

Pierre Le Sidaner ¹, Cyril Chauvin ¹, Regis Haigron ², Stéphane. Erard ³,

Baptiste. Cecconi ³

¹ – Observatoire de Paris – PSL DIO – PADC

² – Observatoire de Paris – PSL GEPI

³ – Observatoire de Paris – PSL LESIA



Paris Astronomical Data Centre



Observatoire de Paris



Introduction

Vespa is an initiative of four successive European Europlanet projects. It's a package that uses International Virtual Observatory Alliance (IVOA) standards to access solar system and exoplanet data.

Based on the TAP (Table Access Protocol), Vespa offers a set of metadata for tagging and searching metadata. The EPN-TAP model is now an IVOA standard.

The aim of this poster is to propose different portals that use EPN-TAP metadata for data discovery and data mining. No fewer than 18 services have solar data within the portal.

Standardized access to the metadata is also possible using the classic OV clients Topcat and Aladin, or using the current python libraries (Astropy and PyVo).

How it work to publish or find data

EPN-TAP's standard search metadata vocabulary is contained in the IVOA document <https://www.ivoa.net/documents/EPNTAP/20201027/WD-epntap-2.0-20201027.html>. It consists of a set of metadata specific to each service and a group of optional metadata dedicated to particular services.

This vocabulary is living and evolving, so if a data provider needs additional terms for its services, the best way to proceed is to discuss with the EPN-TAP team (support.epntap@obspm.fr) in order to try and maintain homogeneity.

This makes it easy to discover the service, while leaving the possibility of data mining in the optional parameters.

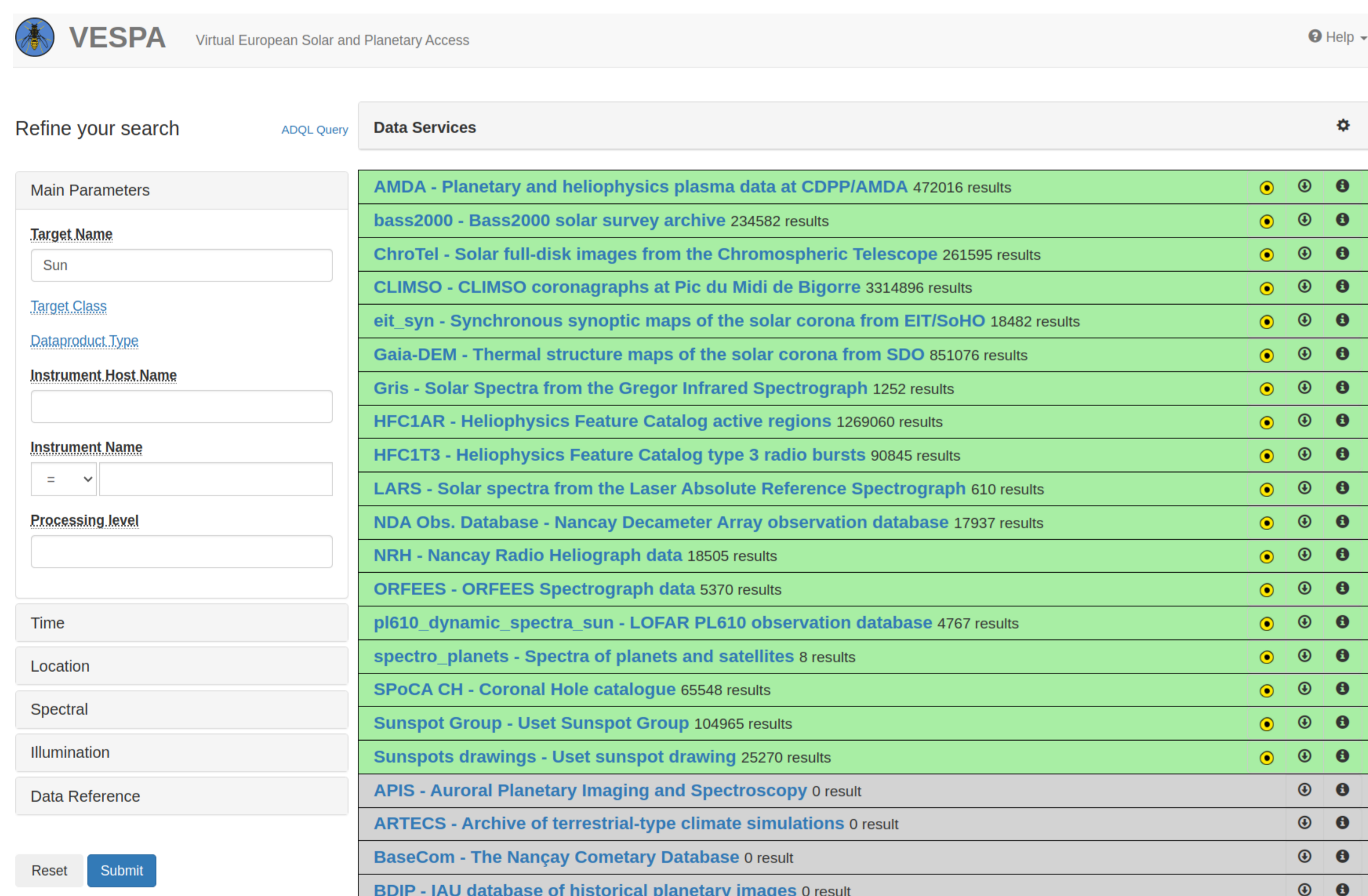


fig 1 : Vespa portal <https://vespa.obspm.fr> query for target name as Sun

The main portal associated with vespa (vespa.obspm.fr) presents all the EPN-TAP services that have been reviewed by the Vespa team, and over a hundred data collections are currently being validated. A collection search using a tool like Topcat will give a more extensive result.

the Vespa portal features an advanced web form for searches using ADQL language similar to SQL (intersection, union, unit conversion, multiple choice, etc.). Finally, it can display query results in easy-to-read format, automated thumbnail access, image display, and links with other OV protocols using the SAMP data exchange standard.

Two other portals have been developed to try out a discovery approach more akin to that of online sales sites. The idea is to discover data collections rather than to search them. The possibilities offered by the Elasticsearch NoSQL search engine make it possible to sort by center of interest and at the same time perform full-text searches, even on physical quantities.

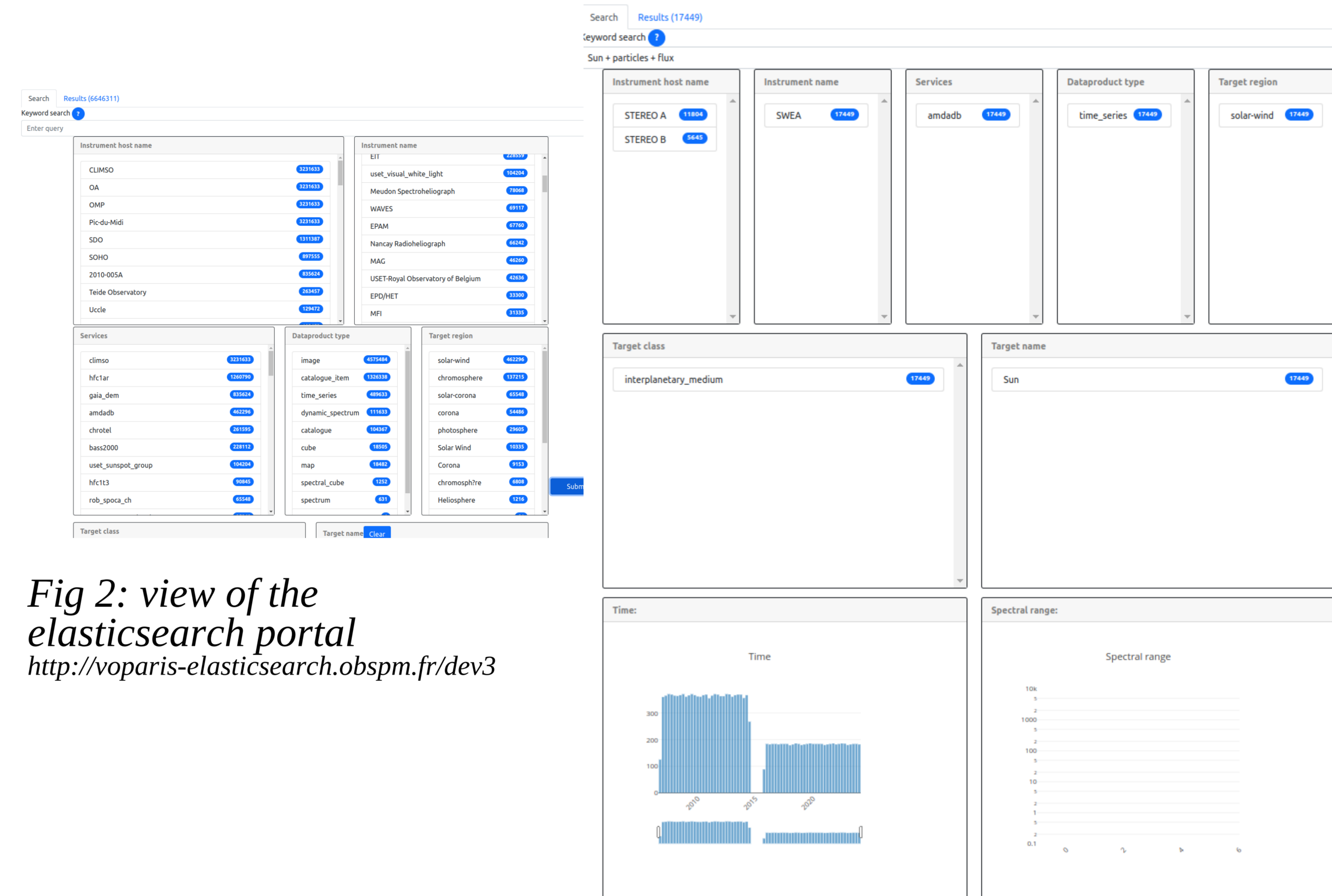


Fig 2: view of the elasticsearch portal <http://voparis-elasticsearch.obspm.fr/dev3>

Fig 3: For example, if you want data on particle fluxes from the solar wind, simply enter the terms in the query Sun + particles + flux. Then the CDDP's AMDA service displays time series from the STEREO-B mission

Geospatial selection

Graphical selection on location information (planets or sun) based on polygon location was not conclusive. We switched to the multi-scale MOC (multi Order coverage map) system. Thanks to the libraries developed by the Strasbourg Data Center (CDS), it is now possible to quickly select an area of interest from large quantities of data. A dedicated portal enables this selection and also includes metadata.

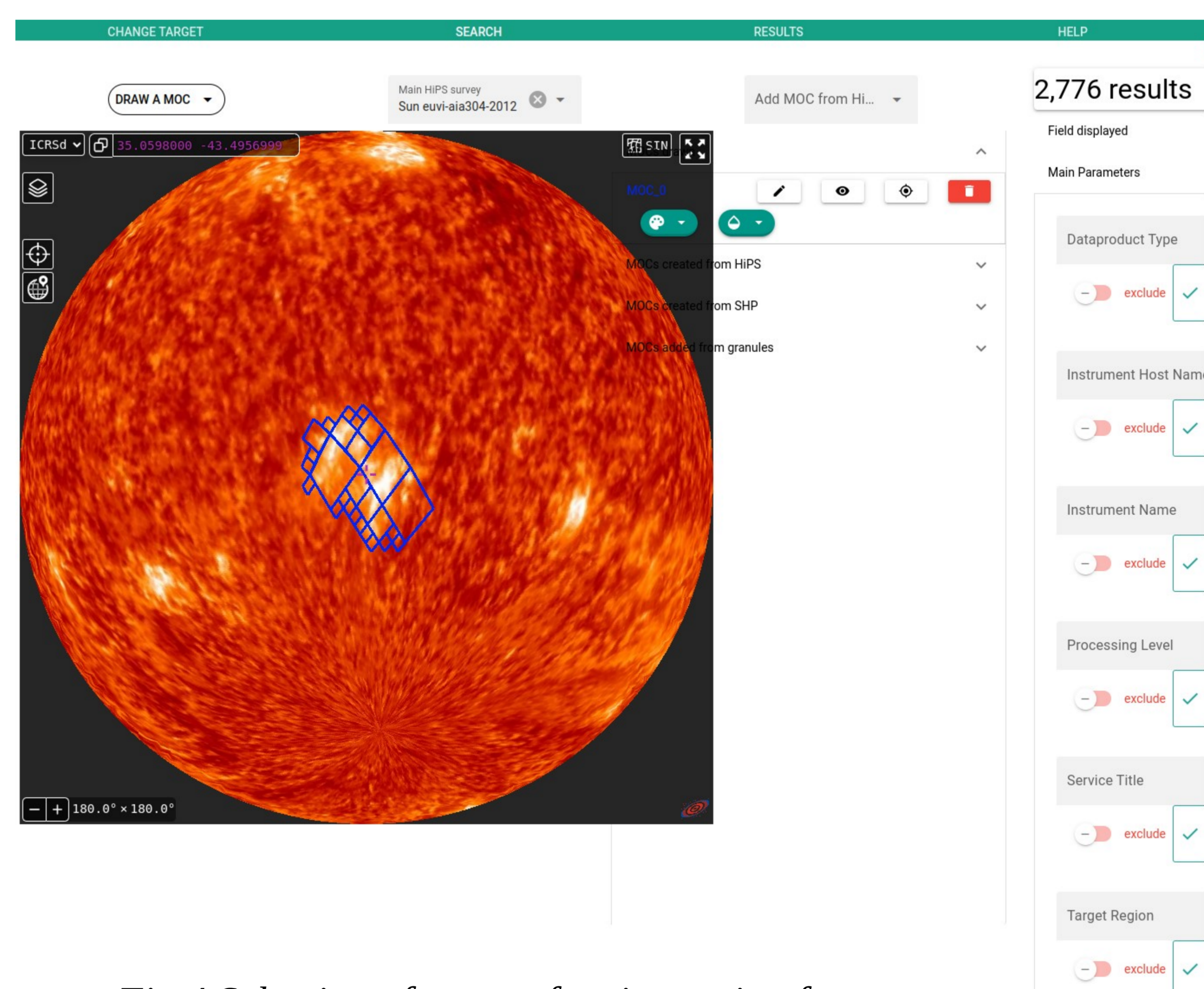


Fig 4 Selection of areas of active region from map, transformation into MOC and database query.

Conclusion

The aim of this work is to investigate the appeal of EPN-TAP and its access portals for distributing and searching for data services in solar physics.