



HIPE Introduction and Setup for SPIRE

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on behalf of the SPIRE ICC



This presentation is intended as an overview and “quick start”

- It sets the stage for hands-on work
- Some features will not be covered
- Customization for SPIRE is described



Intro to HIPE and Setup for SPIRE

- The HIPE Workbench Perspective
- Accessing Observations in HIPE
- Help and Documentation
- SPIRE-specific Setup





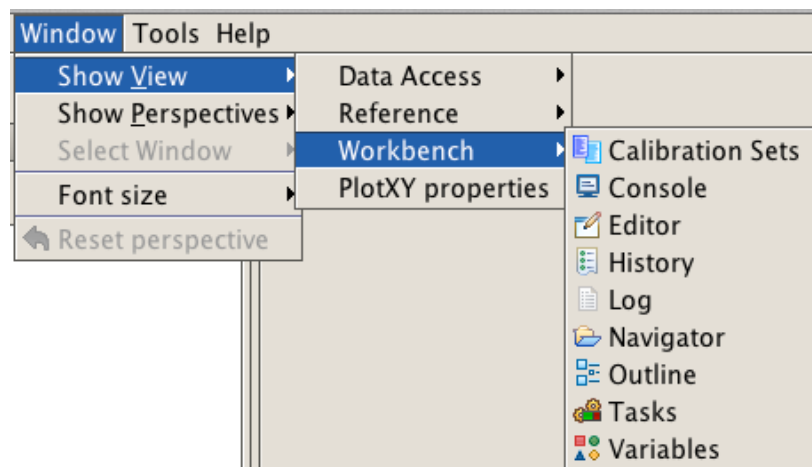
Intro to HIPE and Setup for SPIRE

- The HIPE Workbench Perspective
 - Views and Perspectives
 - Variables and Outline views
 - The Editor View
 - Monitoring memory usage
- Accessing Observations in HIPE
- Help and Documentation
- SPIRE-specific setup



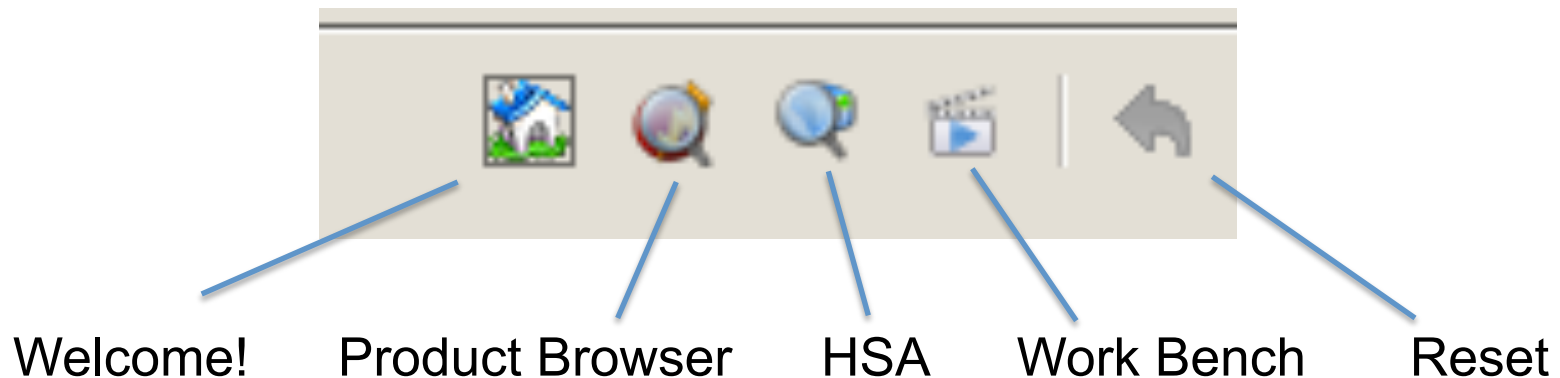
Views are windows or regions with specialized functions

- Views can be resized or minimized
- Views can be endlessly rearranged
- Views don't shut down when closed
- Views are accessible by menu

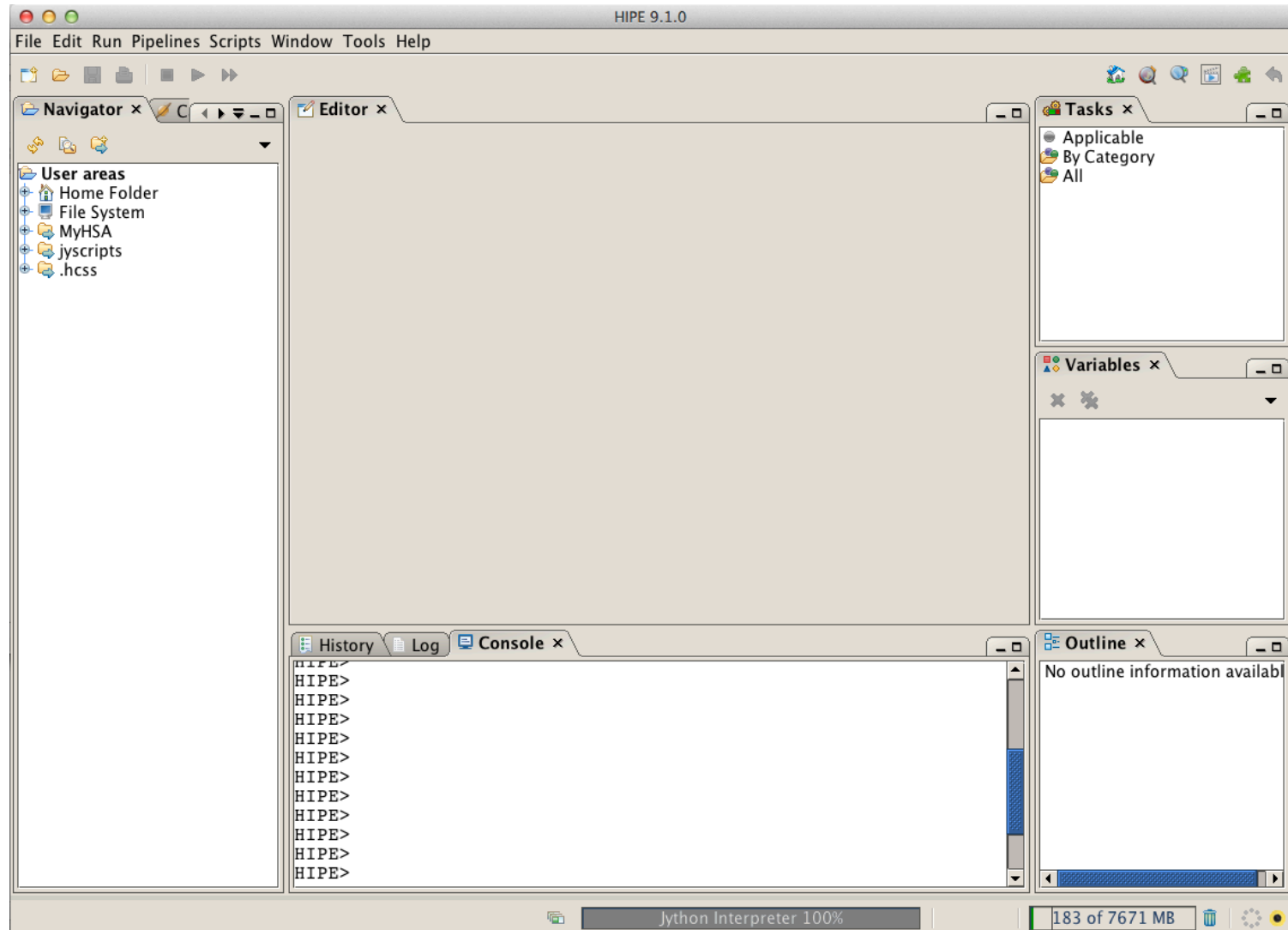


A Perspective is a specific collection of view windows

- Perspectives are pre-defined
- Your re-arrangement of views is “sticky”
- You can reset the arrangement to the default



Most of the action takes place in the Work Bench perspective



The Variables view provides easy access to each data item

The screenshot displays the HIPE 9.1.0 application window. The main area is the 'Variables' view, which contains a list of variables. One variable, 'PCalBase_TimeDependency', is selected and highlighted in blue. The interface includes a menu bar (File, Edit, Run, Pipelines, Scripts, Window, Tools, Help), a toolbar, a Navigator pane on the left, and a History pane at the bottom. The status bar at the bottom shows 'Jython Interpreter 100%' and '183 of 7671 MB'.

Annotations with blue arrows point to specific features:

- Delete selected variable:** Points to the 'x' icon in the top-left corner of the Variables view.
- Delete all variables:** Points to the 'x' icon in the top-right corner of the Variables view.
- Double-click for default (usually a viewer):** Points to the selected variable 'PCalBase_TimeDependency'.
- Right-click or control-click for a quick list of options:** Points to the right-click context menu area.

The Outline view shows details and structure of a data item

Red = not loaded yet
Black = loaded in session

For any item:
Double-click for default
(usually a viewer)

Right-click or control-click
for a quick list of options

The screenshot shows a software interface with an 'Outline' window. The window displays the following information:

name	obs_50001833
class	ObservationContext
package	herschel.ia.obs

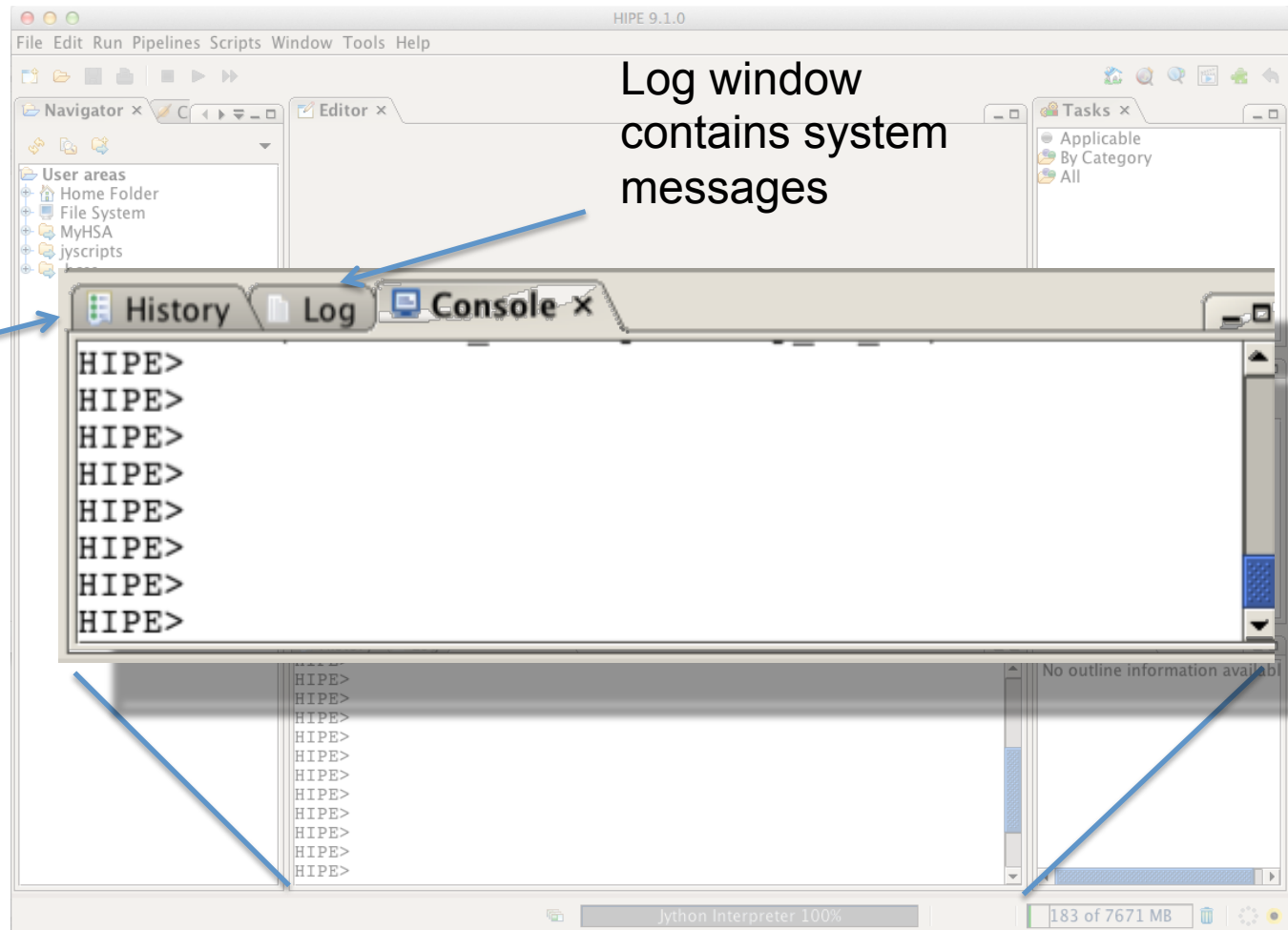
Below the table, a tree structure is shown for the 'obs_50001833' folder:

- auxiliary
- browseImageProduct
- browseProduct
- calibration
- level0
- level0_5
- level1
- level2
- logObsContext
- quality

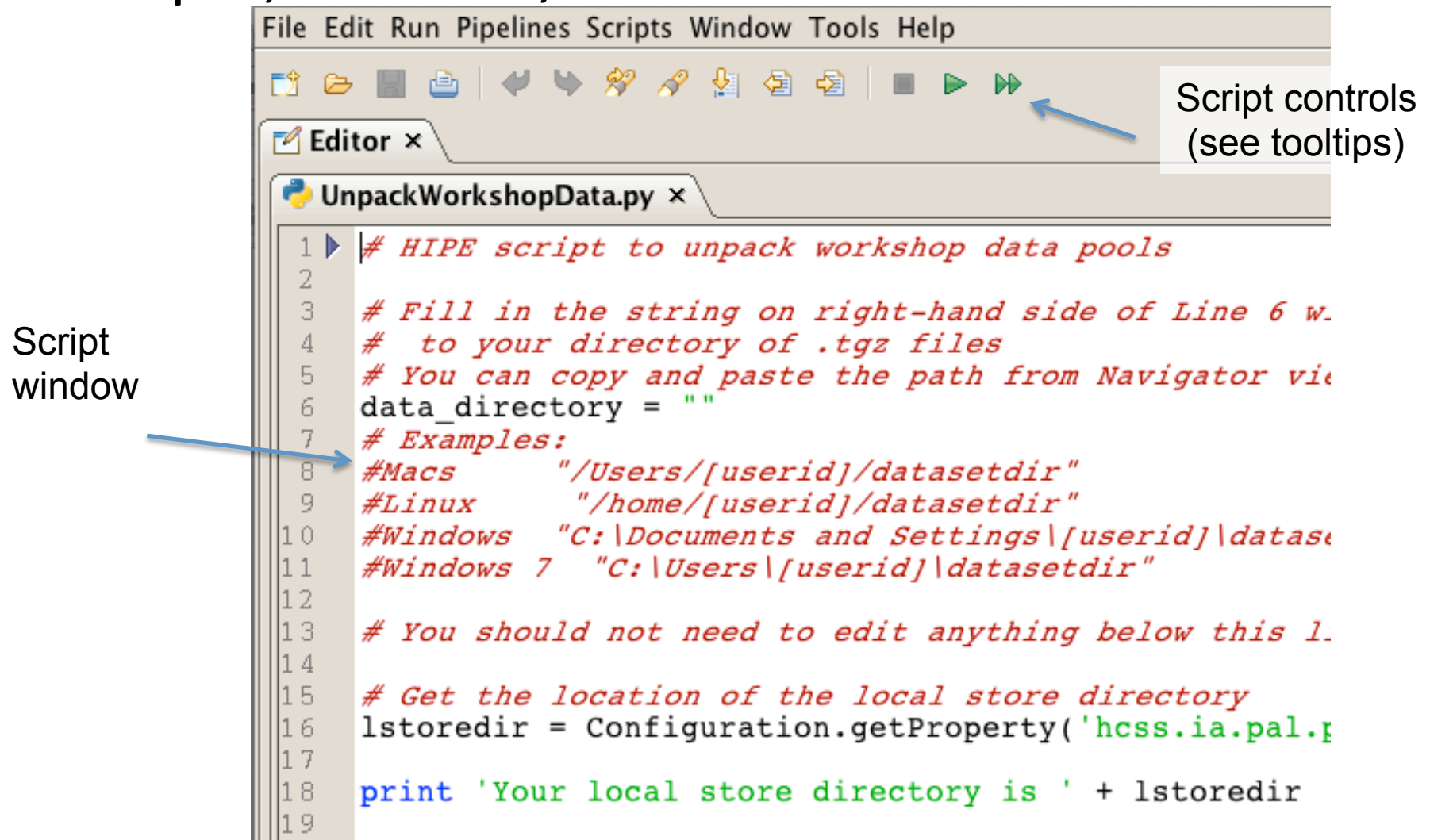
The items in the tree are color-coded: 'auxiliary', 'browseImageProduct', 'browseProduct', 'logObsContext', and 'quality' are in red, while 'calibration', 'level0', 'level0_5', 'level1', and 'level2' are in black. A blue arrow points from the top right of the Outline window to the 'variables' panel on the right side of the interface.

Jython commands are executed in the Console window

History tab keeps a record of your commands



The Editor view contains scripts, viewers, and task interfaces



The Observation Viewer breaks out all the pieces of your observations

The screenshot displays the HIPE 6.0.0 Observation Viewer interface. The window title is "HIPE 6.0.0" and the active tab is "obs". The interface is divided into several sections:

- Browse Product**: A summary table with the following data:

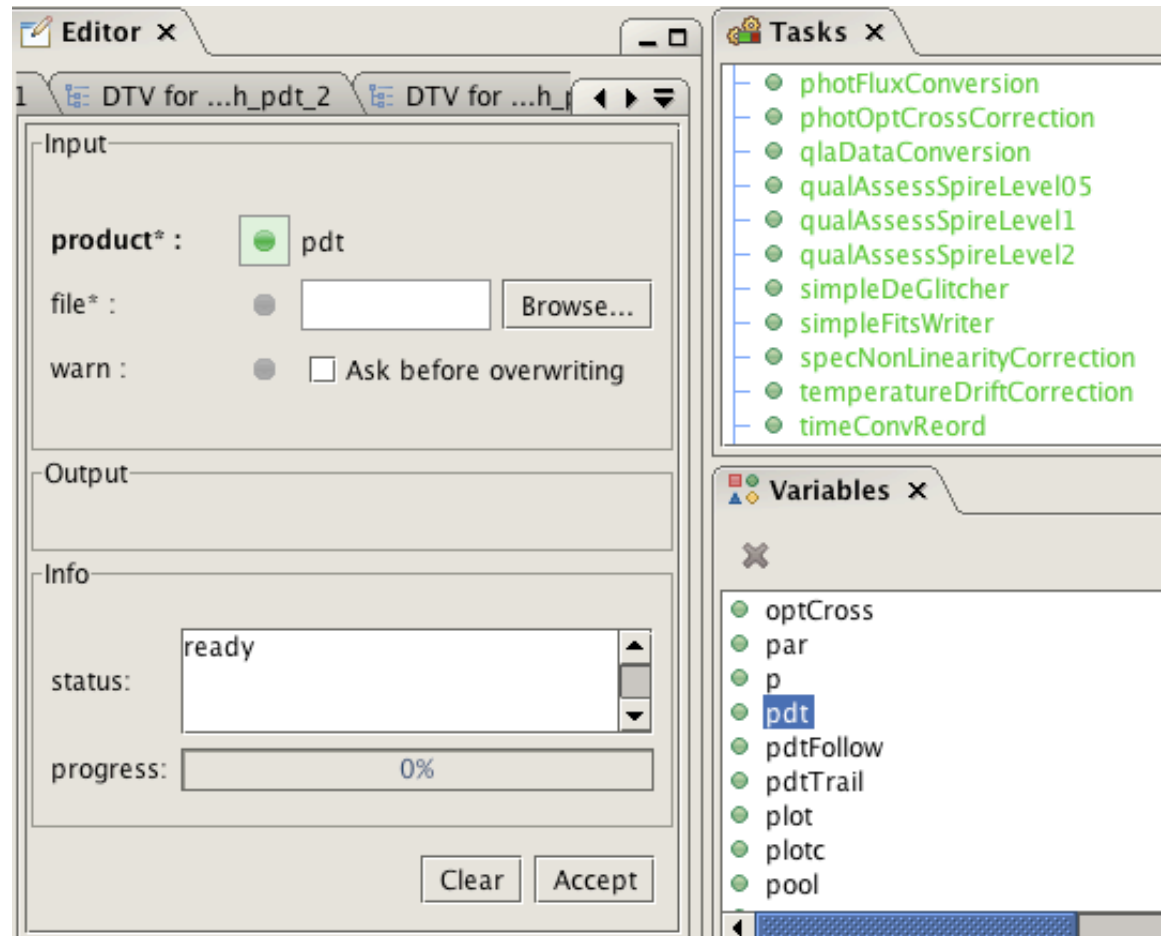
Object:	BD +30 3639	Instrument:	SPIRE
RA:	19h 34m 45.5s	DEC:	30° 30' 22.38"
Observation ID:	1342210941	Operational Day:	576
Observation Mode:	Small Map		
- Meta Data**: A section for additional metadata.
- Data**: A tree view showing the product structure. The "obs" folder is expanded, showing sub-folders: auxiliary, browseImageProduct, browseProduct (highlighted), calibration, level0, level0_5, level1, level2, logObsContext, and quality.
- Visualization**: A large central plot showing a multi-color astronomical image. A smaller version of the same image is visible in the top right corner.
- Terminal**: A terminal window at the bottom left showing the command `obs.refs["browseProduct"].product` and the output `obs.refs["browseProduct"].product`.

The status bar at the bottom indicates "Jython Interpreter 100%" and "91 of 4088 MB".

The Tasks view enables quick startup of applicable modules

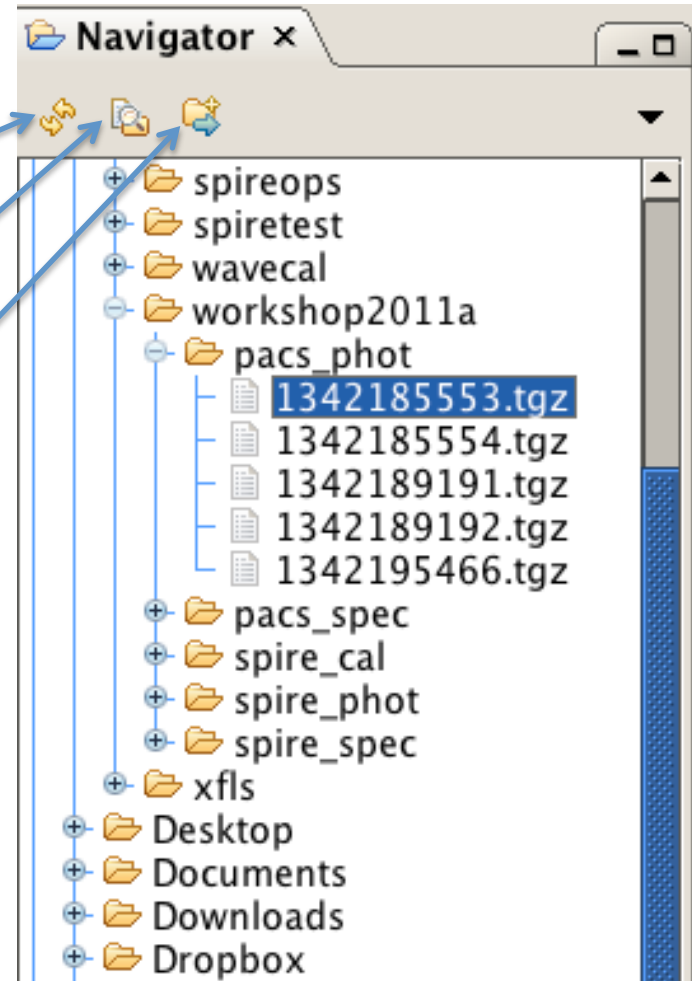
- Double-click to launch
- Drag-and-drop variables into parameter slots
- The “Applicable” tab shows all the available tasks for a selected variable

simpleFitsWriter task



The Navigator view enables browsing of your filesystem

- Double-click to load a script or a FITS file
- Refresh
- Show Hidden
- Create “user area”





Intro to HIPE and Setup for SPIRE

- The HIPE Workbench Perspective
- Accessing Observations in HIPE
 - Logging into the HSA
 - Where data are stored
 - Using the HSA User Interface
 - Using the Product Browser Perspective
 - Using *getObservation* in the Console
- Help and Documentation
- SPIRE-specific Setup

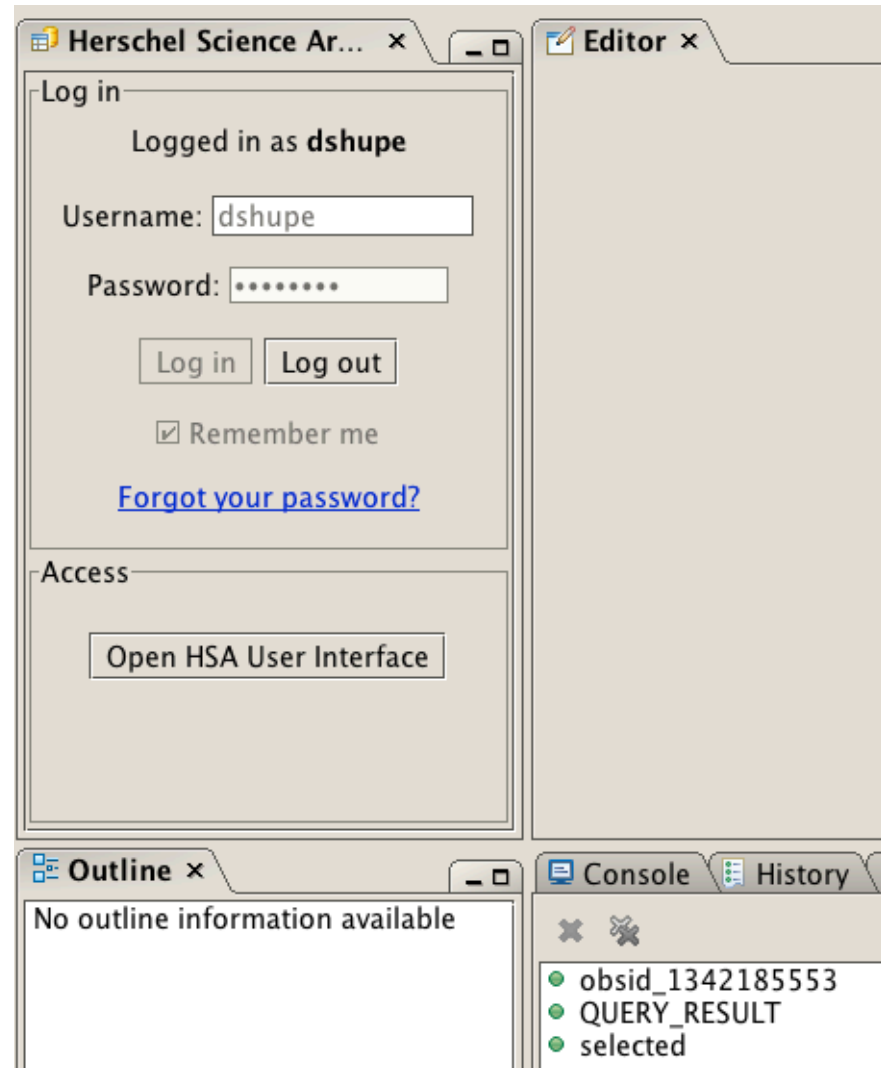


Login in to the Herschel Science Archive using its perspective

Log in using your Herschel credentials

(one-time only, if you tick “Remember me”)

Start the HSA User Interface



Data products are stored in and retrieved from one of three locations

1. Herschel Science Archive (HSA)
 - Located at ESAC (Madrid)
 - Read-only
2. Local pools
 - On your computer (local store directory)
 - Read and write data
3. MyHSA
 - On your computer (MyHSA directory)
 - Read-only, for data retrieved from HSA
 - More on this later from Bernhard Schulz

The next slides show three ways to access the archive (and local data)

1. HSA User Interface
 - Accesses the archive only
2. The Product Browser
 - Accesses any data source
3. The *getObservation* task
 - Accesses any data source

Query the archive by obsid, target name, instrument, public status

If OBSID is known...

Set to "Public" to browse
released data

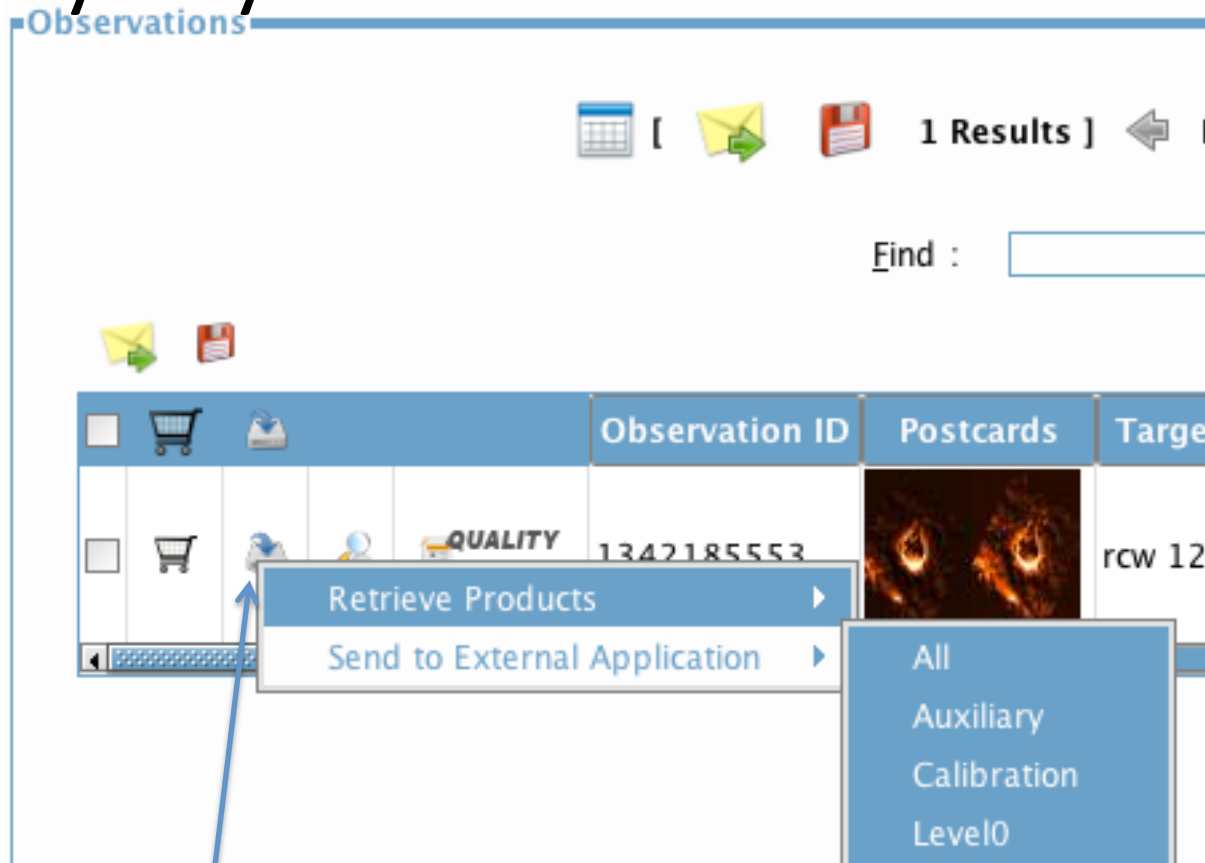
Search by target name

Specify instrument

The screenshot shows a web-based search interface with the following components:

- Search** (tab)
- Query Panels** (header)
- Main Query Panel**
 - Observation Id: Obs. List:
 - Proprietary Status:
- Geometry Panel**
 - Target
 - Shape: Circle
 - Resolve Name Equatorial Galactic
 - Centre Coordinates: Target: Radius:
- Instruments Query Panel**
 - Instrument:
 - Obs. Type:
 - Standard Data
 - HIFI**
 -
 - PACS**
 -
 - SPIRE**
 -

The HSA User Interface can send data directly to your HIPE session



Select
“Send to External Application”
then
“All”


Use “Retrieve” to receive a tarfile

Observations

[[[1 Results] Page 1 of 1 Page Size: 25

Find : [] Find Next Find Previous

Filter Rows: []

Observation ID	Postcards	Target	RA/DEC	Inst
			20 17h 12m 30.58s -38d 27' 25.50"	PAC

Retrieve Products
Send to External Application

- All
- Auxiliary
- Calibration
- Level0
- Level0_5
- Level1
- Level2
- Level2_5
- Multiple

Select “Retrieve” then “All” or “Multiple”

The Shopping Basket collects several observations

Search Shopping Basket Observations #1 Observations #3

Observations

[2 Observations]

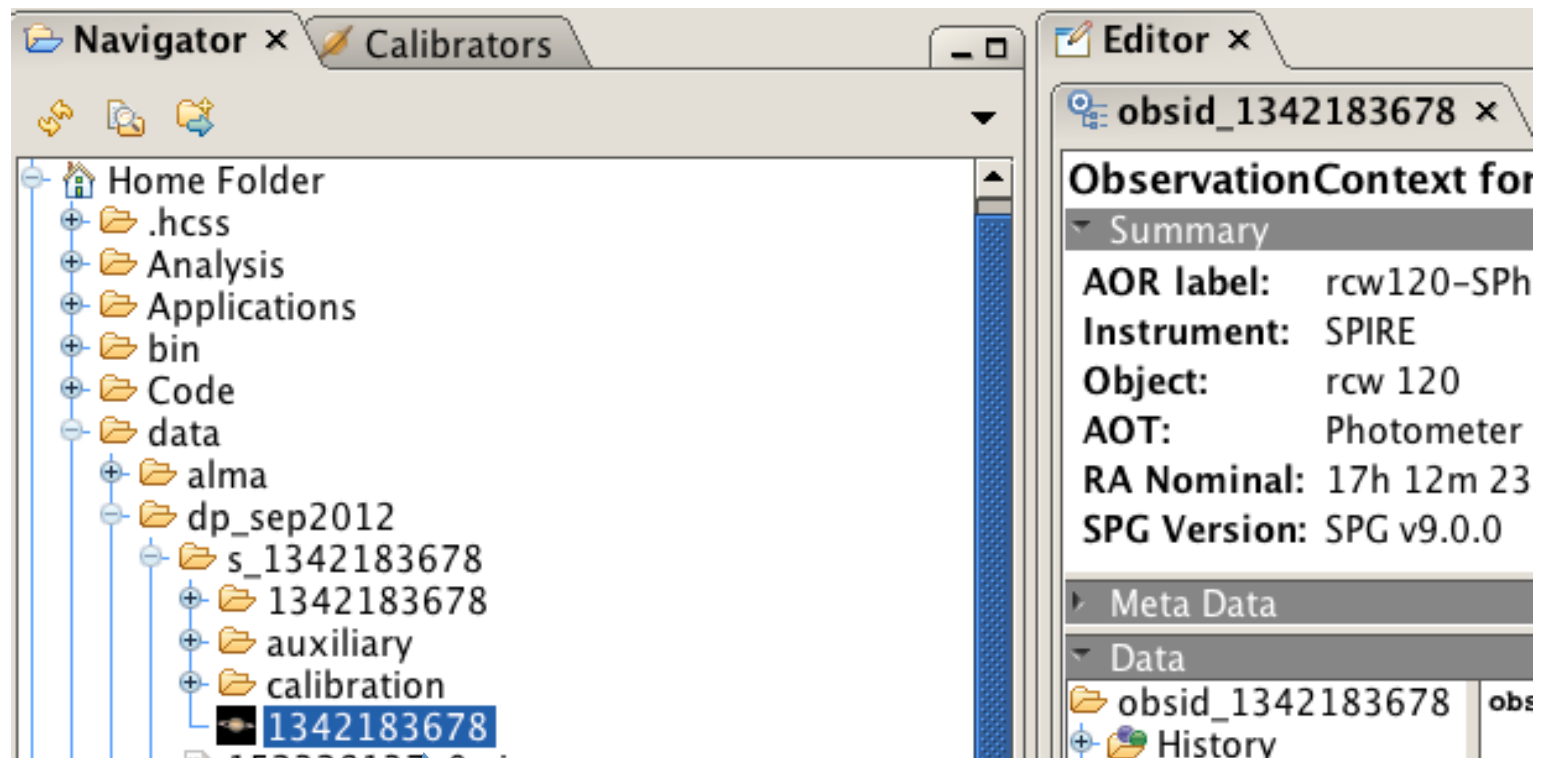
Retrieve On Demand Reprocessing

<input type="checkbox"/>	All	Observation	Target Name	RA	DEC
<input type="checkbox"/>	All	1342185553	rcw 120	17h 12m 30.58s	-38d 27' 25.50"
<input type="checkbox"/>	All	1342183678	rcw 120	17h 12m 18.79s	-38d 27' 58.50"

You can retrieve all the observations in one tarfile...

...or reprocess with last released version

For any tarfile or zip file from the HSA, unpack, then double-click to load



Double-click loads it into HIPE
and registers it in MyHSA

The Product Browser can search the HSA directly

Select the HSA as Data Source, then specify the obsid

The screenshot shows the 'Product Browser' application window. The 'Data Source' section on the left has 'HSA' selected with a checked checkbox. Below it, several 'Local Pools' are listed with unchecked checkboxes. The 'Search parameters' section on the right includes a 'Show all versions' checkbox (unchecked) and three input fields: 'Observation Id (obsid)' with the value '1342185556', 'Instrument (instrument)', and 'Operational Day (odNumber)'. A 'Run' button is located below the search parameters. At the bottom, a table displays the search results.

1 result found									
Query Result					QUERY_RESULT3			# of Results	
odNumber	obsid	tag	version	object	total size	instrument	aot	obsMode	startDate
148	1342185556	OBS:P:00...	10	IRDC01...	2730846966	PACS	Photometer	Scan map	2009-10-09T12:55:45Z

The *getObservation* task can retrieve data from the HSA and store in MyHSA

- To browse an observation:
*getObservation(obsid=1342183678, *
useHsa=True)
- To download an observation:
*getObservation(obsid=1342183678, *
useHsa=True, save=True)
 - Download takes place in the background
 - Files are compressed



Intro to HIPE and Setup for SPIRE

- The HIPE Workbench Perspective
- Accessing Observations in HIPE
- Help and Documentation
 - Starting the Help system
 - User Guides, Tutorials and How-Tos
 - Search
 - SPIRE Observer's Manual
- SPIRE-Specific Setup



The Help and Documentation are accessed in your web browser

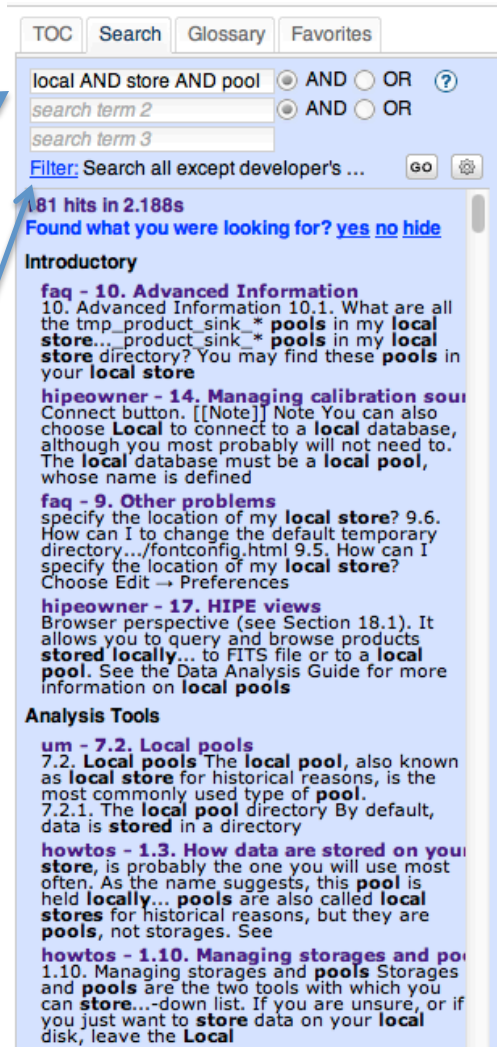
- Start the *local* help system by 1 of 4 ways:
 - Menu “Help” -> Help Contents
 - Right-click on variable
 - Help in URM (Users Ref. Manual)
 - Help in DRM (Developers Ref. Manual)
 - “hipe_help” in the app directory of HIPE
 - Only one local help system can be running
- Also online at <http://herschel.esac.esa.int/hipe-doc-9.0/>

The Help system includes user guides, tutorials and how-tos

The screenshot displays the Herschel Interactive Processing Environment (HIPE) Help System interface. The main window title is "Welcome to the Herschel Interactive Processing Environment Help System" with the version number "hcss-9.0.30" in the top right corner. The interface features a left-hand navigation pane with a Table of Contents (TOC) and search, glossary, and favorites options. The TOC is organized into several sections: "Introductory" (containing Welcome, Quick Start Guide, HIPE Owner's Guide, and Frequently Asked Questions), "Analysis Tools" (containing Herschel Data Analysis Guide and Scripting and Data Mining), "HIFI", "SPIRE" (containing SPIRE Data Reduction Guide and SPIRE Pipeline Specification Manual), "PACS", and "Reference" (containing various user and developer reference manuals). A "HIPE known issues" warning icon is visible in the main content area. At the bottom, there are social media links for YouTube and Twitter. A detailed view of the "SPIRE" section is shown on the right, listing sub-topics such as "SPIRE Data Reduction Guide", "Preface", "Introduction", "SPIRE Launch Pad: Data Reduction Overview", "SPIRE Observation Context Data Structure", "SPIRE Calibration Data", "SPIRE Photometer Mode Cookbook", "SPIRE Spectroscopy Mode Cookbook", "SPIRE Visualisation Tools", "Overview of Scripts in HIPE", "Advanced HIPE Tips", "Glossary", "Reprocessing with the SPIA", "References", and "SPIRE Pipeline Specification Manual".

The Search tab allows filtering by manual

Combine terms with AND for better results



TOC Search Glossary Favorites

local AND store AND pool AND OR ?

search term 2 AND OR

search term 3

Filter: Search all except developer's ... GO

181 hits in 2.188s
Found what you were looking for? [yes](#) [no](#) [hide](#)

Introductory

faq - 10. Advanced Information
10. Advanced Information 10.1. What are all the tmp_product_sink_* **pools** in my **local store...** product_sink_* **pools** in my **local store** directory? You may find these **pools** in your **local store**

hipeowner - 14. Managing calibration sou
Connect button. [[Note]] Note You can also choose **Local** to connect to a **local** database, although you most probably will not need to. The **local** database must be a **local pool**, whose name is defined

faq - 9. Other problems
specify the location of my **local store**? 9.6. How can I to change the default temporary directory.../fontconfig.html 9.5. How can I specify the location of my **local store**? Choose Edit → Preferences

hipeowner - 17. HIPE views
Browser perspective (see Section 18.1). It allows you to query and browse products **stored locally...** to FITS file or to a **local pool**. See the Data Analysis Guide for more information on **local pools**

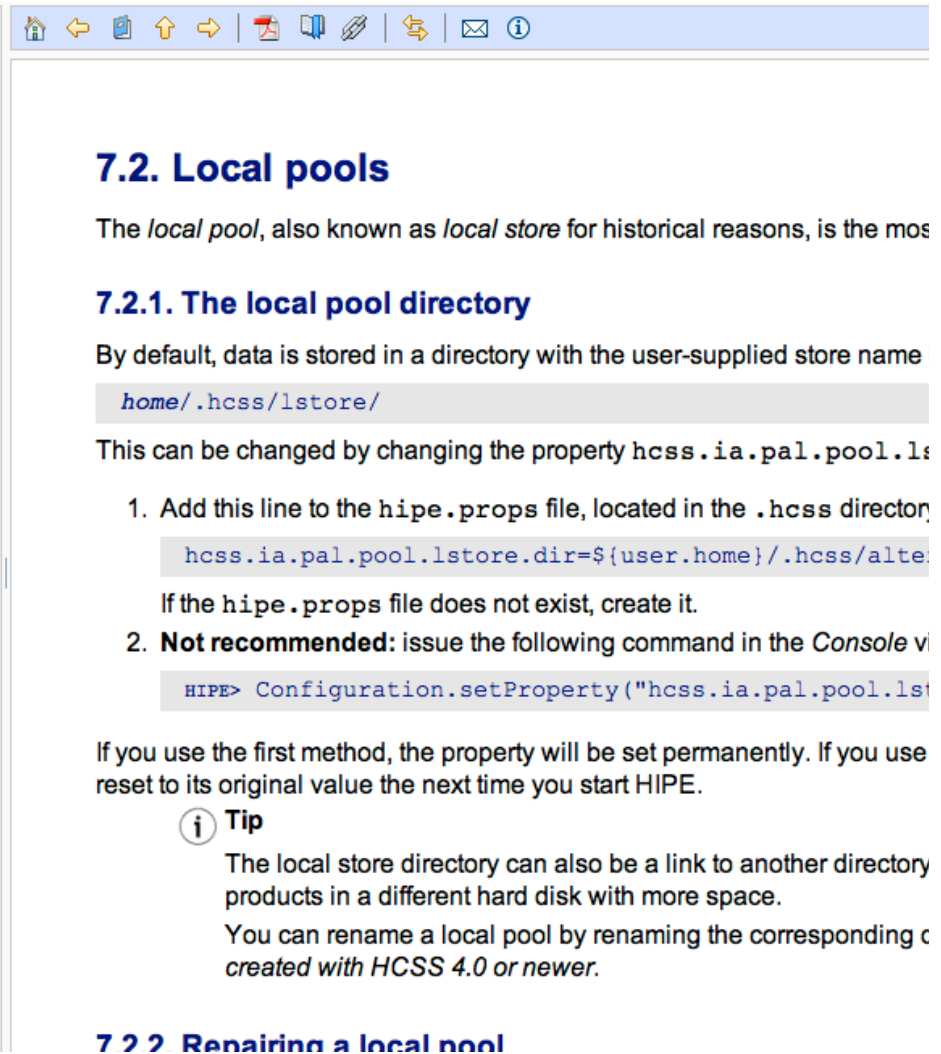
Analysis Tools

um - 7.2. Local pools
7.2. **Local pools** The **local pool**, also known as **local store** for historical reasons, is the most commonly used type of **pool**.
7.2.1. The **local pool** directory By default, data is **stored** in a directory

howtos - 1.3. How data are stored on your store, is probably the one you will use most often. As the name suggests, this **pool** is held **locally...** **pools** are also called **local stores** for historical reasons, but they are **pools**, not storages. See

howtos - 1.10. Managing storages and po
1.10. Managing storages and **pools** Storages and **pools** are the two tools with which you can **store...**down list. If you are unsure, or if you just want to **store** data on your **local** disk, leave the **Local**

Filter by specific manuals, or “all but developer’s documentation”



7.2. Local pools

The *local pool*, also known as *local store* for historical reasons, is the most

7.2.1. The local pool directory

By default, data is stored in a directory with the user-supplied store name

```
home/.hcss/lstore/
```

This can be changed by changing the property `hcss.ia.pal.pool.lstore.dir`

1. Add this line to the `hipe.props` file, located in the `.hcss` directory

```
hcss.ia.pal.pool.lstore.dir=${user.home}/.hcss/alter
```

If the `hipe.props` file does not exist, create it.
2. **Not recommended:** issue the following command in the *Console* view

```
HIPE> Configuration.setProperty("hcss.ia.pal.pool.lstore.dir", "home/.hcss/alter")
```

If you use the first method, the property will be set permanently. If you use the second method, the property will be reset to its original value the next time you start HIPE.

i Tip
The local store directory can also be a link to another directory on a different hard disk with more space. You can rename a local pool by renaming the corresponding *created with HCSS 4.0 or newer*.

7.2.2 Renaming a local pool

The SPIRE Observer's Manual contains essential calibration information

- The Observer's Manual is not included in your HIPE installation
- See “Documentation” on HSC website, or the SPIRE page on NHSC site
http://herschel.esac.esa.int/Docs/SPIRE/html/spire_om.html
- Chapter 5 (Calibration) covers several topics needed to understand SPIRE data



Intro to HIPE and Setup for SPIRE

- The HIPE Workbench Perspective
- Accessing Observations in HIPE
- Help and Documentation
- **SPIRE-specific Setup**
 - Setting up SPIRE calibration
 - Installing the SPIA Plug-in
 - Installing the special workshop data pools
 - Checklist and Data Description documents



A few additional steps will make HIPE ready for SPIRE work

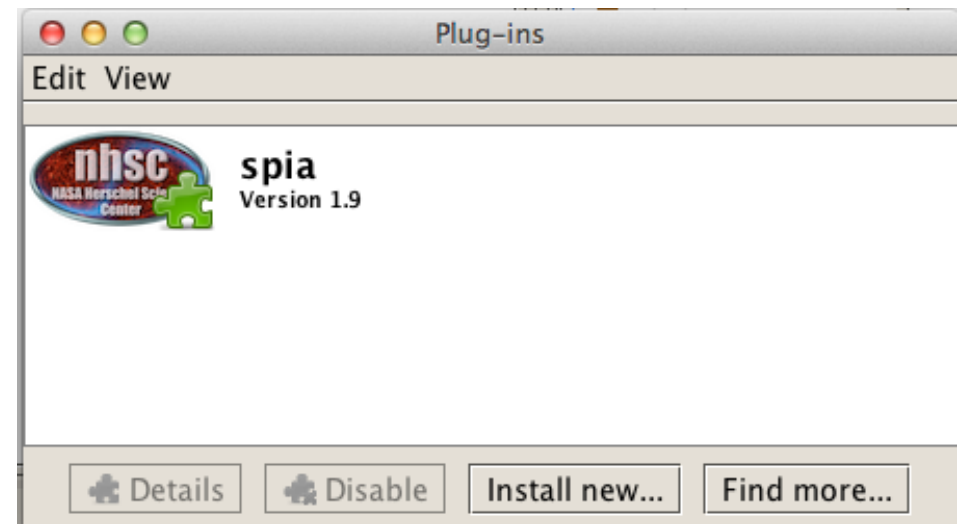
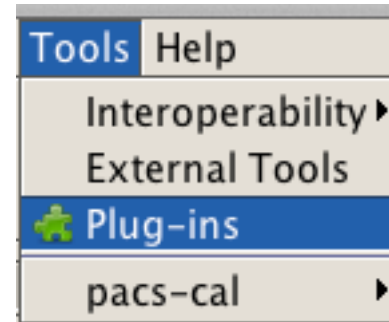
- Listen now, follow checklist afterwards
 - Detailed checklist is on agenda page
- Install the calibration tree
 - Normally: run the import procedure
 - Today: special procedure
- Install plug-in for interactive analysis
- Install workshop data pools
 - Normally: get data from the HSA
 - Today: unpack special pools

Normally SPIRE calibration data is imported from the HSA

- Two tasks described in SPIRE Data Reduction Guide
 - spireCal task
 - spiaCalCopyHsa in SPIA plugin
- For this workshop only:
 - Unpack spire_cal_9_1 pool from our site into your local store directory
 - Run *SetSpireCalProperty.py* script

Plug-ins are add-on software for HIPE maintained elsewhere

- Install once, use in all HIPE versions
- SPIA plug-in covers Photometry mode
- CASSIS to be covered on Thursday



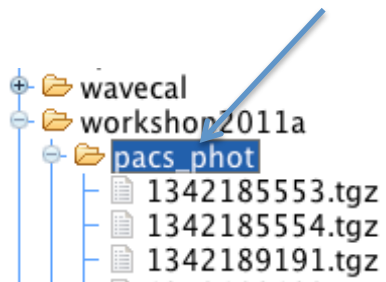
The *UnpackWorkshopData.py* script will unpack the workshop data

- Get the script from agenda webpage
 - Follow link at top of SPIRE section
- Unpacks all .tgz files in a directory
 - ...which you downloaded previously
- These are special compressed pools
 - Not the format of HSA tarballs

Edit Line 6 of UnpackWorkshopData.py and run script to install pools

HIPE tip: Select data directory,
then copy with ctrl-C or cmd-C...

...then put cursor in between “”
on Line 6, and ctrl-V or cmd-V to paste



Navigator

```
2
3 # Fill in the string on right-hand side of Line 6 with the path
4 # to your directory of .tgz files
5 # You can copy and paste the path from Navigator view
6 data_directory = "/Users/shupe/data/workshop2011a/pac_s_phot"
7 # Examples:
8 # " /Users/shupe/data/workshop2011a/pac_s_phot "
```

Editor

Console
output:

```
Your local store directory is /Users/shupe/.hcss/lstore/
unpacking /Users/shupe/data/workshop2011a/pac_s_phot/1342185553.tgz
unpacking /Users/shupe/data/workshop2011a/pac_s_phot/1342185554.tgz
unpacking /Users/shupe/data/workshop2011a/pac_s_phot/1342189191.tgz
unpacking /Users/shupe/data/workshop2011a/pac_s_phot/1342189192.tgz
unpacking /Users/shupe/data/workshop2011a/pac_s_phot/1342195466.tgz
HIPE>
```

Follow the checklist linked from the agenda page

- DP-SPIRE_Sep2012_InstallationChecklist.pdf

Items to have completed before arrival

1. Install HIPE 9.1 RC2 (user release candidate 2)
 - a. Point your browser to <https://nhscsci.ipac.caltech.edu/sc/index.php/Workshops/Sep2012WorkshopDownloads> to download the HIPE 9.1 RC2 installer.
 - b. Run the installer with these options recommended:
 - Select SPIRE, and other instruments as needed
 - Keep the default installation folder
 - Ignore proxy properties (unless you know you need them)
 - Ignore Versant configuration
 - Deselect the source code option (unless you want it) and set the default Java maximum heap size to the lesser of 4 GB, or about 900 MB less than the amount of RAM in your laptop. (You can change this later in HIPE Preferences.)
 - Leave the defaults to create a link on your desktop. (If you already have links for another
- DP-SPIRE_Sep2012_DataPools.pdf



Wishing you every success
with your SPIRE data