Quick Start Guide

1. Preface

The purpose of this document is to help you get started using HIPE with the minimum of fuss, confusion, time wasted, and helpdesk tickets raised.

It is assumed that you have installed HIPE without any issues, you have registered with the Herschel system (go here if not), you have an account with permission to access the Herschel Science Archive (HSA), and you know the observation ID for at least one set of data.

By the end of this document you will have achieved the following:

- transferred one observation from the HSA into your HIPE session;
- developed a broad understanding of the data structure that you see;
- learnt how to look at your data;
- begun to have an understanding of where you can go from here, and where in the documentation to look for this.

This document is intended to be read as you carry out these actions in HIPE. It does not describe any of the other views you see in the main HIPE window; for that, please see the HIPE Owner's Guide.

2. Access the Herschel Science Archive

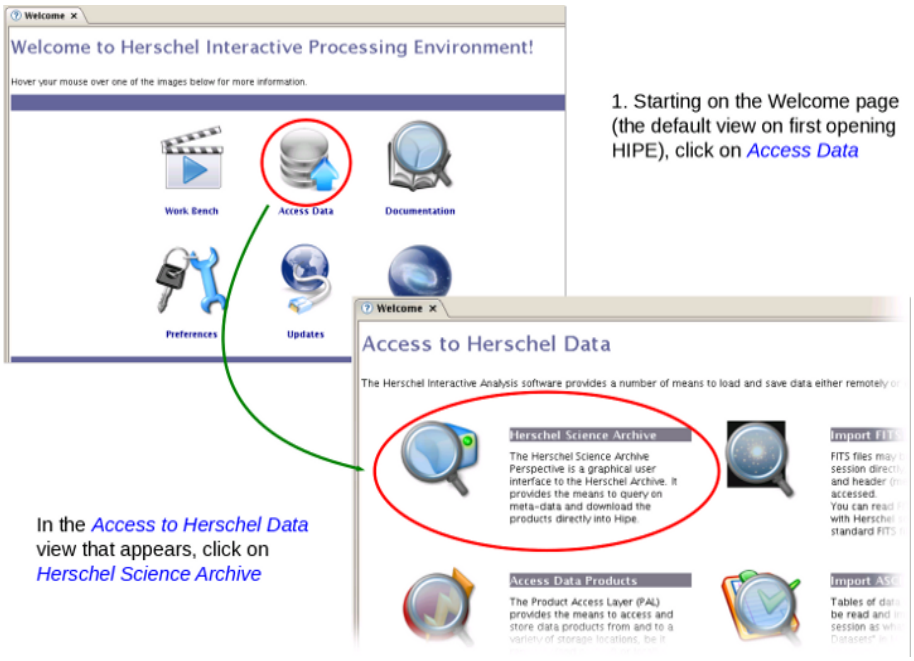

Figure 1. Accessing the Herschel Science Archive

Starting on the *Welcome* page (the default view on first opening HIPE), click on *Access Data*. In the *Access to Herschel Data* view that appears, click on *Herschel Science Archive* (see Figure 1). The *Herschel Science Archive* view appears. Use it to log into the Herschel system and open the archive interface.

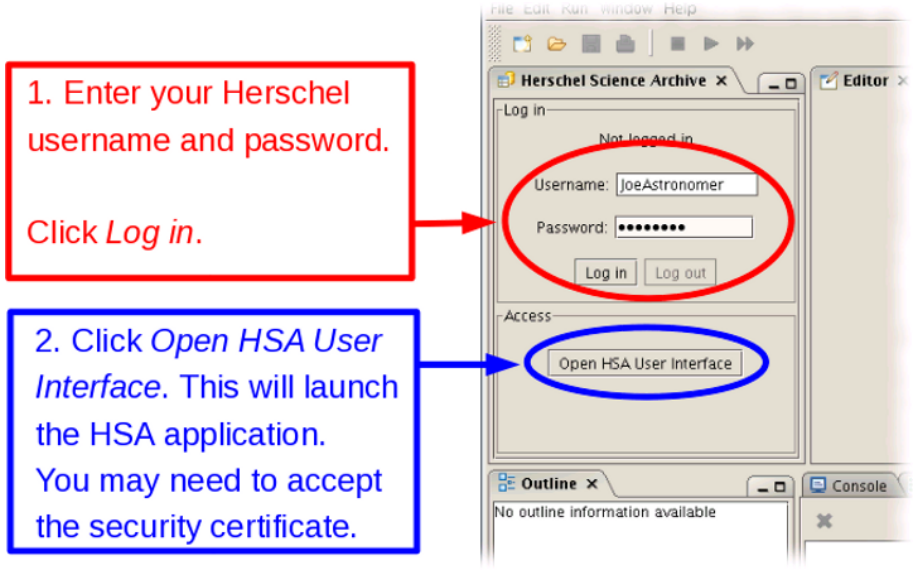

Figure 2. The HSA view

In the *Herschel Science Archive* view, enter your Herschel username and password, and click *Log in*. The click *Open HSA User Interface*. This will launch the HSA application. You may need to accept the security certificate (see Figure 2).

3. Query the HSA

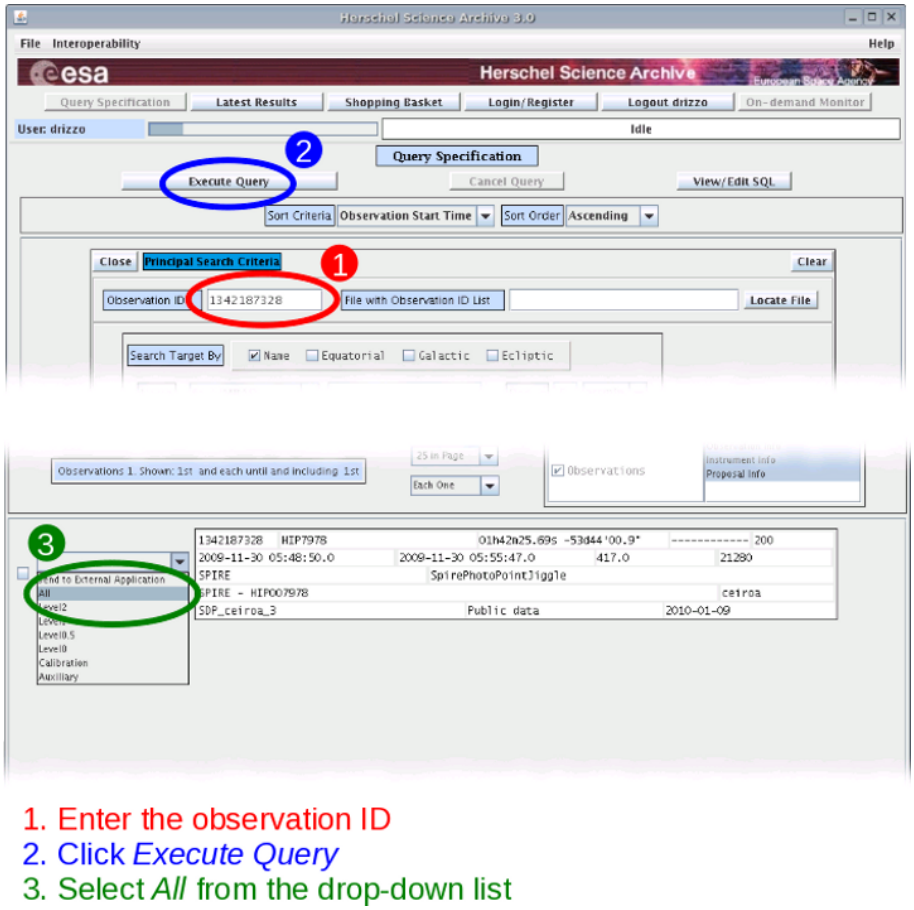

Figure 3. Querying the HSA

These steps are performed in the HSA application, which is not part of HIPE but communicates with it (see Figure 3). Enter a valid observation ID in the *Observation ID* field. Click *Execute Query*: you should obtain one result. Select *All* from the drop-down list next to the result.

Since any observation ID is unique, it is all you need to know to find your data. You can also do more involved queries, for instance per instrument and/or observing mode. For more information see the *Data Analysis Guide*.

4. Get the data into HIPE

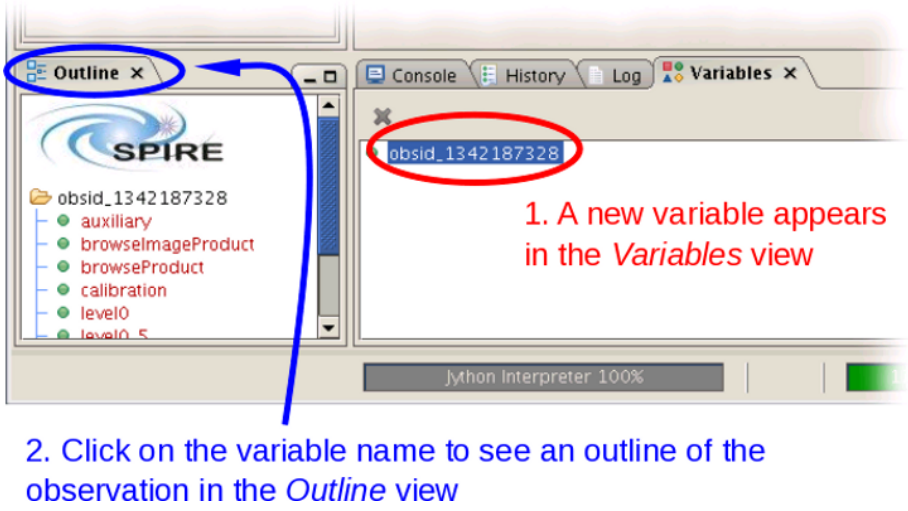

Figure 4. Loading data into HIPE

Back in HIPE, data are automatically imported and appear as a new variable in the *Variables* view (see Figure 4). The variable name contains the ID of your observation. Click on the variable to see an outline of the observation in the *Outline* view.

Tip

If you cannot see the *Variables* or *Outline* views, open them via the Window → Show View menu. Note also that the views could be in a different position than shown in Figure 4.

There are other ways in which to get your data. The method described above is ideal if you want to get a small number of observations and immediately be able to work on them in HIPE. To download, store and then access a larger number of observations see the *Data Analysis Guide*.

4.1. Save the data

You should note that with the method of data import described above, the data are not stored on your machine but referenced for fetching as needed during your session. If you still want to have access to this data the next time you open HIPE, you need to save them.

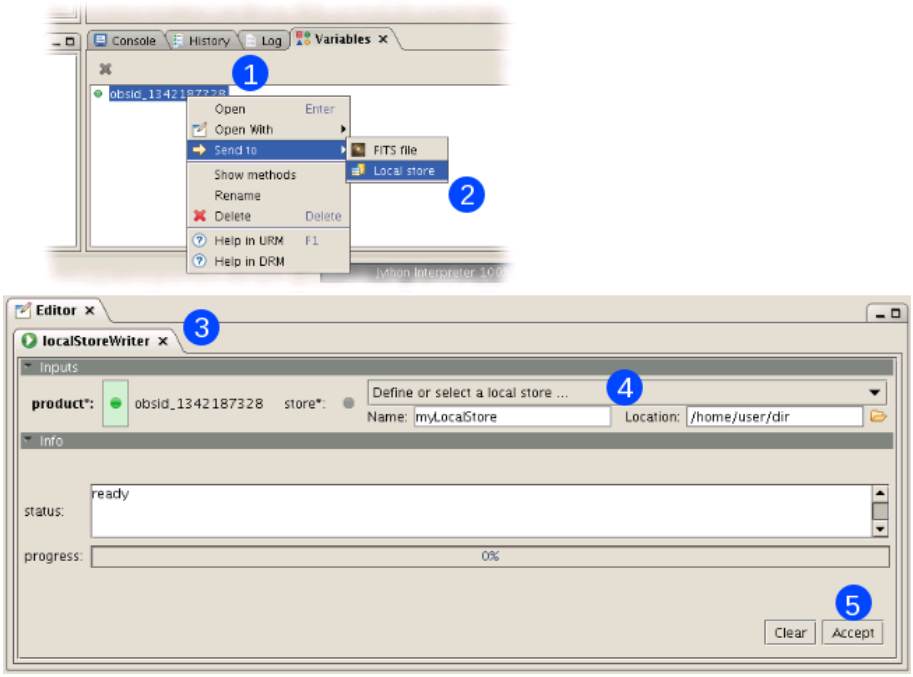

Figure 5. Saving data

To save your data, follow these steps (see Figure 5):

1. Right-click on the variable containing your data (called `obsid_` followed by the ID number) in the *Variables* view.

2. From the context menu, choose Send To → Local store.

3. The *localStoreWriter* dialogue window opens in the *Editor* view.

4. Select an existing *local store*, or write a name to define a new one. You can also choose the folder where to create it.

5. Click *Accept*. Your observation is saved in the local store. For more information on local stores, see the Data Analysis Guide.

5. Inspect your data

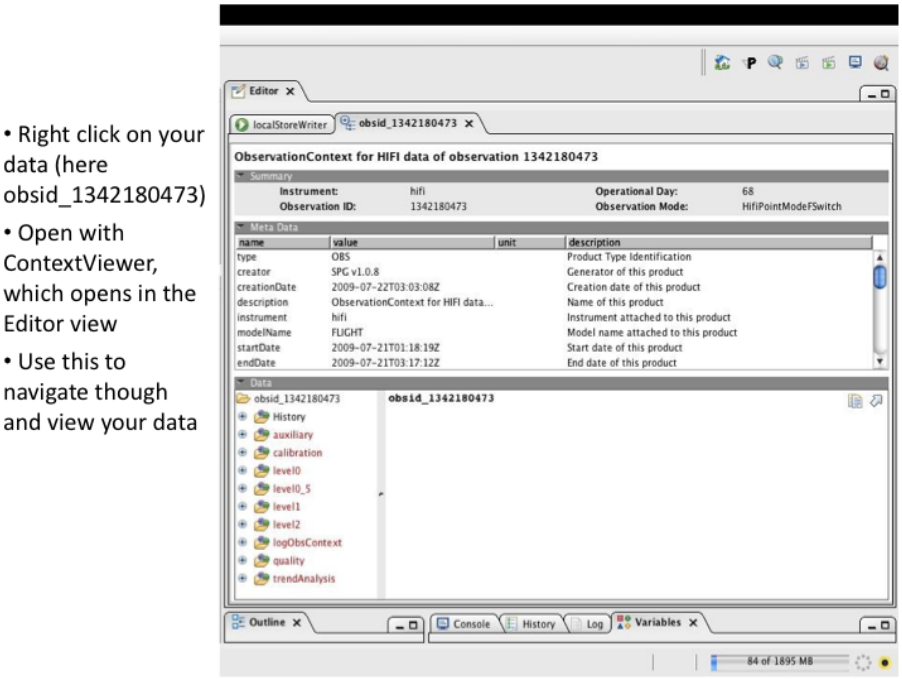

Figure 6. Inspecting an Observation Context

Using the *Context Viewer* you can navigate through and inspect the contents of your Observation Context.

To look at your Level-2 data, click on the Level-2 product in the Observation Context. The Level-2 product contains other products, which can themselves contain other products. This onion skin arrangement of products is represented in the ContextViewer by a hierarchical structure. The data you want are right in the middle of the onion so click on through until you reach the bottom Product and inside that you will find your data.

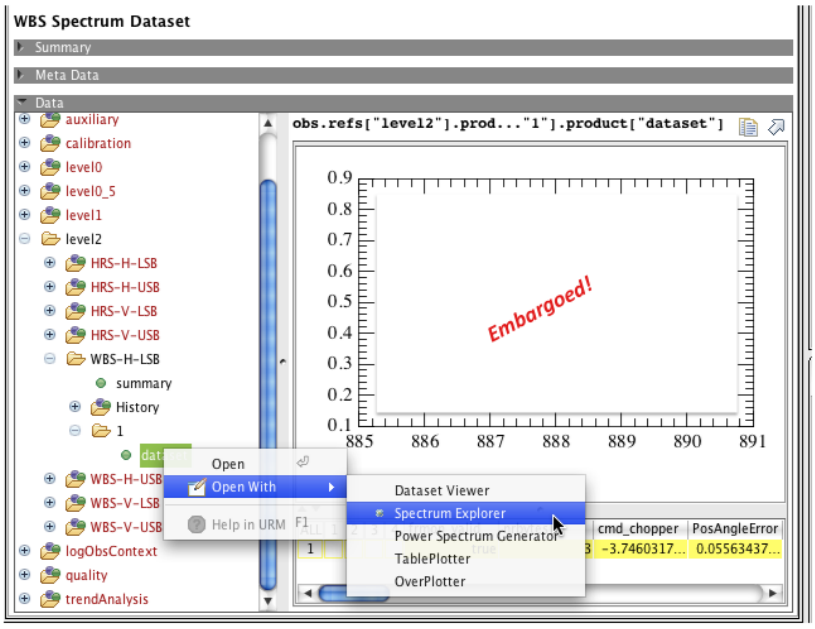

Figure 7. Opening a spectrum with the Spectrum Explorer

Typically, double-clicking on this will open the data in the most appropriate tool with which to view them. You can also right click (a preview will appear in the rest of the Editor view) and choose *Open with*:

- Spectrum Explorer - single point spectra (all instruments)
- Cube Analysis Toolbox - SpectralCubes (all instruments)
- Standard Image Viewer - PACS and SPIRE photometry.

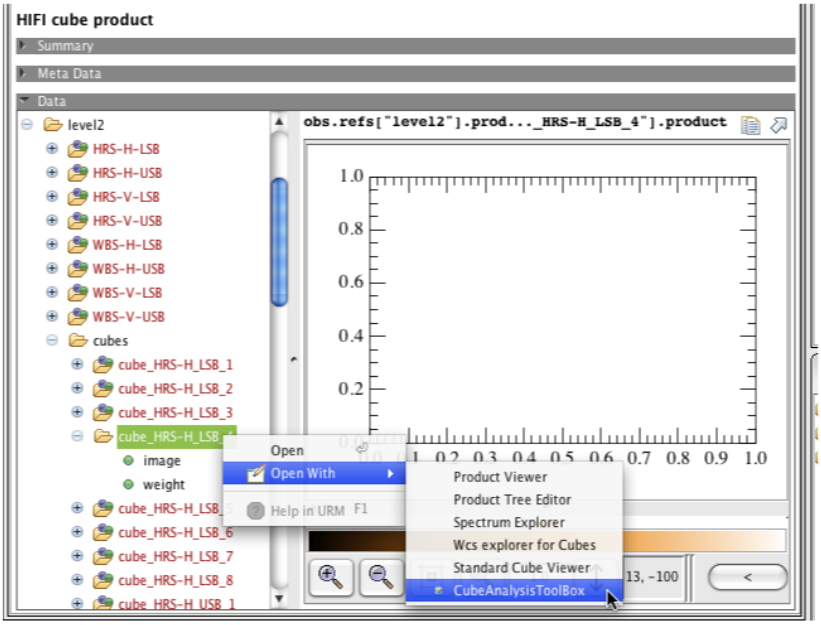

Figure 8. Opening a cube with the Cube Analysis Toolbox

What is an Observation Context?

An Observation Context contains all the meta data and data products associated with your observation. It is the box we give you your data in.

The structure of an Observation Context is the same for all instruments and all observing modes. As you can see in Figure 6 above, an Observation Context contains the following products:

History:	Contains the automatically generated script of actions performed on your data, a history of the tasks applied to the data, and the parameters belonging to those tasks.
Auxiliary Context:	All Herschel non-science spacecraft data required directly or indirectly in the processing and analysis of the scientific data.
Calibration Context:	The parameters that characterise the behaviour of the satellite and the instruments. Used for reprocessing data.
Level-0 Context:	Raw data, minimally manipulated.
Level-0.5 Context:	Data processed to an intermediate point adequate for inspection

Level-1 Context:	Detector readouts calibrated and converted to physical units, in principle instrument and observatory independent.
Level-2 Context:	Scientific analysis can be performed. These data products are at a publishable quality level and should be suitable for Virtual Observatory access.
Level-3 Context (optional):	Publishable science products with level 2 data products as input. Possibly combined with theoretical models, other observations, laboratory data, catalogues, etc. Formats should be Virtual Observatory compatible.
LogObsContext:	A log of actions performed on the Products in the Observation Context
Quality Context:	Issues flagged by the pipelines that indicate possible issues with the quality of the data or pipelining. An empty quality report indicates no problems in processing.
Trend Analysis Context	Products useful for tracking systematic changes in instrument response over time.
Telemetry Context:	Optional - only included when the HSC deems it necessary because of a serious problem in the processing to level-0 data.

6. Moving into data analysis and reprocessing data

6.1. Starting data analysis

Now that you have had a first look at your data, you will probably want to do so a little more quantitatively by, for example, fitting spectral features, or comparing with other fits files, such as data from other observatories. You may wish to do some basic photometry or other image analysis among other things, for all of which you should look in the Data Analysis Guide.

6.2. Reprocessing data

After looking at your data, you may decide that you are not happy with how they were reduced. Indeed it is expected that re-processing will be required, especially in the earlier stages of the mission.

Because you are supplied with raw data and all calibration and auxilliary products, it is possible for you to reprocess your data yourself. The information you need to reprocess data can be found in the separate instrument guides: the HIFI User Manual, the PACS Data Reduction Guide, and the SPIRE User Manual.