

- 1) Vizier
- 2) Content
- 3) Usage
- 4) Devs: assoc. data



VizieR Staff and contributors:

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Non-CDS: L.Michel, J.Y.Hangouet, T.Keller (Strasbourg Observatory)

What is VizieR ? - I



The vizier **service** provides unified access to a very large collection of astronomical catalogues & associated data:

- Reference catalogues & surveys of astronomical sources at all wavelengths (e.g. SDSS, 2MASS, UCAC, WISE)
- Tables from papers published in the major astronomical journals
- A large variety of astronomical data: astronomical sources , spectra, polarization data, but also models (evolutionary, populations, synthetic spectra, ...), statistical analyses, compilations, ...

What is VizieR ? - II

VizieR can be queried:

- By catalog name
- By wavelength, Mission name, object type / process, ...
- By keyword (galaxies, quasars, ISM, ...)
- By column description
- By position, through ALL catalogs

Find catalogs among 13865 available

Expand search

? *Catalog, author's name, word(s) from title, description, etc. e.g.: AGN, Veron, I/239, or bibcodes...*

Search for catalogs by column descriptions (UCD) ?

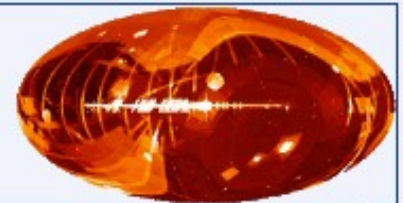
Search for catalogs containing additional data

Wavelength	Mission	Astronomy
Radio	AKARI	Abundances
IR	ANS	Ages
optical	ASCA	AGN
UV	BeppoSAX	Associations
EUV	CGRO	Atomic_Data
X-ray	Chandra	Binaries:cataclysmic
Gamma-ray	COBE	Binaries:eclipsing

Search by Position across 14526 tables

Target Name (resolved by [Sesame](#)) or Position:

Radius
 Box size



? [More about VizieR](#)
≤ 375 matching catalogs

The M word



The metadata describes the data:

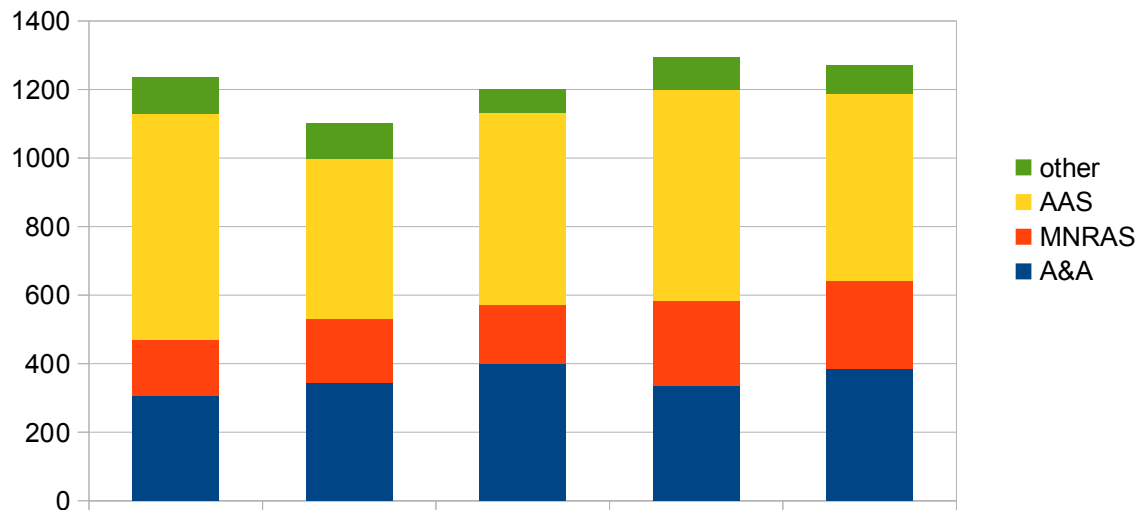
- Type of data (catalog, spectra, light curves etc...)
 - Units
 - Wavelengths / filters / instrument
 - Magnitude system, Coordinates system
- ... with homogenized descriptions (metadata)

Goal: **Discoverability, reusability**, platform for higher level services (phot. Viewer, associated data, ...)

Statistics in input

- A regular increasing volumetry
 - 15,366 catalogues, 32,991 tables, 19,2G records (95 % coming from large surveys)
 - 1,270 ingested catalogue in period sep 2015 – oct 2016

New catalogues ingested



Datasets regularly updated

- ATNF pulsar catalogue (Radio)
- Occultation lights curves (logs of observations)
- (In the pipeline) CFHT, HST :
observation logs provided by the CADC (Canadian Astronomy Data Center)
a new VO-pipeline based on the standard TAP

Large surveys

3 next slides courtesy of T. Boch

□ Large catalogues: what's new?

- New organization of the large catalogues team
 - for each big catalogue to be ingested:
1 astronomer + 1 software engineer + 1 documentalist
 - focus on each other's expertise
 - speed up the overall ingestion process
- Systematic integration of *ESO public surveys* catalogues
ongoing work
- 4 new large catalogues ingested in the past year

□ New large catalogues

- **Gaia DR1**

1+ billion sources

- unusual process: CDS had data in advance in order to make them ready for the release date
- *more about Gaia DR1 in CDS services later this afternoon*

- **VPHAS+ DR2**

319M rows



public survey

- **APASS9**

611M rows

- **XPM**

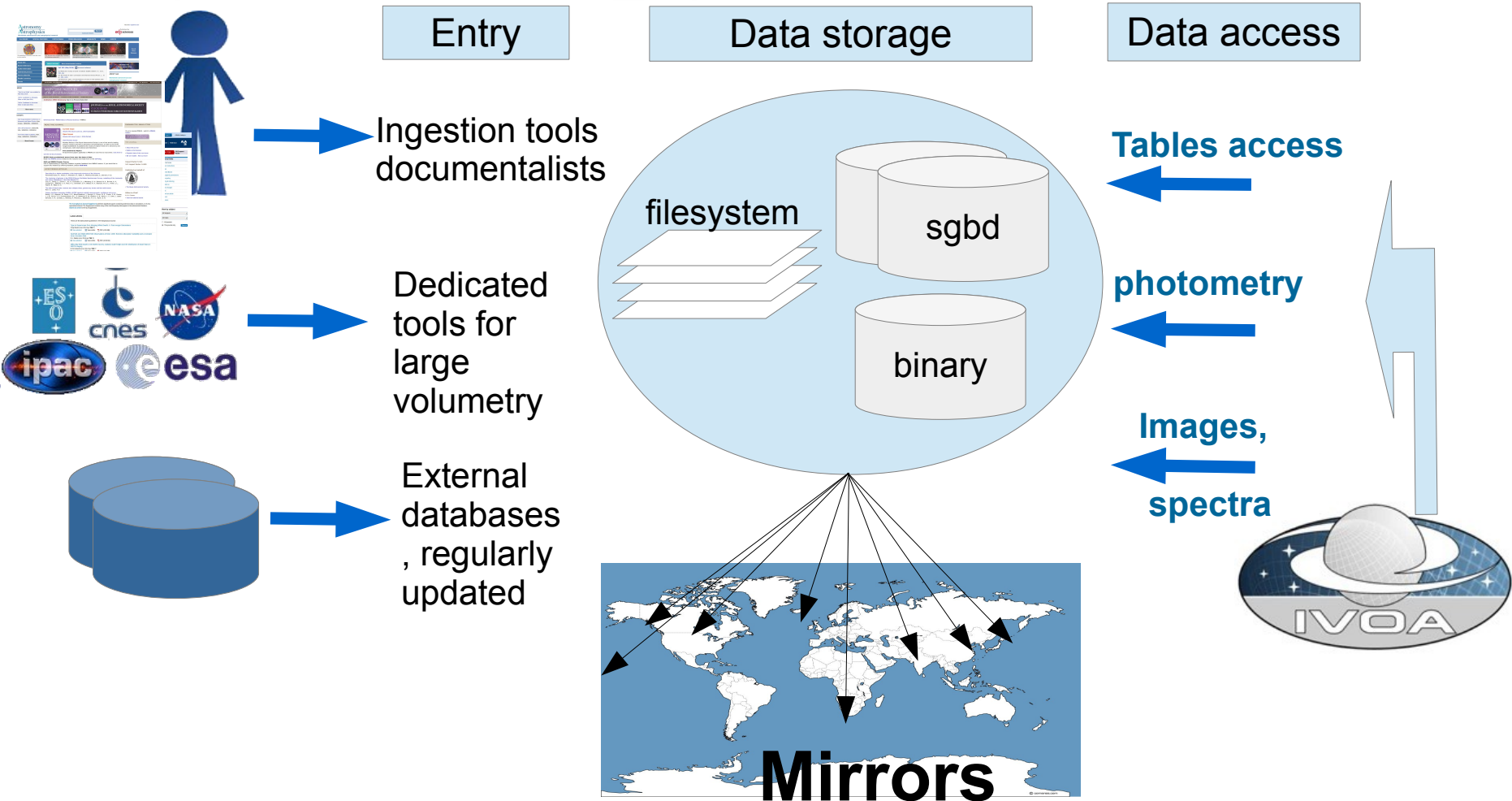
□ Soon available

- SDSS DR12
- Hubble Source Catalog v1 & v2
- KiDS DR2
- Viking DR2
- VVV DR2



The information system

Information System

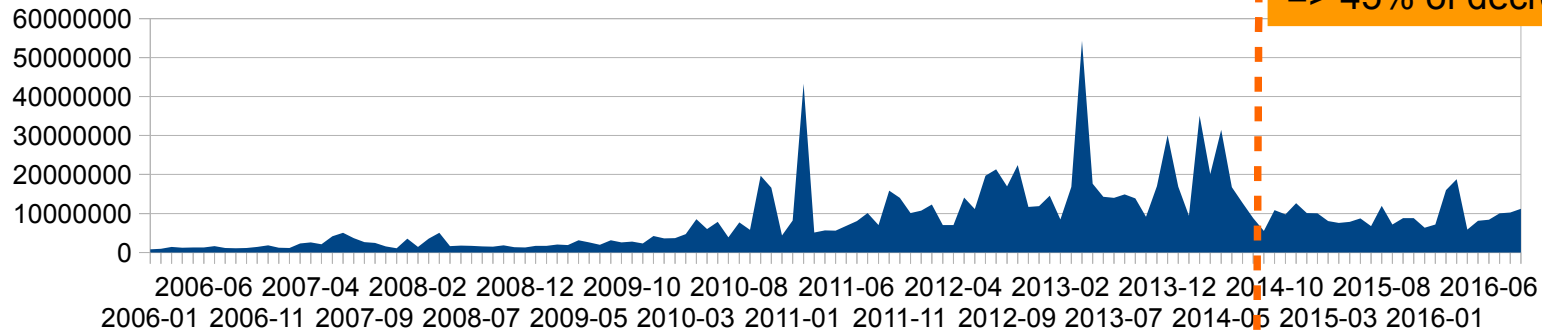


Output statistics



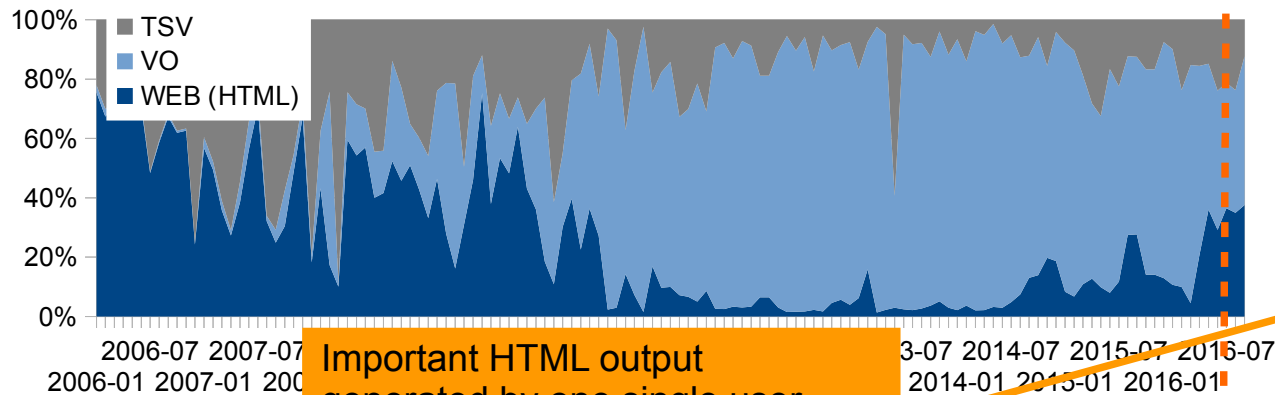
The last year: 380,000 queries/day, 12% coming from mirrors

Evolution of the VizieR queries



Decrease due to jobs on smart X-Match API instead of direct VizieR queries
=> 45% of decreased

Evolution of the VizieR queries repartition

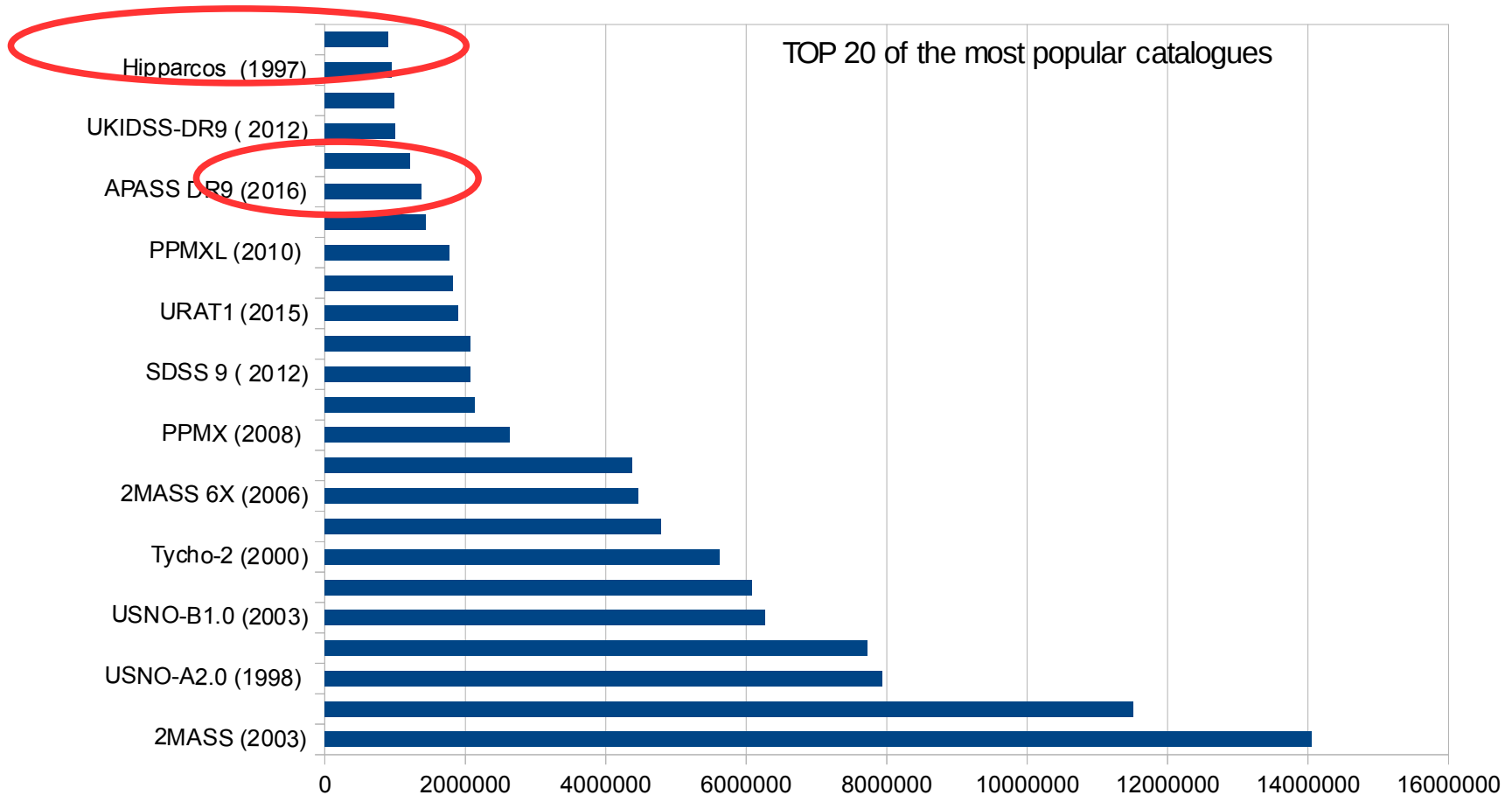


Important HTML output generated by one single user using wget and perl user-agent

Output statistics



Gaia DR1 (released in september 2016) ~3,322,000 queries



Work accomplished



- Improvement of the logs observations pipeline

in particular a new VO-pipeline based on the standard TAP for the logs observation provided by the CADC (Canadian Astronomy Data Center) : CFHT, HST

- VizieR updates resulting of Gaia ingestion
 - Work with original column name in VizieR (including TAP queries)
 - Updates into the internal TAP engine
- Indexation of the spectra, images in VizieR

Works in progress

- (still in developpement) XML Extraction tool using the XML distributed by ApJ journals (Thomas Delacour)
- Finalise the CFHT/HST pipeline : the process could be reused for others pipelines
- DOI attribution for the VizieR catalogues

The associated data



Indexation of the associated data (images, spectra, time-series)

Improving the associated data visibility with indexation and meta-data based on the ObsCore Data model (VO).

Services ready from end to end and partially deployed

- Development began in 2014 after the AAS meeting
- build on the Saada database generator (L.Michel, Observatoire de Strasbourg)
- Discovery services are online with dedicated web application and VO access
- Ingestion pipeline is ready, but **not in action**

The increase of the ingestion pipeline workload

- Meta-data generation shared between authors and the CDS staff
- Trial period is needed for CDS & authors
- Evaluation of the additional workload at CDS

The associated data



The contents

Ingestion of 64 VizieR catalogues having FITS

- 18,400 images from 33 catalogues
- 2,470,000 spectra from 34 catalogues
- 2 surveys:
 - LAMOST : ~2,2M spectra (Chinese Optical Telescope)
 - CoRoT: ~170,000 time-series (Exoplanet detection CNES)

The softwares/services

- Graphical and console GUI softwares for metadata mapping
- Data access services in a dedicated web-application and through the VO

Ingestions tools



Portal Simbad VizieR Aladin X-Match Other Help

VizieR upload catalogue

Upload tabular data Fill the ReadMe Spectral/TimeSeries Upload Images Terminate

Upload images in VizieR and provide them through a dedicated database. Providing these documents need description for indexation. Currently, the indexation is available only for FITS document. The VizieR engine will first extract the metadata from the documents uploaded in a mapping that you can update or change.

Upload your Images

You can upload your documents one by one by describing them independently OR if you have documents with similar header you can upload a collection (an archive in tar, zip format) and put a common description.

Force my mapping

Target name Right ascension Declination Region Spatial resolution Begin time End time Exposure time Time resolution

Spectral min Spectral max Spectral resolution Polarization Facility name Instrument name

WCS assignment Value: 83.61380300634698 -5.202777646688953 83.61570373799456 -5.6062302897654535 84.02151529742596 -5.606229489475328 84.02137938547027 -5.202776885766383

WCS assignment Value: 4.0257228836780135

Choose 1

Authors

XObsCoreFits <@cdsar>

File Help

Description File sp/ Nb files 108 Type

Current path /data/ftp/0/catj//A+A/561/A2/

Field	Expression	Value
Target name	OBJECT	AKC2006-19
Right ascension	RA	236.24042100000003
Declinaison	DEC	-34.39441
Field of view	(deg)	

Resources sp

Time Resolution (second) Xray

Spectral minimum 0.01 nm

Spectral maximum 10.0

Spectral resolution

Polarization

Facility name TELESCOP ESO-VLT-U2

Instrument name INSTRUME XSHOOTER

Search

Name	Comment	Value
SIMPLE	Standard FI...	T
BITPIX	No. of bits ...	-32
NAXIS	No. of axes...	1
NAXIS1	No. of pixels	24750
EXTEND	FITS extens...	T
BLOCKED	FITS file m...	T
CRPIX1	Reference ...	1.
CRVAL1	Coordinate...	994.02
CDEL1	Coord. incr...	0.06
CTYPE1	Units of co...	LINEAR
BUNIT	Units of da...	
DATAMAX	Maximum ...	1.865616...
DATAMIN	Minimum d...	1.175494...
ORIGIN	Written by...	ESO-MIDA...
DATE	[UTC] Dat...	2012-05-...
FILENAME	Original fil...	flux_AKC...
MIDASFTP	MIDAS File...	IMAGE
OBJECT	MIDAS des...	AKC2006...
RA	MIDAS des...	236.2404...
DEC	MIDAS des...	-34.39441
EQUINOX	MIDAS des...	2000

Console Test Preview

Facility name Instrument name Spec Band Band min

Walraven	350		3.34E-4
Bappu	450		4.26E-4
SCUBA	750		6.95E-4
BVRI	850		7.88E-4
BLAST			
UKIRT/WFCAM			
VLT/CONICA			
HST/ACS			
GALEX			
VISIR			
DAO			

Facilities ori... list filters from VizieR

Open FITS : sp/AKC2006N.fit

Ext...	Type	Size
0	SPECTRUM?	24750

Name	Comment	Value
SIMPLE	Standard FITS form...	T
BITPIX	No. of bits per pixel	-32
NAXIS	No. of axes in image	1
NAXIS1	No. of pixels	24750
EXTEND	FITS extension may ...	T
BLOCKED	FITS file may be blo...	T
CRPIX1	Reference pixel	1.
CRVAL1	Coordinate at refere...	994.02

CDS documentalists

VizieR Associated data web page



Search associated data among the VizieR catalogues

This web page is an access to the [VizieR Associated data](#) (images, spectra, timeseries, SED) which comes from publications. This tool is the result of the documentation assigned by the authors of the catalogues (in particular by A&A authors) and supervised by the CDS documentalists team (see the [VizieR ingestion tool](#)).

VO compatibility
The meta-data and the search engine are built according to the [VO framework](#) (SIA, SSA, ObsTAP) and softwares. The data are gathered with the [Saada](#) engines, and the VO data model [ObsCore](#) has been c

Simple search [ObsTAP Query](#)

Search by position : radius

Search by spectral band : min max -

Search by time data : start stop (MJD)

Search by catalog name :

Spectrum / Time series Image

Simple search [ObsTAP Query](#)

Request :

```
SELECT TOP 500 [default] FROM obscore
WHERE obs_collection LIKE '%J/A+A/531/A26%'
AND dataproduct_type = 'image'
```

Show 10 entries

6 entries

Preview	Target	Data collection	Ra	Dec	Band min (nm)	Band max (nm)	Begin time (MJD)	End time (MJD)	Facility
	G10.25	J/A+A/531/A26	271.967	-19.833	13,602,281.809	13,602,287.072			
	1806-203	J/A+A/531/A26	271.566	-20.193	2,046,504,880.879	2,046,504,880.879	49,759.00		VLA
	G011.033+00	J/A+A/531/A26	272.170	-19.895					

2017 ...



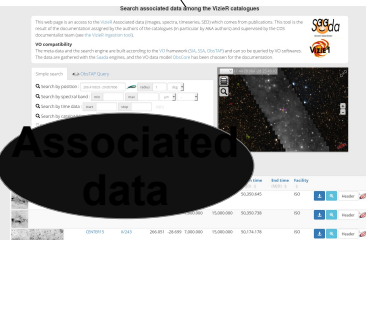
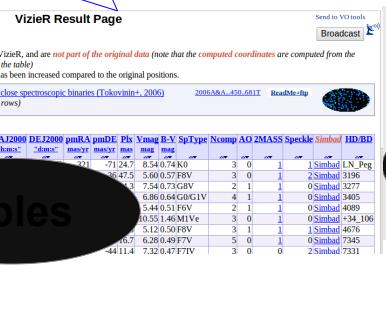
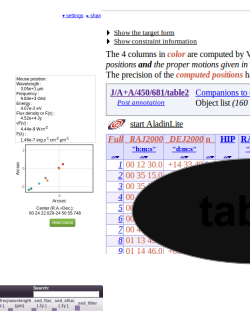
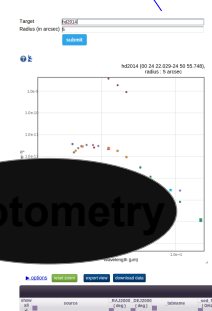
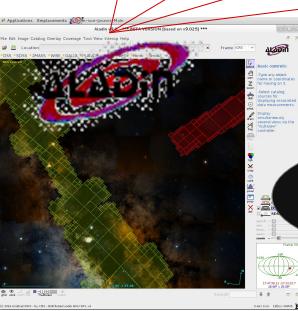
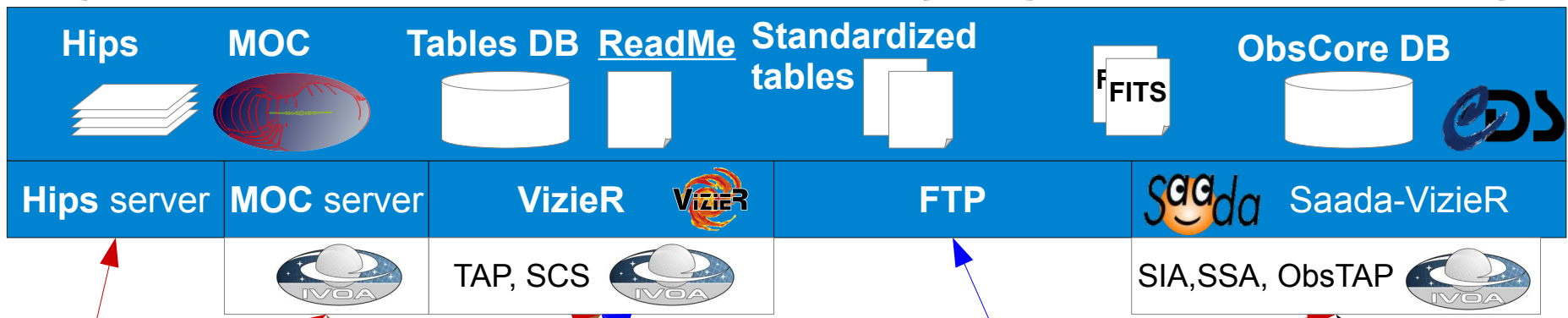
2017....

- Deploy the associated data pipeline
- Renewal of the acceptance of the DSA label (Data Seal of Approval)



What is VizieR ?

Data provider & astronomers papers



xmatch

photometry

tables

Associated data

	09/2013	09/2014	09/2015	09/2016
Catalogs	11,601	12,802	14,096	15,366
Tables	24,912	27,450	30,058	32,991
Total of records	14.2G	16.8G	17.4G	19.2G
Total of records coming from big catalogues (binary format)	13.8G	16.1G	16.7G	18.3G

1270 new catalogues ingested from oct 2015 to sept 2016
95% of records come from large catalogues.