

The new Planetary Science Archive: A tool for exploration and discovery of scientific dataset of ESA planetary missions. S. Besse¹, I. Barbarisi¹, C. Arviset¹, G. De Marchi², M. Barthelemy¹, R. Docasal¹, D. Fraga¹, E. Grotheer¹, D. Heather¹, T. Lim¹, A. Macfarlane¹, S. Martinez¹, C. Rios¹. ¹European Space Agency, ESAC, 28691 Villanueva de la Canada, Madrid, Spain, (sbesse@sciops.esa.int), ²European Space Agency, ESTEC, 2200 AG Noordwijk, Netherlands.

Introduction: The Planetary Science Archive (PSA) is the European Space Agency's (ESA) repository of science data from all planetary science and exploration missions. The PSA is providing access to scientific datasets through various interfaces (e.g. FTP browser, Map based, Advanced search interface, and Machine interface) at this address: <http://archives.esac.esa.int/psa>. All datasets are scientifically peer-reviewed by independent scientists, and are compliant with the Planetary Data System (PDS) standard, which is the default standard used in planetary science.

The PSA is currently implementing a number of very important and significant changes, both for its web-based interface to the scientific community and the public, and for its database structure. The new PSA will be up-to-date with the PDS3 standard, and the new PDS4 standard being used for ESA's upcoming ExoMars and BepiColombo missions.

Home Page: The newly designed home page will provide direct access to the datasets of ESA's missions through a search of the targets or missions (Figure 1). This new functionality will significantly diminish the complexity for users to find their favorite dataset by promoting a one-click access to the datasets.

Additionally, the home page will provide direct access to advanced views and searches of the same datasets. The users will also have direct access to documentation, information and tools that are relevant to the scientific use of the dataset. It includes ancillary datasets for all ESA's mission, Software Interface Specification (SIS), and any help that the PSA team can provide. A log-in mechanism will provide additional functionalities to the users that will ease and help their search of scientific datasets (e.g., saving unfinished queries, default views, etc.).

Views of the queries: Queries to the PSA database can be done either through the home page (i.e. in a relatively simple way of querying missions or targets of ESA's missions), or through the filter menu located on the left part of the table view (Figure 2). The filter

menu will offer multiple options to search for a particular dataset, including in-situ or remote sensing instruments. Parameters such as start-time, phase angle, and heliocentric distance will be emphasized, although an advanced search will allow users to query all the metadata present in the database.

Results will be displayed in 3 different ways: 1) A table listing all the corresponding datasets matching the criteria in the filter menu, 2) a projection of the products onto the surface of the object when applicable (i.e., planets, small bodies), and 3) a list of images for the relevant instruments to enjoy the beauty of our Solar System. These different ways of viewing the datasets will ensure that scientists and non-professionals will have access to the specific dataset they are looking for, regardless of the field of research (e.g., atmosphere, interior, surface, etc.).

Conclusions: The new PSA will maintain the various interfaces and services it had in the past, and will include significant improvements in particular through a Geographical Information System (GIS) based search. The new PSA is expected to be released by mid-2016. It will support the past, present and future missions, auxiliary datasets, and will enhance the scientific output of ESA's missions.

As such, the PSA will become a unique archive ensuring the long term preservation of scientific datasets together with a user-friendly interface.

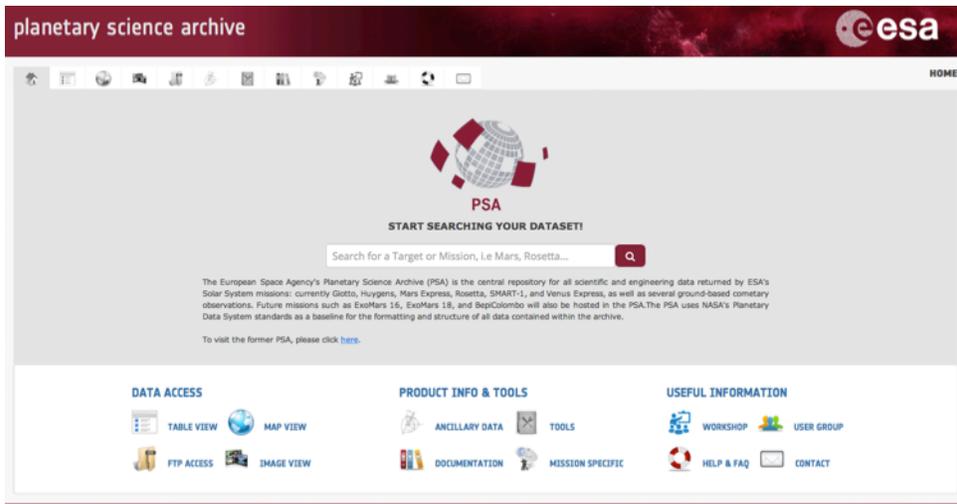


Figure 1: Home page of the future Planetary Science Archive

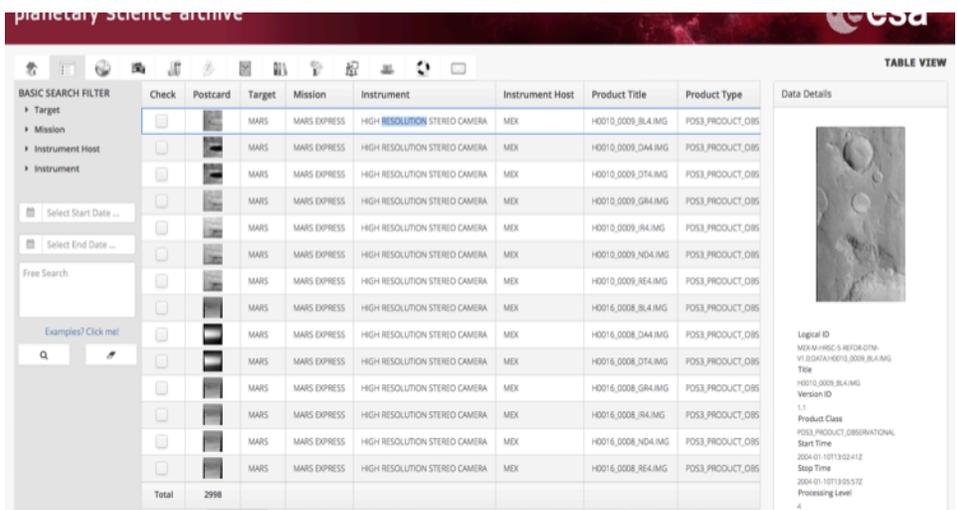


Figure 2: Display of the result for a query on Mars Express datasets.

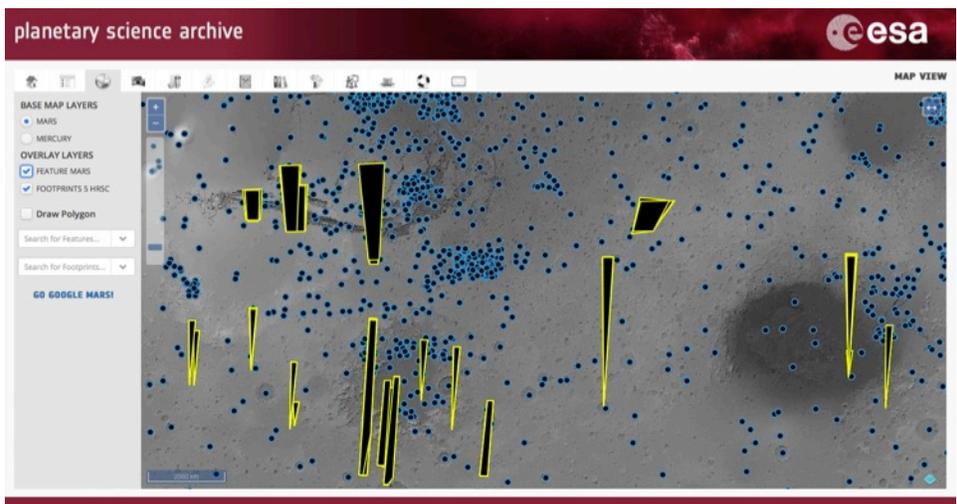


Figure 3: Geographical Information System visualization of Mars Express HRSC camera.