

## Using EPN-TAP to share data HELIO or IMPEX projects

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### Abstract

The main outcome of the Europlanet (EPN) project in terms of data sharing on the Virtual Observatory (VO) [1] is the EPN-TAP (Table Access Protocol) [2], drafted by some members of the EPN-IDIS (Integrated and Distributed Information System) team. This protocol is used as a data discovery protocol after a user-defined request based on physical and observational parameters (target name, target type, time range, frequency range, observatory name, location, etc...). Although the protocol keywords have been forged to be consistent with any solar system data sets, only planetary sciences data services have been implemented during the course of the EPN project. A web-based client of EPN-TAP queries (VESPA, Virtual European Solar and Planetary Access) is available here:

<http://vespa.obspm.fr>

Recently, we have worked on implementing links with databases from other solar system science communities, in particular the HELIO (Heliophysics Integrated Observatory) and the IMPEX (Integrated Medium for Planetary Exploration) projects [3, 4]. The result of this study is presented here and shows that EPN-TAP can be easily implemented on various databases, thanks to the series of keywords that are enough generic, and to the versatile framework (DaCHS) selected for the EPN-TAP server implementation.

### References

- [1] Erard S., P. Le Sidaner, B. Cecconi, J. Berthier, F. Henry, M. Molinaro, M. Giardino, N. Bourrel, N. André, M. Gangloff, C. Jacquey, F. Topf: The EPN-TAP protocol for the Planetary Science Virtual Observatory. Submitted to *Astronomy & Computing*, 2014.
- [2] Erard S., P. Le Sidaner, B. Cecconi, J. Berthier, F. Henry, N. André, V. Génot, C. Jacquey, M. Gangloff, N. Bourrel, B. Schmitt: Planetary Science Virtual Observatory architecture. Submitted to *Astronomy & Computing*, 2014.

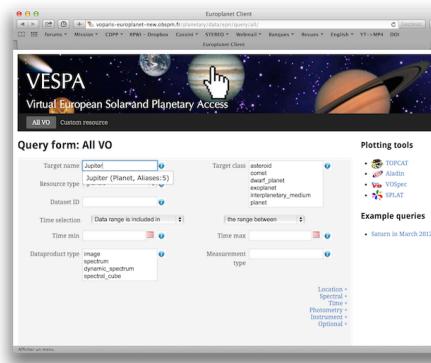


Figure 1: Screenshot of the VESPA query page, with a simple query: *target name = Jupiter*

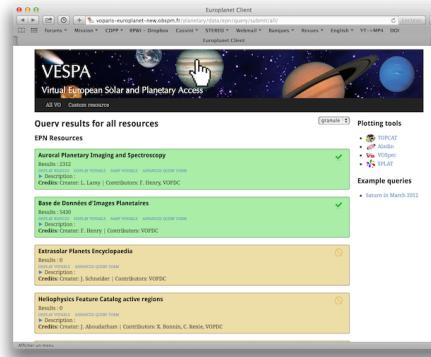


Figure 2: Screenshot of the VESPA service result list. The 4 first results are visible: Auroral Planetary Images and Spectra (APIS), Historical Planetary Images (BDIP), Extrasolar Planets Encyclopaedia, and Helio-physics Feature Catalog active regions (HELIO-HFC-AR). Only the two first contains Jupiter-related data.

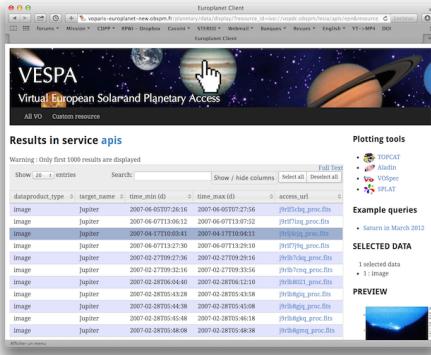


Figure 3: Screenshot of the VESPA results for APIS (Auroral Planetary Images and Spectra). The database is also accessible here: <http://www.lesia.obspm.fr/apis>.

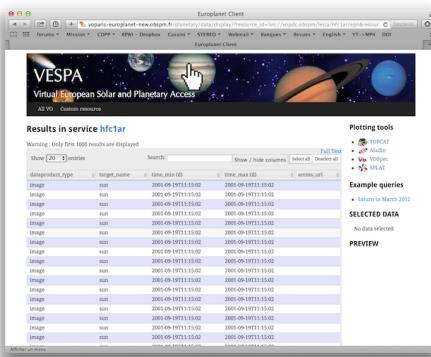


Figure 4: Screenshot of the VESPA results for HFC-AR (HELIO Feature Catalog - Active Regions). The database is also accessible here: <http://voparis-helio.obspm.fr/hfc-gui>.

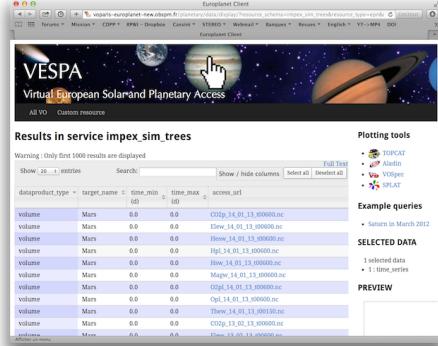


Figure 5: Screenshot of the VESPA results for the IMPEX data tree, containing simulation runs provided as time series along spacecraft trajectories, 2D cuts along planes and 3D volumes.

- [3] Bentley, R B, J Brooke, A Csillaghy, D Fellows, A Le Blanc, D Pérez-Suárez, G Pierantoni, and M Soldati: HELIO: Discovery and Analysis of Data in Heliophysics. Proceedings of IEEE 7th International Conference on E-Science, Stockholm, 248-255, 2011.
- [4] Génot, V. et al.: IMPEX, a FP7 infrastructure for joint analysis of planetary plasma data following the Virtual Observatory paradigm. PV-2013 Proceedings, Frascati, Italy, 2013.