MARS EXPLORATION ROVERS ANALYST'S NOTEBOOK: INTEGRATING DATA AND DOCUMENTATION FOR MISSION PLAYBACK. T. C. Stein[1,] R. E. Arvidson[2], J. G. Ward[3], M. E. Berwick[4].

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Introduction: The MER Analyst's Notebook provides access to the MER mission data archives by integrating sequence information, engineering and science data, and documentation into web-accessible pages to facilitate mission "replay." This provides context needed by scientists to understand observations made by the nondeterministic mission. The MER Notebook is not an operational but rather a reference tool made available to participating scientists and to the Planetary Data System (PDS) community.

Populating the Notebook: Data and documentation are transferred from the Jet Propulsion Laboratory (JPL) to Washington University each day throughout the mission and are ingested into the MER science team version of the Notebook. The public version of the Analyst's Notebook is comprised of peer-reviewed, released data and is updated coincident with quarterly PDS data releases. Release 16, covering mission activity through sol 1350, is scheduled for April 25, 2008.

Both Operations Products Generation Subsystem (OPGS) and Science data pro are included in the Notebook. The OPGS products are generated to support mission planning and operations on a daily basis. They are geared toward researchers working on machine vision and engineering operations. Science products of Panoramic Camera (Pancam) and Microscopic Imager (MI) observations are provided for those interested in radiometric and photometric analyses.

Figure 1. MER Analyst's Notebook data navigation web page. The Notebook Navigator tree structure is on the left side of screen; the Product View Window is on the right side of screen.

The Notebook Interface: The Analyst's Notebook provides several ways to access the mission data and documentation:

• In the Notebook Navigator (Fig. 1) data products are organized in a tree structure which may be ordered by instrument, site, or sol.

• The Product View Window (Fig. 1) provides detailed information about a single product, including the PDS label. In addition, all versions of a given product may be previewed and downloaded.

• The Sol Summary reports (Fig. 2) provide per-sol listings of data products, documentation, and activity plans.

• The Product Search (Fig. 3) tool allows the user to search for data by specifying parameters such as instrument, time of acquisition, feature, and target.

Additional resources, including data set documents, site maps, context images, and a free-text search of sol reports are also available. Online help and a user forum provide guidance to the user.

Current Status: The first release of the Analyst's Notebook in August 2004 contained data and documentation from the first 30 sols. The Notebook for Spirit held approximately 45,000 products while that for Opportunity had about 65,000 products.

Release 14 in October 2007 included results from the first 1170 sols. Included were more than 2 million products for each rover, comprising more than 3 TB of data, documentation, and support files.

Web traffic statistics for 2007 indicate about 40 users access the Notebook daily. Average web session time is 5 minutes per user.

Future Development: Effort is being made to provide a better end-user experience by improving the interactive features and increasing the speed of the interface.

Interface enhancements include grouping of data products by commanded sequence number and generating RGB color composites on demand. The web and database servers will be upgraded to faster machines with better failover protection.

An Analyst's Notebook is under development for the Phoenix mission which lands on Mars in May 2008. In addition, Analyst's Notebooks are under development for the Apollo lunar data and the Mars Science Laboratory mission.

The MER Analyst's Notebook is available from the PDS Geosciences Node web site (http://pds-geosciences.wustl.edu/meran).

Figure 2. A Sol Summary report showing a list of data products.

Figure 3. A sample search screen.