

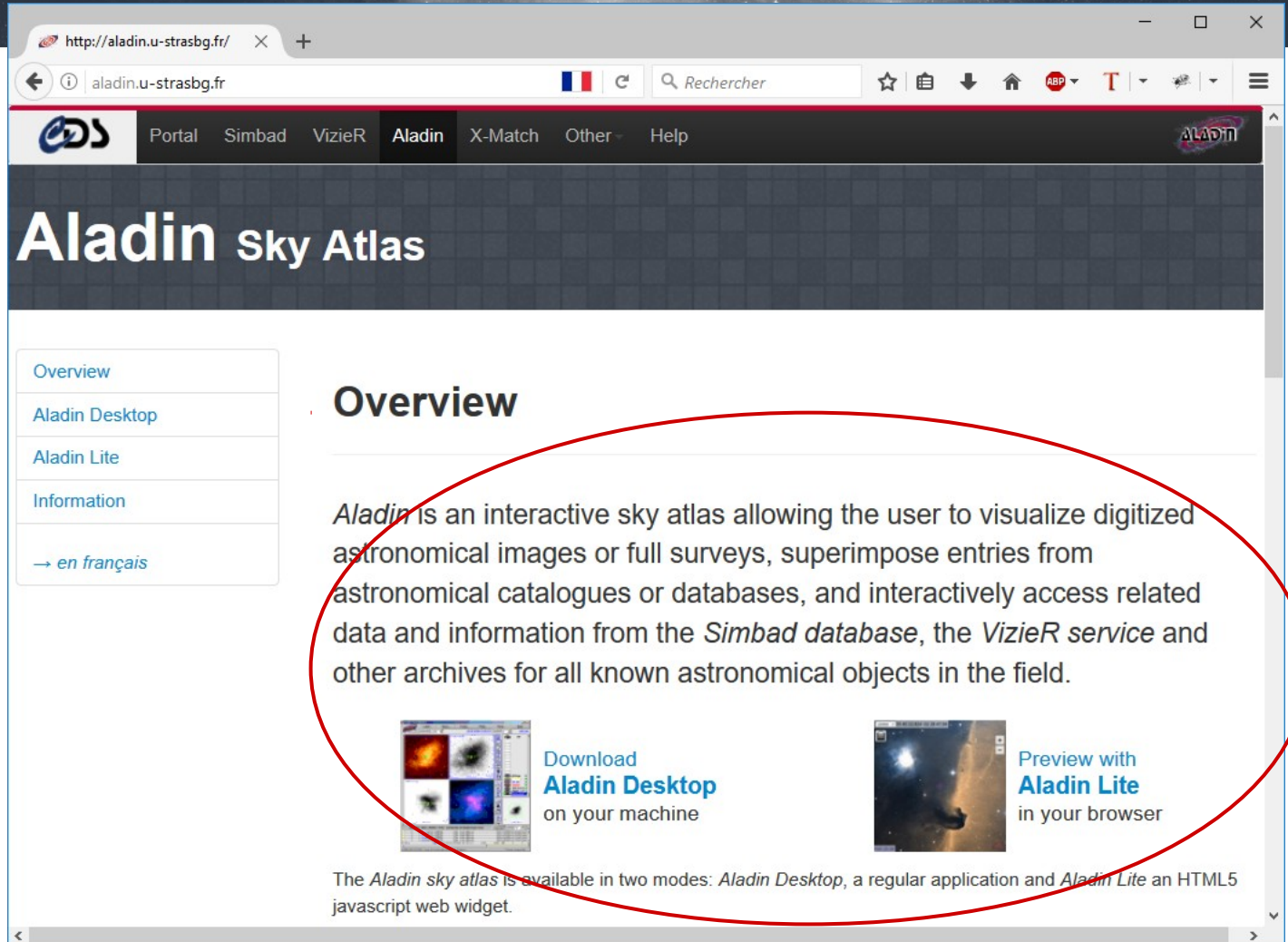
ALADIN

Aladin V10 and Aladin Lite for ESFRI (and other) projects

Pierre Fernique, Thomas Boch, Chaitra (CDS)
Presented by François Bonnarel (CDS)



□ What is Aladin ?



The screenshot shows the Aladin sky Atlas website. The browser address bar displays <http://aladin.u-strasbg.fr/>. The navigation menu includes [Portal](#), [Simbad](#), [VizieR](#), [Aladin](#), [X-Match](#), [Other](#), and [Help](#). The main heading is "Aladin sky Atlas". A sidebar on the left contains links for [Overview](#), [Aladin Desktop](#), [Aladin Lite](#), [Information](#), and [→ en français](#). The main content area features an "Overview" section with the following text: "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." Below this text are two promotional boxes: "Download Aladin Desktop on your machine" and "Preview with Aladin Lite in your browser". At the bottom, a note states: "The Aladin sky atlas is available in two modes: Aladin Desktop, a regular application and Aladin Lite an HTML5 javascript web widget."

[Overview](#)

[Aladin Desktop](#)

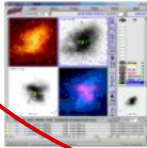
[Aladin Lite](#)


[Information](#)

[→ en français](#)

Overview

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.

 [Download Aladin Desktop](#) on your machine

 [Preview with Aladin Lite](#) in your browser

The *Aladin sky atlas* is available in two modes: *Aladin Desktop*, a regular application and *Aladin Lite* an HTML5 javascript web widget.

□ Key dates

1993

Protos XWindows (C, C++)

1999

Applet (java)

2003

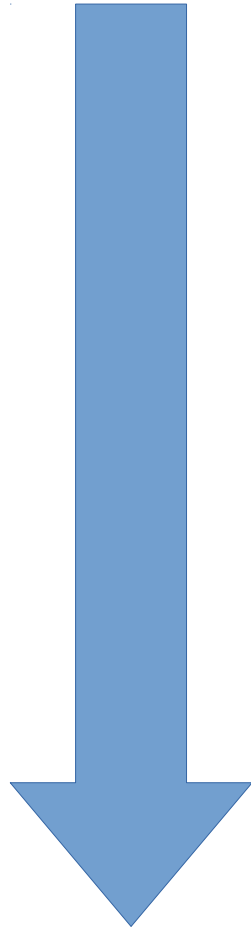
Standalone/Applet (java)

2013

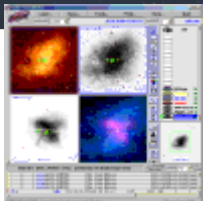
Aladin Lite (javascript)

2017

Aladin v10 (java)



□ Aladin Sky Atlas, one in two!



Aladin Desktop

- high level features **desktop**
- access images, catalogs, footprints
- **full range of functionalities**
- interoperable with VO tools
 - Aladin is a VO portal
 - used to validate most standards
- Used for observation preparation tools (APT, GuideCam)
- going all hierarchical now! (HiPS)



Aladin Lite

- **Web** HiPS visualizer
- preview mode
- embed in any webpage
- **easy appropriation**
- **highly used in wide range of sites/services**
- basic functions... but more and more!



Aladin Desktop V10

Main new features

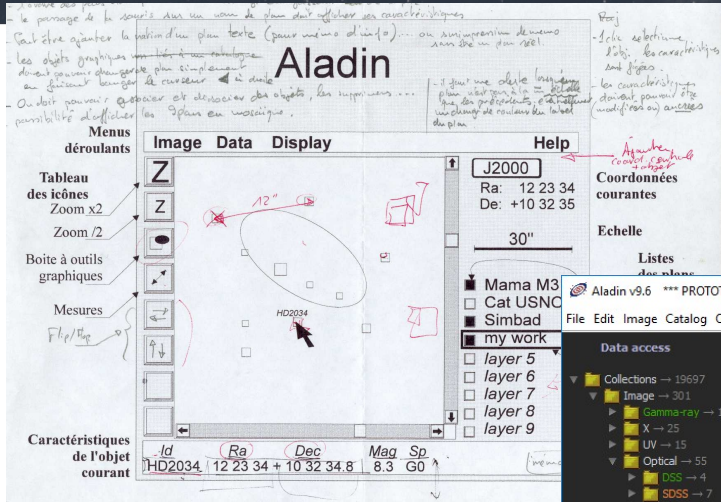


□ Key figures on Aladin Desktop

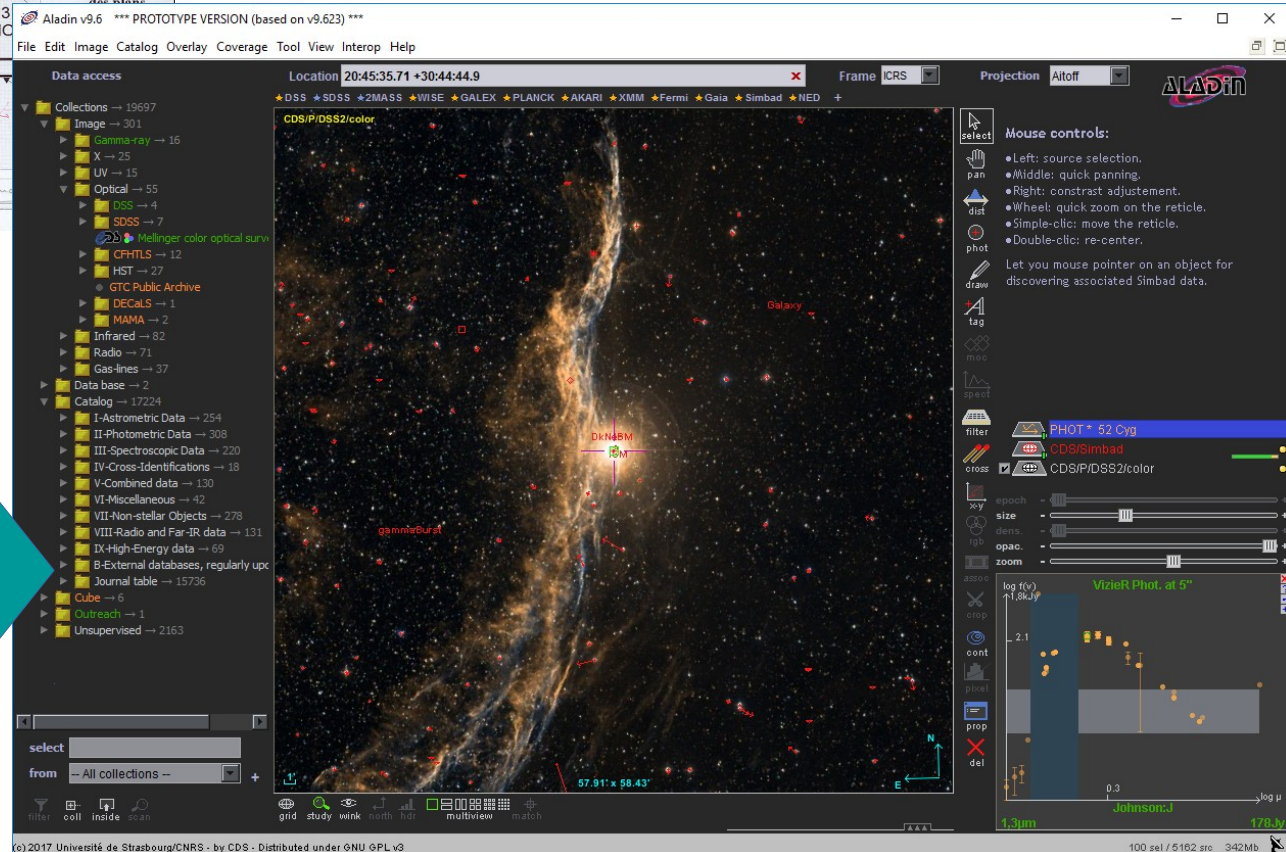
- 1) **Code: 5MB jar**, 250k source lines, 500 classes
 - only based on CDS & JDK regular libraries (+ HEALPix lib)
 - 2 main developers (P. Fernique, T. Boch)
 - + dozen of contributors (recently Chaitra)
- 2) **Usage: 1k sessions per day** for 150k http queries (HiPS tiles queries included)
- 3) **Language: 85% en**, 10% fr, 2% de, 1% it, 1% es ..
- 4) **Java: 75% 1.8**, 12% 1.7, 12% 1.6, 0.2% 1.5, ...

Aladin Desktop

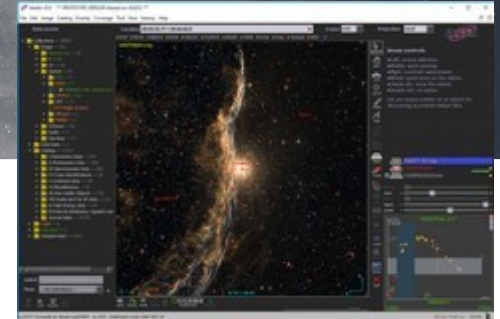
Aladin v0 (1999)



Aladin v10



□ Release v10



1) **Integration**++:

- IVOA protocols: SIAv2, TAP, Datalink/SODA, VO registry (via RegTAP), VOSpace, MOC, HiPS
- CDS advanced services: MocServer, Xmatch, query by MOC

2) **Desktop only**

=> no longer applet support, full screen

3) New **look & feel**

=> modernisation, simplification



□ The plan of the slide demo...



- 1) Load Simbad over DSS HiPS
- 2) **Load the region** (MOC) of the sky both observed by Chandra and XMM
- 3) **Load sources** from ARXA catalog **inside this region**
- 4) **Xmatch these sources** with MORX catalog
- 5) **Browse** XMM,GALEX surveys (HiPS) for each sources
- 6) Query ROSAT GAVO TAP **service** for one of them



Simbad over DSS color HiPS

Aladin v9.6 *** PROTOTYPE VERSION (based on v9.623) ***

File Edit Image Catalog Overlay Coverage Tool View Interop Help

Data access → 24 / 19697 Location 05:43:27.24 -01:54:27.1 Frame ICRS Projection Aitoff

★DSS ★SDSS ★2MASS ★WISE ★GALEX ★PLANCK ★AKARI ★XMM ★Fermi ★Gaia ★Simbad ★NED +

CDS/P/DSS2/color

Stack controls:

- the icon: show/hide a plane
- size: change object size
- zoom: adjust field size.
- Opacity: adjust transparency.

The view is drawn according to the projection of a reference plane.

For changing the reference, click on its check box.

select
pan
dist
phot
draw
tag
mod
spect
filter
cross
xy
rgb
opac.
zoom
crop
cont
pixel
prop
del

CDS/Simbad
 CDS/P/DSS2/color

epoch
size
dens.
opac.
zoom

grid study wink north hdr multiview match Search

| | MAIN_ID | OTYPE | RA | DEC | C00... | C00... | C... | PMR |
|------|--------------------------|--------|----------------|----------------|---------|---------|------|-----|
| NAME | Flame Nebula | NoClid | 05 41 42.7 | -01 54 44 | | | | |
| * | zct 0r1 A | ** | 05 40 45.527 | -01 56 33.26 | 1 | 1 | 90 | 4 |
| | NGC 2023 | RfNeb | 05 41 37.9 | -02 15 52 | 3200... | 7000... | 51 | |
| * | zct 0r1 | ** | 05 40 45.52... | -01 56 33.2... | 5.189 | 2.289 | 90 | 3 |
| | HD 37903 | Ew* | 05 41 38.38... | -02 15 32.4... | 7.651 | 3.437 | 90 | -1 |
| * | zct 0r1 B | Star | 05 40 45.571 | -01 56 35.59 | 8 | 5 | 90 | 4 |
| | HD 38087 | ** | 05 43 00.57... | -02 18 45.3... | 11.084 | 5.986 | 90 | |
| | [Thick88] NGC 2024 FIR 5 | dens | 05 41 44.6 | -01 55 38 | | | | |

select simbad
from -- All collections --

filter coll inside scan

Data access → 38 / 19697

Location 16:50:20.58 -68:31:35.0

- ▼ Collections → 38 / 19697
 - ▼ Catalog → 38 / 17224
 - ▼ B-External databases, regular
 - AAVSO International Variable Star
 - The DENIS database (DENIS-1)
 - Catalogue of Stellar Spectra
 - ESO Science Archive Catalogue
 - The Washington Visual Double Star
 - ▼ General Catalogue of Variable Stars
 - Extragalactic Variable Stars
 - The Suspected Variable Stars
 - The GCVS Catalog (General Catalogue of Variable Stars)
 - The PASTEL catalogue (Pulsar and Asteroid Spectroscopically Identified)
 - ▼ Log of CFHT Exposures (CFHT Log)
 - The CFHT Observations
 - The CFHT Observations
 - ▼ HST Archived Exposures Catalogue
 - Merged log of HST Observations
 - HST WFPC2 associated observations
 - The HST logs observations
 - Asiago Supernova Catalogue
 - XMM-Newton Observations
 - The Chandra Archive Log
 - Spectroscopically Identified
 - ▼ IRAM Observation Logs (IRAM Log)
 - List of observations
 - The Plateau de Bure
 - The Plateau de Bure
 - ▼ Optically visible open dust clouds
 - The Catalogue Data
 - Removed clusters (VizieR)
 - SB9: 9th Catalogue of Stars
 - ▼ Cataclysmic Binaries, LMXBs
 - Catalogue of Cataclysmic Binaries
 - Catalogue of Low-Mass X-ray Binaries
 - Catalogue of Related

★ DSS ★ SDSS ★ 2MASS ★ WISE ★ GALEX ★ PLANCK ★ AKARI ★ XMM ★



2 data sets selected

In view + Coverages: All Union Intersection

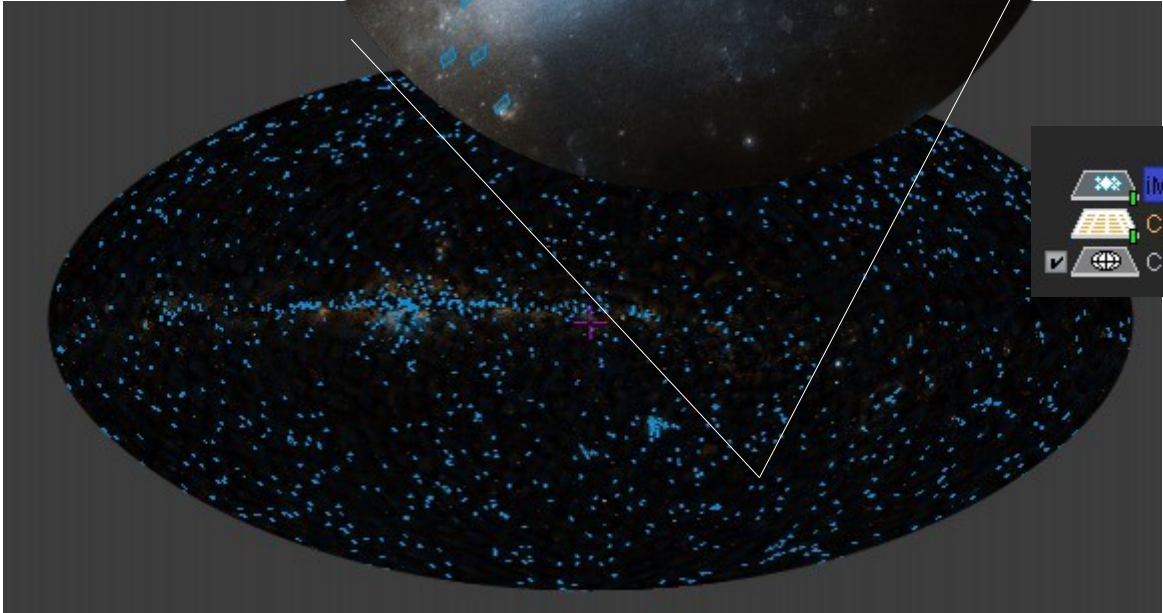
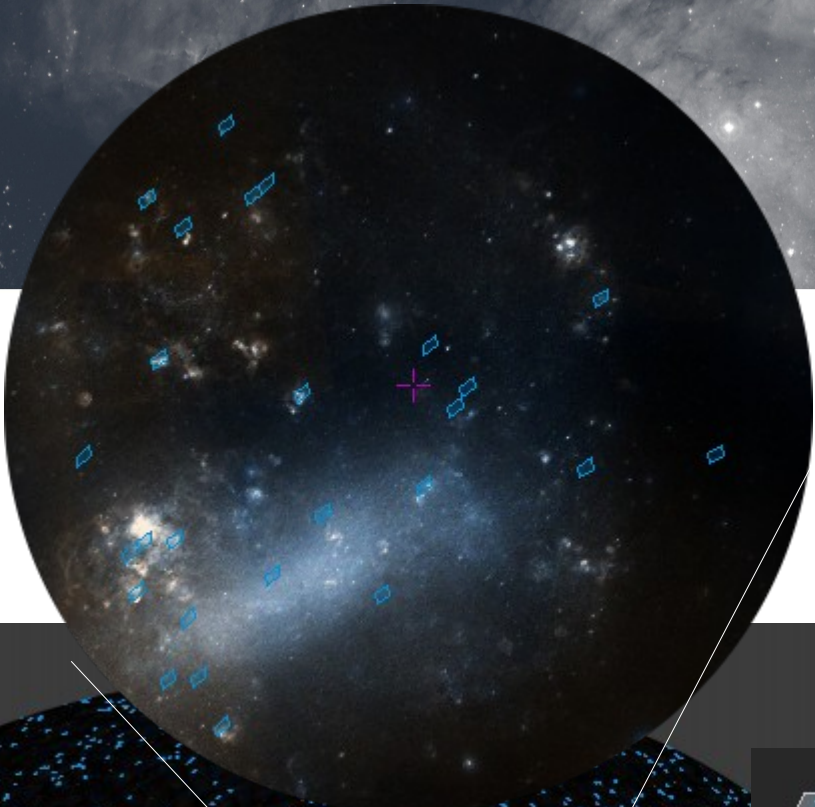
CDS/B/xmm/xmmlog, CDS/B/chandra/chandra

select
from Log missions

5" 23.47° x 24.78°

Query the region simultaneously observed by Chandra & XMM

Chandra and XMM coverage intersection



- iMOCs
- CDS/Simbad
- CDS/P/DSS2/color



Access Data Tree filtering:
Catalog only + X regime
=> query by region

Collection registry filter

Filter name store Delete

Global constraints Catalog constraints HIPS constraints

Keywords

Data type Catalog Unsuperv... Image Cube
 Data base

Sky fraction

Regime Radio millimeter Infrared Optical
 UV Euv X-ray Gamma-ray
 visible

Bib. year

Authority CDS nasa.he...
 irsa.ipac org.gavo.dc
 ov-gso wfau.roe...
 uk.ac.le... mast.stsci
 svo.cab ia2.inaf.it

Obs. epoch ..

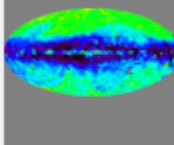
Protocol HIPS SIA SSA
 Cone search Progenitors

corresponding filter expression
client_category=Catalog* && obs_regime=x-ray

Apply

Data access → 1 / 19697

- ▼ Collections → 1 / 19697
 - ▼ Catalog → 1 / 17224
 - ▼ V-Combined data → 1 / 130
 - Atlas of Radio/X-ray associa

 Atlas of Radio/X-ray associations (ARXA) (Flesch, 2010) (more...)

Provenance: CDS
Sky coverage: 1.15% Nb rows: 602 570 Reference pub. year: 2010

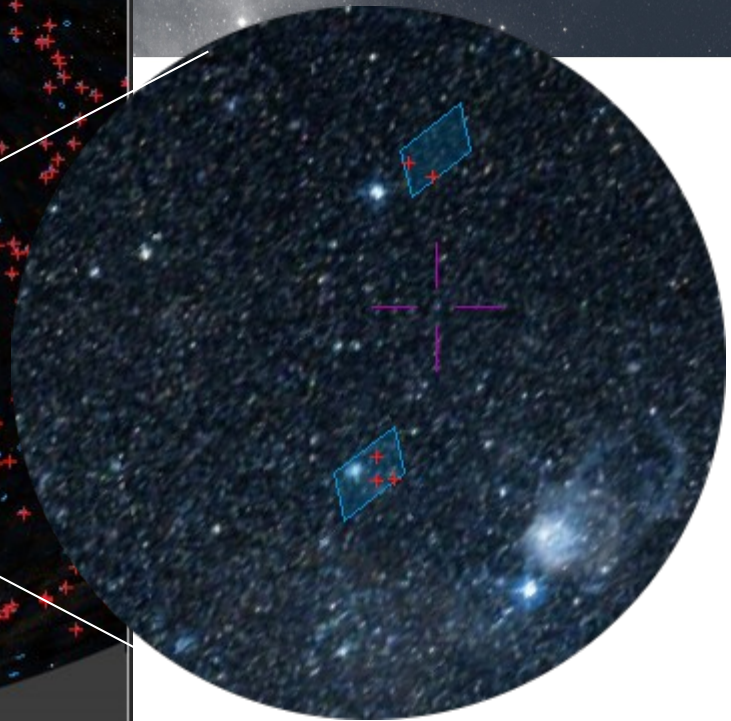
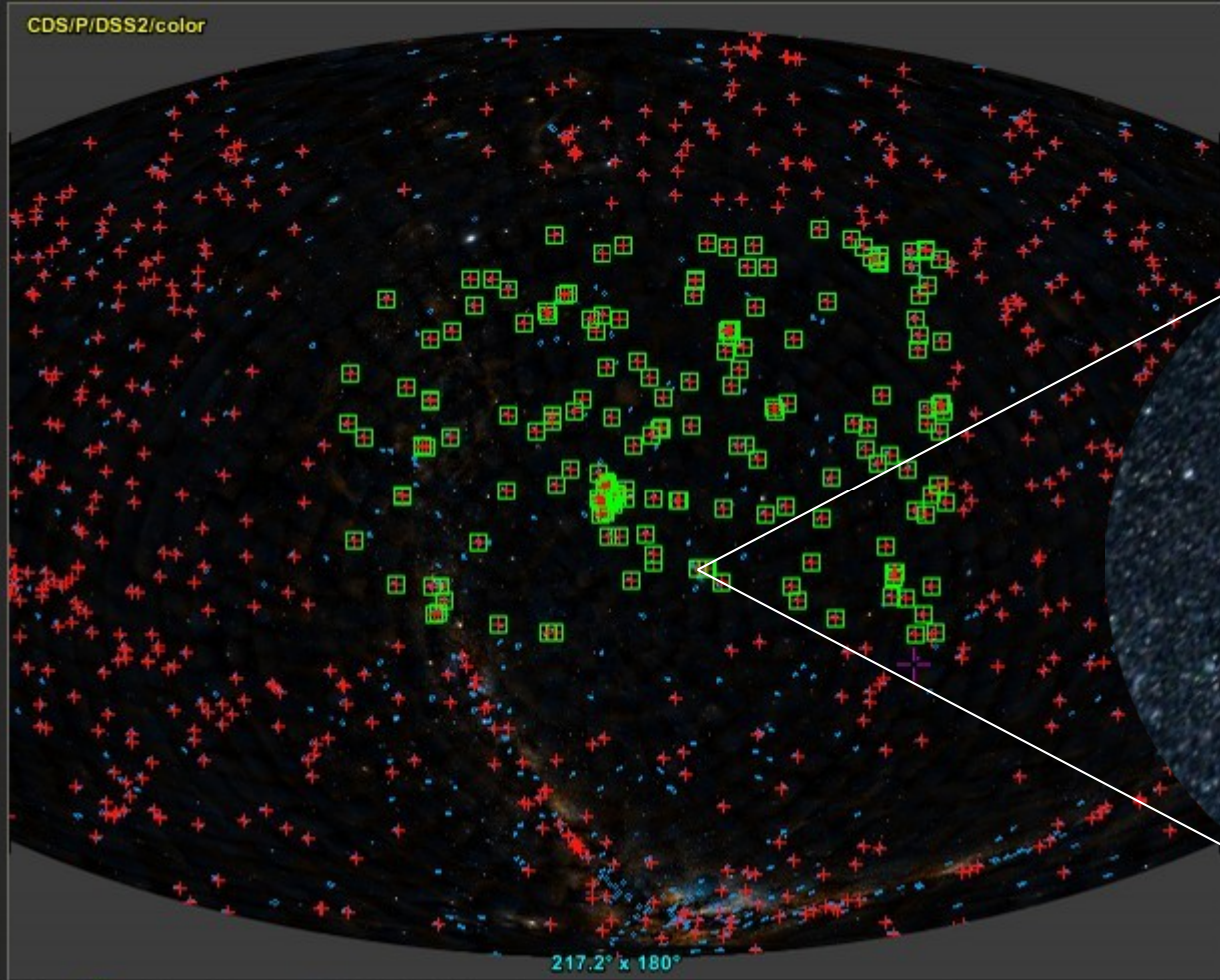
in view in region or MOC via Xmatch by criteria + Coverage Density map

[CDS/V/134/arxa \(more...\)](#)



CDS/P/DSS2/color

ARXA sources inside
the region



grid study wink north hdr multiview match Search

| RAJ2000 | DEJ2000 | Name | C1 | Rmag | Bmag | z | p... | p... | p... | Q0 | Rad | X |
|------------|-----------|-------------|-----|------|------|-------|------|------|------|----|-----|---|
| 23 56 58.6 | -34 45 16 | | X | 18.8 | 20.1 | NaN | 13 | 75 | 1 | Q0 | Rad | X |
| 23 56 59.2 | -34 45 37 | | X | 18.8 | 19.1 | NaN | 70 | 10 | 1 | Q0 | Rad | X |
| 23 57 00.0 | -34 44 49 | | X | 19 | 20.3 | NaN | 45 | 29 | 4 | Q0 | Rad | X |
| 23 57 00.8 | -34 45 34 | ESO 349-10 | GRX | 9.2 | 9.4 | 0.049 | 6 | 87 | 6 | Q0 | Rad | X |
| 23 57 02.4 | -34 45 21 | | X | 17 | 18.3 | NaN | 27 | 58 | 0 | Q0 | Rad | X |
| 23 58 56.8 | -55 26 21 | | X | 19.3 | 21.9 | NaN | 22 | 71 | 1 | Q0 | Rad | X |
| 23 58 58.9 | -55 26 35 | | X | NaN | 22.8 | NaN | 88 | 5 | 1 | Q0 | Rad | X |
| 23 59 00.1 | -55 27 30 | NGC 7796 | GX | 4.1 | 8.5 | 0.011 | 0 | 10 | 47 | Q0 | Rad | X |
| 23 59 07.9 | -30 37 40 | 1H 2351-... | BRX | 16.8 | 17.9 | 0.165 | 24 | 72 | 0 | Q0 | Rad | X |



Xmatching ARXA sources with MORX catalog

The screenshot displays a web-based astronomical data viewer interface. At the top, a navigation bar lists various astronomical surveys: DSS, SDSS, 2MASS, WISE, GALEX, PLANCK, AKARI, XMM, Fermi, Gaia, Simbad, and NED. On the left, a sidebar shows a hierarchical tree of collections, including 'Collections → 2 / 19697', 'Catalog → 2 / 17224', 'V-Combined data → 2 / 130', and 'The MORX catalogue (Fles...)'. The main panel shows a catalog selection dialog for 'CDS/P/DSS2/color'. The dialog title is 'The catalogue (morx) (more...)' and includes a small thumbnail image of a star field. Below the title, it states 'Provenance: CDS', 'Sky coverage: 1.843%', 'Nb rows: 107 655', and 'Reference pub. year: 2016'. There are several checkboxes: 'in view', 'in region or MOC', 'via Xmatch' (which is checked), 'by criteria', 'Coverage', and 'Density map'. At the bottom of the dialog are buttons for 'Load' and 'Close'. A red lightning bolt icon is positioned over the 'via Xmatch' checkbox. Below the dialog, a large oval-shaped visualization shows a star field with numerous red crosses overlaid on a dark background. On the right side, a vertical toolbar contains icons for 'select', 'pan', 'dist', 'phot', 'draw', 'tag', 'moc', 'sp', 'cross', 'x-y', 'rgb', and 'assoc'. At the bottom right, a legend panel shows several layers: 'CDSM/134...', 'IMOCs', 'CDS/Simba...', and 'CDS/P/DSS...', with the last one checked. A red arrow points from the star field visualization towards the legend panel.



Resulting tables, sorted by magnitude

The screenshot displays a software interface for astronomical data analysis. The main window shows a galaxy image with several objects marked by green squares. A red arrow points from the control panel to the 'filer' icon, and another red arrow points from the search bar to the table below.

Control Panel (Right):

- dist
- phot
- draw
- tag
- moc
- filer
- cross
- x-y
- rgb
- assoc
- crop
- cont
- pixel
- prop
- del

Object List (Right):

- CDSM/148/morx via Xmatch
- CDSM/134/anxa by MOC
- iMOCs
- CDS/Simbad
- CDS/P/DSS2/color

Sliders (Right):

- epoch
- size
- dens.
- opac.
- zoom

Table (Bottom):

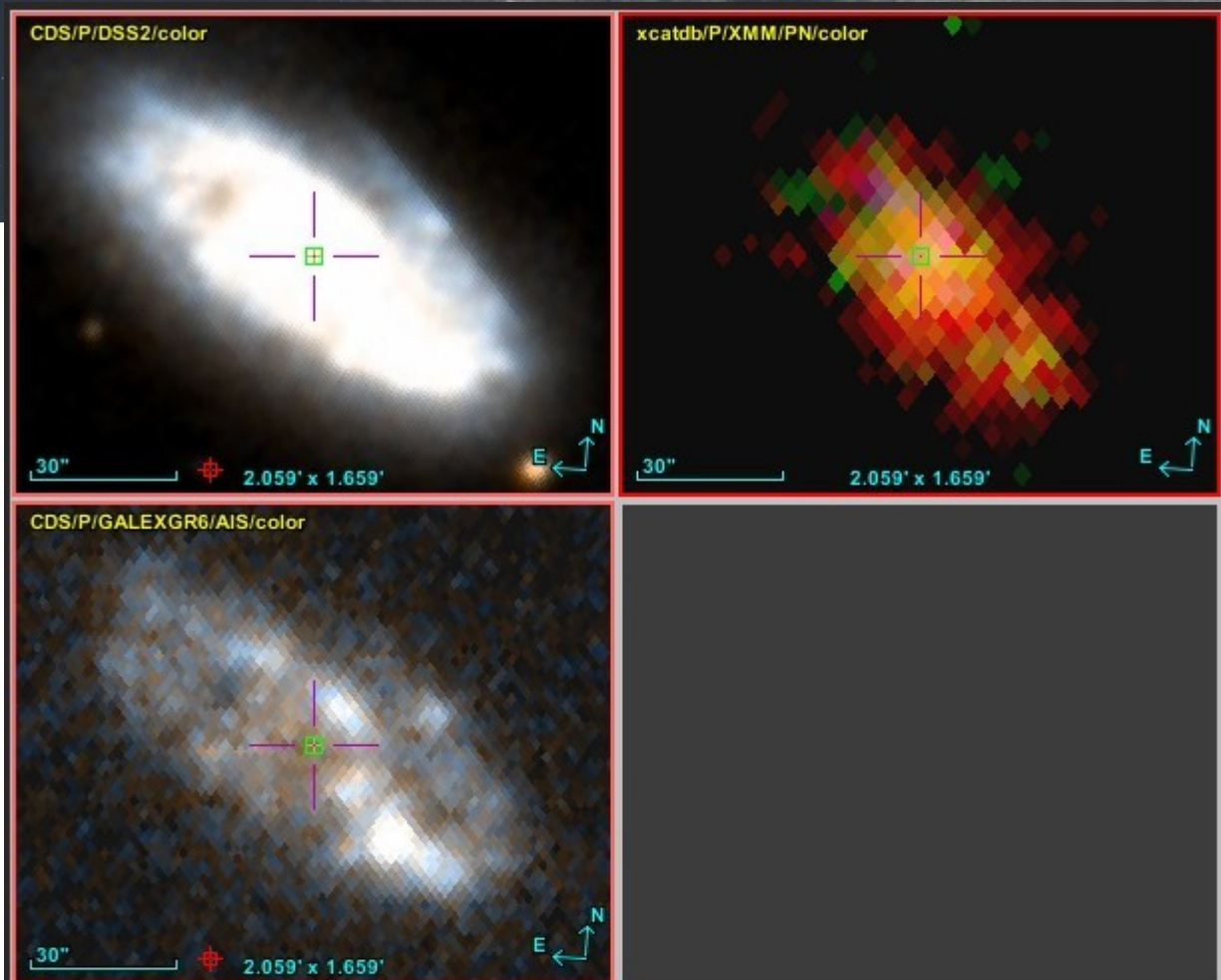
| RAJ2000 | DEJ2000 | Name | De... | Rmag | Bmag | Δ | C... | R |
|-------------|-------------|-------------|-------|------|------|----------|------|---|
| 51.5833334 | -21.3386... | J032620.... | X | | | 6.6 | j | x |
| 334.0379... | -36.8437... | IC 5179 | GRX | 7.1 | | 7.0 | j | 1 |
| 59.904125 | -67.6342... | NGC 1511 | GRX | 0.5 | | 7.6 | j | 1 |
| 198.849875 | -16.3855... | NGC 5044 | GRX | 11.4 | | 7.8 | p | 1 |
| 191.28615 | -0.46191 | 2MRS J12... | G2X | | | 7.9 | p | x |
| 182.6358... | 39.4058334 | NGC 4151 | ARX | 11.1 | | 8.0 | p | n |
| 179.63091 | 43.94702 | 2MRS J11... | GRX | 11.2 | | 8.0 | pm | n |
| 335.1861... | -24.6786... | NGC 7252 | GRX | 8.3 | | 8.1 | p | n |

Map (Bottom Right):

Frame: ICRS

03 26 19.97 -21 20 18.8
4.117' x 3.325'

Generate X and UV
thumbnail images for
each source



grid study wink north hdr multiview match
[View A2] - CDS/P/GALEXGR6/AI: Search

| | RAJ2000 | DEJ2000 | Name | De... | Rmag | Bmag | Δ | C... | R | |
|--|-------------|-------------|-------------|-------|------|------|----------|------|---|---|
| | 51.5833334 | -21.3386... | J032620.... | X | | | 6.6 | j | x | - |
| | 334.0379... | -36.8437... | IC 5179 | GRX | 7.1 | | 7.0 | j | 1 | 1 |
| | 59.904125 | -67.6342... | NGC 1511 | GRX | 0.5 | | 7.6 | j | 1 | 1 |
| | 198.849875 | -16.3855... | NGC 5044 | GRX | 11.4 | | 7.8 | p | 1 | - |
| | 191.28615 | -0.46191 | 2MRS J12... | G2X | | | 7.9 | p | x | - |
| | 182.6358... | 39.4058334 | NGC 4151 | ARX | 11.1 | | 8.0 | p | n | 1 |
| | 179.63091 | 43.94702 | 2MRS J11... | GRX | 11.2 | | 8.0 | pm | n | 1 |
| | 335.1861... | -24.6786... | NGC 7252 | GRX | 8.3 | | 8.1 | p | n | r |



TAP query on ROSAT image catalog

The screenshot displays the ALADIN interface for a TAP query on the ROSAT image catalog. The interface is divided into several sections:

- Available data (left sidebar):** Lists various astronomical surveys and datasets, including PSPC summed pointed observations, Sloan Digitized Sky Surveys, ROSAT All-Sky X-ray Surveys, and others.
- Command bar:** Shows the current command: `17:03:37.28 +78:43:07.8`.
- Query Window (center):** A window titled "TAP access with org.gavo.dc/rosat/q/im" containing a query form. The table is set to "rosat.images" and the query is: `SELECT TOP 10 * FROM rosat.images WHERE CONTAINS(POINT('ICRS', centeralpha, centerdelta), CIRCLE('ICRS', 323.75763, 41.26193, 1.15)) = 1`. The window includes fields for "Select:", "Constraints:", "Max rows:", "Target", "Radius", and "Ra= 323.75763 Dec= 41.26193 Radius= 1.15".
- Results Table (bottom center):** A table with columns: `image`, `mime`, `acssize`, `centeralpha`, `centerdelta`, `imagetitle`, `instid`, `dateobs`, `naves`, `pixelsize`, and `pixelscale`. The table contains 5 rows of data.
- Visualization Panel (right):** A panel titled "Imagine your eye" showing a sky map with a green circle representing the query radius. The map includes a coordinate grid and a search bar.

| image | mime | acssize | centeralpha | centerdelta | imagetitle | instid | dateobs | naves | pixelsize | pixelscale |
|------------------|--------|------------|-------------|---------------------------|--------------|--------------|---------|-------|-----------|------------|
| image/fits | 334774 | 255.905319 | 78.718821 | ROSAT HRI ROSAT ROSAT HRI | 48073.564465 | | | 2 | 512 512 | Fov |
| application/fits | 80326 | | | ROSAT HRI - 199 | ROSAT HRI | 48073.564465 | | | | |
| image/fits | 33431 | 255.905319 | 78.718821 | ROSAT HRI ROSAT ROSAT HRI | 48073.564465 | | | 2 | 512 512 | Fov |
| application/fits | 338001 | | | ROSAT HRI - 199 | ROSAT HRI | 48073.564465 | | | | |
| application/fits | 300023 | | | ROSAT HRI - 199 | ROSAT HRI | 48076.692294 | | | | |



ROSAT image

Available data → 197 / 20647
 Command: 20:22:21.48 +59:32:57.8
 Frame: ICRS Projection: Aitoff

SDSS SDSS 2MASS WISE GALEX PLANCK AKARI XMM Fermi Gaia Simbad HED

CDS/P/DSS2/color

10.46° x 6.614°

| accref | mime | accsize | centerAlpha | centerDelta | imageTitle | Instid | dateObs | nAxes | pixelSize | pixe |
|---|------------|---------|-------------|-------------|-----------------|-------------|--------------|-------|-----------|------|
| http://dc.zah.ur | image/fits | 79823 | 308.724326 | 60.147849 | ROSAT PSPCB RG | ROSAT PSPCB | 48789.634838 | 2 | 512 512 | FoV |
| http://dc.zah.ur | image/fits | 48577 | 308.724326 | 60.147849 | ROSAT PSPCB RG | ROSAT PSPCB | 48789.634838 | 2 | 512 512 | FoV |
| http://dc.zah.ur | image/fits | 67536 | 308.724326 | 60.147848 | ROSAT PSPCB RG | ROSAT PSPCB | 48789.634838 | 2 | 512 512 | FoV |
| http://dc.zah.ur | image/fits | 165229 | 308.724326 | 60.147849 | ROSAT PSPCB RG | ROSAT PSPCB | 48789.634838 | 2 | 512 512 | FoV |
| http://dc.zah.ur | image/fits | 46684 | 308.722094 | 60.148821 | ROSAT HRI ROSAT | ROSAT HRI | 49486.406559 | 2 | 512 512 | FoV |
| http://dc.zah.ur | image/fits | 37058 | 308.712084 | 60.158819 | ROSAT HRI ROSAT | ROSAT HRI | 49942.974504 | 2 | 512 512 | FoV |
| http://dc.zah.ur | image/fits | 26250 | 308.752095 | 60.188818 | ROSAT HRI ROSAT | ROSAT HRI | 50305.328389 | 2 | 512 512 | FoV |

7 sel / 177 src 274Mb

Aladin V10 for large projects

- Projects data in HipS will appear in discovery tree
- You can distribute your own HiPS and keep responsibility
- Query by MOC, CDS x-match available in Aladin
- Services in all kind of VO protocols can be queried from the discovery tree





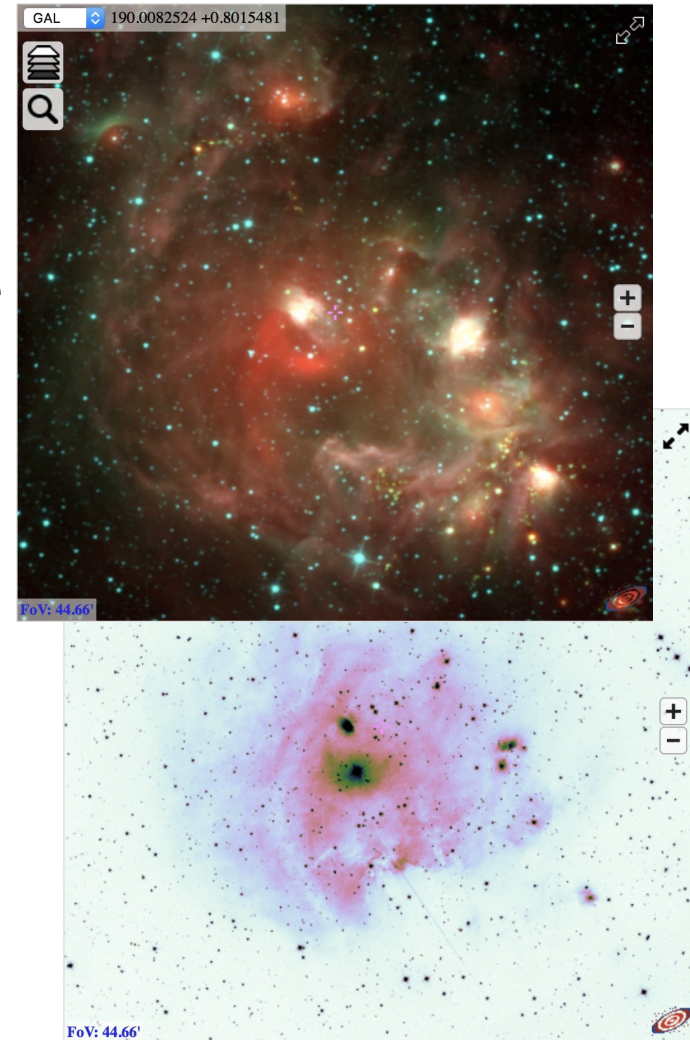
Aladin Lite

Current status, ongoing developments



Aladin Lite: A HiPS visualizer

- Interactive HiPS visualizer in the browser
- 300+ available HiPS can be visualized in Aladin Lite
- JPG or PNG tiles
FITS tiles not supported (yet?)
- Support for color maps
- No native support for FITS image display
 - FITS file is first converted to HiPS server-side



Easy embedding

Choose options:

| | | |
|------------------|--|---------|
| Width | <input type="text" value="600"/> | px |
| Height | <input type="text" value="400"/> | px |
| Image survey | <input type="text" value="DSS colored"/> | |
| Initial location | <input type="text" value="M 81"/> | |
| Initial FoV | <input type="text" value="0.3"/> | degrees |

Then copy/paste the following code in your page:

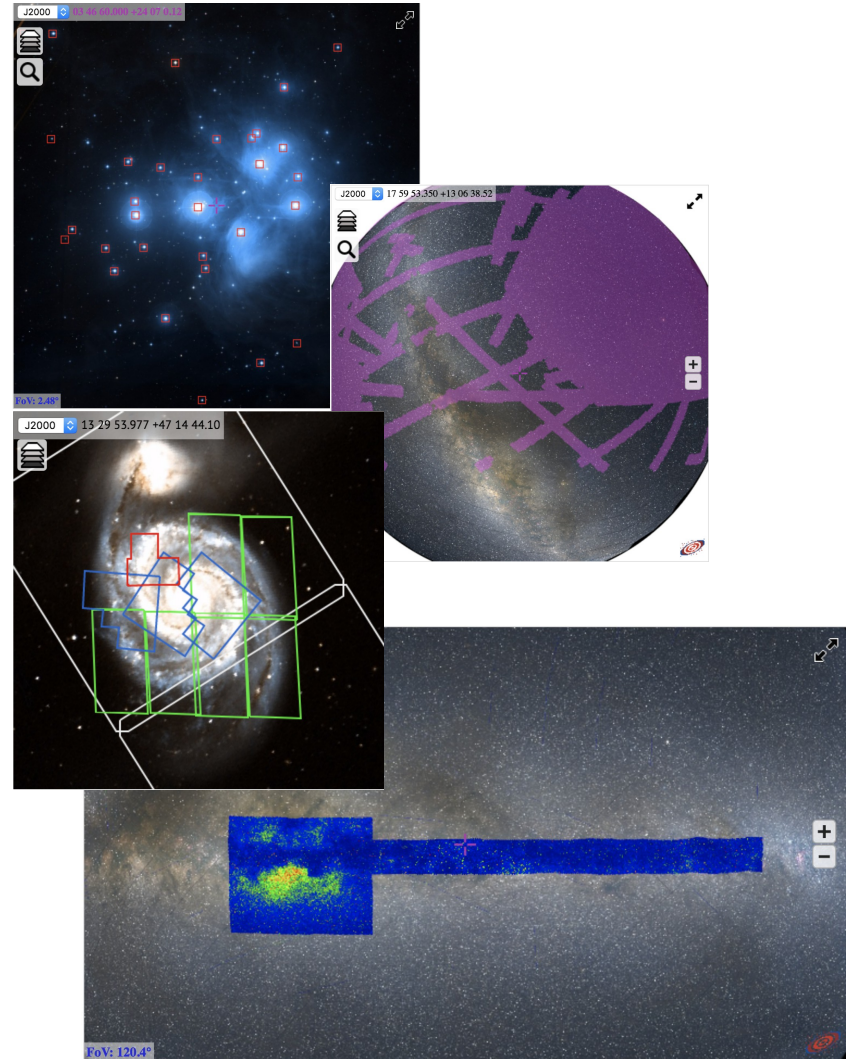
```
<!-- include Aladin Lite CSS file in the head section of your page -->
<link rel="stylesheet" href="//aladin.u-strasbg.fr/AladinLite/api/v2/latest/aladin.min.css" />

<!-- you can skip the following line if your page already integrates the jQuery library -->
<script type="text/javascript" src="//code.jquery.com/jquery-1.9.1.min.js" charset="utf-8"></script>

<!-- insert this snippet where you want Aladin Lite viewer to appear and after the loading of jQuery -->
<div id="aladin-lite-div" style="width:600px;height:400px;"></div>
<script type="text/javascript" src="//aladin.u-strasbg.fr/AladinLite/api/v2/latest/aladin.min.js" charset="utf-8"></script>
<script type="text/javascript">
  var aladin = A.aladin('#aladin-lite-div', {survey: "P/DSS2/color", fov:0.3, target: "M 81"});
</script>
```

Overlays: catalogues, footprints

- **Catalogues**
 - From URL
 - Progressive catalogues (HiPS)
 - programmatically
- **MOCs** (coverage maps)
 - From URL
 - From a list of HEALPix pixels
- **Footprints** (polygons and circles)
 - From STC-S description
 - programmatically
- **Image HiPS**
 - Overlay another HiPS on the base layer



□ Javascript API

- API allows to control Aladin Lite and make it a component of a larger application
- <http://aladin.unistra.fr/AladinLite/doc/API/>
Examples of API usage at
<http://aladin.unistra.fr/AladinLite/doc/API/examples/>



□ Who uses Aladin Lite?

- (*) □ ESASky
- (*) □ ESO Phase3 archive search interface
- (*) □ Gaia archive visualization interface
- (*) □ LIGO Skymap viewer
- (*) □ ARCHES Walker
- (*) □ MOPRA pointing
- (*) □ JUDO2
- □ Akari explore tool
- □ Cassis atlas of Spitzer spectra
- (*) □ GLIMPSE 360
- (*) □ CADE
- (*) □ ADS All Sky Survey
- □ Maser DB
- □ Webb Deep-Sky Society
- □ Galaxy of interactive stars
- (*) □ Gamma-Sky
- □ eHST
- □ DACE
- □ http://www.tauceti.caltech.edu/kunal/cgi-bin/batch_marshall.py
- □ UWISH2
- □ Olimpiadi italiane di astronomia
- □ ICRAR What's up
- □ NOAO Data Labs
- □ Planck Legacy archive
- □ SkyWatch
- □ EXOSS Citizen Science
- □ Giraffe archive
- (*) □ Astrodeep
- (*) □ XMM X-Class
- □ Clusterix SVO
- □ BlackCAT
- □ GALAH
- □ XMM Newton at IRAP
- □ Subaru Suprime cam
- □ Skymapper Skyviewer
- □ SETIquest
- □ ARI Gaia page
- LEDA : □ exemple
- (*) □ ALMA Science Archive
- □ IRAP RR Lyr Database
- □ Gaia Follow-Up Network for Solar System Objects
- □ Gaia Alerts





ESA Sky

J2000 14 45 11.447 -62 28 43.67 FoV: 1.62° SNR G315.0-02.3

Image Observations

| | |
|----------------------|-------------------------|
| XMM-OM (UV) | XMM-Newton (Soft X-ray) |
| Chandra (Soft X-ray) | XMM-OM (Optical) |
| SUZAKU (Soft X-ray) | INTEGRAL (Hard X-ray) |

XMM-Newton X Chandra SUZAKU HST XMM-OM Herschel XMM-OM





ALMA

ALMA Science Archive Query

Query Form

Results Table

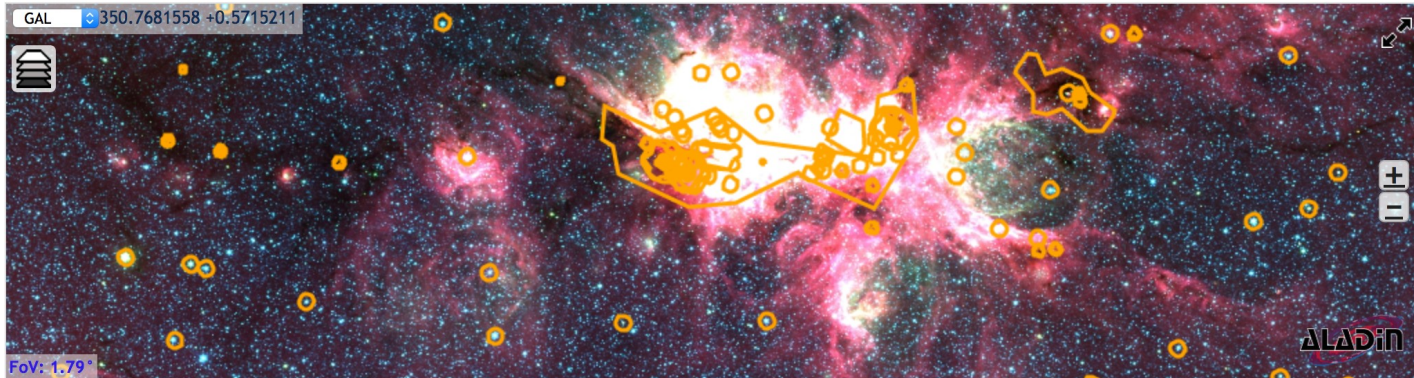
Submit download request

[Close Viewer](#)

[Results Bookmark](#)

[Export Table](#)

[Results Help](#)



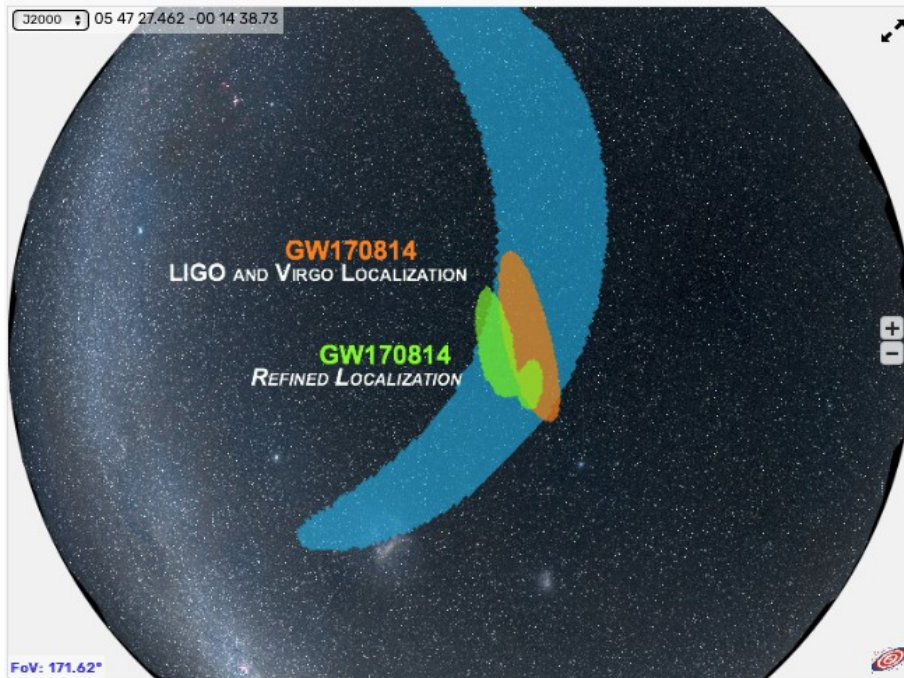
[More columns](#)

Showing 19687 of 19687 rows.

| <input type="checkbox"/> | Project code | Source name | RA | Dec | Band | Integration | Release date ▲ |
|--------------------------|--------------------------------|----------------------|--|--|----------------------|--|-----------------------------|
| Filter: | <input type="text"/> | <input type="text"/> | <input type="text"/> H:M:S ▼ | <input type="text"/> D:M:S ▼ | <input type="text"/> | <input type="text"/> seconds ▼ | <input type="text"/> |
| <input type="checkbox"/> | 2011.0.00191.S | Fomalhaut b | 22:57:38.68 | -29:37:12.6 | 7 | 8709.120 | 2012-12-06 |
| <input type="checkbox"/> | 2011.0.00101.S | GRB021004 | 00:26:54.68 | +18:55:41.6 | 7 | 3749.760 | 2012-12-06 |
| <input type="checkbox"/> | 2011.0.00131.S | R Scl | 01:26:58.08 | -32:32:36.4 | 7 | 738.319 | 2012-12-06 |
| <input type="checkbox"/> | 2011.0.00397.S | J030427.53-310838.3 | 03:04:27.53 | -31:08:38.3 | 7 | 90.720 | 2012-12-20 |
| <input type="checkbox"/> | 2011.0.00397.S | J030629.21-335331.5 | 03:06:29.21 | -33:53:31.5 | 7 | 90.720 | 2012-12-20 |
| <input type="checkbox"/> | 2011.0.00397.S | J035448.24-330827.2 | 03:54:48.24 | -33:08:27.2 | 7 | 90.720 | 2012-12-20 |
| <input type="checkbox"/> | 2011.0.00397.S | J040403.61-243600.1 | 04:04:03.61 | -24:36:00.1 | 7 | 90.720 | 2012-12-20 |



VIRGO



Using the skymap

Click on the various options below to display information relating to each detection.

| Detection | Sky localisation | Label | Pop-up info |
|---------------------------|-------------------------------------|-------------------------------------|--------------------------|
| GW170814 - L1/H1 only | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| GW170814 - L1/H1/V1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| GW170814 - refined skymap | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| GW150914 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| GW151226 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| GW170104 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Backgrounds

If you want to see the extension of these sky regions through the constellations you can select an artistic background image **Constellations**.

You can also select various background images at different wavelengths, combining the electromagnetic data with the gravitational-wave information: **Mellinger (default)** **WISE** **2MASS** **DSS color** **XMM** **Fermi**





Latest developments (available in beta version)

- New listeners available:
 - `positionChanged`
 - `zoomChanged`
 - `click`
 - `mouseMove`
- Improvements in MOC display performance
- Density maps of all Vizier tables available as HiPS
- *ipyaladin*
 - Jupyter widget for integration of Aladin Lite in Python notebooks



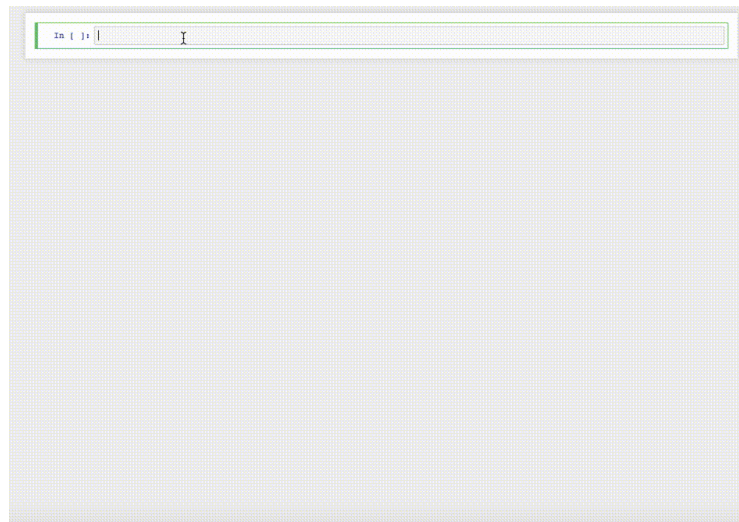
ipyaladin



- **A Jupyter widget for Aladin Lite**
- Features
 - Easy integration of Aladin Lite in Python notebooks
 - Control of field of view (target, zoom level, HiPS to display)
 - Linked views
 - Overlay VOTable, Astropy Tables, MOCs
 - Register callbacks triggered by action in widget view

```
In [4]: import ipyaladin.aladin_widget as ipyal
```

```
In [5]: aladin = ipyal.Aladin(target='orion', fov=4)  
aladin
```





Ongoing developments (work in progress)

- Mirror management
- HTTPS support
 - Sesame, SIMBAD, HiPS tiles available in HTTPS
 - Still missing: HTTPS access to VizieR catalogues
- Footprints selection (ESASky/ESAC development)
- STC-S parsing improvement
- Mobile devices support (pinch to zoom)
- Source code on *github*
 - In a first time, contribution welcome from *close partners*
 - Currently released under GPL3 license



Aladin Lite for large projects

- As an Implementor :
 - Use Aladin Lite in you service web page in addition to your own functionalities
- As a Developer :
 - Add you own Aladin Lite code to the software to add more integrated functionality,
 - but please keep in touch with Aladin Lite developer (Thomas)

