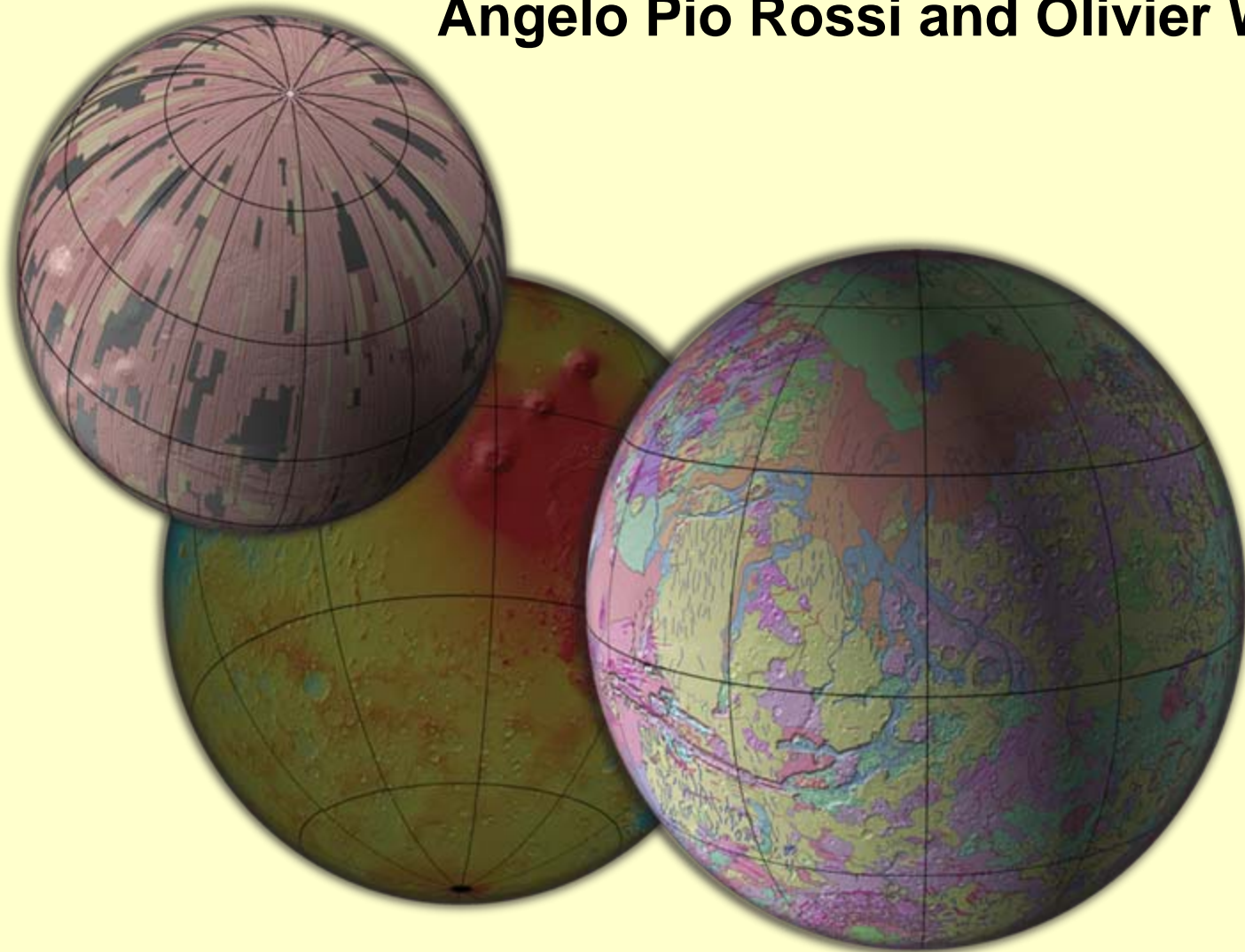


Introduction to PDS and ESA data archives

Angelo Pio Rossi and Olivier Witasse



Content of this presentation

- Introduction to the archives and to the PDS standard
- The ESA Planetary Science Archive
- Tools
- Forums, links etc..
- Data workshops
- A few exemples / demo

Planetary Archives: PDS

PDS: Planetary Data System

- PDS - the organization
 - An organization that archives and distributes all of NASA's planetary mission data (and much other planetary data) according to PDS standards
- PDS - the archiving standard
 - A standard that defines how to label data products in order to make them automatically readable and interpretable and how to document everything for future generations
- PDS - the archive
 - A distributed but centrally searchable archive of all data from NASA's planetary missions

PDS Goals

- Ensure that all data from NASA's planetary missions are archived in a manner that will make them usable far into the future
- Acquire and archive other planetary data relevant to NASA's missions
- Distribute the data to researchers
- Provide appropriate tools for finding the right data
- Work with non-US partners to ensure compatible archiving of all planetary missions

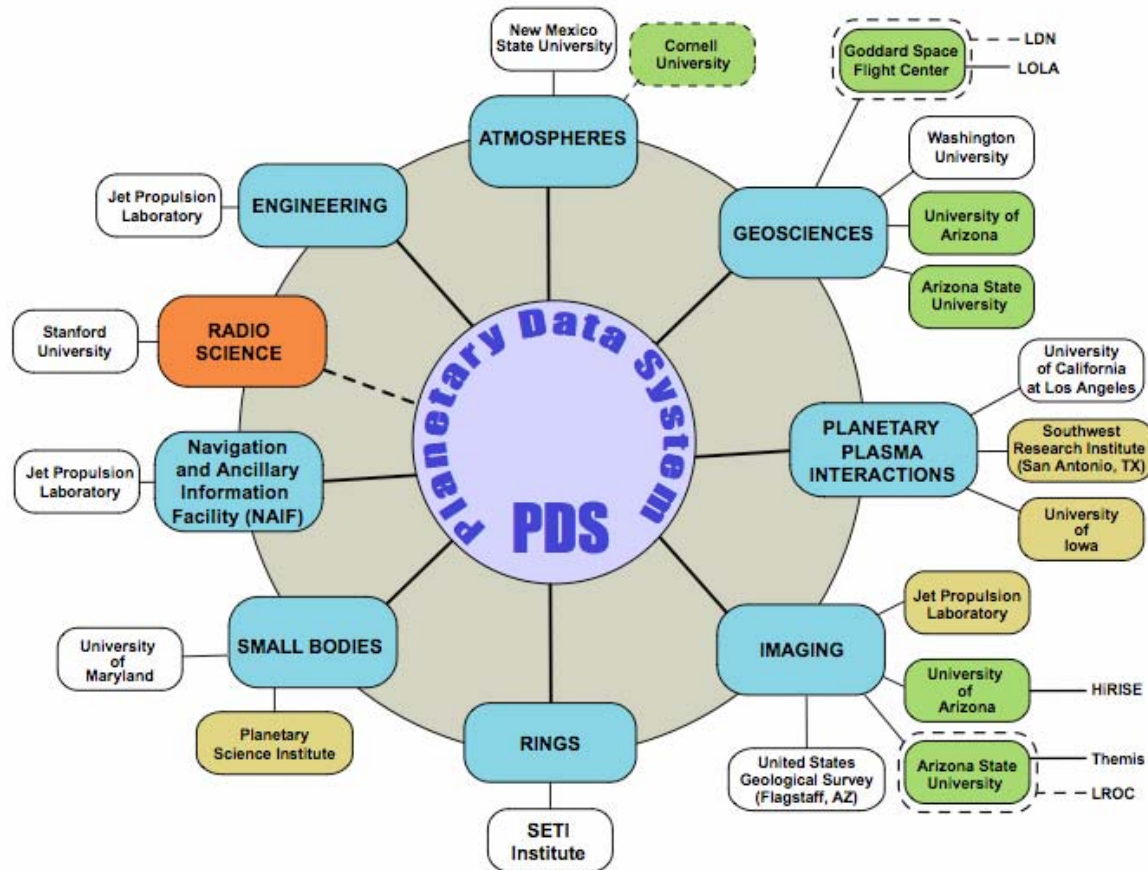
- A wealth of data - waiting to be analyzed!

PDS organization

- ❑ **PDS is a distributed system, with Discipline Nodes headed by various scientific specialists**
 - DN leads selected competitively based on management and on scientific approach to data
 - PDS started as part of the R&A program run by active researchers
- ❑ **PDS has centralized capabilities for searching data at all the nodes and also a central repository for PDS-wide documents, standards, policies, etc.**
 - At the Engineering Node at JPL
- ❑ **Individual scientific discipline nodes provide capabilities that are special to their area as well as archiving all the data relevant to that discipline**

PDS organization

NODES/SUBNODES/DATA NODES Function



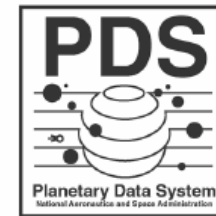
PDS Standard

- ❑ Standards go back to Proto-PDS in late 1980s, prior to the current structure of discipline nodes
- ❑ Standards allow many different types of data
- ❑ Standard evolves to accommodate new needs

JPL D-7669, Part 2

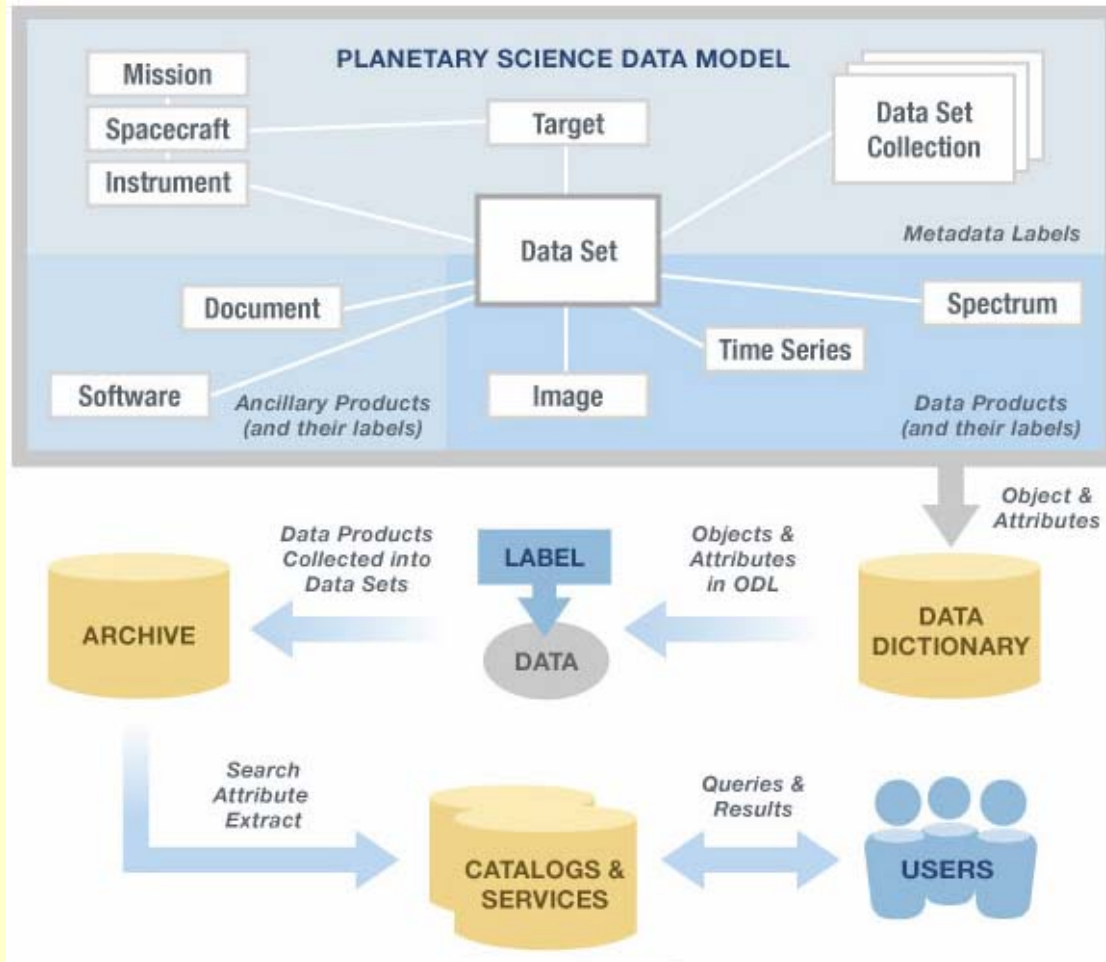
Planetary Data System Standards Reference

August 1, 2003
Version 3.6



Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

PDS Data Model



Processing Levels

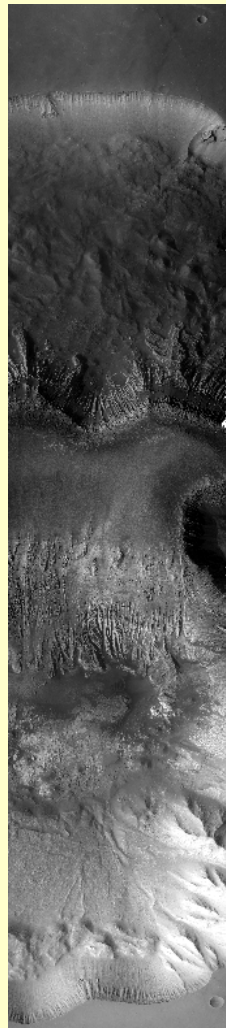
Level	Type	Data Processing Level Description
1	Raw Data	Telemetry data with data embedded.
2	Edited Data	Corrected for telemetry errors and split or decommutated into a data set for a given instrument. Sometimes called Experimental Data Record. Data are also tagged with time and location of acquisition. Corresponds to NASA Level 0 data.
3	Calibrated Data	Edited data that are still in units produced by instrument, but that have been corrected so that values are expressed in or are proportional to some physical unit such as radiance. No resampling, so edited data can be reconstructed. NASA Level 1A.
4	Resampled Data	Data that have been resampled in the time or space domains in such a way that the original edited data cannot be reconstructed. Could be calibrated in addition to being resampled. NASA Level 1B.
5	Derived Data	Derived results, as maps, reports, graphics, etc. NASA Levels 2 through 5.
6	Ancillary Data	Nonscience data needed to generate calibrated or resampled data sets. Consists of instrument gains, offsets, pointing information for scan platforms, etc.
7	Correlative Data	Other science data needed to interpret space-based data sets. May include ground-based data observations such as soil type or ocean buoy measurements of wind drift.
8	User Description	Description of why the data were required, any peculiarities associated with the data sets, and enough documentation to allow secondary user to extract information from the data.

Processing Levels



Raw

Level 0



Radiometrically
corrected

Level 1



Geometrically
corrected

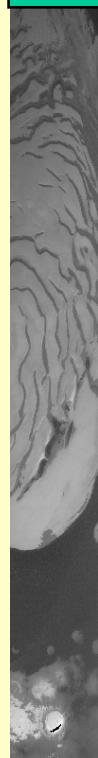
Level 2

! HRSC: Terminology !

label(s)

image →

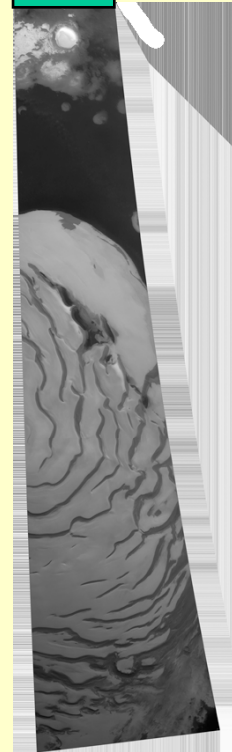
PDS
Vicar



Level 2

Level 1

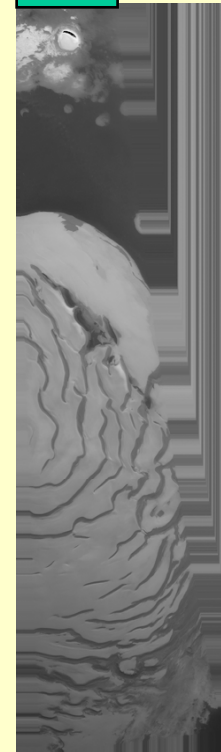
PDS
Vicar



Level 3

Level 2

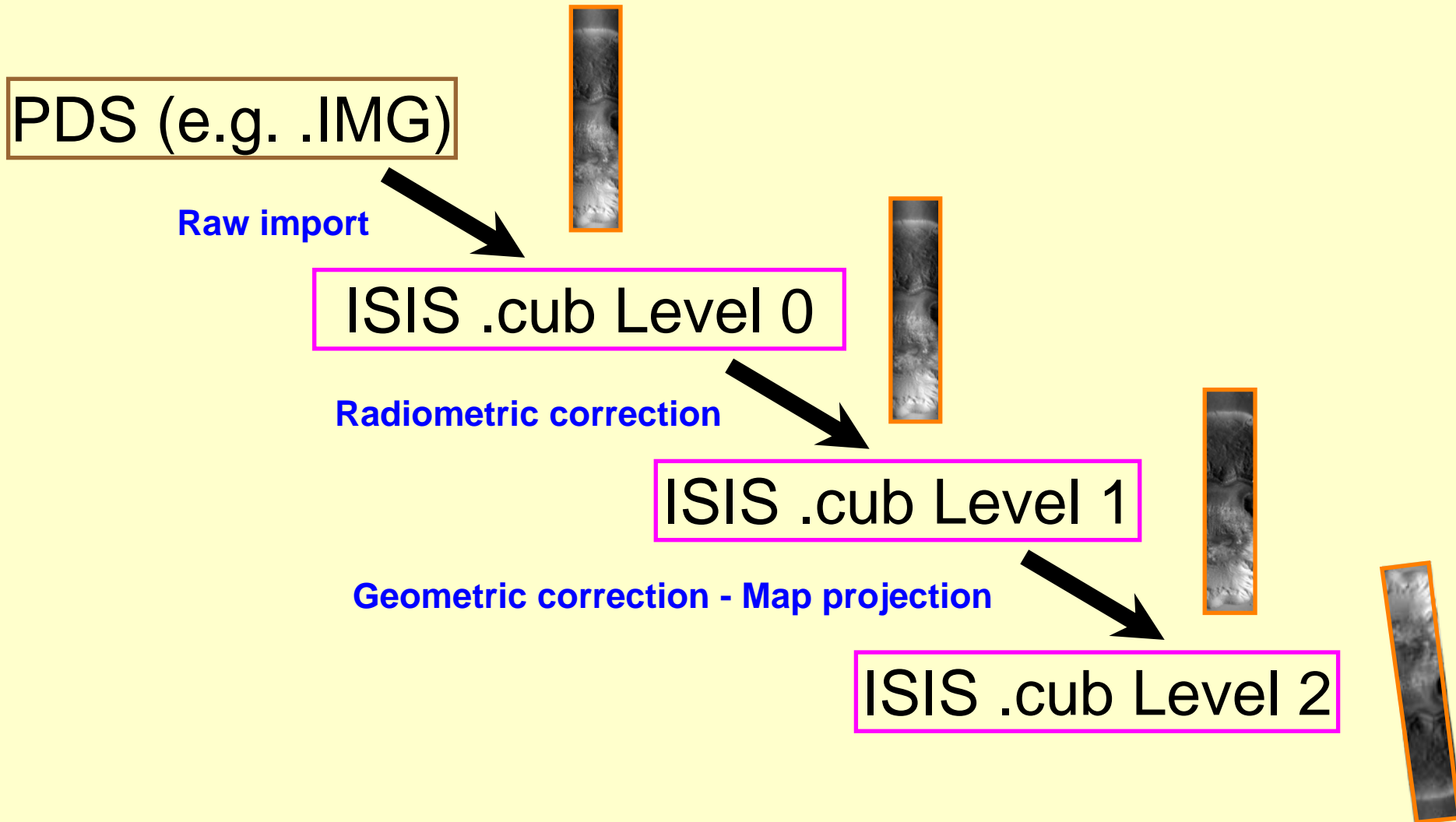
PDS
Vicar



Level 4

processing level →

ISIS Terminology



Data Products

- ❑ **Product = image or spectrum or time series, etc. including label and, e.g., supplementary data**
- ❑ **Labels are like FITS headers**
 - Keyword = value format
- ❑ **Important differences from FITS**
 - Label can be attached to data product or a separate file (FITS headers must be attached)
 - Keywords are ALL defined (FITS defines only a few and allows almost unlimited user-defined keywords)
 - Format of data is not prescribed (FITS requires, e.g., 2880-byte records) but the format must be described in the label
 - There are significant differences among discipline nodes, e.g., in how data are formatted

PDS sample label

```

PDS_VERSION_ID          = PDS3
RECORD_TYPE              = "FIXED_LENGTH"
RECORD_BYTES            = 2880
FILE_RECORDS            = 3298

^HEADER                  = "MV0173728448_9001040_001_R.FIT"
^IMAGE                   = ("MV0173728448_9001040_001_R.FIT", 18)
^EXTENSION_QUALITY_HEADER = ("MV0173728448_9001040_001_R.FIT", 1475)
^EXTENSION_QUALITY_IMAGE = ("MV0173728448_9001040_001_R.FIT", 1476)
^EXTENSION_SNR_HEADER   = ("MV0173728448_9001040_001_R.FIT", 1841)
^EXTENSION_SNR_IMAGE    = ("MV0173728448_9001040_001_R.FIT", 1842)

DATA_SET_ID             = "DIF-C-MRI-3/4-9P-ENCOUNTER-V2.0"
INSTRUMENT_HOST_NAME   = "DEEP IMPACT FLYBY SPACECRAFT"
INSTRUMENT_HOST_ID     = "DIF"
INSTRUMENT_NAME        = "
    DEEP IMPACT MEDIUM RESOLUTION INSTRUMENT - VISIBLE CCD"
INSTRUMENT_ID          = "MRI"

/***** PRODUCT INFORMATION *****/
PRODUCT_ID              = "MV0173728448_9001040_001_R.FIT"
PRODUCT_NAME            = "
    DI FLIGHT DATA, REDUCED MRI, MV0173728448_9001040_001_R.FIT"
PRODUCT_CREATION_TIME  = 2006-11-13T16:50:25
PRODUCT_TYPE           = "RDR"

/***** TIME INFORMATION *****/
START_TIME              = 2005-07-04T05:56:59.927
STOP_TIME               = 2005-07-04T05:57:00.227
DEEPIMPACT:IMAGE_MID_TIME = 2005-07-04T05:57:00.077
START_JULIAN_DATE_VALUE = 2453555.7479159
STOP_JULIAN_DATE_VALUE  = 2453555.7479193
MID_JULIAN_DATE_VALUE   = 2453555.7479176
SPACECRAFT_CLOCK_START_COUNT = "1/0173728448.130"
SPACECRAFT_CLOCK_STOP_COUNT = "1/0173728448.207"
DEEPIMPACT:SPACECRAFT_CLOCK_MID_COUNT = "1/0173728448.169"
DEEPIMPACT:TIME_FROM_IMPACT_VALUE = 745.812 <S>
EARTH_RECEIVED_TIME     = 2005-07-04T06:04:26.236

```

```

/***** OBSERVATION INFORMATION *****/
MISSION_PHASE_NAME      = "9P ENCOUNTER"
DEEPIMPACT:MISSION_ACTIVITY_TYPE = "IMPACT IMAGING"
OBSERVATION_TYPE        = "IMPACT IMAGING"
TARGET_NAME             = "9P/TEMPEL 1 (1867 G1)"
INSTRUMENT_MODE_ID      = 1
DEEPIMPACT:COMPRESSED_IMAGE_VALUE = "DECOMPRESSED"
COMPRESSOR_ID           = 1
OBSERVATION_ID          = 9001040
IMAGE_NUMBER            = 1
DEEPIMPACT:COMMANDED_IMAGE_COUNT = 1
FILTER_NUMBER           = 6
FILTER_NAME             = "CLEAR6"
CENTER_FILTER_WAVELENGTH = 650 <NM>
DEEPIMPACT:MINIMUM_EXPOSURE_DURATION = 3.500 <MS>
DEEPIMPACT:COMMANDED_EXPOSURE_DURATION = 297.000 <MS>
DEEPIMPACT:INTERFRAME_DELAY_DURATION = 0.000 <MS>
DEEPIMPACT:INTEGRATION_DURATION = 300.500 <MS>
INSTRUMENT_TEMPERATURE = ( 293.290 <K>,
    292.812 <K>,
    "UNK",
    292.702 <K>,
    271.414 <K>,
    177.834 <K>,
    155.691 <K>,
    154.224 <K>,
    152.577 <K>,
    147.842 <K>,
    0.000 <K> )
INSTRUMENT_TEMPERATURE_POINT = ( "INSTRUMENT CONTROLLER PROCESSING
    BOARD",
    "CCD SIGNAL PROCESSING BOARD",
    "IR SIGNAL PROCESSING BOARD",
    "LVPS SIGNAL PROCESSING BOARD",
    "CCD PREAMP BOX",
    "CCD ON-CHIP SENSOR",
    "OPTICAL BENCH",
    "PRIMARY MIRROR",

```

PDS sample label

```

SPICE_FILE_NAME = ("NAIFSTARNAMES_2005321_V01.TPC",
                  "IMPACTTOI_0006.TPC",
                  "NAIF0008.TLS",
                  "PCK00008.TPC",
                  "DI_TEMPEL1_V01.TPC",
                  "DIF_SCLKSCET_00015_SCIENCE.TSC",
                  "DII_SCLKSCET_00008_SCIENCE.TSC",
                  "DI_V16.TF",
                  "DIF_HRI_V10.TI",
                  "DIF_MRI_V10.TI",
                  "DII_ITS_V10.TI",
                  "DIF_SC_050112_050809.BC",
                  "DIF_SC_050225_HIGHRATE.BC",
                  "DIF_SC_050704_HIGHRATE.BC",
                  "DII_SC_050112_050703.BC",
                  "DII_SC_050703_050704.BC",
                  "STARS_2005321_V01.BSP",
                  "JUP164_20YEAR.BSP",
                  "DII_PREENC174_NAV_V1.BSP",
                  "DIF_PREENC174_NAV_V1.BSP",
                  "DI_TEMPEL1_SSD_V1.BSP",
                  "DI_FINALENC_NAV_V3_T02006048.BSP")
RIGHT_ASCENSION      = 224.043927540 <DEG>
DECLINATION          = 41.581518858 <DEG>
CELESTIAL_NORTH_CLOCK_ANGLE = 145.4768 <DEG>
SOLAR_NORTH_POLE_CLOCK_ANGLE = 115.8491 <DEG>
QUATERNION           =
(0.907518398910, 0.313026713217, -0.264899587444, -0.0908451485989)
QUATERNION_DESC      = "QUATERNION_DESC.ASC"
DEEPIMPACT:INST_EMEJ2000_VELOCITY_VECTOR =
(-3.310424037940e-006 <RAD/S>,-2.898796555130e-003 <RAD/S>,
-2.273291180330e-003 <RAD/S>)
DEEPIMPACT:TARGET_SC_POSITION_VECTOR =
(631.162 <KM>, 615.444 <KM>, -782.227 <KM>)
DEEPIMPACT:TARGET_SC_VELOCITY_VECTOR =
(-8.6027 <KM/S>,-3.3706 <KM/S>, 4.3114 <KM/S>)
TARGET_CENTER_DISTANCE = 1178.5653 <KM>
SC_SUN_POSITION_VECTOR =

```

```

OBJECT              = HEADER
BYTES               = 48960
HEADER_TYPE         = "FITS"
INTERCHANGE_FORMAT  = "BINARY"
RECORDS             = 17
DESCRIPTION         = "
FITS format defined in NASA/Science Office Standards Technology
100-1.0
"
END_OBJECT          = HEADER

```

```

OBJECT              = IMAGE
LINE_SAMPLES        = 1024
LINES               = 1024
SAMPLE_BITS         = 32
SAMPLE_TYPE         = "IEEE_REAL"
AXIS_ORDER_TYPE     = "FIRST_INDEX_FASTEST"
LINE_DISPLAY_DIRECTION = "UP"
SAMPLE_DISPLAY_DIRECTION = "RIGHT"
UNIT                = "W/[M**2 SR UM]"
MINIMUM             = 1.49198e-001
MAXIMUM             = 2.29177e+000
MEDIAN              = 6.15966e-001
STANDARD_DEVIATION = 4.63193e-001
END_OBJECT          = IMAGE

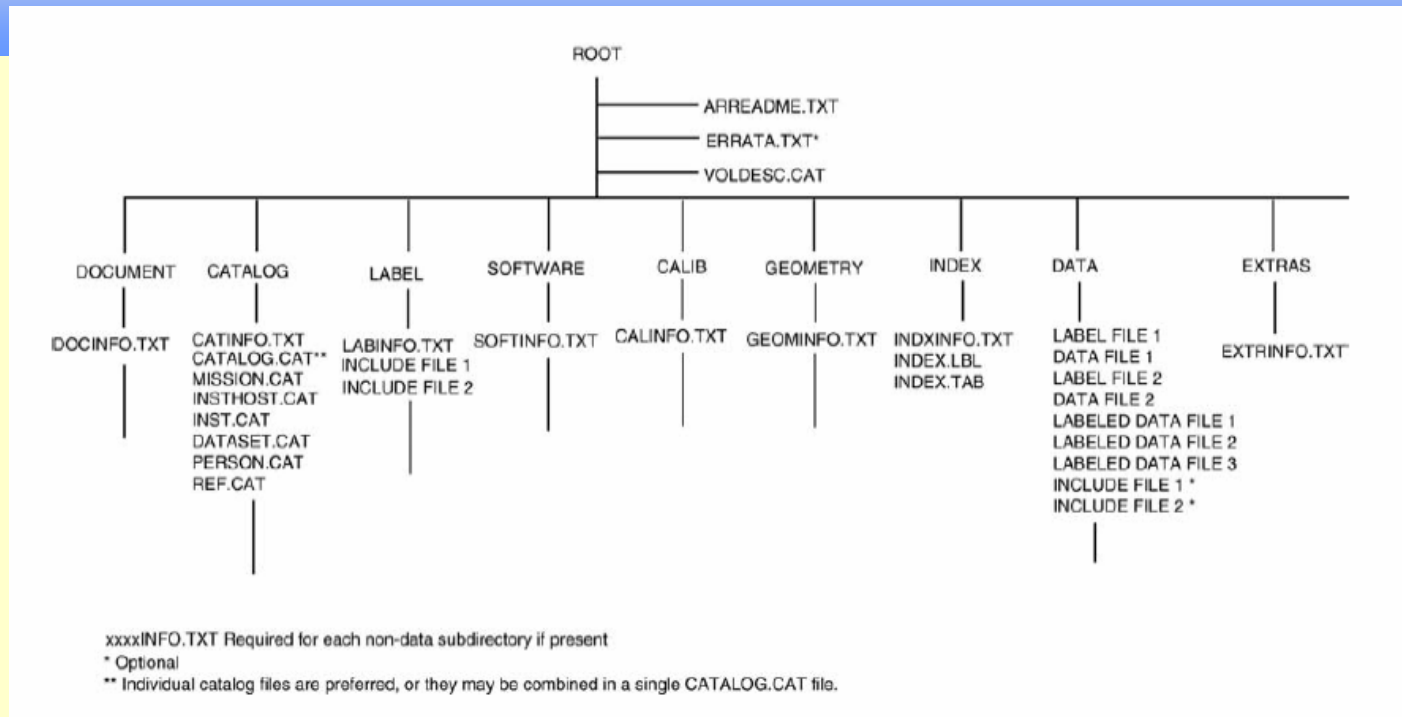
```

```

OBJECT              = EXTENSION_QUALITY_HEADER
BYTES               = 2880
HEADER_TYPE         = "FITS"
INTERCHANGE_FORMAT  = "BINARY"
RECORDS             = 1
DESCRIPTION         = "
This extension contains a quality map for the primary image array.
Each of the one-byte pixels in this map is composed of eight bits.
Each
bit represents a specific characteristic about the corresponding pixel
in the primary image array. For a raw image, only the bit for a

```

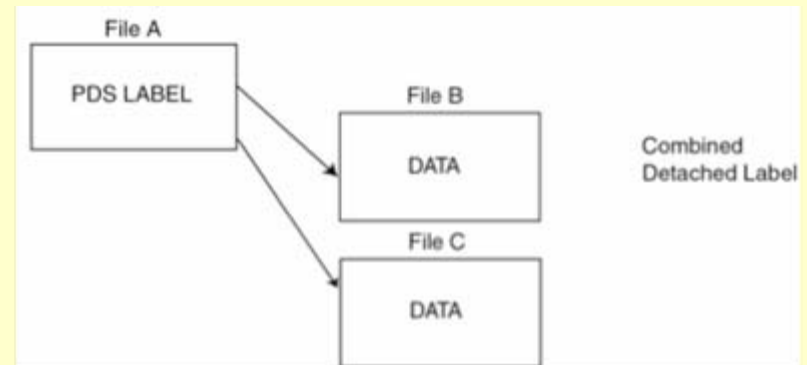
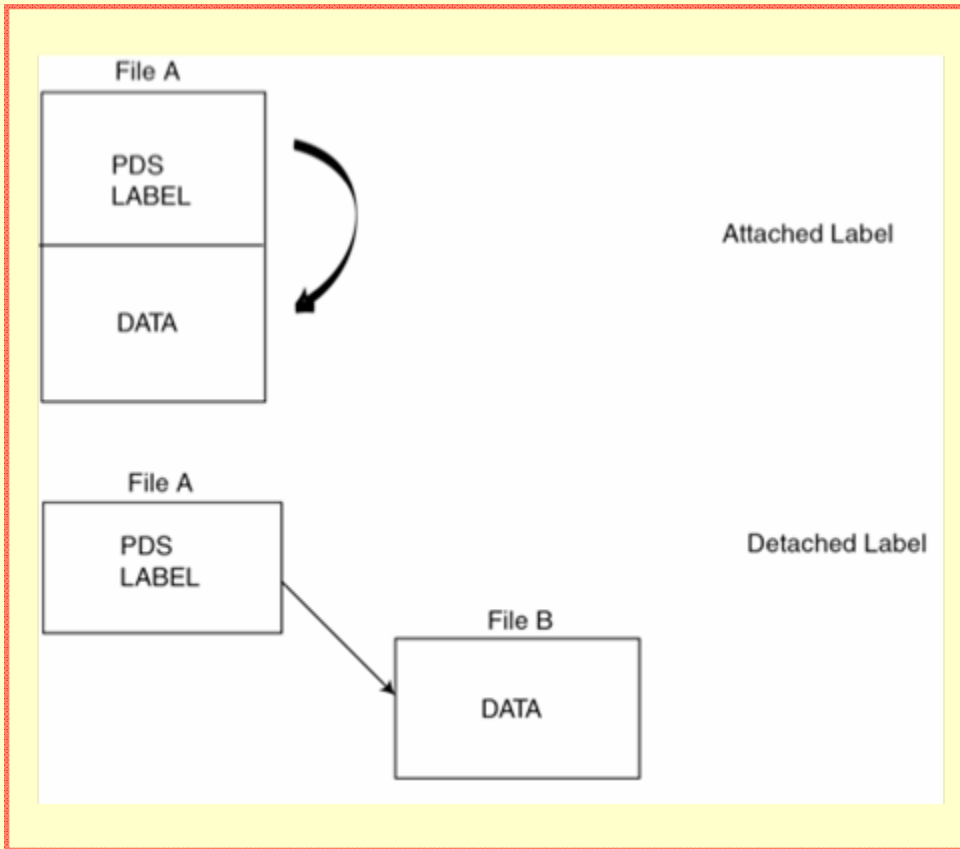

PDS data organization



❑ PDS requires a lot of ancillary information

- Both raw and calibrated (physical units) data are required from NASA missions
- Geometry is required either in the labels or in separate files or in SPICE
- Catalog files are used to load the central search facility
- Documents (including ascii versions) are required to explain enough that any intelligent scientist 20 years from now should be able to recalibrate and use the data (with the help of library references)

Attached & detached labels



Using PDS archives

NATIONAL AERONAUTICS
AND SPACE ADMINISTRATION

+ NASA Homepage
+ NASA en Español
+ Contact NASA

Planetary Data System

Home
Data Services
Tools
Documents
Related Sites
About PDS
Sitemap

PDS Tools

Join the Data Community

Subscription Manager

Data where and when you want it.

PDS Data Search Services

New Users

Can't find what you're looking for?

The Planetary Data System (PDS)

The PDS archives and distributes scientific data from NASA planetary missions, astronomical observations, and laboratory measurements. The PDS is sponsored by NASA's Office of Space Science. Its purpose is to ensure the long-term usability of NASA data and to stimulate advanced research. PDS is continually upgrading and updating its archives, to better serve the needs of its user communities. [Learn more about PDS.](#)

PDS Nodes - The Best of Planetary Data!

The PDS includes seven university/research center science teams, called discipline nodes. These nodes specialize in specific areas of planetary data. The contributions from these nodes provide a data-rich source for scientists, researchers and developers. You can visit them through the links on the PDS Nodes navigation bar, below. You will learn more about the archives of each node, and about the education and public outreach services that these nodes provide.

New

Support for ROSES 2007

New

NEW RELEASES

June 8, 2007: MRO Release 1. Data acquired by the Mars Reconnaissance Orbiter (MRO) science experiments during aerobraking, transition, and typically the first 30 days of mapping (Nov. 8 - Dec. 7, 2006) are now released. [Click here](#) to see data sets included in this release. For more information about MRO, visit the [mission web site](#).

Odyssey Radio Science Data 62 July 17, 2007
Odyssey Data Release 20 July 3, 2007
Tools Package Software 4.6 June 20, 2007

Please go to "[PDS Data Release Summary](#)" for a complete list of releases

begin here...

Data Search

Information for Proposers

How to Search

Planetary Photojournal

Management
Atmospheres
Geosciences
Imaging
NAIF
PPI
Rings
Small Bodies
Engineering

File types

.img

These are PDS binary image files with attached or detached PDS labels. They may be found in the /data directory. They can be displayed using an SBN utility for IDL, [ReadPDS](#).

.jpg

These are lossy compressed image files which may appear in the data/, document/ or calibration (calib/) directory. They will be accompanied by a PDS label and can be opened using most image manipulation software (like XV, Photoshop, etc.) or a browser.

.lbl

The PDS label files describe the contents of each dataset in detail, field-by-field, and are a PDS archive requirement. This includes a physical description of the storage format as well as a logical explanation of the significance or content of each field. Labels accompany most files on the volume and are ASCII text, so they can be read with any standard text editor or browser.

.pdf

These are Adobe Portable Document Format (PDF) files. They may be found in the document/ or calibration (calib/) directory and should have an associated PDS label. They can be opened using [Adobe Acrobat Reader](#).

.pds

The PDS is planning to start archiving spectral cubes. The .pds extension is just a place holder for these spectral cubes. The PDS data cubes will be data files requiring specialized software to display and manipulate. The USGS has developed and made available software for this purpose. [Integrated Software for Imagers and Spectrometers \(ISIS\)](#) combines basic capabilities of image processing, analysis and display of 2- and 3-dimensional data with specialized planetary cartographic functionality.

.png

These are Portable Network Graphics images, a bitmapped image format using lossless compression. They may appear in the document/ or calibration (calib/) directory. They can be opened using most image manipulation software (like XV, Photoshop, etc.) or a browser.

.tab

These are ASCII table files. Table files may be found in most directories. The tables should be accompanied by PDS labels. The tables should be displayable in a standard text editor or browser.

.tar

These files are tape archive format files, which are used to simplify storage and downloads of large data sets. They preserve the directory structure of the data set volume. Data reviewers and archive users may encounter .tar files when downloading an entire data directory or a large set of documentation. Tar files can be opened by using [GNU Tar software](#), [WinZip](#) or a similar program.

.tif

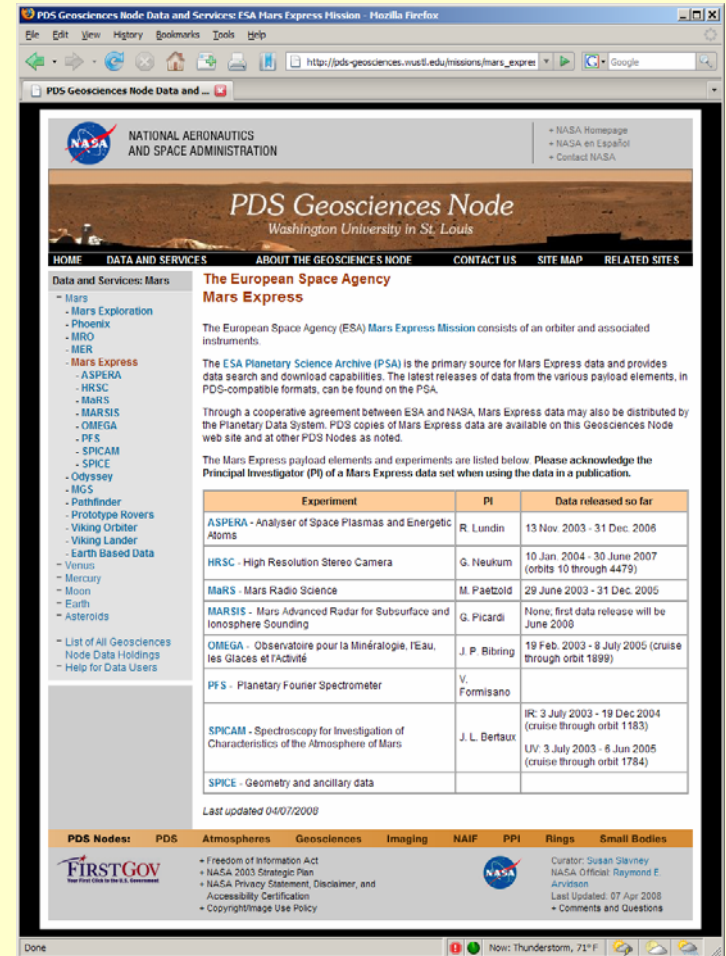
Tagged Image File Format files are image files that may appear in the document/ or calibration (calib/) directory. They can be opened using most image manipulation software (like XV, Photoshop, etc.) or a browser.

.txt

These text files are flat ASCII files, but usually denote documentation files which either a) have no accompanying PDS label; or b) have a minimal PDS label attached to the top of the file. They provide additional information to explain archive directories and contents. They can be read with any standard text editor or a browser.

PDS Geosciences Node

- **How to access the PDS copy of Mars Express data?**
 - Mars Express data are available from Geosciences Node via:
 - FTP
 - HTTP download
 - Search interface – Orbital Data Explorer (ODE)
 - See URL above for the main PDS Mars Express page from the Geosciences Node.
 - There is a page for each MEX instrument with more detailed information about data from that instrument.
 - The main Geosciences Node web page (<http://pds-geosciences.wustl.edu/>) has a “What’s New” section to announce recent additions.
 - Geosciences Node pages note that the PSA is the primary source for Mars Express data.



The screenshot shows a web browser window displaying the PDS Geosciences Node website for Mars Express data. The page features the NASA logo and the title "PDS Geosciences Node" with the subtitle "Washington University in St. Louis". The main content area is titled "The European Space Agency Mars Express" and provides information about the mission and data availability. A table lists various experiments and their data release dates.

Experiment	PI	Data released so far
ASPERA - Analyser of Space Plasmas and Energetic Atoms	R. Lundin	13 Nov. 2003 - 31 Dec. 2006
HRSC - High Resolution Stereo Camera	G. Neukum	10 Jan. 2004 - 30 June 2007 (orbits 10 through 4479)
MaRS - Mars Radio Science	M. Paetzold	29 June 2003 - 31 Dec. 2005
MARSIS - Mars Advanced Radar for Subsurface and Ionosphere Sounding	G. Picardi	None, first data release will be June 2008
OMEGA - Observatoire pour la Minéralogie, l'Eau, les Glaces et l'Activité	J. P. Bibring	19 Feb. 2003 - 8 July 2005 (cruise through orbit 1899)
PFS - Planetary Fourier Spectrometer	V. Formisano	IR: 3 July 2003 - 19 Dec 2004 (cruise through orbit 1183) UV: 3 July 2003 - 6 Jun 2005 (cruise through orbit 1784)
SPICAM - Spectroscopy for Investigation of Characteristics of the Atmosphere of Mars	J. L. Bertaux	
SPICE - Geometry and ancillary data		

The page also includes a navigation menu with links for HOME, DATA AND SERVICES, ABOUT THE GEOSCIENCES NODE, CONTACT US, SITE MAP, and RELATED SITES. A sidebar on the left lists various Mars and planetary data holdings. The footer contains information about the PDS Nodes, including Atmospheres, Geosciences, Imaging, NAIF, PPI, Rings, and Small Bodies, along with contact information for the Curator, Susan Slavney.

Orbital Data Explorer

- For users that need to locate specific subsets of data, the Geosciences Node has developed a web-based tool for Mars orbital data – known as the Orbital Data Explorer (ODE).
- Originally developed to support access to MRO data archives (CRISM, HiRISE, and SHARAD).
- It has been expanded to include Mars Express OMEGA and HRSC data.
- Provides a tool to search for data by area on Mars or data acquisition time for multiple instruments on multiple spacecraft.
- Users can browse through and download selected data.
- ODE will soon be further expanded to include MGS MOLA and Odyssey GRS data sets.
- <http://ode.rsl.wustl.edu/mars/>

ODE Search Forms

Mars - Orbital Data Explorer Version 2.1.3 - Web 1 - Mozilla Firefox

http://ode.rsl.wustl.edu/mars/indexProductSearch.aspx

Mars Orbital Data Explorer

PDS Geosciences Node
Washington University in St. Louis

Home Data Product Search Data Set Explorer MRO Coordinated Obs Download Help & Resources

Planetary science data stored in PDS is organized by [data products](#) and [data sets](#). A data set is a collection of related data products, usually products acquired by a particular instrument and processed in a certain way. The data set also includes all documentation and supporting materials needed to understand and use the data products. A data product is a set of measurements resulting from a science observation, usually products acquired by a particular instrument and processed in a certain way.

STEP 1. SELECT DATA SETS TO SEARCH (A SELECTION IS REQUIRED)

Select One or More Desired Data Sets (Hide Options - 0 Parameters Set)

Mars Reconnaissance Orbiter

CRISM - Compact Reconnaissance Imaging Spectrometer for Mars **Other Product Types** [CRISM Product Primer](#)

TRDR & DDR - Targeted Reduced Data Record & associated Derived Data Record

- Targeted TRDRs & DDRs (FRT, HRL, HRS) [Data Set Description](#)
- Targeted TRDRs & DDRs (FRT, HRL, HRS), center swath only [Data Set Description](#)
- Multispectral TRDRs & DDRs (MSP, MSW) [Data Set Description](#)
- EPF TRDRs & DDRs [Data Set Description](#)
- All TRDRs & DDRs [Data Set Description](#)
- MRDR - Multispectral Reduced Data Record [Data Set Description](#)

CTX - Context Camera

EDR - Experimental Data Record [Data Set Description](#)

HIRISE - High-Resolution Imaging Science Experiment

Other Product Types [RDR - Reduced Data Record - Combined and Processed Images](#) [Data Set Description](#)

[RDRV11 - RDR with Embedded Map Projection](#) [Data Set Description](#)

RSS - Radio Science Subsystem

EDR - Experimental Data Record [Data Set Description](#)

SHARAD - Shallow Radar

Other Product Types [RDR - Reduced Data Record](#) [Data Set Description](#)

Mars Express

HRSC - High Resolution Stereo Camera

- [RDR - Reduced Data Record](#) [Data Set Description](#)
- [REFDR - Map Projected Reduced Data Record](#) [Data Set Description](#)
- [REFDR_DTM - Map Projected DTM Reduced Data Record](#) [Data Set Description](#)

OMEGA - Observatoire Mineralogie, Eau, Glaces, Activite

- [EDR - Experiment Data Record](#) [Data Set Description](#)

STEP 2. SET ADDITIONAL FILTERING PARAMETERS (OPTIONAL)

Mars - Orbital Data Explorer Version 2.1.3 - Web 1 - Mozilla Firefox

http://ode.rsl.wustl.edu/mars/indexProductSearch.aspx

Mars Orbital Data Explorer

PDS Geosciences Node
Washington University in St. Louis

Home Data Product Search Data Set Explorer MRO Coordinated Obs Download Help & Resources

DATA PRODUCT SEARCH

Reset Form

Planetary science data stored in PDS is organized by [data products](#) and [data sets](#). A data set is a collection of related data products, usually products acquired by a particular instrument and processed in a certain way. The data set also includes all documentation and supporting materials needed to understand and use the data products. A data product is a set of measurements resulting from a science observation, usually products acquired by a particular instrument and processed in a certain way.

STEP 1. SELECT DATA SETS TO SEARCH (A SELECTION IS REQUIRED)

Select One or More Desired Data Sets (Show Options - 0 Parameters Set)

STEP 2. SET ADDITIONAL FILTERING PARAMETERS (OPTIONAL)

Select a Product ID or filter by a partial Product ID (Show Options - 0 Parameters Set)

Find by Product Center Latitude / Longitude (Hide Options - 4 Parameters Set)

ODE uses [areocentric](#) coordinates that are based on the product's center latitude and longitude.

Selected Search Area

Max Latitude (-90 to 90)

Western most Longitude (0 to 360)

Eastern most Longitude (0 to 360)

Min Latitude (-90 to 90)

Filter by Time Range (Show Options - 0 Parameters Set)

STEP 3. SUBMIT QUERY

A selection must be made in Step 1 to submit a query.

Display Product Thumbnails on search results page

ODE browse results

Mars - Orbital Data Explorer Version 2.1.3 - Web 1 - Mozilla Firefox

http://ode.rsl.wustl.edu/mars/indexProductSearch.aspx

Mars Orbital Data Explorer
PDS Geosciences Node
Washington University in St. Louis

Home | Data Product Search | **Data Set Explorer** | MRO Coordinated Obs | Download | Help & Resources

Instrument	Product Type	Product Name	Time	Check
MEX HRSC	REFDR	H2249_0001_RE3.IMG	2005-10-14T11:24:29.646	<input type="checkbox"/>
MEX HRSC	REFDR	H2271_0000_ND3.IMG	2005-10-20T15:13:30.398	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0000_ND3.IMG	2007-04-03T22:35:30.678	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0001_SR3.IMG	2007-04-03T22:35:27.62	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0002_SR3.IMG	2007-04-03T22:35:28.165	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0003_SR3.IMG	2007-04-03T22:35:28.71	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0004_SR3.IMG	2007-04-03T22:35:29.255	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0005_SR3.IMG	2007-04-03T22:35:29.8	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0006_SR3.IMG	2007-04-03T22:35:30.345	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0007_SR3.IMG	2007-04-03T22:35:30.89	<input type="checkbox"/>
MEX HRSC	REFDR	H4165_0008_SR3.IMG	2007-04-03T22:35:31.435	<input type="checkbox"/>
MEX HRSC	REFDR	H4187_0001_ND3.IMG	2007-04-10T02:27:09.308	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0072_1_DATA	2004-02-01T22:12:51.06	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0072_1_GEOM	2004-02-01T22:12:51.06	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0954_6_DATA	2004-10-16T21:12:56.532	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0954_6_GEOM	2004-10-16T21:12:56.532	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0965_6_DATA	2004-10-19T23:07:41.032	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0965_6_GEOM	2004-10-19T23:07:41.032	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0976_6_DATA	2004-10-23T01:02:24.531	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0976_6_GEOM	2004-10-23T01:02:24.531	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0987_5_DATA	2004-10-26T02:56:44.059	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0987_5_GEOM	2004-10-26T02:56:44.059	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0998_6_DATA	2004-10-29T04:51:58.546	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0998_6_GEOM	2004-10-29T04:51:58.546	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1291_3_DATA	2005-01-19T05:53:41.515	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1291_3_GEOM	2005-01-19T05:53:41.515	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1313_2_DATA	2005-01-25T09:44:59.032	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1313_2_GEOM	2005-01-25T09:44:59.032	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1879_5_DATA	2005-07-02T21:08:06.551	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1879_5_GEOM	2005-07-02T21:08:06.551	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1890_5_DATA	2005-07-05T23:04:25.038	<input type="checkbox"/>
MEX OMEGA	EDR	ORB1890_5_GEOM	2005-07-05T23:04:25.038	<input type="checkbox"/>

H0335_0000_ND3.IMG

[More About this Product Type \(help page\)](#)
[Data Product Software Interface Specification \(PDF\)](#)
[Archive Software Interface Specification Document \(PDF\)](#)

Browse | Meta Data | Label

Browse Image - the image below is not the actual data product

Add Product to Cart | Remove Product from Cart

Individual Files of the Product	KB
dsmap.cat	13
h0335_0000_nd3.img	364,448
h0335_0000_nd3.jpg	2,385
h0335_0000_nd3.lbl	2
mex_orientation_desc.txt	1
mex_pointing_desc.txt	2
vicar2.txt	2

Product Summary

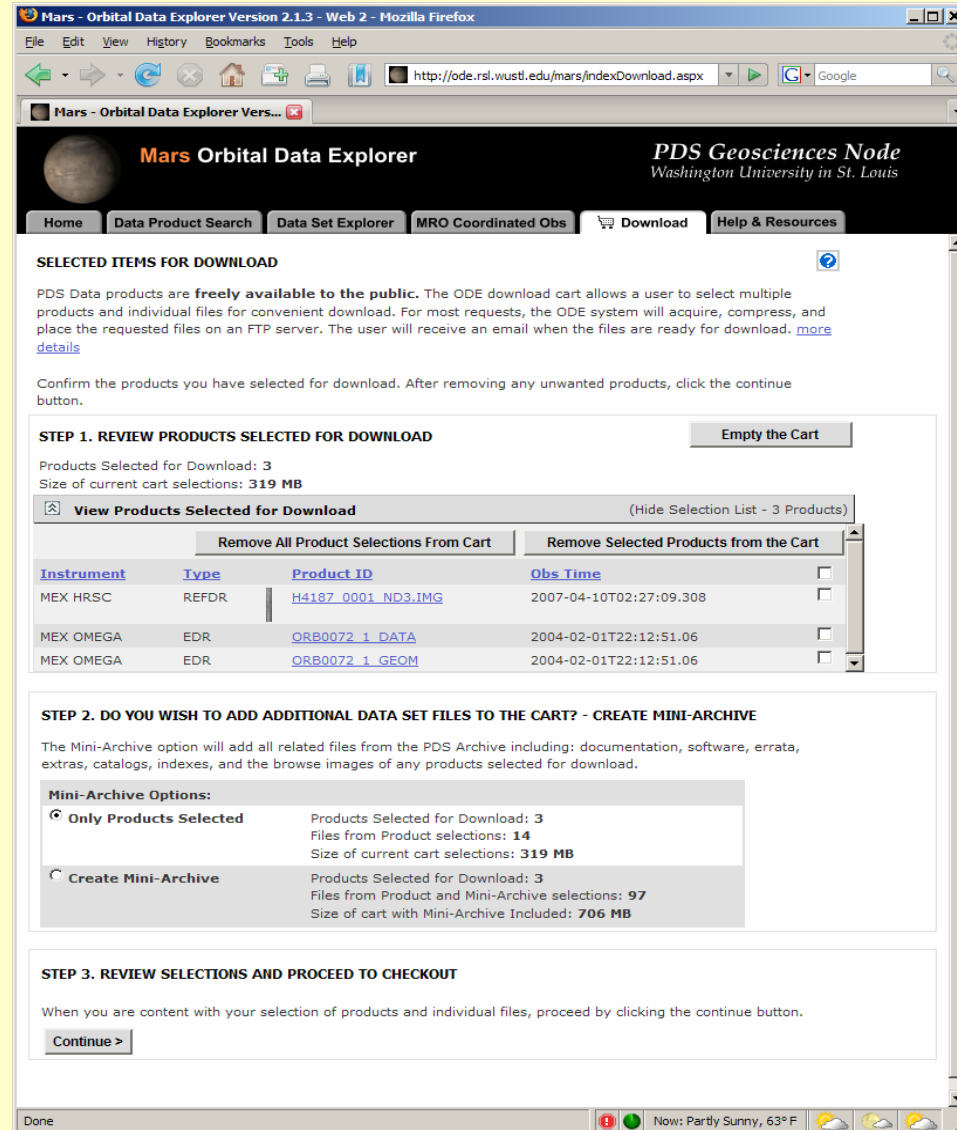
Instrument Host ID	MEX
Instrument ID	HRSC
Product Type	REFDR

Read ode.rsl.wustl.edu

Now: Thunderstorm, 71°F

ODE data download

- Individual files can be downloaded from the 'Browse' or 'Data Set Explorer' pages.
- Products can also be added to a cart for downloading.
- Through the cart method, users can select to download
 - Only data products
 - Products and all supporting information (documentation, software, etc.)
- Cart selections are packaged into zip or tar files and downloaded by ftp.



Mars - Orbital Data Explorer Version 2.1.3 - Web 2 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ode.rsi.wustl.edu/mars/indexDownload.aspx

Mars - Orbital Data Explorer Vers...

Mars Orbital Data Explorer PDS Geosciences Node
Washington University in St. Louis

Home Data Product Search Data Set Explorer MRO Coordinated Obs Download Help & Resources

SELECTED ITEMS FOR DOWNLOAD

PDS Data products are **freely available to the public**. The ODE download cart allows a user to select multiple products and individual files for convenient download. For most requests, the ODE system will acquire, compress, and place the requested files on an FTP server. The user will receive an email when the files are ready for download. [more details](#)

Confirm the products you have selected for download. After removing any unwanted products, click the continue button.

STEP 1. REVIEW PRODUCTS SELECTED FOR DOWNLOAD Empty the Cart

Products Selected for Download: 3
Size of current cart selections: 319 MB

View Products Selected for Download (Hide Selection List - 3 Products)

Remove All Product Selections From Cart Remove Selected Products from the Cart

Instrument	Type	Product ID	Obs Time	
MEX HRSC	REFDR	H4187_0001_ND3_IMG	2007-04-10T02:27:09.308	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0072_1_DATA	2004-02-01T22:12:51.06	<input type="checkbox"/>
MEX OMEGA	EDR	ORB0072_1_GEOM	2004-02-01T22:12:51.06	<input type="checkbox"/>

STEP 2. DO YOU WISH TO ADD ADDITIONAL DATA SET FILES TO THE CART? - CREATE MINI-ARCHIVE

The Mini-Archive option will add all related files from the PDS Archive including: documentation, software, errata, extras, catalogs, indexes, and the browse images of any products selected for download.

Mini-Archive Options:

Only Products Selected Products Selected for Download: 3
Files from Product selections: 14
Size of current cart selections: 319 MB

Create Mini-Archive Products Selected for Download: 3
Files from Product and Mini-Archive selections: 97
Size of cart with Mini-Archive Included: 706 MB

STEP 3. REVIEW SELECTIONS AND PROCEED TO CHECKOUT

When you are content with your selection of products and individual files, proceed by clicking the continue button.

Continue >

Done Now: Partly Sunny, 63° F

Pilot

Unified Planetary Coordinates (UPC) Database

- Provides improved metadata for planetary images
- Reads position & pointing from PDS labels
- Converts to unified coordinates
- Calculates 'improved' pointing & location data
- Can be used by other delivery services
- Requires camera model in ISIS3
- Primarily supports images used in cartography and geologic mapping
- Mars: Vik.Or., MOC, CTX, HiRISE, TH IR
- Moon: Clementine UVVIS & NIR

Planetary Image Locator Tool (PILOT)

- Map interface for UPC footprints (visual check on what UPC is calculating)
- Improved data identification because of increased accuracy of geometric information
- Standardizes map coordinates and projection for all included datasets (no need to know 'native' systems)
- Built-in updating possible, benefits from improvements in image pointing, etc. that result from cartographic processing
- Provides POC for obtaining UPC database



Planetary Archives: PSA

PSA Definition and Purpose

The *Planetary Science Archive (PSA)* is the initiative, the setup, the process and the implementation to preserve data from ESA's spacecraft to planetary bodies, as well as supplementary information acquired in laboratories or ground-based observatories.

The prime objectives of the PSA are:

- to support the experimenter teams in the preparation for the spacecraft and ground-based long-term archives
- to enable and ensure the (long-term) preservation of these archives
- distribution of scientific useful data to the world wide scientific community
- provision of supplementary data services aiming to maximize the usage of planetary mission data and ease the scientific data analysis.

The PSA will be advised by a PSA Scientific Advisory Group that meets at least yearly.

Planetary Science Archive

Users Quick Guide

Classical User Interface

By J. Zender and D. J. Heather
9 June 2008, Version 2.1

Step 1

- a) Open the PSA www home page at <http://www.rssd.esa.int/psa>
- b) Select "Classical User Interface" on your left or in the yellow box



Step 2

- a) You must click 'Trust' to accept the certificate and run the PSA applet.

Step 3

The "PSA Browser Start Page" will appear on your screen and will automatically start to load

**Welcome to the
Planetary Science Archive**

... data access via ...

Dataset Browser Interface	Classical User Interface	Map-based Interface
User Guide	User Guide	User Guide
Notification Management User Guide		

PSA version 2.9.9

Announcements		History (2004, 2005)	
June 2008	Release of PSA 2.9.9	6 June 2008	Planetary Science Archive 2.9.9 is released today. PSA 2.9.9 contains the first release of calibrated datasets from the MARSIS radar sounder on Mars Express. The following data is now available: <ul style="list-style-type: none"> ● MEX-M-MARSIS-2-EDR-V1.0 containing raw data from the MARSIS instrument ● MEX-M-MARSIS-3-RDR-SS-V1.0 containing calibrated Subsurface Sounding data ● MEX-M-MARSIS-3-RDR-AIS-V1.0 containing calibrated Active Ionosphere Sounding data
Apr 4 2008	First Venus Express Data Release	05 Feb 2008	HRSC on Mars Express, MEX-M-HRSC-5-REFDR-MAPPROJECTED-V2.0 and MEX-M-HRSC-3-RDR-V2.0 data released up to June 2007 (orbit 4479).
early 2008	Pending Data Reviews:	05 Feb 2008	Mars Express, ingestion and release of first HRSC Digital Terrain Model data MEX-M-HRSC-5-REFDR-DTM-V1.0, containing data up to Orbit 0569 (June 2004). A basic user guide document is available for use of these new data. Further DTMs will be delivered to the PSA periodically for long-term archiving. More recent DTMs can currently be viewed alongside other HRSC data from the HRSCView page maintained by the Freie Universitaet, Berlin.
	- Rosetta -- MIDAS -- MIRO -- SPICE	05 Feb 2008	Mars Express, ingestion and release of MEX-M-ASPERA3-2_3-EDR_RDR-NPI-V1.0, containing data for the entire nominal mission, and MEX-M-ASPERA3-2_3-EDR_RDR-NPI-EXT1-V1.0 containing data from January 2006 to December 2006.
	- Mars Express -- ASPERA ELS -- ASPERA IMA -- MARSIS AIS -- MARSIS	27 Nov 2007	Mars Express, ingestion of 114 Radio Science data sets: MEX-M-MRS-1-2-3-PRM-0361-V1.0 and MEX-M-MRS-1-2-3-PRM-OXXX-V1.0: 0362, 0364, 0365, 0387, 0404, 0411, 0414, 0417, 0425, 0434, 0435, 0436, 0439, 0442, 0444, 0448, 0450, 0451, 0452, 0456, 0468, 0469, 0470, 0474, 0475, 0478, 0479, 0481, 0482, 0484

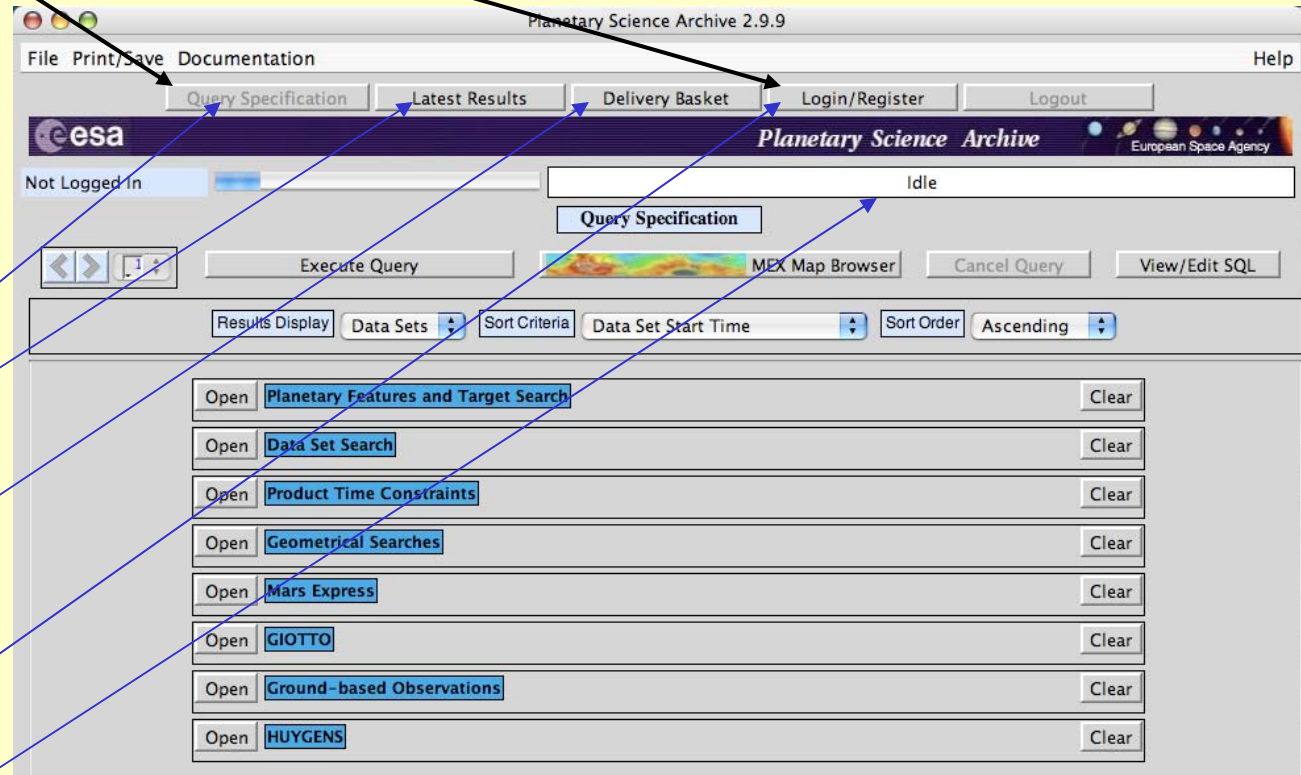
Login/Registering

Step 4

- Select the “Login/Register” View and login or request new user id.
- After having logged in, select the “Query Specification” View

The Planetary Science Archive (PSA) is structured in 5 different ‘views’,

- The “Query Specification” view, that allows you to define your query against the database
- The “Latest Result” view, that allows you to view the result of your previous query.
- The “Delivery Basket” view, that allows you to select your items of interest and order them later (free of charge).
- The “Login/Register”, that you should know by now (if not, please register to have the full functionality of the PSA)
- The “Request Monitor” view to monitor your requests



By clicking/selecting the individual views you can ‘walk around’ in the PSA.

Define Your Query

Step 3

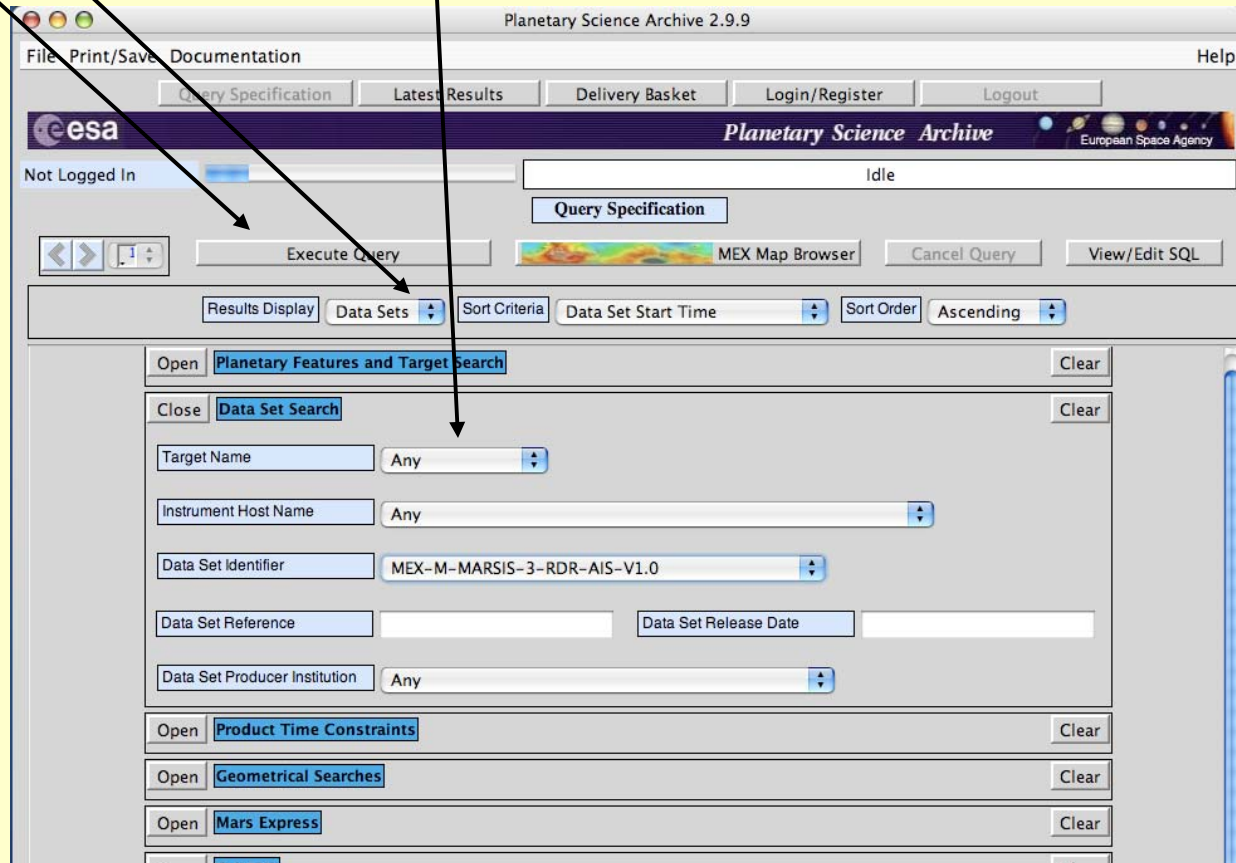
- Open a “Query Panel” and select your search criteria
- Select your “Result Display” view options
- Execute the query

Opening several “Query Panels” will logically-AND the constraints within the individual query panels.

Not opening any “Query Panel” will result in the display of all available datasets

The PSA contains data conform to the Planetary Data System Standard. A ‘Data Product’ is e.g. a PDS-labeled file containing an image. A ‘Data Set’ is a full directory hierarchy containing documentation, catalogues, indexes, data products and any other information.

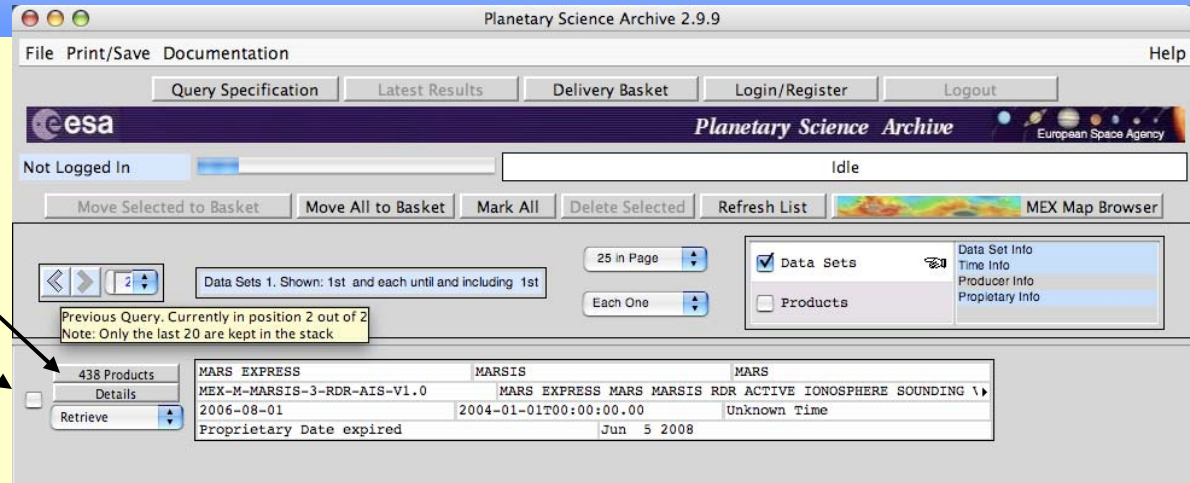
In the “Result Display” view options, you can select to see Data Products, Data Sets or both in the “Result Panel”



Browse your Results and Select

Step 4

- a) If you want individual data products, 'view' the products by clicking on 'xxx Products'
- b) If you want to download the whole data set, 'mark' the dataset as selected and move it to the Delivery Basket

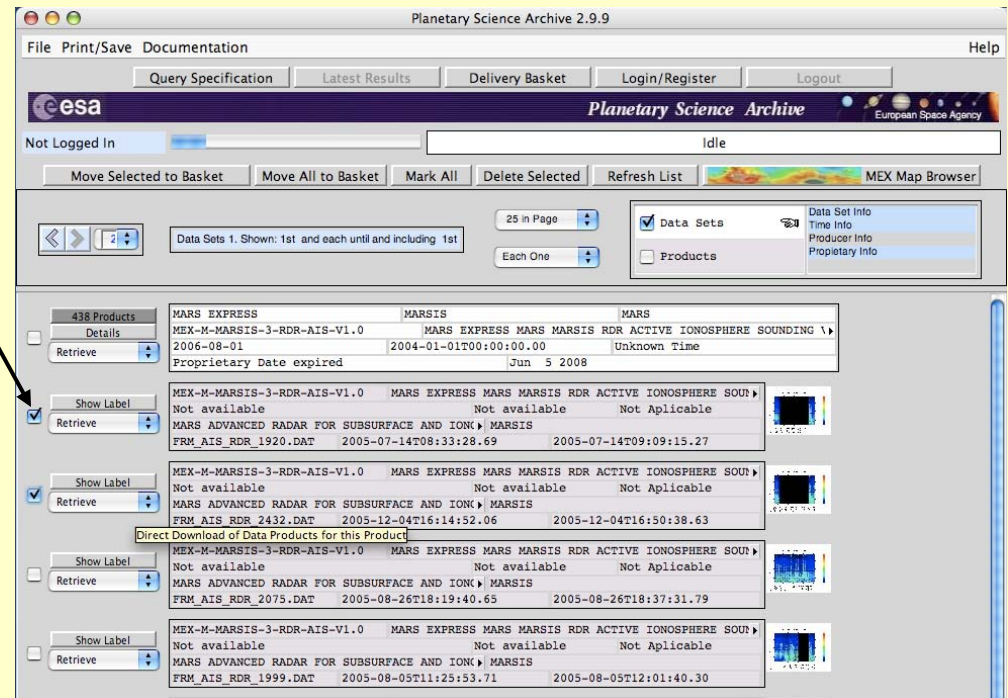
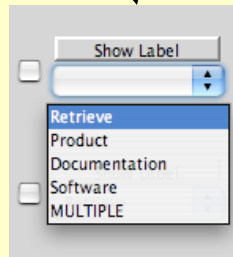


Step 4:

- c) 'mark' the data products that you want to download as selected and move them into the Delivery Basket

Step 4 Alternative:

You can download a Data Products, associated software and documentation directly, using the 'Retrieve' menu on the left side of each Data Product



Order via the Delivery Basket

Step 5:

- 'mark' the Data Product(s) that you want to download and move it to the basket
- You can then open the Delivery Basket window
- When you are happy with your selections, click on 'Submit Request'

Planetary Science Archive 2.9.9

File Print/Save Documentation Help

Query Specification Latest Results Delivery Basket Login/Register Logout

esa Planetary Science Archive European Space Agency

Not Logged In Idle

Move Selected to Basket Move All to Basket Mark All Delete Selected Refresh List MEX Map Browser

25 in Page Each One

Data Sets 1. Shown: 1st and each until and including 1st

438 Products

Details	MARS EXPRESS	MARSIS	MARS
MEX-M-MARSIS-3-RDR-AIS-V1.0	MARS EXPRESS MARS MARSIS RDR ACTIVE IONOSPHERE SOUNDING	2006-08-01	2004-01-01T00:00:00.00
Proprietary Date expired		Jun 5 2008	Unknown Time

Retrieve Show Label

MEX-M-MARSIS-3-RDR-AIS-V1.0	MARS EXPRESS MARS MARSIS RDR ACTIVE IONOSPHERE SOUN	Not available	Not Aplicable
MARS ADVANCED RADAR FOR SUBSURFACE AND IONOSPHERIC DATA	MARSIS		
FRM_AIS_RDR_1920.DAT	2005-07-14T08:33:28.69	2005-07-14T09:09:15.27	

Retrieve Show Label

MEX-M-MARSIS-3-RDR-AIS-V1.0	MARS EXPRESS MARS MARSIS RDR ACTIVE IONOSPHERE SOUN	Not available	Not Aplicable
MARS ADVANCED RADAR FOR SUBSURFACE AND IONOSPHERIC DATA	MARSIS		
FRM_AIS_RDR_2432.DAT	2005-12-04T16:14:52.06	2005-12-04T16:50:38.63	

Planetary Science Archive 2.9.9

File Print/Save Documentation Help

Query Specification Latest Results Delivery Basket Login/Register Logout DHEATHER

esa Planetary Science Archive European Space Agency

User: DHEATHER Idle

Delivery Basket

Next Products PER ITEM Submit Request Delete Selected Mark All Refresh

5 in Page Each One

2 Products. Shown: 1st and each until and including 2nd

Product	MEX-M-MARSIS-3-RDR-AIS-V1.0	MARS EXPRESS MARS MARSIS RDR ACTIVE IONOSPHERE SOUN	Not available	Not Aplicable
	MARS ADVANCED RADAR FOR SUBSURFACE AND IONOSPHERIC DATA	MARSIS		
	FRM_AIS_RDR_1920.DAT	2005-07-14T08:33:28.69	2005-07-14T09:09:15.27	

Product	MEX-M-MARSIS-3-RDR-AIS-V1.0	MARS EXPRESS MARS MARSIS RDR ACTIVE IONOSPHERE SOUN	Not available	Not Aplicable
	MARS ADVANCED RADAR FOR SUBSURFACE AND IONOSPHERIC DATA	MARSIS		
	FRM_AIS_RDR_2432.DAT	2005-12-04T16:14:52.06	2005-12-04T16:50:38.63	

To have a somewhat larger view of the data product, click on the icon and it will be displayed in a separate window.

Downloading / Retrieving the Data

Step 6:

- a) 'select' your data packing option
- b) 'Confirm' and wait for an email that will inform you on the ftp retrieval of the data you have selected

Confirmation of Request Page

Request Summary

UserID	DHEATHER
Number of Items	2 Products
Estimated Total Product Size, Mb	9.54
FTP Download Time	Perform Estimation ----- Not Yet Calculated -----

Tar Option

- compressed tar (one file)
- zip (one file)
- tar (one file)
- no tar (files loose)

Confirm Abort

To: dheather@rssd.esa.int

Dear Planetary Science Archive User,

Your retrieval request has been successfully processed.

Please follow the instructions below to access/browse the ftp area where your data is located:

```
ftp psa.esac.esa.int
anonymous
<your email address as password>
prompt
cd /pub/dheather
binary
dir
```

Alternatively, you can also access your files directly from your browser at:

<ftp://psa.esac.esa.int/pub/dheather/DHEATHER21647.zip>
where you will be able to see some of the products on-line.

Your data will remain at this location for 7 days.

The Planetary Science Archive (PSA) can be accessed at

<http://www.rssd.esa.int/psa>

You can also get more information about the PSA project by accessing the PSA web pages at the same address.

If you have any comments or questions, please contact the PSA HelpDesk at the following email address:

psahelp@rssd.esa.int

Regards,

The PSA Team

Your email confirmation contains all you need to know to download the data within the next week from the PSA server.

Planetary Science Archive

Users Quick Guide

PSA Data Set Browser Interface

By J. Zender and D. J. Heather

09 June 2008, Version 1.1

- Step 1
- Open the PSA www home page at <http://www.rssd.esa.int/psa>
 - Select “Data set Browser Interface” on your left or in the yellow box

Welcome to the Planetary Science Archive

... data access via ...

Dataset Browser Interface	Classical User Interface	Map-based Interface
User Guide	User Guide	User Guide
Notification Management User Guide		

Announcements		History (2004, 2005)	
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April 2008	First Venus Express Data Release	05 Feb 2008	HRSC on Mars Express, MEX-M-HRSC-5-REFDR-MAPPROJECTED-V2.0 and MEX-M-HRSC-3-RDR-V2.0 data released up to June 2007 (orbit 4479).
early 2008	Pending Data Reviews: <ul style="list-style-type: none"> - Rosetta -- MIDAS -- MIRO -- SPICE - Mars Express -- ASPERA ELS -- ASPERA IMA -- MARSIS AIS -- MARSIS 	05 Feb 2008	Mars Express, ingestion and release of first HRSC Digital Terrain Model data MEX-M-HRSC-5-REFDR-DTM-V1.0, containing data up to Orbit 0569 (June 2004). A basic user guide document is available for use of these new data. Further DTMs will be delivered to the PSA periodically for long-term archiving. More recent DTMs can currently be viewed alongside other HRSC data from the HRSCView page maintained by the Freie Universitaet, Berlin.
		05 Feb 2008	Mars Express, ingestion and release of MEX-M-ASPERA3-2_3-EDR_RDR-NPI-V1.0, containing data for the entire nominal mission, and MEX-M-ASPERA3-2_3-EDR_RDR-NPI-EXT1-V1.0 containing data from January 2006 to December 2006.
		27 Nov 2007	Mars Express, ingestion of 114 Radio Science data sets: MEX-M-MRS-1-2-3-PRM-0361-V1.0 and MEX-M-MRS-1-2-3-PRM-0XXX-V1.0: 0362, 0364, 0365, 0387, 0404, 0411, 0414, 0417, 0425, 0434, 0435, 0436, 0439, 0442, 0444, 0448, 0450, 0451, 0452, 0456, 0468, 0469, 0470, 0474, 0475, 0478, 0479, 0481, 0482, 0484

Direct Browsing of Datasets

- From the Dataset Browser entry page, select the instrument of interest.
- Only public datasets are available through this interface! So you will not find
 - Datasets before public release
 - Datasets in Peer Review

Welcome to the

Planetary Science Archive Dataset Browser

The Dataset Browser offers experienced archive users the possibility to access the full dataset information in a quick and straightforward way. The datasets are accessed using the ftp protocol, it must however be noted that the PSA is not based on the typically known ftp servers. This will be transparent to most users. When using this service for batch download or as a mirror functionality, we would appreciate to get a quick note to [our support desk](#), to avoid performance problems that could affect other users. Only public available datasets will be accessible via this service.

You can directly access data from:



- Mars Express ([please read and follow acknowledgement note](#))
 - [ASPERA3](#), Analyser of Space Plasmas and Energetic Atoms (PI: R. Lundin, IRF)
 - [HRSC](#), High/Super Resolution Stereo Camera (PI: G. Neukum, Freie Universitaet Berlin)
 - [MaRS](#), Mars Express Radio Science (PI: M. Paetzold, University of Cologne)
 - [MARSIS](#), Mars Advanced Radar for Subsurface and Ionosphere (PI: G. Picardi, Universita di Roma 'La Sapienza', Rome)
 - [OMEGA](#), Observatoire pour la Minéralogie, l'Eau, les Glaces et l'Activité (PI: J-P. Bibring, IAS Paris)
 - [SPICAM](#), Spectroscopy for Investigation of Characteristics of the Atmosphere of Mars (PI: J-L. Bertaux, Service d'Aeronomie/CNRS)
- Huygens ([please read and follow acknowledgement note](#))
 - [ACP](#), Aerosol Collector and Pyrolyzer (PI: G. Israel, Service d'Aeronomie/CNRS)
 - [DISR](#), Descent Imager Spectral Radiometer (PI: M. Tomasko, University of Arizona)
 - [DTWG](#), Descent Trajectory Working Group
 - [DWE](#), Doppler Wind Experiment (PI: M. Bird, University of Bonn)
 - [GMS](#), Gas Chromatograph Mass Spectrometer (PI: H. Niemann, NASA/GSFC)
 - [HASI](#), Huygens Atmospheric Structure Instrument (PI: M. Fuchignoni, Observatory Paris-Meudon)
 - [Huygens Housekeeping Data](#) (ESOC/ESTEC, O. Witasse)
 - [SSP](#), Surface Science Package (PI: J. Zarnecki, UK Open University)
- Giotto
 - [DID](#), Dust Impact Detector System (PI: J.A.M. McDonnell)
 - [EPA](#), Energetic Particle Analyser
 - [GRE](#), Radio Science Experiment (PI: P. Edenhofer)
 - [HMC](#), Halley Multimetre Camera (PI: U. Keller, MPI Lindau)
 - [IMS](#), Ion Mass Spectrometer (PI: H. Balsiger, University of Bern)

Direct Browsing of Datasets II

> Browse through the dataset in the usual way.

Index of <ftp://psa.esac.esa.int/pub/mirror/MARS-EXPRESS/SPICAM>



















[Up to higher level directory](#)

 MEX-Y-M-SPI-2-UVEDR-RAWXCRUISE-MARS-V1.0	10/17/06 2:22:00 PM
 MEX-Y-M-SPI-2-IREDR-RAWXCRUISE-MARS-V1.0	10/17/06 2:33:00 PM

[Up to higher level directory](#)

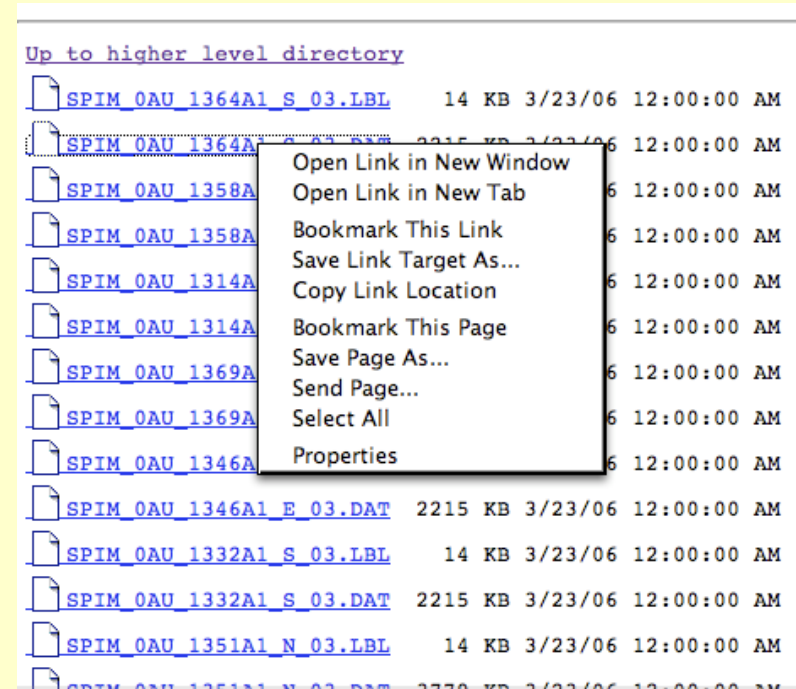
 CATALOG	10/17/06 2:08:00 PM
 DATA	10/17/06 2:12:00 PM
 BROWSE	10/17/06 2:17:00 PM
 CALIB	10/17/06 2:13:00 PM
 DOCUMENT	10/17/06 2:13:00 PM
 GEOMETRY	10/17/06 2:19:00 PM
 LABEL	10/17/06 2:22:00 PM
 INDEX	10/17/06 2:22:00 PM
 VOLDESC.CAT	4 KB 3/22/06 12:00:00 AM
 AAREADME.TXT	31 KB 3/23/06 12:00:00 AM

[Up to higher level directory](#)

 SPIM_0AU_1364A1_S_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1364A1_S_03.DAT	2215 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1358A1_E_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1358A1_E_03.DAT	2215 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1314A1_S_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1314A1_S_03.DAT	2215 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1369A1_E_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1369A1_E_03.DAT	2215 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1346A1_E_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1346A1_E_03.DAT	2215 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1332A1_S_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1332A1_S_03.DAT	2215 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1351A1_N_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1351A1_N_03.DAT	3779 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1379A2_L_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1379A2_L_03.DAT	5020 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1330A1_S_03.LBL	14 KB 3/23/06 12:00:00 AM
 SPIM_0AU_1330A1_S_03.DAT	2215 KB 3/23/06 12:00:00 AM
SPIM_0AU_1382A2_L_03.LBL	14 KB 3/23/06 12:00:00 AM

Data Download

- When using a web browser, please insure to use an appropriate method to download your data,
 - E.g. in MOZILLA the ‘Save Link Target As...’
- Be aware that you download only the file selected, ...
 - Detached label files (e.g. LBL and DAT) need to be both downloaded to get the full data product!
 - Any linked files, .e.g. ^DESCRIPTION = “INSTRUMENT.PDF” will not be attached to the downloaded file!



Accessing the PSA archive with an FTP-client

- **You will be able to connect to the PSA archive with any ftp client, e.g. ncftp, ftp, fuqu, etc**
 - Using <ftp://psa.esac.esa.int/pub/mirror>
 - Or directly the mission related subpage
<ftp://psa.esac.esa.int/pub/mirror/MARS-EXPRESS>

Automatic Download Scripts / Mirror Scripts

- You can use any automatic download script (mirror, etc) to recursively download the data on the PSA.
- Before installing a regular download scheme on your side (mirror, etc), please inform us by sending a short note to psahelp@rssd.esa.int. We will keep an eye on the load of network and server such that other users are not disturbed. In such cases, we will contact you and propose alternative time periods and options to download the data you are interested in.
- Be aware that the files that you see in your www-browser or your ftp-client are not the physical files, but a link into the PSA database system. When downloading data, the PSA server resolves the link on the fly and delivers the data back to you.
- When building mirror scripts, you can compare your data items against size or time with the ones on the PSA server.

Be careful when using automatic downloads, as the size of the datasets can be huge (several 100GBytes or larger)! Please contact the PSA Helpdesk beforehand.

Planetary Science Archive

Users Quick Guide

Map Based User Interface

By J. Zender and D. J. Heather

09 June 2008, Version 1.1

- Step 1
- Open the PSA www home page at <http://www.rssd.esa.int/psa>
 - Select “Map-based User Interface” on your left or in the yellow box

- Step 2
- The “PSA Browser Start Page” will appear on your screen. The applet will initiate automatically.

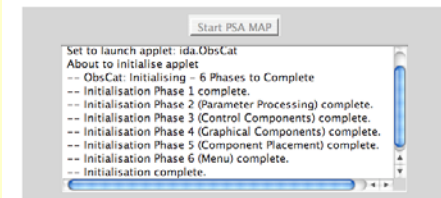
- Data Access
 - Classical User Interface
 - Map-based User Interface
 - Dataset Browser Interface
- Services and Help
 - FAQ
 - PSA Home Page
 - PSA Quick Guide
 - Ancillary Data Support
 - Workshops
- Mission Related
 - Giotto
 - Bepi-Colombo
 - Huygens
 - Venus Express
 - Mars Express
 - Rosetta
- Restricted Items
 - Facilities
 - Document Portal
 - My Portal
- Restricted Access Logon
 - UserID: dtheater
 - Pass: *****
 - Login Reset
- Automated Password Reset
- Restricted Search (Guest)
 - GO
- Advanced Search
- Bookmarks
 - Make this my Home Page

Welcome to the Planetary Science Archive

... data access via ...

Dataset Browser Interface	Classical User Interface	Map-based Interface
User Guide	User Guide	User Guide
Notification Management User Guide		

PSA version 2.9.9

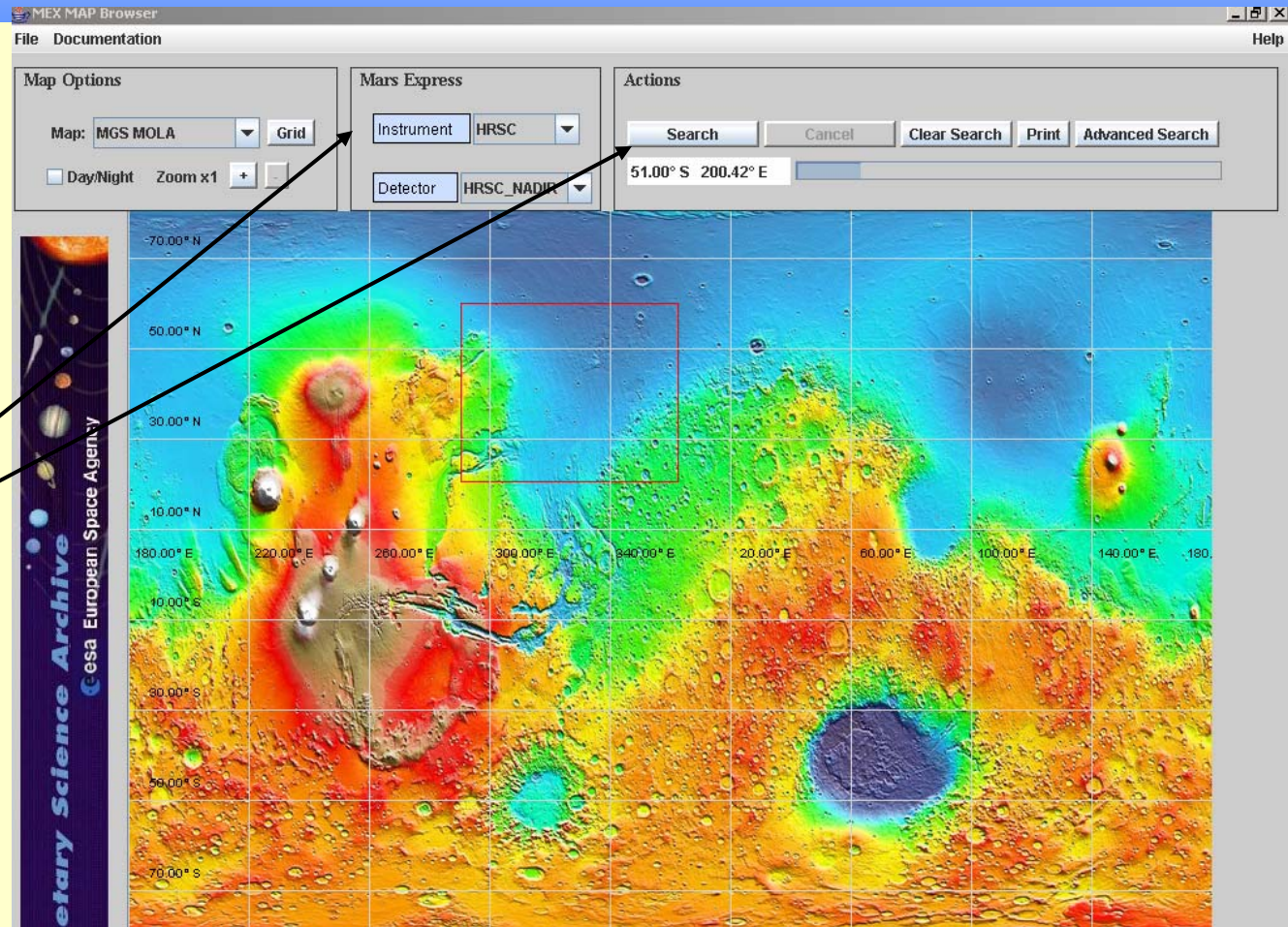


(Check the full list of options for running the PSA)

Please note:
Closure of this window will terminate the PSA Browser and work may be lost.

Send your questions about the Planetary Science Archive to [PSA Helpdesk](#)

Announcements		History (2004, 2005)	
June 2008	Release of PSA 2.9.9	6 June 2008	Planetary Science Archive 2.9.9 is released today. PSA 2.9.9 contains the first release of calibrated datasets from the MARSIS radar sounder on Mars Express. The following data is now available: <ul style="list-style-type: none"> • MEX-M-MARSIS-2-EDR-V1.0 containing raw data from the MARSIS instrument • MEX-M-MARSIS-3-RDR-SS-V1.0 containing calibrated Subsurface Sounding data • MEX-M-MARSIS-3-RDR-AIS-V1.0 containing calibrated Active Ionosphere Sounding data
Apr-1 2008	First Venus Express Data Release	05 Feb 2008	HRSC on Mars Express, MEX-M-HRSC-5-REFDR-MAPPROJECTED-V2.0 and MEX-M-HRSC-3-RDR-V2.0 data released up to June 2007 (orbit 4479).
05 Feb 2008	Pending Data Reviews:	05 Feb 2008	Mars Express, ingestion and release of first HRSC Digital Terrain Model data MEX-M-HRSC-5-REFDR-DTM-V1.0, containing data up to Orbit 0569 (June 2004). A basic user guide document is available for use of these new data. Further DTMs will be delivered to the PSA periodically for long-term archiving. More recent DTMs can currently be viewed alongside other HRSC data from the HRSCView page maintained by the Freie Universitaet, Berlin.
	- Rosetta	05 Feb 2008	Mars Express, ingestion and release of MEX-M-ASPERA3-2_3-EDR_RDR-NPI-V1.0, containing data for the entire nominal mission, and MEX-M-ASPERA3-2_3-EDR_RDR-NPI-EXT1-V1.0 containing data from January 2006 to December 2006.
	-- MIDAS	27 Nov 2007	Mars Express, ingestion of 114 Radio Science data sets: MEX-M-MRS-1-2-3-PRM-0361-V1.0 and MEX-M-MRS-1-2-3-PRM-OXXX-V1.0: 0362, 0364, 0365, 0387, 0404, 0411, 0414, 0417, 0425, 0434, 0435, 0436, 0439, 0442, 0444, 0448, 0450, 0451, 0452, 0456, 0468, 0469, 0470, 0474, 0475, 0478, 0479, 0481, 0482, 0484
	-- MIRO		
	-- SPICE		
	- Mars Express		
	-- ASPERA ELS		
	-- ASPERA IMA		
	-- MARSIS AIS		
	-- MARSIS		



Step 1

- a) Define a Region of Interest (ROI) by marking an area on the map with your mouse.
- b) A red-colored rectangle will be visualize your ROI
- c) Select your Instrument of choice and, if required, an instrument detector
- d) Execute the query

Step 2

- a) Analyze the footprint resulting from your query
- b) Select a footprint by moving the mouse over it and pressing a mouse button

The screenshot shows the MEX MAP Browser interface. The main window displays a topographic map of Mars with a grid overlay. A red rectangular footprint is visible on the map. A context menu is open over the footprint, listing the following options:

- H0740_0000_ND2.IMG ▶ Show This Footprint Alone
- H1154_0001_ND2.IMG ▶ View Image
- Show Label
- Download Product
- Download Documentation
- Download Software

The interface includes several panels:

- Map Options:** Contains a 'Grid' checkbox.
- Mars Express:** Contains dropdown menus for 'Instrument' (set to HRSC) and 'Detector' (set to HRSC_NADIR).
- Actions:** Contains buttons for 'Search', 'Cancel', 'Clear Search', 'Print', and 'Advanced Search'. Below these buttons is a search input field containing the coordinates '66.00° N 211.67° E'.

Arrows from the 'Step 2' instructions point to the footprint on the map and the context menu.

Step 3

- a) Select a service offered to you
 - a) View browse image, if available
 - b) Download data product
 - c) Download all documentation related to this data product

Step 4

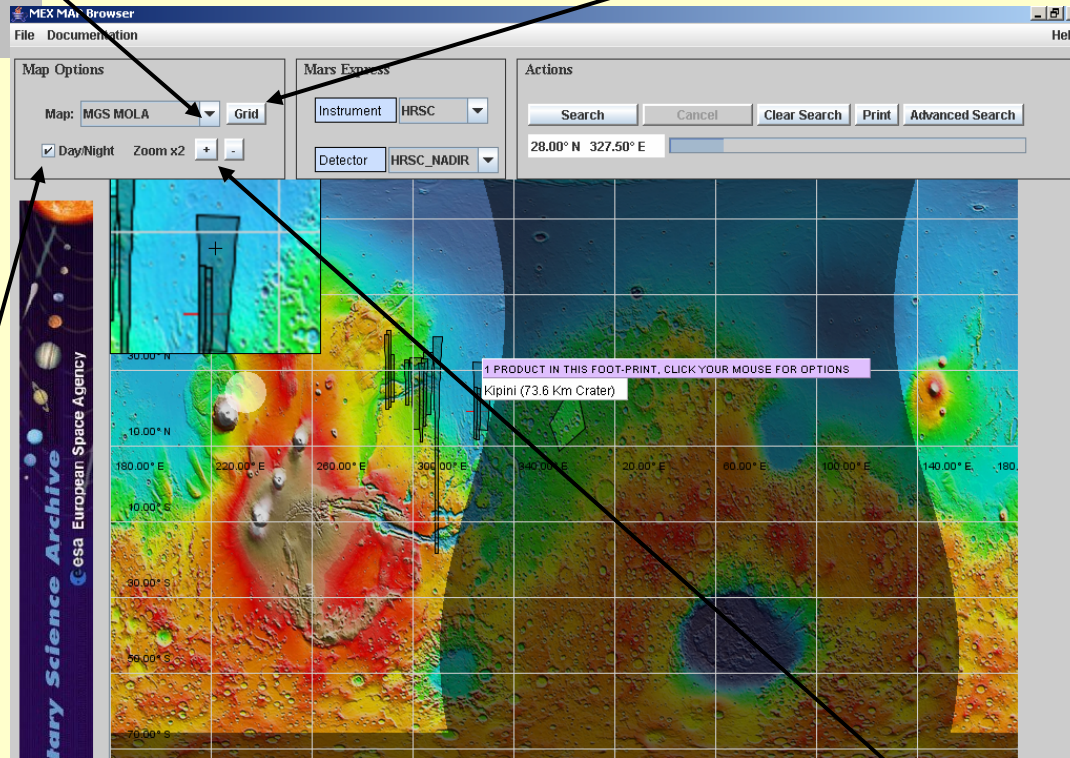
- a) Clear your search, reselect a region of interest and run your query

Options

Option 1: Background map

- Select between several background maps
- Load an own map via the FILE entry of the Main Menu.

Option 4: visualize a grid on top of your background image



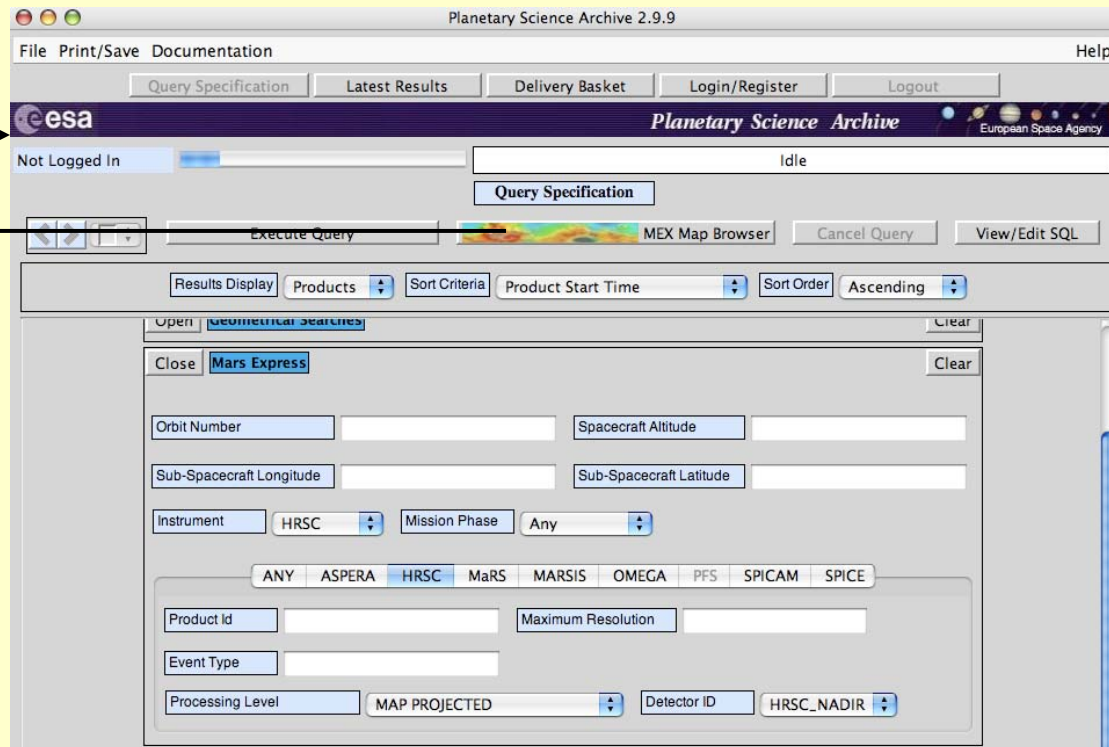
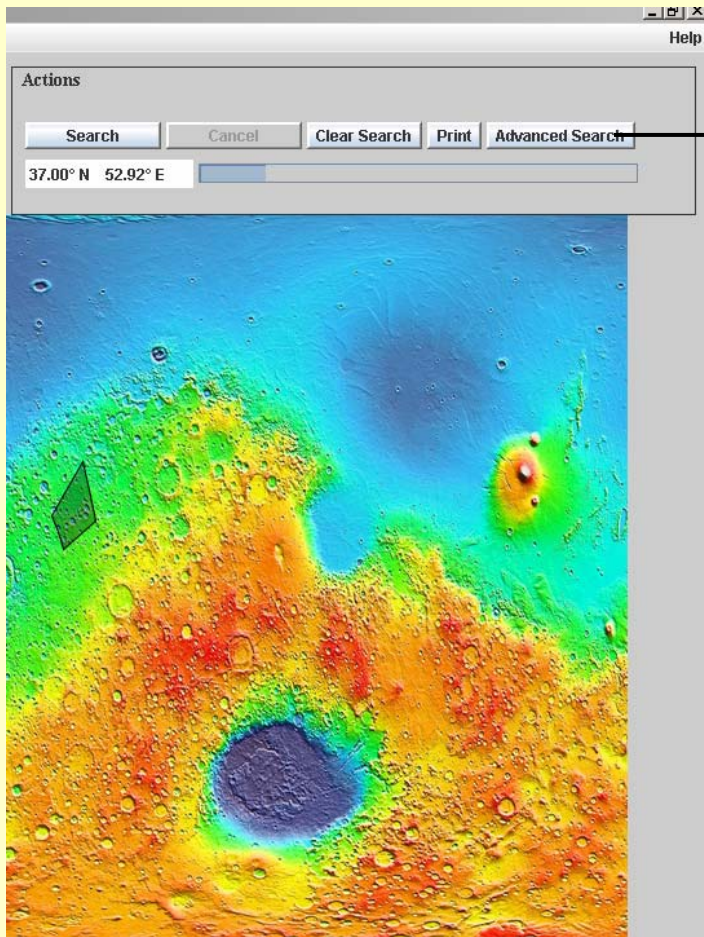
Option 2: visualize day night boundary and the intersection of the Sun to the center of Mars.

Option 3: display a zoom window that allows you to better select individual data products

Map-based Interface vs Advanced Interface

Switch between the map-based interface to the advanced interface of the PSA and vice versa.

The results you receive from your queries from within the advanced interface are taken over to the map-based interface and displayed there in case of Mars data for which geometry information is existing (HRSC, OMEGA) is available. This gives you the full flexibility of the advanced interface coupled to the visual power of the map-based concept.



Planetary Science Archive

Users Quick Guide

Notification Management

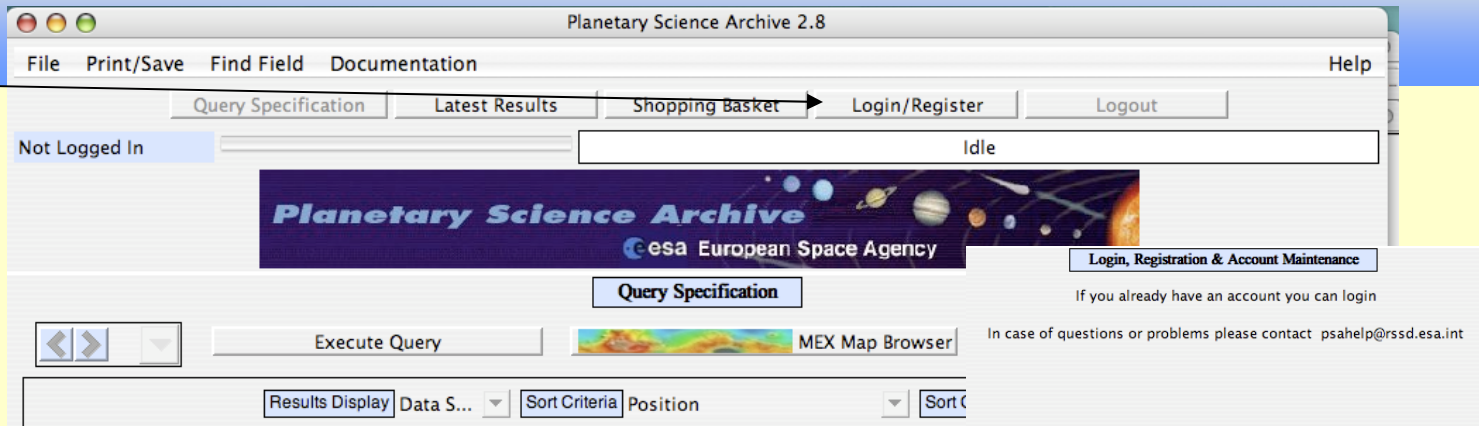
By J. Zender and D. J. Heather
08 June 2007, Version 1.1

Overview

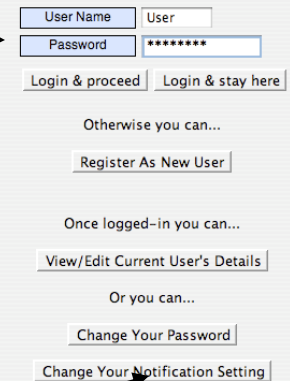
- **Registration**
- **Notification Rules**
- **Notification via Email**
- **Comments and Suggestions**

Registration I

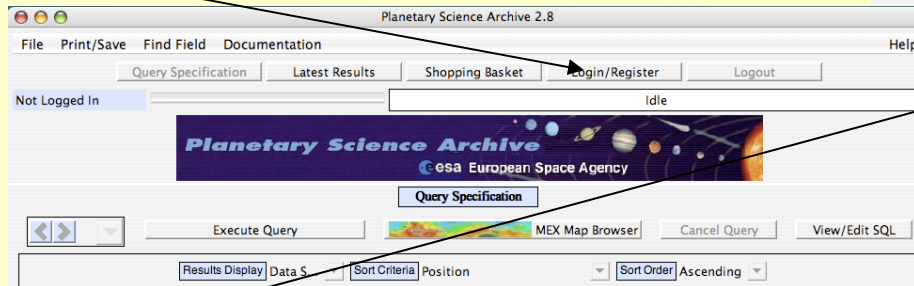
1. Goto Login Page



2. Login with your user id / password



3. Goto Login Page



4. Select 'Change Notification Setting'

Change Your Notification Setting

Registration II

Select Add

Planetary Science Archive
European Space Agency

Change Notification Setting

Mission:	INTERNATIONAL ROSETTA MISSION	▼	
Instrument Host:	All	▼	
Instrument:	All	▼	Add

Notification List:

Mission	Instrument Host	Instrument	
MARS EXPRESS	MEX	HRSC	
CASSINI-HUYGENS	HP	All	
INTERNATIONAL ROSETT...	All	All	Delete

View Return

Dismiss

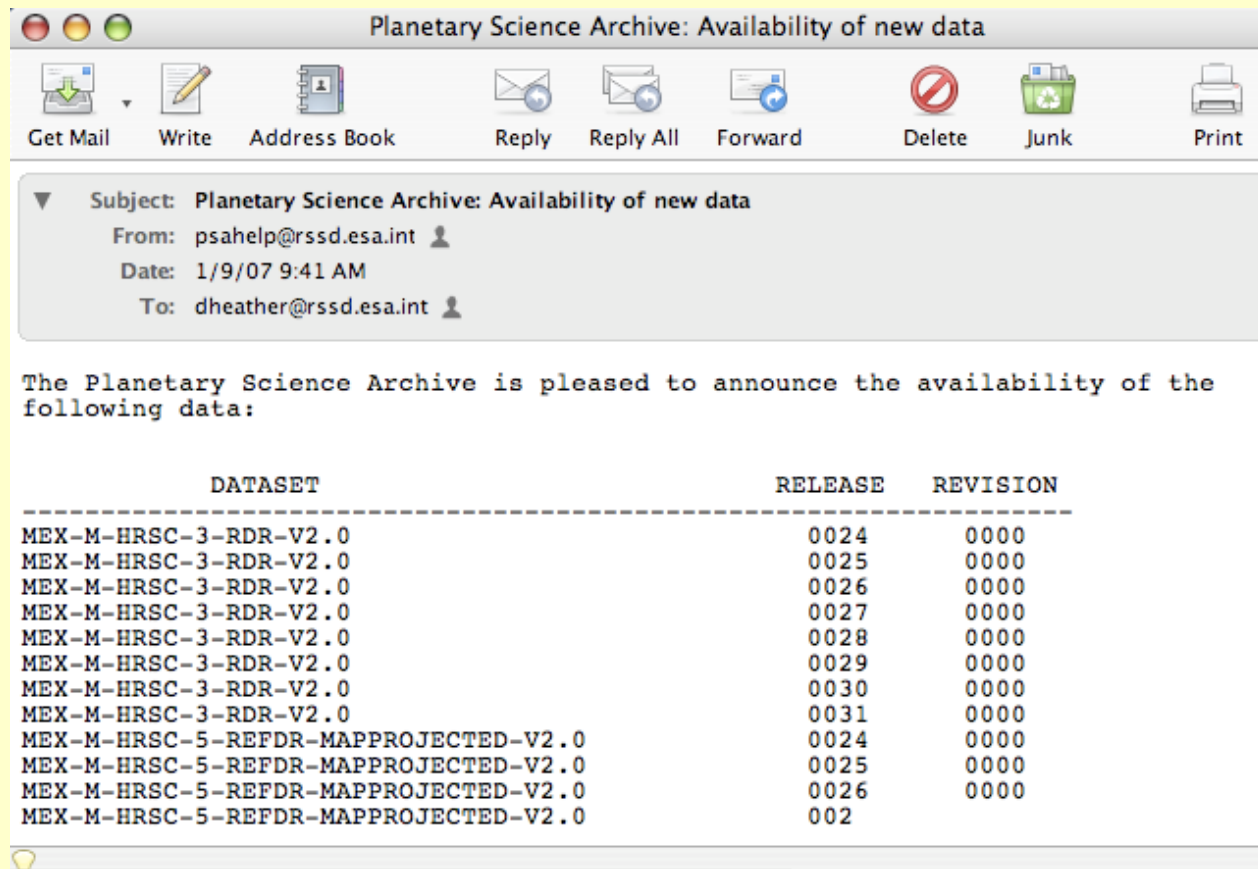
Notification Rules

- **Notification will be done shortly after**
 - A new dataset was ingested into the archive
 - A new dataset release was ingested into the archive
 - The ERRATA.TXT was modified, in other words an important piece of information about the dataset was made available.
- **Notification will be done using email service**
 - Ensure that your PSA account setting, especially your email address is correct
- **You will be informed on the following changes:**

Mission	Instrument Host (Spacecraft)	Instrument	Notification
ALL	ALL	ALL	You will be informed on any change in the archive.
SPECIFIC	ALL	ALL	You will be informed an any change relating to data for a specific mission.
SPECIFIC	SPECIFIC	ALL	You will be informed on any change relating to data obtained from a specific spacecraft.
SPECIFIC	SPECIFIC	SPECIFIC	You will be informed on any change relating to a specific instrument.

Notification via Email

Once you have registered, you will receive e-mails with announcements of the new data in the archive that you are interested in.



Planetary Science Archive: Availability of new data

Get Mail Write Address Book Reply Reply All Forward Delete Junk Print

▼ Subject: Planetary Science Archive: Availability of new data
 From: psahelp@rssd.esa.int
 Date: 1/9/07 9:41 AM
 To: dheather@rssd.esa.int

The Planetary Science Archive is pleased to announce the availability of the following data:

DATASET	RELEASE	REVISION
MEX-M-HRSC-3-RDR-V2.0	0024	0000
MEX-M-HRSC-3-RDR-V2.0	0025	0000
MEX-M-HRSC-3-RDR-V2.0	0026	0000
MEX-M-HRSC-3-RDR-V2.0	0027	0000
MEX-M-HRSC-3-RDR-V2.0	0028	0000
MEX-M-HRSC-3-RDR-V2.0	0029	0000
MEX-M-HRSC-3-RDR-V2.0	0030	0000
MEX-M-HRSC-3-RDR-V2.0	0031	0000
MEX-M-HRSC-5-REFDR-MAPPROJECTED-V2.0	0024	0000
MEX-M-HRSC-5-REFDR-MAPPROJECTED-V2.0	0025	0000
MEX-M-HRSC-5-REFDR-MAPPROJECTED-V2.0	0026	0000
MEX-M-HRSC-5-REFDR-MAPPROJECTED-V2.0	002	

Comments and Suggestions

- Please send us your remarks psahelp@rssd.esa.int
- In case of problems, please visit the FAQ page before contacting us
- In case you can not find the data you are looking for, please read the Mission Specific pages on the PSA home page (<http://www.rssd.esa.int/psa>)

Data workshops

Mars Express Data workshops

Goal:

- Explain the archive in general
- Facilitate the access, use, processing and analysis of the data
- Meet members of Instrument Teams

~ 1 week training session, 20-25 'students'

HRSC and OMEGA workshops in 2007 and 2008

MARSIS and Radio-Science in 2008

MRO CRISM User Data Workshop

http://crism.jhuapl.edu/CRISM_workshop_2009/

Important: ESA PSA tutorials, hands-on are available on the web:

<http://www.rssd.esa.int/mexdataworkshops>

Tools

Software Tools

- PDS Tools (including NASAVIEW)
- http://pds.nasa.gov/tools/release/software_download.cfm
- ISIS3
- <http://isis.astrogeology.usgs.gov/>
- HiRISE IAS Viewer
- <http://hiweb.lpl.arizona.edu/iasclient/>

Software Tools II

- JMARS
- <http://jmars.asu.edu/wiki/>
- Davinci
- <http://davinci.asu.edu/>
- GDAL
- <http://www.gdal.org/>

Useful tools

❑ Simple Viewers (all free, available on-line)

- NASAView - intended for all PDS products but has some limitations (I broke it yesterday on a product from Geosciences)
- ds9 and fv - useful only for PDS-labeled FITS files

❑ A good analysis environment

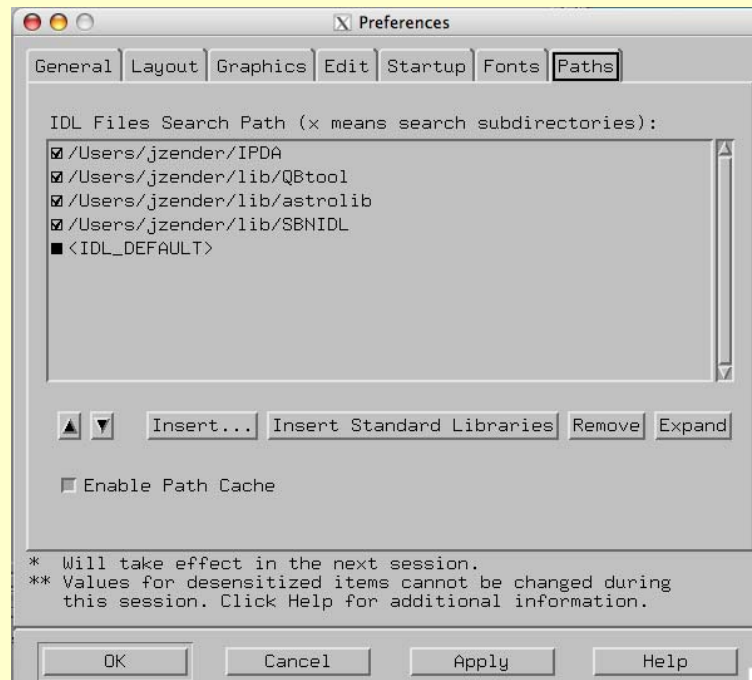
- IDL (somewhat expensive)
 - A versatile environment for “exploring” your data as well as analyzing it
 - Library of astronomical routines at NASA-GSFC
 - Needs an I/O routine such as SBN’s readpds.pro (which works on many but not all products)
- ISIS (free)
 - Widely used by planetary geologists with many built-in functions
 - Supported via Imaging Node of PDS at USGS
 - I/O works only with products designed for ISIS compliance (not FITS)
- IRAF (free)
 - Can be used only for PDS-labelled FITS files since there are not (yet) any I/O routines for PDS-labeled products

❑ SPICE (free)

- Tool for working out geometry of measurements (if not already in keywords or for updating the values)
- Supported via NAIF on many platforms & languages

ReadPDS

- **ReadPDS is an IDL package that is maintained and distributed by PDS's Small Bodies Node (SBN). It allows most PDS compliant products to be read in to the IDL software.**
- **To retrieve the latest fully tested release or previous releases, check out the page <http://pdssbn.astro.umd.edu/nodehtml/software.shtml>**
- **Within your IDLDE, select the File->Preferences and check that you path contains the ReadPDS.**



Software Tools III

- QGIS
- <http://www.qgis.org/>
- Planetary WMS (web mapping server)
- <http://webgis.wr.usgs.gov/ogc/Examples.htm>
- PROJ4
- <http://trac.osgeo.org/proj/>

Software Tools IV

- SPICE
- <http://naif.jpl.nasa.gov/naif/>
- GMT
- <http://gmt.soest.hawaii.edu/>
- GRASS
- <http://grass.itc.it/>
- HRSCVIEW and additional HRSC software
- <http://hrscview.fu-berlin.de/software.html>

Other archives

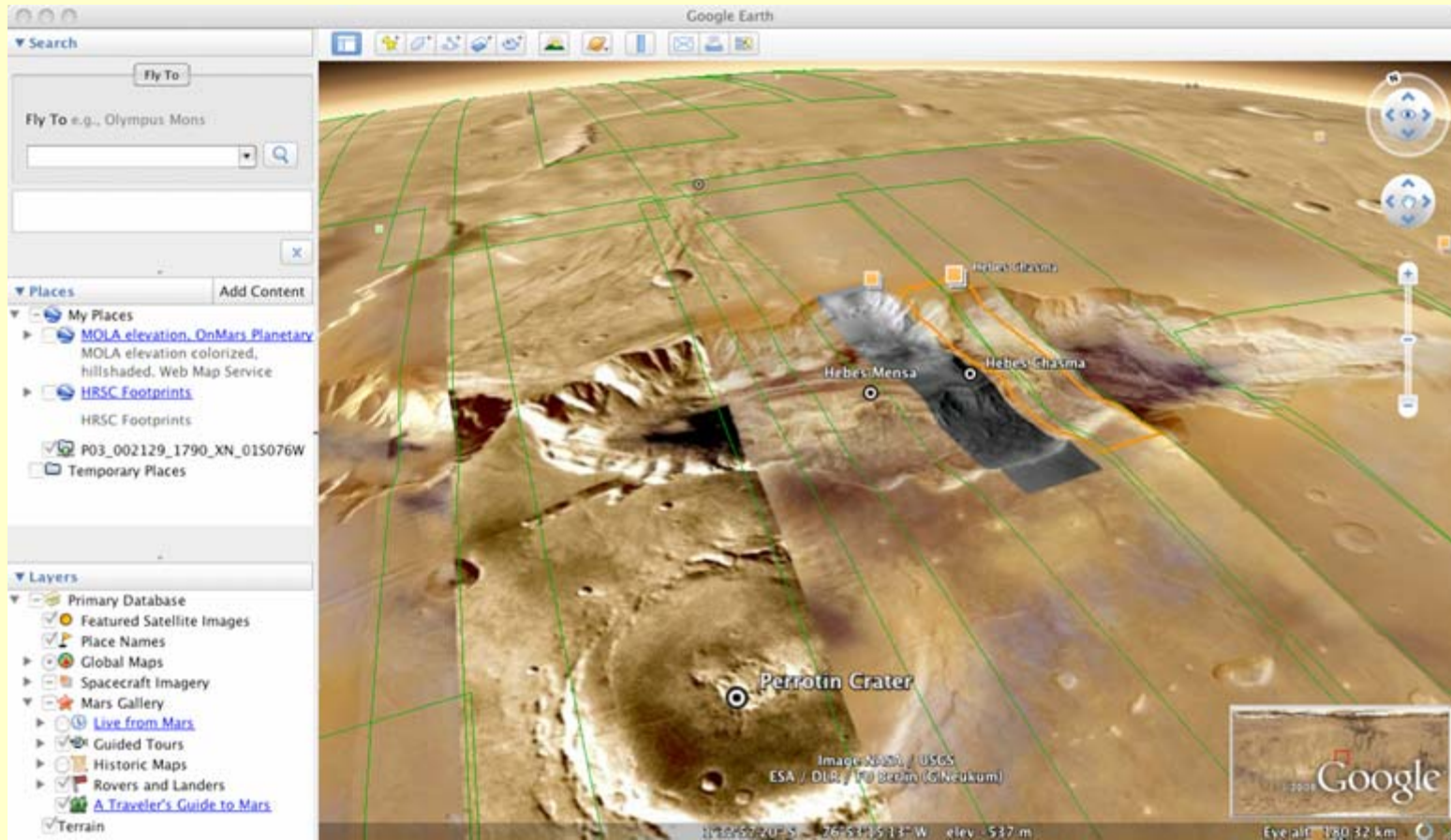
Ways to find/access data II

- ❑ **CRISM MAP**
 - <http://crism-map.jhuapl.edu/>
- ❑ **USGS PIGWAD**
 - <http://webgis.wr.usgs.gov/>
- ❑ **Malin Space Science Systems**
 - <http://www.msss.com/>
- ❑ **USGS Map-a-Planet**
 - <http://www.mapaplanet.org/>

Ways to find/access data

- ❑ **USGS PILOT**
 - <http://pilot.wr.usgs.gov/>
- ❑ **THEMIS Mars image explorer**
 - <http://themis-data.asu.edu/>
- ❑ **HRSCVIEW**
 - <http://hrscview.fu-berlin.de/>
- ❑ **Google Earth**
 - <http://earth.google.com/>

Google Earth



Forum/Documentation

- USGS ISIS3 Support Forum
- <http://isis.astrogeology.usgs.gov/IsisSupport/>
- Planetarygis
- <http://www.planetarygis.org/>
- Orrey.us
- <http://orrery.us/>

Getting started tips...

- Consider investing some time: **if one does not want to put reasonable effort, it is much better to spend the time doing something else.**
- Consult all relevant documentation and try to repeat simple examples here or on the software documentation page.
- Check the forums (e.g. isis3 support) and post questions (after having carefully searched for possible answers already available!!!).
- Check for new data/software releases (and sign up for notifications, e.g. isis3, ESA PSA).
- Keep in touch (ask/provide help) with your friends/colleagues, e.g. with mailing lists, etc. Some critical mass of users in your professional neighborhood helps a lot!

Examples, demos