

**2001 MARS ODYSSEY SCIENCE DATA ARCHIVES.** S. Slavney, R. E. Arvidson, and E. A. Guinness, Department of Earth and Planetary Sciences, McDonnell Center for the Space Sciences, Washington University, St. Louis, MO, 63130 (slavney@wunder.wustl.edu).

**Overview:** In its first two data releases, the 2001 Mars Odyssey Mission has delivered to the Planetary Data System more than 200 gigabytes of data from its suite of science instruments. The data are available online for public access. PDS-D, a new online service from the Planetary Data System, provides the capability to search for and download user-selected data products. Odyssey data releases are scheduled every three months through the end of the Primary Mission in August 2004.

**Mission and Instrument Background:** The 2001 Mars Odyssey Orbiter began its Primary Mapping Mission on February 19, 2002. A 917-day primary mission is planned with completion on August 24, 2004. The Odyssey science payload consists of THEMIS (Thermal Emission Imaging System), MARIE (Martian Radiation Environment Experiment), and GRS (Gamma Ray Spectrometer), which includes the HEND (High Energy Neutron Detector) and NS (Neutron Spectrometer) instruments in addition to the Gamma Sensor. Raw and derived data from all science instruments are archived with the NASA Planetary Data System (PDS).

**Science Data Releases:** In accordance with the Mars Exploration Program data release policy [1], the Odyssey Archive Plan [2] specifies that instrument teams are permitted a period of six months to generate and validate their raw data products. After that, the data must be released to the PDS. Data releases are scheduled every three months. The first two releases occurred on October 1, 2002, and on January 1, 2003.

#### 2001 Mars Odyssey Primary Mission Science Data Release Schedule

Release Date	Dates of Data Acquisition
October 1, 2002	February 19, 2002 – March 31, 2002
January 1, 2003	April 1, 2002 – June 30, 2002
April 1, 2003	July 1, 2002 – September 30, 2002
July 1, 2003	October 1, 2002 – December 31, 2002
October 1, 2003	January 1, 2003 – March 31, 2003
January 1, 2004	April 1, 2003 – June 30, 2003
April 1, 2004	July 1, 2003 – September 30, 2003
July 1, 2004	October 1, 2003 – December 31, 2003
October 1, 2004	January 1, 2004 – March 31, 2004
January 1, 2005	April 1, 2004 – June 30, 2004
April 1, 2005	July 1, 2004 – August 24, 2004

**Odyssey Data Sets: THEMIS.** THEMIS generates multispectral visible and thermal infrared image cubes. The raw data are known as THEMIS EDRs (Experiment Data Records). Derived products include calibrated radiance image cubes (Reduced Data Records or RDRs), Visible Apparent Brightness Records (ABRs), Infrared Brightness Temperature Records (BTRs), and will eventually include geometrically corrected, map-projected images. The first THEMIS release included EDRs, ABRs, and BTRs for data acquired through March 31, 2002. The second release included the same products plus calibrated radiance RDRs acquired through June 30, 2002. Also, the January 2003 data release included revised versions of all the products that had been released the previous October.

**GRS.** The GRS instruments generate gamma ray, neutron, and high energy neutron spectra. The raw spectra and other ancillary data constitute the GRS EDR products. Derived products include the gamma spectra corrected to a common energy scale (CGS), summed gamma spectra binned by latitude and longitude (SGS), and eventually maps of elemental ratios and concentrations, including hydrogen concentrations from NS and HEND data. The October 2002 release included EDRs from the Gamma Sensor and HEND instruments acquired through March 31, 2002. Neutron Spectrometer EDRs were released one month later, delayed by validation problems. The January 2003 release contained Gamma, NS, and HEND EDRs, along with corrected gamma spectra (CGS) products, acquired through June 30, 2002. This release also included revised versions of all the products that had been released the previous October.

**MARIE.** MARIE raw data products are radiation event data and count data, reformatted into binary and ASCII tables but otherwise unprocessed. They are known as REDRs (reformatted EDRs). MARIE derived products (RDRs) include calibrated event data. In August 2001 MARIE was turned off after it failed to respond during a downlink. It was successfully restarted in March 2002 after Odyssey's mapping orbit was established, and data have been collected from that time without major interruption. The October 2002 and January 2003 releases included both REDR and RDR products.

**Radio Science.** The Odyssey mission has no formal Radio Science experiment; however, Radio Science data are being collected and archived by the PDS Ra-

dio Science Subnode at Stanford University. These data are not released at three-month intervals, but rather are released as they are accumulated, on the order of one to three CD volumes per month. As of this writing (January 2003) 20 volumes have been produced with data acquired through December 3, 2002.

*SPICE.* SPICE data for Odyssey are collected and archived by the Navigation and Ancillary Information Facility (NAIF) at JPL. The SPICE kernel files contain geometric and other ancillary information needed to recover the full value of science instrument data. For example, SPICE kernels provide spacecraft and planetary ephemerides, instrument mounting alignments, spacecraft orientation, spacecraft sequences of events, and data needed for certain time conversions. Updated SPICE kernels are included in every Odyssey data release.

**Online Data Distribution:** All data released by the Odyssey Mission is publicly available on the Internet. The 2001 Mars Odyssey Data Archives web site, <http://wwwpds.wustl.edu/missions/odyssey/>, includes links to the online data repositories.

The new PDS-D online service made its debut with the first Odyssey data release on October 1, 2002. This service provides the capability to search the Odyssey data based on latitude, longitude, time, orbit, data set, product ID, and other criteria. Specific data products may be selected from search results and downloaded. The PDS-D web site is <http://starbrite.jpl.nasa.gov/pds>. The PDS welcomes feedback from users of the new service.

The PDS is also offering a new Data Notification Service for the Odyssey archives. Subscribers to this service receive an email message whenever new Odyssey data become available. To register for this service, visit <http://pdsproto.jpl.nasa.gov/PersInfo/distlist/notification.cfm>. For more information about the PDS, visit the PDS home page at <http://pds.jpl.nasa.gov>.

**References:** [1] Arvidson and Slavney (2000), Mars Exploration Program Data Management Plan, <http://wufs.wustl.edu/missions/mep/dmp.html>. [2] Arvidson (2001), 2001 Mars Odyssey Orbiter Archive Generation, Validation, and Transfer Plan, JPL D-20679, [http://wufs.wustl.edu/missions/odyssey/docs/ody\\_archive.pdf](http://wufs.wustl.edu/missions/odyssey/docs/ody_archive.pdf).