

Integrating Hubble Data into the Planetary Data System: When Data Systems Collide

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Abstract

The Mikulski Archive for Space Telescopes (MAST) currently contains over 120,000 HST solar system observations. However, using MAST to find data for planetary research poses significant challenges to the user. MAST relies heavily on RA and Dec which is not convenient for moving target searches. In addition, MAST enforces no standard over how targets are named. Consequently, finding data like this iconic SL-9 image is remarkably challenging.

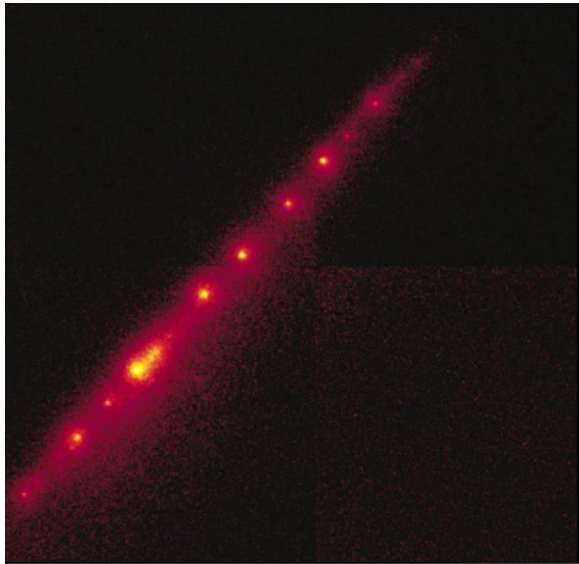


Figure 1: Fragments of Shoemaker-Levy 9.

Searches based on other constraints like lighting and viewing geometry are not supported in MAST.

We are developing a pipeline to integrate the solar system data from HST into the Planetary Data System. The project is designed to leverage the strengths of PDS4 to ensure that planetary scientists can use HST data sets in their research with the same

level of support that they receive for data from planetary missions.

The pipeline performs a number of tasks that bridge the gap between standards employed by MAST and those required by PDS. These include: (1) identifying all planetary targets within each field of view; (2) standardizing target name(s); (3) generating PDS's discipline-specific metadata; (4) creating SPICE kernels; (5) assembling necessary documentation; (6) generating informative, PDS4-compliant XML files; (7) assembling all of this information into PDS4 bundles and entering them into the PDS Registry; and (8) maintaining the version history of products after they are modified in the HST archive.

We will incorporate the data products and metadata into OPUS, the search engine of PDS's Ring-Moon Systems Node, providing users with a rich new set of search capabilities. Since all of the generated metadata parameters will be captured in PDS4 discipline dictionaries, that metadata also will support the PDS4 registry search.

Ultimate goal: Automatic, nightly synchronization of the PDS4 holdings with the MAST holdings.

Acknowledgements

This project is supported by NASA's Planetary Data, Archiving, Restoration and Tools (PDART) program.