Cube Access protocols: IVOA status

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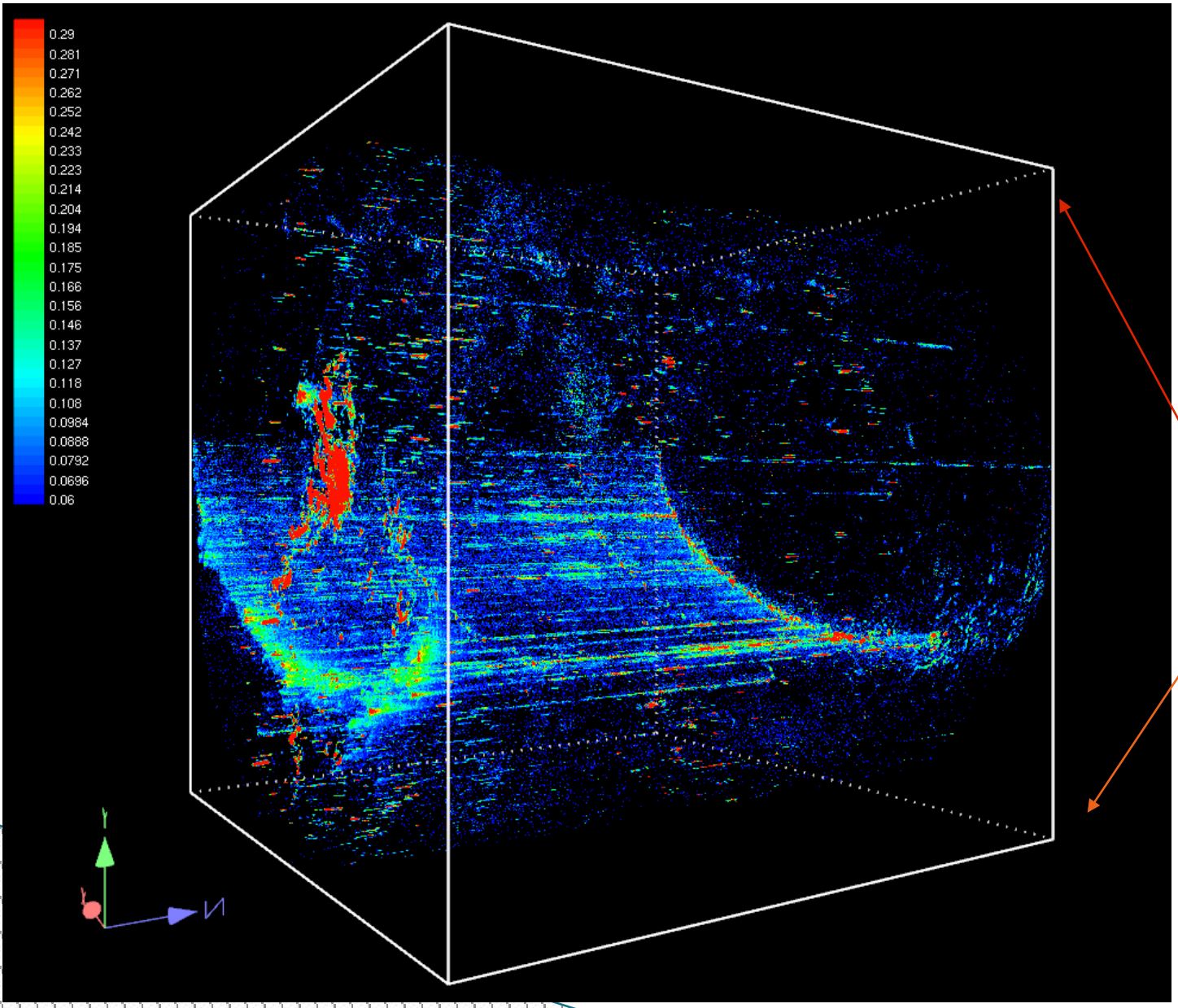
EURO VO CoSADIE Collaborative and Sustainable Astronomical Data Infrastructure for Europe

Multi-dimensional Data Acces

minimal requirements:

* Data Discovery (Query)
  * A service shall be able to receive queries regarding its data collection(s) from a client, with the client placing one or more of the following constraints:
    * RA,Dec
    * Frequency/wavelength
    * Polarization states
    * Spatial size
    * Angular resolution
    * Integration time
    * Time of observation
  * A service shall return to the client a list of observations, and the corresponding metadata for each observation, meeting the user-imposed constraints. In the event that the user places no constraints, the entire list of observations, and the corresponding metadata for each data set, shall be returned. In the event that no data meet the user's constraints, the service shall indicate the absence of any matches.
* Data Access
  * Once a user has the list of observations that satisfy the constraints, they select all or a subset of the observations and:
    * Download the complete science data for each of the selected observations (the service shall return the complete multi-dimensional science data and metadata for each selected observation) or;
    * Download simple cutouts of the science data for each of the selected observations (the service shall be able to extract and return a user-specified subset of the complete multi-dimensional science data and metadata for each selected observation).
* Simple Cutout
  * For a simple cutout, the user-specified subset is restricted to be a contiguous interval within each dimension of the multi-dimensional science data. The user should *not* be allowed to specify subsets with "gaps" or resampling or anything like that.
    * Spatial: a circle (a coordinate and a radius)
    * Energy: one interval (from energy1 to energy2)
    * Time: one interval (from time1 to time2)
    * Polarization: a list

STEP 1 : Discovery



Radio data cube

Grenn and red Axes
- Spatial dimensions
Blue Axis :
- Wavelength dimension

STEP 2:

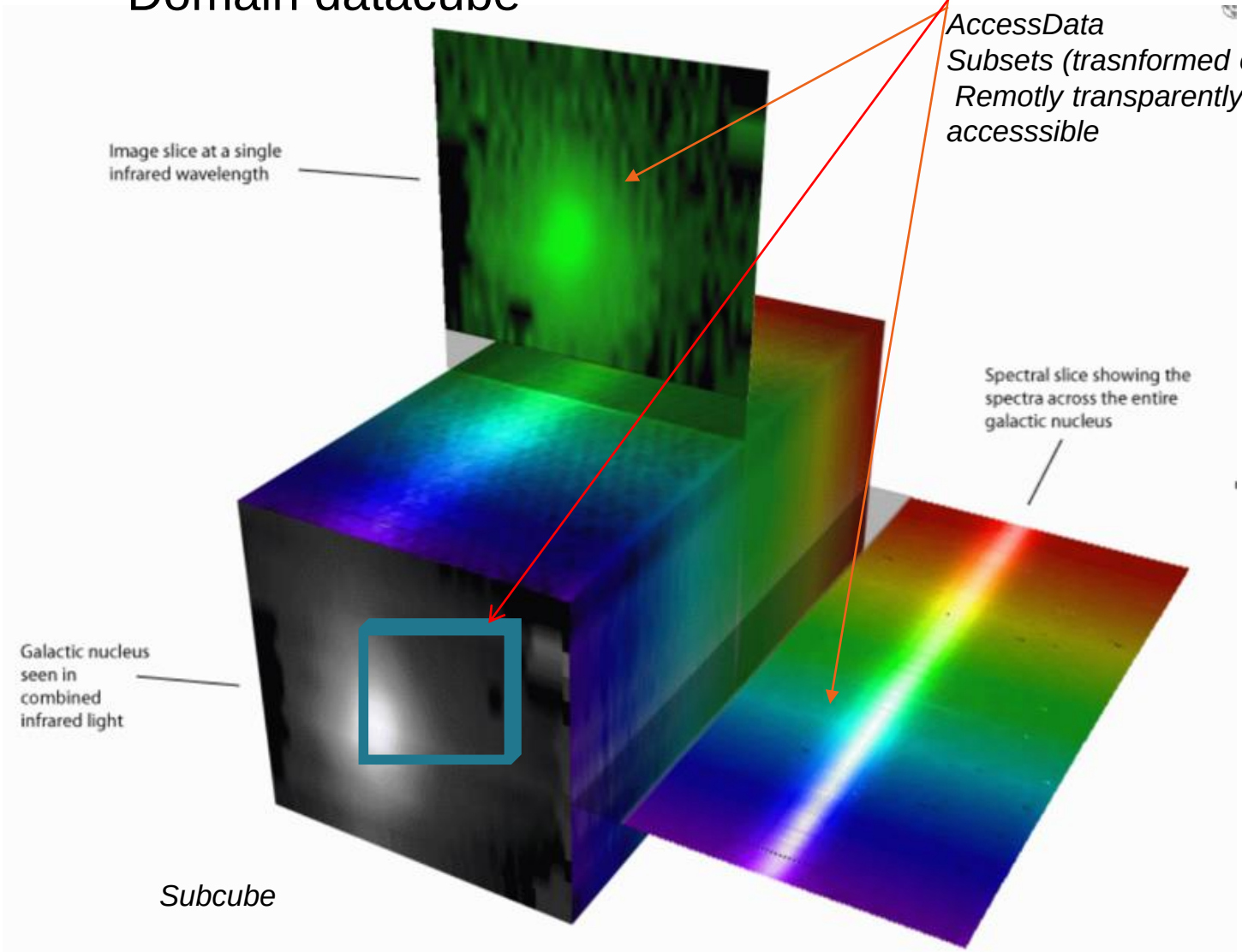
Description :

- *Axes type*
- *Extension*
- *Typical value*
- *Date*
- *Data producer,*
- *Data curator*

« Integral Field Unit » optical Domain datacube

STEP 3

AccessData
Subsets (trasnformed or not)
Remotly transparently accesssible



Subcube

Cube Access scenario: basic
(first version of protocols, may 2014)

- I) Scenario : find out cube services from registry

Obstap / SIAV2

- II) Query from an ObsCore service

« select * from Obscore where dataproduct_type = cube »

- II bis) Query from a SIAV2 service

« http://.....?request=query&pos=...&band=.... »

Cube Access scenario: basic (first version of protocols, may 2014)

- III) query response :

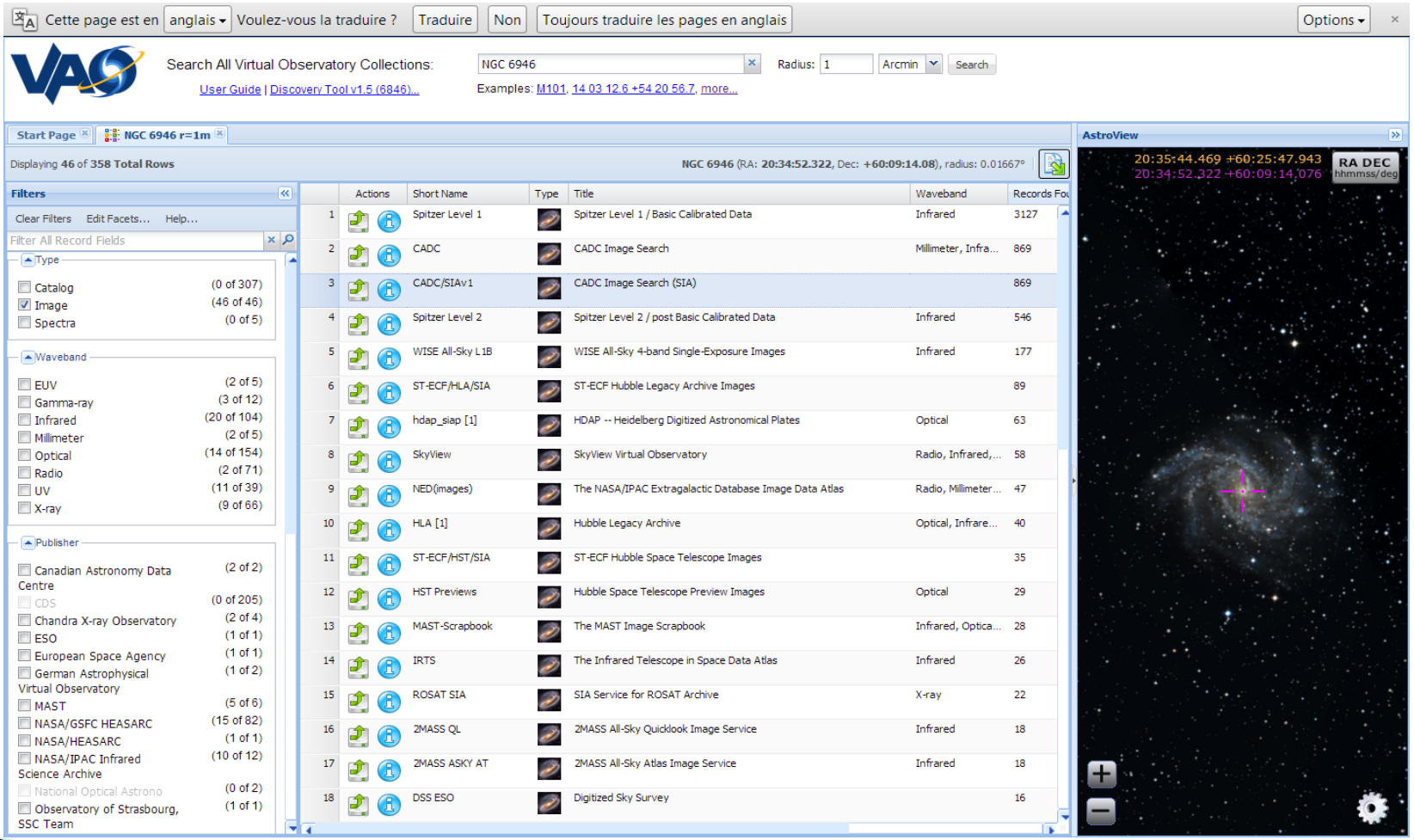
votable, ObsCore/consistent

- IV) DataLink :

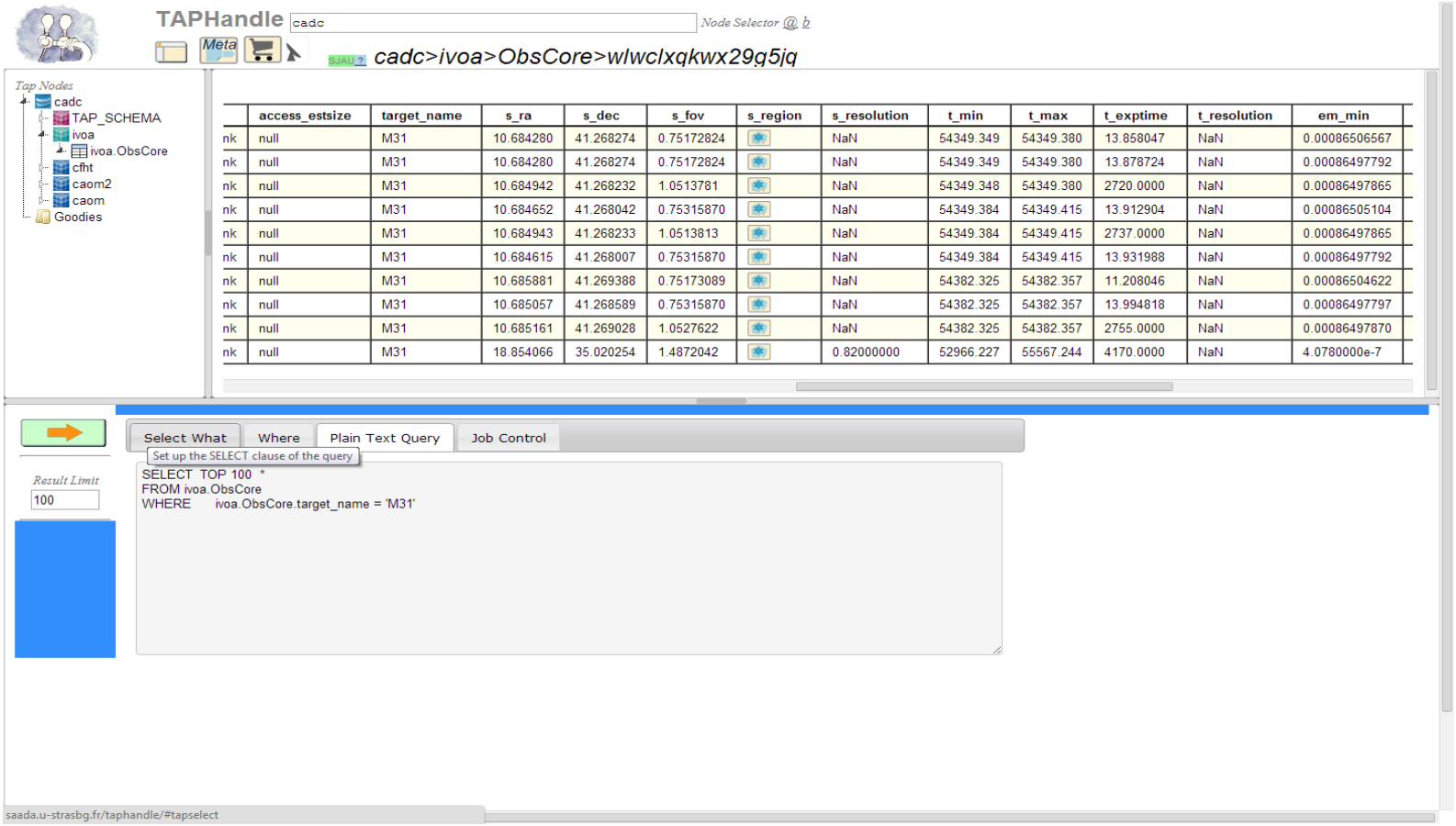
fixed links, metadata services, access data

- IV bis) direct AccessData

Discovery


Cette page est en anglais Voulez-vous la traduire ? Traduire Non Toujours traduire les pages en anglais Options
Search All Virtual Observatory Collections:
NGC 6946
Radius: 1 Arcmin Search
User Guide | Discovery Tool v1.5 (6846)...
Examples: M101, 14 03 12.6 +54 20 56.7, more...
Start Page
NGC 6946 r=1m
Displaying 46 of 358 Total Rows
NGC 6946 (RA: 20:34:52.322, Dec: +60:09:14.08), radius: 0.01667°
Filters
Clear Filters Edit Facets... Help...
Filter All Record Fields
Type
Catalog (0 of 307)
Image (46 of 46)
Spectra (0 of 5)
Waveband
EUV (2 of 5)
Gamma-ray (3 of 12)
Infrared (20 of 104)
Millimeter (2 of 5)
Optical (14 of 154)
Radio (2 of 71)
UV (11 of 39)
X-ray (9 of 66)
Publisher
Canadian Astronomy Data Centre (2 of 2)
CDS (0 of 205)
Chandra X-ray Observatory (2 of 4)
ESO (1 of 1)
European Space Agency (1 of 1)
German Astrophysical Virtual Observatory (1 of 2)
MAST (5 of 6)
NASA/GSFC HEASARC (15 of 82)
NASA/HEASARC (1 of 1)
NASA/IPAC Infrared Science Archive (10 of 12)
National Optical Astrono (0 of 2)
Observatory of Strasbourg, SSC Team (1 of 1)
Actions Short Name Type Title Waveband Records Fou
1 Spitzer Level 1 Spitzer Level 1 / Basic Calibrated Data Infrared 3127
2 CADC CADC Image Search Millimeter, Infra... 869
3 CADC/SIAv1 CADC Image Search (SIA) 869
4 Spitzer Level 2 Spitzer Level 2 / post Basic Calibrated Data Infrared 546
5 WISE All-Sky L1B WISE All-Sky 4-band Single-Exposure Images Infrared 177
6 ST-ECF/HLA/SIA ST-ECF Hubble Legacy Archive Images 89
7 hdap_siap [1] HDAP -- Heidelberg Digitized Astronomical Plates Optical 63
8 SkyView SkyView Virtual Observatory Radio, Infrared,... 58
9 NED(images) The NASA/IPAC Extragalactic Database Image Data Atlas Radio, Millimeter... 47
10 HLA [1] Hubble Legacy Archive Optical, Infrare... 40
11 ST-ECF/HST/SIA ST-ECF Hubble Space Telescope Images 35
12 HST Previews Hubble Space Telescope Preview Images Optical 29
13 MAST-Scrapbook The MAST Image Scrapbook Infrared, Optica... 28
14 IRTS The Infrared Telescope in Space Data Atlas Infrared 26
15 ROSAT SIA SIA Service for ROSAT Archive X-ray 22
16 2MASS QL 2MASS All-Sky Quicklook Image Service Infrared 18
17 2MASS ASKY AT 2MASS All-Sky Atlas Image Service Infrared 18
18 DSS ESO Digitized Sky Survey 16
AstroView
20:35:44.469 +60:25:47.943
20:34:52.322 +60:09:14.076
RA DEC
hhmmss/deg

Discovery


TAPHandle
cadc
Node Selector @ b
Meta
cadc>ivoa>ObsCore>wlwclxqkwx29q5jq
Tap Nodes
cadc
TAP_SCHEMA
ivoa
ivoa.ObsCore
cfht
caom2
caom
Goodies
access_estsize target_name s_ra s_dec s_fov s_region s_resolution t_min t_max t_exptime t_resolution em_min
nk null M31 10.684280 41.268274 0.75172824 NaN 54349.349 54349.380 13.858047 NaN 0.00086506567
nk null M31 10.684280 41.268274 0.75172824 NaN 54349.349 54349.380 13.878724 NaN 0.00086497792
nk null M31 10.684942 41.268232 1.0513781 NaN 54349.348 54349.380 2720.0000 NaN 0.00086497865
nk null M31 10.684652 41.268042 0.75315870 NaN 54349.384 54349.415 13.912904 NaN 0.00086505104
nk null M31 10.684943 41.268233 1.0513813 NaN 54349.384 54349.415 2737.0000 NaN 0.00086497865
nk null M31 10.684615 41.268007 0.75315870 NaN 54349.384 54349.415 13.931988 NaN 0.00086497792
nk null M31 10.685881 41.269388 0.75173089 NaN 54382.325 54382.357 11.208046 NaN 0.00086504622
nk null M31 10.685057 41.268589 0.75315870 NaN 54382.325 54382.357 13.994818 NaN 0.00086497797
nk null M31 10.685161 41.269028 1.0527622 NaN 54382.325 54382.357 2755.0000 NaN 0.00086497870
nk null M31 18.854066 35.020254 1.4872042 0.82000000 52966.227 55567.244 4170.0000 NaN 4.0780000e-7
Select What
Where
Plain Text Query
Job Control
Set up the SELECT clause of the query
Result Limit
100
SELECT TOP 100 *
FROM ivoa.ObsCore
WHERE ivoa.ObsCore.target_name = 'M31'
saada.u-strasbg.fr/taphandle/#tapselect

DataLink

The list of links that is returned by the {links} resource can be represented as a table with the following columns:

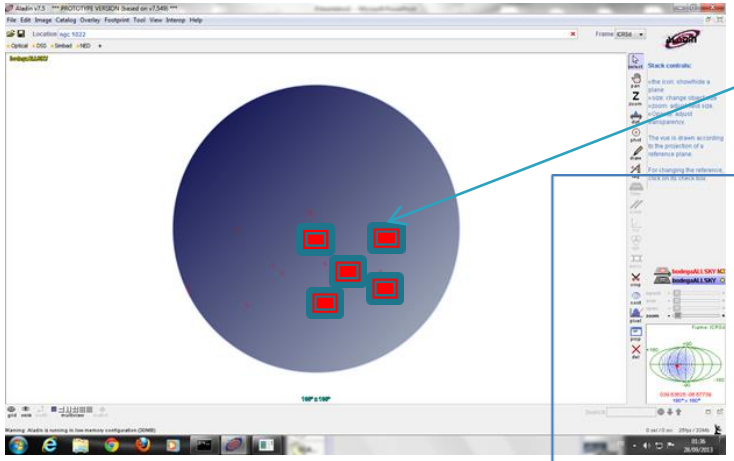
name	description	required	UCD
ID	Input identifier	yes	meta.id;meta.main
access_url	link to data or service	one only	meta.ref.url
error_message	error if an accessURL cannot be created		meta.code.error
service_def	reference to the description of a service at access_url	no	meta.ref
description	human-readable text describing this link	no	meta.note
semantics	limited vocabulary describing this link	no	meta.code
content_type	mime-type of file the link returns	no	meta.code.mime
content_length	size of download the link returns	no	phys.size;meta.file

- Cube average (fixed links), accessdata, *(custom services)*

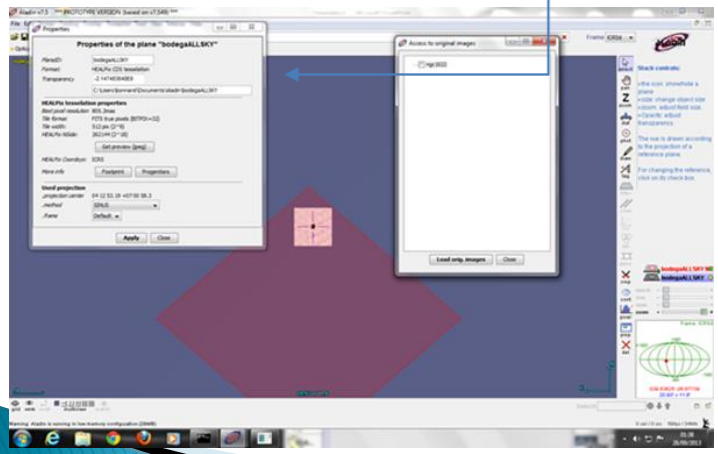
AccesData

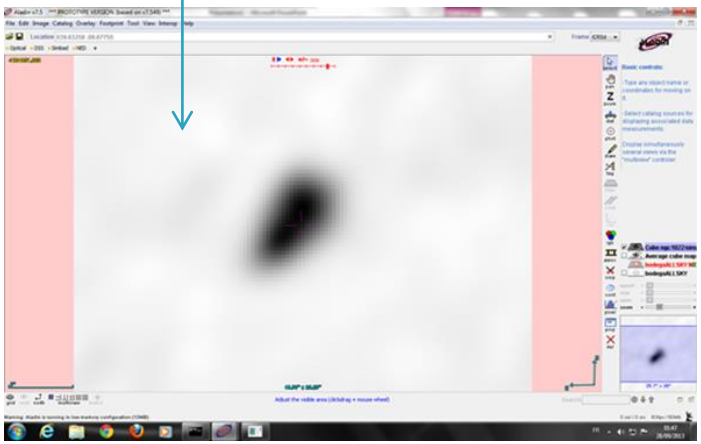
- Cutout driven by parameters identical to Query
  - POS=CIRCLE 12 34 0.5
  - POS=RANGE 12/14 34/36
  - BAND=500/550
  - TIME=2012-01-01/2012-12-31
  - POL=Q,POL=.....

DataLink and Cube AccessData integration in CDS Aladin



1)Centering on NGC 1022
2) Links available in the window. Zoom on average NGC 1022 cube.
3) sub cube in movie mode





Cube Access scenario
(second version of protocols, may 2015)

- I) Scenario : find out cube services from registry.

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« http://.....?request=query&pos=...&band=.... »

  - Stored datasets
  - Virtual datasets

Cube Access scenario
(second version of protocols, may 2015)

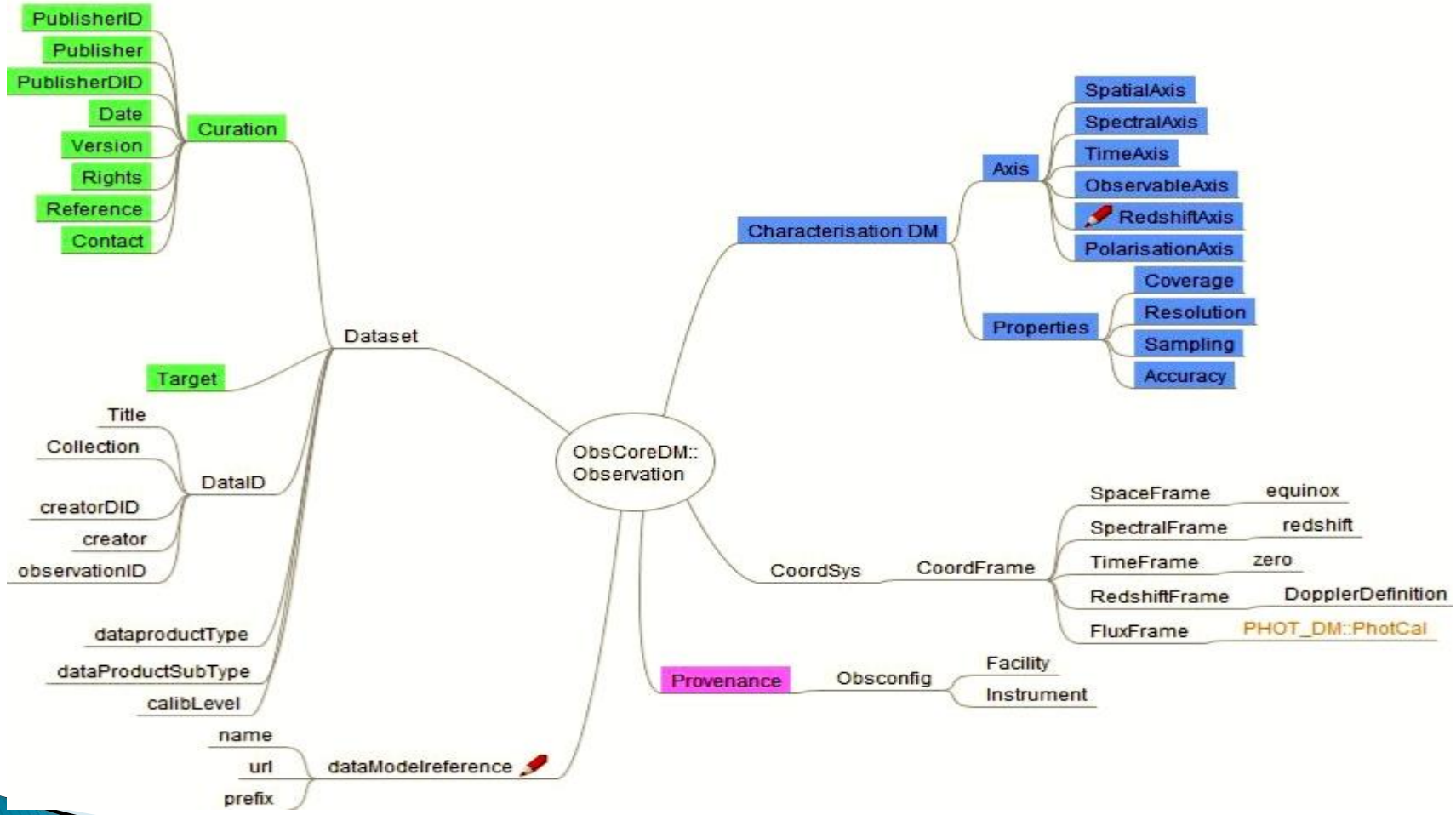
- IV) direct acces to Metadata (get gory details) .

Additional metadata ImageDM consistent

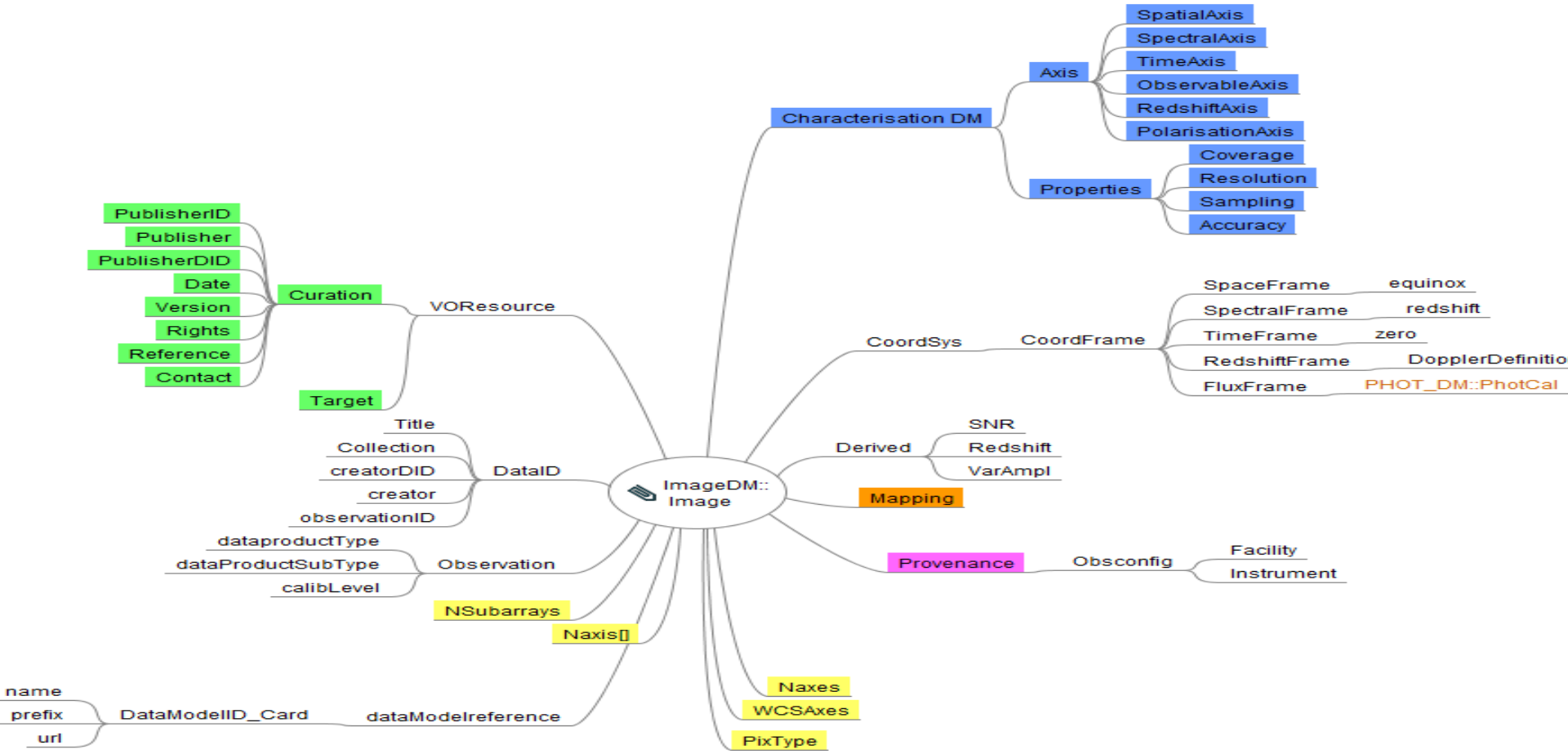
- IV bis) datalink
- V) Accessdata :

cutout, resampling, regridding

ObsCore Heuristic Map



ImageDataModel heuristic map



Cube access : IVOA protocols

May 2014 and then later

- DAL protocols
  - ObsTap 1.0
  - SIAV2 1.0 → 1.1
  - DataLink 1.0
  - AccessData 1.0 -> 1.1
- Models :
  - Obscore -> 1.1 ?
  - ImageDm 1.0 -> 1.1 (and spectrum?)

Remaining issues

- Cutout driving :
  same or different than query parameters ?
- UPLOAD in SIAV2:
  how to refer to Fields in a VOTABLE
  for input
- ObsCore / need an update ?
- Custom services :
  free parameters described like DataLink
- AccessData and DataLink in same Document ?