

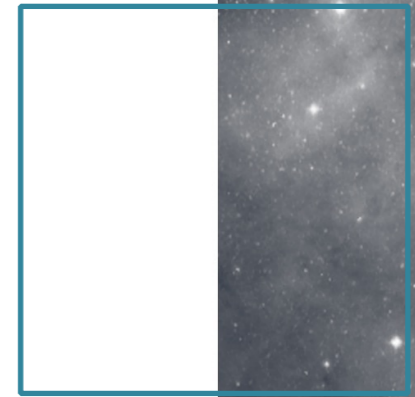
Portals

Thomas Boch, Sebastien Derriere

CDS Council, November 7 2016



CENTRE DE DONNÉES
ASTRONOMIQUES DE STRASBOURG



□ 2 kind of portals

- **CDS Portal**

- Search by position or object name
- Retrieve datasets of interest in CDS services

- **Project-specific portal**

Access to and visualization of a limited highlighted set of datasets

eg: *Astrodeep portal*

CDS Portal

- Existing portal
<http://cdsportal.u-strasbg.fr/>
(released in 2010)
 - monolithic
 - limited datasets filtering/selection
 - poor data preview
 - poor data visualisation

CDS Portal

Portal [My data](#) [Help](#) thomas [Preferences](#) [Admin](#) [Logout](#)

Target:
J2000 position for M 81: 09 55 33.173 +69 03 55.06

Object identifiers, measurements and bibliography for M 81

- Object type: Active Galaxy Nucleus
- Morphological type: SA(s)ab
- [More SIMBAD data for M 81](#)
- [3545 bibliographic references](#)
- [515 objects within 2'](#)
- [Display map around M 81](#)
- [Display SimPlay interactive map around M 81](#)
- [Related objects in bibliography:](#)

Number of bibliographic references for M 81

Images for M 81

- [Display region in Aladin \(Web Start\)](#)

Survey	Band	λ (μm)	Size	Epoch	Resolution	Download
POSSI	E	0.64	14.1" x 14.1"	1953-03-07	1.6" / pixel	JPEG FITS
POSSI	E	0.64	1.6" x 1.6"	1953-03-07	6.7" / pixel	JPEG FITS
POSSI	E	0.64	7.7" x 7.7"	1953-03-07	27.1" / pixel	JPEG FITS
POSSII	J	0.49	13.0" x 13.0"	1988-02-15	1.0" / pixel	JPEG FITS
POSSII	F	0.65	12.9" x 12.9"	1998-12-17	1.0" / pixel	JPEG FITS
POSSII	F	0.65	12.9" x 12.9"	1998-11-24	1.0" / pixel	JPEG FITS
POSSII	J	0.49	12.9" x 12.9"	1997-04-08	1.0" / pixel	JPEG FITS
POSSII	N	0.83	12.9" x 12.9"	2000-04-01	1.0" / pixel	JPEG FITS

[Display color image](#)

Catalogues for M 81

- [146 catalogues with 'M 81' keyword](#)
- [329 catalogues around M 81:](#)

Name	Description	Local density	Wavelength	Popularity	Coverage map
J/ApJ/715/...	Census of self-obscured massive stars (Khan+, 2010) [ReadMe]	93	IR	46	
J/ApJS/19/...	Chandra ACIS survey in 383 nearby galaxies. I. (Liu, 2011) [ReadMe]	67	X-ray	59	
J/AJ/139/1/...	M81 star cluster candidates (Nantais+, 2010) [ReadMe]	61	optical	48	
I/324	The Initial Gaia Source List (IGSL) (Smart, 2013) [ReadMe]	55		88	
I/337	Gaia DR1 (Gaia Collaboration, 2016) [ReadMe]	54	optical	94	
I/297	NOMAD Catalog (Zacharias+ 2005) [ReadMe]	53	optical,IR	90	
I/294	The SDSS Photometric Catalog, Release 7 (Adelman-McCarthy+, 2009) [ReadMe]	47	optical	84	
J/AJ/141/205	UVOT imaging of M81 and Holmberg IX (Hofersten+, 2011) [ReadMe]	45	UV,optical	43	
J/ApJ/757/52	UV and IR observations for SINGS galaxies. I. (Mao+, 2012) [ReadMe]	43	UV,IR	43	
I/328	AllWISE Data Release (Cutri+ 2013) [ReadMe]	43	IR	100	

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□ New CDS Portal

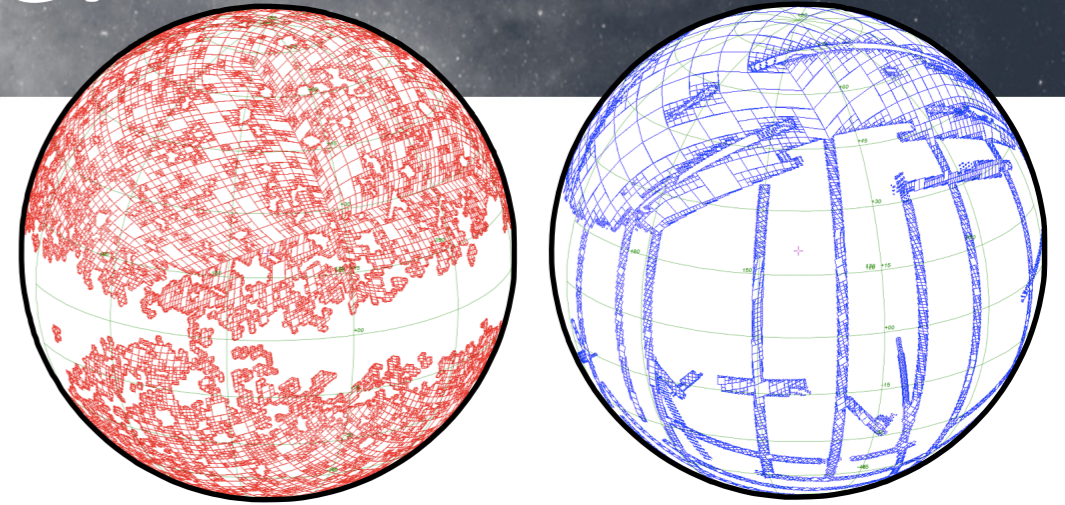
- Features

- **Discovery**: locate datasets of interest
- **Filter** datasets
- **Preview** data
- **Access** data

- Implementation

- powered by **MOCServer** and **HiPS**
- **independent** composable reusable **widgets**

□ MOC and MOCServer

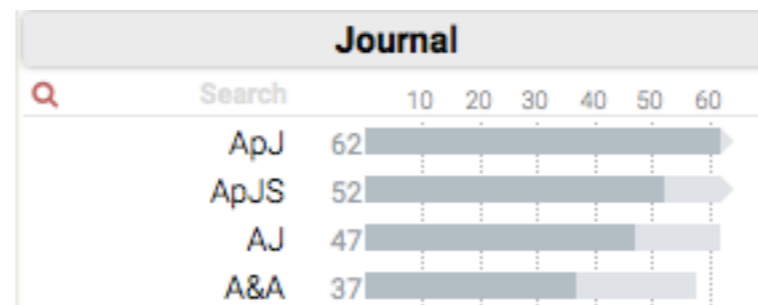
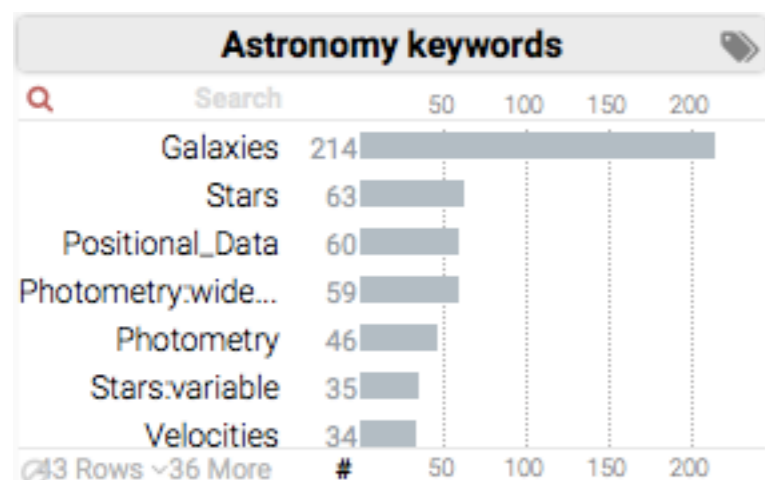


- MOC
 - IVOA standard to describe a dataset coverage
 - allows for fast comparison of coverages
 - based on HEALPix tessellation
- MOCServer
 - collection of 15,000 MOCs for:
 - all image HiPS published by CDS & partners (ESAC, JAXA, IRAP, etc)
 - all VizieR tables with positions (1.7 arcmin resolution)
 - Simbad
 - queryable by cone, polygon, MOC
 - give me resources available in this region

□ MOCServer

- spatial indexation
 - which data collections are available in this sky region?
 - eg: image HiPS in a 2 degrees cone around M31
http://alasky.unistra.fr/MocServer/query?RA=10.68&DEC=41.273&SR=2&dataprod_type=image&get=record ↗
 - fast: spatial query <100ms
- metadata provider

Wavelength : Gamma-ray X UV Optical Infrared Radio Gas-line

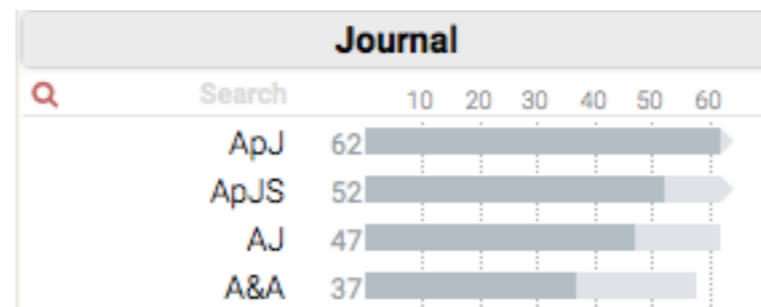
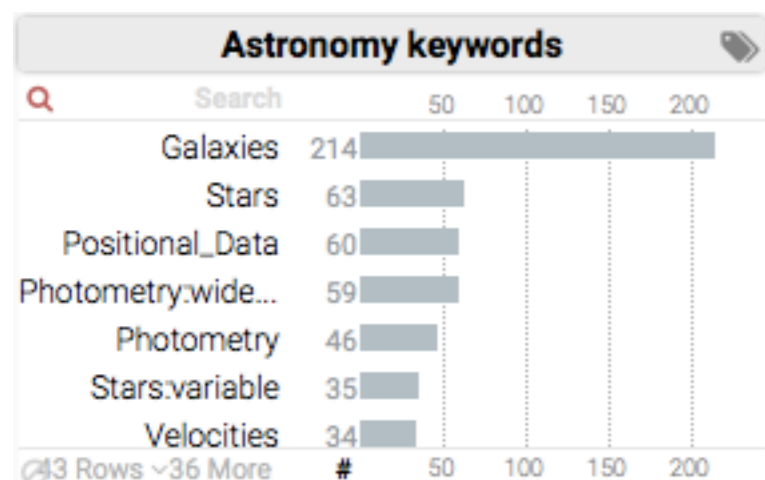


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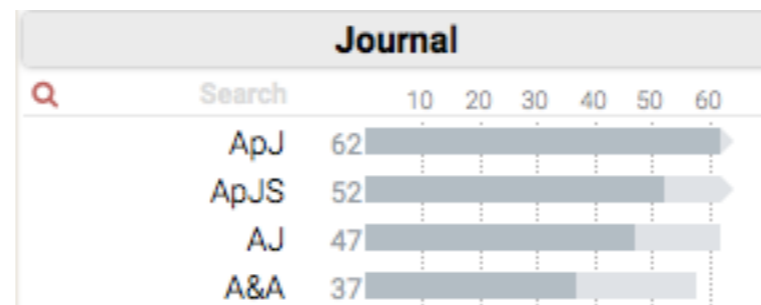
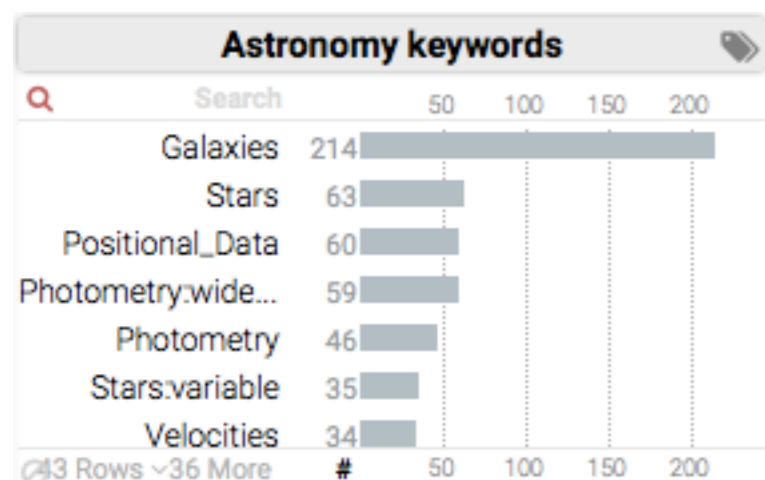


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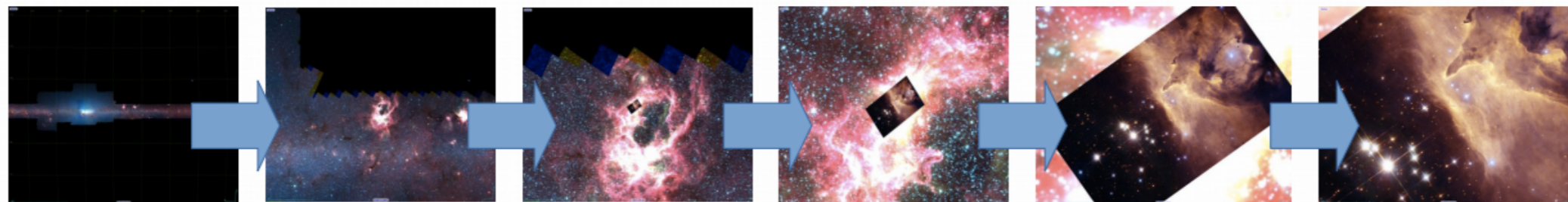


Filtering

□ HiPS, Aladin Lite and widgets

- HiPS: Hierarchical Progressive Surveys

- Multi-resolution data structure



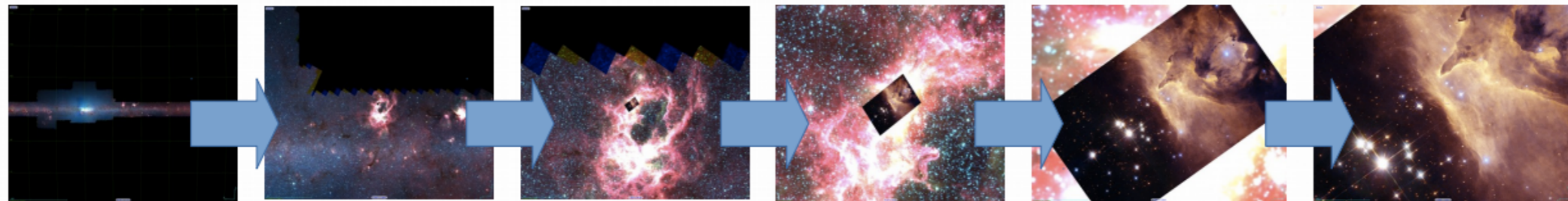
- Widgets

- Aladin Lite: HiPS visualizer
- Simbad details on one object
- Available images HiPS
- Available catalogues HiPS
- Photometric points
- Data plot
- ...

□ HiPS, Aladin Lite and widgets

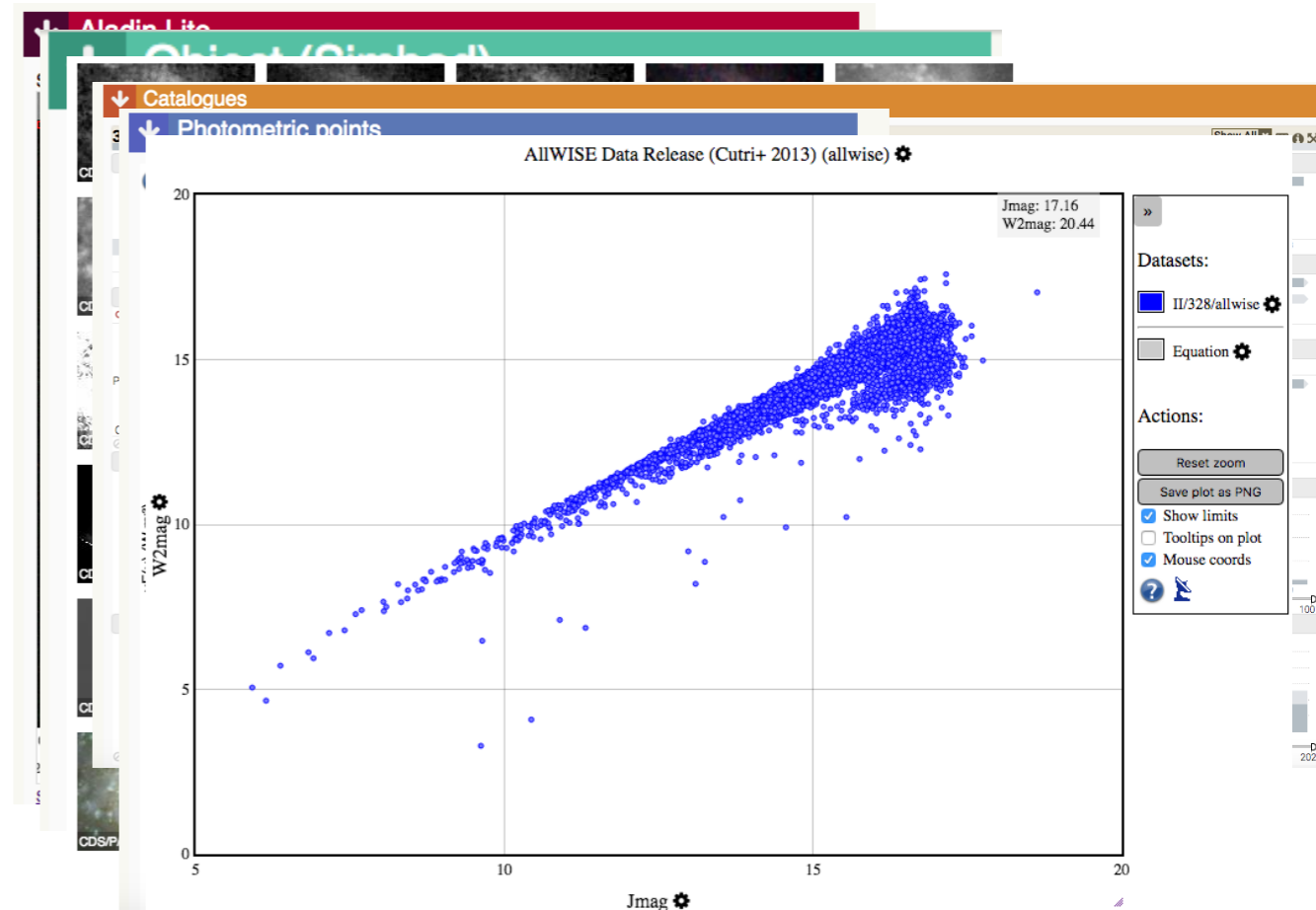
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- Widgets

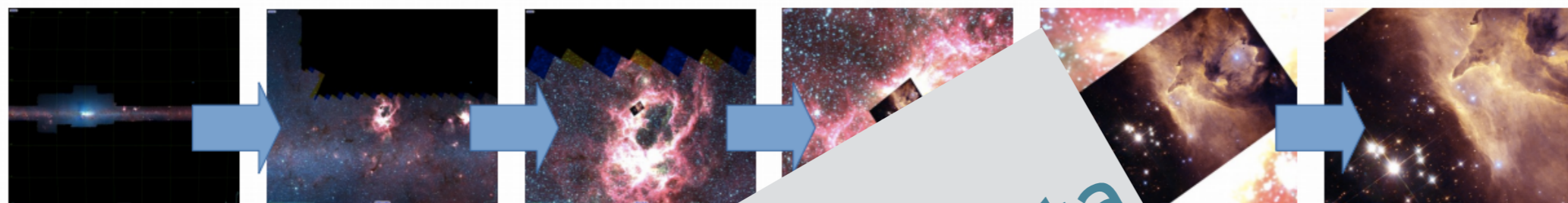
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□ HiPS, Aladin Lite and widgets

- HiPS: Hierarchical Progressive Surveys

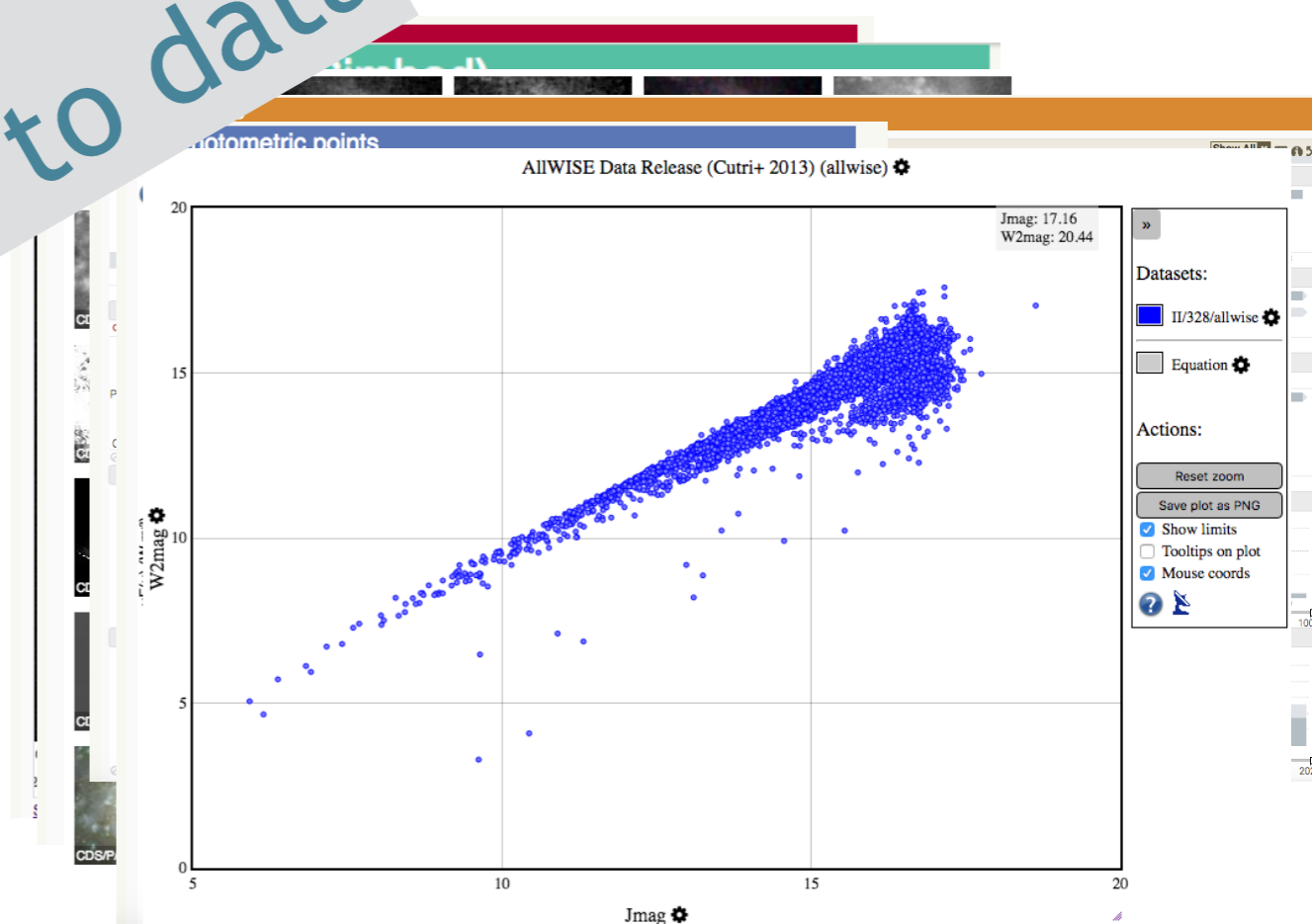
- Multi-resolution data structure



Preview
Access to data

- Widgets

- Aladin Lite: HiPS view
- Simbad details on on object
- Available images HiPS
- Available catalogues HiPS
- Photometric points
- Data plot
- ...



□ Inter-widgets communication

Inter-widgets communication

Object name or position

Object (Simbad)

Main ID
M 99

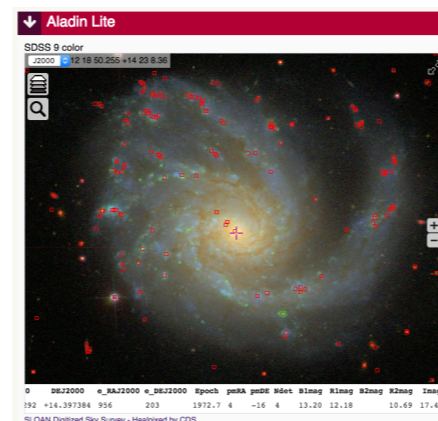
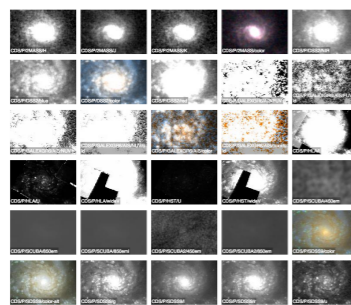
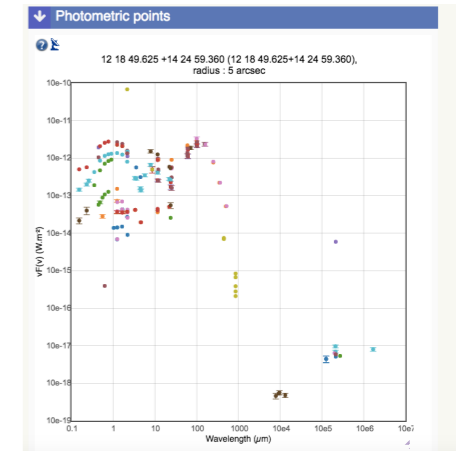
Object type
HII Galaxy

Morphological type
Sc(dSc)

More info in Simbad

Magnitudes

- u : 10.45
- u : 13.226
- B : 10.44
- V : 9.87
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Showing 389 entries (filtered from 637 total entries)

Inter-widgets communication

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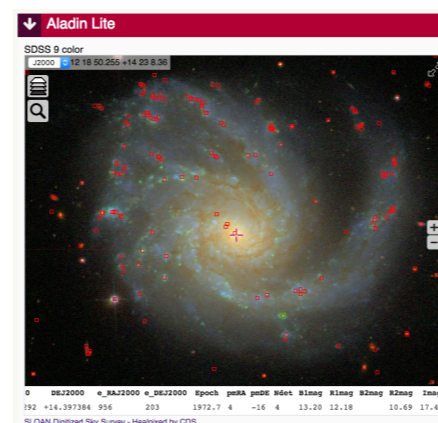
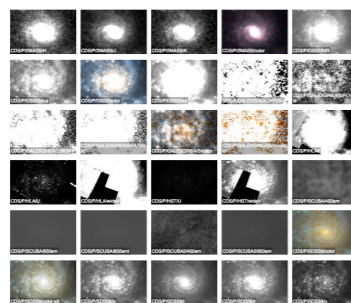
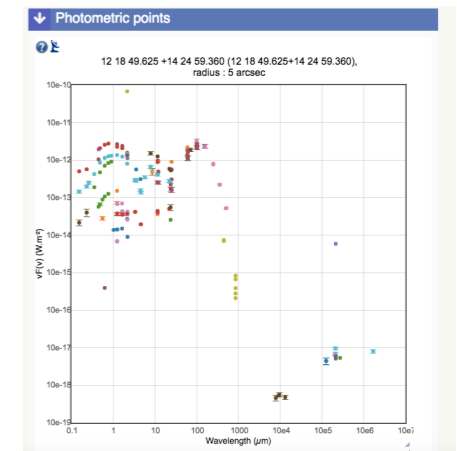
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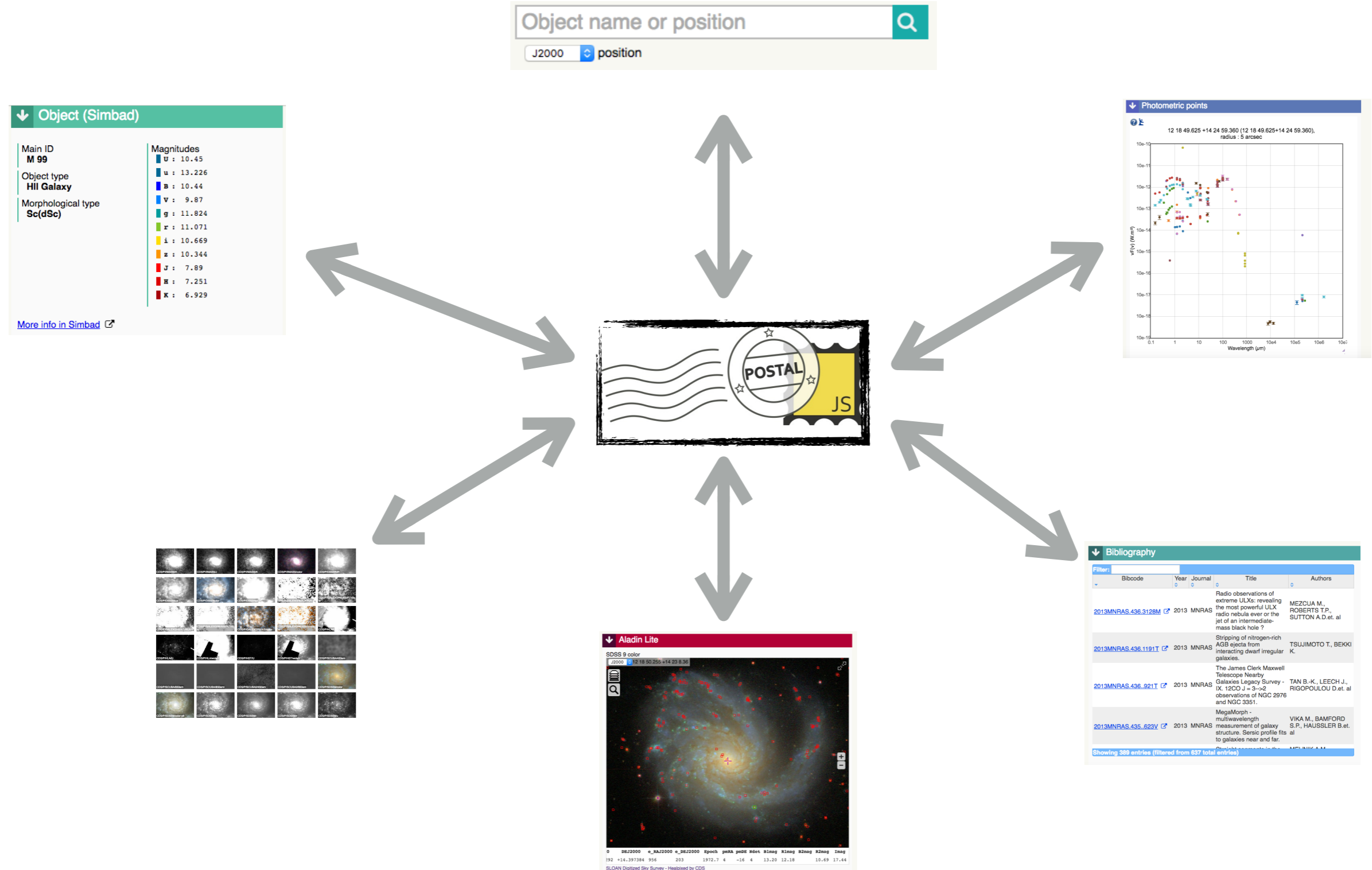
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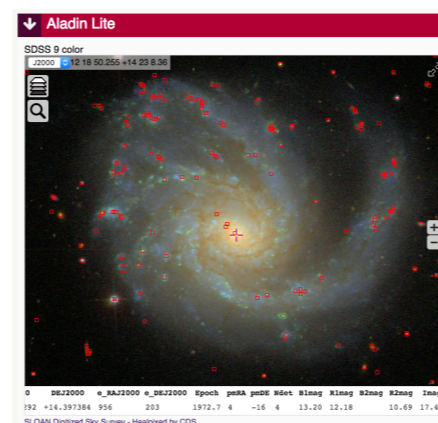
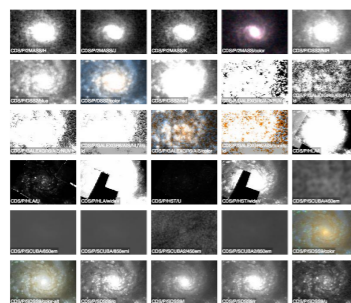
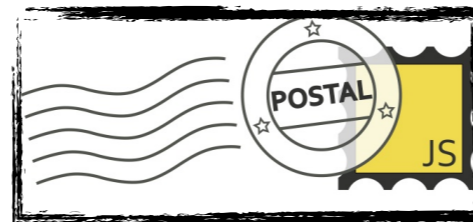
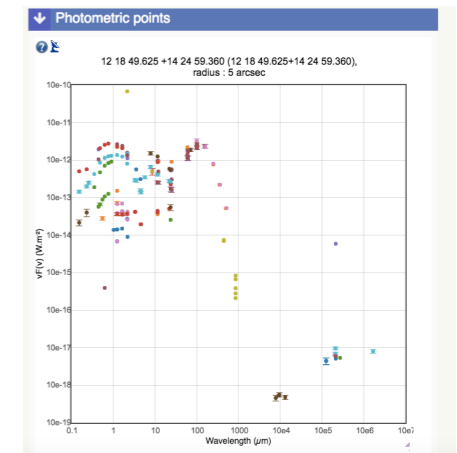
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J2000

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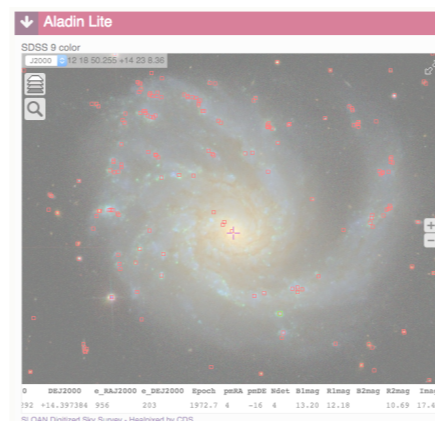
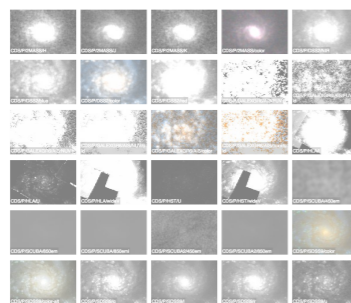
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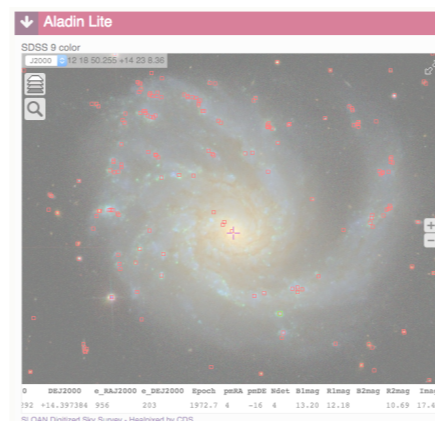
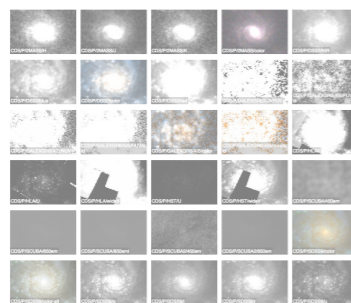
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ra= 184.706
dec=14.416



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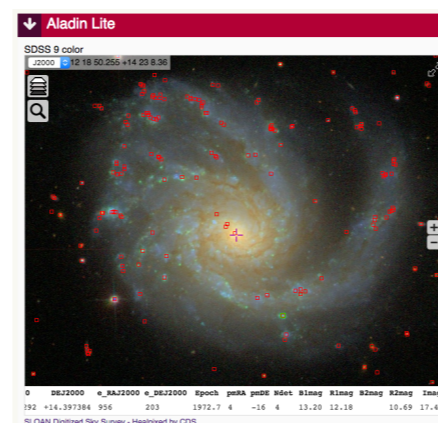
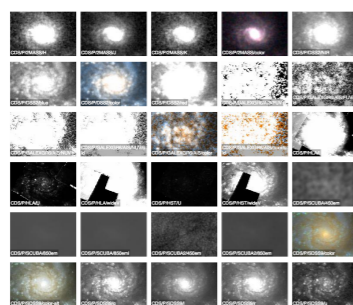
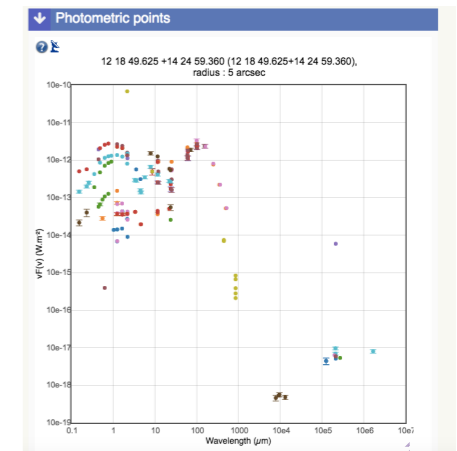
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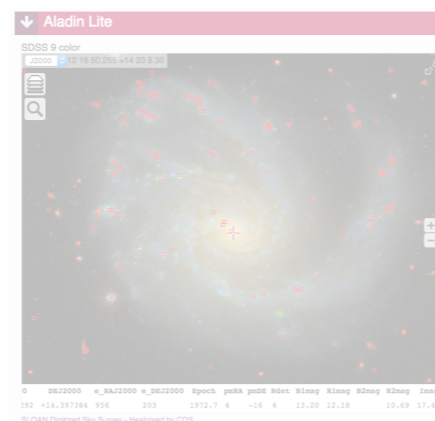
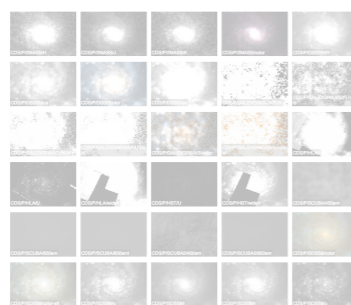
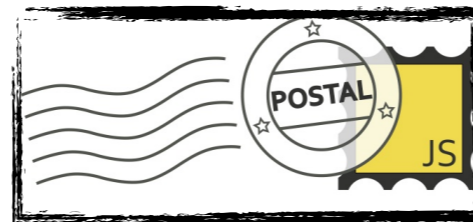
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HII Galaxy

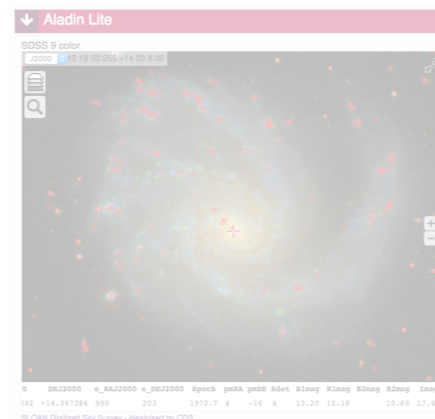
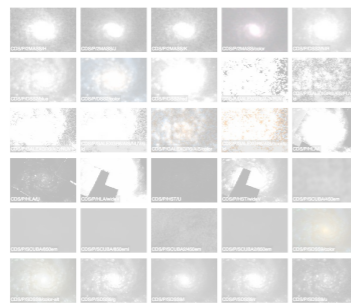
Morphological type
Sc(dSc)

Magnitudes

- u : 10.45
- u : 13.226
- B : 10.44
- v : 9.87
- g : 11.824
- r : 11.071
- i : 10.669
- z : 10.344
- J : 7.89
- H : 7.251
- K : 6.929

[More info in Simbad](#)

object.updated
name=M99



Bibliography

Filter:	Bibcode	Year	Journal	Title	Authors
	2013MNRAS.436.3128M	2013	MNRAS	Radio observations of extreme ULXs: revealing the most powerful ULX radio nebula ever or the jet of an intermediate-mass black hole?	MEZCUA M., ROBERTS T.P., SUTTON A.D. et al.
	2013MNRAS.436.1191T	2013	MNRAS	Stripping of nitrogen-rich AGB ejecta from interacting dwarf irregular galaxies.	TSUJIMOTO T., BEKKI K.
	2013MNRAS.436.921T	2013	MNRAS	The James Clerk Maxwell Telescope Nearby Galaxies Legacy Survey - IX. 12CO J = 2-2 observations of NGC 2976 and NGC 3351.	TAN B.-K., LEECH J., RIGOPOLLOU D. et al.
	2013MNRAS.435.622V	2013	MNRAS	MegaMorph - multiwavelength measurement of galaxy structure. Sersic profile fits to galaxies near and far.	VJKA M., BAMFORD S.P., HAUSSLER B. et al.

Showing 389 entries (filtered from 637 total entries)

Inter-widgets communication

M 99

J2000 position : 12 18 49.625 +14 24 59.36

Object (Simbad)

Main ID
M 99

Object type
HII Galaxy

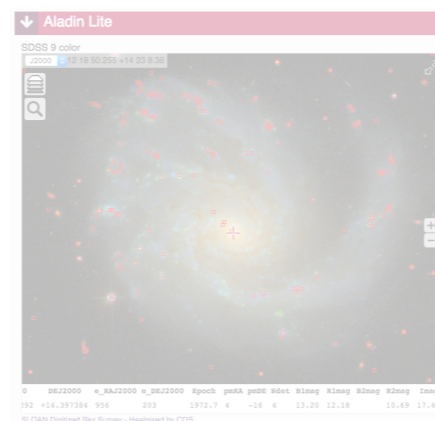
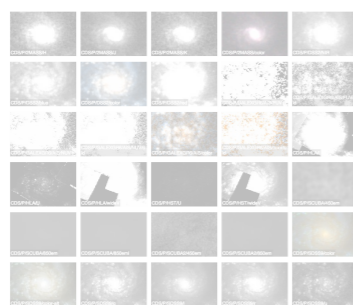
Morphological type
Sc(dSc)

Magnitudes

u	: 10.45
u	: 13.226
b	: 10.44
v	: 9.87
g	: 11.824
r	: 11.071
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z	: 10.344
J	: 7.89
H	: 7.251
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[More info in Simbad](#)

object.updated
name=M99



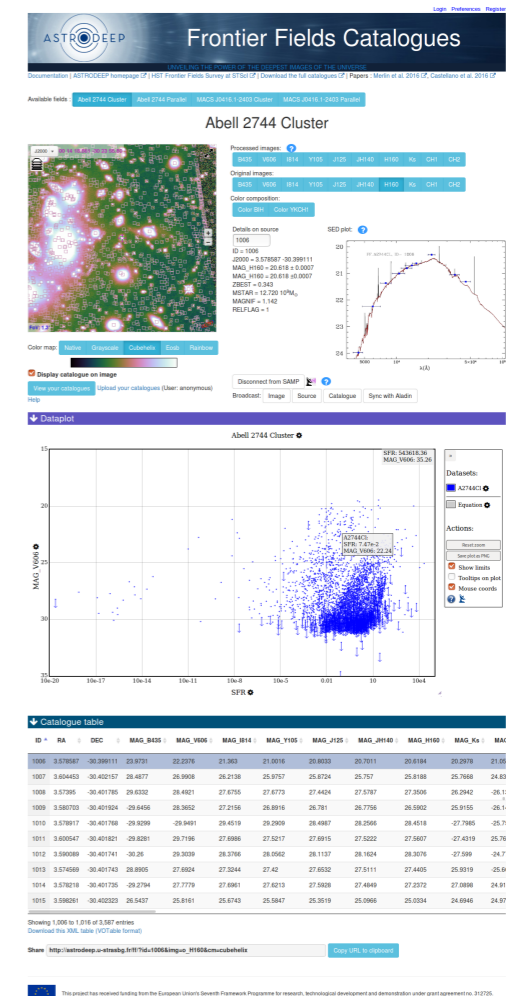
Bibliography

Filter:	Bibcode	Year	Journal	Title	Authors
	2013MNRAS.436.3128M	2013	MNRAS	Radio observations of extreme ULXs: revealing the most powerful ULX radio nebula ever or the jet of an intermediate-mass black hole?	MEZCUA M., ROBERTS T.P., SUTTON A.D. et al
	2013MNRAS.436.1191T	2013	MNRAS	Stripping of nitrogen-rich AGB ejecta from interacting dwarf irregular galaxies.	TSUJIMOTO T., BEKKI K.
	2013MNRAS.436.921T	2013	MNRAS	The James Clerk Maxwell Telescope Nearby Galaxies Legacy Survey - IX. 1200 J = 2-2 observations of NGC 2976 and NGC 3351.	TAN B.-K., LEECH J., RIGOPOLLOU D. et al
	2013MNRAS.435.623V	2013	MNRAS	MegaMorph - multiwavelength measurement of galaxy structure. Sersic profile fits to galaxies near and far.	VJKA M., BAMFORD S.P., HAUSSLER B. et al

Showing 389 entries (filtered from 637 total entries)

□ Astrodeep portal

- Provides access to 4 Frontier Fields
- Developed in the frame of the ASTRODEEP project
- Analyze data with 5 widgets:
 - Aladin Lite (visualization of 10 HiPS)
 - Details of current source
 - SED plot
 - Dataplot
 - Catalogue in table view
- Dataplot features:
 - view errors/limits
 - zoom, reverse axis, log or linear scale
 - overlay other datasets



□ Astrodeep portal - a reusable template

- Configurable through a Javascript file
- Customizable
- Can be reused as a template for projects with similar content (HiPS for pointed regions, tables, ...)
- Relics project might reuse Astrodeep portal template
<https://relics.stsci.edu/>

□ Global architecture

□ Global architecture

Components

CDS Login

CDS Storage

Widgets

□ Global architecture

Components

CDS Login

CDS Storage

Widgets

Applications

VOAlerts

SimWatch

Simbad

Annotations

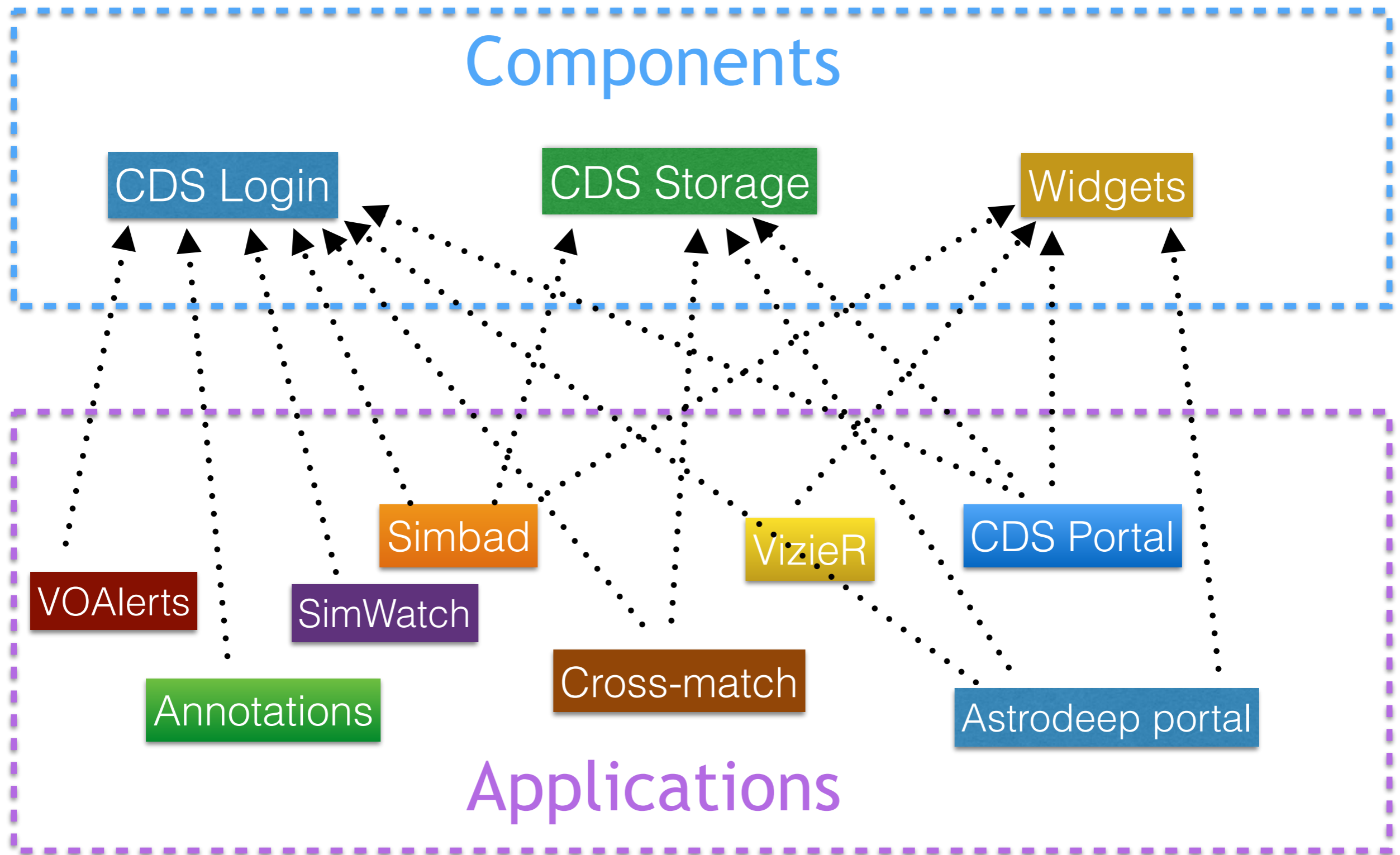
Cross-match

VizieR

CDS Portal

Astrodeep portal

□ Global architecture



Demonstrations

Target:
M33
J2000 position: 01 33 50.904 +30 39 35.79

Images

193 HiPS images available around 01 33 50.904 +30 39 35.79 :

Wavelength: Gamma-ray X UV Optical Infrared Radio Gas-line

Show: All HiPS Most popular

Filter	title	wavelength	Sky fraction
and F342W			0.02 %
HST-V includes the following filters: F555W, F547W, F569W and F550W			0.02 %
HST-I includes the following filters: F814W, F791W, F785LP and F775W			0.03 %
HLA-wideV includes the following filters: F606W and F600LP			0.05 %
HST-wideV includes the following filters: F606W and F600LP			0.06 %
HLA-I includes the following filters: F814W, F791W, F785LP and F775W			0.07 %
SCUBA 450um emission maps		Radio	0.31 %
			0.82 %
SCUBA 850um emission maps		Radio	0.9 %
SCUBA 850um emission maps - extended dataset		Radio	0.99 %
SCUBA2 450um observations		Radio	1.75 %
SCUBA2 850um observations		Radio	1.8 %
XMM-Newton stacked EPIC images			5.06 %
Arches PN Colored			5.31 %
X-ray images on band 0.5-1Kev			6.69 %
X-ray images on band 1-2Kev			6.69 %

HST-V includes the following filters: F555W, F547W, F569W and F550W

Color map: Native Grayscale Cubehelix Eosb Rainbow

Display catalogue on image

[View your catalogues](#) [Upload your catalogues \(User: anonymous\)](#)

Catalogues

450 Vizier Catalogs

Wavelength: Infrared (96), Gamma-ray (1), X-ray (73), UV (20), Optical (277), Radio (64)

Astronomy keywords: Galaxies (214), Stars (63), Positional_Data (60), Photometry.wide... (59), Photometry (46), Stars.variable (35), Velocities (34)

Year: 1923M, 1.925M, 1.193M, 1.193M, 1.018M, 1.014M, 705.9K, 643.6K, 311.3K, 254.7K, 214.3K, 174.3K, 174.1K, 171.6K, 170.6K

Mission: ROSAT (17), XMM (10), IRAS (8), Einstein (8)

Associated data: timeSeries (10), image (11), spectrum (10)

Journal: ApJ (71), ApJS (64), AJ (62), A&A (58), MNRAS (58)

Sky fraction: 419, 2, 4, 4, 21

ASTRODEEP Frontier Fields Catalogues

UNVEILING THE POWER OF THE DEEPEST IMAGES OF THE UNIVERSE

Documentation | ASTRODEEP homepage | HST Frontier Fields Survey at STScI | Download the full catalogues | Papers: Merin et al. 2016, Castellano et al. 2016

Available fields: [Abell 2744 Cluster](#) [Abell 2744 Parallel](#) [MACS J0416.1-2403 Cluster](#) [MACS J0416.1-2403 Parallel](#)

Abell 2744 Cluster

Processed images: [B435](#) [V606](#) [I814](#) [Y105](#) [J125](#) [JH140](#) [H160](#) [Ks](#) [CH1](#) [CH2](#)

Original images: [B435](#) [V606](#) [I814](#) [Y105](#) [J125](#) [JH140](#) [H160](#) [Ks](#) [CH1](#) [CH2](#)

Color composition: [Color BIH](#) [Color YKCH1](#)

Details on source: 1006
ID = 1006
J2000 = 3.578587 -30.399111
MAG_H160 = 20.618 ± 0.0007
MAG_H160 = 20.618 ± 0.0007
ZBEST = 0.343
MSTAR = 12.720 10³M_⊙
MAGNIF = 1.142
RELFLAG = 1

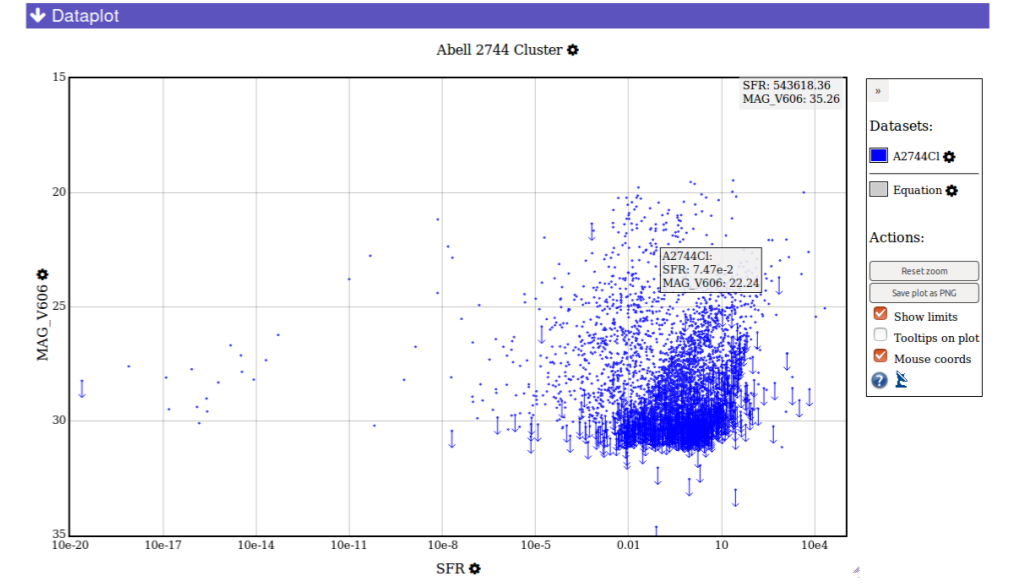
Color map: Native Grayscale Cubehelix Eosb Rainbow

Display catalogue on image

[View your catalogues](#) [Upload your catalogues \(User: anonymous\)](#)

Disconnect from SAMP

Broadcast: [Image](#) [Source](#) [Catalogue](#) [Sync with Aladin](#)



Catalogue table

ID	RA	DEC	MAG_B435	MAG_V606	MAG_I814	MAG_Y105	MAG_J125	MAG_JH140	MAG_H160	MAG_Ks	MAG...
1006	3.578587	-30.399111	23.9731	22.2376	21.363	21.0016	20.8033	20.7011	20.6184	20.2978	21.05
1007	3.604453	-30.402157	28.4877	26.9908	26.2138	25.9757	25.8724	25.757	25.8188	25.7668	24.83
1008	3.57395	-30.401785	29.6332	28.4921	27.6755	27.6773	27.4424	27.5787	27.3506	26.2942	-26.1
1009	3.580703	-30.401924	-29.6456	28.3652	27.2156	26.8916	26.781	26.7756	26.5902	25.9155	-26.1
1010	3.578917	-30.401768	-29.9299	-29.9491	29.4519	29.2909	28.4987	28.2566	28.4518	-27.7985	-25.7
1011	3.600547	-30.401821	-29.8281	29.7196	27.6986	27.5217	27.6915	27.5222	27.5607	-27.4319	25.76
1012	3.590089	-30.401741	-30.26	29.3039	28.3766	28.0562	28.1137	28.1624	28.3076	-27.599	-24.7

□ Links

- Astrodeep portal is online at <http://astrodeep.u-strasbg.fr/ff/>
- CDS Portal will be updated by the end of the year <http://cdsportal.unistra.fr/>