# THE NASA PLANETARY DATA SYSTEM

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ABSTRACT. The "Planetary Data System" (PDS) was developed and supported by the Solar System Exploration Division of the National Aeronautics and Space Administration (NASA) and has now successfully operated for a few years. Its primary objectives are to preserve data obtained from previous, current and future space missions; to help individual scientists in the analysis of planetary data by preparing them in a usable form and making them easily accessible to the community; and to assist the National Space Science Data Center (NSSDC) managing, archiving and distributing data obtained by NASA missions. The principal goals and general structure of the PDS have been summarized in several brochures issued by the PDS and articles such as e.g., "The Planetary Data System" by S.W. Lee, published in the IUGG U.S. National Report on Planetology 1987-1990 or by the Jet Propulsion Laboratory. Additional information can be obtained e.g., by the current author; the PDS Project Manager, S. McMahon at JPL; the PDS Project Scientist, S. Lee at the Laboratory for Atmospheric and Space Physics, University of Colorado or from any of the seven Discipline Nodes listed below.

The PDS organization is characterized by three different nodes: One Central Node, seven Discipline Nodes and a variable number of Data Nodes.

**1. Central Node.** The management of the PDS and the coordination of activities related to PDS such as establishing data standards, providing data restoration etc. are conducted at the Central Node. This node also provides the interface to planetary missions. It is operated for NASA's Solar System Exploration Division by the Jet Propulsion Laboratory (JPL) in Pasadena, California. The Central Node maintains and updates a Central Catalog which contains information about all data archived by the PDS and which can directly be accessed by the user community through the Central Node. A Management Council assists NASA Headquarters and the Central Node in making management decisions and providing scientific oversight.

**2. Discipline Nodes.** Seven Discipline Nodes have been established and are listed in Table 1. They are electronically linked to each other as well as to the Central Node. They are the critical elements of the system. They are centers of research excellence where discipline specific data sets are curated and where their use by resident, visiting, and remotely located scientists is promoted. These nodes are not mere data repositories, however well organized, but rather centers where research is the primary



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concern and is actively conducted, and where expertise exists to understand the data, to use them, and to help others who need to use them. (For more detailed information, see NASA Research Announcement "Planetary Data System").

These Discipline Nodes are mainly responsible for securing, organizing and curating planetary data sets which are specific to that specific discipline or research area; for providing access to the organized data together with information necessary to analyze them; for facilitating use of the data through standardization, documentation, and application of modern data handling and analysis techniques; for keeping the working data close to the scientific community which knows and cares about them, which will use them, and which is best able to aid others in their use; and for conducting original research using the data.

Information on available data can be obtained from the Central Catalog, and requests for specific data can be placed through the NSSDC or a Discipline Node. Data will then be made available in form of magnetic tapes, CD-ROMs or electronic files and will include documentation on the use of the data.

Table 1. PDS NODES

| NODE | MANAGER | INSTITUTE | SPAN ADDRESS |
|---|---|---|---|
| Central | S. McMahon | JPL | JPLPDS::SMCMAHON |
| Atmospheres | S. Lee | U. Colorado | ORION::LEE |
| Geosciences | R. Arvidson | Washington U. | WURST::ARVIDSON |
| Imaging | L. Soderblom | USGS | ASTROG::LSODERBLOM |
| NAIF | C. Acton | JPL | NAIF::CHA |
| Plasma Interactions | R. Walker | UCLA | UCLASP::RWALKER |
| Planetary Rings | J. Cuzzi | ARC | GAL::CUZZI |
| Small Bodies | A. A'Hearn | U. Maryland | STAR::ma@astro.und |

(NAIF: Navigation Ancillary Information Facility)

**3. Data Nodes.** Specific Data Nodes are being established for the principal purpose of restoring selected science and ancillary data from a previous planetary mission or for making significant improvements to a more recently obtained data set. Once a data set is restored or enhanced, it is included in the PDS and the activity at that specific Data Node will stop.

Recent PDS CD-ROM releases include 12 volumes of Voyager data on Jupiter, Saturn, Uranus and Neptune; Viking Orbiter and Lander data on Mars; Mariner 9 and 10 data on Mars, Venus and Mercury; and 22 Magellan CD-ROMs on Venus, covering the first 4 months of mapping or roughly 1/2 of the planet. The full planet will be available in February in a set of about 50 CD-ROMs.

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