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## New search capabilities based on observational geometry for Mars Express data in the ESA's Planetary Science Archive

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The European Space Agency's (ESA) Mars Express (MEX) mission to Mars has been returning valuable scientific data for ~16 years. This data is available to the public for free via the Planetary Science Archive (PSA), which houses the raw, calibrated, and higher-level data returned by the ESA's planetary missions, including data provided by the various MEX instrument teams. Besides an FTP server, there is also a user interface with different search views available for the public to search for archived data. Development of a map-based search interface is underway. As a first step towards this, the geometrical parameters of all the data products from a wide variety of instruments had to be computed in a unified manner. These values will be used to enable searches based on observational geometry via the Table View, and other views as well.

### 1. The PSA user interfaces

The ESA's PSA uses the Planetary Data System (PDS) format developed by NASA to store the data from its various planetary missions. In the case of MEX, the data is stored in the PDS3 format, which primarily uses ASCII files to store and describe the data. When first searching for new data, users would benefit from using the Table View search interface [1]. Here the user can search using various parameters, such as mission name, target (e.g. Mars), instrument name, processing level, observation times, etc. The development of the PSA's search capabilities continues, thus more search parameters will be added over time. In particular, this presentation will focus on the development of new filter menus within the Table View to allow for searches based on the observational geometry of the data products.

Also available in the Table View interface is a section for "Free Search", allowing one to use Contextual Query Language (CQL) to search over additional parameters. These various search methods rely mainly on the metadata provided by the instrument teams in the labels associated with each of the data products. In the case of the observational geometry searches, in order to provide a uniform search capability, the GEOGEN tool was developed by SpaceFrog Design to provide the tables of relevant parameters to be queried.

## 2. Summary and Conclusions

Thanks to the efforts of the MEX instrument teams, the MEX Science Ground Segment team, and the PSA Archive Scientists and Engineers, over 16 years worth of observational data from Mars orbit are available to the public. This data can be freely accessed at the ESA's PSA, at [. There are multiple ways of browsing the archived data, including those from other planetary missions, though in this presentation we will focus on the new observational geometry search capability that will become available soon.](#)

The development of the PSA's user interface is an ongoing project, and we welcome feedback from the community for suggestions on new ways to search this wealth of data. Feedback and suggestions can be sent to [.](#)

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