

# Spectres/images VizieR



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- Origine des spectres, images dans VizieR :
  - Les journaux : en particulier A&A
- De nouveaux services VO : SIA, SSA, ObsTAP pour les données associées FITS
  - 160 catalogues en attente d'ingestion contenant des images FITS
  - 150 catalogues en attente d'ingestion contenant des spectres/time-série en FITS
- Les catalogues les plus important en nombre de ressources FITS :
  - CoRoT : ~ 150,000 time-séries
  - LAMOST : ~2,300,000 spectres
  - (en attente) ARCHES : ~200,000 SED (VOTable)

# □ Choix technologique



Utilisation du générateur de bases de données Saada

<http://saada.unistra.fr/saada/>

Raisons du choix :

- SAADA est orienté VO (SSA, SIA, ObsTAP)
- Test de performance ok (CoRoT, LAMOST)
- Logiciel qui évolue
- Les méta-données sont personnalisables et peuvent évoluer dans le temps
- L'ingestion Saada peut être incluse dans un pipeline (processus ant)
- La proximité et une collaboration étroite avec Laurent Michel

# □ Les méta-données



## Choix des méta-données

- ObsCore mais limité aux colonnes mandatory
- Choix discuté avec les éditeur de l'AAS
- Permet un service ObsTAP

## Des méta-données propres à VizieR

- em\_band
- has\_wcs

dataprodukt_type	Logical data product type (image etc.)
calib_level	Calibration level {0, 1, 2, 3}
obs_collection	Name of the data collection
obs_id	Observation ID
obs_publisher_did	Dataset identifier given by the publisher
access_url	URL used to access (download) dataset
access_format	File content format (see in App. BB.5.2 )
access_estsize	Estimated size of dataset in kilo bytes
target_name	Astronomical object observed, if any
s_ra	(deg)Central right ascension, ICRS
s_dec	(deg)Central declination, ICRS
s_fov	(deg)Diameter (bounds) of the covered region
s_region	Region covered as specified in STC or ADQL
s_resolution	(arcsec)Spatial resolution of data as FWHM
t_min	Start time in MJD
t_max	Stop time in MJD
t_exptime	(s)Total exposure time
t_resolution	(s)Temporal resolution FWHM
em_min	Start in spectral coordinates
em_max	Stop in spectral coordinates
em_res_power	Spectral resolving power
o_ucd	UCD of observable (e.g. phot.flux.density)
pol_states	List of polarization states or NULL if not applicable
facility_name	Name of the facility used for this observation
instrument_name	Name of the instrument used for this observation



## Identifications des ressources

- **obs\_collection:** le nom du catalogue  
exemple: SDSS, CoRoT, J/A+A/378/861
- **obs\_id:** le fichier  
exemple: 10144aa.fit
- **obs\_publisher\_did:**  
exemple: le spectre 10144aa.fit issu du catalogue J/A+A/378/861  
`ivo://CDS/J/A+A/378/861?res=10144aa.fits`

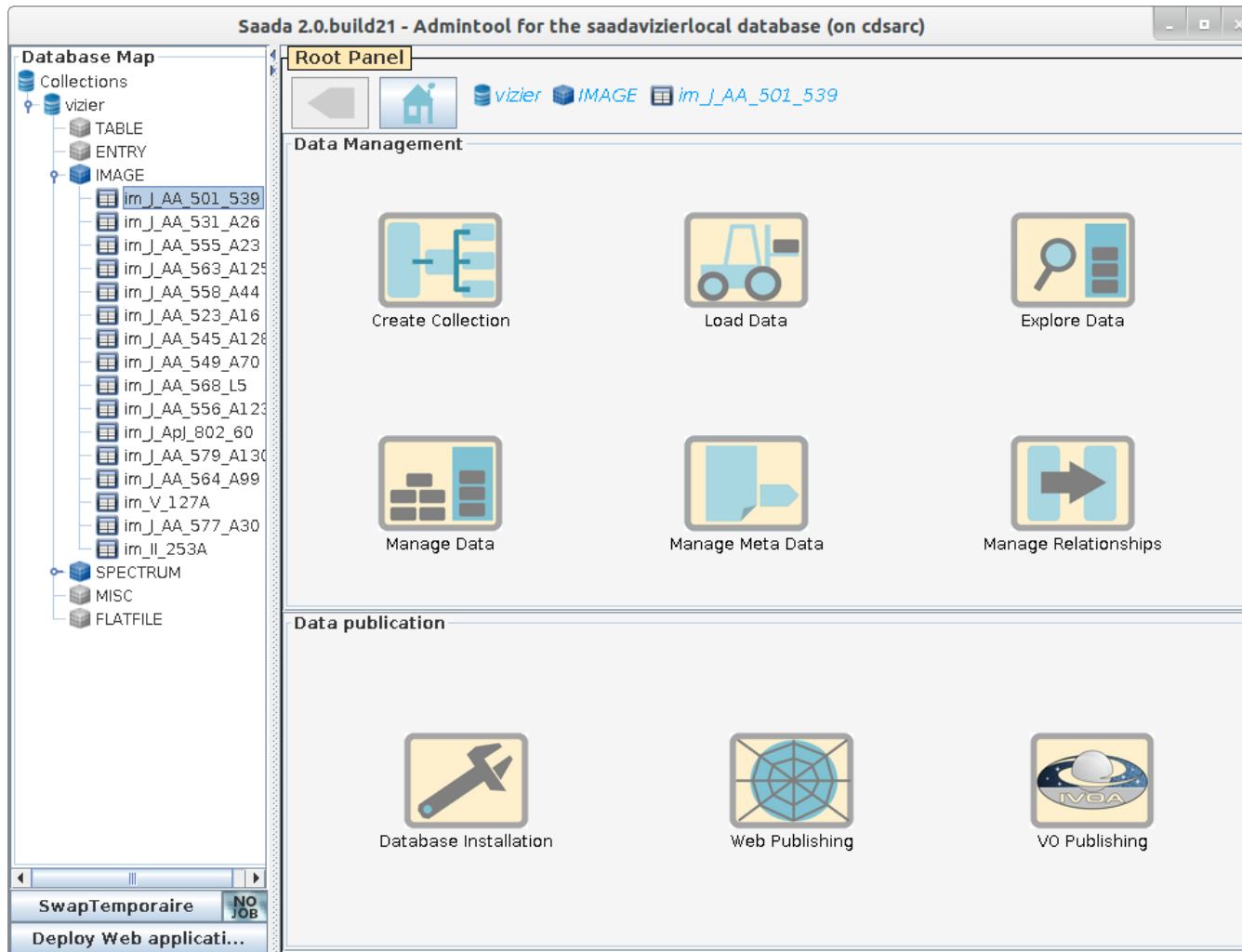
# □ Architecture Saada



- Saada est un générateur de bases de données qui prend en entrée:
  - Tables, FITS et VOTable
  - Saada établit un mapping entre entête et ObsCore d'une ressource ou d'un collection
- La base de données indexe les ressources (HEALpix)
  - Dans des tables générales (ex: vizier\_spectrum, vizier\_image)
  - Dans des tables dédiées dont les colonnes correspondent aux entêtes des ressources et le contenu issu des valeurs du header.
- La base est hiérachisée en 3 niveaux:
  - Les collections
  - Le type de ressource
  - Les classes
- Saada fournit des accès VO:
  - Protocole SIA (v1), SSA (v1), ObsTAP ainsi que les entrées dans le registry VO



# □ Hiérarchies Saada





## Saada version 2.21

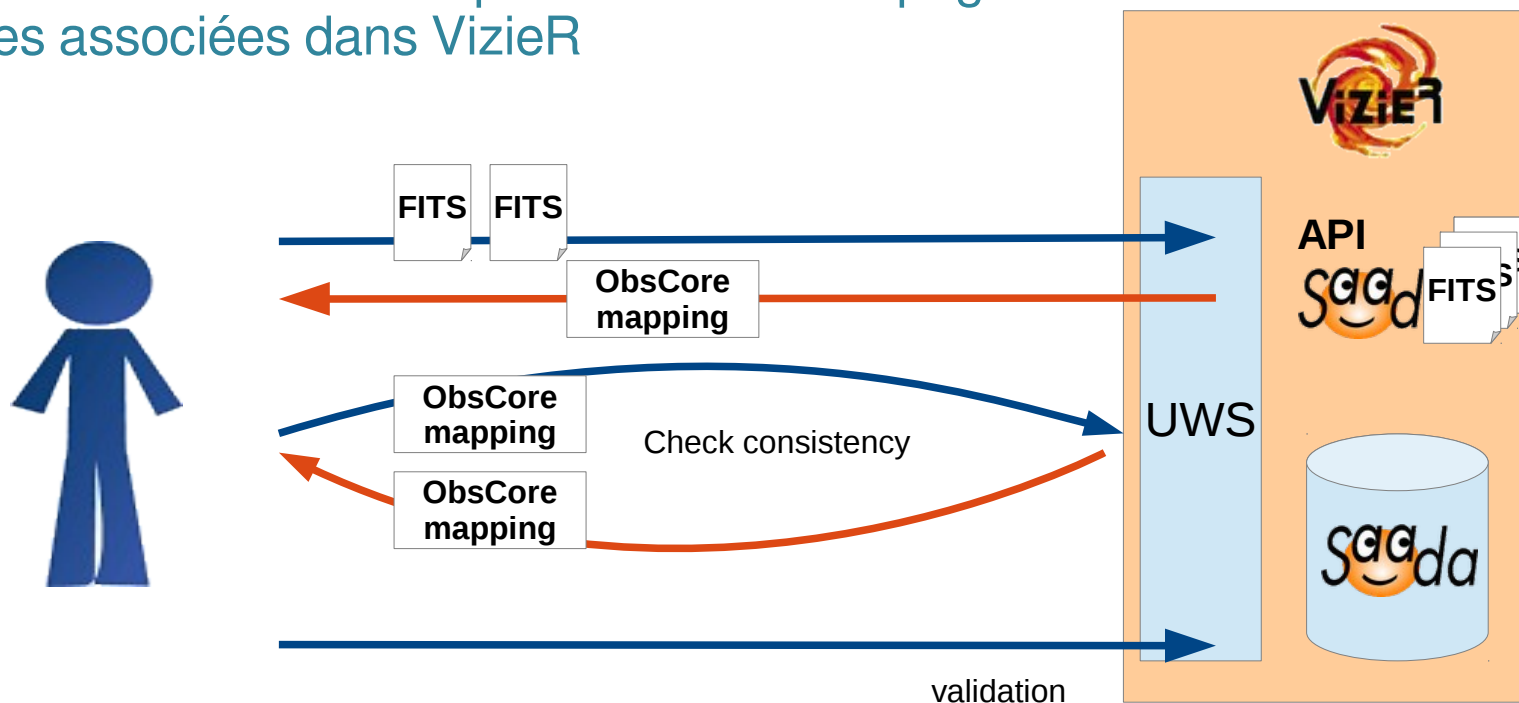
- Utilisation de ObsCore comme base des meta-données
- API utilisable pour créer un mapping entre FITS - ObsCore
- Grande amélioration de détection des coordonnées WCS (spectrales et spatiales) dans les images/spectres FITS
- Optimisations pour l'ingestion de collections



# □ Vizier et Saada



Utilisation de l'API SAADA pour une nouvelle page de soumission des données associées dans Vizier



★ target\_name  
(70%)

★ ra, de  
(60%)

instrument,  
facility  
(50%)

begin\_time

exposure,  
end\_time  
(40%)

em\_min,  
em\_max  
spect. resol.  
★ (33%)

region  
(30%)

spacial resol,  
FOV (25%)

# □ Vizier et Saada



Utilisation de l'API SAADA pour une nouvelle page de soumission des données associées dans Vizier

The screenshot shows the 'VizieR upload catalogue' interface. At the top, there's a navigation bar with 'Portal', 'Simbad', 'VizieR', 'Aladin', 'X-Match', 'Other...', and 'Help'. Below the navigation bar, a progress bar indicates the current step: 'Upload'. The main content area has a heading 'VizieR upload catalogue' and a sub-heading 'Upload your Images'. A message box states: '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.' Below this, there's a section 'Upload your Images' with a warning: 'Only FITS format is accepted! Please, upload documents in other format later.' A message box says: '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.' There's a button 'Add new document(s)' and a 'Browse...' button. Below that, a file upload area shows a file named 'File image/ap508569f3.fits' with a 'spectral/time not set! (6 item(s) filled)' warning. The main form is titled 'Description of the HDU 1' and includes fields for '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', and 'Instrument name'. There are also checkboxes for 'Force my mapping' and 'Apply the mapping for all HDU'. A 'Choose I' dropdown is visible.



**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 the result of the documentation assigned by the authors of the catalogues (in particular by A&A authors) and superdocumentalist 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 can so be used with various softwares. The data are gathered with the Saada engines, and the VO data model ObsCore has been chosen for this purpose.

Simple search  ObsTAP Query

Search by position :  radius 1 deg

Search by spectral band : min  max   $\mu\text{m}$  -

Search by time data : start  stop  (MJD)

Search by catalog name : J/A+A/531/A26

Spectrum / Time series  Image

500 entries max

Request :

```
SELECT TOP 500 [default] FROM obscure
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					



# □ Vizier et Saada



## Utilisation des images dans Aladin via SIA, SAMP

The screenshot displays the Aladin v9.0 interface. At the top, the menu bar includes File, Edit, Image, Catalog, Overlay, Coverage, Tool, View, Interop, and Help. The main window shows a multi-wavelength astronomical image with a zoomed-in region. The zoomed-in region is a small white square containing a single star, with a red rectangle around it and a blue arrow pointing to it. The main image is a large, multi-wavelength image with a red rectangle around a region. The zoomed-in region is a small white square containing a single star, with a red rectangle around it and a blue arrow pointing to it. The main image is a large, multi-wavelength image with a red rectangle around a region. The zoomed-in region is a small white square containing a single star, with a red rectangle around it and a blue arrow pointing to it.

Location: 18:03:43.09 -20:46:12.7  
Frame: ICRS  
DSS SDSS 2MASS WISE GALEX PLANCK AKARI XMM Fermi Simbad NED +

http://cdsarc.u-strasbg[0]

select  
pan  
zoom  
dist  
phot  
draw  
tag  
filter  
epoch  
size  
cont  
opac.  
zoom  
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GALEX Allsky Im

epoch  
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18 03 43.09 -20

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grid wink north hdr  
multiview match

	dataprod...	c: target n...	obs id	obs coll...	obs publ...	access url	access f...	ai s s s	s region	s t t t e r	em band	o ucd	pol states	facility...	instr
image	-	1806-203	21cm.fits	J/A+A/53...	ivo://CD...	http://c...	applicat...	1 2 - 0	FoV	7 4!	0 0	obs.image	I	VLA	VLA
image	-	G011.033...	24mu.fits	J/A+A/53...	ivo://CD...	http://c...	applicat...	8 2 - 0	FoV	0		obs.image	NotSet		
image	-	10.25972...	8mu.fits	J/A+A/53...	ivo://CD...	http://c...	applicat...	8 2 - 0	FoV	0		obs.image	NotSet		

TIP: Reset the stack => SHIFT key + "Del" button

5 sel / 119 src 45fps / 896Mb

ASOV 2016 - spectre/images dans VizierR