NSSDC

NATIONAL SPACE SCIENCE DATA CENTER

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NSSDC and Planetary Data System Sign Memorandum of Understanding

A Memorandum of Understanding (MOU) was recently signed by NSSDC, the Planetary Data System (PDS) at the Jet Propulsion Laboratory (JPL), and appropriate NASA Headquarters organizations. This MOU covers the roles of NSSDC and PDS both in the context of the overall NASA data management environment and, more specifically, in acquiring, archiving, and disseminating planetary data.

NSSDC is recognized as the lead organization in the NASA distributed data environment, with PDS a discipline data center at the second level. NSSDC provides high-level management of NASA's data, a top-level directory of all NASA data, and coordination and guidance of data system engineering functions (cataloging standards, data structures and formats, data storage media, etc.). PDS provides management of planetary data, a catalog of such data, and selected technology advances (e.g., CD/ROM formats).

PDS is responsible for planetary data collections, content definition, validation, and catalog management. NSSDC is responsible for the long-term archiving of planetary data. Distribution and access responsibilities are split between NSSDC and PDS: NSSDC handles requests involving replication of whole digital media and all film products while PDS handles requests requiring scientific expertise or data manipulation.

PDS is in its early formative years. Occasional articles in this newsletter will describe PDS, itself a distributed system, in more detail.

The NSSDC/PDS MOU is particularly significant as the first of a number of such MOUs NSSDC is likely to sign with other discipline data centers in the coming years, as the distributed data environment encouraged by the National Academy of Science's Committee on Data Management and Computation (CODMAC) materializes. In this environment, NSSDC will not only play the roles discussed above, but will also be the discipline data center in some disciplines (e.g., space plasma physics and climate science).

Joseph H. King

In attendance for the MOU signing were (seated, left to right) Joe King (NSSDC) and Tony Villasenor (NASA HQ); (standing, left to right) Caldwell McCoy (NASA HQ), William Quaide (NASA HQ), Jim Green (NSSDC), Tom Renfrow (JPL), Tom Duxbury (JPL), Ray Arvidson (Washington University), and Ed Danielson (California Institute of Technology).

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Message from the Director

NASA Missions and the NSSDC Interact Through Project Data Management Plans

The National Space Science Data Center (NSSDC) is responsible for assuring that quality spacecraft data from past, present, and future NASA missions are archived, readily accessible, and distributed upon request, thus providing a mechanism for maximizing the science return from NASA's initial investment in these missions. To this end all NASA missions, in conjunction with NSSDC, must prepare a Project Data Management Plan (PDMP). This plan is a requirement under the NASA Management Instruction (NMI) 8030.3A.

Since the NMI came into effect in 1978, only the Space Telescope Project has completed the process of a formal PDMP. In all fairness to the projects, in the past NSSDC did not have the staffing to actively seek and help complete the PDMPs. That has all changed now. NSSDC is slowly working its way with the many current and funded future projects in the preparation of their PDMPs.

Defines Roles and Responsibilities

Broadly speaking, the PDMP is a statement of NASA project data management and defines the roles and responsibilities of the individual investigators, the NASA officials implementing the programs, and NSSDC to ensure proper use and preservation of space-acquired data. It addresses the total activity associated with the mission data from the delivery of the experiment data records to the investigators to the delivery of selected reduced and analyzed records, along with supporting documentation, to a specified repository such as NSSDC.

NSSDC places great importance on the PDMP since the quality, accessibility, and usability of the data (particularly in the postmission phase) is dependent on many aspects of the (previously) active mission's data system. Many currently active and long-lived missions do not have a "data system" per se. NSSDC must maintain liaison with NASA spacecraft projects and its investigators throughout the life of the project, assigning acquisition scientists with expertise in the appropriate areas, and offering additional available specialized support as necessary. In addition, NSSDC will continue to assure the open accessibility of nonproprietary data and respect proprietary data rights during the mission phase as data are archived at its facility.

NSSDC has the responsibility of being NASA's long-term data archive. Recently, other possible discipline data centers, such as the Space Telescope Institute, the NASA Ocean Data Center, and the Planetary Data System, are becoming appropriate regional data analysis centers and data archives. At this time discipline data centers are being viewed as interim archives with the long-term responsibility of mission data archiving remaining with NSSDC.

In the cases where NSSDC is the specified interim and long-term data archive for a mission's data, the PDMP is viewed as the interface document between the NASA project and NSSDC. It is important to note that the PDMP is not intended to be a static document but should be revised on an "as needed" basis.

The emphasis in the PDMP should be on advance planning of the management of the data. The nature of the flight projects and their objectives obviously will strongly influence the data flow and the data products, but the project management must plan this data flow, determine what processing is done where, and identify, in conjunction with NSSDC, the appropriate data sets and the schedule for public access to them and their archival. As mentioned earlier, there are several projects that are well into the mission phase and have not developed a PDMP. These guidelines should also be applied in those cases. However, as pointed out in the CODMAC report, early (prelaunch) involvement by the data archiving facility with the mission produces the most cost-effective and scientifically productive long-term data archives.

Specifies Proprietary Data Rights

The PDMP should specify the nature and duration of any proprietary data rights. For instance, a project's science working team members may agree that during a one-year proprietary period they might share higher level data products on a coauthorship basis. After one year, the data would become openly accessible to the general scientific community. Clearly, the right of the scientific community to data access must be considered in the light of the sometimes lengthy effort on the part of the experimenter to fully understand and correctly calibrate the instrumental data.

The archival of a data set, creation of the associated catalog, and entry of data set information into the directory should be done during the mission. This facilitates the research done during the mission and ensures that the directory information is readily available to both mission and nonmission scientists.

A data set that is not used by its creator in its archived form is notoriously unreliable. Consequently, a project's archives should be originally created, developed, and exercised by the investigator or investigator team. The mission data should be moved to a data center at the earliest possible date when the data are still in active usage and yet are not continuously undergoing recalibration, recalculation, etc.

Contents of Archive

The contents of the archive should include (but not be limited to): the instrument data; orbit/attitude (ancillary) information; commanding and telemetry information (as appropriate); information about the data, such as catalogs and general documentation; and any useful, well-documented software which is transportable. All catalogs and documentation, as well as software, should be machine readable, to facilitate both online access and archival storage. For data sets that are not machine readable, such as photographs and microfilm plots, the documentation and catalog information should still be machine readable. For example, microfilm plots are often extremely effective and convenient for providing a variety of users with quick and simple access to data for summary purposes.

It should be the responsibility of the principal investigators to ensure the integrity of their data whether located at the investigator's institution, a central project archive, or at the data center. NSSDC will undertake every effort to quickly facilitate the investigator's task of verifying data integrity for his or her data at NSSDC. Once the data are archived, it is the responsibility of NSSDC to maintain the integrity of the archived data.

The PDMP should answer the following questions for the mission and be a commitment by the project and the NSSDC to ensure that the goals are met.

1. What data products will be archived? Will calibrated, full-resolution, digital data be archived? If not, why not, and what

see PDMP, page 3

Request Office Processes Thousands of Inquiries Yearly

The pace is brisk at the Request Coordination Office where more than 2,000 requests for data and information are processed each year. It is here that requests for documents, prints, film, microfiche, microfilm, magnetic tapes, and videotapes are handled.

How is this accomplished? When a request is received, it is logged into NSSDC's automated information system for tracking. Because the Request Coordination Office processes only nondata ("off-the-shelf") requests, most requests are then dispersed to other groups for processing. For example, different groups process requests for digital data, astronomical data, and analog data.

For the past few years, the most requested data have been from the IRAS mission. Other popular data include Shuttle Imaging Radar (SIR-A) from the STS 2 mission, IUE, Nimbus 7, and planetary imagery data from Voyager and Viking.

At present, NSSDC is operating several online data base systems, which are accessible by dialing procedures or via the Space Physics Analysis Network (SPAN). These systems are the multidisciplinary Central Online Data Directory (CODD), the Pilot Climate Data System (PCDS), the Pilot Land Data System (PLDS), and the Crustal Dynamics/Data Information System (CD/DIS).

According to Pat Ross (SAR), manager of the Request Coordination Group, the process is going to become more user-oriented and less paper-involved. The current SIRS data base is going to be replaced by the IDM/500 that will be accessible through the VAX. Requesters currently can send electronic mail through SPAN to NSSDC::REQUEST to make their requests.

Liz Kennedy

Serita Stephens

Request Coordination Staff

Liz Kennedy (SAR) is the new request coordinator in the Request Coordination Office. She receives all the mail and telephone requests that go through the Data Center and, except for document requests that she handles personally, forwards them to the appropriate group for processing.

Liz worked previously at the State Department as an airline auditor. Prior to that she worked at NSSDC in the Data Repository as a data technician handling lunar and planetary data.

Serita Stephens (SAR), the newest member of the Request Coordination Office, began working as a technical typist in January. Her responsibilities involve logging the requests into the computer and typing all the cover letters. She previously worked at Goddard as a secretary for the Flight Projects Directorate.

PDMP, cont'd from page 2

products are suggested as an alternative? Will low resolution or other more highly processed data be archived? Will ancillary data such as orbit and attitude be archived?

2. Where will each data product be archived? There may be national archives or discipline data centers other than NSSDC where this data can be appropriately archived.

3. When will each data product be archived? If not within two years of in-space data acquisition, why not?

4. Are there any special handling instructions? NSSDC has accepted and handled proprietary data in accordance with project rules and will continue to do so.

5. What medium will be used for transmitting data to the archive? In addition to magnetic tape, NSSDC is receiving data over a variety of networks and on optical disks.

6. What catalog (structure and contents) will be associated with each data product? Will this be accessible over the networks, and when and to whom will it be accessible? What other information or data access capabilities will be accessible? What will be transferred to NSSDC with each data product?

7. What additional documentation will be provided with each product? This information should include processing histories and data quality analyses.

8. What data formats and structures will be used? If the data are not in a standard format such as FITS, CDF, SFDU, why not?

9. What software (including browse) will be supplied to the archive? What will be remotely accessible and in what time frame?

10. Will any hardware be provided to the archive from the project data management system to handle the incoming data or transferred over in the postproject phase?

The effectiveness of NSSDC in performing its service to the space and earth science community depends on a well-defined relationship between NSSDC and the project. With mutual cooperation, NSSDC can provide a valuable service to all and help preserve our precious space heritage.

James L. Green

Data Center Institutes Optical Disk Technology

A mass purchase of optical disk drives and platters has been initiated by NSSDC to facilitate the use and exchange of scientific data. Between 20 and 40 optical disk drives will be purchased and distributed to NASA-supported scientists at government, university, and industrial sites where space data are analyzed and prepared for distribution and archiving.

The optical disk equipment will interface to VAX and MicroVAX computers. NSSDC will employ a few of the drives to copy data for distribution to other users and to hold data on line for ready access by users entering the NSSDC computer via the SPAN electronic network.

The optical disk drives are of the "write once read many times" (WORM) type. The

see Optical, page 10

NSSDC Establishes Applied Artificial Intelligence Laboratory

The NSSDC Applied Artificial Intelligence Laboratory (NAAIL) has been formed to help establish the National Space Science Data Center as a world-class institution for data dissemination and manipulation. The goal is to develop intelligent data management value-added services and systems that can support a large number of scientists and engineers involved in the management and use of space-derived spatial and symbolic information. These users have a need for online access to space- and earth-related data but may not have the needed experience in data base operations. Data management systems using these concepts will overcome most user data base difficulties by serving as an intermediary between a data base system and a user who may be unfamiliar with the architecture, data content, or query language of the data base.

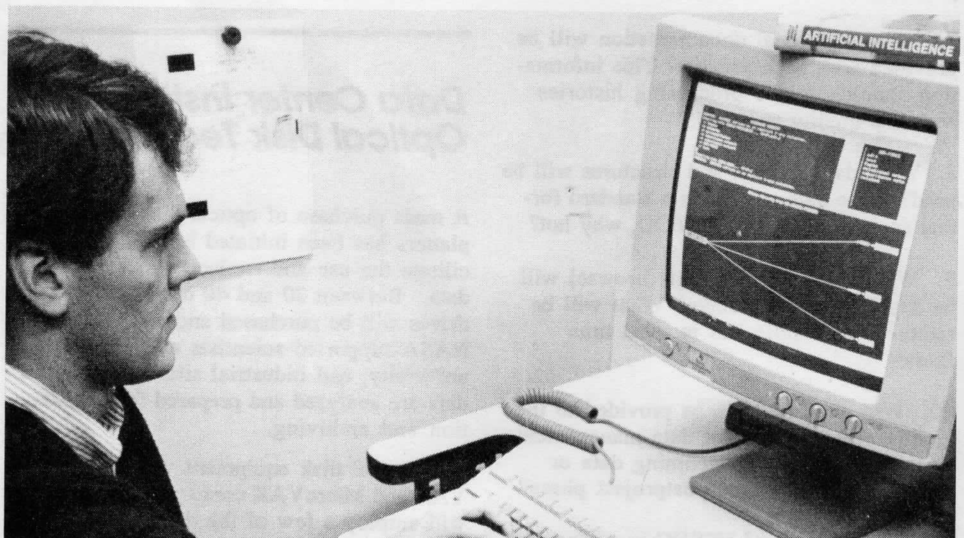
Other technical issues that will be addressed include research in spatial data structure design, graphical data object representation, and user interaction. Most importantly, new and imaginative approaches will be developed that will allow the automatic ingesting of scientific data in such a manner that the data, or some abstracted view of the data, can be characterized in the broad context of a multidisciplinary environment and made readily available to the scientific community. These developments are critical to the efficient use of data that will be generated in the Space Station era.

The laboratory is staffed with personnel experienced in the physical sciences, physics, computer science, mathematics, and artificial intelligence techniques and technologies. The four staff members include Bill Campbell (NSSDC), Larry Roelofs (CTA), Nick Short, Jr. (NSSDC), and Scott Wattawa (SAR).

Bill Campbell, who manages the AI Laboratory, won a Director's Discretionary Fund award for the past two years to conduct research using expert systems graphics interfacing. Campbell is very pleased with what has been accomplished thus far in intelligent user software development and with what the future will bring. He says "We are just starting to explore the tremendous potential of AI for data management."

Larry Roelofs is responsible for the laboratory's technical operation and for the formalized creative developments that come out of it. As senior knowledge engineer, Roelofs translates the problem in sufficient detail so that, once understood, it can be dealt with by using AI tools.

Nick Short, Jr. develops expert systems for user interfaces to data base management systems. The languages he works in are primarily LISP, ART (Automatic Reasoning Tool), and C. Together with Campbell, Short developed the Crustal Dynamics Database Expert System (CRUDDES).



Nick Short works at a terminal in AI lab.

Scott Wattawa is responsible for the development of AI to visualization and geographic information sytems as it applies to data managment problems.

Laboratory Equipment

The AI Laboratory is equipped with a Texas Instruments Explorer LISP workstation, the ART expert system development software, and an IBM PC/AT with 140 Mb of storage with the M.1 microcomputer expert system development tool and GKS graphics. The purchase of additional hardware and software is in progress.

Current research and development efforts include a microcomputer-based prototype expert system that provides expertise to a user of an operational scientific data base (Crustal Dynamics Data Information System) using a natural language interface (THEMIS) and NSSDC's VAX 11/780 computer. This development provides the capability for inexperienced data base users to formulate complex queries to support science data requests. In addition, a Director's Discretionary Fund project developed a microcomputer-based graphics interface using an expert system. By using a mouse, the user is able to interact with graphic representations of information contained in a remotely located data base. Appropriate information based upon this interaction is then returned to the user in English.

Future directions of this research include the development of an advanced knowledge-based management controller that will greatly extend the ability of a data base user to identify both metadata (information about data) and the actual data themselves in near-real time by using pattern recognition processes that support specific applications problems. In addition, a second generation prototype graphics expert system is being developed to interact with spatial data in concert with expert systems that are able to reason and interact with operational data bases. This development will greatly reduce the time required for a user to learn about, and interact with, a given data base management system. It will also enable the inexperienced user to interact with engineering and scientific data in a fashion never before achievable.

William J. Campbell

New Data Acquired During 1986

The accompanying list gives a one-line description of each data set archived at NSSDC for which data were received during calendar year 1986. In some cases the received data were the first for the data set and in other cases the data were for additional time periods. To keep the list brief, routine ephemeris data sets, project data pool data sets, and data provided solely for the very limited time periods studied in CDAW were omitted.

The time period entered in the list is the total time period covered (after addition of the new data received). Similarly, the quantity of data is the current total amount of data in the data set. For each data set, there is a one-line description of the experiment that produced it, and for each experiment there is a line describing the spacecraft on which it was flown. For the spacecraft entries, the "Contact" field gives the country and/or agency responsible for the launch.

SATELLITE NAME	NSSDC ID	IDENTIFICATION	CONTACT	QNTY	TIME SPAN OF DATA	
ANS	74-070A	ANS,ASTRO.NETHERLAND SAT.08/30/74	NETH-NASA			
	74-070A-01	ANS, 1500-3300A ULTRAVIOLET EXP.	VANDUINEN			
	74-070A-01B	UV INTERSTELLAR EXTINCTION EXCESS	SAVAGE	1		
AUREOL 2	73-107A	AUREOL 2 12/26/73	USSR			
	73-107A-02	ION MASS SPECTROMETER				
	73-107A-02A	ION MASS SPECTROMETER DATA ON TP	GRECHNEV	3	012574	021974
ERBS	84-108B	ERBS 10/05/84	NASA-GSFC			
	84-108B-01	ERBS,EARTH RADN BUDGET EXP/ERBE	BARKSTROM			
	84-108B-01A	RAW ARCHIVAL TAPE (RAT)	KIBLER	87	110484	013186
GOES 1	75-100A	GOES 1 10/16/75	NOAA-NESS			
	75-100A-01	GOES 1,V/IR SPIN-SCAN RAD (VISSR)	NESS STAF			
	75-100A-01D	VISSR IR/VIS AOIPS IMAGE TAPES	PUCCINELL	4120	071975	061178
GOES 2	77-048A	GOES 2 06/16/77	NOAA-NASA			
	77-048A-01	GOES 2,SPIN-SCAN RADIOMETER-VISSR	NESS STAF			
	77-048A-01A	AOIPS IR + VISIBLE IMAGE DATA	PUCCINELL	2912	120777	030578
	77-048A-04	GOES 2,BIAXIAL FLUXGATE MAGNETOMR	WILLIAMS			
	77-048A-04C	MAGNETOMETER DATA	KROEHL	1	012883	032683
GOES 3	78-062A	GOES 3 06/16/78	NOAA-NASA			
	78-062A-01	GOES 3,SPIN-SCAN RADIOMETER-VISSR	NESS STAF			
	78-062A-01C	AOIPS IR + VISIBLE IMAGE DATA	PUCCINELL	618	061178	050279
HEAO 2	78-103A	HEAO 2 11/13/78	NASA-MSFC			
	78-103A-02	HEAO 2, HIGH-RESOLUTION IMAGER	GIACCONI			
	78-103A-02C	X-RAY DATA OF JOVIAN AURORAE	METZGER	1	010681	010681
HELIOS	74-097A	HELIOS-A 12/10/74	NASA-BWF			
	74-097A-11	HELIOS-A,ZODIACAL LT. PHOTOMETER	LEINERT			
	74-097A-11A	REDUCED DATA TAPE	LEINERT	72	121174	021885
	74-097A-11B	ZODIACAL LIGHT DATA ON TAPE	LEINERT	72	121174	021885
IMP-J	73-078A	IMP-J, EXPLORER 50 10/26/73	US			
	73-078A-01	IMP-J,TRI-AXIS MAGNETOMETER	NESS			
	73-078A-01A	15 SEC AVGD MAGNETIC VECTORS,TAPE	LEPPING	98	103073	052786
	73-078A-02	IMP-J,SOLAR PLASMA,FARA.CUP	BRIDGE			
	73-078A-02A	HOURLY AVERAGED SOLAR PLASMA,TAPE	BRIDGE	4	010176	041785
	73-078A-02G	1-2 MINUTE RESOLUTION PLASMA PARA	LAZARUS	4	103173	051686
	73-078A-03	IMP-J,SOL.IONS+ELECT,100KEV	GLOECKLER			
	73-078A-03C	SUMMARY DATA ON MAG TAPE	GLOECKLER	30	103073	061186
	73-078A-04	IMP-J,ELEC+PROT,25EV-50KEV	FRANK			
	73-078A-04C	COLOR E-T SPECTROGRAMS, SLIDES	FRANK	2570	111573	123182
	73-078A-07	IMP-J,COSMIC RAY NUCLEAR COMP	SIMPSON			
	73-078A-07A	RATE AND PHA DATA TAPES (JOST)	MURPHY	448	103073	092282
	73-078A-07B	5.46-MIN AVG COUNT RATES ON TAPE	MURPHY	15	103073	060882
	73-078A-07C	SOL. ROT. COUNT-RATE PLOTS, MFILM	MURPHY	10	103073	092083
	73-078A-08	IMP-J,PART.TELE.+GM TUBES	KRIMIGIS			
	73-078A-08B	HR AVG 1-2,14-25 MEV PROT FLX,TPE	ODONNELL	5	080175	073185
	73-078A-10	IMP-J,PLASMA,ELECTRO.ANALYZER	BAME			
	73-078A-10D	HR-AVG SW DEN, V, PROT TEMP, TAPE	GOSLING	3	011279	123185
	73-078A-10E	HIGH RESOLUTION PLASMA,PROMIS PRD	HONES	1	031586	061786
IRAS	83-004A	IR ASTRON. SAT., NETH. 01/25/83	NIVR-JPL			
	83-004A-01	IRAS, IR TELESCOPE				
	83-004A-01R	GALACTIC PLANE IMAGES, HCON 1,B/W	GAUTIER	24		
	83-004A-01S	GALACTIC PLANE OVERLAY	GAUTIER	1		
	83-004A-01T	GALACTIC PLANE DATA ON MAG TAPE	GAUTIER	6		
	83-004A-01U	SMALL SCALE STRUCTURE (SSS) CAT.	HELOU	1		
	83-004A-01V	POINTED OBSERVATIONS DIRECTORY	CHESTER	1		
	83-004A-01W	POINTED OBSERVATIONS ON TAPE	CHESTER	66		
	83-004A-01X	SMALL SCALE STRUCTURE CAT, MFICHE	HELOU	3		
	83-004A-01Y	HCON 2,SKPLTE IMG 12,25,60,100MIC	GAUTIER	212		
	83-004A-01Z	SKY PLATE (HCON 2) DATA ON TAPE	GAUTIER	27		
	83-004A-01a	GALACTIC PLANE IMAGES,HCON-2, B/W	GAUTIER	24		
	83-004A-01b	GALACTIC PLANE IMAGES,HCON-3, B/W	GAUTIER	24		

SATELLITE NAME	NSSDC ID	IDENTIFICATION		CONTACT	QNTY	TIME SPAN OF DATA	
ISEE 1	77-102A	ISEE 1	10/22/77	NASA-GSFC			
	77-102A-02	ISEE 1,FAST ELECTRONS		OGILVIE			
	77-102A-02A	3-D 6EV-10KV ELECT SPECT DATA,TP		OTTENS	7	110277	032683
	77-102A-03	ISEE 1,HOT PLASMA		FRANK			
	77-102A-03C	E-T SPECTGMS CHAN. 4P & 4E,SLIDES		FRANK	2747	110177	123081
	77-102A-03D	E-T SPECTGMS,CHAN 1P,1E&6P,SLIDES		FRANK	1435	010182	082784
	77-102A-04	ISEE 1,FLUXGATE MAGNETOMETER		RUSSELL			
	77-102A-04G	24-HR MAG FLD SUMMARY PLOTS,FICHE		RUSSELL	80	102277	011683
	77-102A-04I	GSE/GSM MAG VECTORS 1 MIN AVG		RUSSELL	2	032279	040179
	77-102A-04L	FLUXGATE MAGNETOMETER 4 S MAG FLD		RUSSELL	4	032279	062883
	77-102A-04Q	ONE-MINUTE AVERAGED MAGNETIC FLD		RUSSELL	30	011380	123081
	77-102A-05	ISEE 1,LO ENERGY COSMIC RAYS		HOVESTADT			
	77-102A-05D	64-S ION, ELECTRON DIR, OMNI FLUX		KLECKER	1	012883	062883
	77-102A-06	ISEE 1,QUASI-STATIC ELECTRIC FILD		MOZER			
	77-102A-06C	SPIN-PERIOD AVERAGED DATA		MOZER	148	102577	050584
	77-102A-06E	QUASI-STATIC E-FIELD, MAG TAPE		CATTELL	1	012883	062883
	77-102A-07	ISEE 1,PLASMA WAVES		GURNETT			
	77-102A-07A	VLF ELEC SPECT ANALYZER DATA,TAPE		ANDERSON	4	110377	062883
	77-102A-07B	VLF MAG. SPECTRUM ANA. DATA, TAPE		ANDERSON	4	110377	062883
	77-102A-07D	24-HR ELEC SPEC ANALYZER PLTS,FLM		ANDERSON	7	102277	123184
	77-102A-07I	24-HR MAG SPEC ANALYZER PLOTS,FLM		ANDERSON	7	102277	123184
	77-102A-08	ISEE 1,PLASMA DENSITY		HARVEY			
	77-102A-08F	SUMMARY SPECTROGRAMS, MFICHE		HARVEY	272	102277	123182
	77-102A-10	ISEE 1,ELECTRONS AND PROTONS		ANDERSON			
	77-102A-10G	PROTN & ELECTRN FLUX & CNT. RATE		PARKS	1	012883	052683
ISEE 2	77-102B	ISEE 2	10/22/77	ESA			
	77-102B-04	ISEE 2,FLUXGATE MAGNETOMETER		RUSSELL			
	77-102B-04D	24-HR MAG FLD SUMMARY PLOTS,FICHE		RUSSELL	125	102277	122785
	77-102B-04I	FLUXGATE MAGNETOMETER 4 S MAG FLD		RUSSELL	4	032279	062883
	77-102B-04K	4-SEC AVGD MAG FIELD PLOTS,MFICHE		RUSSELL	524	102277	123184
	77-102B-04M	1-MIN AVGD MAG. FLD.(INCLD PROMIS		ELPHIC	54	102277	070686
	77-102B-05	ISEE 2,PLASMA WAVES		GURNETT			
	77-102B-05D	24-HR SPEC ANALYZER PLOTS, MFILM		ANDERSON	7	102277	123184
	77-102B-08	ISEE 2,ELECTRONS AND PROTONS		ANDERSON			
	77-102B-08E	PROTN & ELECTRN FLUX & CNT RATE		PARKS	1	012883	062883
ISEE 3	78-079A	ISEE 3	08/12/78	NASA-GSFC			
	78-079A-02	ISEE 3,MAGNETIC FIELDS		SMITH			
	78-079A-02M	60-S B-FIELD DATA, SM COORDS,TAPE		SLAVIN	1	012883	062883
	78-079A-03	ISEE 3,LOW-ENERGY COSMIC RAYS		HOVESTADT			
	78-079A-03D	128-S ION, ELECTRON DIR, OMNI FLX		KLECKER	1	012883	062883
	78-079A-06	ISEE 3,CSMC RAY ELTRNS,NUCLEI		MEYER			
	78-079A-06C	C.R.ELECT&PROTN CNT RTE PLTS,MFLM		EVENSON	1	081478	122085
	78-079A-07	ISEE 3,PLASMA WAVES		SCARF			
	78-079A-07A	24-H PLASMA WAVE SUMRY PLTS,FICH		SCARF	50	081278	123185
	78-079A-10	ISEE 3,RADIO MAPPING		STEINBERG			
	78-079A-10C	90-MIN + 24-HR SURVEY PLOTS,FICHE		STONE	2777	081378	011087
	78-079A-14	ISEE 3, X- AND GAMMA-RAY BURSTS		ANDERSON			
	78-079A-14A	32-SEC AVGD WEEKLY PLOTS,MFICHE		ANDERSON	322	081278	111784
	78-079A-14B	32-SEC AVGD WEEKLY LISTING,MFICHE		ANDERSON	1752	081278	111784
ISIS 1	69-009A	ISIS 1,TOPSIDE SOUNDER	01/30/69	CRC-NASA			
	69-009A-03	ISIS 1, VLF EXPERIMENT		BARRINGTN			
	69-009A-03B	KASHIMA AND SYOWA VLF DATA, BOOK		ONDOH	14	112172	082784
ISIS 2	71-024A	ISIS 2, ISIS B	04/01/71	CRC-NASA			
	71-024A-01	ISIS 2,SWEEP FREQUENCY SOUNDER		WHITTEKER			
	71-024A-01A	SWEEP-FREQUENCY IONOGRAMS, MFILM		WHITTEKER	2427	052871	061783
	71-024A-03	ISIS 2, VLF EXPERIMENT		BARRINGTN			
	71-024A-03B	KASHIMA AND SYOWA VLF DATA, BOOK		ONDOH	14	110872	062383

SATELLITE NAME	NSSDC ID	IDENTIFICATION	CONTACT	QNTY	TIME SPAN OF DATA	
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	45772	062078	011487
	78-012A-01B	SPECTROSCOPIC IMAGE DATA ON TAPE	WARREN	580	040178	010180
	78-012A-01C	EUROPEAN SPECT. IMAGE DATA	WARREN	231	040178	020180
	78-012A-01D	EXTRACTED SPECTRA ON TAPE	WARREN	222	040178	013182
	78-012A-01G	VILSPA PHOTOWRITES	WARREN	753		
NIMBUS 4	70-025A	NIMBUS 4 04/08/70	NASA-GSFC			
	70-025A-05	NIMBUS 4,BACKSCATTER UV SPEC(BUV)	HEATH			
	70-025A-05O	ZONAL MEANS TAPE (ZMT)	HEATH	1	040170	053177
	70-025A-05P	COMPRESSED OZONE PROFILE TP (CPOZ	HEATH	4	041070	053177
NIMBUS 5	72-097A	NIMBUS 5 12/11/72	NASA-GSFC			
	72-097A-04	NIMBUS 5,ELEC SCAN MICROWAVE RAD	WILHEIT			
	72-097A-04A	ESMR BRIGHTNESS TEMPERATURE TAPES	WILHEIT	103	121172	051677
NIMBUS 7	78-098A	NIMBUS 7 10/24/78	NASA-GSFC			
	78-098A-06	NIMBUS 7,SAM-11,STRAT AEROSOL MEA	MCCORMICK			
	78-098A-06A	RADIANCE DATA ARCHIVE TAPE (RDAT)	HARPER	84	110178	103185
	78-098A-06B	BETA-AEROSOL NO DEN ARCH (BANAT)	MCCORMICK	84	110178	103185
	78-098A-07	NIMBUS 7,ERB-EARTH RADIATN BUDGET	JACOBOWIT			
	78-098A-07A	EARTH RAD BUDGET MAP ARCH TAPE	JOCOBOWIT	943	111678	013185
	78-098A-07B	SOLAR + EARTH FLUX DATA(ERB/SEFDT	STOWE	87	110178	123185
	78-098A-07C	MATRIX DATA ON TAPE	STOWE	16	111678	020386
	78-098A-07E	ZONAL MEANS TAPE (ZMT)	STOWE	15	111678	113085
	78-098A-07H	POST MAT CALIBRATION (DELMAT)	STOWE	73	060280	090586
	78-098A-07I	ERB SAVER (SEASONAL AVERAGE)	STOWE	29	120278	030186
	78-098A-07O	MATRIX MONTHLY AVG SUMRY TP, EMST	KYLE	2	110178	103185
	78-098A-08	NIMBUS 7,SMMR-SCNNG MICROWAVE RAD	GLOERSEN			
	78-098A-08A	ANTENNA TEMPERATURE TAPE (TAT)	GLOERSON	543	102578	070886
	78-098A-08B	CELL-ALL HOR + VERT POLAR.BRGH TM	GLOERSON	458	102978	032286
	78-098A-08C	PARAMETERS OF 37 GHZ(SMMR PARM-30	GLOERSON	368	102978	102985
	78-098A-08D	PARAMETERS OF LAND-OCEAN (PARM-LO	GLOERSON	218	102978	102985
	78-098A-08E	PARAM.SEA ICE&SNOW & ICE (PARM-SS	GLOERSON	218	102978	102985
	78-098A-08H	MAPPED PARM OF LAND-OCEAN(MAP-LO)	GLOERSON	60	103078	102683
	78-098A-08W	CALIBRATED TEMPERATURE TAPE (TCT)	GLOERSON	433	102578	122685
	78-098A-08Z	0.25-DEG CAL. TEMP MAP (TCT) TAPE	HWANG	29	102578	110184
	78-098A-08a	SMMR PARMAP DATA ON TAPE	GLOERSEN	6	110383	103185
	78-098A-08b	MIZEX-W SEA ICE CONCENTRATION	CAVALIERI	1	020183	022883
	78-098A-09	NIMBUS 7,BUV/TOMS-BACKSC UV/OZONE	HEATH			
	78-098A-09C	HDTOMS OZONE-T	FLEIG	110	103178	110384
	78-098A-09D	HDSBUV OZONE-S	FLEIG	45	103178	110285
	78-098A-09E	RAW UNITS TAPE - TOM DATA (RUT-T)	HEATH	646	103178	102785
	78-098A-09F	RAW UNITS TAPE-SBUV DATA (RUT-S)	HEATH	365	103178	102785
	78-098A-10	NIMBUS 7,TEMP-HUMID IR RAD (THIR)	STOWE			
	78-098A-10C	CALIB.-LOCATED RAD DATA TP(CLDT)	SISSALA	4478	103078	050985
	78-098A-10D	CLOUD DATA ERB FORMAT (NCLE)	SISSALA	1035	103078	033185
	78-098A-10F	CLOUD DATA (C-MATRIX)	SISSALA	6	040179	103184
NOAA 9	84-123A	NOAA 9 12/12/84	NOAA-NASA			
	84-123A-05	NOAA 9,EARTH RADIA BUDGET SAT SYS	BROMME			
	84-123A-05A	RAW ARCHIVAL TAPE (RAT)	KIBLER	30	040185	050185
OAO 3	72-065A	OAO 3, COPERNICUS 08/21/72	NASA-GSFC			
	72-065A-01	OAO 3, REFL. TELESCOPE,800-3000A	SPITZER			
	72-065A-01I	BETA ORIONIS UV SPECTRAL ATLAS TP	ROGERSON	1		
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	SCHROEDER	57	030372	123180
	72-012A-02C	5-MIN AVG. COUNT RATE TAPES	SCHROEDER	24	030372	123180
	72-012A-11	PIONEER 10,JOVIAN CHARGED PARTICL	VAN ALLEN			
	72-012A-11B	ONE HOUR CRUISE AVERAGES	VAN ALLEN	6	030472	051682

SATELLITE NAME	NSSDC ID	IDENTIFICATION	CONTACT	QNTY	TIME SPAN OF DATA	
PIONEER 11	73-019A	PIONEER 11 04/06/73	NASA-ARC			
	73-019A-02	PIONEER 11,CHARGED PARTICLE COMP	SIMPSON			
	73-019A-02A	15-MIN PULSE HEIGHT TAPES	SCHROEDER	50	040773	123180
	73-019A-02B	5-MIN SECTORED COUNT-RATE TAPES	SCHROEDER	23	040773	123180
	73-019A-11	PIONEER 11,JOVIAN CHARGED PARTICL	VAN ALLEN			
	73-019A-11C	ONE HOUR CRUISE AVERAGES	VAN ALLEN	6	040673	051882
PIONEER VENUS 1	78-051A	PIONEER VENUS ORBITER 05/20/78	NASA-ARC			
	78-051A-01	PIO78OR,ELECTRON TEMPERATUR PROBE	BRACE			
	78-051A-01C	12-S ELEC TEMP DENSITY (UADS-LFD)	THEIS	1	120678	021884
	78-051A-12	PIO78OR-TRIAX FLUXG MAGNETOMETER	RUSSELL			
	78-051A-12E	HI-RES, 12-S, & 2-MIN B & E PLOTS	RUSSELL	1052	120578	090584
	78-051A-12F	12-S B+E FIELD, PERIAPSIS	RUSSELL	4	120578	052884
	78-051A-12G	2-MIN OVERLAPPED AVG,EVERY MIN.	RUSSELL	24	120678	093084
	78-051A-13	PIO78OR-ELECTRIC FIELD DET.	SCARF			
	78-051A-13C	HI-RES, 12-S, & 2-MIN B & E PLOTS	RUSSELL	1052	120578	090584
	78-051A-13D	2-MIN OVERLAPPED AVG,EVERY MIN.	SCARF	24	120678	093084
PROGNOZ 9	83-067A	PROGNOZ 9 07/01/83	USSR			
	83-067A-02	SOLAR X-RAY SPECTROMETER	FARNIK			
	83-067A-02A	SOLAR X-RAY SURVEY PLOTS, MFICHE	FARNIK	5	070183	011384
	83-067A-03	MAGNETOMETER				
	83-067A-03A	5-MIN AVG. IMF VECTORS, GSM & GSE	CLAUER	1	011184	013084
SMS 1	74-033A	SMS 1, SYNC MET SAT 1 05/17/74	NOAA-NASA			
	74-033A-01	SMS 1,SPIN-SCAN RADIOMETER(VISSR)	NESS STAF			
	74-033A-01D	AOIPS IR + VISIBLE IMAGE TAPES	PUCCINELL	5459	051774	092675
	75-011A-04	SMS 2,SPIN-SCAN RADIOMETER(VISSR)	NESS STAF			
	75-011A-04D	AOIPS IR + VISIBLE IMAGE TAPES	PUCCINELL	4272	081274	091279
	75-011A-04E	IDAMS VISIBLE + IR IMAGE DATA	PUCCINELL	1780	020675	102775
STP P78-2	79-007A	STP P78-2 01/30/79	SAMS-GSFC			
	79-007A-08	STP P78-2,MAGNETIC FIELD MONITOR	LEDLEY			
	79-007A-08A	B FIELD AVERAGES 1 MIN	LEDLEY	2	032279	062883
STS 41-G	84-108A	STS 41-G 10/05/84	NASA-HQ			
	84-108A-01	STS 41-G,SHUTTL IMG RADAR-B/SIR-B	ELACHI			
	84-108A-01B	IMAGE DATA & ANNOTATION ON TAPE	HOLMES	134	100784	101284
STS-2/ OSTA-1	81-111A	STS-2 11/12/81	NASA-OSTA			
	81-111A-04	STS-2,MEASURE OF AIR POLU FR SAT	REICHLE			
	81-111A-04A	TROPOSPHERIC CO MIXING RATIO TAPE	HYPES	2	111481	111481
VIKING 1 LANDER	75-075C	VIKING 1 LANDER 08/20/75	NASA-JPL			
	75-075C-06	VIKING 1 LANDER,LANDER IMAGING	MUTCH			
	75-075C-06Y	PLANETARY IMAGING DATA ON MAG TAP	WACHNER	40		
VIKING 1 ORBITER	75-075A	VIKING 1 ORBITER 08/20/75	NASA-JPL			
	75-075A-01	VIKING 1 ORBITER, IMAGERY	CARR			
	75-075A-01V	B/W PHOTOMOSAICS 1:500 K	CARR	82		
	75-075A-01X	IMAGING DATA ON MAGNETIC TAPE	WACHNER	367	061876	081580
VIKING 2 LANDER	75-083C	VIKING 2 LANDER 09/09/75	NASA-JPL			
	75-083C-06	VIKING 2 LANDER, LANDER IMAGING	MUTCH			
	75-083C-06X	IMAGING DATA ON MAGNETIC TAPE	WACHNER	31	090376	020180
VIKING 2 ORBITER	75-083A	VIKING 2 ORBITER 09/09/75	NASA-JPL			
	75-083A-01	VIKING 2 ORBITER, IMAGERY	CARR			
	75-083A-01W	IMAGING DATA ON MAGNETIC TAPE	WACHNER	179	081276	052478
VOYAGER 1	77-084A	VOYAGER 1, MARINER 77A 09/05/77	NASA-JPL			
	77-084A-01	VOYAGER 1, IMAGING	SMITH			
	77-084A-01L	FOOTPRINTS+AIRBR MAPS OF JUP SATS	BATSON	15		
	77-084A-02	VOYAGER 1, COHERNT S+X BAND RADIO	TYLER			
	77-084A-02K	OPACITY & PHASE PROFILES SAT RING	ROSEN	1		
	77-084A-06	VOYAGER 1, PLASMA SPECTROMETER	BRIDGE			
	77-084A-06F	HOUR AVERAGED SOLAR WIND PLASMA	LAZARUS	1	082177	122685
VOYAGER 2	77-076A	VOYAGER 2 08/20/77	NASA-JPL			
	77-076A-01	VOYAGER 2, IMAGING	SMITH			
	77-076A-01A	BLACK & WHITE PRESS RELEASE PHOTO	SMITH	129	020878	090481
	77-076A-01B	COLOR PRESS RELEASE PHOTOGRAPHY	SMITH	98	062579	082981
	77-076A-01M	SYSTEMATIC MIPL IMAGES, URANUS	WEIWALL	13414		
	77-076A-06	VOYAGER 2, PLASMA SPECTROMETER	BRIDGE			
	77-076A-06F	HOUR AVERAGED SOLAR WIND PLASMA	LAZARUS	1	082177	122685

NSSDC Hosts Data System Users Working Group

The Ninth Data System Users Working Group (DSUWG) meeting was hosted by NSSDC on January 29-30. It attracted over 100 scientists and specialists in communications, data management, graphics, and computer systems.

The day before this meeting, there was a meeting with Space Physics Analysis Network (SPAN) and Digital Equipment Corporation (DEC) representatives to discuss DECnet/OSI. DEC is enthusiastic about helping to solve SPAN's growing network needs and has invited SPAN personnel to take an active part in further definition of DECnet Phase V.

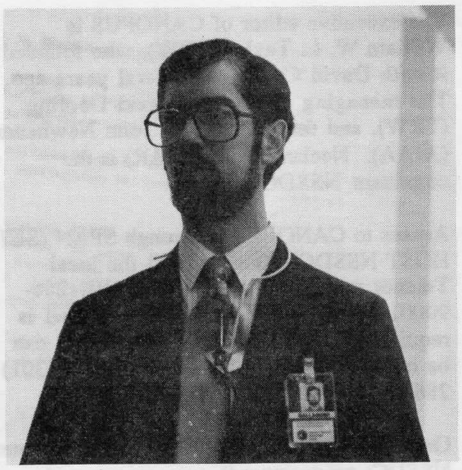
Just prior to the general DSUWG meeting, SPAN and NASA Headquarters management met to discuss several topics. They talked about the oversight role played by DSUWG over SPAN growth and operation; recent SPAN achievements in support of various disciplines, e.g., the recent Coordinated Data Analysis Workshop; how SPAN can continue to best serve Headquarters in the future; the procedure for becoming a SPAN node; and Headquarters' support for SPAN's security policy.

Numerous Presentations Given

During the general DSUWG meeting, numerous presentations were given. Items covered included:

- SPAN management
- SPAN performance and the Packet Switched System
- Internetworking
- Committee on Data Management and Computing (CODMAC) activities
- Coordinated Data Analysis Workshop (CDAW)
- NASA Science Internet meeting
- SPAN for the European community
- Optical disk and graphics mass buys
- Common Data Format (CDF) and Standard Formatted Data Units (SFDU)
- Central Online Data Directory (CODD)
- Distributed Access View Integrated Database (DAVID) System

This information provided a common level of awareness among the attendees as to the status and management of SPAN, the scientific use of SPAN, new hardware and software technologies that either have recently become available or will be available to SPAN users in the future, and the European SPAN activity. Copies of the view graph presentations are available from NSSDC upon request.



Dennis Gallagher, Marshall Space Flight Center scientist, addresses NASA Science Internet meeting.

With the completion of the SPAN reconfiguration and rapid increase in the number of nodes accessible to SPAN, management of the network now is even more important. The eight revised or new SPAN documents distributed at the meeting should form a SPAN reference set for each remote node manager. The documents include:

- *Introduction to the Space Physics Analysis Network*--Background information and a procedure for joining SPAN
- *Management of the Space Physics Analysis Network*--Management information
- *SPAN: Astronomy and Astrophysics*--SPAN discipline document
- *SPAN: Ocean Science*--SPAN discipline document
- *Space Physics Analysis Network Node Directory (the Yellow Pages)*--Directory of SPAN node information
- *A Communications Model for an ISAS to NASA Span Link*--Model for a SPAN link to Japan
- *A Communications Model for the ISTP Correlative Data Analysis Network*--SPAN model for supporting flight projects
- *SPAN Network Security Guide*--Security guide

Inputs are needed on the SPAN special astronomy and astrophysics nodes, which have resources that are available to the rest of the community. They should be sent to Valerie Thomas (NSSDCA::THOMAS). All of these documents except the security guide are generally available from NSSDC through a mail message to the Request Coordination Office (NSSDCA::REQUEST). Distribution of the security guide will be controlled.

It was reported at the meeting that in spite of the rapid growth of the network, the capacity of the new network architecture has not been compromised. During tests conducted in January, it was determined that less than five percent of the backbone was being used during a one-week period.

The Policy, Standards, Network, and Data Management subgroups met on January 30 to discuss topics related to their specific areas of expertise. They also considered the general topics of whether the name of the users group should be changed, if the terms for DSUWG officers should be limited, if DSUWG includes a community that is broader than that already networked to SPAN, and the review of SPAN documents. Because DSUWG does not have the name recognition afforded SPAN, there was discussion of a name change to the SPAN Users Group. No consensus was reached. There was agreement, however, that DSUWG includes a broader community than that now included in SPAN and that the term of the officers should be limited.

Valerie Thomas

Online Bulletin Board Replaces CANOPUS Newsletter

The Canadian CANOPUS newsletter, a service of the American Institute of Aeronautics and Astronautics (AIAA) and its Technical Committee on Space Science and Astronomy, has been replaced by the online CANOPUS Bulletin Board System. CANOPUS is partially supported by NSSDC and is easily accessible to NSSDC VAX users.

CANOPUS provides an insider's perspective on issues in space science and astronomy. It does not attempt to educate the layman or to present research results. Rather, its goal is to promote space science by providing information that is not readily available elsewhere. The newsletter is for scientists, astronomers, astrophysicists, engineers, and managers with space careers. It gives information about schedules, funding, problems, and successes of space science missions from conception through definition, approval, development, test, launch, operations, and analysis.

Scientists' participation in missions is identified, and measurement capabilities of instruments are outlined. The approval process, whereby the increasingly limited resources for space research are allocated, receives special attention. The reader is briefed on agency policies, organization, and personnel. Relevant congressional and advisory bodies are identified and their memberships and affiliations are listed.

The executive editor of CANOPUS is William W. L. Taylor (TRW), who founded it with David Caufmann several years ago. The managing director is David Dooling (TRW), and the publisher is John Newbauer (AIAA). Neelam Vaidya (SAR) is the cognizant NSSDC person.

Access to CANOPUS is through SPAN (SET HOST NSSDC), Telenet (dial the local Telenet number), or telephone (301-286-9000). A VT-100 compatible terminal is required. More information on access can be obtained from Bruce McLendon at (301) 286-2990 or at NSSDCA::MCLENDON.

Once linked to the NSSDC VAX (Username: NSSDC; no password), your name, node and, possibly, terminal identification will be requested. What will follow will be a menu driven, user-friendly session equipped with online help.

Success with the online CANOPUS will likely accelerate the availability of an online version of this NSSDC newsletter.

Bill Taylor and Neelam Vaidya

Optical, cont'd from page 3

data are written by a high-powered laser beam that creates a "spot," or data bit, on a platter. The data are read by a low-powered laser beam that detects the presence or absence of the bit. There are powerful error correction codes that compensate for real bit errors; the user will see no more than one error in 10^{12} operations. The industry is moving into the mass production era, which promises to provide an ample supply of drives and media at reasonable cost.

Each optical disk drive unit will interface to a VAX or MicroVAX using a VMS operating system so that few, if any, changes will need to be made to the existing software at the host computer. Each platter can be filled with one gigabyte of space data. With the use of the VAX/VMS file structure, data files on the disk can be accessed randomly. This will enable the user to select data files interactively for scientific analysis.

Mass storage on optical disk platters promises the capability of analyzing, selecting, storing, and utilizing space data more readily than in the past. It will provide a hefty boost to comparisons of ground and space observations, thereby facilitating the processing of interdisciplinary data.

Barbara Lowrey

Neutral Atmosphere Model Available

The newest version of the Mass-Spectrometer-Incoherent-Scatter model (MSIS-86) is now available from NSSDC. This model will also constitute the upper part of the internationally recommended COSPAR International Reference Atmosphere (CIRA-86) following the decisions made at last year's COSPAR general assembly in Toulouse, France.

The MSIS model is based on the extensive data compilation and analysis work of A. E. Hedin and his collaborators. Data sources for the present model include temperature and density measurements from several rockets, satellites, and incoherent scatter radars. Since the MSIS-83 model, terms were added or changed to better represent seasonal variations in the polar regions under both quiet and magnetically disturbed conditions and local time variations in the magnetic activity effect. In addition a new species, atomic nitrogen, was added to the list of species covered by the model.

The model expects as input the year, day of year, universal time, altitude, geodetic latitude and longitude, local apparent solar time, solar F10.7 flux (for previous day and 3-month average), and magnetic Ap index (daily or Ap history for last 59 hours). For these conditions the following output parameters are calculated: number density of He, O, N_2, O_2, Ar, H, and N; total mass density; neutral temperature; and exospheric temperature. For diagnostic purposes the source code is equipped with 23 flags to turn on/off particular variations.

The model is available on tape or floppy disk, and on the SPAN network. The package includes a library file of subroutines and functions, a test driver, and the test driver output for several examples.

To get a copy contact Dieter Bilitza by telephone at (301) 286-9536, or via SPAN at NSSDCA::BILITZA.

Dieter Bilitza

CDAW 8.2 Researches Plasmoid Formation

Despite the official closing of Goddard on January 26 because of heavy snow, the Coordinated Data Analysis Workshop (CDAW) 8.2 was successfully held January 26-28 at facilities set up by NSSDC. CDAW 8.2 continued the emphasis of CDAW 8.1 on a search for clear observational evidence for plasmoid formation in the geomagnetic tail of the earth during substorms.

After CDAW 8.1 (held in late September 1986), several new events were defined and data contributions were solicited. Although substantial areas of disagreement remain among the two dozen CDAW 8.2 workshop participants in the interpretation of the very large and complex data base assembled, as many as 10 abstracts will be submitted for the May American Geophysical Union (AGU) meeting in Baltimore as a direct result of the workshop activities thus far.

Robert McGuire

NEWSBRIEFS

Direct European Link Installed

The Space Physics Analysis Network's (SPAN) direct link to Europe was installed in January, providing 9600 baud capability and a much more reliable connection for SPAN users. European involvement with SPAN during the International Cometary Explorer (ICE) encounter, made possible by a special temporary connection, had led to the European and U.S. scientists' desire for continuing SPAN access.

According to Trevor Sanderson, SPAN project scientist for the European Space Agency (ESA), "Prior to 1987 the European connection to SPAN was established on a scheduled basis using Telenet and PSI X.25 circuits. This was somewhat unreliable service due to hardware problems and difficulties with the time zone." In addition, the heavy data traffic over this link quickly justified the installation of a dedicated link to Europe.

Sanderson anticipates that this direct link should provide reliable 24-hour service to those SPAN users who wish to communicate to Europe. Currently, there are approximately 20 nodes connected to the European Routing Center at the European Space Operations Center (ESOC) in Darmstadt, West Germany. Several other European users can access SPAN by logging into the central node (ECD1) using the PAD or PSI_MAIL.

The names of those using the ECD1 node can be found in the user list file of that computer. Plans are under way to include the list of users reachable by PSI_MAIL in the user list file; this will be available in the future. Any questions about European nodes and users can be sent via SPAN to Jenny Franks at EDC1::320JENNY.

Valerie Thomas

PCDS To Archive New Data

The Pilot Climate Data System (PCDS) continues "gearing up" to serve as the central archive for the First International Satellite Cloud Climatology Project (ISCCP) Regional Experiment (FIRE), a U.S. cloud climatology research program to validate and improve cloud/radiation parameters used in general circulation models. A recent activity involved working with FIRE investigators to refine the FIRE Standard Data Format (SDF), the format investigators will use to submit FIRE data to the archive.

The format that has been developed should make it easy for investigators to exchange data. It documents tape contents and structure internally, is flexible enough to meet the needs of investigators without the overhead of major reformatting programs, allows for updates (such as the addition of fields) if needed, and encourages the development of multiuse software. These features should lower costs, not only for the data archive but also for the investigators.

The PCDS development staff recently created a sample tape in the FIRE SDF and shipped it to about 40 FIRE investigators. Included on this tape was software to assist the investigators' staff in producing the content descriptions specified by the format. The PCDS staff has been working with some of the investigators to help them read the sample tape and create their own sample tape describing their data. One investigator sent back a sample tape, and the development staff was able to load some of the data into an online data set that can be listed, manipulated, and displayed with PCDS utilities.

The PCDS staff hopes to transfer the knowledge gained by working on the FIRE SDF to projects that PCDS may support in the future, including the Tropical Rainfall Measurement Mission and the reprocessed Nimbus-7 Coastal Zone Color Scanner data.

Mary G. Reph

Access to Interplanetary Medium Data Improves

Over the years, NSSDC's compilation of hourly resolution interplanetary magnetic field and plasma data, which now spans 1963-85, has been among the most used of NSSDC's data holdings. This data set has been widely distributed in magnetic tape and hard copy book formats.

About a year ago, an online version of this data set was made available on the SPAN-accessible NSSDC VAX, and a friendly interface was built allowing users to select any subset of the 37 parameters of the logical records, for any desired period, for listing to their terminal screens. Many remote accesses to this file have been registered.

A new functionality has just been added to this interface. Users may now create an ASCII or VAX binary file for any parameter subset and time range(s), which they may have electronically mailed (ASCII) or which they may copy (binary) immediately following the file creation session. This offers great flexibility over the previous functionality, which handled only small amounts of data that could be listed to a terminal screen or required a time consuming and usually undesired copy of the entire file.

The data are available via the NSSDC captive account (from a SPAN node: SET HOST NSSDC; Username: NSSDC; no password), which involves a simple menu path through various online NSSDC services. The new file creation capability and interface modifications were provided by Howard Leckner and Nathan James. This capability is one of a growing number of paths by which NSSDC is making its information and data files readily accessible to the science community.

Joseph King

McGuire Presents "Strawman" Plan for Geotail

Dr. Robert E. McGuire of NSSDC's Central Data Services Facility attended the NASA/Institute of Space and Astronautical Science (ISAS) Geotail Joint Working Group meeting in Japan the week of January 5-9. He presented a "strawman" data management plan for Geotail, which also covered aspects of the larger International Solar Terrestrial Physics (ISTP) program. The presentation addressed issues including Geotail data flow, the archive of and subsequent access to Geotail key parameter data, project network requirements, and considerations and possible directions in defining format standards for ISTP data exchange. ISTP key parameters consist of selected scientific parameters from the various instruments and spacecraft, sampled at approximately one-minute resolution. They are to be kept in a common data base at NSSDC.

Substantially more detailed plans and negotiations will be required for a full and formal definition of the ground data system. Good progress toward a first network link into NASA's Space Physics Analysis Network (SPAN) has been made, with a prospect that such a link may be created as early as mid-1987.

Robert McGuire

Climate Data System Develops CREATECDF

A new tool, the CREATECDF utility, has recently been developed for the Pilot Climate Data System (PCDS). This tool allows PCDS developers to extract data from relational data base tables (specifically ORACLE) and place the data in the NSSDC Common Data Format (CDF). The CDF is a self-describing data structure that provides a vehicle for transparently transferring data among the Data Manipulation and Graphics subsystems of PCDS, and is also utilized by a number of NSSDC systems.

The CREATECDF utility allowed Dr. Richard Goldberg of Goddard Space Flight Center to produce CDFs from Peruvian rainfall and hydrology data sets. Dr. Goldberg also took advantage of the features of the PCDS Version 4 Graphics Subsystem (which has not yet been released to the public) to produce rainfall maps and pseudocolor images.

PCDS receives data sets in various forms (tape, disk, and hard copy) and provides the software support for implementing the data sets into a CDF. Now many of the data sets that are received in hard copy form can be entered into ORACLE relational data base tables that allow PCDS to take advantage of the data base functions to enter and verify the data. Once entered, the data from the relational tables can be extracted with the CREATECDF utility to produce a CDF. The CREATECDF utility provides both subsetting and filtering capabilities, allowing the specification of the fields and the range of values for constructing the CDF.

Gregory Goucher

Land Data System Passes Critical Review Milestone

Another major milestone was successfully achieved for the Pilot Land Data System (PLDS) project with the critical review conducted by the NASA Headquarters-sponsored Science Steering Group (SSG) at Goddard on January 15 and 16. The SSG and Headquarters program offices were briefed on the system design and capabilities of the first prototype system, called Build 1, of PLDS.

Build 1 will provide an operational distributed data and information system in August 1987 to support three projects in the land sciences. The project has gone out on a limb to promise the completed Build 1 system this summer to support the First International Satellite Land Surface Climatology Field Experiment (FIFE) data acquisition schedule, and to provide integrated support for the International Satellite Land Surface Climatology Project Retrospective Analysis Program (IRAP) and the Jet Propulsion Laboratory's (JPL) Sedimentary Basins Project (SBP). An all-out crash effort is being devoted to this multicenter engineering development effort in designing, developing, integrating, and testing the Build 1 system.

The capabilities in this first phase of PLDS include:

- **Data Management Subsystem.** Online facilities at GSFC and JPL, directory and catalogs, spatial data subsettings, and automatic data ingesting
- **System Access and Communication Subsystem.** Digital communications to all PIs, 56 kbps digital communications between four major NASA nodes, electronic message services, friendly interfacing to all system capabilities, and connection to other national data bases
- **Data Analysis Subsystem.** Information and guidance on image-processing software, software to connect geometric and radiometric distortion, and processing services on a "pay-as-you-go" basis
- **User Support Subsystem.** User support offices at GSFC and JPL, management of data ingest processes, and data archive

In addition to its role in the three land science projects mentioned, PLDS is now being accepted as the model for the data system development for the Earth Observation System (EOS).

Paul H. Smith

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
Telephone: (301) 286-4106
SPAN: NSSDCA::HILLS

Requests:

National Space Science Data Center
Code 633.4
Goddard Space Flight Center
Greenbelt, Maryland 20771
Telephone: (301) 286-6695
Telex: 89675 NASCOM GBLT
TWX: 7108289716
SPAN: NSSDC::REQUEST

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

World Data Center A for Rockets and Satellites
Code 630.2
Goddard Space Flight Center
Greenbelt, Maryland 20771 USA
Telephone: (301) 286-6695
Telex: 89675 NASCOM GBLT
TWX: 7108289716
SPAN: NSSDC::REQUEST

CALENDAR

April 17 — Mid-Atlantic INGRES Users' Group, Goddard Space Flight Center

August (TBD) — NCDS Workshop, Goddard Space Flight Center

September (TBD) — PLDS Team Meeting, Goddard Space Flight Center

September (TBD) — PLDS Science Steering Group Meeting, Goddard Space Flight Center

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