

**2005 ANNUAL STATISTICS AND HIGHLIGHTS REPORT FOR
THE
NATIONAL SPACE SCIENCE DATA CENTER**

Edwin J. Grayzeck

National Space Science Data Center

Greenbelt, Maryland 20771

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PREFACE

The [National Space Science Data Center](#), as noted in its [charter](#), serves as the permanent archive for NASA's Office of Space Science (OSS). A major component of its mission is to ensure future data accessibility and usability. NSSDC also provides current data access, complementary to the efforts of other NASA/OSS "active archives," in support of the NASA and international astrophysics and space physics research enterprises. Finally, NSSDC is a conduit for the general public and education community to acquire NASA space science data that may interest them.

For the year 2005 we report on the activities of the NSSDC. In 2002 and earlier years we reported jointly on NSSDC and the Sun-Earth Connection Active Archive (SECAA) of the Space Physics Data Facility (SPDF), who were organizational peers within the GSFC Space Sciences Data Operations Office (SSDOO) and co-located with a number of shared resources. More recently these two organizations have been funded from separate offices within NASA. Their separation was furthered in late 2004 when the Goddard Space Flight Center initiated a transformation which separated the components of the SSDOO and placed NSSDC and SPDF under separate parent organizations, NSSDC within the Solar Systems Exploration Division and SPDF within the Earth-Sun Exploration Division. Most importantly, at the completion of the transition NSSDC itself is intact and undisturbed.

NSSDC is pleased to issue this 2005 Annual Report describing (1) the 2005 growth and evolution of NSSDC's data archives, access pathways, and other tools and services, and (2) the 2005 access to those data and services by NSSDC's customer communities. This report has been made WWW-accessible in the hope that readers will avail themselves of the opportunity to link to the services reported herein.

I welcome suggestions from users for improvements to this Annual Report and to NSSDC services.

Edwin J. Grayzeck

Head, National Space Science Data Center

1. INTRODUCTION

This report characterizes NSSDC's data holdings, metadata holdings, access pathways, and value-added data products, tools, and services at the end of 2005, with a focus on the 2005 activities leading to that end-of-year state. In addition, this report characterizes the nature and amount of access to NSSDC's data and services by its many users from various communities. It is assumed the reader will have a general familiarity with NSSDC and its mission. The top NSSDC web page is at <http://nssdc.gsfc.nasa.gov/> gives more information.

In 2005 we assembled an external user group, the NSSDC User Group or NUG, which will meet annually to advise us on our short and long range goals. The group's first report from Dec 2005 is on line and can be linked to from the NSSDC homepage.

2. SOME SELECTED STATISTICS

Shown below are key statistics for 2005 or totals as of 12/31/05:

Volume of data at NSSDC: 36.7 TB
Distinct datasets: 4397
Distinct digital media volumes: 58,895
Media Volumes arriving in 2005: 2262
Data volume reaching NSSDC during 2005: 3.8 TB
Datasets with 2005-arriving data: 98
Files downloaded from NSSDC via ftp: 3,609,174
 From Photo_Gallery specifically: 1,190,555
Executions of geophysical models Ephemerides: 184,323
Number of offline requests satisfied: 223
Number of refereed papers published citing NSSDC: > 127

IMPORTANT NOTE: The numbers above and in many tables below are NOT comparable to their equivalents for preceding years due to changes in the NIMS database, which contains the NSSDC supporting information. In 2005 a new, revamped database was put into production. The NSSDC dataset IDs were redefined as part of the transition. The new dataset IDs support the assignment of a dataset to multiple (or no) contributing spacecraft/experiments. (Old dataset IDs could only be attributed to a single spacecraft/experiment, even if multiple ones contributed to it.) The net effect was a compression in the number of datasets tracked by NSSDC. In addition to the changes in IDs, during the transition many errors and ambiguities were found in the database entries and corrected. The database improvements, entry updates, and new reporting software necessitated by the other changes have introduced a discontinuity between our 2005 annual statistics and those for prior years. As a result we are pleased to provide more accurate numbers this year and into the future.

3. HIGHLIGHTS

The center of this report is the 14 Tables which summarize NSSDC activities in 2005. In most cases these numbers speak for themselves, though it is irresistible to address a few highlights.

The most important result of NSSDC's 2005 continuing activities is the preservation of growing space science data volumes, ensuring their continuing and future accessibility to the space science, education and general public communities. NSSDC's archive has now grown to 33.4 TB of space science data and an additional 3.3 TB of Earth science data. During 2005, 3.8 TB of data were added to the NSSDC.

NSSDC's data dissemination leads to the publication of significant new science. Our count of papers in 2005 scientific journals found that 127 of them acknowledged NSSDC data or services as contributing to their analyses. That is just the papers that have come to the attention of our staff from a few key journals. Most science journals in which NSSDC data or services may have been used are not routinely reviewed by our staff, and several authors do not cite use of NSSDC data/services, so even a complete list by our staff represents a lower limit on papers enabled or benefited by NSSDC. Nonetheless, we have appended to this report the list of the 127 publications we have found so far that cite NSSDC.

In 2001 NSSDC began using its reengineered data management approach, which stores data as Archive Information Packages (AIPs; bundles of data files and companion attribute files as prescribed by the ISO/CCSDS Archive Reference model) written to DLTs. Its first application was for migration of NSSDC Data Archive and Dissemination System (NDADS) data files, which was essentially completed in 2003. About half the AIPs constituent data and attribute files also were written to a unix-based RAID magnetic disk environment for external user access. The IMAGE spacecraft project continued to use NSSDC-provided software to prepare AIPs for submission to NSSDC and ingestion to the permanent archive on DLTs. This facilitates an automated NSSDC data ingest and management pipeline. The approach will hopefully be replicated with other missions and individuals preparing data for NSSDC submission to support the rapidly growing data ingest volumes. Most recently, we installed a demonstration version for JPL. During 2005 we continued planning for the creation of AIPs from the offline digital archive and their ingestion to the nearline DLT jukebox.

The NSSDC continues to lead within the Consultative Committee for Space Data Systems for the widespread adoption of the Reference Model for an Open Archival Information System (OAIS). This standard provides a conceptual model of a digital archive, including a functional view and an information view. The model establishes initial criteria for recognition of a true archival function and should lead to improved archival implementations, provide a basis for further standardization, and provide more cost-effective vendor support. Its use has been considered by an ever growing variety of organizations including data centers, libraries, national archives, and commercial organizations around the world.

In 2005 the NASA Sun-Earth Connection Education Forum (SECEF) team, with major NSSDC participation, prepared for and orchestrated Sun-Earth Day held in March, 2005. The Ancient Observatory theme for 2005 featured solar alignments with structures that mark the equinoxes and/or solstices. Many thousands packets of information were sent to teachers, scientists and others for Sun-Earth Day programs, reaching hundreds of thousands of people with live webcasts. SECEF also sponsored a number of workshops and teacher professional development events reaching thousands of teachers, girl scouts, amateur astronomers, and the general public in partnership with SEC missions, museums, science centers, and planetariums as well as science

and educational professional societies. The SECEF web site for Sun-Earth Day is at <http://sunearth.gsfc.nasa.gov/> .

4. DATA MANAGED AT NSSDC, AND 2005 INFLOW AND OUTFLOW

There are several ways to characterize the multi-disciplinary NSSDC archive. Byte counts are a common metric for modern archives, and will be reported herein. Numbers of distinct datasets and numbers and diversity of media volumes managed are also very important. The diversity of datasets and of media types relates to the intellectual and technical heterogeneity of the archive, respectively, and we shall report on these also.

For the remainder of this section we will present this variety of statistics in tables, similar in format to prior years' reports, though *recognizing that the content of some tables will not be comparable to prior years' because of the NIMS database changes in 2005 (see Sec. 2 above)*. We intersperse brief discussions, highlighting occasional specifics from individual tables.

Table 1. Counts of NSSDC Datasets December 31, 2005

Discipline	Digital	Non-Digital	Totals
Astronomy	225	76	301
Space/Solar Phys	1225	666	1891
Planetary	657	761	1418
Earth	122	131	253
Other (incl Ephem)	97	437	534
TOTAL	2326	2071	4397

At the end of 2005, NSSDC was managing 4,397 distinct datasets and accompanying documentation packages. Table 1 indicates the disciplines from which these datasets come and whether the datasets are digital or non-digital. By dataset count, space physics is the dominant discipline, accounting for nearly half of NSSDC's holdings. This reflects that in its early years, NASA launched a preponderance of space physics missions and also that space physics spacecraft typically carry more independent experiments than do astrophysics missions.

NSSDC manages almost as many non-digital (film, microfilm and microfiche) datasets as digital datasets, though in recent years new data has been essentially all digital. NSSDC also has generated digital versions for some of its film archive, often in response to requests.

Table 2. State of the NSSDC Archive December 31, 2005

All Digital Data (TB)	
Astro	6.81
Space Physics	20.61
Planetary	5.75
Earth	3.30
Other	0.20
Total	36.67

Table 2 is a different characterization of the NSSDC archive, showing byte counts for the entire digital archive. Some of the byte counts are estimates, involving assumptions about the mean numbers of bytes on various media types for some datasets.

Table 3. Data Ingested to Nearline Permanent Archive

	2002		2003		2004		2005	
	<i>AIPs</i>	GB	<i>AIPs</i>	GB	<i>AIPs</i>	GB	<i>AIPs</i>	GB
IMP8	10	0.02	12,690	7.40	8,158	0.53	2,357	0.36
ISIS	243,430	122.40	136,190	75.08	26,853	11.33	1	0.00
DE	4,520	2.93	220	1.98	-	-	512	0.32
IMAGE	4,620	57.38	3,510	49.27	3,336	45.85	3,294	43.76
IRAS	144,960	80.56	-	-	-	-	-	-
ISEE	1,030	0.09	1,070	1.60	4,998	6.74	3,034	2.57
SAMPEX	950	5.83	790	5.09	528	3.43	-	-
OSO-8	3,650	4.06	-	-	-	-	-	-
PIONEER	280	0.52	-	-	-	-	-	-
SANMARCO	10	0.01	-	-	-	-	-	-
ULYSSES	13,220	0.83	30,360	6.17	8,405	17.49	971	1.02
VOYAGER	8,650	20.65	-	-	-	-	-	-
WIND	1,940	1.09	1,090	0.88	337	0.27	395	0.32
MARINER			290	0.02	-	-	-	-
RHESSI			10,890	856.39	8,833	677.88	11,100	796.08
SNOE					63,345	0.89	-	-
LEGACY DATA					6	0.03	-	-
ALOUETTE							26,410	16.31
CDAWEB							2352	626.61
Totals	427,270	296.37	197,100	1003.9	124,799	764.45	50,426	1487.35

Data are also being moved from NSSDC's traditional offline archive to a near line archive based on a DLT jukebox attached to a unix server. Data are newly archived in Archive Information Packages (AIPs), which hold data files and companion attribute files and are media-independent and platform-independent. These are defined as per the AIP concept of the ISO/CCSDS Open Archival Information System reference model. Table 3 shows the volumes of data ingested to this portion of the archive for 2002-5 for a total of 4.38 TB in AIPs.

Table 4. Space Physics Data Electronically Accessible from NSSDC
December 31, 2005

Spacecraft	ftp://nssdcftp/spacecraft_data GB
ACE	8.60
CRRES	34.07
DE	186.64
HELIOS	1.16
IMAGE	245.24
IMP	19.67
ISEE	17.08
ISIS	153.14
MAGSAT	1.87
PIONEER	2.00
RHESSI	1.98
SAMPEX	57.39
ULYSSES	37.59
VOYAGER	25.63
WIND	20.36
Others*	4.47
TOTAL	816.88

* total for spacecraft with <1Gb data each, including AE-C,-D,-E, AEROS, Alouette, ARCAD, Explorers 22 & 31, Galileo, Hinotori, Mariner 10, OGO, OMNI, Prognoz 6,7, & 9, San Marco, SNOE, and additional Soviet spacecraft; SWAS not included as per 2005 MOU with LAMBDA.

About half of the data stored in AIPs are made network-accessible from NSSDC for the convenience of some portions of the user community. Table 4 lists by project NSSDC's network-accessible Space Physics data as of 31 December 2005.

Table 5. Counts of Volumes* at NSSDC Archive on Dec 31, 2005

	Astro Physics	Space Physics	Planetary Science	Earth Science	Total
4-mm Tape	257	92	3	97	449
8-mm Tape	189	503	74		766
9-Track Tape	529	2,661	3,722	17,290	24,202
3480 Cartridges	491	1,918	1,126	2,913	6,448
DLT	65	25	2		92
CD-ROM	47	582	1,095	12	1,736
CD-WO	464	19,719	3,618	42	23,843
DVD			14		14
DVD Write Once	387	538	142		1067
12" Worm		4			4
M-O Disk	274				274
Totals	2,703	26,042	9,796	20,354	58,895

* Backup volumes and those not attributable to these 4 disciplines not included.

Table 5 characterizes the digital media types managed at NSSDC, not including backup copies. It should be noted that most volumes are replicable and have one backup volume. For the commercially pressed CDs, "CD-ROMs," NSSDC typically holds several extra copies. If more are needed, a CD duplicator is available.

Table 6. Photographic Data Products at NSSDC by Discipline

Discipline	Micro film	Micro fiche	Film (feet)	Film (Frames)	Reels	Slides
Astrophysics	6,020	18,524	100	63,459		121
Earth Science	1,430		4,200	236,066		
Planetary Science	3,294	6,345	143,214	392,122	259	25
Space Physics	20,195	14,669	4,640	4,379		41,509
Communications	183					
Other	162					
Totals	31,284	39,538	152,154	696,026	259	41,555

Table 6 lists NSSDC's photographic archive holdings by disciplines and by form factor. This has been unchanged for the last few years. NSSDC has begun digitizing some of its Apollo film products to systematically generate computer-readable versions of some of them, though it is so far a level of effort task spurred by occasional student help.

4.1 Data Inflow

Tables 7 and 8 characterize the inflow of digital data to NSSDC during 2005.

Table 7. Media Arriving at NSSDC During 2005*

	Astro Physics	Space Physics	Planetary Science	Total
4-mm Tape	93	0	0	93
DLT	0	39	1	40
CD-ROM (Titles)	0	12	1	13
CD-WO	1	1561	131	1693
DVD-WO	195	178	50	423
Totals	289	1790	183	2262

* Ephemeris and Other data not included.

Table 7 characterizes the in-flowing media types by discipline. As in recent years, CD-WO media (CD-Write Once as opposed to pressed CD-ROMs) clearly dominate input media type overall.

Table 8. Data Arriving at NSSDC During 2005

Astrophysics	GB	Planetary	GB	Space Physics	GB
		Comet D			
FUSE	621.24	Shoemaker-Levy9	0.84	ACE	7.27
GALEX	93.00	Deep Impact	34.50	Alouette	16.30
HEAO 1	0.02	Galileo Orbiter	0.30	CDAWeb	626.61
		Mars Global Surveyor	211.11	Cluster II	355.82
		Stardust	2.50	DE	4.56
				FAST	440.04
				Genesis	6.36
				Geotail	100.09
				Helios-B	0.03
				IMAGE	43.76
				IMP-J	0.99
				ISEE 1	9.57
				ISEE 2	7.86
				Polar	351.23
				RHESSI	796.07
				Ulyesses	12.07
				Wind	35.39
TOTALS	714.26		249.25		2814.03
		Grand Total	3777.54		

Table 8 shows by project the data volumes that NSSDC received in 2005, approximately 3.8 TB of new data via a combination of electronic deliveries and hard media. Dominating the counts are data from the IMAGE, RHESSI and Alouette missions plus CDAWeb data from the SPDF Active Archive. During 2005 NSSDC received more than 1.4 TB of data electronically, in addition to the data arriving on the media reported above in Table 7.

4.2 Data Outflow

Much of the data outflow discussed in NSSDC Annual Reports before 2003 was activity within SPDF, which maintains the Active Archive for NASA Space Physics missions. Recognizing this distinction, the activities of CDAWeb, etc, now are covered in SPDF reports elsewhere.

NSSDC provides user access to its data holdings with network-accessible data for chosen datasets and, in addition, through a user support infrastructure for the mailing of offline digital and non-digital data volumes. Most electronic interfaces are accessible through NSSDC's WWW home page and include (1) special WWW-based interfaces to specific datasets or groups thereof and (2) ftp pathways to a range of data files maintained permanently on NSSDC disks. The CDF-formatted data underlying CDAWeb are at <ftp://cdaweb.gsfc.nasa.gov/> while all other data are at <ftp://nssdcftp.gsfc.nasa.gov/>. Because NSSDC and SPDF have been and are still co-located since the latter's inception, nssdcftp is and remains a shared resource.

Table 9. 2005 Access Statistics to Geophysical Models & Services

Geophysical Models	Accesses*
Corrected Geomagnetic Coordinates, and Related Parameters	17,061
International Reference Ionosphere Model (IRI)	116,993
MSIS Atmospheric Model	32,505
International Geomagnetic Reference Field Model (IGRF)	10,122
User-Oriented Service Based on External (T_89,T_96) and Internal (IGRF) Geomagnetic Field Models	4,664
Trapped Particles Model	2,978
Total, Geophysical Models and Ephemerides	184,323

* These counts are software executions, yielding results for user-specified criteria. They do not include ftp-downloads of corresponding software.

Table 9 reports statistics on the usage of NSSDC's executable geophysical models services. The models service lets users specify a model, a spatial point of interest, and any other parameters on which the model depends, and have the model parameters computed at the point or along a profile through the point of interest. Table 9 shows that there were about 184,000 such computations done by NSSDC customers in 2005, with geomagnetic, ionospheric and atmospheric models dominating.

Table 10. Number of Files Downloaded via FTP

	2001	2002	2003	2004	2005
Photo Gallery	2,888,000	1,516,658	1,633,333	1,277,133	1,190,555
Spacecraft Data	155,000	746,008	572,791	468,580	1,154,900
Geophysical Models	95,000	95,957	110,191	92,063	96,901
All others on nssdcftp	195,000	179,277	438,834	721,474	1,166,818
Total	3,333,000	2,537,900	2,755,149	2,559,250	3,609,174

A great many NSSDC datasets and other information services are held permanently on disk for ftp access. The reader is invited to review all these services from the ftp link on the NSSDC home page. Table 10 gives the annual counts of files downloaded, both overall and for selected directories with high activity. Previously the Photo Gallery, of high public interest, dominated the individual category statistics. Downloading by researchers via ftp of data files from the spacecraft_data subdirectory increased greatly in 2005, showing the high interest in and great value of these services provided by NSSDC and SPDF on this shared resource. Ftp access to modeling software (over 180,000 file downloads in 2005, see Table 9) is also included.

WWW access statistics are frequently misleading, insofar as they usually individually count the many files (buttons, etc.) that make up a page. Nevertheless, WWW accesses are indicative of the continuing use of the WWW-provided NSSDC services. In 2005 there was an average of 11.4 million monthly error-free accesses to NSSDC's web pages, slightly lower than 12.2 million for 2004. Total WWW hits have similar numbers, 13.9M/mo for 2004 and 13.1M/mo for 2005.

Table 11. NSSDC User Community (Offline Requests Only) for CY 2005

Affiliation Category	Total Requests	Percent of Total
No Affiliation [General Public]	77	34.5
Non-US	36	16.1
US Academic Institutions	29	13.0
US Private Industry	18	8.1
NASA/GSFC	41	18.4
NASA Centers, Excluding GSFC	11	4.9
Other Government Agencies	3	1.3
Miscellaneous	8	3.6
Total	223	100

The dominant mode of dissemination of data to the research communities is via the internet, so that offline data dissemination has gradually decreased, but serves a vital public function. For 2005 Table 11 shows that NSSDC responded to 187 (compared to 230 in 2004) distinct requests for “traditional” products. Table 11 also characterizes the user community of NSSDC’s offline services. To a very large extent it is the U.S. and international general public, the education enterprise, publishers, etc. and their desire for NASA imagery on CD-ROM and as film products that account for most of NSSDC’s offline request activity.

Table 12. Number of Requests for Offline Data by Discipline

Discipline	Dataset Requests 1968 - 2005	Dataset Requests 2005
Astrophysics	11394	12
Earth Science	7143	4
Planetary Science	47284	169
Space Physics	9101	24
Ephemeris	91	2
Other	43	10
Total	75056	221

Table 12 gives the counts of requests for offline datasets from various disciplines in 2005, and as integrated over NSSDC's history. Note particularly the dominance of planetary data over both time scales. This is largely associated with lunar and planetary image data that are widely requested by the general public.

Table 13. NSSDC Offline Data Dissemination Statistics 2001-2005

Offline	2001	2002	2003	2004	2005
DVDs			46	10	11
CDs	2241	1741	1813	793	689
Films	2494	1114	215	221	450
Videotapes	280	211	112	105	41
Magnetic tapes		5	0	0	0
TOTAL Units Sent	5015	3071	2186	1129	1191

Table 13 shows the most recent 5-year history of NSSDC's offline data request activity by media type. The dominant mode of offline digital data dissemination continues to be by CD-ROM. The downward trend in CDs, and other media, counts continues, presumably as more members of the general public are able to access NSSDC's data electronically.

5. ADDITIONAL NSSDC SERVICES

In addition to its archive of scientific data and the variety of data interfaces characterized in the preceding sections, NSSDC offers a number of additional services, which are described below.

5.1 NSSDC Information Management System

The NSSDC Information Management System (NIMS) encompasses most of the separate databases that NSSDC has used to track data and information through the years. The NSSDC is in the process of incorporating its off-line data inventory system into NIMS, a task which began in earnest in 2002 and is expected to be completed in 2005.

Table 14. NIMS/JEDS Database Statistics for CY 2005

Subpartition	Number of Records as of 12/31/05	Number Added in 2005
Spacecraft	6,142	73
Experiment	5,234	45
Dataset	5,095	24
Totals	16,471	142

Number of spacecraft with experiment records - 1,048
 Number of experiments with datasets at NSSDC - 1,546
 Additional datasets associated only with spacecraft, not experiments - 339
 Additional datasets that are not associated with spacecraft/experiment - 76

Table 15. NIMS Bibliographic Partition Statistics as of Dec 31, 2005

Total Number of Records	46,355
Number of Records Inserted in 2005	817

NIMS identifies virtually all launched spacecraft, the experiments carried by many of these spacecraft, and datasets from these spacecraft primarily as archived at NSSDC. This portion of the database is the source of information for many of NSSDC's WWW information pages. The NSSDC Master Catalog (NMC) dynamically generates WWW pages so that the latest information is presented to the user. A number of discipline and project pages are based on information derived from NIMS or utilize the NMC to generate such information.

5.2 NASA/Science Office of Standards and Technology (NOST) at NSSDC

NOST's mission is to facilitate the recognition and use of standards to reduce cost/benefit ratios in the exchange and management of scientific data among NASA entities and the scientific communities they serve. NOST's Web Home Page is at <http://ssdoo.gsfc.nasa.gov/nost/> . The NOST strategy is to play a coordinating role in helping the science disciplines identify new standards requirements. NOST participates in partnerships with them, other agencies, and industry on facilitating the adoption of leading-edge technologies with national or international visibility that can be tailored to meet NASA science information management and exchange requirements, and it assists in the process of moving these technologies toward standards with commercial support.

NOST operates NASA's highest level Control Authority office in accordance with the applicable [Consultative Committee for Space Data Systems \(CCSDS\)](#) and ISO standards to formally archive data descriptions for interchange and long term preservation. NOST also participated in the development of draft CCSDS/ISO standards applicable to multi-discipline and sub-discipline information interchange. The WWW is the ideal forum for the worldwide standards work. The reader is referred to <http://www.ccsds.org/> for specifics.

5.3 SPASE

Our first effort in this direction is as a participant in the development of the Space Physics Archive Search & Exchange (SPASE), the dictionary which will be the common language among space physics archives as we move into the age of VOs. Version 1.0 of SPASE was released in October 2005.

5.4 Virtual Observatories

As the designated permanent archive for the Office of Space Science (OSS), with over 30 years experience in managing and preserving digital information comprising thousands of datasets, NSSDC is acutely aware of the need to acquire and preserve data and adequate documentation to ensure they are independently understandable and usable for current and future researchers. This remains our primary mission. But in this era of Virtual Observatory (VO) concepts for more seamless access to data, NSSDC must also play a larger role, especially for data not available from Active Archives. NSSDC will expend considerable effort becoming part of the Virtual Observatories.

Glossary

ACE	Advanced Composition Explorer
ADC	Astronomical Data Center
AE	Atmospheric Explorer
AEROS	AEROnomy Satellite
AIP	Archive Information Package
ARCAD	Arc Aurorale et Densite
CANOPUS	Canadian Auroral Network for the OPEN Program Unified Study
CCSDS	Consultative Committee for Space Data Systems
CD-ROM	Compact Disk-Read Only Memory
CD-WO	Compact Disk-Write Once
CDAW	Coordinated Data Analysis Workshop
CDF	Common Data Format
COBE	Cosmic Background Explorer
CRRES	Chemical Release and Radiation Effects Satellite
DARN	Dual Auroral Radar Network
DE	Dynamics Explorer
DLT	Digital Linear Tape
DTD	Data Type Description
DVD	Digital Versatile Disk (originally, V = video)
DVD-WO	Digital Versatile Disk-Write Once
FAST	Fast Auroral SnapshoT
FTP	File Transfer Protocol
GB	Gigabyte
GOES	Geostationary Observational Environmental Satellite
GSFC	Goddard Space Flight Center
IDA	Interactive Data Archive
IMAGE	Imager for Magnetopause-to-Aurora Global Exploration
IMP	Interplanetary Monitoring Platform
ISEE	International Sun-Earth Explorer
ISIS	International Satellite for Ionosphere Studies
ISO	International Organization for Standardization
ISTP	International Solar-Terrestrial Physics
JEDS	Java Experiments, Datasets, Spacecraft
JRAND	Java Request and Name Directory
KP	Key Parameters
LANL	Los Alamos National Laboratory
MAGSAT	MAGnetic field SATellite
M-O	Magneto-optic
MSIS	Mass Spectrometer and Incoherent Scatter
NASA	National Aeronautics and Space Administration
NDADS	NSSDC Data Archive and Distribution System
NEAR	Near Earth Asteroid Rendezvous
NIMS	NSSDC Information Management System
NMC	NSSDC Master Catalog
NOST	NASA/Science Office of Standards and Technology
NSSDC	National Space Science Data Center
NVO	National Virtual Observatory
OAIS	Open Archival Information System

OMNI	Interplanetary Medium Data (not an acronym)
OSO	Orbiting Solar Observatory
OSS	Office of Space Science
RAID	Redundant Array of Independent Disks (or I = "Inexpensive")
SAMPEX	Solar Anomalous and Magnetospheric Particle Explorer
SPASE	Space Physics Archive Search & Exchange
SEC	Sun Earth Connection
SECAA	Sun Earth Connection Active Archive
SECEF	Sun Earth Connection Education Forum
SNOE	Student Nitrogen Oxide Explorer
SOHO	Solar and Heliospheric Observatory
SSC	Satellite Situation Center
SWAS	Submillimeter Wave Astronomy Satellite
TB	Terabyte
TRF	Technical Reference File
WORM	Write-Once, Read-Many
WWW	World Wide Web
XDF	eXtensible Data Format
XML	eXtensible Markup Language

NSSDC Acknowledged 2005 Publications

B54927-000A

Anagnostopoulos, G. C., Efthymiadis, D., Sarris, E. T., Krimigis, S. M.,
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