

ACCESS TO LARGE PLANETARY SCIENCE DATA BASES; S. Slavney, T. Stein, and R.E. Arvidson, McDonnell Center for the Space Sciences, Earth and Planetary Sciences Department, Washington University, St. Louis, MO 63130

Technological advances in recent years have made it possible for planetary missions such as Magellan to generate datasets of many gigabytes in size. Upcoming missions will result in equivalent data volumes. Cost-effective archiving and timely distribution of such large data bases require careful planning based on an understanding of the demand for the data. A large dataset for which there is great demand, such as the Magellan MIDRs (Mosaicked Image Data Records), is a good candidate for distribution on CD-ROMs, each disk being sent directly from the factory to a list of subscribers as soon as it is produced. On the other hand, a high-volume dataset that is only occasionally in demand can be stored on write-once compact discs (CD-WOs) and distributed electronically upon request. In this abstract we illustrate an approach to distributing Magellan F-BIDR (Full Resolution Basic Image Data Record) products based on the latter model.

The Magellan F-BIDR dataset consists of several thousand individual products ranging in size from 20 to about 140 megabytes. The original products are stored on 9-track tapes. In order to preserve the dataset on a more stable medium, and at the same time make it accessible to the science community, the Planetary Data System (PDS) Geosciences Node at Washington University is currently working to transfer the complete Magellan F-BIDR dataset to CD-WOs. Two copies are made of each CD-WO volume, one of which is sent to the National Space Science Data Center for deep archive. The other is kept at Washington University where it can be made available upon request for electronic file transfer over the Internet. The process of ordering data products is automated using a system of three Kodak Professional PCD CD-ROM jukeboxes, each holding 100 disks, accessed through the Magellan Standard Products Catalog based on the Sybase relational data base management software. The catalog enables the user to select products based on location, time, orbit, product ID, and Magellan Experimenter's Notebook parameters. The catalog currently contains information for Magellan data from Cycle 1, and by the end of January 1994 will include information for Cycles 2 and 3 and for gravity data from Cycle 4. Users may place orders for selected products electronically, and may choose to have them delivered via FTP (File Transfer Protocol) over the Internet. The viability of electronic delivery has been demonstrated by experiments conducted with Rand Corporation and Stanford University. Results show that this method is reliable and reasonably fast; as of December 1, 1993, a total of 1690 products (over 93 gigabytes) had been transferred with an average rate of 5 megabytes per minute during the day and 10 megabytes per minute at night, with no loss of data.

The Geosciences Node and the PDS Image Node are currently planning a similar approach to archive and distribute data from the Clementine mission. Clementine's 3.5 million images of the lunar surface and the asteroid Geographos will be stored on CD-WOs and made accessible on the Internet via an electronic catalog.