

ESA Datalabs


Vicente Navarro, on behalf of the ESA Datalabs Team

IVOA Interop
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THE EUROPEAN SPACE AGENCY

ESA Datalabs [0.3.0/BETA]



«YOU CAN EITHER MOVE YOUR QUESTIONS OR THE DATA. [...] OFTEN IT TURNS OUT TO BE MORE EFFICIENT TO MOVE THE QUESTIONS THAN TO MOVE THE DATA.»

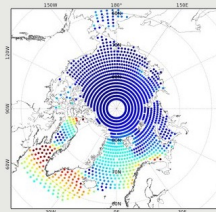
Jim Gray, eScience: A Transformed Scientific Method

BRING YOUR QUESTIONS TO THE DATA

There is a new paradigm, opening completely new opportunities for discovery – a data-intensive approach to science. In many domains, we have entered what could be called the golden age of surveys, with several large-scale projects, spanning decades, between finished, ongoing, and planned activities. ESA is responsible, or is a major partner, in several of these initiatives.

There is, however, a new profound change: data has become a major technological challenge. Increases by multiple orders of magnitude in dataset size means that transferring data to a scientist is often unfeasible.

ESA datalabs gives you a privileged position; bring your code directly to ESA's infrastructure – there is a great set of tools and programming languages are flexible – and execute it with direct access to ESA's archives.


















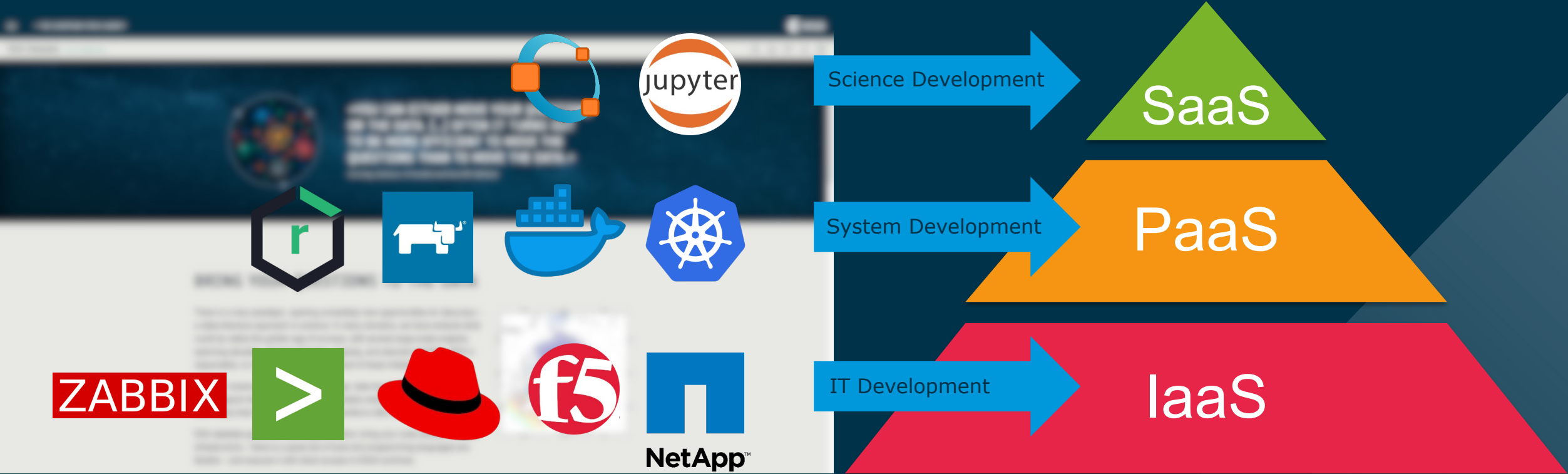
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ESA Datalabs [0.3.0/BETA]

Create Datalab

Find a datalab in ESA datalabs catalog

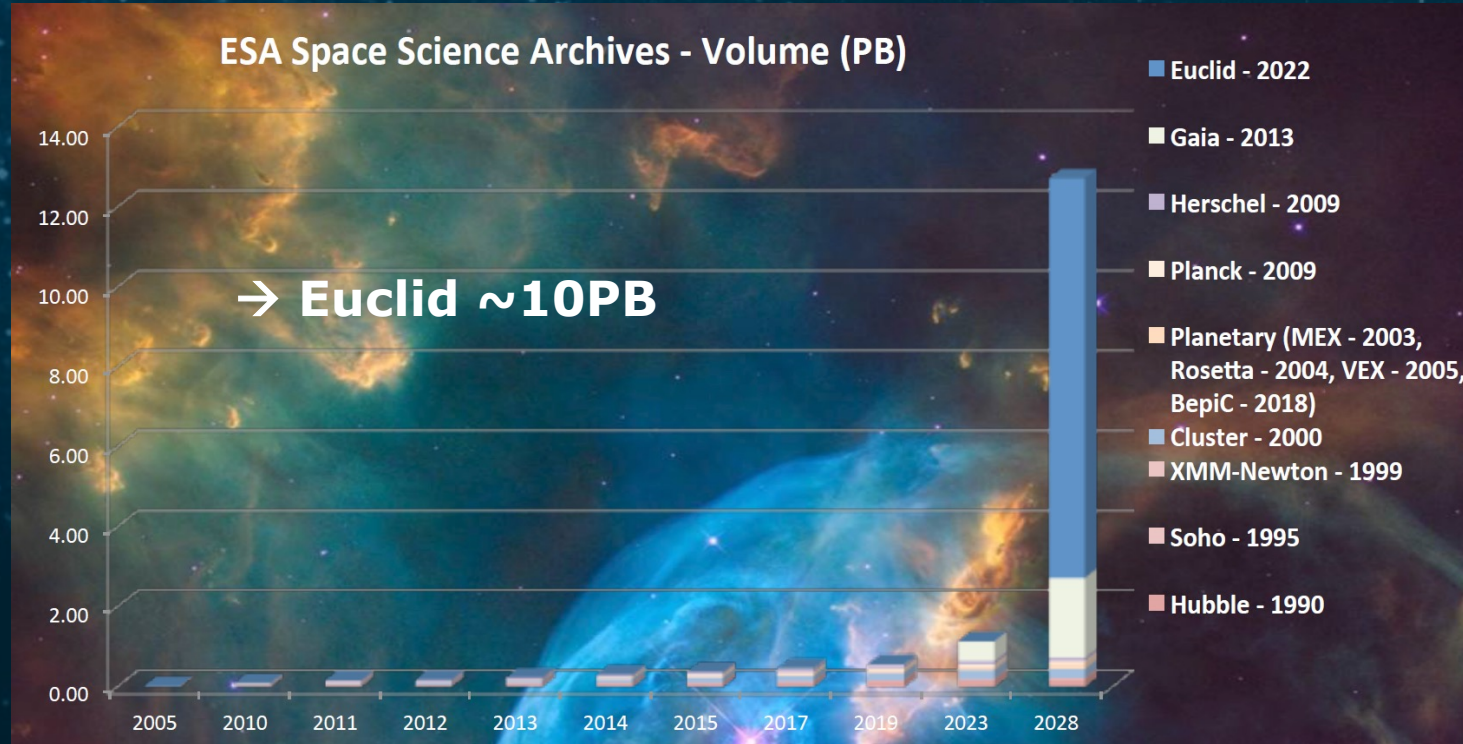
 aladin Aladin is an interactive sky atlas allowing the user to visualize digitized astronomical images or full surveys, superimpose entries from astronomical catalogues or databases, and interactively access related data and information from the Simbad database, the Vizier service and other archives for all known astronomical objects in the field.	 filezilla FileZilla	 fv FV - An image display and visualization tool for astronomical data
 j-esdc Jupyterlab ESDC	 j-euclid-dps Euclid DPS JupyterLab	 j-herschel Herschel JupyterLab
 j-juice JupyterLab with JUICE moon coverage tool (0.8.0).	 j-pangaia PanGaia JupyterLab	 jupyterlab Plain JupyterLab for demonstration of basic functionality.
 jwst Jupyterlab JWST	 jwst-miricle Jupyterlab JWST Miricle	 jwst-nips Jupyterlab JWST NIPS
 jwst-nsrt Jupyterlab JWST NSRT	 qfitsview QFitsView - An image display and visualization tool for astronomical data	 theia-python Theia Python Editor



The background is a complex digital visualization. It features a dense network of thin, glowing green lines that intersect and curve across the frame. Interspersed among these lines are various numbers in white and green, some appearing to float or be part of the network. The overall color palette is dominated by shades of green, from light lime to deep forest green, with bright white highlights and a dark, almost black background. The composition has a sense of depth and movement, suggesting a dynamic data environment.

Data Access Innovation

Data Exploitation Paradigm Shift



From bring the data to the user

To bring the user to the data

Main Scenario / Use Case

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Create Datalab

Find a datalab in ESA datalabs catalog

Filter results

Aladin Sky Atlas Aladin is an interactive sky atlas allowing the user to visualize digitized astronomical images or full surveys, superimpose entries from astronomical catalogues or databases, and interactively access related data.	ESDC JupyterLab tbd	Euclid DPS JupyterLab tbd
File Browser Web File Browser which can be used as a middleware or standalone app File Browser Website.	File Manager (PCManFM) Lightweight file manager from LXDE.	FreeDOS VM Virtual machine demonstration based on docker-ubuntu-dock's FreeDOS image.
GNSS-Lab-Tool (gLAB) gLAB performs precise modeling of GNSS observables (pseudorange and carrier phase) at the centimetre level, allowing standalone GPS positioning, PPP, SBAS and DGPS. Every single error contributor may be	GNU Octave Scientific Programming Language • Powerful mathematics oriented syntax with built-in plotting and visualization tools	GSSC JupyterLab tbd
HARM VM Historical Archives Rationalization and Management Login with use epharm and password epharm.	Herschel JupyterLab tbd	Integral JupyterLab INTEGRAL is an ESA's Hard X-ray and Gamma-Ray high sensitivity in large field of view. This Datalab analyzing and interpreting INTEGRAL observation
JWST JupyterLab tbd	Juice JupyterLab JupyterLab with Juice capabilities for demonstration purposes. Includes kernels.	JupyterLab Plain JupyterLab for demonstration of basic funct
Kolibri VM Virtual machine demonstration based on KolibriOS.	PanGaia JupyterLab tbd	TOPCAT Tool for Operations on Catalogues And Tables
Terminal Multiplexing terminal running Bash.		

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Datalab Launch

jl-jwst

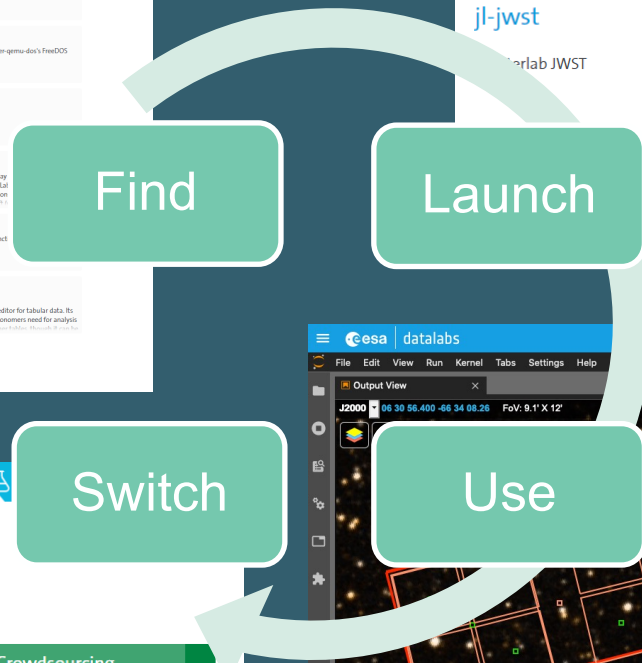
JWST JupyterLab JWST

Options

Name (optional):

select datalab as soon as its interface is available

remove datalab automatically when finished



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Datalabs

ESDC Analysis Labs ESDC JupyterLab <input type="button" value="Logs"/> <input type="button" value="Destroy"/>	GNSS Desktop Analysis GNU Octave <input type="button" value="Logs"/> <input type="button" value="Destroy"/>	GNSS Crowdsourcing GSSC JupyterLab <input type="button" value="Logs"/> <input type="button" value="Destroy"/>
Juice analysis Juice JupyterLab <input type="button" value="Logs"/> <input type="button" value="Destroy"/>	Integral Spectral Analysis Integral JupyterLab <input type="button" value="Logs"/> <input type="button" value="Destroy"/>	Gaia DR2 Analysis PanGaia JupyterLab <input type="button" value="Logs"/> <input type="button" value="Destroy"/>

esa | datalabs

File Edit View Run Kernel Tabs Settings Help

J2000 06 30 58.400 -66 34 08.26 Fov: 9.1' X 12'

Output View

Launcher Demo_Datalabs.ipynb

Example cone search + Proposal Id + Calibration level + Instrument

```

[66]: coord = SkyCoord(ra=88.831985, dec=-66.81864444, unit=(u.degree, u.degree), frame='icrs')
j = Jwst.cone_search_async(coord, radius, proposal_id='00623', ca_level=3, show_all_columns=True, instrument_name='MIRI')
table = j.get_results()
INFO: Query finished. [astroquery.utils.tap.core]
[67]: table['observationid', 'proposal_id', 'instrument_name', 'dataproductype', 'calibrationlevel'][:5]
[67]: Table length=1

```

observationid	proposal_id	instrument_name	dataproductype	calibrationlevel
object	object	object	object	int32
jw00623-0034_1004_miri_f770w-sub256	00623	MIRI	image	3

Query the list of files associated with an observation ID

```

[51]: product_list = Jwst.get_product_list('jw00623-0034_t004_miri_f770w-sub256', ca_level=3)
product_list
[51]: Table length=4


```






uri	artifactid	filename	contenttype	producttype	calibrationlevel	public
object	object	object	object	object	int32	bool
mast:JWST/product/jw00623-0034_1004_miri_f770w-sub256_cat.ecsv	00000000-0000-0000-ad8b-9d9f4ebf4f6a	jw00623-0034_1004_miri_f770w-sub256_cat.ecsv	text/plain	science	3	True
mast:JWST/product/jw00623-0034_1004_miri_f770w-sub256_i2d.fits	00000000-0000-0000-b506-f72c56c90110	o034_1004_miri_f770w-sub256_i2d.fits	image/fits	science	3	True
mast:JWST/product/jw00623-0034_1004_miri_f770w-sub256_i2d.jpg	00000000-0000-0000-9743-58139852f010	jw00623-0034_1004_miri_f770w-sub256_i2d.jpg	image/jpeg	preview	3	True

JWST NIRCAMP Footprints

RA J2000	DEC J2000	Public	Dist	Alg...	Calib
06h 30m 34.065s	-68° 31' 09.41"	True	5.88302107189034e-06	composite	3
06h 30m 34.057s	-68° 31' 09.46"	True	5.88302107189034e-06	composite	3
06h 30m 33.901s	-68° 31' 07.41"	True	5.88302107189034e-06	composite	3
06h 30m 33.839s	-68° 31' 07.81"	True	5.88302107189034e-06	composite	3
















4 No Kernel | Idle Saving completed Mode: Command Ln 1, Col 1 Demo_Datalabs.ipynb

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ESA Datalabs [0.3.0/BETA]     

Create Datalab

Find a datalab in ESA datalabs catalog

 aladin Aladin is an interactive sky atlas allowing the user to visualize digitized astronomical images or full surveys, superimpose entries from astronomical catalogues or databases, and interactively access related data and information from the <i>Simbad database</i> , the <i>VizieR</i> service and other archives for all known astronomical objects in the field.	 filezilla FileZilla	 fv FV - An image display and visualization tool for astronomical data
 jl-esdc Jupyterlab ESDC	 jl-euclid-dps Euclid DPS JupyterLab	 jl-herschel Herschel JupyterLab
 jl-juice JupyterLab with JUICE moon coverage tool (0.8.0).	 jl-pangaia PanGaia JupyterLab	 jupyterlab Plain JupyterLab for demonstration of basic functionality.
 jwst Jupyterlab JWST	 jwst-miricle Jupyterlab JWST Miricle	 jwst-nips Jupyterlab JWST NIPS
 jwst-nsrt Jupyterlab JWST NSRT	 qfitsview QFitsView - An image display and visualization tool for astronomical data	 theia-python Theia Python Editor

FIND – Desktop Apps



The screenshot shows the ESA Datalabs [0.3.0/BETA] desktop application. The interface includes a menu bar with 'File', 'Views', 'Graphics', 'Joins', 'Windows', 'VO', 'Interop', and 'Help'. A toolbar contains various icons for file operations and data visualization. The main workspace is divided into several panels: 'Table List' on the left, 'Current Table Properties' in the center, and a 'Sky Plot' window displaying a celestial sphere with coordinate axes. A 'Histogram Plot' window is also visible, showing a graph with a y-axis from 0 to 1.0 and an x-axis from 0 to 0.8. A yellow cartoon cat icon is overlaid on the right side of the interface.

The screenshot shows the ESA Datalabs [0.3.0/BETA] desktop application with the Aladin v11.0 window open. The Aladin window has a menu bar with 'File', 'Edit', 'Image', 'Catalog', 'Overlay', 'Coverage', 'Tool', 'View', 'Interop', and 'Help'. The main area displays a star field visualization in 'DSS2 color'. A sidebar on the left shows a tree view of 'Available data' with categories like 'Gamma-ray', 'X-ray', 'UV', 'Optical', 'Infrared', 'Radio', 'Gas-lines', 'Data base', 'Catalog', 'Cube', 'Ancillary', 'Outreach', and 'Others'. A 'Command' window at the top shows coordinates '22:47:08.230 +58:01:03.31'. A 'Last news' section on the right mentions 'Aladin manual has been released (dedicated to version 11, in english and french)'. A toolbar on the right contains icons for 'select', 'pan', 'dist', 'phot', 'draw', 'tag', 'moc', 'spect', 'filter', and 'cross'.



FIND – Web Apps (i.e. JupyterLab)



ESA Datalabs [0.3.0/BETA]

Moon-coverage 0.8.0 - JUICE examples

The `moon-coverage` python package is a toolbox to perform surface coverage analysis based on orbital trajectory configuration. Its main intent is to provide an easy way to compute observation opportunities of specific region of interest above the Galilean satellites for the ESA-JUICE mission but could be extended in the future to other space mission.

It is actively developed by the [Laboratory of Planetology and Geodynamics \(CNRS-UMR 6112\)](#) at the University of Nantes (France), under ESA-JUICE founding support.

This notebook provides a list of examples on how-to-use the `moon-coverage` tool version `0.8.0` in the context of the JUICE mission. The complete documentation of this module can be found on [ReadTheDocs](#) for additional details.

```
[1]: from moon_coverage import __version__

if __version__.startswith('0.8.'):
    print(f'Your current version of the moon-coverage tool is {_version__}')
else:
    raise ImportError(
        f'Your version of the moon-coverage tool is {_version__}. '
        'The examples below require the version 0.8.0 and may not work as expected.'
```



ESA Datalabs [0.3.0/BETA]

Example Query Region + Calibration level (-1) + Filter name (F1130W)

```
[48]: j2a = Jwst.cone_search(coord, radius, ca_level=-1, filter_name='F1130W')
table2a = j2a.get_results()
print(table2a.columns)
print(table2a[['observationid', 'dataproductype', 'calibrationlevel', 'public']])
```

observationid	dataproductype	calibrationlevel	public
jw01865001001_xx107_00012_miri	image	-1	False
jw01865001001_xx105_00001_miri	image	-1	False
jw01865001001_xx105_00002_miri	image	-1	False
jw01865001001_xx105_00003_miri	image	-1	False
jw01865001001_xx105_00004_miri	image	-1	False
jw01865001001_xx105_00005_miri	image	-1	False
jw01865001001_xx106_00006_miri	image	-1	False
jw01865001001_xx107_00011_miri	image	-1	False
jw01865001001_xx108_00019_miri	image	-1	False
jw01865001001_xx108_00020_miri	image	-1	False
jw02368007001_xx102_00002_miri	image	-1	False
jw02368007001_xx103_00003_miri	image	-1	False
jw02368007001_xx104_00004_miri	image	-1	False
jw02368007001_xx105_00001_miri	image	-1	False
jw02368007001_xx106_00002_miri	image	-1	False
jw02368007001_xx107_00003_miri	image	-1	False
jw02368007001_xx108_00004_miri	image	-1	False
jw02368007001_xx109_00005_miri	image	-1	False
jw02368007001_xx10a_00006_miri	image	-1	False
jw02368007001_xx10b_00007_miri	image	-1	False
jw02368007001_xx10c_00008_miri	image	-1	False
Length = 32 rows			



The screenshot displays the ESA Datalabs web interface. At the top, it says 'THE EUROPEAN SPACE AGENCY' and 'ESA Datalabs [0.3.0/BETA]'. The main content area is divided into 'Running' and 'Public' sections. A modal window titled 'Running datalab' is open, allowing configuration of a datalab. The modal includes a dropdown for 'Select a version to use' (set to 1), an 'Advanced configuration' section with a scrollable list, and fields for 'Minimum CPU resources needed' (set to 2) and 'Minimum memory resources needed' (set to 2048). There are also input fields for 'Datasets' and 'Internal volumes', and a 'Launch' button at the bottom right of the modal. The background shows several datalab cards, including 'CYPRESS TEST', 'TOPCAT', 'GAIA-ISM', 'JWST JUPYTERLAB', and 'JUPYTERLAB'.

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ESA Datalabs [0.3.0/BETA]

File Edit View Run Kernel Git Tabs Settings Help

Filter files by name

/ my_workspace / My Notebooks /

Name	Last Modified
PanGaia_VN_Edition.ipynb	2 months ago
Untitled.ipynb	2 months ago

Launcher Moon-coverage_0.8.0-JUIC PanGaia_VN_Edition.ipynb

Python 3 (ipykernel)


```
[11]: # Show selected HDBSCAN results =====
if step_4:
    data_clustering.run_hdbscan(probability = data_clustering.probability, min_samples = data_clustering.min_samples, verbose = True)
if step_1:
    data_clustering.load_control_obj(control)
    data_clustering.compare_to_control()
    data_clustering.plot_clusters()






Insert min_cluster_size: 20
mCls = 20; clusters = 2; N_members = [183, 23]

Cluster 0 contains 183 Elements, including 120 (83.3%) of the Control Sample
Cluster 1 contains 23 Elements, including 0 (0.0%) of the Control Sample
```

PDF saved as: test_hdb_minsamp_1_prob_0.8_mCls_20.pdf

Simple 0 s 2 Python 3 (ipykernel) | Idle
Mode: Command Ln 1, Col 1 PanGaia_VN_Edition.ipynb













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ESA Datalabs [0.3.0/BETA]     

Datalabs

+ LAUNCH NEW DATALAB

- Juice
- Aladin Dev
- GSSC gLab
- JWST Miricle
- ESASky
- Octave

 Juice jl-juice  DELETE	 Aladin Dev aladin  DELETE	 GSSC gLab x-glab  DELETE
 JWST Miricle jwst-miricle  DELETE	 ESASky jl-esdc  DELETE	 Octave x-octave  DELETE

Data Volume Catalog

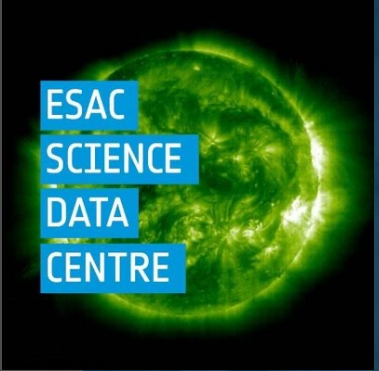
Data Volume Settings

Name: Planck Legacy Archive

Path to mount in datalab: /data/user/pla_legacy

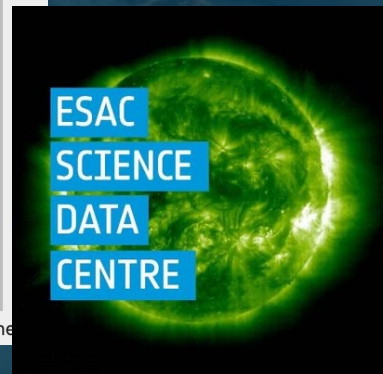
Details: Hide technical details

+ Add to my volumes x Cancel



Data and Computing Colocation – Data Volumes

The screenshot displays the ESA Datalabs web interface. At the top, it says 'THE EUROPEAN SPACE AGENCY' and 'ESA Datalabs [0.3.0/BETA]'. The interface includes a menu bar with 'File', 'Edit', 'View', 'Run', 'Kernel', 'Git', 'Tabs', 'Settings', and 'Help'. On the left, a file explorer shows a directory structure with a folder named 'pla_legacy' highlighted. The main area is titled 'Launcher' and contains several options: 'data', 'Notebook', 'Python 3 (ipykernel)', 'Console', 'Python 3 (ipykernel)', and '\$_ Other'. On the right, a 'Data Volumes' panel lists several data sources, with 'Planck Legacy Archive' selected and highlighted by a blue box. Other listed volumes include 'JwstPublic', 'JwstCrds', 'GsscDataProducts', 'EsdcLegacy', 'GsscSatellite', 'spice', 'PSA', and 'Soho'. The browser address bar at the bottom shows 'https://datalabs.esa.int/datavol-manager'.



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ESA Datalabs [0.3.0/BETA]

Search...

My files

New folder

New file

Settings

File Browser 2.11.0
Help

Folders

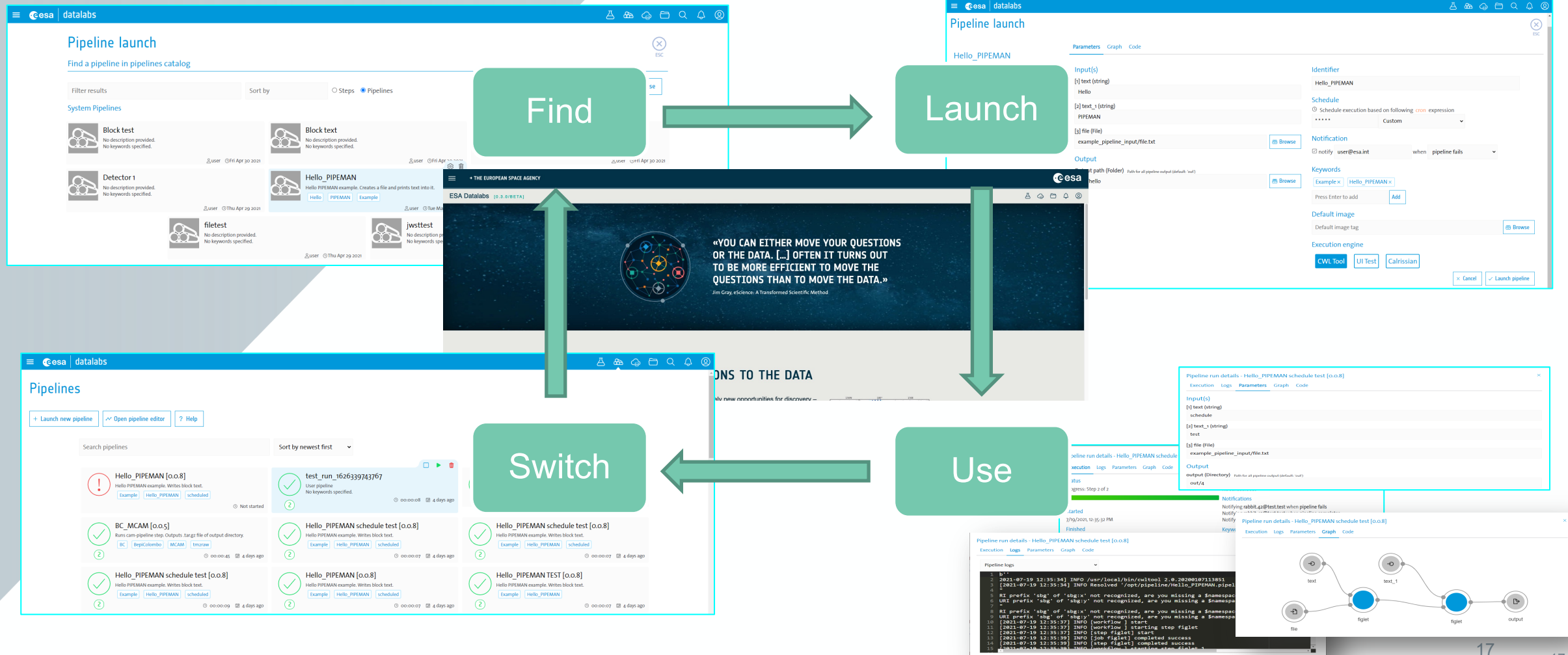
- EDL_UG
2 months ago
- My Notebooks
2 months ago
- ScienceUCD
6 days ago

Files

- ds100011.92n.Z
19.3 KB
3 months ago
- EDL_SUM.doc
104.5 KB
a year ago
- ESA-GSSC-RP-0003_Collectio...
43.42 KB
a year ago
- PanGaia.ipynb
379.21 KB
2 months ago

Data Processing Innovation

Pipelines – Standard Flow



The screenshot displays the Pipeline Editor interface. On the left, a file explorer shows a workspace with folders like 'my_notebooks', 'example_pipeline_input', and 'data'. Under 'data', there is a 'JWST' folder containing sub-folders for 'crds_cache', 'references', 'mappings', 'config', and 'cache_override'. The main area shows a pipeline graph with nodes: 'Pipeline input FITS file', 'Detector1 CRDS override list', 'CRDS cache overrides', 'Image 2 CRDS cache override list', 'Detector1', 'Detector1 intermediate output', 'Image2', and 'FITS file output'. A details panel on the right for 'Hello_PIPEMAN.pipeline.cwl' shows fields for Name, Description, Keywords, Allowed groups, and Allowed users, along with buttons for 'CWL Tool', 'UI Test', and 'Calrissian'. Below the graph, a validation status shows '[2/14/2022, 3:13:44 PM] CWL Valid'.

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ESA Datalabs

Create Datalab

Find a datalab in ESA datalabs catalog

jupyterlab-cuda
JupyterLab for demonstration of GPU functionality (CUDA 10.0).

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ESA Datalabs [0.3.0/BETA]

File Edit View Run Kernel Git Tabs Settings Help

Filter files by name

/ notebooks /

Name	Last Modified
example.ipynb	2 months ago
gpu_confirmed.ipynb	2 months ago
sorting.ipynb	2 months ago

sorting.ipynb | gpu_confirmed.ipynb

Make sure the CUDA kernel is chosen before running this notebook (top left corner)

```
[ ]: import tensorflow as tf
import sys
from platform import python_version
from tensorflow.python.client import device_lib
import os
```

First way to check if the GPU is visible in the datalab is to call the NVIDIA specific method. If the GPU is visible a table showing some statistics will appear. If something went wrong you'll get an error.

```
[ ]: !nvidia-smi
```

Time measured	numpy + no gpu	numpy + gpu	cupy + gpu
Total execution time	≈ 44m47s	≈ 14min26s	≈ 3min2s

Federated Scalability

The screenshot displays the ESA Datalabs interface, which is designed for managing running datalabs. The interface is split into two horizontal panels, each representing a different datazone.

Top Panel (SCI-CLOUD): The current datazone is SCI-CLOUD. It shows three running datalabs: 'situ jupyterlab', 'jupyterlab-cuda' (highlighted with a blue box), and 'jupyterlab'. Each lab has a 'Delete' button. A blue arrow points to the 'Current datazone: SCI-CLOUD' text, and another blue arrow points to the 'Datazones' dropdown menu on the right, which is currently set to SCI-CLOUD.

Bottom Panel (GO.ESA): The current datazone is GO.ESA. It shows two running datalabs: 'x-ds9' and 'jl-juice', each with a 'Delete' button. A blue arrow points to the 'Current datazone: GO.ESA' text, and another blue arrow points to the 'Datazones' dropdown menu on the right, which is currently set to GO.ESA.

A central graphic on the left side of the image shows a hexagonal shape with 'ESA' at the top, 'Azure' on the left, 'AWS' on the right, and 'EU' at the bottom, with a cloud icon in the center, representing the federated cloud infrastructure.

At vero eos et accusamus et iusto odio dignissimos ducimus qui blanditiis praesentium voluptatum deleniti atque corrupti quos dolores et quas molestias excepturi sint occaecati cupiditate non provident, similique sunt in culpa qui officia deserunt mollitia animi, id est laborum et dolorum fuga. Et harum quidem rerum facilis est et expedita distinctio. Nam libero tempore, cum soluta nobis est eligendi optio, cumque nihil impedit quo minus id quod maxime placeat facere possimus, omni voluptas assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et aut officiis debitis aut rerum necessitatibus saepe eveniet ut et voluptates repudiandae sint et molestiae non recusandae. Itaque earum rerum hic tenetur a sapiente delectus, ut aut reiciendis voluptatibus maiores alias consequatur aut perferendis doloribus asperiores repellat.

The main title 'Collaborative Innovation' is centered on the page in a large, bold, white sans-serif font. The background features a world map, gears, and various icons representing people and technology.

Collaborative Innovation

INNOVATION
SOLUTION
BRANDING
IDEAS
MARKETING
SUCCESS
MANAGEMENT
ANALYSIS

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ESA Datalabs [0.3.0/BETA]

File Edit View Run Kernel Git Tabs Settings Help

Filter files by name

Name	Last Modified
data	7 hours ago
my_workspace	7 hours ago
notebooks	7 hours ago
team_workspaces	seconds ago

Overview

PanGaia simplifies the access, exploration, and clustering analysis of the Gaia DR2 [catalogue](#). This toolkit has been developed with the aim to facilitate the research of astromers who are *familiar* with the Gaia archive and that are interested in Star Formation. However, because of its design and capabilities PanGaia might be useful for a broad audience of researchers interested in exploring large astrometric catalogues. This code closely follows the analysis described by [Canovas et al. 2019](#), where more than 150 potential new members of the ρ -Ophiuchus Star Forming Region were identified using Machine Learning algorithms applied to the Gaia DR2.

PanGaia in a Nutshell:

- Data Access:** An [ADQL](#) cone-search (e.g. [link](#)) in the Gaia DR2 archive is performed using the [astroquery.gaia](#) package. Several extra columns are added to the queried table (like e.g. the distance, computed as the inverse of

Search datalab catalog

Customize view

Public

App Name	Unique ID	Label
CYPRESS SEPPTEST-219	1994.7571690539014	Test Automated
CYPRESS SEPPTEST-219	1111.6848610854097	Test Automated
CYPRESS SEPPTEST-219	1419.7853655034294	Test Automated
CYPRESS SEPPTEST-219	1713.2724871003359	Test Automated
CYPRESS SEPPTEST-219	1673.9987705736833	Test Automated

See more

Developed by me

App Name	Label
CYPRESS SEPPTEST-219	No description provided



Interoperability

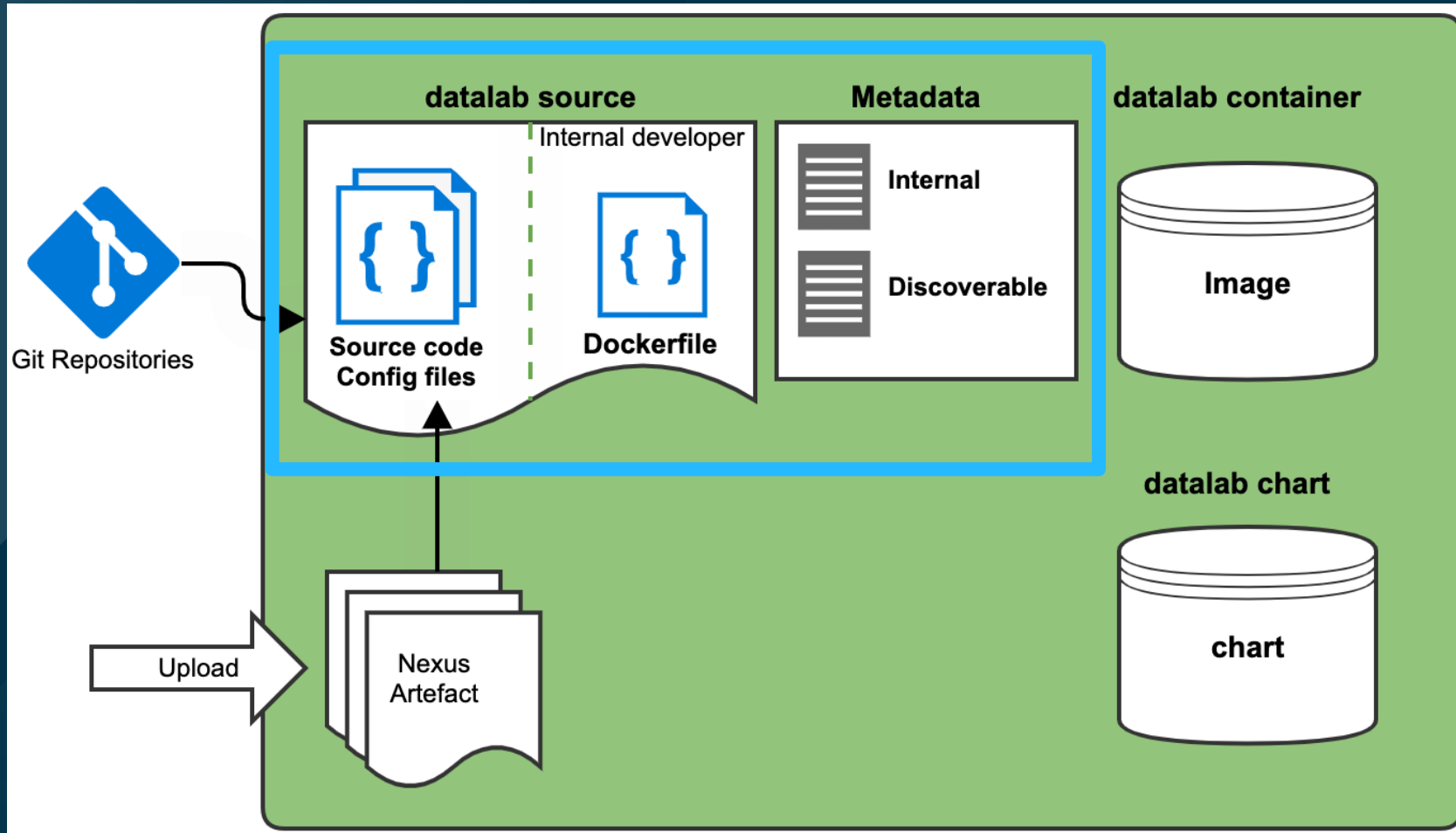
Datalab Metadata Specification

ESA DDP Term	Namespace:Term	Description	Visibility (private / public)	Write access (developer / moderator / sciapps)	Data type
abstract	sdo:abstract	Abstract (a short description)	PUBLIC	DEVELOPER	Text
alternateName	sdo:alternateName (pipeman: displayName)	Short name or acronym for the datalab	PUBLIC	DEVELOPER	Text
associatedFileType	esado:associatedFileType (new)	List of associated filetypes - if applicable/pertinent (e.g. FITS, VOTable, GeoTIFF, netCDF)	PUBLIC	DEVELOPER	Text
ESAOfficial	esado:ESAOfficial	flag indicating that the datalab was created by ESA	PUBLIC	DEVELOPER	Boolean
audienceType	sdo:audienceType	Intended audience for the datalab	PUBLIC	DEVELOPER	Text
citation	sdo:citation	Citation for the datalab (e.g. article DOI)	PUBLIC	DEVELOPER	Text
datalabImage.platform	sdo:version	ESA datalabs platform version	PRIVATE	APPLICATION...	Text
datalabImage.id	sdo:identifier	Identifier of the datalab image	PRIVATE	APPLICATION...	Text
datalabImage.keyword	dcat:keyword	Keyword tag of the current datalab image	PRIVATE	DEVELOPER	Text
dateCreated	sdo:dateCreated	Date the datalab was created	PRIVATE	APPLICATION...	Date

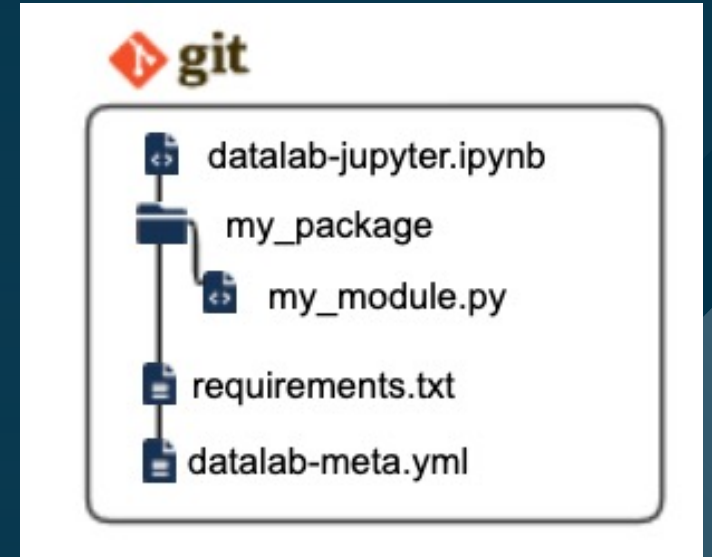
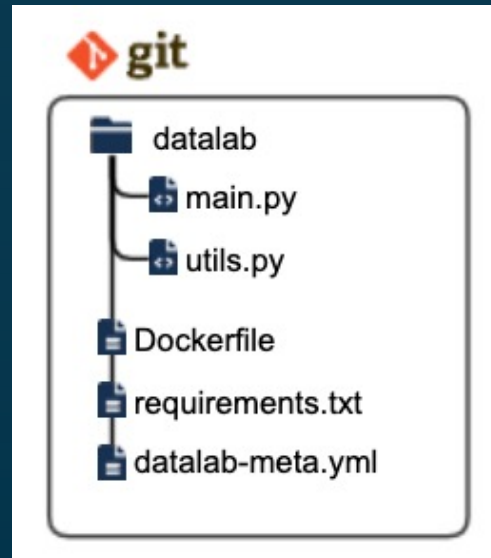
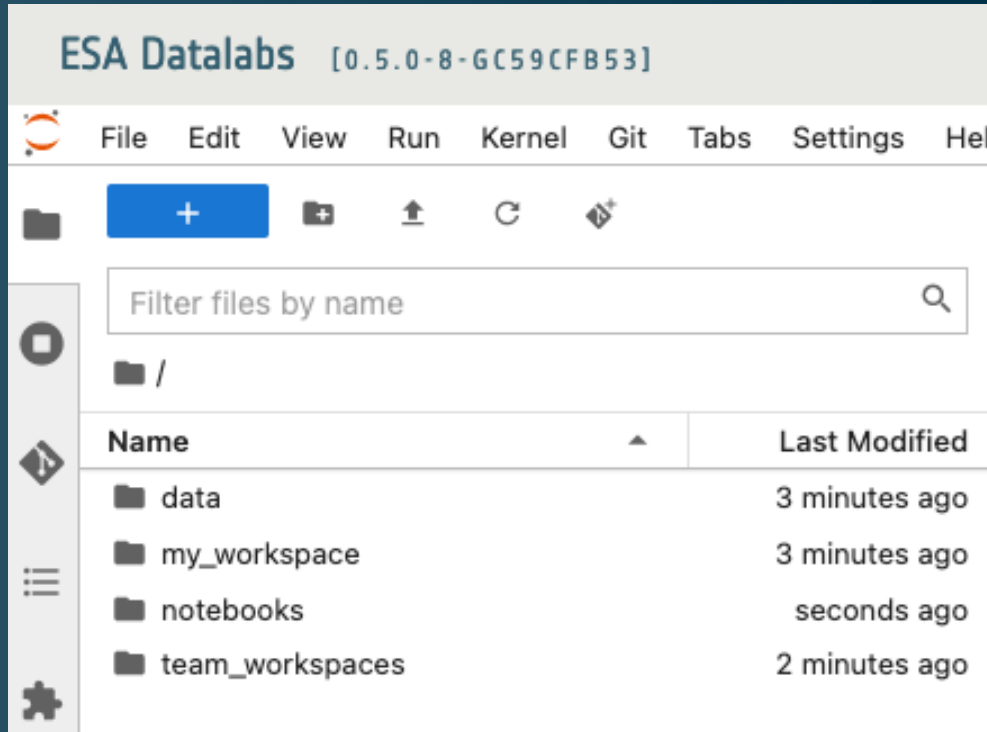


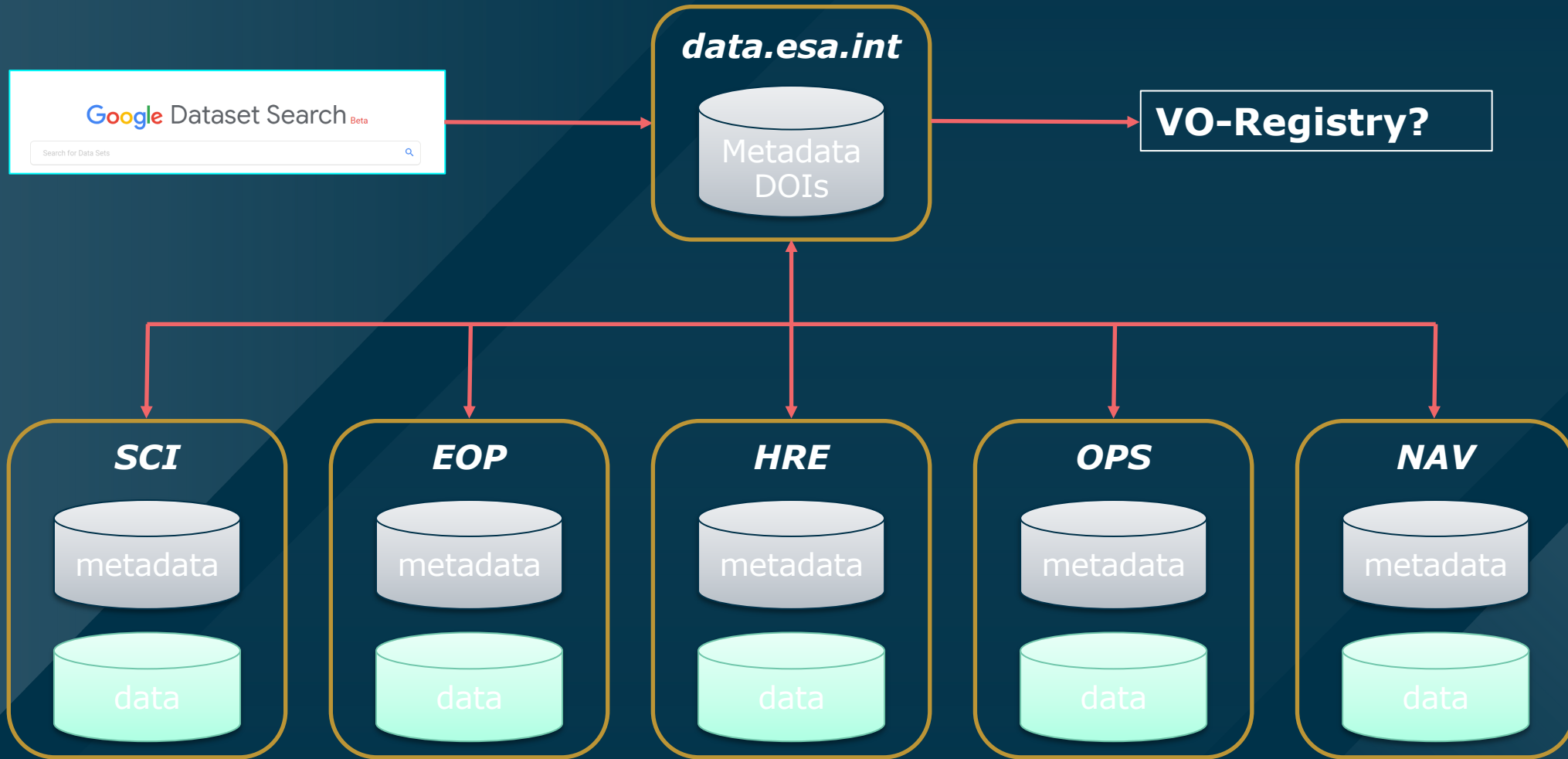
Leveraging on existing vocabularies and ontologies: sdo, dcat, skos, foaf ... esado

Datalab Package Specification



Datalab Structure Specification (development & runtime)





Exploitation environment

→ THE EUROPEAN SPACE AGENCY

ESA Data Discovery Portal [0.4.0/ALPHA]

Type of Asset
 Datalab
 Dataset

Properties
 Query Tool
 Visualization Tool
 Analysis Tool
 Data Volume

Domain
 Earth Observation (1,766)
 Navigation (21)
 Space Science (21,818)

Instrument
^

Thematic Area
^

Mission
 Astronomy (15,365)
 Gaia (5)
 Herschel (723)
 Hubble Space Telescope (9,745)
 ISO (1,515)
 Lisa Pathfinder (6)
 Planck (4)
 XMM-Newton (3,367)
 Earth Observation Satellite (1,088)
 ADEOS (1)

Type in your query...

aladin Aladin is an interactive sky atlas allowing the user to visualize digitized astronomical images or full surveys, superimpose entries from astronomical catalogues or databases, and interactively access related data and information from the <i>Simbad</i> database, the <i>VizieR</i> service and other archives.	file-browser Web File Browser which can be used as a middleware or standalone app.
filezilla FileZilla - FileZilla - FileZilla - FileZilla - FileZilla - FileZilla - FileZilla	fv FV - An image disp
jl-esdc Jupyterlab ESDC - Jupyterlab ESDC - Jupyterlab ESDC - Jupyterlab ESDC	jl-euclid-dps Euclid DPS Jupyterlab - Euclid DPS Jupyterlab
jl-herschel Herschel JupyterLab - Herschel JupyterLab - Herschel JupyterLab - Herschel JupyterLab	jl-juice JupyterLab with JUICE
jl-pangaia PanGaia JupyterLab - PanGaia JupyterLab - PanGaia JupyterLab - PanGaia JupyterLab	jl-xmm-sas Jupyterlab XMM SAS - Jupyterlab XMM SAS
jupyterlab	jupyterlab-cuda

aladin Version 0.3.1

Overview Details [Launch datalab](#)

Aladin is an interactive sky atlas allowing the user to visualize digitized astronomical images or full surveys, superimpose entries from astronomical catalogues or databases, and interactively access related data and information from the *Simbad* database, the *VizieR* service and other archives for all known astronomical objects in the field.

ESA Science support

- Increased science return from its missions
- Increased science operations efficiency

Innovation traits

- Science data exploitation coupled with data
- Science pipelines for current and future needs
- Collaborative research & citizen science

Thank You!



datalabs.esa.int