Discovery Program: Lessons Learned: The Planetary Data System

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Overview

- OSS Science Data Management Policies
- Overview of Planetary Data System (PDS)
- Offer PDS as resource for planning

OSS Science Data Management

- **Key Objectives**
  - Preserve and use space science data as a National resource
  - "Open" Data: data ultimately belongs to science community and public
  - Appropriate and balanced allocation of resources for data issues through mission life cycle

Screw Ups

Project

1.   Not budgeting properly for data archiving

2.   Not getting the PDS involved in archiving processes early enough in the
        mission

3.   Not capturing all the data [I&T/ATLO, ground-based calibration, etc]

4.   Waiting too long to begin the actual archiving

5.   Not delivering data in the proper format

6.   Not delivering data in a timely manner

NASA HQ

1.   Few teeth in AO's to correct 1-5

2.   Not enough management of PDS itself to ensure data capture

NASA HQ Corrective Actions. I.

More teeth in AO's

    Preliminary Data Management Plan due at PDR

    Final PDMP due at CDR

Withheld funds for mission Data Analysis Program until all data were delivered to PDS, reviewed, and accepted

Archiving plan now part of mission selection process

PDR and CDR will probably have archiving specialist[s] on the review teams

NASA HQ Corrective Actions. II.

NASA HQ Management

Fever charts: PDS Node by Node, mission by mission, instrument by instrument

Charts shown each month at HQ flight reviews

Charts shown at JPL quarterly reviews and monthly flight project reviews

An entire set of fever charts will be distributed at Division of Planetary Sciences and Lunar and Planetary Meetings each year so the entire planetary community can see the progress individual missions and PI's are making toward getting data into the PDS

PDS Working Group makes reviews PDS operations and recommendations actions to the Program Executive

The Planetary Data System

The PDS manages, preserves, and disseminates the large volume of unique and valuable data returned by Solar System Exploration missions

Key PDS Products:

- High quality data archives
- Interface to active missions and mission planning
- Science expertise for researchers
- Value-added data products
- Data distribution to planetary scientists
- Educational data products

http://pds.jpl.nasa.gov
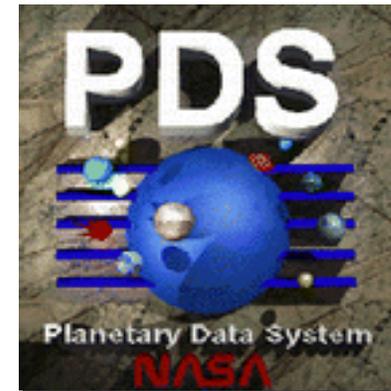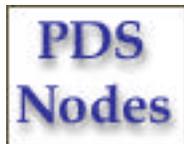
PDS Nodes	Atmospheres	Geosciences	Imaging	NAIF	PPI	Rings	Small Bodies
	New Mexico State Univ.	Wash Univ. St. Louis	JPL/USGS Flagstaff	JPL	UCLA	NASA Ames	U. Maryland

Node structure provides focus on key disciplines

What is the PDS?

- PDS is the official planetary science data archive for the NASA Office of Space Science (OSS) Solar System Exploration (SSE).

- PDS is chartered to ensure that SSE planetary data are archived and available to the scientific community.

- PDS is a distributed system designed to optimize scientific oversight in the archiving process.

- The PDS has been in existence in its present form for 10 years.

PDS Services

- PDS establishes and maintains standards for high quality data archives.
- PDS works with missions to create complete data sets.
  - PDS develops and maintains a suite of tools to help data producers create and validate archive-quality data products.
  - PDS personnel can be funded by the mission to perform mission archiving tasks.
- PDS provides expert assistance to the scientists who use the archives.
- PDS ensures the viability of planetary data that might otherwise be lost.

PDS Science Support

Small Bodies Node

- **Special data collections gathered and maintained in support of the Near Earth Asteroid Rendezvous (NEAR)**

PPI Node

- **Galileo energetic particle data used in support of Europa mission design and radiation modeling**

Atmospheres Node

- **Correlation found between convective clouds and a water ice spectral feature in Jupiter's atmosphere using Galileo NIMS and Voyager IRIS data**

Geosciences Node

- **On-line access to MGS MOC, MOLA, and TES data supports 6 oral sessions with approximately 36 presenters from R&A Program at LPSC**

Small Bodies - *NEAR was the first Discovery Program spacecraft to be launched and is the first spacecraft to orbit an asteroid.*
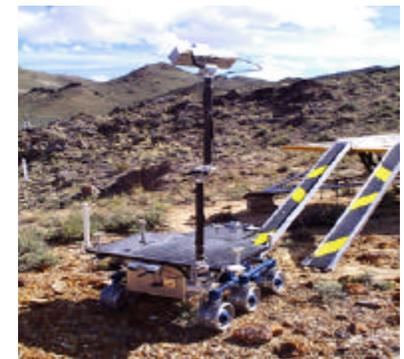
Geosciences - *"FIDO" (Field Integrated Design & Operations) rover, a concept vehicle for the Mars Sample Return missions.*

PDS Science Support

Imaging Node

- **Clementine UVVIS multi-spectral products used in selection of landing sites and observation sequences for Selene (Japanese) Lunar Lander/Orbiter**

Rings Node

- **Jupiter Viewer - interactive site widely used in planning observations**

NAIF Node

- **Galileo Europa Mission Observations of the Io Plasma Torus - calculations for radial positions and longitudes**


Imaging Node - This true color image of Jupiter, taken by NASA's Cassini spacecraft, is composed of three images taken in the blue, green and red regions of the spectrum. All images were taken from a distance of 77.6 million kilometers (48.2 million miles) on Oct. 8, 2000.
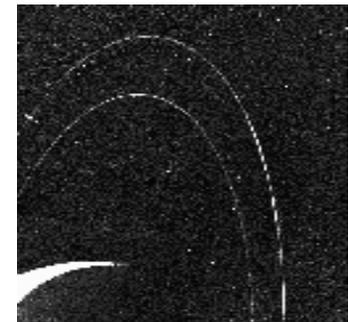
Rings Node - Two of Neptune's narrow rings are visible as arches above the crescent planet. Voyager 2 acquired this image as it encountered Neptune in August of 1989.

Recently Archived PDS Data
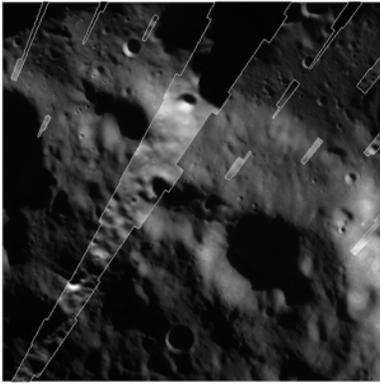
The Clementine High-Resolution Strip Mosaics, produced by Malin Space Science Systems, are organized on a 22 CD-ROM volume set. The image shows a portion of the high-resolution mosaic near the Lunar south pole centered at 87º south latitude, 30º east longitude.
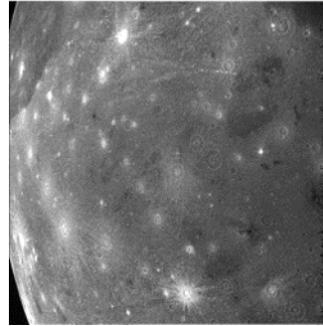
Galileo SSI image of Ganymede, taken while orbiting Callisto (volume GO_0019, "C9" orbit).
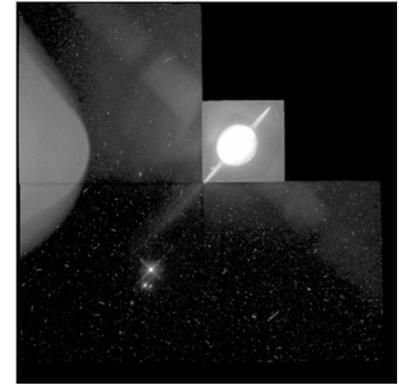
This Hubble image is from the Rings Plane Crossing volume (RPX_0004) showing all four Wide Field Planetary Camera 2 images, properly scaled and rotated into a mosaic.
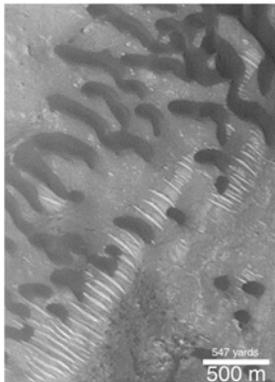
Dark Dunes Over-riding Bright Dunes MGS MOC Release No. MOC2-201, 1/31/2000

MOC Narrow angle image M0202861 of Neith Regio centered at latitude 37.25, longitude 268.24. The recent release of the MGS/MOC image data to the science community offers exciting Mars geologic research opportunities.

For Further Information….

- Log in to *http://pds.jpl.nasa.gov*

- Go to **Data Producer** for on-line standards information, sample archive plans, other help

- Contact PDS for any additional information required

http://pds.jpl.nasa.gov