



Quickstart Guide to HIPE and the HSA



David Shupe

User Support coordinator / NHSC
Archive Scientist





Quickstart Guide

- Mechanics of HIPE Installation
- Using Remote Computing Accounts
- Accessing the Herschel Science Archive
- Status, Plans, and Caveats





Quickstart Guide

- Mechanics of HIPE Installation
 - Get a Herschel account
 - Download and run HIPE installer
 - Configure HIPE
 - Install Calibration
- Using Remote Computing Accounts
- Accessing the Herschel Science Archive
- Status, Plans, and Caveats



A Herschel account is required to work with the archive

<http://www.cosmos.esa.int/web/herschel/home>

Go to User Services, then User Registration



COSMOS HOME SCIENCE MISSIONS ▾ SCIENCE FACULTY ▾

Cosmos » Herschel » Home

- Home
- General Information ▶
- Documentation ▶
- Observations ▶
- Data Products ▶
- Data Processing ▶
- Publications ▶
- User Services** ▶
 - Services Overview
 - User Registration**
 - Lost Password ???
- Herschel Helpdesk

EXPLORER
DÉCOUVRI

Welcome to the **Herschel Astronomers' website**
For additional ESA and external Herschel related w

Herschel was launched on 14 May 2009! It is
ESA science programme. With a 3.5 m Cassegrain
telescope ever launched. It is performing photometry
the 55-671 μm range, bridging the gap between

...ned to observe the `cool
universe, resolving the far
...GN/starburst symbiosis a
most stars in the universe were formed, unveil
interstellar medium and its molecular clouds, the v
mechanisms governing the formation of and e
systems, including our own solar system, putting
opening a new window to study how the universe
see today, and how our star the sun, our planet the

Download and run the HIPE 12.1.0 installer

<http://www.cosmos.esa.int/web/herschel/hipe-download>

I have a repository on USB drive if needed

Tips:

Install all 3 instruments
(for this workshop)

Choose a Local store
location with sufficient disk
space

Choose the memory
carefully

Uncheck the “Install
Source Code” option if
network speed is slow

Specify the local repository location. This is a common software and documentation repository among all local HIPE installations that is used for installing common components.

Local repository location:

The local store is the main repository for data retrieved from the Herschel Science Archive and/or reprocessed with HIPE. It typically contains several GBs of data after some usage so you might want to choose a proper location for it:

Local store location:

A default java maximum heap size for the various HCSS applications (i.e. HIPE, etc.) should be specified. Your computer has 16384 MBs of RAM, so you should not set more than 15872 MB. Although higher values are possible, they will strongly reduce system performance due to memory swapping. Choose a value from the drop-down list or type your **Custom Size** in units of MB (allowed values range from 512 to 24576)

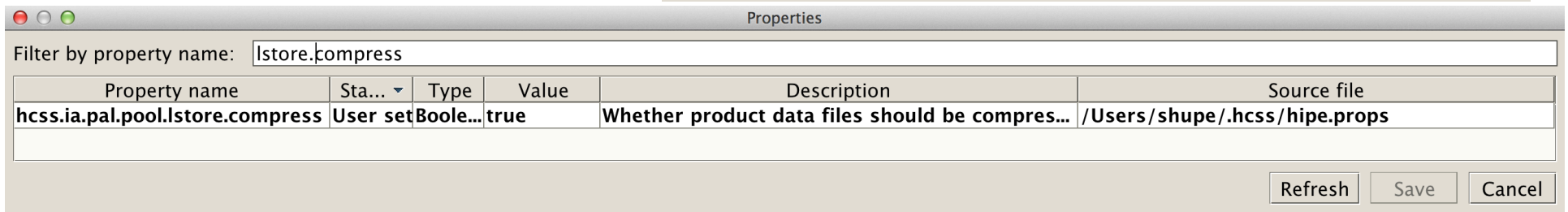
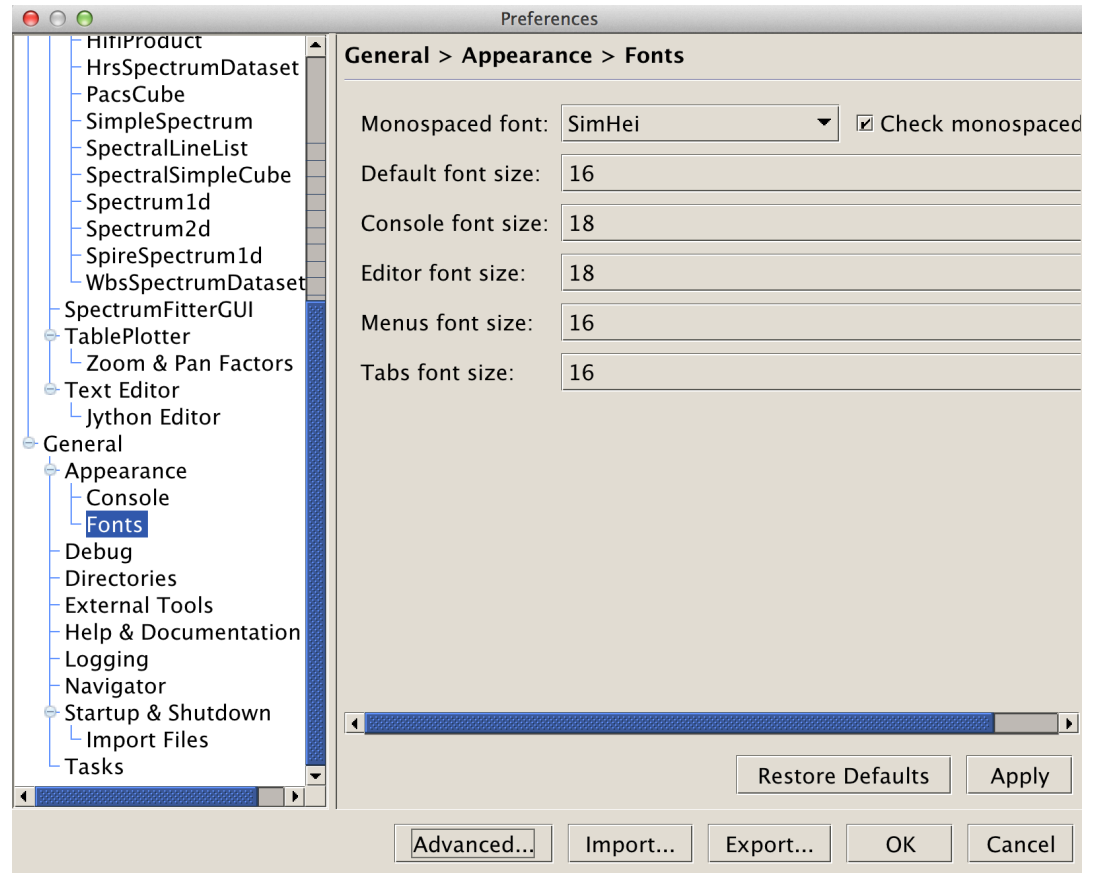
Would you like to have the source code installed?

Start HIPE and optionally configure a few more items

On a MacBook Pro with Retina display, change the fonts and size (here using SimHei font and sizes of 16-18)

You can reset memory size and data locations

Save space by setting `hcss.ia.pal.pool.lstore.compress` to true (using Advanced tab)



For SPIRE photometry reprocessing with SPIA, a patch must be applied

Don't forget to install the quick fix
for HIPE 12.1
see SPIA homepage
<https://nhscsci.ipac.caltech.edu/sc/index.php/Spire/SPIA>

- Replace one jarfile with another
- One of the suggested exercises

Install PACS and SPIRE calibration

- Usually both updaters run after HIPE starts up, checking for new calibration
- Tools -> pacs-cal -> run Updater...
- Tools -> spire-cal -> run Updater...



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The remote computing facilities can supply large resources to many users

- Physical servers with large capacity
 - 3 machines with 64 GB memory
 - 2 machines with 128 GB memory
 - Large server with 384 GB memory
- A virtual machine is created for each request
 - Secure (destroyed after use)
 - Each VM is tailored
 - Memory, disk, # cpus are adjustable
- ssh / scp access

Key Herschel software is already installed

- Java
- HIPE
- SIMPLE
- scientific python
(Anaconda)
- IDL
- Scanamorphos
- Unimap
- ds9
- xpa
- Topcat
- cadaver

Virtual Network Computing (VNC) is provided on all accounts

- Virtual Network Computing is now installed and pre-configured on our remote computing accounts
<https://nhscsci.ipac.caltech.edu/sc/index.php/ExternalUser/VNC>
- VNC provides X-windows sessions that can be closed down and reconnected to later
 - HIPE keeps running, even when user is not logged in
 - User can reconnect from a different machine to check on processing progress

A few tips will help you use VNC

- Vnchiipe to start HIPE
- Old window manager (twm)
- Vncremove to clean up prior sessions
- Might not be needed if you're at IPAC



Quickstart Guide

- Mechanics of HIPE Installation
- Using Remote Computing Accounts
- **Accessing the Herschel Science Archive**
 - Starting HSA User Interface
 - Finding an observation
 - Shopping Basket to Tarfile
 - Import into HIPE
- Status, Plans, and Caveats





Some data access terms

- **OBSID**: A unique 10-digit identifier for the observation
- **Proposal**: Each proposal is identified with a unique string:
 - Program_FirstInitialLastNameXX_number
 - For example: OT2_dardila_2, AOTVAL_cwilso01_2
- **Programs**:
 - **OT**: Open time; **GT**: Guaranteed time; **DDT**: Director's Discretionary Time; **TOO**: Target of Opportunity; **KP**: Key Program; **AOTVAL**: AOT validation; **OBS**: Filler program; **SDP**: Science Demonstration Phase

Courtesy David Ardila





More Data access terms

- AOT: Astronomical Observation Template
 - The name of the observing mode used
- AOR: Astronomical Observation Request
- OD: Operational Day
 - The day the observation was done, from 120 to 1451
- SPG: Standard Product Generation
 - The pipeline version, updated about every year.
Currently 12.1.0 (incomplete)
- QC State: Manual quality control verification – Failed, Pending, Passed, <blank>

Courtesy David Ardila



Log into the Herschel Science Archive

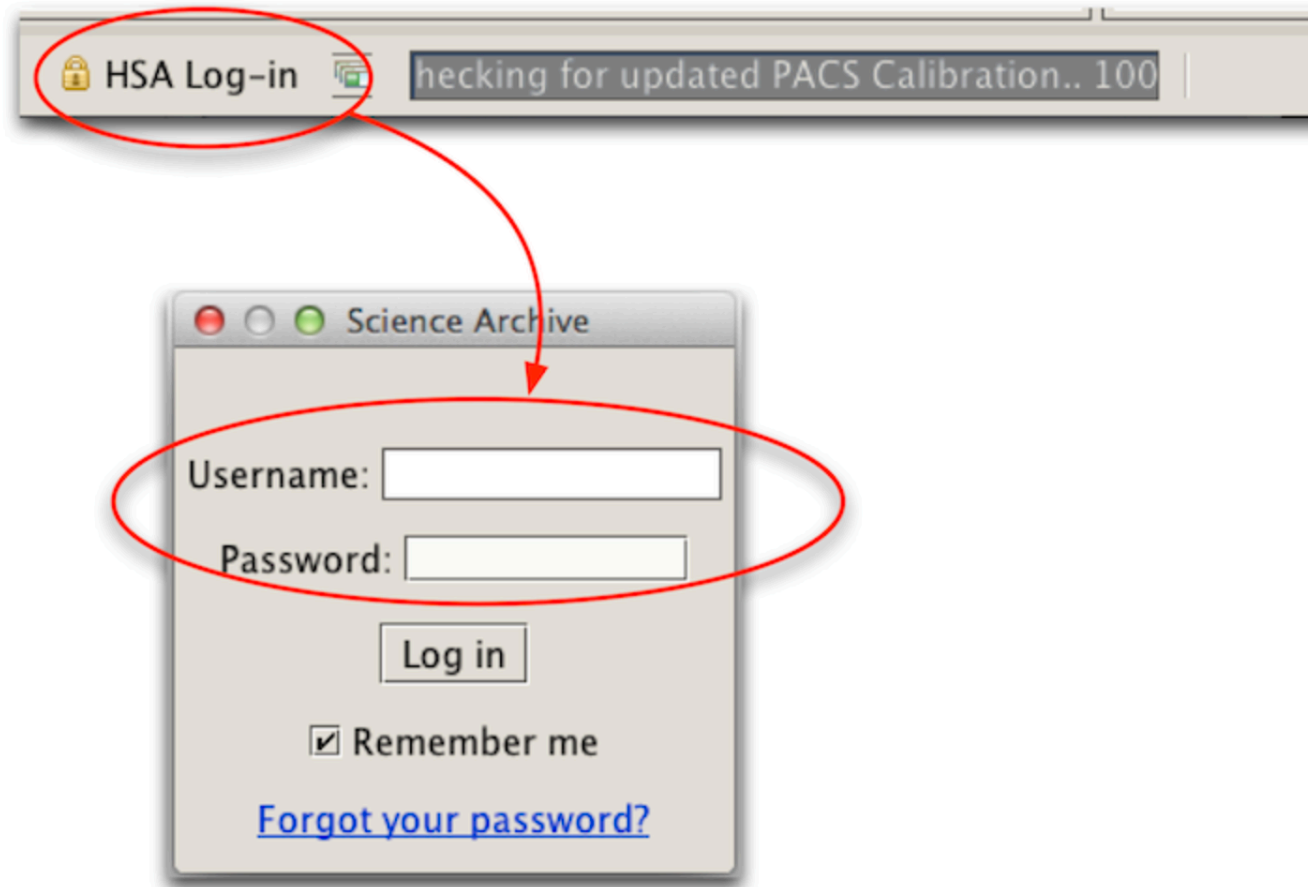
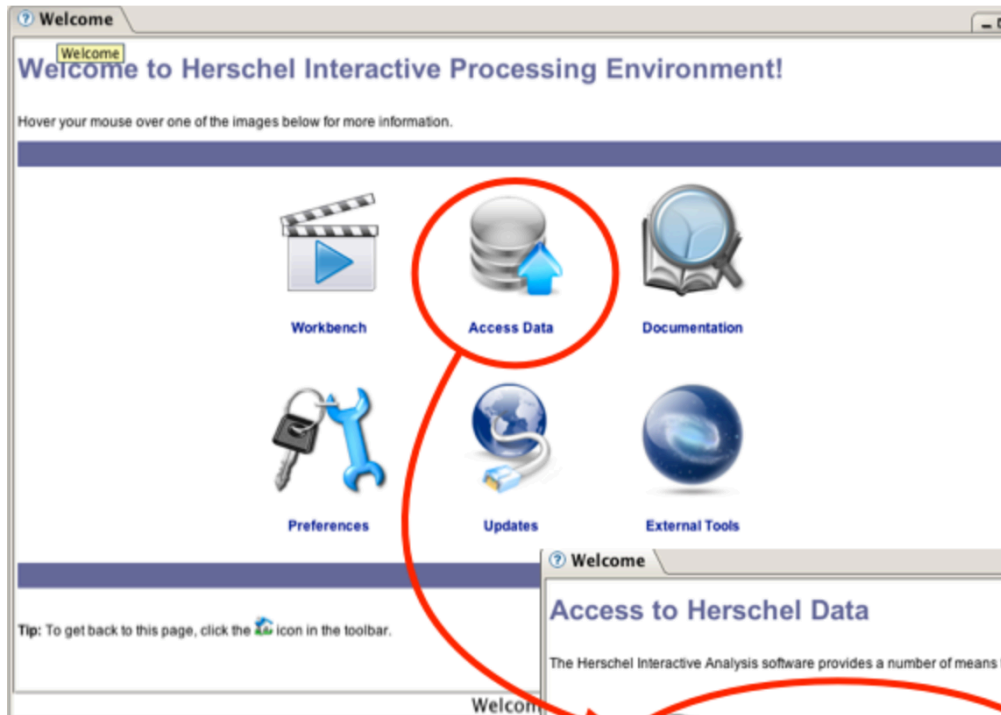


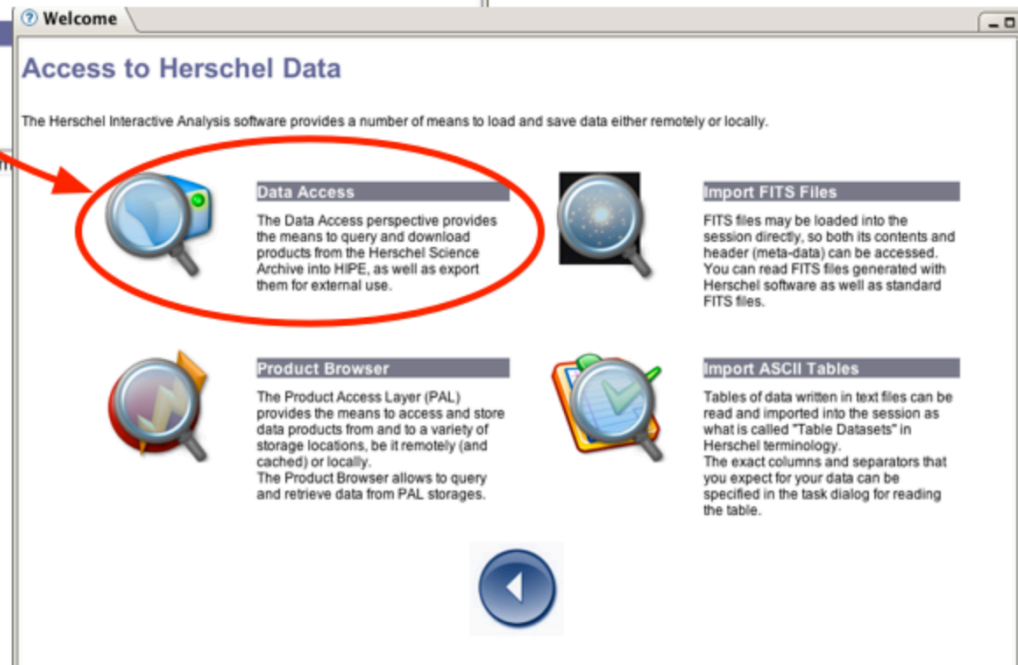
Figure 1. Logging in to the Herschel Science Archive

Navigate to Data Access



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 *Data Access*



Launch HUI (HSA User Interface)

Tip

If you cannot see the *Welcome* page, click the 🏠 icon at the top right corner of the HIPE main window. Also, in the same toolbar to the left, there is an always-visible icon 📄 that instantly launches the HSA interface.

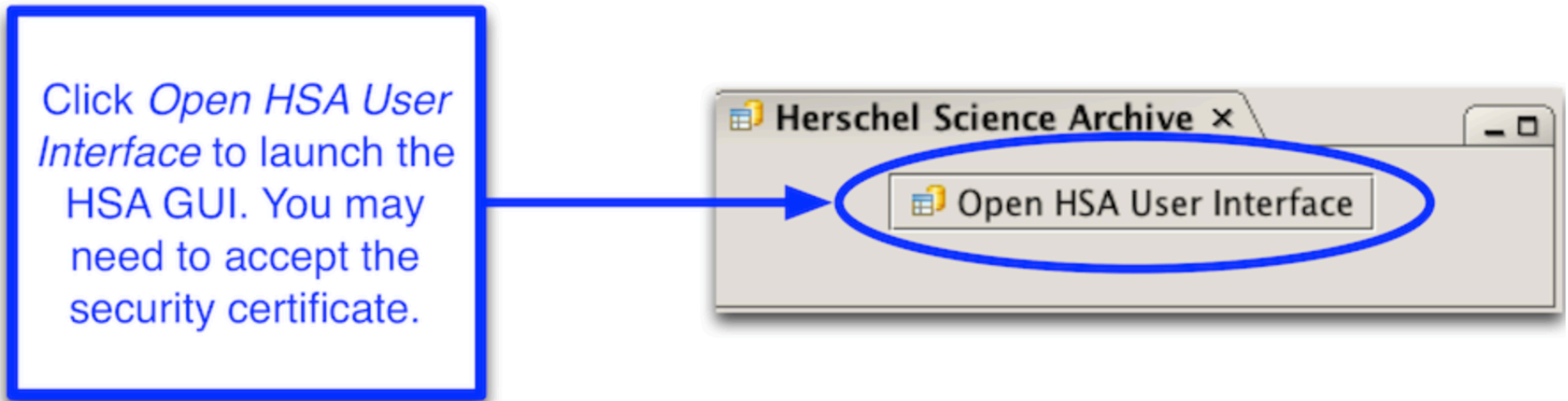


Figure 3. The HSA view

From *HIPE Quick Start Guide*

HUI Search on target (M82)

Search Observations #3

Main Query Panel

Observation Id Obs. List

Proprietary Status

Geometry Panel

Target Multiple Target

Shape Circle Box Resolve Name Equatorial

Centre Coordinates

Target **Ra:**
Dec:
Epoch: J2000

Instruments Query Panel

Instrument Obs. Type: Standard Data

All
HIFI
PACS
SPIRE
SPIREPACS

HIFI
Single Point Mapping
Spectral Scan

PACS
Pacs Photometer
Range Spectroscopy
Line Spectroscopy

SPIRE
Photometer
Spectrometer

SPIREPACS
Parallel Mode



More terms...Levels

- Level 0: Raw data, minimally manipulated.
 - Also level 0.5
- Level 1: Detector readouts converted to physical units.
 - Also level 1.5
- Level 2: Science-quality products. All good observations should have data to level 2. **If the level 2 is not present something went very wrong.**
- Level 2.5: Enhanced products (e.g. combinations for multiple OBIDS, extracted spectra).
- Level 3: More enhanced products (e.g. for SPIRE, combinations of all imaging observations in that coordinate, zero-point corrected).

Courtesy David Ardila



Place observation in Shopping Basket, and submit request for Level-2

UPDP **QUALITY REPORT** 1342187206 M82 09h 55m 51.26s +69d 40' 23.10" 24.58arc... 194

START TIME: 2009-11-24 17:12:32 **Duration:** 4504.0 **URN:** 522229
INSTRUMENT: PACS **OBS. MODE:** PacsLineSpec
PROPOSAL: Calibration_pvpac80
AOR: Calibration_PVSpecAotVal_1-PVSpecAotVal_521X_StdLineMap_63_...
PROP STATUS: Public data **EXPIRATION DATE:** 2009-11-24
SPG: SPG v12.1.0 **Level:** LEVEL2_PROCESSED **Status:**

Search Shopping Basket Observations #3

Observations

[1 Observations]

Retrieve On Demand Reprocessing

<input type="checkbox"/>		All	Observation	Target Name	RA	DEC
<input checked="" type="checkbox"/>		Level2	1342187206	M82	09h 55m 51.26s	+69d 40' 23.10"

You will receive an email when the download is ready

Dear HSA User,

Your retrieval request has been successfully processed.
The data may be retrieved from the following address where they will remain for 3 days.

You can access your files online from the browser at:

http://archives.esac.esa.int/hsa/ftp_public/dshupe204282201/dshupe204282201.tar.gz

The total size of the requested files is 165.0 MB (173285302 bytes).
The list of files which have been copied is attached at the bottom of this message.

You can get more information about the Herschel project by accessing the Herschel web pages from the following URL:

<http://herschel.esac.esa.int>

Best Regards,

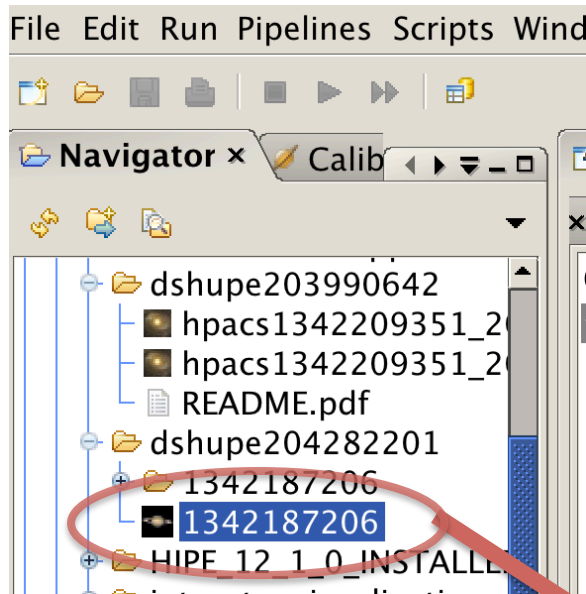
The Herschel Science Data Archive team

The following files have been copied (limit to 1000 products):

=====

23 /hsa/oper/hsa_oper_repository/request_files/v12.1.0/1342187206-herschel.ia.obs.ObservationContext-522229.xml
/hsa/oper/hsa_oper_repository/images/v12.1.0/1342187206-herschel.ia.obs.ObservationContext-522229.jpg

After downloading tarball, unpack and double-click Saturn icon



1. Double-click the Saturn icon...

2. ...then double-click in Variables on obsid_1342187206

ObservationContext for PACS data of observation 1342187206

Summary

AOR label:	Calibration_PVSpecAotVal_1-PVSp...al_521X_StdLineMap_6	Obs. ID:	1342187206
Instrument:	PACS	Obs. Date:	2009-11-24T17:1
Object:	M82	Obs. Mode:	Mapping
AOT:	Line Spectroscopy	Dec. Nominal:	69° 40' 46.9"
RA Nominal:	9h 55m 52.22s	Operational Day:	194
SPG Version:	SPG v12.1.0		

Meta Data

Data

- obsid_1342187206
- History
- processingErrors
- auxiliary
- browseImageProduct
- browseProduct
- calibration
- level0
- level0_5
- level1
- level2
- logObsContext
- quality
- trendAnalysis

obsid_1342187206

You have Level-2 on your disk,
and pointers to the rest in archive

- The top-level obsid_132187206 is a handle on the entire Observation Context (tree structure)
- Opening up branches other than Level-2 will pull them from HSA
- In Shopping Basket you could ask for All levels to have retrieved everything



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- **Status, Plans, and Caveats**
 - HIPE Versions
 - Bulk Reprocessing Versions
 - HSA Versions



Major HIPE versions are released about once per year

- Current version is 12.1
- HIPE 13 release in early 2015
 - code freeze will be Nov '14
- HIPE 14 in early 2016
- HIPE 15 will be last version (end 2016)

Bulk reprocessing is tied to HIPE releases

- Current bulk reprocessing version is SPG 12.1.0
 - Nearly all observations are processed to Level-2
 - Consolidation is ongoing
 - Combining overlapping mapping observations (Level 2.5, Level 3) has not yet started
- *The archive is currently incomplete, sometimes unstable*



Hands-on exercises

- Install HIPE and calibration (if not yet done)
- Turn on local store compression (Edit -> Preferences -> Advanced)
- Login to the HSA and launch the HSA User Interface
- Download tarball from workshop site, untar, and double-click to load into HIPE