National Space Science Data Center

NSSDC NEWS

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Data Restoration Program Winds Down

by Sharlene Rhodes and Joe King

NSSDC has a fundamental responsibility to preserve for future access the NASA mission data in its archives. To this end, NSSDC has pursued over the past 6 years a data restoration program in which data were migrated from 35,800 aging tapes to 6,100 pairs of new 9-track tapes and 3,480 tape cartridges. This data restoration program is now concluding in the sense that NSSDC holds no space science tapes older than 10 years. A forever-ongoing data preservation activity will follow.

Of the 35,800 tapes passed through the data restoration program, approximately 19,800 were space science (astrophysics, space physics, planetary) and 16,000 were Earth science. In general, NSSDC automatically restored all small space science datasets and enlisted community input in assessing the cost-benefit ratio of restoring large and possibly obsolete datasets. Three datasets from ATS-1 and from S-Cubed-A were recommended for nonrestoration.

The data on the old tapes on Sharlene Rhode's right arm were transferred to the one 3480 tape cartridge in her left hand.

In addition, NSSDC is able to release an additional 3,000 old space science tapes as holding differently formatted or organized versions of datasets that have been restored for future access, as holding digital planetary image data now being written to CD-Write Once media at the Jet Propulsion Lab, and as holding non-NASA data (mainly geomagnetic) once acquired by NSSDC for the convenience of GSFC scientists.

Approximately 98% of the data on the 35,800 tapes were successfully migrated to new media. This includes many tapes received at NSSDC in the 1960s and 1970s, and held in reasonable environmental conditions. In some cases, NSSDC's backup tapes were used when difficulties were encountered in reading the primary tapes.

Hawkeye Data Now on Web

by Scott Boardsen and Jim Green

A WWW home page has been created for the NASA/University of Iowa Hawkeye spacecraft. Hawkeye was launched in mid-1974 into a 21 Re polar orbit carrying a fluxgate magnetometer, a plasma wave instrument, and an electrostatic analyzer. The home page includes a brief description of Hawkeye and its mission, an instrument overview, and a dataset overview. The dataset overview includes low-time resolution (~5 min) summary plots of the entire dataset (with solar wind data) and facts on how to access the high-resolution data archived at NSSDC. The data are in native binary format, and the software must be run in a VMS environment. Planned enhancements to Hawkeye accessibility and usability are discussed.

New WWW-Based System Allows Access to OMNI Data

by Jason Mathews and Syed Towheed

NSSDC has developed a WWW-based scientific data retrieval and visualization system called OMNIWeb for accessing NSSDC's Near-Earth Heliospheric OMNI data. The OMNI dataset consists of 1-hour-resolution, "near-Earth" solar wind magnetic field and plasma data; energetic proton fluxes (1-60 MeV); and geomagnetic and solar activity indices. OMNIWeb, a prototype data system, is the next logical development of WWW application in the NASA environment, where the focus is to provide more sophisticated visualizations of data in addition to online data retrieval systems. The data system is designed to exploit the hypertext feature of the WWW and offer a single "one-stop-shop" interface to the data and metadata, as well as an additional data browse capability to OMNI data. OMNIWeb also includes a graphical data browser and a data retrieval tool. The data browser allows users to visualize the data as time series plots using IDL to generate GIF images of selected data parameters. The browsing feature is designed to assist users in following trends and isolate areas of interest. The data retrieval tool also allows users to choose subsets from the available data and instantly retrieve them to their computer in ASCII or binary formats. In the future, NSSDC intends to apply the OMNIWeb-type interface to other datasets of special interest to users, such as COHO.

ASCA Now on NDADS

by Nancy Oliversen

The Advanced Satellite for Cosmology and Astrophysics (ASCA), launched on February 20, 1993, is a joint Japanese and U.S. mission. The mission's purpose is to perform X-ray astronomical observations in the energy band from 1-2 KeV. ASCA carries four, large-area X-ray telescopes and four X-ray detectors. Data from the mission are now being archived at NSSDC on the NASA Data Archive and Distribution System (NDADS). Data first became publicly available on November 15, 1994, and consist of data from the initial 8-month Performance Verification period of the mission. Data from the Guest Observer part of the program should begin to become publicly available in May 1995. The article further describes data organization, data archive format, and how to gain access to ASCA data from NDADS, WWW, E-mail, WWW at HEARSRC, and U.S. mail.

Ulysses Data Coming to NSSDC

by John Cooper

The ESA/NASA Ulysses spacecraft reached its extreme southerly heliolatitude of about 80 degrees in September 1994 and will attain a similar northerly heliolatitude in August 1995. NSSDC will serve as the primary archive for interplanetary cruise data and as the deep archive for all Ulysses data. Planetary magnetosphere data related to the February 8, 1992, flyby of Jupiter will first be submitted to the Planetary Data System and later deep archived at NSSDC. Many Ulysses cruise datasets covering up to and beyond the Jupiter flyby have already been electronically acquired by NSSDC from ESA's Ulysses Data System (UDS) or from individual investigator sites on the Internet. Most of these datasets, particularly those including solar wind plasma, magnetic field, and energetic particle data, have been staged online through NSSDC's Coordinated Heliospheric Observations (COHO) database. Questions about Ulysses data archiving and access at NSSDC should be directed to Dr. John F. Cooper, Ulysses Acquisition Scientist, via E-mail (jcooper@nssdca.gsfc.nasa.gov), phone (301-441-4188), or fax (301-441-9486).

Images From Skylab Available On Internet

by Dave Batchelor

NSSDC has made 1,451 digitized images from the Skylab S-054 X-ray telescope available from the NDADS over the Internet. Most of the images are 1,243 x 1,244-pixel arrays, produced by scanning the original photographic film with a microdensitometer. The access is made particularly easy by an automated software system for retrieving images from the archive on optical disk and staging them to temporary disk space from which a requestor can copy them over the Internet, using ftp. The images show the structure of the 2-million-degree corona of the Sun, as well as transient phenomena such as solar flares. The S-054 X-ray telescope revealed coronal structure invisible from the ground at unprecedented angular resolution (a few arc seconds), and the observing program accumulated a record of the evolution in the corona on timescales from seconds to 8 months.

Atmosphere Explorers C, D, and E on CD-ROM

by Dieter Bilitza and Natasha Papitashvili

NSSDC is preparing the 15-second Unified Abstract (UA) data from Atmosphere Explorers C, D, and E (AE-C,D,E) for release on one CD-ROM ftp site and via floppy disk. Launched in the mid-1970s, the AE satellites have collected a large database of ionospheric and thermospheric densities, temperatures, wind drifts, and emissions for almost a full solar cycle (1973–81). The data on the CD-ROM will be in ASCII format, and MS-DOS access and plotting software will be made available from NSSDC's anonymous ftp site. The data cover the time periods December 16, 1973–December 11, 1978, for AE-C; October 6, 1975–January 29, 1976, for AE-D; and December 1, 1975–June 6, 1981, for AE-E.

NSSDC Mass Storage Upgrades

by Jeanne Behnke and Joe King

In order to meet growing mass storage capacity needs, NSSDC has recently acquired a Digital Linear Tape (DLT) jukebox and a Silicon Graphics Indigo2XL computer running IRIX as a front end. The jukebox has a 2.5 terabyte capacity (5.0 TB of user data, compressed). NSSDC will run a mixed VMS/UNIX (IRIX) environment for some indefinite duration. In addition, NSSDC has recently acquired a 200-GB magneto-optical jukebox primarily to assist in data staging.

Common Data Format Update

by Gregory Goucher and Jason Mathews

Version 2.5 of the Common Data Format (CDF) software was ported to the most recent version of the Silicon Graphics operating system (IRIX 6.x). The Macintosh toolkit programs also were modified to recognize CDFs with uppercase extensions on the CD-ROMs. The Skeleton-CDF was modified to allow mixed-case data type tokens. In addition, the "compute Epoch" routines have been modified to provide more flexibility in how the time components are used. The WWW CDF home page is accessible from both the NSSDC and GSFC home pages. The CDF home page is available from http://nssdc.gsfc.nasa.gov/cdf/cdf_home.html.

Astronomical Data Center Report

by Nancy Roman

The ADC WWW pages have been revised to make searching for and ordering catalogs and journal files easier. Work has been finished for about half of the catalogs planned for the second ADC CD-ROM. An agreement has been concluded with the American Astronomical Society (AAS) for the ADC to provide access to the files on the AAS CD-ROMs.

New Data at NSSDC

by Joe King

Much new data arrived at NSSDC since the last *NSSDC News*. Among the datasets having their initial submissions to NSSDC were several COBE/DIRBE data products, including two CD-ROMs of "project data;" IRAS zodiacal observation history files on CD-WO disk; ASCA data (see ASCA article, page 2); daily averaged UV data from Pioneer 10; Ulysses gamma ray (GRB), solar wind (SWOOPS), and ion composition (SWICS) data (see Ulysses article, page 2); and Voyager 1 and 2 Cosmic Ray Spectrometer flux data.

Continuing flows of IUE, ROSAT, ISTP/Geotail (CD-WO of level zero data), IMP-8 (magnetic field data at 1-min and 1-hr resolutions for the first half of 1994, LEPEDEA daily spectrograms), and Yohkoh solar X-ray data were received. Particularly noteworthy was the resumption of flow of the IMP-8 15.36-sec magnetometer data whose creation had been displaced by the 1-min data as being more compatible with ISTP needs. The IMP-8 15.36-s data was provided for the period July 1991–March 1994.

NSSDC received from either the Planetary Data System or from the JPL Data Restoration program many CD-WO and CD-ROM disks with planetary data, including Galileo images, Magellan (FMAPs and Gravimetry/LOSAPDR), Mariner 9 images, Pioneer Venus electric and magnetic field data, Viking 1 and 2 Orbiter and Lander data, and Voyager 1 and 2 image data.

NOST News

by John Garrett and Donald Sawyer

NSSDC staff, with Code 500 and 700 personnel, continued development of the Consultative Committee for Space Data Systems (CCSDS) WWW pages. The amount of CCSDS information available from the Web, as well as the quality of its presentation, has been steadily improving over the past several months. Our data user's workbench software, which is based on using the CCSDS SFDU standards, is now available in beta version from the CCSDS Panel 2 home page. A new FITS proposal is now circulating. The new proposal details a way to produce logical groups for FITS data header units (HDUs) that are physically separated on one file or are located on separate files. The proposal has been developed as the result of a collaboration between NOST, HEARSARC, and NCSA.

Online Access to Satellite Situation Center Software

by Bob McGuire

A unique capability to cast Earth-orbiting spacecraft orbits against empirical models of the boundaries of various regions of geospace and a variety of internal/external magnetic field models for field line tracing in the magnetosphere are available online in the Satellite Situation Center (SCC) system, which is jointly operated by NSSDC and the Space Physics Data Facility. The software supports tabular output of spacecraft location, graphical output of multiple spacecraft orbits, lists of time periods when one or more selected spacecraft are in the same magnetospheric region or a specified combination, and lists of periods when spacecraft are in magnetic conjunction with each other or with specified ground stations/locations. The user-accessible system runs from the same database (some 33 spacecraft) that is used by the SSC operations staff and by the ISTP Science Planning and Operations Facility. Access to the system is possible via the WWW.

NSSDC/SPDF Booth at AGU Meeting

by Joe King

NSSDC and its sister organization, the Space Physics Data Facility (SPDF), will have a booth at the spring national meeting of the American Geophysical Union to be held at the Baltimore Convention Center May 29–June 2, 1995. Brochures and CD-ROMs will be available for distribution. CD-ROMs will be demonstrated locally and will be specially "show priced." Subject to bandwidth available from the convention center, local and network demonstrations of WWW access to NSSDC/SPDF data, information, and services will be given, including entry to the NASA Space Physics Data System.

SSDOO Education Committee Visits Science Center

by Valerie Thomas

The Space Science Data Operations Office Education Committee, with the help of Dr. Thomas Meylan (CSC, IUE Satellite Data Analysis Center), has developed a close working relationship with the Howard B. Owens Science Center. A visit to the center on January 10, 1995, gave committee members a chance to see the labs, watch middle school students teach elementary school students, observe the excitement of the students in the planetarium, and see the simulated control center and space lab module in the Challenger Center. Now, the center can incorporate space science data and technology into innovative curricula.

"Welcome to the Planets"

by Dave Williams

The Planetary Data System has produced an educational CD-ROM, "Welcome to the Planets," consisting of 190 selected images acquired over approximately 25 years of NASA planetary exploration. The CD is now available from NSSDC. This CD is dedicated to Dr. William L. Quaide, Chief (Ret.) of the Planetary Science Branch, NASA Solar System Exploration Division. The price of "Welcome to the Planets" is $36 for the first CD-ROM and $6 for each additional copy in the order. There is an extra $5 charge for all foreign requests to cover shipping. To order these CD-ROMs, contact the NSSDC Request Office at (301) 286-6695 or by E-mail: request@nssdca.gsfc.nasa.gov.

Space Physics Data System Meeting

by Bob McGuire

A meeting of the SPDS Coordination Working Group was hosted by Project Scientist, Dr. Robert McPherron, from February 6–8, 1995, at UCLA. This was the third meeting of this group since the SPDS Rice Workshop in June 1993 and the naming of CWG members in late 1993. Although operating with limited funding, there is a growing collection of data and services under SPDS' umbrella. Key topics discussed included data restoration progress, a shift in emphasis from restoration to accessibility, a Discipline Data Management Plan for the Space Physics Division, the roles of NSSDC relative to SPDS, and evolving use of WWW pages.

NSSDCNEWS

NSSDC News is published quarterly by NASA's National Space Science Data Center. Please send your address changes and requests to the appropriate address listed in the box at right. Your comments are welcome.

Joe King, Head
Carol Kanga, Editor
Syed Towheed, WWW

Richard Horowitz Retires

by Joe King

With 44 years of dedicated federal service, Mr. Richard Horowitz is retiring in March 1995. He has been a valuable NSSDC asset over the past 24 years. Prior to his service at NSSDC, he worked for 12 years for NASA at both Headquarters and Goddard. He was one of the Naval Research Laboratory's contingent of scientists and engineers who came to Goddard at its creation in the late 1950s.

CD-ROM Catalog Now Available

by Karinn Hassan

The December 1994 version of the NSSDC CD-ROM Catalog is now available. Several additions have been made to NSSDC's CD-ROM inventory, bringing the total to nearly 500 unique planetary, space physics, and astrophysics volumes. In the new catalog, NSSDC also offers a recently expanded guide to frequently asked questions. Another section of the catalog highlights CD-ROMs that are available from other locations.

NSSDC Information

To discuss the archiving of data at NSSDC, contact:

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To request data or information from NSSDC, contact:

NSSDC (for U.S. requesters) or
WDC-A-R&S (for non-U.S. requesters)

both at:

Request Coordination Office
NSSDC, Code 633
NASA/Goddard Space Flight Center
Greenbelt, MD 20771 U.S.A.

Telephone: (301) 286-6695
FAX: (301) 286-1771
Internet: request@nssdca.gsfc.nasa.gov
NSI/DECnet: NSSDC::REQUEST

To access NSSDC's online services (NODIS), log on:

TELNET: 128.183.36.23
Username: NODIS

To access NSSDC's WWW home page, enter this URL:

http://nssdc.gsfc.nasa.gov/

To access NSSDC's education home page, enter this URL:

http://www.gsfc.nasa.gov/education/education_home.html

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