SCIENCE DATA PLAN
for the
EOS DATA AND INFORMATION SYSTEM
covering
EOSDIS VERSION 0 AND BEYOND

NASA
GODDARD SPACE FLIGHT CENTER
Greenbelt, MD

DOCUMENT VERSION 3

JULY 1994
1° or 2.5°) segregated by orbital pass (ascending or descending) and averaged over a day, a 5- 
y period, or a month.

least two different limb correction processes have been used (Limb90 and Limb93) each with 
or own set of error characteristics. A complete description of the different processing procedures 
be obtained by contacting the MSFC DAAC User Services Office.

3.7 National Snow and Ice Data Center (NSIDC)

The discipline focus of the Snow and Ice DAAC (SI DAAC) is on snow and ice processes, especially 
interactions between snow and ice and the atmosphere and ocean. The primary areas in which SI 
DAAC supports research are global change detection, Earth system model validation, and process 
model development and validation relating to the cryosphere.

Currently, snow and ice products are generated from DMSP SSM/I data. Non-satellite data, such as 
meteorological fields, station data, and buoy measurements, are archived for comparison to satellite 
information and for input into sea-ice and climate models. The SI DAAC supports the development 
of products to monitor ice-surface temperature and motion by providing access to 1 km AVHRR, 
DMSP OLS and SSM/T2, and TOVS satellite data. Satellite altimetry data are being archived and 
distributed to support ice-sheet topography studies.

As of July 1994, data sets held by the SI DAAC, include those of the heritage NSIDC Cryospheric 
Data Management System (CDMS). The suite of SI DAAC holdings is summarized in Table 3.7, 
with additional information provided in the following discussion and in Table A–7 of Appendix A. 
Note that Table A–7 includes some NOAA data sets for which there may be distribution restrictions. 
The distribution of these data and the prices to be charged will be governed by NOAA’s policies and 
procedures. Access through the DAAC and the services to be provided by the DAAC are yet to be 
fully negotiated.

The paragraphs below contain a discussion of current data sets and the additional data sets that may 
be included in the SI DAAC in the future.

3.7.1 DMSP SSM/I Data

SI DAAC processes the SSM/I data into gridded, full global, and polar data products. All products 
are available on CD-ROM. Orbital data from the SSM/I instrument are held by NOAA Satellite Data 
Services Division (SDSD). Within the EOSDIS DAAC structure, the MSFC DAAC is designated as 
the Level-1.5 data archive. In the future, NSIDC may acquire SSM/I data from the National 
Geophysical Data Center Digital DMSP Data Archive (see Section 4.7).
<table>
<thead>
<tr>
<th>Data Type</th>
<th>Volume (GB)</th>
<th>Remarks</th>
</tr>
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<tbody>
<tr>
<td>DMSP SSM/I</td>
<td>70</td>
<td>Level-1.5 and Level-3 brightness temperatures; Level-3 ice extent and concentration (daily) and ice concentration (monthly)</td>
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<tr>
<td>Nimbus–7 SMMR</td>
<td>7</td>
<td>Level-3 brightness temperatures and sea-ice concentration</td>
</tr>
<tr>
<td>Geosat and Seasat altimetry data</td>
<td>15</td>
<td>Gridded elevations, height profiles, and wave form for Greenland and Antarctica</td>
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<tr>
<td>Nimbus–5 ESMR</td>
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<td>Level-1.5 and Level-3 monthly and 3-day brightness temperatures and sea-ice concentration products (monthly)</td>
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<tr>
<td>AVHRR: Polar Subsets</td>
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<td>Level-0 and swath data</td>
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<td>Level-3 AVHRR scenes</td>
</tr>
<tr>
<td>In situ data</td>
<td>1.9</td>
<td>Multiple source and data types</td>
</tr>
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</table>

Table 3.7 NSIDC SI DAAC—Summary of Data Holdings as of July 1994

Products generated at SI DAAC from SSM/I data include gridded sea-ice concentration and brightness temperature. Currently, a polar stereographic projection covering the polar regions is employed. The Equal Area SSM/I Grid (EASE grid) will be produced in parallel with the polar stereographic products to provide improved radiometric fidelity, temporal resolution, and coverage.

3.7.2 Nimbus–7 SMMR Data

The SMMR on Nimbus–7 operated from 1978 to 1987. Current SI DAAC products include gridded SMMR brightness temperatures and sea ice concentration in the SSM/I polar-grid format, which were generated by Dr. Per Gloersen of GSFC in conjunction with the SI DAAC. The complete time series has been published on CD-ROM’s.

3.7.3 AVHRR Data

Recent polar AVHRR data of both polar regions, at 1.1 km resolution (LAC and HRPT data types), are available from NSIDC. The Polar AVHRR 1-km Data Set at NSIDC consists of Antarctic scenes acquired since April 1992, and Arctic scenes acquired since August 1993. All five bands of the AVHRR sensor (primarily from the NOAA–11 satellite) are archived in orbit swath format, in uncalibrated sensor units. Several derived data products, such as sea ice motion and ice surface temperature, are under development in conjunction with the polar science community.

3.7.4 Radar Altimetry Data

SI DAAC distributes a data set derived from the Geosat and Seasat radar altimeters that contains georeferenced and corrected data collected over Greenland and Antarctica. The data are available as
either point elevations or interpolated onto a 20 km grid. NSIDC has arranged with NASA's GSFC to provide data distribution from its archive of Seasat and Geosat data (supervised by Dr. Jay Zwally of GSFC). Gridded digital elevations, height profiles, and waveform data are available for both missions. For requests of data over limited areas, NSIDC will select the data from the archive and deliver them (floppy diskette, tape, or ftp transfer). The entire data set, with browse and retrieval software, will be available on CD-ROM and will be distributed by both NASA GSFC and NSIDC.

3.7.5 Nimbus-5 ESMR Data

ESMR monthly and 3-day brightness temperatures and monthly sea ice concentration grids for 1973 to 1976 for Arctic and Antarctic regions are distributed on 9-track tape. Ancillary data include surface air temperature and pressure mapped to the same grid as the ESMR products.

3.7.6 In Situ Data

The following summarizes the more important in situ data available from the SI DAAC. A more complete list can be obtained from the SI DAAC Users Support Office.

Drifting Buoy Data—Arctic Ocean drifting buoy data (1979 to present) collected by the Polar Science Center (PSC), University of Washington, are archived at SI DAAC. This set of pressure, temperature, and interpolated ice-velocity values is derived from an average of about 10 Argos buoys per day. A related data set is the historical drifter data, also assembled by PSC and archived at NSIDC, containing 2-day interpolated velocities for 34 polar tracks spanning 1893 to 1973.

Arctic Sounding Data—The Historical Arctic Rawinsonde Archive (HARA) of Arctic temperature soundings above 65° N is archived at SI DAAC. Approximately 1.2 million soundings are contained in the archive, representing nearly 100 land stations. A smaller data set consisting of soundings from drifting ice stations, ships, and aircraft dropsondes will be available within several months. The daily sounding data base is available on three CD-ROM’s.

3.7.7 Additional Data

NSIDC archives and supports polar subsets of satellite data that have primary archives at other DAACs or ADC’s, as well as cryospherically relevant in situ data. This section presents the current status of these data sets. Satellite data sets are listed first, followed by in situ data sets.

DMSP OLS—NSIDC is in its 13th year of service as the national archive for visible and infrared imagery data from the U.S. Air Force DMSP Operational Linescan System (OLS). The archive contains over 1.5 million pieces of imagery in the form of hard copy films cataloged in an on-line data base.
The historical DMSP OLS imagery collection (with data from 1973 to the present), in the form of film positives, is being transferred to the National Archives and Records Administration Federal Records Center (NARA/FRC). The move to FRC has begun but will take several years. Regularly used data subsets, such as those for the polar regions, will be held at NSIDC until they are deemed no longer valuable.

**AIDJEX**—During the 1970's, the Arctic Ice Dynamics Joint Experiment (AIDJEX) generated data sets relating the response of sea ice to its environment. NSIDC holds three track- lines of sonar data collected in April 1976, containing a 777-nautical-mile profile of the sea ice. Wind, current, and position data from four manned camps on ice floes are also held for April–October 1975. The location of most of the AIDJEX data sets is unknown at this time. NSIDC continues to seek out information that may lead to the recovery of these data.

**MIZEX**—The Marginal Ice Zone Experiment (MIZEX), which was conducted in the Fram Strait and Greenland Sea in June to July 1983, May to July 1984, and March to April 1987, and in the Bering Sea in February 1983, provided data from shipborne platforms on processes in the marginal ice zone. Supporting data sets on meteorology, oceanography, sea-ice conditions, and biology are archived at NSIDC. Meteorology data are distributed on the CEAREX Vol. 1 CD-ROM.

**CEAREX**—The Coordinated Eastern Arctic Experiment (CEAREX), carried out in the East Greenland Sea west of Svalbard from September 1988–June 1989, used satellite-, ship-, aircraft-, helicopter-, and ice-floe-based sensors. Surface platforms provided meteorological, oceanographic, biological, acoustic, and sea-ice data. NSIDC is the designated archive for the CEAREX data sets, and is funded by ONR to generate a CD-ROM series containing CEAREX and other important eastern Arctic data (Volume 1 released in November 1991).

**Birdseye Data**—NSIDC holds over 11,000 ice observations from U.S. Navy “Birdseye” and other ice reconnaissance operations spanning 1964 to 1975. Airborne sensors flown during MIZEX and CEAREX also generated SAR and SLAR data; microwave, infrared, and visible imagery; radar altimetry; and boundary-layer meteorology. If funded, these data sets will be available for incorporation in the eastern Arctic CD-ROM series, and are an invaluable resource for better understanding the meso- to small-scale processes in the exchange of momentum, heat, and biomass within ocean eddies, internal waves, and the ocean/atmosphere boundary layer.

3.8 Oak Ridge National Laboratory (ORNL)

The ORNL DAAC draws on the experience gained from previous data management systems, including the International Biome Program (IBP), the Atmospheric Radiation Measurement (ARM) Archive, and the Carbon Dioxide Information Analysis Center (CDIAC), a World Data Center–A (WDC–A) for Atmospheric Trace Gases.

Current holdings of the ORNL DAAC include data from FIFE, the Oregon Transect Ecosystem Research (OTTER) Project, and other projects formerly maintained in NASA’s PLDS. Many of the