

**DEVELOPMENT OF THE PROTOTYPE ATMOSPHERES
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A prototype planetary atmospheres Discipline Node of NASA's Planetary Data System (PDS) is being developed at the University of Colorado's Laboratory for Atmospheric and Space Physics (LASP). The PDS is developing a large distributed information system for managing and providing access to NASA's planetary science data. The Atmospheres Node is implementing a prototype data center to acquire, store, maintain, and provide easy access to large volumes of planetary atmospheres data. In addition, the Node is assessing and developing new technologies for storage and retrieval of massive quantities of data. As part of this initial effort, LASP is assembling an online database of planetary atmospheres datasets, is hosting data workshops in which groups of scientists use the Node's software and hardware system to perform correlative analyses on the Atmospheres database, is investigating the utility of Write Once Read Many (WORM) optical disk drives for storage of large datasets, and is overseeing the production of a set of ten optical disks (CD-ROMs) containing 6000 Voyager images of Uranus, Saturn, and Jupiter in digital form.

The Atmospheres Node is being designed to promote interdisciplinary research on planetary atmospheres by providing ready access to multiple datasets and necessary supporting software. The Node will assist scientists in locating and evaluating datasets through the use of both high-level (general) and low-level (detailed) catalogs, and is assembling a database of selected atmospheric datasets; resident expertise on the available datasets and software will also be available at the Node. The database will be accessed and managed through use of a VAX-cluster and high-performance Britton-Lee relational database hardware.

Initial use of the Node will be in the form of "data workshops". The purposes of the workshops are to provide the data and analysis capabilities to investigate topics of interest to planetary scientists which were previously very difficult to achieve, and to gather input from users of the Node's database to aid in future development of this and other PDS Discipline Nodes. The "Mars Clouds Data Workshop", held in June 1987, concentrated on research topics related to martian clouds, and involved fifteen participants who gathered at LASP to access several Mars datasets (see below). The second workshop (to be held in mid-1988) will be concerned with research topics related to the atmospheres of Jupiter and Saturn and will utilize several Voyager and Pioneer datasets on which the latest pointing corrections have been performed (see below); participants will access the database both at the Node and remotely from their home institutions. The third workshop, expected to occur in late 1988, will be held jointly with the prototype PDS Fields and Particles Discipline Node (housed at UCLA), and will involve correlative use of both Nodes' databases.

The datasets which are currently entered in the Node's database are:

- Viking Mars Atmospheric Water Detector (MAWD) data
 - raw and calibrated data
- Viking Lander meteorology data
 - summary pressure data (1 reading/sol) [1]
 - point-by-point pressure data (multiple readings/hour) [1]
 - binned pressure, temperature, and wind data (25 bins/sol) [1,2]
- Viking and Mariner 9 cloud database (image-based) [3]
- Viking Infrared Thermal Mapper (IRTM) cloud database [4]
- Viking IRTM phase-corrected albedo map [5]
- Viking IRTM thermal inertia map [6]
- USGS digital Mars topographic map [7].

Several other datasets are expected to be installed in the Node's database by mid-1988:

- Mariner 9 Ultraviolet Spectrometer (UVS) data
 - raw and calibrated data
 - pressure-altitude maps [8]
 - total ozone column-abundance maps [8]
- Viking Lander atmospheric optical depth dataset [9]
- Viking Orbiter image-based limb profiles [10]
- Pioneer 10 & 11 polarization maps [11]
- Voyager image mosaics (photometrically and geometrically corrected) [12]
- Voyager IRIS data
 - selected spectra
 - derived atmospheric properties [13]
- Voyager Photopolarimeter (PPS) data
- Voyager UVS data
 - Lyman-alpha maps [14].

The Node has been available to outside users on a trial basis since mid-1987. Users are able to access the Node's catalogs and database via dial-up telephone links, through the Space Physics Analysis Network (SPAN), or by visiting the Node. For more information, and to obtain a computer account to access the Node's database, contact Steven Lee (phone: 303-492-5348; NASAMAIL: SWLEE; SPAN: ORION::LEE).

REFERENCES: [1] Dataset contributed by J. Tillman. [2] Dataset contributed by J. Murphy. [3] Dataset contributed by R. Kahn. [4] Dataset contributed by P. Christensen. [5] Mars Consortium dataset (produced by L. Pleskot and E. Miner). [6] Mars Consortium dataset (produced by F. Palluconi and H. Kieffer). [7] Dataset contributed by S. Wu. [8] Dataset contributed by C. Barth. [9] Dataset contributed by D. Colburn and J. Pollack. [10] Dataset contributed by F. Jaquin. [11] Dataset contributed by L. Doose and P. Smith. [12] Dataset contributed by J. Magalhaes. [13] Dataset contributed by B. Conrath and P. Gierasch. [14] Dataset contributed by B. Sandel.