q	SATURN B/W PRESS RELEASE	NELSON	YG	46	
	77-076A-01R	SATURN COLOR PRESS RELEASE	NELSON	ZG	38	
	77-076A-02	VOYAGER 2, COHERNT S+X BAND RADO	ESHLEMAN			
	77-076A-02F	RADIO OCCULTATION DATA ON URANUS	SIMPSON	DD	15	012486 012586
	77-076A-02G	DSN TRACKING DATA: URANUS ENCOUNTER	ANDERSON	DD	2	102485 022486
	77-076A-03	VOYAGER 2, IR INTERFEROMETER	HANEL			
	77-076A-03C	URANUS IRIS DATA ON MAGNETIC TAPE	HANEL	DD	1	102185 022386
	77-076A-05	VOYAGER 2, FLUXGATE MAGNETOMETER	NESS			
	77-076A-05G	URANUS ENCUNTER (HG COOR), TAPE	LEPPING	DD	3	011986 013086
	77-076A-05H	URANUS ENCOUNTER (UI COOR), TAPE	LEPPING	DD	1	012386 012586

NEW NSDF DATA SETS

DISCIPLINE / SOURCE / DATA TYPE NAME / DATA CONTENTS NAME / DATA SET NAME	FORM	QUANTITY	TIME SPAN OF DATA		NSSDC ID
ASTRONOMY					
GROUND-BASED DATA					
ASTRONOMICAL CATALOGS					GA-1
ASTROMETRIC DATA CATALOGS					GA-11
FK4 AND SUPPLEMENT (V. 1989)	DD	1			GA-11EB
LUN OCC IRAS PT SRCS 1991-2000	DD	1	01/01/91	12/31/99	GA-11EA
NEPTUNE-VOYAGER REF STARS (1986)	DD	1			GA-11DZ
SRS 20488 POSITIONS (1988)	DD	1			GA-11DY

DISCIPLINE / SOURCE / DATA TYPE NAME / DATA CONTENTS NAME / DATA SET NAME	FORM	QUANTITY	TIME SPAN OF DATA		NSSDC ID
ASTRONOMY CATALOGS COMBINED DATA					GA-15
CATACLYS BINARIES (RITTER 1988)	DD	1			GA-15BM
ASTRONOMY CATALOGS MISCELLANEOUS					GA-16
INTERFEROMETRIC MEAS BIN V. 10/88	DD	1			GA-16AM
CDROM TEST DISK (ADC 1989)	KC	1			GA-16AL
ASTRONOMY CATALOGS OF NON-STELLAR OBJECTS					GA-17
ATLAS SYNTHESIS SPECTRA GAL 1985	DD	1			GA-17DH
CFA REDSHIFTS (HUCHRA 6/1988)	DD	1			GA-17DG
MASS-STONY BROOK CO SURVEY(1986)	DD	1			GA-17DJ
NEW CAT QUASISTELLAR OBJ (1987)	DD	1			GA-17DI
ASTRONOMY CATALOGS PHOTOMETRIC DATA					GA-12
GEN CAT VAR STARS, 4TH ED (1988)	DD	1			GA-12EN
HST GUIDE STAR PHOT CAT (1988)	DD	1			GA-12EQ
PREDICTED K MAGS OF STARS (KUAN)	DD	1			GA-12EP
SUSPECTED VARIABLES (1982)	DD	1			GA-12EO
UBV PHOT 1690 H-P-M STARS (1986)	DD	1			GA-12ER
ASTRONOMY CATALOGS SPECTROSCOPIC DATA					GA-13
ATLAS SPECTROPHOT W-R STARS/1987	DD	1			GA-13FG
EQUIVALENT WIDTH MEAS(LUCK 1988)	DD	1			GA-13FF
HENRY DRAPER CAT/EXT (ADC 1989)	DD	1			GA-13FH
HENRY DRAPER EXT 112 (ADC 1989)	DD	1			GA-13FE
MICHIGAN MK/HD STARS 4 (1988)	DD	1			GA-13FA
RAD VEL 889 PROP-MOT STARS(1986)	DD	1			GA-13FI
RV BRIGHT POP II F STARS (1985)	DD	1			GA-13FD
STELLAR SPECTROPHOTOMETRIC(1985)	DD	1			GA-13FB
U,V,W, RAD VEL 1295 STARS (1987)	DD	1			GA-13FJ
SPACECRAFT RELATED DATA					
NONSTELLAR AND EXTENDED OBJECTS					SA-17
IRAS GALAXIES AND QUASARS (1989)	DD	1			SA-17C
ASTROPHYSICS					
MULTIPLE SOURCE					
COMPOSITE SPACECRAFT AND GROUND-BASED DATA					XX-1
PUBLISHED SOLAR-GEOPHYSICAL DATA					XX-12
SOLAR-GEOPHYSICAL DATA REPORTS	BI	90	06/01/74	02/28/89	XX-12A
CARTOGRAPHY					
SPACECRAFT RELATED DATA					
LUNAR MAPS					SL-1
DEFENSE MAPPING AGENCY					SL-11
LUNAR MAPS AND CHARTS	HT	740			SL-11B
MARS MAPS					
1989 USGS ELEV. MODEL OF MARS	DD	3			SL----
IONOSPHERE					
MODELS					
MISC IONOSPHERIC MODELS					MI-9
IONOSPHERIC MAPPING DATA, PREDICTIONS					MI-92
CCIR F0F2 AND M3000F2 (1967)	DD	1			MI-92C
IONOSPHERIC MODELS - 1973, 1986					MI-91
BENT & LLEWELLYN (1972)	DD	1			MI-91G
INTERN. REFERENCE IONOS (SPAN)	DD	1			MI-91F
INTERDISCIPLINARY AND OTHER DISC					
MULTIPLE SOURCE					
PDS IDI WORKSHOP SAMPLER	KC	1			------
MAGNETIC FIELDS AND PLASMAS					
GROUND-BASED DATA					
AURORAL ELECTROJET ACTIVITY INDICES					GG-3
1.0 MIN DATA					GG-33
WDC-C AE INDICES	FR	39	01/01/78	12/31/85	GG-33A
HOURLY AVERAGED AE INDICES					GG-32
WDC-C AE INDICES	FR	39	01/01/78	12/31/85	GG-32G
DST INDICES					GG-4
HOURLY EQUATORIAL DST VALUES					GG-41
HOURLY DST VALUES, HARDCOPY	HI	192	01/01/81	02/29/88	GG-41A
GEOMAGNETIC EVENTS					GG-7
GEOMAGNETIC EVENT LISTS					GG-71
IUGG/IAGA RAPID VARIATION DATA	HI	797	01/01/69	12/31/88	GG-71A
GEOMAGNETIC PLANETARY INDICES					GG-6
PLANETARY INDICES					GG-61
KP, AP, CP, CI INDICES,IAGA BULL	HI	640	09/01/69	01/31/89	GG-61A
MODELS					
INTERNAL SOURCE GEOMAGNETIC FIELD MODELS					MG-1
GSFC FIELD MODELS					MG-12
GSFC (11/87) FIELD MODEL	DD	1			MG-12C
PROGRAMS					
GEOMAGNETIC FIELD PROGRAMS					PG-1
MAGNETIC FIELD RETRIEVAL PROGRAMS					PG-18
IGRF 1945-1985 B+L CALC. PROGRAM	KF	1			PG-18C
TSYGANENKO ET AL. (1987)	DD	1			PG-18D
NEUTRAL ATMOSPHERE					
MODELS					
ATMOSPHERIC MODELS					MN-6
MSIS MODELS					MN-61
AE-E&DE-2NEUTRL WIND MODEL(1988)	DD	1			MN-61E
ROCKET DATA					
ATMOSPHERIC CONSTITUENT OBSERVATIONS					RN-3
MASS SPECTROMETER OBSERVATIONS					RN-31
MINZER SUMMARY ROCKET DATA SET	DD	1			RN-31D
SMITH-THEON ROCKET DATA SET	DD	1			RN-31C
TERRESTRIALLY TRAPPED PARTICLES					
PROGRAMS					
TRAPPED RADIATION PROGRAMS					PT-1
AE-8/AP-8/RADBELT ON FLOPPY DISK	KF	2			PT-11B

Nimbus Coastal Zone Color Scanner Images Now Available On Line

As of May 1, NSSDC provides scientists with electronic access to the NASA-processed Nimbus 7 Coastal Zone Color Scanner (CZCS) images. By logging onto a VAX computer through the NSSDC Online Data and Information Services (NODIS; formerly known as the NSSDC public account), images may be selected, browsed, and ordered.

CZCS operated from November 1978 through June 1986, acquiring over 66,000 images, each of which covers approximately 2 million square kilometers of ocean surface (Hovis et al., 1980, *Science*, 210, pp. 60-63). Based on the fact that ocean color shifts from blue to green as phytoplankton and their associated light absorbing pigments become more abundant, the CZCS data provide a synoptic view of phytoplankton distribution and abundance.

These data also allow studies of spatial and temporal variations and contribute to the understanding of phytoplankton growth; consequently, the CZCS data illuminate the role of the ocean in the global carbon cycle and global climate change. They represent the most comprehensive source of ocean color measurements to date (Esais et al., 1986, *Eos Transactions*, AGU, 67, p. 835).

Because of their enormous volume—Level I (1 km) data alone comprise 800 gigabytes—the data are archived on some 200 SONY WORM optical disks. This storage method minimizes space requirements and allows random access to the data.

An online browse program for the CZCS images was developed by Gene Feldman (Goddard Space Flight Center) and others. The program permits easy access to and selection of data and is supported on NODIS and at several NASA-sponsored ocean research sites. Scientists may search the entire Level II (4 km, chlorophyll) data set by time and/or location.

The browse program lists certain characteristics of each selected image, including sensor degradation and calibration, ozone concentrations used for atmospheric corrections, and sunglint information. If the researcher feels that a given scene warrants further investigation, the program can generate an order file requesting any of these images, at Level I, Ia, II, and III (20 km). Ordered images are copied on magnetic or optical media and shipped to the requester with documentation and necessary software.

Before ordering the selected images, the browse program can be used in conjunction with analog video disks to view and evaluate images. The video browse capability is available to visitors to Goddard/NSSDC. Researchers are invited to try the online program (SET HOST NSSDCA; Username: NSSDC) and provide feedback to Carolyn Ng at (301) 286-4088 or SPAN address NCF::NG.

Carolyn Ng

New NSSDC Computer Graphics Lab Receives National Attention

NSSDC has a small but aggressive research and development program in scientific data visualization. This group has recently formed an ad hoc NSSDC Computer Graphics Laboratory (NCGL), which has received national attention.

The work in the NCGL has focused on discipline-independent techniques for the visualization of data to be used in all of NASA's space and earth sciences. In particular, the pioneering work at the NCGL has concentrated on the development of a portable, operational, CPU- and device-independent toolbox for nonprgrammers that provides for the robust and flexible visualization of arbitrary multiple parameter/dimensional data sets for the NASA scientific community.

This toolbox is embodied as the NSSDC Graphics System (NGS), which provides a variety of visualization techniques for *any* data. The NGS has been recognized as a leading development in the field of data visualization at a national level.

As a result, NCGL personnel were invited to give tutorials on this subject at SIGGRAPH '88 and '89, and NCGA '89. NCGL personnel will chair a panel session on scientific visualization at SIGGRAPH '89. The NCGL was invited to submit a paper for publication in a special issue of the *IBM Journal of Research and Development* on visual data interpretation.

The NCGL was recently selected to referee papers for the special issue of *IEEE Computer* on scientific visualization as well as for SIGGRAPH '89. NCGL personnel have also been invited to speak to groups as diverse as the joint NSF/JPL Scientific Visualization Workshop, Woods Hole Oceanographic Institute, National Center for Supercomputer Applications, TAE User's Conference, Template User Network Conferences, JPL Data Laboratory, and Stellar Computer. The NCGL is the only Goddard Space Flight Center representative in the NSF-sponsored effort in Visualization in Scientific Computing (ViSC).

Lloyd A. Treinish

Progress and Goals Discussed at Fourth Catalog Interoperability Workshop

The Fourth Catalog Interoperability (CI) Workshop, hosted by NSSDC from May 3-5, brought together members of the CI working group, the CI science advisory group, and interested observers to discuss progress on the issues of data system interoperability and the NASA Master Directory (MD), and to establish new goals for the CI effort. Decisions were made to proceed with the advertising and evaluation of the Master Directory, to test the passing of user data search criteria among inventory and catalog systems, and to analyze additional building blocks of an interoperable data system to support global change and space science research.

One of the most important recommendations was that evaluation of the Master Directory should begin as soon as possible (see facing page). The data set entries in the MD were provided by NASA, the National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Survey (USGS), and the international and academic communities. The evaluation is designed to determine the preferences and research interests of the users and priorities for future directory development.

Progress in providing efficient mechanisms for locating data of interest was discussed. These efforts focus on cooperation and standardization among discipline and agency data systems, as well as standards such as the Directory Interchange Format (DIF) and user search criteria passing from one system to another. The resultant interoperable system should allow a user to efficiently locate, learn about, and order data of interest through widely scattered data systems.

Photo by Jay Friedlander

CI Workshop participants, bottom, left to right: B. Callicott (NOAA), M. Martin (JPL/PDS), M. James (NSSDC), E. Smith (JPL/NODS), N. Wakim (NSSDC), T. Jefferson (SAIC). First step: G. Karas (JPL/PLDS), F. Slazer (USGS), P. Bailey (NSSDC), V. Abreu (University of Michigan), G. Milkowski (URI), S. Ungar (GISS), R. Jenne (NCAR), M. Schein (NSSDC). Second step: E. Stemmer (Bendix), L. Ashcroft (TRW), E. Dobinson (JPL/PDS), S. Lubow (ST SCI), R. Walker (UCLA). Top: J. Brown (JPL), G. McConaughy (NSSDC), P. Ramamurthy (NSSDC), P. Cornillon (URI), M. van Steenberg (NSSDC), M. Johnson (JPL/PLDS), J. King (NSSDC), R. Chinman (URI), L. Oleson (USGS/EROS), J. Thieman (NSSDC), R. Dorsey (NSSDC), M. Elkington (EOS/U.K.), C. Hood (SAIC), G. Saxton (NOAA), G. Hunolt (NASA HQ).

Plans for increasing interoperability among the interconnected systems were also discussed. The MD is being replicated in Italy to test its use as a prototype international directory to earth observing data. It will be used by the international Committee on Earth Observation Satellites (CEOS) Working Group on Data to evaluate issues associated with international data directories and access.

There was much discussion of "context passing." Context passing involves forwarding information about a user's data interests (time and spatial coverage, keywords, etc.), account, and address from one system to another. Passage of this information would allow a user to first determine that a data set of interest exists, then automatically move to the inventory to learn which specific data items are available. Passing the context would allow an inventory to quickly lead a user to the chosen data. In some cases, the context would be passed to a catalog system that could provide more information about the data collection, processing, or analyses. In addition, workshop participants decided that the advanced concepts of multi-inventory search capabilities of the NSSDC-developed Distributed Access View Integrated Database (DAVID) software should be tested and evaluated with selected data systems.

Scientists, data managers, and system engineers representing U.S. and international organizations and projects attended the workshop. They represented such projects as Eos, CEOS, NOAA, USGS, NASA discipline data systems, and NASA Headquarters. Short presentations were given by several multi-institution groups, including CEOS, the Interagency

see CI, *page 20*

NASA Master Directory Now Accessible for Scientific Use and Evaluation

The NASA Master Directory (MD) is now available for use by the scientific community, following the recommendation made by the CI Science Advisory Group at the Fourth Catalog Interoperability (CI) Workshop in May. The MD is a data information system in which a user can search for earth and space science data. It also acts as a gateway to other data systems containing additional information about the data.

The group also recommended that users' experiences and reactions to the MD be recorded via a questionnaire and used to evaluate the directory and determine areas of concern to researchers. This evaluation will run from June through November.

The MD is a quick, online first step in the search for data to support scientific research. The directory provides summary and contact information about earth and space science data from NSSDC, other NASA facilities, the National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Survey (USGS), and other agencies and institutions. The directory also provides descriptive information about selected data centers and facilities, as well as coordinated scientific campaigns. It may be accessed through computer networks or dial-in lines (see box for access information). Even the simplest terminal types are supported.

A user may search for data set information by entering discipline, parameter, or location keywords; sensor (instrument) or source (spacecraft) names; or time period and geographic area (latitude, longitude). The result of a data set search is a list of descriptive titles of directory entries that meet the specified search criteria. As users gain experience in these methods of finding data, their evaluation responses should identify steps that can be taken to improve search efficiency in the future, such as automated cross-inventory data searches.

Through its gateway function, the MD leads to more detailed information about data sets. Wherever possible, the MD allows users to request an automatic network link to other data systems with online capabilities. By using the various links, researchers can view more detailed information about data sets, leave requests for information or data, browse data sets, or perform inventory searches.

For example, a user can connect to the Earth Resources Observation System (EROS) Data Center's online customer request service to request information or inventory searches for earth observation data, given a time period and geographic location of interest. The Southwest Research Institute Data Display and Archival System (SDDAS) offers online access to space physics data from several satellites, which includes the ability to interactively plot the data. The Astronomical Data Center provides information on a large number of astronomical catalogs, some of which can be transmitted directly through the network. The MD provides access to many other similar services.

For those wishing to advertise data availability, the MD is an excellent tool to increase the visibility of useful data sets. Persons holding interesting data sets who would like to have them described in the MD should contact Dr. James Thieman at (301) 286-9790 or Mary James at (301) 794-5316. The MD uses the standard Directory Interchange Format (DIF) for data set descriptions. The DIF allows data set information to be loaded into the MD, or other DIF-compatible directories, in a matter of minutes.

The nature of the MD has been heavily influenced through interaction with the Catalog Interoperability (CI) Working Group. This group includes representatives of NOAA and USGS, as well as several major NASA data systems, including NASA's Climate Data System (NCDS), the Pilot Land Data System (PLDS), the NASA Ocean Data System (NODS), the Synthetic Aperture Radar (SAR) Data Catalog System (SDCS), and the Planetary Data System (PDS). The MD is intended to be usable without prior training, but if you wish to have an MD reference guide, or if you have any questions, contact the MD User Support Office at (301) 286-9761.

Mary James and James Thieman

Access to the Master Directory

To access the MD from computers on the Space Physics Analysis Network (SPAN), issue the command SET HOST NSSDCA and respond to the subsequent Username: request with NSSDC followed by a carriage return. Then, select option 1 (the NASA Master Directory) from the NSSDC Online Data and Information System (NODIS) menu.

For access through dial-in lines, set terminals to full duplex at eight bits, no parity, one stop bit (300, 1200, or 2400 baud). Dial 301-286-9000 or FTS 888-9000. At the Enter Number: prompt, enter MD and a carriage return. When the system responds Call Complete, enter a few more carriage returns and the Username: prompt will appear. Then proceed as above.

Via ARPAnet or Internet, the command to use is TELNET 128.183.10.4, which will result in the Username: prompt. Then proceed as for SPAN, above.

Publications Office Improves Printed Products by Using New Technologies

The NSSDC Publications Office has been revitalizing its publications and upgrading its hardware and software for the past several years. "We are using the Macintosh and desktop publishing systems to improve the aesthetics of our products," says Karen Satin, publications manager.

The Publications Office generates a variety of documents for the scientific community. The list of publications begins with two periodicals, the *NSSDC News* and the *SPACEWARN Bulletin*. The *NSSDC News*, a free quarterly newsletter, has an international circulation of about 3500 recipients. It was the first publication to be produced using desktop publishing, says Satin, who pioneered its new image when she joined the Data Center three years ago. Through the *SPACEWARN Bulletin*, the NSSDC/World Data Center A for Rockets and Satellites disseminates information about the status of launched and orbiting spacecraft to a select group of about 650 scientists worldwide.

Variety of Products Generated

Some technical and scientific publications are revised periodically; others are one-time products. The Data Catalog Series, for instance, is an 11-volume series of scientific catalogs containing descriptions of satellites and experiments. The final two volumes will be completed this year. The recently printed *NASA's Climate Data System Primer*, a user's guide for NSSDC's online climate data archive, exemplifies the technical documentation produced.

Books and journal articles written by NSSDC scientists are edited and prepared for printing. *The Worldwide Ionospheric Data Base* is the most recent example. The staff also provides presentation visuals and displays for convention exhibitions.

Satin orchestrates the flow of work through the editorial and word processing sections. Her primary goal is "to produce high quality, visually attractive, easily readable publications." Publications makes use of the most current software in desktop publishing, giving the staff the flexibility to create typeset-like documents through the ability, for example, "to select from an enormous variety of typefaces and sizes," Satin continues, and to create artwork using various graphics packages.

Satin coordinates with Carol Kanga and Miranda Knowles, technical editors, who determine layout and design and interact with graphics and printing personnel, along with their editing and writing responsibilities. They work closely with the expert word processing staff of Lynda Williams, Cindy Posinski, and Sandra Walter, who are well-versed in a large variety of software packages for the Macintosh and editing programs on the VAX computer.

With this edition, Kanga has taken on production responsibilities for the *NSSDC News*, which is generated on the desktop publishing package Ready, Set, Go!. She has initiated some changes in the newsletter "to make it more reader-friendly." For example, in this issue the typeface and spacing have been changed to create a more readable piece. Kanga's goal for NSSDC publications is to "make the details of the way things are published more consistent with the sophistication of the content," i.e, "to come closer to an actual phototypesetting standard."

Knowles maintains that "achieving the kind of professionalism that we are aiming for takes just plain hard work. It means careful consideration of all the factors that go into producing a publication, right up through page layout and cover design." Along with her other editing and writing responsibilities, Knowles is currently compiling an updated version of the *Document Availability and Distribution Services* publication.

Word Processing Equipment

It is in word processing that the efforts to provide accurate and aesthetically pleasing publications come to fruition. The computer talents of the word processing staff ensure the professional appearance of documents, books, articles, reports, and visual presentations. Lynda Williams, Cindy Posinski, and Sandra Walter have at their disposal a VAX terminal, a Talaris laser printer, two Apple Macintoshes, and an Apple LaserWriter printer, as well as a library of software that includes Microsoft Word, Excel, and PowerPoint; the desktop publishing packages PageMaker and Ready Set Go!; and graphics packages such as MacDraw and MacPaint.

Through the use of this equipment, Williams, Posinski, and Walter not only enter and format documents but also design and produce such items as view graphs, illustrations, and letterhead for the varied NSSDC entities. They, too, are committed to a standard of excellence for NSSDC publications and are concentrating on improving appearance through format.

Most documents come to the word processing staff either on Macintosh disk or over the VAX. While much of the VAX material is converted to Macintosh format, some information transmitted on the VAX remains in that system on line, where others have easy access for making changes and producing updated versions. Certain publications, such as the newsletter, are keyed into the Macintosh "from scratch."

The staff, all employees of Science Applications Research (SAR), have strong editorial and computer backgrounds that enable Publications to

take advantage of today's innovative technologies while maintaining a high standard of quality.

Meet the Staff

Publications manager Karen Satin's extensive editorial career began after receiving a B.A. in English and sociology from the University of Connecticut. Subsequently, she acquired an M.A. in journalism from the University of Maryland. Although she had been certified to teach high school English, she accepted a job as an editor for *Encyclopaedia Britannica* and never looked back. She "retired" from full-time employment for many years while raising her family but continued to edit and write on a freelance basis.

Returning actively to the field, Satin worked on convention materials for the National Science Teachers Association and then as a senior technical writer for Computer Sciences Corporation. She joined SAR five years ago, working on projects for NASA, NOAA (National Oceanic and Atmospheric Administration), and the corporate offices before coming to NSSDC when SAR was contracted in 1986.

Carol Kanga returned to NSSDC in February as a permanent staff member after having worked as a temporary technical editor in1987 and 1988. She earned a B.A. in English from the University of Maryland and has worked in editorial and electronic environments since 1975. In recent years she served as an editor for the Controller Financial Information Systems division of the Bechtel Power Corporation and as a methods analyst for the Federal Home Loan Bank of San Francisco. Kanga says that she is "really happy to be back" with NSSDC and likes "the idea that we're serving a worldwide scientific community."

The newest member of the Publications Office is Miranda Knowles, who has been with NSSDC since April. For the past four years, she edited for the American Association of Collegiate Registrars and Admissions Officers in Washington, DC. During the preceding eight years, she taught Latin and English at the middle, junior high, and senior high school levels. Knowles holds a B.A. in Latin and religion from Dickinson College. She especially enjoys working with the variety of technical material that her position entails.

Lynda Williams served as executive secretary to the president of Mash's Inc. before she joined NSSDC's word processing team a year and a half ago. When Williams first came to NSSDC, only the newsletter was produced on "the desktop." Now, she says, "anything that comes in new, we're going to do [on desktop]." Her own skills, she adds, have grown with NSSDC's expanding publications.

Also a member of the word processing staff, Cindy Posinski has been with NSSDC for two years in both the word processing section of Publications and in the SPAN Network Group as the SPAN Network Information Center coordinator. Posinski held both administrative and management positions at Association Management Inc./National Burglar and Fire Alarm Association in Washington, DC, before joining NSSDC.

Posinski is enthusiastic about coming back to NSSDC parttime after taking off two months to welcome the arrival of her new son. In September she will resume her computer science degree program at the University of Maryland while continuing to work.

Sandra Walter has been honing her computer skills on a parttime basis at NSSDC since late March. While pursuing a computer science degree at Anne Arundel Community College, she also works at the University of Maryland for the Maryland Drug Data Base, "a huge data base on drug treatment and prevention programs in Maryland, sponsored by the governor." The data base is set up in 4th Dimension, with some data going into an Excel program for computations and charts.

Miranda Knowles

Photo by Jay Friedlander

Publications staff members, left to right: Carol Kanga, Karen Satin, Cindy Posinski, Miranda Knowles, Lynda Williams, and Sandra Walter.

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ROSAT System Presented to Astronomers at AAS Meeting

NSSDC's ROSAT Mission and Information Planning System (MIPS) was demonstrated to astronomers attending the American Astronomical Society (AAS) Meeting in Boston, MA, in January. ROSAT MIPS is an online information system provided by NASA to assist scientists in preparing proposals for observing time on the ROSAT satellite, scheduled for launch in February 1990.

A special workshop was held on ROSAT, and the U.S. ROSAT Science Data Center was represented at an exhibit. Terminals were brought to the meeting, and demonstrations were performed through the NSF network, SPAN, and GTE Telenet on the ROSAT MicroVAX located at Goddard Space Flight Center. Thorough demonstrations of MIPS were provided to approximately 50 AAS attendees.

A brochure describing MIPS and its login procedure was handed out at the meeting. Over 100 scientists signed up to receive the ROSAT NASA Research Announcement and the technical appendixes, which contain a detailed description of the MIPS.

Jeanne Behnke and Carey Noll

25-Year Old Tapes Restored

NSSDC recently completed the restoration of a Television and Infrared Observation Satellite (TIROS) 2 data set. These data were originally provided to NSSDC by B. Bandeen and J. Barkdale. The data set is unusual in that the data were written at 200 bpi on 7-track tape about 25 years ago.

These tapes were first ingested into the Data Center in 1968; they were archived in canisters and sealed in plastic bags before being shipped to the Federal Records Center (FRC) in 1970. There is no record of them having been "exercised" in any way during the past 20 years. An outside science advisory panel had recommended their restoration, and NSSDC was interested in their readability.

On being recalled from the FRC, a few sample tapes were checked on a tape cleaning machine for signs of deterioration such as flaking oxide, adhesive bleed-through, and contaminates. Finding none, technicians then copied the tapes, using the NSESCC IBM 3081 computer, onto 9-track, 6250-bpi tapes on a one-to-one basis. While some reading problems were encountered that required resubmitting the copy job, all 126 tapes were successfully copied, with only one lost record. After verifying all the tape copying jobs, the 126 9-track tapes were stacked at NSSDC onto five 9-track, 6250-bpi tapes.

Ralph Post and Robert McGuire

SPAN Supports Experiment Team Visiting Japan

The Network Support Office for the Space Physics Analysis Network (SPAN) recently participated in a joint effort with the University of Kyoto SPAN node to support a Geotail investigator team from the University of Iowa. The team was conducting instrument tests at the Institute for Space and Astronautical Science (ISAS) in Japan.

The only SPAN/DECnet link currently possible between the United States and ISAS is via public packet switched network. Connection to the University of Kyoto can be made either through the SPAN PSN gateway at NSSDC/Goddard or the gateway at SSL/Marshall to the node at Kyoto, with an internal Japanese link between Kyoto and the ISAS facilities (located in the vicinity of Tokyo/Yokahama). Electronic mail is now regularly exchanged via these links.

To conform to conditions in the governing agreements between NASA and ISAS for the Geotail collaboration, several special procedures were needed to support the Iowa team. For two hours each evening (eastern time) during the support period, an X.25 link to Kyoto was established and monitored at NSSDC. During that time (morning in Japan), members of the Iowa team visiting ISAS had full access to SPAN capabilities. In addition, a special electronic mailbox was set up at Kyoto for nonurgent United States communications traffic from Japan outside of the two-hour window. This mailbox was emptied by SPAN/NSSDC during the evening connection period and during a several-minute X.25 connection made each morning (eastern time).

The Iowa team has expressed great satisfaction at how well the procedures worked in satisfying their requirements and specifically thanked all involved for the effort in setting up the appropriate procedures.

Robert McGuire, Patricia Sisson, and Valerie Thomas

Nimbus 7 Ozone: The Movie Is Better Than the Book

NSSDC has begun to distribute a VCR movie made from the entire 10-year (1978-88) record of daily global stratospheric ozone data acquired by the Total Ozone Mapping Spectrometer (TOMS) instrument aboard Nimbus 7. The movie was an outgrowth of an idea from Dr. Dennis Chesters of Goddard's Climate and Radiations Branch to create his own personal at-

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las of all digital imagery from TOMS to support his research.

The TOMS movie can be viewed at various speeds, including freeze frame, so that a researcher can identify and study interesting phenomena embedded in the data set that might not be apparent by examining the data set one image at a time. For example, the well-known Antarctic "ozone hole" is clearly visible, as is its annual variation.

The movie is made up of one frame for each day of the 10-year period—3440 frames in all. Each frame contains a color-coded display of measured ozone over both the north and south polar regions as well as a worldwide Mercator display. The tape also contains a two-minute introduction that explains the color-coding scheme, ozone amounts, and missing data.

SPAN Connects Successfully Between U.S. and Japan

Tests were recently completed between Space Station Technical Management Information System (TMIS) computer hosts at NASA's Space Station Freedom Project Office (SSFPO) in Reston, VA, and TMIS hosts at the National Space Development Agency (NASDA) in Tokyo, Japan. The tests were successful and no problems were experienced.

SPAN management personnel located at Goddard Space Flight Center directed the test. Others involved were SPAN management personnel at Marshall Space Flight Center, Boeing TMIS personnel at SSFPO, and NASDA personnel at SSFPO and NASDA.

The tests were conducted during evening hours to ensure there would be no disruption of SPAN during peak use hours if any problems were encountered. This also allowed NASDA personnel in Tokyo to participate in the testing during their normal business day (Tokyo is 14 hours ahead of the eastern time zone). The tests demonstrated that SPAN can successfully allow transparent DECnet connections between NASDA TMIS hosts in Tokyo to TMIS hosts at SSFPO and other NASA field centers accessible over SPAN by riding over the top of the international public packet switched network.

DECnet is the communications protocol used by SPAN; it allows intercomputer communications such as electronic mail, file transfer, virtual terminal, and task-to-task communications. In addition to the use of standard network utilities, TMIS hosts make further use of DECnet to support interconnection of their office automation packages.

This SPAN capability, which allows NASDA TMIS to communicate with SPAN-accessible NASA TMIS hosts, will be used on a regular basis within several months.

David Peters and James L. Green

CDDIS MicroVAX Now Accessible Worldwide

NSSDC's Crustal Dynamics Data Information System (CDDIS) has been operating on a dedicated DEC MicroVAX II computer since February 1988. During the past year, software and hardware have been procured to connect this system to various worldwide computer networks. These connections include the DECnet-based Space Physics Analysis Network (SPAN; node name CDDIS), the TCP/IP-based Internet/ARPAnet (node name CDDIS), and the store-and-forward mail and file transfer BITnet (node name CDDIS1). In addition, the MicroVAX is directly accessible through the GTE Telenet facility, allowing users located throughout the world to dial local phone numbers to connect to the CDDIS. Conventional dial-up lines are also available to local users.

Since the various networks became operational on the dedicated MicroVAX, approximately 50 user accounts have been established for Crustal Dynamics Project staff members and cooperating institutions. Using their network connections, these accounts are typically accessed on a daily basis to exchange information on system schedules, experiment information, data issues, and other project-related news items.

The implementation of these network connections on the CDDIS computer has greatly benefitted the Crustal Dynamics Project. Users located worldwide can access the system through networks connected to their home institutions and can transfer analyzed data files for inclusion in the CDDIS.

The system has become a cost-efficient mechanism for the exchange of data and information within the project. Users can log into the computer in the least expensive manner to forward messages and data to other interested parties. Thus, phone, Telex, and other costly forms of communication can be avoided. The CDDIS computer also permits users in different time zones to communicate more efficiently.

The CDDIS MicroVAX acts as a "hub" for promoting electronic communication between the Crustal Dynamics Project office and cooperating institutions and scientific investigators. Users have consistent, rapid access to the system 24 hours a day, seven days a week.

Carey Noll

CALENDAR

June 19-20, 1989	CD-ROM Workshop Goddard Space Flight Center
September 20-22, 1989	NASA's Climate Data System Workshop Goddard Space Flight Center
December 10-12, 1989	CDAW 9.2 Stanford University

PLDS Releases Production Version

NSSDC's Pilot Land Data System (PLDS) office recently released the production version of its PLDS-88 software and the associated *PLDS User's Guide*. During the beta-test period, the software was extensively and critically reviewed by a variety of independent land scientists and the PLDS Science Working Group members. The test results were favorable.

Written reports from four of the beta-test sites have been compiled into the document *Validation and Verification of PLDS-88*, which is available from the PLDS project office at NSSDC. Reviewers' comments were examined in detail by the system developers; many of their suggestions have been incorporated into the production version.

NSSDC currently ports this software to the other PLDS nodes and plans to have the software up and running at JPL within a couple of months and at ARC by October. The PLDS software will function in a new operating system environment at the ARC node. This new version of the software has three new functional components, and two of the existing functions have been substantially improved. Directory and catalog functions have been added by capitalizing on existing software and information collected by other Goddard activities (i.e., the Master Directory for the directory and NASA's Climate Data System for the catalog). A query tool was also added; it permits users to access all pieces of data within the data system without knowing the logical structure of the data bases. The data access and inventory functions have been rewritten to provide greater functionality and to make them easier to use.

The inventories at ARC, NSSDC, and JPL have been loaded with information about current PLDS data holdings and other data holdings at the three centers. NSSDC will continue to expand this information by adding more entries for each data set already supported by the PLDS and by supporting several new data sets.

Blanche Meeson

CI, *from page 14*

Working Group on Data Management for Global Change, NASA's Earth Science Applications Data System (ESADS) project, the Eos mission, and the International Geosphere Biosphere Program. Representatives of these agencies described their efforts to make data more available for the solution of important research problems. There were also presentations by several system development groups about the status of their data management systems. All shared their plans to further the goals of interoperability.

The next CI Workshop is planned for January 1990. A detailed report on the recent workshop is available from Maryel Schein at (301) 286-9761 or NCF::SCHEIN.

James Thieman and Mary James

Data Inquiries

For information on submitting data to the Data Center or inquiries regarding availability, cost, and ordering procedures, researchers within the United States should contact:

Submissions:

Dr. H. K. Hills
National Space Science Data Center
Code 633.8
Goddard Space Flight Center
Greenbelt, Maryland 20771
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SPAN: NCF::HILLS

Requests:

National Space Science Data Center
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Goddard Space Flight Center
Greenbelt, Maryland 20771
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Telex: 89675 NASCOM GBLT
TWX: 7108289716
SPAN: NCF::REQUEST

Individuals residing outside the United States should contact Dr. James L. Green for information on submissions. Inquiries to Dr. Green and requests from outside the United States must be directed to:

World Data Center A for Rockets and Satellites
Code 630.2
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