The Legacy Herschel Science Archive

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Abstract

On 22 May 2018, a new version (v9.0) of the Herschel Science Archive (HSA) was publicly available. Together with some other minor implementation changes, this version constitutes the 'legacy' version of the Herschel Science Archive, this is, no more development is foreseen at the user interface level, although it is expected that its contents will still continue growing with the ingestion of new products provided by the community and by the mission experts in the Herschel ground segment. The main functionalities of this version are presented here.

1 Introduction

The Legacy Herschel Science Archive (HSA) offers access to all public Herschel data and offers a host of features:

- Access to all Herschel science data products at various (user selected) levels of processing.

- Access to interactively reduced data provided by the community (User Provided Data Products; UPDPs).

- Access to interactively reduced data produced by ground segment experts (Highly Processed Products; HPDPs)

- Visualization of accurate footprints projected onto the Digitized Sky Survey (DSS) image of the field

- Search on publications, providing links to the Herschel data used for these publications and to the corresponding publication registry in ADS, including the possibility to search for observations in the archive without known associated publications

- Preview images and connectivity to common astronomical tools over Virtual Observatory (VO) protocols

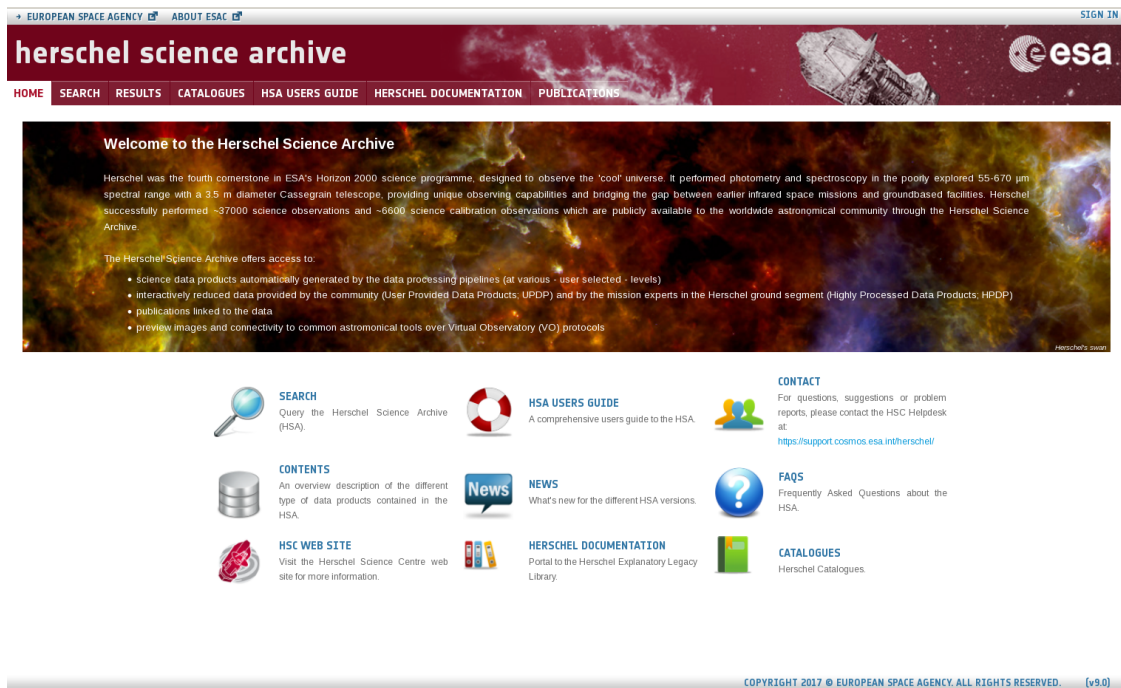- Search on Herschel Catalogues through the VO Table Access Protocol (TAP)

Figure 1: Web-based User Interface of the Herschel Science Archive.

2   Search capabilities

On the top of the interface there are three different tabs for searching:

The SEARCH tab with three main panels to search by Target Name, NAIF ID or Coordinates. It is also possible to submit a list of targets, NAIF IDs or coordinates. Observation Constraints which are contained in different tab filters per observation ID, instrument and refined queries by instrument settings, proposal information, pipeline processing constraints, date and publications. And for Product Selection: The query can be restricted to those observations which are contained in an UPDP or an HPDP. Also, a set of Ancillary Data Products (ADPs) can be retrieved directly from this panel.

The CATALOGUES tab. The User Interface also allows to query the contents of the main Herschel catalogues: The Photometric Catalogues and the Spectral Line Catalogues. The selection of the catalogue can be combined with geometrical searches by target name or coordinates. Also after selection of one catalogue, extra conditions for the query can be added and the columns displayed as output can be selected. The result can be saved as VOTable, CVS, FITS...

Users can also perform more complex queries through a TAP/ADQL Form.

The PUBLICATIONS tab. This functionality allows to make all kind of queries on the database of refereed publications linked to Herschel observations. Different filters (and combinations of them) for making queries are possible. In the results table, column "BIB
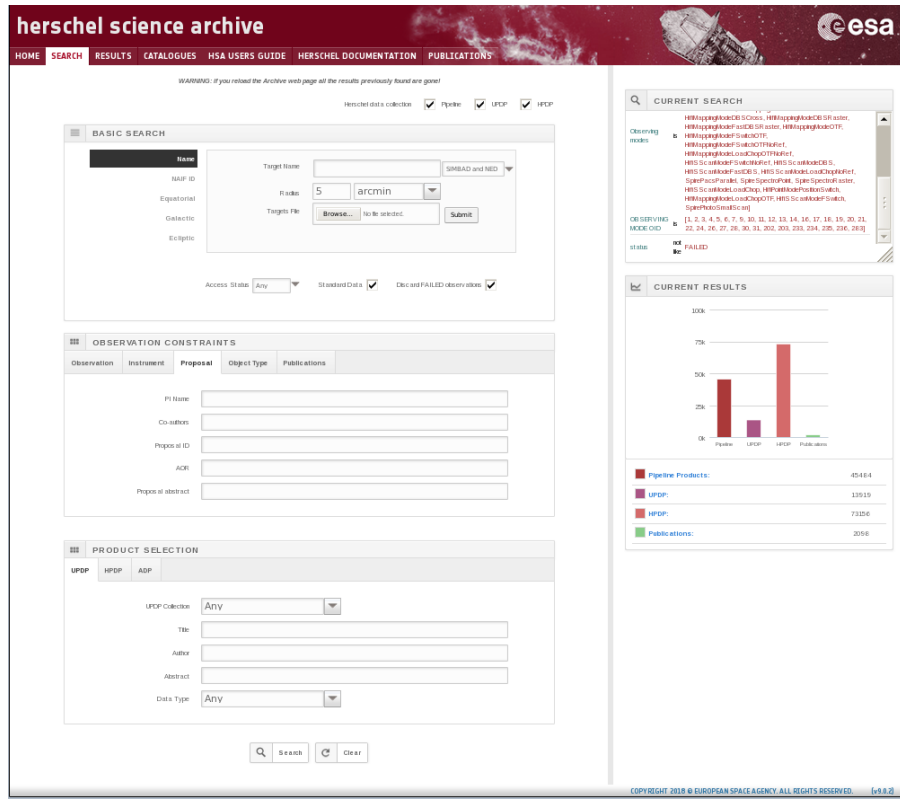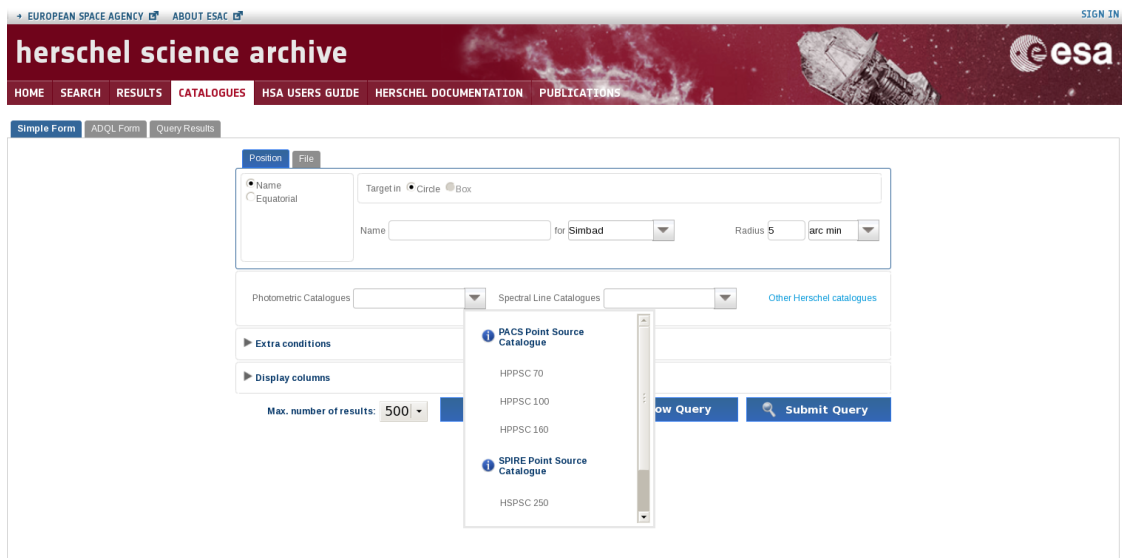
Figure 2:   The SEARCH tab of the HSA User Interface

Figure 3:   The CATALOGUES tab of the HSA User Interface

Figure 4: Searching catalogues and the HSA database through TAP/ADQL

Figure 5: The PUBLICATIONS tab of the HSA User Interface

Code" is a link to ADS and "OBS" gives the number of observations linked to this paper. Clicking on this number, the list of observations is given.

3   The Result of a query

The result of a query is always a list of observations which match the conditions given by the parameters used for searching the Herschel archive.

The Interface provides 4 different result tabs per query. The Pipeline tab gives the list of observations matching the query and information related to every observation and the associated Pipeline products. The UPDP tab gives the list of observations which are contained in one or more user provided datasets. It provides information on the UPDP (through the UPDP Keyword column) which is also illustrated when available through a
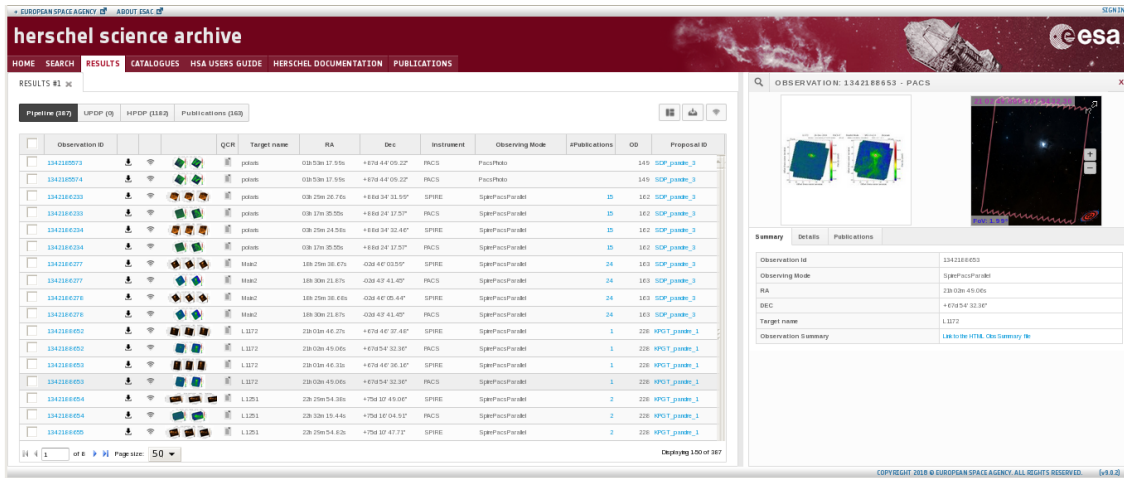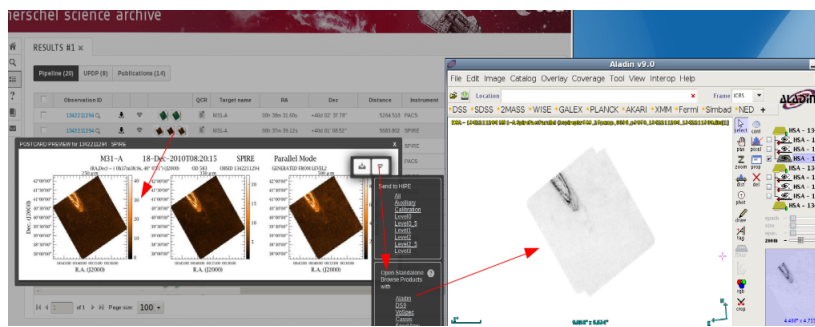
Figure 6: The RESULT of a query

Figure 7: Sending Herschel products to Aladin via SAMP

Postcard per observation. Like the UPDP tab, the HPDP tab gives the list of observations matching the query which are contained in one or more expert reduced dataset and gives similar information about it. And the Publications tab which gives the total list of papers in which any of the observations resulting from the query is included and a link to the corresponding publication registry in the ADS. Also, the number of observations included in every paper is given.

4 How to retrieve/visualize Herschel Data

The Herschel Science Archive makes use of the SAMP Web Profile (Javascript library) to interoperate with other astronomy tools via SAMP (Simple Application Messaging Protocol). This allows visualization and inspection of the Herschel data before the actual data download. Herschel products can be sent to the Herschel Interactive Processing Environment (HIPE) for their visualization and analysis and to VO tools like Aladin, DS9, VOSpec, CASSIS...

There are several methods to retrieve Herschel data: Pipeline products are retrieved
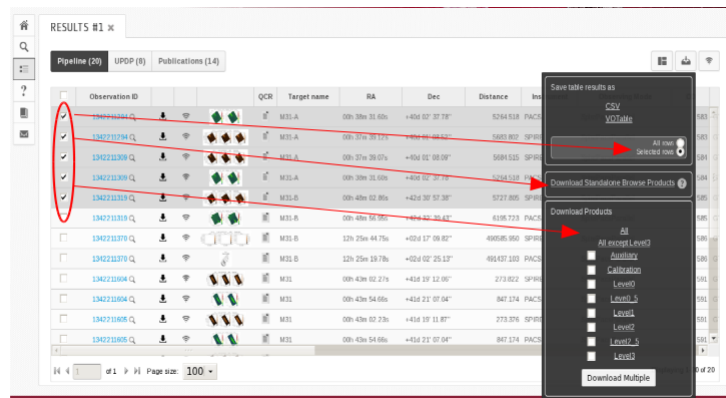
Figure 8:   Retrieving pipeline products and table of results from the Search tab
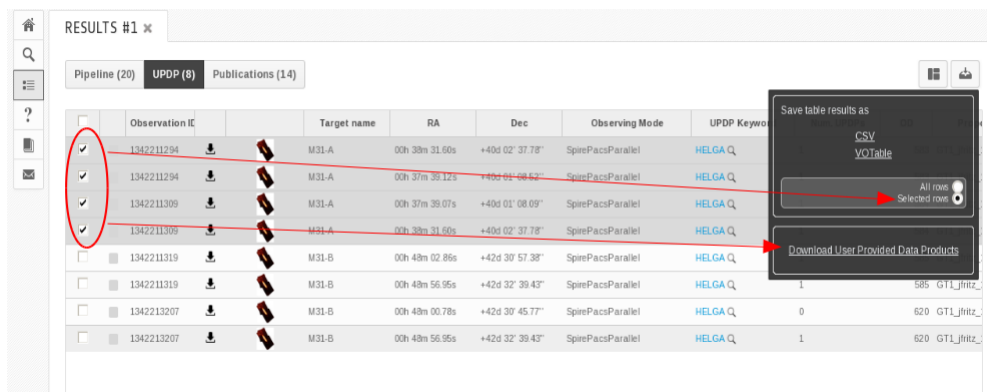

Figure 9:   Retrieving UPDPs from the Search tab

from the results tab while UPDP/HPDP can be also retrieved from the dedicated panel in the Search tab. The table of results (metadata) can also be saved as CVS or VOTable.

The complete guide on the usage of the Herschel Science Archive User Interface is provided inside the own interface and also as a document at:

https://www.cosmos.esa.int/web/herschel/legacy-documentation-observatory[1]

References

[1] Verdugo, E. 2018, HERSCHEL-HSC-DOC-2172