# AAS meeting – September 2023


**VizieR Staff and contributors:**

Astronomers: **P.Ocvirk, G. Monari**, **C. Bot**, A. Nebot, S. Derrière

Engineers: **G.Landais**, **A. Vanhulle**, T. Boch, F.-X. Pineau

Documentalists: P. Vannier**, E. Perret**, **C. Fix**, A. Fiallos, M. Brouty

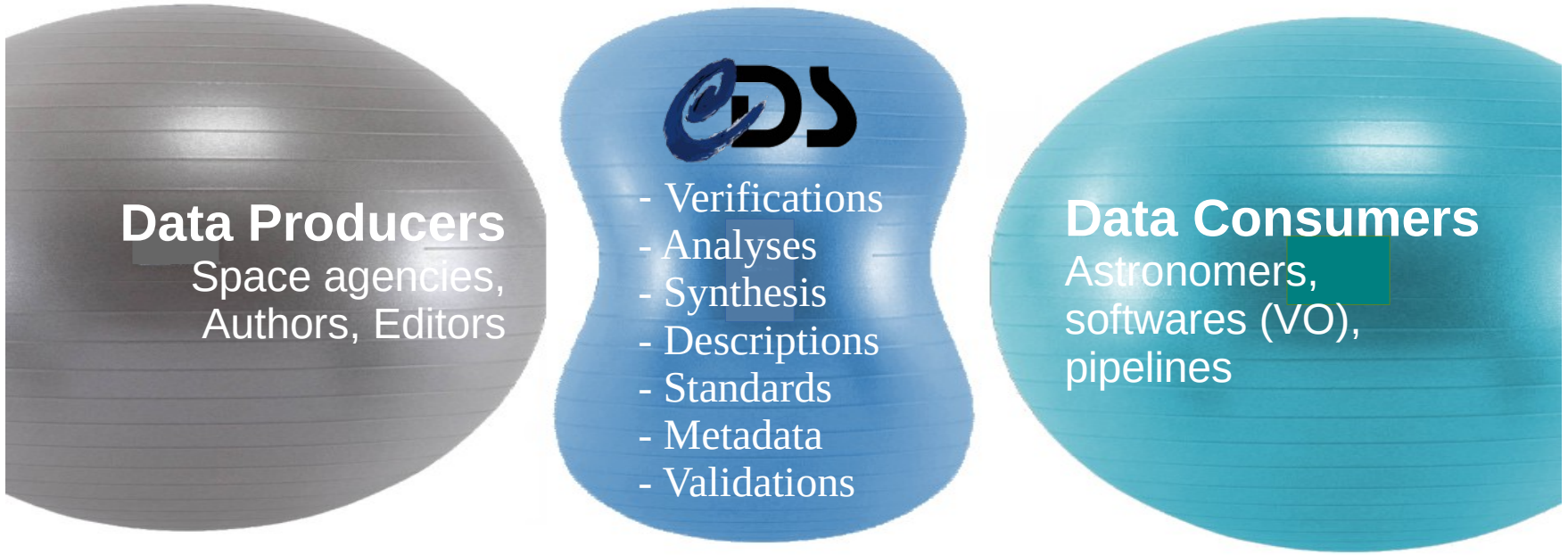
**Outside CDS (engineers):** L.Michel, C. Saillard, T. Keller **(Strasbourg Observatory)**

# CDS Challenge : quantity vs quality

**Preservation commitment :**

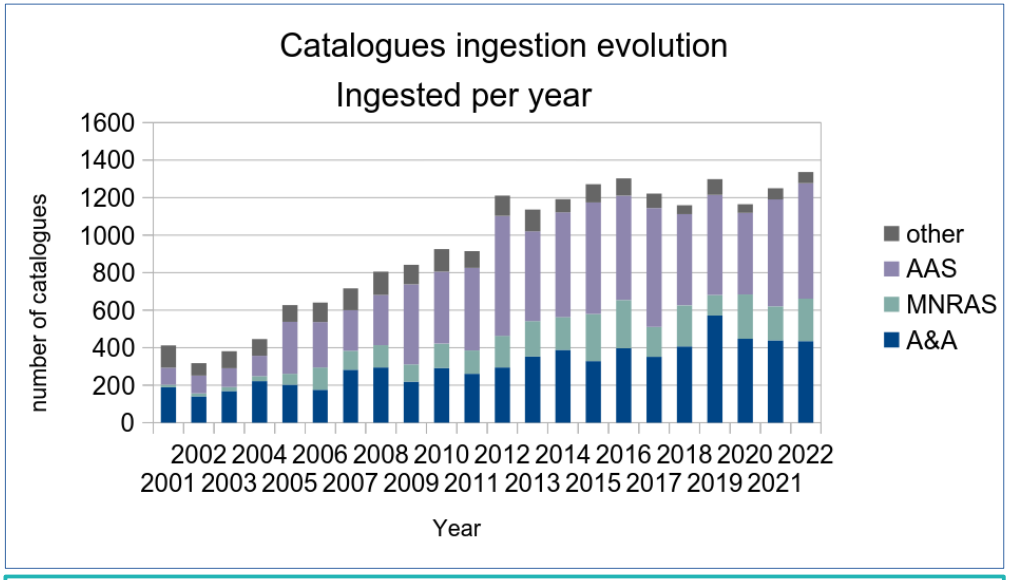
CORE TRUST SEAL

Findable Accessible Interoperable Reusable



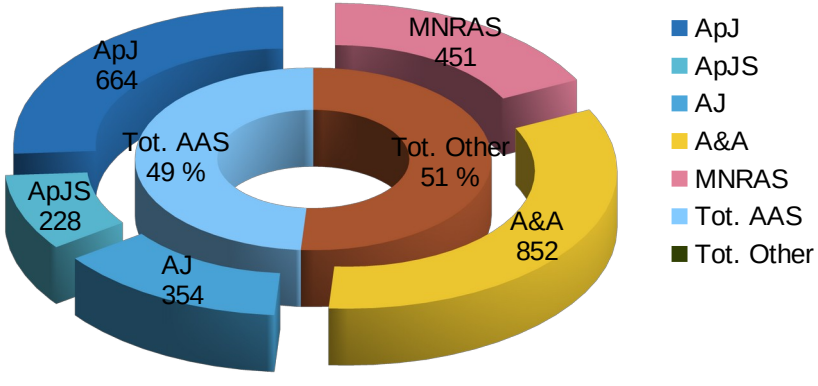

Increasing volume in input vs improving **quality** in output

# About quantity – AAS is ~half of all ingestions

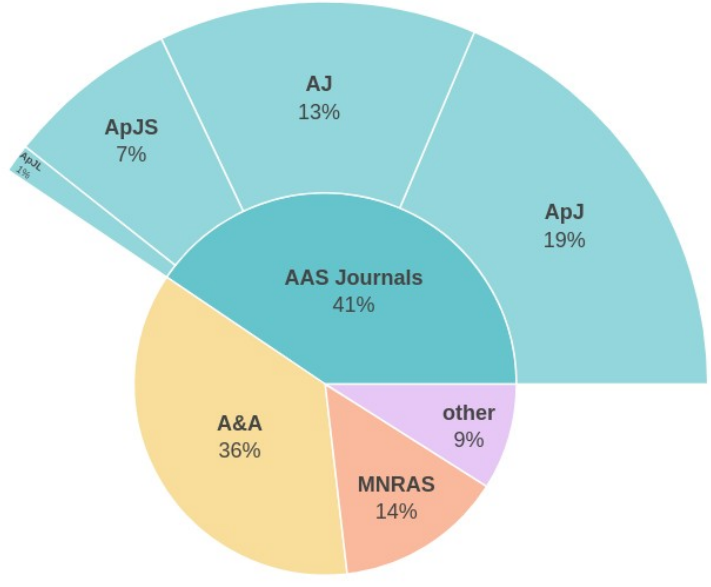



**~1250** ingestions per year on average

Number of articles ingested in VizieR 2021+2022




Provenance of the 24168 catalogues in VizieR (2023-09-11)




Currently 41% of the VizieR catalogs are from AAS

Weekly updated figure available in the EOSC tutorial :
https://cds-astro.github.io/a-FAIR-journey-for-astronomical-data/

# About quantity

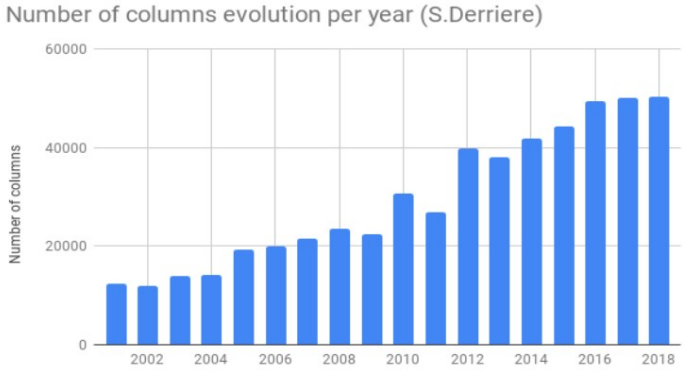
## Curation challenge : curation evolution

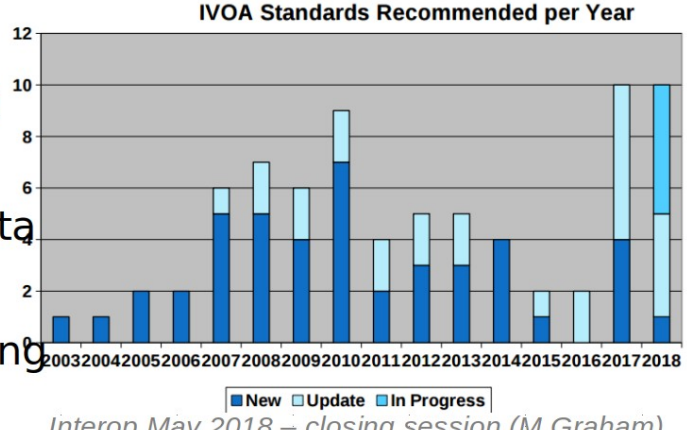
### Increasing volume in input

- Number of articles/year published increased slowly
- Number of tables per VizieR catalogue x3 since 2000
- Number of columns per table was ~12.8 in 2000 and ~17 in 2017

### Evolution and new standards in the VO

- 20 potentials additional metadata to assign
- 10 new tables of metadata among 40 tables

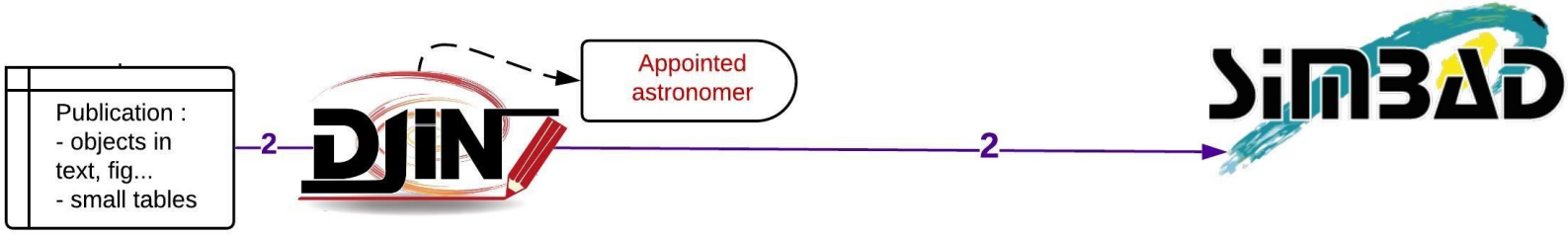



*Interop May 2018 – closing session (M.Graham)*

The number of publications should not be the only criterion taken into account

# Reminder : the workflow – Selection

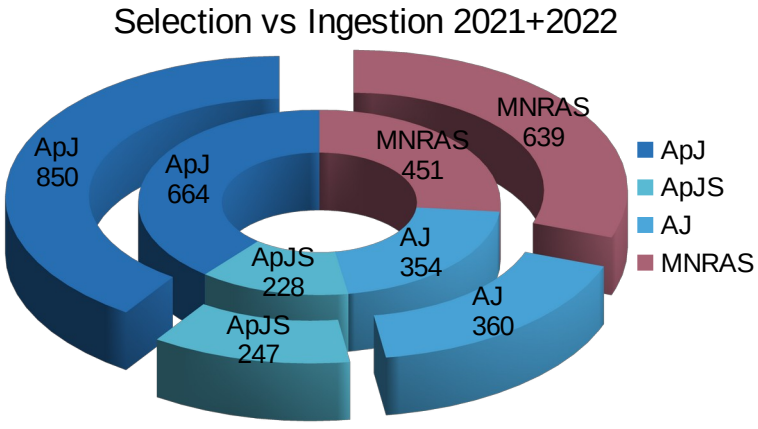



First, Magali (ApJ, ApJS) & Evelyne (AJ) go through **all the articles** to reference astronomical objects from titles, abstract, text, figures, small tables in SIMBAD… ~**No delay** with the publication.

They also warn the VizieR team for « catalogs », « large/complex tables » and « Data behind figures » to process. This is the **main way of selection**.

In rare cases, authors submit directly their data to CDS via the submission tool – currently, this **must be limited to special cases**.

# About the selection




* AJ, ApJS – workload ~absorbed

* ApJ – backlog => workload excess
  (currently processing Feb. 2022)

* Apart from A&A (specific case),
  AAS is widely ingested

**Not all selections become ingestions**:

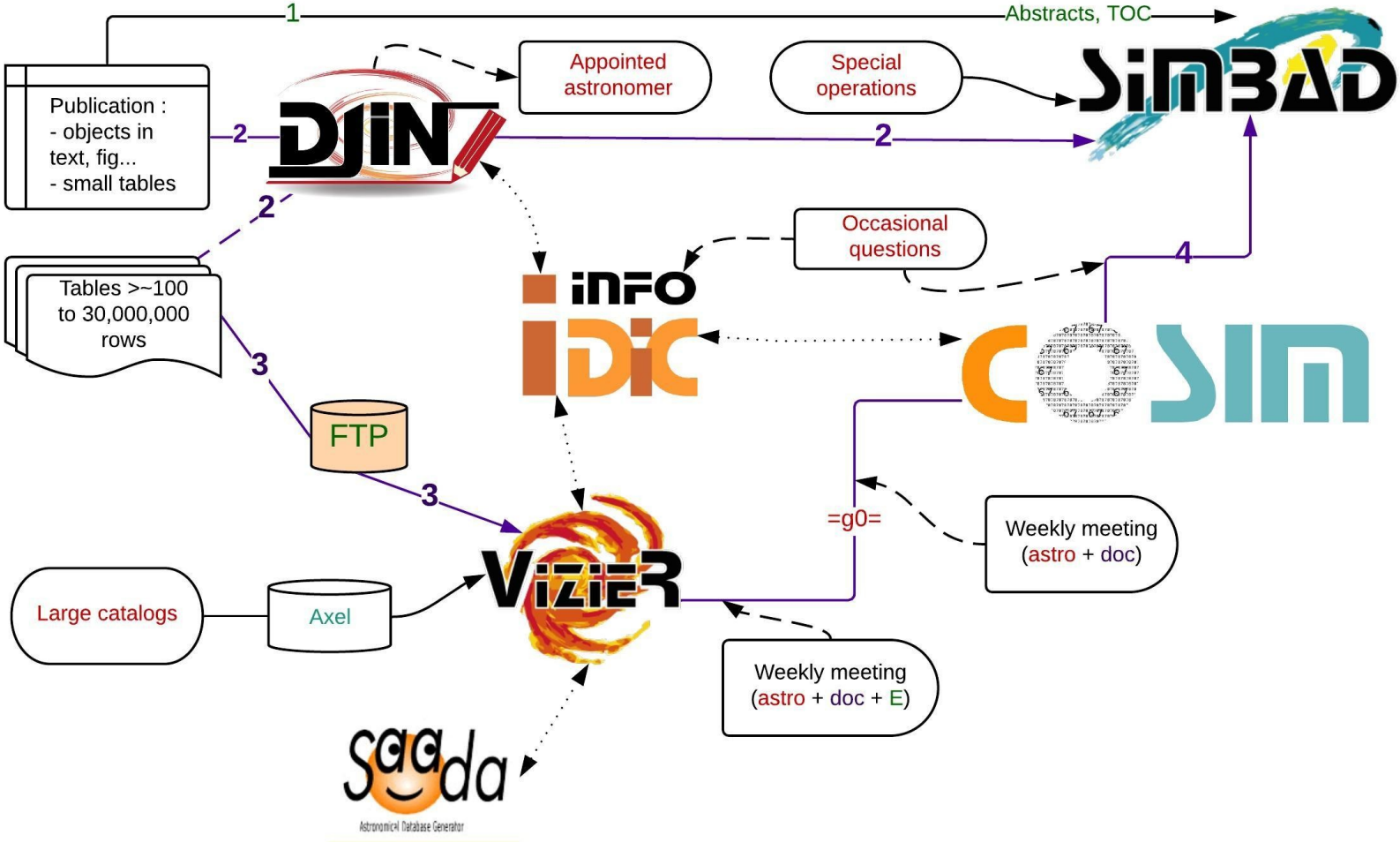
* priorities for observations or astronomical objects for SIMBAD

* rejections (too small MRTs, no interest for VizieR)

* non-recoverable data

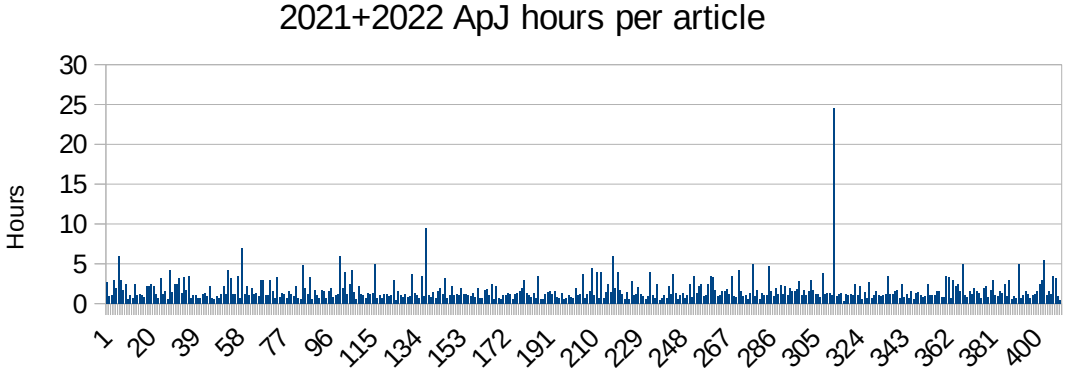
# Reminder : the workflow – VizieR is one step (not linear) of the CDS chain

**Diverse interactions between documentalists, astronomers and engineers**

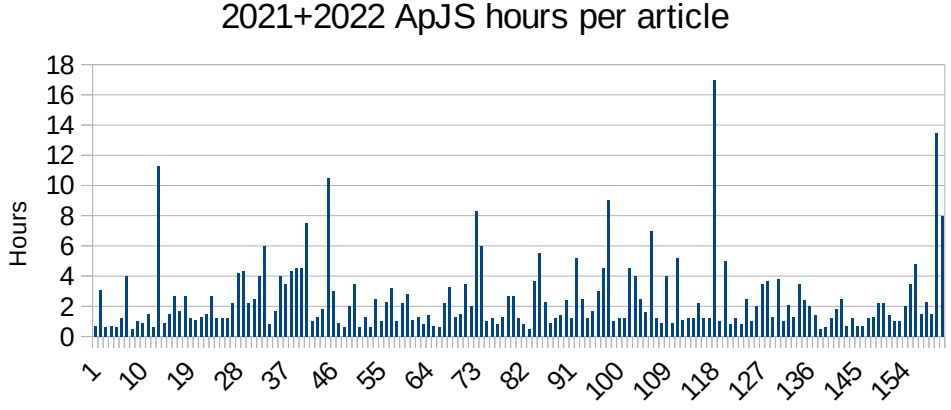


# Often asked question: the time spent per cat.? (for both quantity & quality)

Statistics on a subsample for which we have the time spent per catalog :
ApJ & ApJS ingested in the years 2021+2022 by one documentalist




Very variable




**Between 0.3h and 24.5h per catalog** for ApJ+ApJS on years 2021+2022.

**On average, 1.7h for ApJ vs 2.5h for ApJS** per catalog on years 2021+2022.

# About volume increase solutions


On the publication support page

- **Greater data selection**: priority to observations
  – but requirements for SIMBAD too.
- **One additional documentalist hired** since 2013
  – but temporary contract renewed every ~3-4 years, whereas training lasts ~6 months.
- Use **as many tools as possible to automate** what can be automated (colmeta, getapj, new setUCD…)
  – but engineers are in short supply for VizieR
- **Encouraging authors to follow the Best practices**
  – sometimes works...

# « Make your data visible » – EWASS 2019

## Raise the odds to be included in VizieR!

Ensure that your published tables will be usable by following this **checklist** of essential points:

- ❑ For tables containing known astronomical objects, an existing **non-altered name** must be given along with the **coordinates.**
  - A table of astronomical objects with no coordinates will not be discoverable in VizieR, and will not be processed in SIMBAD. Shortened names like 2M1427+3400 can be ambiguous because they can be matched to multiple objects; use the full **non-altered** object name instead:
    2MASS J14270471+3400138
- ❑ All columns must be well explained, with **their corresponding unit.**

  Please make your columns homogeneous, and avoid mixing measurements with different meanings: errors mixed with limits, or values with different units (that should be in different columns).
  - If too many conditions are needed to understand a column, an additional script is needed to process it, and so, it is not easily interoperable.
- ❑ When there is more than one table, the objects in common must be identified with the **same name between tables**.
  - A common key is fundamental for any action between tables.

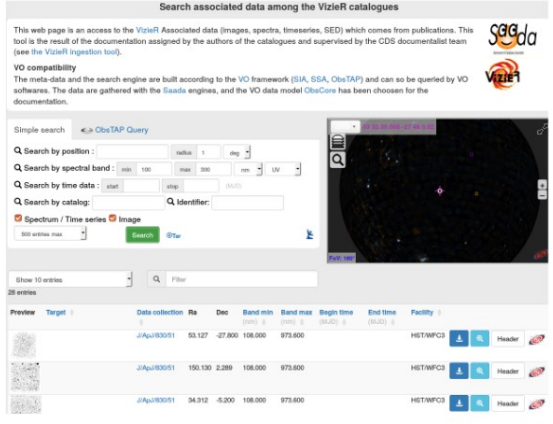
## Why a checklist?

To face the increasing amount of data, the CDS selects the articles to be processed with various scientific criteria but also by the effort required to make the data reusable.

Please use this **essential checklist** to help the CDS processing of your tables to ensure the quality and reusability of data.

## What about FITS spectra/images?

VizieR offers a specific search for images, spectra and data-cubes in FITS format.




A good FITS header is the key for reusability - the CDS encourages the usage of the FITS standards: https://fits.gsfc.nasa.gov/

**Check** that FITS file headers include:

- coordinates and wavelengths in the WCS system.
- observation dates.
- telescope/instrument names.

If the FITS file is not in the standard WCS system, the reusability of the file is compromised.

Try this tool to check the completeness of your FITS header:
http://cdsarc.u-strasbg.fr/vizier.submit/fitsvalidator.html


**Only 3 points…**

But most time-consuming

# New time-saving programs (not perfect but...)

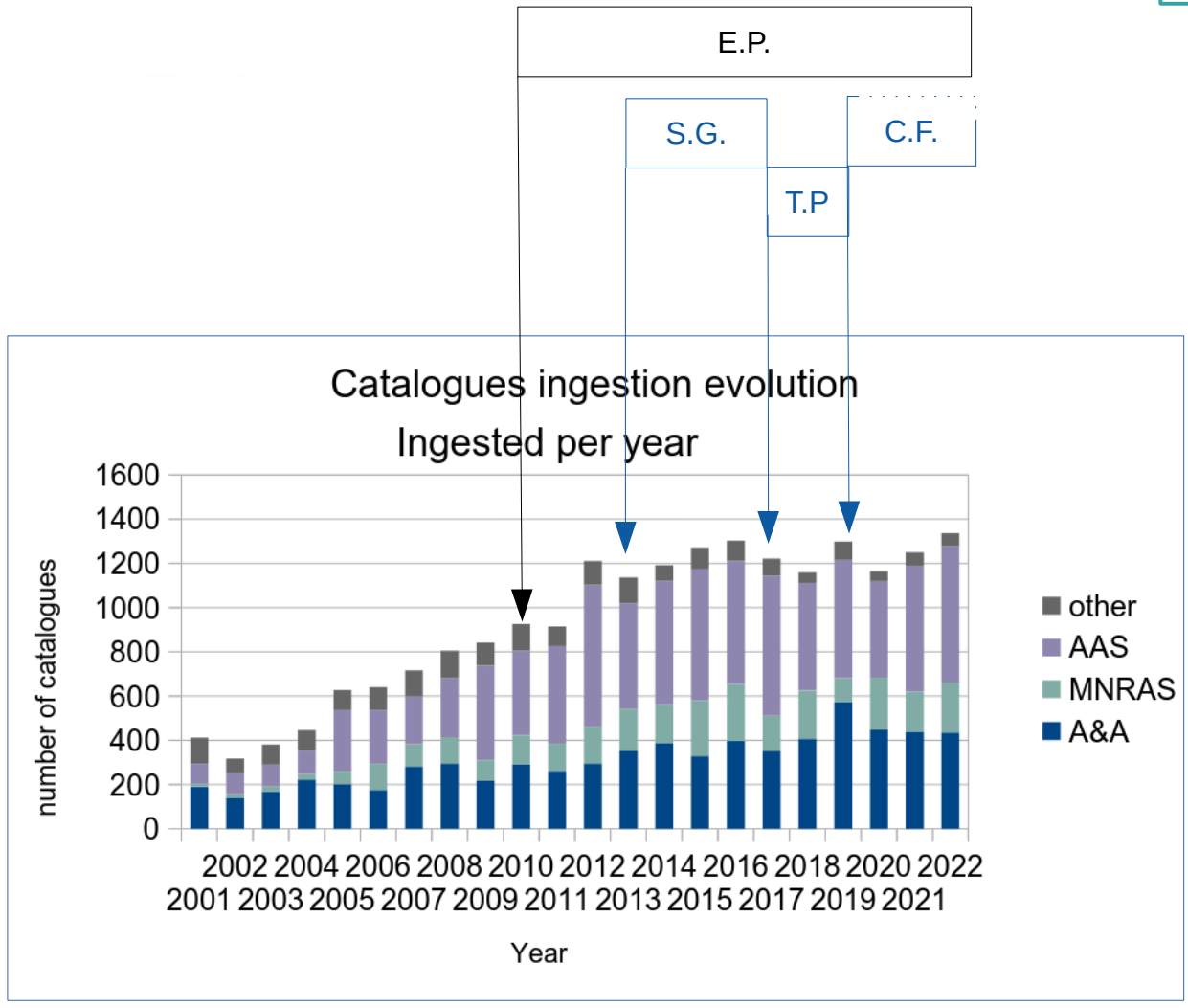
**colmeta :** Help to format the ReadMe file – especially helpfull to describe coordinates & usual parameters from one standard label and follow the rule to 80cc-limited...

**getapj** : uses the BCS to retrieve **MRT tables** and create a ReadMe file from them – especially helpful for multi-tables in one catalog + the « See also » section and min/max values are automatically added.

**setUCD** : the new tool should improve the assignation of ucd1+

# New documentalists hired

This is obviously not the only reason for the variations in the quantity ingested per year (it depends in particular on the time spent by the team on ingestions alone, in relation to their other activities, pandemic crisis and so on) but it seems logical to see a **drop when recruiting**, due to the time spent on training, **before it picks up** again



# Workflow insights – easy case – Before/After :2021ApJ...913..143G ~30 minutes

Actually, not ~30min. straight :

* first step: creating the ReadMe file and standardize the tables; put in place the commands for VizieR, first set of verifications (~3/4 of the work for an easy-case).

* final step is **few weeks later (normally ~1 month**): re-read the ReadMe file and ingest the catalog

```
Title: The Luminous and Double-Peaked Type IC Supernova 2019stc: Evidence
       for Multiple Energy Sources
Authors: Gomez S., Berger E., Hosseinzadeh G., Blanchard P.K., Nicholl M.,
         Villar V.A.
Table: Data behind Figure 2 -- Optical light curves of SN 2019stc in the griz bands
================================================================================
Byte-by-byte Description of file: dbf2.txt
--------------------------------------------------------------------------------
   Bytes Format Units   Label       Explanations
--------------------------------------------------------------------------------
   1- 14 F14.8  d       MJD         Modified Julian Date of observation, JD-2400000.5
  16- 23 F8.5   mag     omag        Observed AB magnitude in Filter
  25- 33 F9.6   mag   e_omag        ?=-1.00000 Uncertainty in omag
  35- 35 A1     ---     Filter      Filter
  37- 45 A9     ---     Tele        Telescope/Instrument used (1)
  47- 51 A5     ---     upperlimit  Is the measurement an upper limit (e_omag=-1)
  53- 54 A2     ---     System      Photometric System
--------------------------------------------------------------------------------
Note (1): Telescope/Instrument used --
    ZTF       = Zwicky Transient Facility, Palomar 48-inch Telescope;
    KeplerCam = KeplerCam Imager, Fred Lawrence Whipple Observatory 48-inch
                Telescope;
    Binospec  = Binospec Spectrograph, MMT Telescope;
    LDSS3c    = Low Dispersion Survey Spectrograph, Magellan Telescopes;
--------------------------------------------------------------------------------
58745.49609375 21.35643  0.231554 r ZTF       False AB
58750.50390625 20.31061  0.075235 r ZTF       False AB
58756.51953125 19.97693  0.068371 r ZTF       False AB
58763.50781250 19.34048  0.145183 r ZTF       False AB
58766.50390625 19.22941  0.139155 r ZTF       False AB
58769.46484375 19.12832  0.054426 r ZTF       False AB
58772.53906250 18.87869  0.056052 r ZTF       False AB
58778.48437500 18.82999  0.046348 r ZTF       False AB
58781.49609375 18.94375  0.060983 r ZTF       False AB
58784.51953125 18.77436  0.084771 r ZTF       False AB
58787.52343750 18.83211  0.064434 r ZTF       False AB
58793.50781250 18.69459  0.051258 r ZTF       False AB
58796.53906250 18.74523  0.129825 r ZTF       False AB
58799.36328125 18.74872  0.035149 r ZTF       False AB
58806.49609375 18.77615  0.118572 r ZTF       False AB
58812.30859375 18.96452  0.059139 r ZTF       False AB
58827.28515625 19.25720  0.070847 r ZTF       False AB
58833.37890625 19.44682  0.070968 r ZTF       False AB
```

Data behind Figure 2 – original data (MRT)

# Workflow insights – easy case – Before/After :2021ApJ...913..143G ~30 minutes

```
Byte-by-byte Description of file: dbf2.txt
--------------------------------------------------------------------------------
   Bytes Format Units   Label       Explanations
--------------------------------------------------------------------------------
   1- 14 F14.8  d       MJD         Modified Julian Date of observation, JD-2400000.5
  16- 23 F8.5   mag     omag        Observed AB magnitude in Filter
  25- 33 F9.6   mag   e_omag        ?=-1.00000 Uncertainty in omag
  35- 35 A1     ---     Filter      Filter
  37- 45 A9     ---     Tele        Telescope/Instrument used (1)
  47- 51 A5     ---     upperlimit  Is the measurement an upper limit (e_omag=-1)
  53- 54 A2     ---     System      Photometric System
--------------------------------------------------------------------------------
Note (1): Telescope/Instrument used --
    ZTF       = Zwicky Transient Facility, Palomar 48-inch Telescope;
    KeplerCam = KeplerCam Imager, Fred Lawrence Whipple Observatory 48-inch
                Telescope;
    Binospec  = Binospec Spectrograph, MMT Tel
    LDSS3c    = Low Dispersion Survey Spectrog
--------------------------------------------
```

Original data

```
Description:
    We obtained optical images of SN 2019stc in the griz filters with
    three different telescopes: KeplerCam on the 1.2m telescope at Fred
    Lawrence Whipple Observatory (FLWO), the Low Dispersion Survey
    Spectrograph (LDSS3c) on the Magellan Clay 6.5m telescope at Las
    Campanas Observatory, and Binospec on the MMT 6.5-m telescope.

    We include additional photometry from the Zwicky Transient Facility
    (ZTF) images. We downloaded the original ZTF images from the NASA/IPAC
    Infrared Science Archive.

    We also obtained seven epochs (spanning 2019-Nov-23 to 2020-Nov-19) of
    low-resolution optical spectroscopy covering phases from 15 to 340
    days. We used the LDSS3c Spectrograph and Inamori-Magellan Areal
    Camera and Spectrograph (IMACS) on the Magellan 6.5m telescopes and
    the Blue Channel and Binospec spectrographs on the MMT 6.5m telescope.
    See Section 2.3.

Objects:
    ------------------------------------------------------------
        RA   (ICRS)   DE        Designation(s)
    ------------------------------------------------------------
     06 54 23.10  +17 29 31.3   ZTF19acbonaa = SN 2019stc
    ------------------------------------------------------------

File Summary:
--------------------------------------------------------------------------------
 FileName  Lrecl  Records  Explanations
--------------------------------------------------------------------------------
ReadMe        80        .  This file
fig2.dat      55      153  Optical light curves of SN 2019stc in the griz bands
--------------------------------------------------------------------------------

See also:
 J/ApJ/741/97  : Light curves of Ibc supernovae (Drout+, 2011)
 J/AJ/147/99   : Spectroscopy of 73 stripped core-collapse SNe (Modjaz+, 2014)
 J/A+A/618/A37 : Spectral log of (i)PTF stripped-envelope SN (Fremling+, 2018)
 J/ApJ/881/87  : 9 epochs spectroscopy of type I SN 201iet (Gomez+, 2019)
 J/ApJ/887/169 : UV-Opt light curves of the type Ic SN 2018gep (Ho+, 2019)
 J/ApJ/901/61  : LCs of 4 superluminous SNe from the ZTF survey (Lunnan+, 2020)
 J/ApJ/902/L8  : Optical & NIR spectra of ZTF19aawfbtg (SN2019hge) (Yan+, 2020)
```

```
Byte-by-byte Description of file: fig2.dat
--------------------------------------------------------------------------------
   Bytes Format Units   Label     Explanations
--------------------------------------------------------------------------------
   1- 14  F14.8 d       MJD       [58745.49/59174.5] Modified Julian Date of
                                   observation (JD-2400000.5)
     16  A1    ---     l_omag    Upper limit flag on omag
  17- 24  F8.5  mag     omag      [18.69/25.77] Observed AB magnitude in Filt
  26- 34  F9.6  mag   e_omag      [0.02/0.6]?=-1 Uncertainty in omag
     36  A1    ---     Filt      Filter ((g, r, i or z)
  38- 46  A9    ---     Tel       Telescope/Instrument used (1)
  48- 52  A5    ---     uLim      Is the measurement an upper limit;
                                   "False" or "True"; e_omag=-1 if "True"
  54- 55  A2    ---     Syst      Photometric System (always "AB")
--------------------------------------------------------------------------------
Note (1): Telescope/Instrument used as follows:
    ZTF       = Zwicky Transient Facility, Palomar 48-inch Telescope
                (66 occurrences);
eplerCam = KeplerCam Imager, Fred Lawrence Whipple Observatory 48-inch
           Telescope (63 occurrences);
inospec  = Binospec Spectrograph, MMT Telescope (15 occurrences);
DSS3c    = Low Dispersion Survey Spectrograph, Magellan Telescopes
           (9 occurrences);
--------------------------------------------------------------------------------

ry:
rom electronic version of the journal
```

ReadMe

# Workflow insights – easy case – Before/After :2021ApJ...913..143G ~30 minutes

## Figure 2 – original data

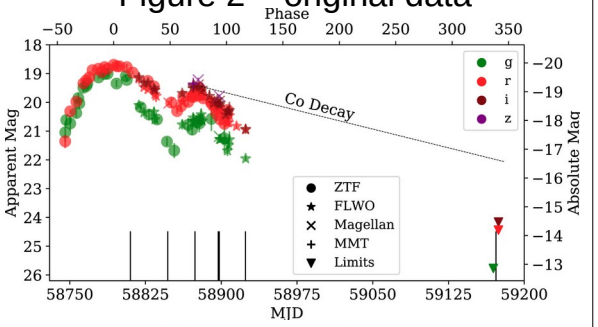



**Figure 2.** Optical light curves of SN 2019stc in the *griz* bands. Magnitudes are in the AB system and not corrected for Galactic extinction. Absolute magnitudes have an additional cosmological K-correction applied. The vertical lines mark the epochs of spectroscopy. The final upper limits are 3$\sigma$ nondetections from deep MMT+Binospec images.(The data used to create this figure are available.)

Download figure:

Standard image | High-resolution image

## Optical light curves of the type Ic SN 2019stc : J/ApJ/913/143

Access to: VizieR | FTP | ReadMe | TAP

**Authors :** Gomez S. , Berger E., Hosseinzadeh G. et..al

**Bibcode :** 2021ApJ...913..143G (ADS)
Cite (Simbad) (Objects)

**CDS Keywords :** Supernovae; Photometry, ugriz

**UAT :** Photometry, Infrared photometry, Optical astronomy, Wide-band photometry, Supernovae

Observation (OC)
Inserted into VizieR : 15-Dec-2022
Last modification : 08-Sep-2023

Article Origin | Description | See also | ReadMe | History | Prov | FTP | VizieR

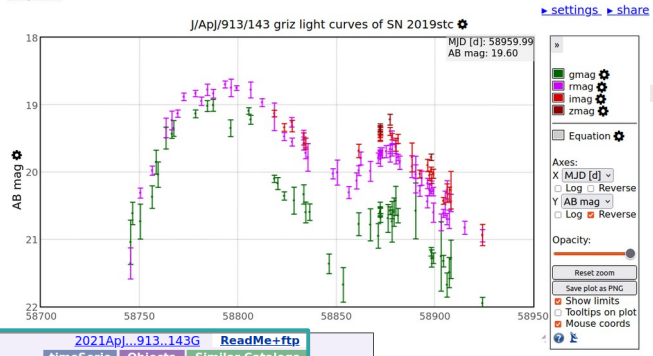
**The luminous and double-peaked type Ic supernova 2019stc evidence for multiple energy sources. (2021)**
Go to the original article (10.3847/1538-4357/abf5e3)

**Keywords :** Supernovae ; Type Ic supernovae

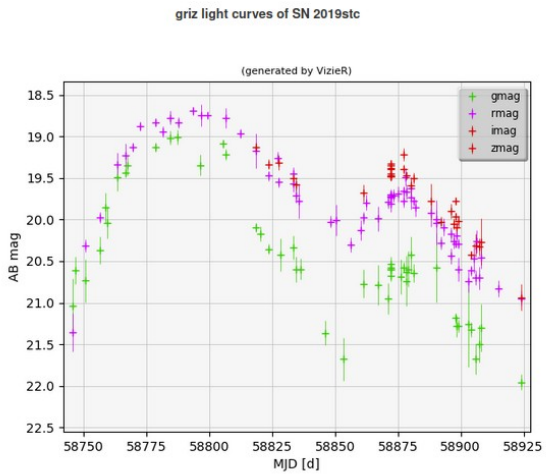
**Abstract:** We present optical photometry and spectroscopy of SN 2019stc (=ZTF19acbonaa), an unusual Type Ic supernova (SN Ic) at a redshift of z=0.117. SN 2019stc exhibits a broad double-peaked light curve, with the first peak having an absolute magnitude of $M_r$=-20.0mag, and the second peak, about 80 rest-frame days later, $M_r$=-19.2mag. The total radiated energy is large, $E_{rad}$~2.5x$10^{50}$erg. Despite its large luminosity, approaching those of Type I superluminous supernovae (SLSNe), SN 2019stc exhibits a typical SN Ic spectrum, bridging the gap between SLSNe and SNe Ic. The spectra indicate the presence of Fe-peak elements, but modeling of the first light-curve peak with radioactive heating alone leads to an unusually high nickel mass ...(more)

American Astronomical Society policies

## Plot catalogue J/ApJ/913/143




**Download:** VOTable - TSV

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Contact

Landing page CDS

J/ApJ/913/143 — Optical light curves of the type Ic SN 2019stc (Gomez+, 2021
Post annotation
2021ApJ...913..143G ReadMe+ftp
timeSerie | Objects | Similar Catalogs
1 J/ApJ/913/143/fig2 Optical light curves of SN 2019stc in the griz bands **[timeSerie]** (Interactive plot) *(153 rows)*

Simple Constraint | List Of Constraints — Submit | Reset All

**Query by Constraints applied on Columns** *(Output Order: + -)*

| Show | SortColumn | Clear | Constraint | Explain (UCD) |
|---|---|---|---|---|
| ☐ | ○ recno | | | Record number assigned by the VizieR team. Should Not be used for identification. (meta.record) (RECORD) |
| ☑ | ○ MJD | | d | [58745.49/59174.5] Modified Julian Date of observation (JD-2400000.5) (time.epoch) (TIME_DATE) |
| ☑ | ○ l_omag | | (char) | Upper limit flag on omag (meta.code.error) (CODE_LIMIT) |
| ☑ | ○ omag | | mag | [18.69/25.77] Observed AB magnitude in Filt (phot.mag) (PHOT_MAG_UNDEF) |
| ☑ | ○ e_omag | | mag (n) | [0.02/0.6] Uncertainty in omag (stat.error;phot.mag) (ERROR) |
| ☑ | ○ Filt | | (char) | Filter (g, r, i or z) (meta.id;instr.filter) (INST_FILTER_CODE) |
| ☑ | ○ Tel | | (char) | Telescope/Instrument used *(Note 1)* (instr.setup) (TEL_ID) |
| ☑ | ○ Syst | | (char) | Photometric System (always "AB") (meta.note) (REMARKS) |

ALL cols | Reset All | Clear — (n) indicates a possible blank or NULL column — (i) indexed column — Submit

Adapt form — Display your selection only — Modify — Reset to default columns — Modify
Display UCD1+ UCD1

VizieR

META-time

# Workflow insights – difficult cases

FITS / ASCII & other file formats
=> Tables need to be transformed to the **standard** aligned ASCII file format

For FITS :
- format (including significant digits) for each parameter is never given
=> each column must be filled with a format by hand
- vectors are not supported by VizieR
=> duplication of X columns per value in the vector (same format).

**What helps** :
CSV format ; the best is the **MRT format** which includes units & explanations in addition to the formats

Top 10+10 of most consuming-time catalogs in 2021-2022 (for those having time record)

| ApJ | | ApJS | |
|---|---|---|---|
| Total hours | Catalog | Total hours | Catalog |
| 24,5 | RELICS,<br>**41 catalogs ASCII** (from MAST) | 17 | SDSS RM,<br>**FITS with 276 col.** Including **vectors** |
| 9,5 | **3 cat. ASCII** From author's archive<br>+ 9258 **LC** | 13,5 | **10 tables in ASCII**<br>with bib. **references**,<br>**Abbreviated names+comp**. not always the same between tables<br>Not always **coo**. |
| 7 | VLA FF survey<br>**14 tables ASCII** (inc. from online archive)<br>+ **Images FITS** | 11,3 | SDSS-IV MaNGA<br>**FITS with 535 columns** |
| 6 | 3 tables MRTs + 2 behind Fig.<br>+1 ASCII added for links toward **spectra**<br>One name modified (**exchange with author**) | 10,5 | **7 tables in ASCII**<br>**Script to add coo** in a table from another table of the same paper (not clear otherwise) |
| 6 | 4 tables MRTs (**T1 ~220 col.**)<br>+ Table of 846 **references** | 9 | The XMM-SERVS survey<br>3 MRTs (**inc. 206 & 197 col.**) |
| 6 | 4 tables (1 MRT, **3 ASCII**)<br>**Curation of T2 complicated** : wrong coo ; **different values for NULL**.<br>145 sources without RA (author has never answered) | 8,3 | IDEOS<br>1 table MRT , **232 col.**<br>**SimbadName for 3559 sources** |
| 5,5 | 3 small Tables in MRTs<br>Issues to **link tables** + **SED**<br>Data presented in another paper + erratum (2 tables to add – via script; paste impossible) | 8 | 22 tables en MRTs<br>**Names between tables** for the same objects are not identical & not well written => **misprints/comp. missing**<br>(diverse exchanges with the author) |
| 5 | 1 MRT + 3 Data behind Figures inc.<br>**Individual Sp (26 MRTs)** + 1 ASCII | 7,5 | BASS XXII. BASS DR2 AGN cat.<br>4 other papers of the same series to do.<br>**Flags added to link other tables** let in the paper<br>2 MRTs tables + 1 ASCII<br>Retrieving **names** from SWIFT. |
| 5 | Cosmicflows-4<br>2 MRTs (**inc. 85 col**).<br>**No coo**. Retrieved from LEDA, 2MASX…<br>=> merge/Ids added in SIMBAD + rewriting names for ~300 galaxies | 7 | BDKP. Paper V.<br>**7 tables** (3 MRTs, 4 ASCII)<br>**Names** between tables => misprints – **diverse exchanges with the author** |
| 5 | 1 MRT (~90 col.)<br>**No coo.**<br>**2 col. Simbad for 6393 pl. + stars** | 6 | **8 tables** (6 en MRTs + **tables added: notes & abund**)<br>**SimbadName** |

# Workflow insights – difficult cases

## Number of tables per cat. increase

=> **links between tables become more complicated**

The links help to find misprint/missing data; added-value: number of galaxies per clusters...

## What helps:

- Keep **a same ID between tables**!

  See « Make your data visible », 3rd point

- Keep the same format between tables.

| ApJ | | ApJS | |
|---|---|---|---|
| Total hours | Catalog | Total hours | Catalog |
| 24,5 | RELICS, **41 catalogs ASCII** (from MAST) | 17 | SDSS RM, **FITS with 276 col.** Including **vectors** |
| 9,5 | **3 cat. ASCII** From author's archive + 9258 **LC** | 13,5 | **10 tables in ASCII** with bib. **references**, **Abbreviated names+comp**. not always the same between tables Not always **coo**. |
| 7 | VLA FF survey **14 tables ASCII** (inc. from online archive) + **Images FITS** | 11,3 | SDSS-IV MaNGA **FITS with 535 columns** |
| 6 | 3 tables MRTs + 2 behind Fig. +1 ASCII added for links toward **spectra** One name modified (**exchange with author**) | 10,5 | **7 tables in ASCII** **Script to add coo** in a table from another table of the same paper (not clear otherwise) |
| 6 | 4 tables MRTs (**T1 ~220 col.**) + Table of 846 **references** | 9 | The XMM-SERVS survey 3 MRTs (**inc. 206 & 197 col.**) |
| 6 | 4 tables (1 MRT, **3 ASCII**) **Curation of T2 complicated** : wrong coo ; **different values for NULL**. 145 sources without RA (author has never answered) | 8,3 | IDEOS 1 table MRT , **232 col.** **SimbadName for 3559 sources** |
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| 5 | Cosmicflows-4 2 MRTs (**inc. 85 col**). **No coo**. Retrieved from LEDA, 2MASX… => merge/Ids added in SIMBAD + rewriting names for ~300 galaxies | 7 | BDKP. Paper V. **7 tables** (3 MRTs, 4 ASCII) **Names** between tables => misprints – **diverse exchanges with the author** |
| 5 | 1 MRT (~90 col.) **No coo.** **2 col. Simbad for 6393 pl. + stars** | 6 | **8 tables** (6 en MRTs + **tables added: notes & abund**) **SimbadName** |

# Workflow insights – difficult cases

**Number of columns** per table increase
=> **each column takes time**:

- min/max values which should be coherent + only one NULL value available…
- Standard unit (if relevant)
- Only one explanation (no if there is … then this is … otherwise this is … unless there is a flag...)
--See Point 2 of « Make your data visible »
- ucd1+
- Origin of the parameter (observation, ref.)
- Explanation of all codes/flags
- Origin of each IDs & SIMBAD nomemclature if relevant
- Which column(s) to display by default

**What helps** :
MRT format
Stick to one homegeneous type of data per column.
Stick to one NULL value per column

| ApJ | | ApJS | |
|---|---|---|---|
| Total hours | Catalog | Total hours | Catalog |
| 24,5 | RELICS,<br>**41 catalogs ASCII** (from MAST) | 17 | SDSS RM,<br>**FITS with 276 col.** Including **vectors** |
| 9,5 | **3 cat. ASCII** From author's archive<br>+ 9258 **LC** | 13,5 | **10 tables in ASCII**<br>with bib. **references**,<br>**Abbreviated names+comp**. not always the same between tables<br>Not always **coo**. |
| 7 | VLA FF survey<br>**14 tables ASCII** (inc. from online archive)<br>+ **Images FITS** | 11,3 | SDSS-IV MaNGA<br>**FITS with 535 columns** |
| 6 | 3 tables MRTs + 2 behind Fig.<br>+1 ASCII added for links toward **spectra**<br>One name modified (**exchange with author**) | 10,5 | **7 tables in ASCII**<br>**Script to add coo** in a table from another table of the same paper (not clear otherwise) |
| 6 | 4 tables MRTs (**T1 ~220 col.**)<br>+ Table of 846 **references** | 9 | The XMM-SERVS survey<br>3 MRTs (**inc. 206 & 197 col.**) |
| 6 | 4 tables (1 MRT, **3 ASCII**)<br>**Curation of T2 complicated** : wrong coo ; **different values for NULL**.<br>145 sources without RA (author has never answered) | 8,3 | IDEOS<br>1 table MRT , **232 col.**<br>**SimbadName for 3559 sources** |
| 5,5 | 3 small Tables in MRTs<br>Issues to **link tables** + **SED**<br>Data presented in another paper + erratum (2 tables to add – via script; paste impossible) | 8 | 22 tables en MRTs<br>**Names between tables** for the same objects are not identical & not well written => **misprints/comp. missing**<br>(diverse exchanges with the author) |
| 5 | 1 MRT + 3 Data behind Figures inc.<br>**Individual Sp (26 MRTs)** + 1 ASCII | 7,5 | BASS XXII. BASS DR2 AGN cat.<br>4 other papers of the same series to do.<br>**Flags added to link other tables** let in the paper<br>2 MRTs tables + 1 ASCII<br>Retrieving **names** from SWIFT. |
| 5 | Cosmicflows-4<br>2 MRTs (**inc. 85 col**).<br>**No coo**. Retrieved from LEDA, 2MASX…<br>=> merge/Ids added in SIMBAD + rewriting names for ~300 galaxies | 7 | BDKP. Paper V.<br>**7 tables** (3 MRTs, 4 ASCII)<br>**Names** between tables => misprints – **diverse exchanges with the author** |
| 5 | 1 MRT (~90 col.)<br>**No coo.**<br>**2 col. Simbad for 6393 pl. + stars** | 6 | **8 tables** (6 en MRTs + **tables added: notes & abund**)<br>**SimbadName** |

# Workflow insights – difficult cases

**No coordinates & link toward SIMBAD**
=> Required for VizieR
Helps to detect misprints

- Find objects/coo in SIMBAD (potentially complete SIMBAD by adding IDs, data, merging… + complexity increased with number of rows)
- If new objects, find coo in other catalogs, other tables not in VizieR/not online…

**What helps** :
See point 1 of « Make your data visible »:
follow the IAU recommandation for non-altered/truncated names + coo + 2d name if available

| ApJ | | ApJS | |
|---|---|---|---|
| Total hours | Catalog | Total hours | Catalog |
| 24,5 | RELICS,<br>**41 catalogs ASCII** (from MAST) | 17 | SDSS RM,<br>**FITS with 276 col.** Including **vectors** |
| 9,5 | **3 cat. ASCII** From author's archive<br>+ 9258 **LC** | 13,5 | **10 tables in ASCII**<br>with bib. **references**,<br>**Abbreviated names+comp**. not always the same between tables<br>Not always **coo**. |
| 7 | VLA FF survey<br>**14 tables ASCII** (inc. from online archive)<br>+ **Images FITS** | 11,3 | SDSS-IV MaNGA<br>**FITS with 535 columns** |
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| 5 | 1 MRT (~90 col.)<br>**No coo.**<br>**2 col. Simbad for 6393 pl. + stars** | 6 | **8 tables** (6 en MRTs + **tables added: notes & abund**)<br>**SimbadName** |

# Workflow insights – difficult cases

## Corrections

=> Over 3 months in 2018, corrections in ApJ/ApJS leading to exchanges with authors were ~30 %

=> The main corrections concern identifiers, missing/erroneous coordinates, units, odd/redundant values…

=> This adds a further delay to the catalog release

| ApJ | | ApJS | |
|---|---|---|---|
| **Total hours** | **Catalog** | **Total hours** | **Catalog** |
| **24,5** | RELICS,<br>**41 catalogs ASCII** (from MAST) | **17** | SDSS RM,<br>**FITS with 276 col.** Including **vectors** |
| **9,5** | **3 cat. ASCII** From author's archive<br>+ 9258 **LC** | **13,5** | **10 tables in ASCII**<br>with bib. **references**,<br>**Abbreviated names+comp**. not always the same between tables<br>Not always **coo**. |
| **7** | VLA FF survey<br>**14 tables ASCII** (inc. from online archive)<br>+ **Images FITS** | **11,3** | SDSS-IV MaNGA<br>**FITS with 535 columns** |
| **6** | 3 tables MRTs + 2 behind Fig.<br>+1 ASCII added for links toward **spectra**<br>One name modified (**exchange with author**) | **10,5** | **7 tables in ASCII**<br>**Script to add coo** in a table from another table of the same paper (not clear otherwise) |
| **6** | 4 tables MRTs (**T1 ~220 col.**)<br>+ Table of 846 **references** | **9** | The XMM-SERVS survey<br>3 MRTs (**inc. 206 & 197 col.**) |
| **6** | 4 tables (1 MRT, **3 ASCII**)<br>**Curation of T2 complicated** : wrong coo ; **different values for NULL**.<br>145 sources without RA (author has never answered) | **8,3** | IDEOS<br>1 table MRT , **232 col.**<br>**SimbadName for 3559 sources** |
| **5,5** | 3 small Tables in MRTs<br>Issues to **link tables** + **SED**<br>Data presented in another paper + erratum (2 tables to add – via script; paste impossible) | **8** | 22 tables en MRTs<br>**Names between tables** for the same objects are not identical & not well written => **misprints/comp. missing**<br>(diverse exchanges with the author) |
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| **5** | 1 MRT (~90 col.)<br>**No coo.**<br>**2 col. Simbad for 6393 pl. + stars** | **6** | **8 tables** (6 en MRTs + **tables added: notes & abund**)<br>**SimbadName** |

# Workflow insights – Value added

5,5

3 small Tables in MRTs
Issues to **link tables** + **SED**
Data presented in another paper + erratum (2 tables to add – via script; paste impossible)

Show the target form
Show constraint information

The 6 columns in ***color*** are computed by VizieR, and are ***not part of the original data***.

**J/ApJ/879/131/psbgal** UV-FIR obs. of post-starburst galaxies & dust masses (Li+, 2019)
*Post annotation*
Post-starburst galaxies properties and archival UV-FIR photometry (Tables 1, 2, 4 and Tables 6+7 from Smercina et al. 2018ApJ...855...51S) *(58 rows)* [METAtab] [METAcola] [stats]

meta

ReadMe+ftp
2019ApJ...879..131L

spectrum/SED

start AladinLite  plot the output  query using TAP/SQL

**Search Criteria**
Save in CDSportal
**Keywords** Back
▪ J/ApJ/879/131
**Tables** Add
J/ApJ/879/131
..psbgal

**J/ApJ/879/131/psbgal metadata**

*Metadata assigned by the CDS*

**Position used for search**

System=FK5/2000
Ref. columns : DEJ2000, RAJ2000

**Photometry**

column Fu, system=SDSS/u
column Fg, system=SDSS/g
column Fr, system=SDSS/r
column Fi, system=SDSS/i
column Fz, system=SDSS/z
column FJ, system=2MASS/J
column FH, system=2MASS/H
column FKs, system=2MASS/Ks
column F70, system=Herschel/PACS/70
column F100, system=Herschel/PACS/100
column F160, system=Herschel/PACS/160
column F250, system=Herschel/SPIRE/250
column F350, system=Herschel/SPIRE/350
column F500, system=Herschel/SPIRE/500
column F3.4, system=WISE/W1
column F4.6, system=WISE/W2
column F12, system=WISE/W3
column F22, system=WISE/W4
column FFUV, system=GALEX/FUV
column FNUV, system=GALEX/NUV

Display data from French+, 2018, J/ApJ/862/2 and Alatalo+, 2016, J/ApJS/224/38 within 0.5"

| _DEJ2000 "d:m:s" | ID | RAJ2000 deg | DEJ2000 deg | FFUV mJy | F500 mJy | SED | f_ID | SCat | Sloan | SimbadName |
|---|---|---|---|---|---|---|---|---|---|---|
| +57 52 58.512 | R1 | 233.13199 | +57.88292 | 5.8e-01 | 60.90 | SED | | | | |
| +20 01 20.496 | R2 | 228.95127 | +20.02236 | 2.3e-01 | 105.00 | SED | | 1 | Sloan | SDSS J151548.33+200120.8 |
| +16 43 46.848 | R3 | 225.40127 | +16.72968 | 6.2e-01 | | SED | | 1 | Sloan | SDSS J150136.30+164346.9 |
| +40 20 42.756 | R4 | 246.45527 | +40.34521 | 6.3e-01 | 131.00 | SED | | 1 | Sloan | SDSS J162549.26+402042.8 |
| +14 03 | | | | | | SED | | 1 | Sloan | SDSS J161735.41+140308.2 |
| +41 40 | | | | | | SED | | 1 | Sloan | SDSS J165141.69+414006.1 |
| +13 51 | | | | | | SED | | 1 | Sloan | SDSS J163758.87+135133.8 |
| +52 29 | | | | | | SED | | 1 | Sloan | SDSS J155816.43+522921.3 |
| +22 23 | | | | | | SED | | 1 | Sloan | SDSS J162842.96+222349.8 |
| +17 20 | | | | | | SED | a | 1 | Sloan | [DYZ2015] EAH01 |
| +18 40 | | | | | | SED | a | 0 | Sloan | [DYZ2015] EAH02 |
| +17 33 | | | | | | SED | a | 1 | Sloan | [DYZ2015] EAH03 |
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| +39 04 | | | | | | SED | a | 1 | Sloan | [DYZ2015] EAH05 |
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| +11 33 | | | | | | SED | a | 0 | Sloan | [DYZ2015] EAH07 |
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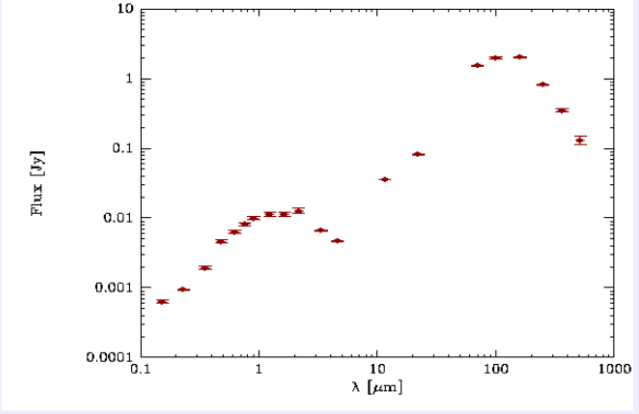
| +37 33 | | | | | | SED | a | 0 | Sloan | [DYZ2015] EAH09 |
| +21 07 | | | | | | SED | a | 1 | Sloan | [DYZ2015] EAH10 |
| +05 59 | | | | | | SED | a | 1 | Sloan | [DYZ2015] EAH11 |
| +13 16 | | | | | | SED | a | 0 | Sloan | [DYZ2015] EAH12 |
| +22 09 47.448 | EAH13 | 155.50328 | +22.16318 | 2.0e-02 | | SED | a | 1 | Sloan | [DYZ2015] EAH13 |
| +64 17 56.508 | EAH14 | 178.27686 | +64.29903 | 3.7e-03 | | SED | a | 3 | Sloan | [DYZ2015] EAH14 |
| 24 10 52 20.4480 | +05 49 41.592 | EAH15 | 163.08520 | +05.82822 | 1.5e-02 | SED | a | 1 | Sloan | [DYZ2015] EAH15 |
| 25 09 26 57.6888 | +42 31 36.624 | EAH16 | 141.74037 | +42.52684 | 2.0e-02 | SED | a | 1 | Sloan | [DYZ2015] EAH16 |
| 26 12 44 51.6936 | -01 45 35.640 | EAH17 | 191.21539 | -01.75990 | 4.4e-03 | SED | a | 1 | Sloan | [DYZ2015] EAH17 |

**SED of R4**

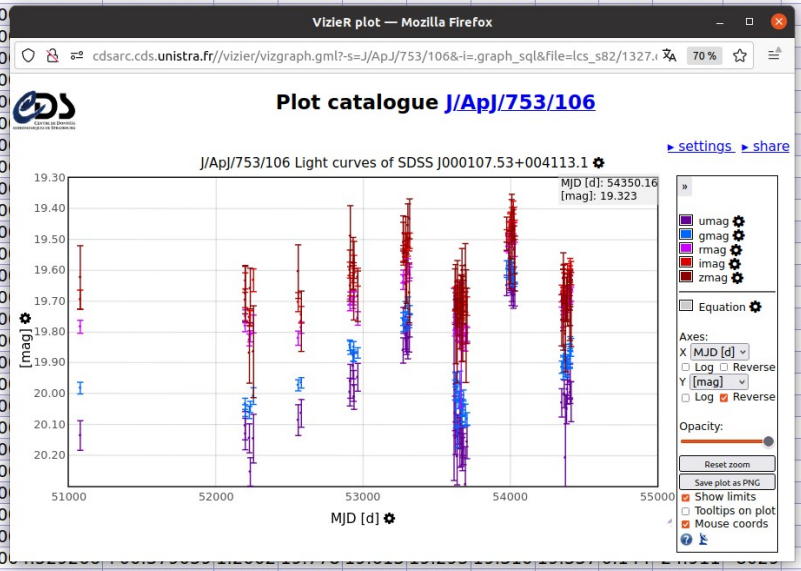



Postscript Figure  Data as a Table

# Workflow insights – Value added

| RAJ2000 deg | DEJ2000 deg | z | umag mag | gmag mag | rmag mag | imag mag | zmag mag | Au mag | iMag mag | DBID | SDR5ID | iMagc mag | MBH [Msun] | logLbol [10-7W] | S11 | LC | SimbadName |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 002.169302 | +01.238649 | 1.0730 | 20.793 | 20.469 | 20.197 | 20.040 | 20.000 | 0.116 | -23.901 | 70 | 301 | -24.181 | | | S11 | LC | SDSS J000840.63+011419.2 |
| 001.091028 | +00.962126 | 0.7867 | 20.790 | 20.183 | 19.849 | 19.818 | 19.430 | 0.183 | -23.399 | 98 | | | | | | | 000421.84+005743.6 |
| 000.331289 | +00.177230 | 1.6199 | 20.892 | 20.554 | 20.431 | 20.199 | 20.099 | 0.154 | -24.735 | 233 | 58 | -25.058 | | | S11 | LC | SDSS J000119.50+001037.9 |
| 001.364696 | -00.098956 | 0.6125 | 20.098 | 19.722 | 19.784 | 19.485 | 19.541 | 0.178 | -23.121 | 1018 | 190 | -24.045 | | 45.433 | S11 | LC | SDSS J000527.52-000556.2 |
| 000.221552 | -00.292485 | 2.7563 | 20.707 | 19.663 | 19.610 | 19.705 | 19.529 | 0.174 | -26.451 | 1310 | 36 | -26.974 | 9.361 | 46.760 | S11 | LC | SDSS J000053.17-001732.9 |
| 000.281370 | +00.686984 | 1.3988 | 20.213 | 20.105 | 19.815 | 19.666 | 19.749 | 0.139 | -24.917 | 1327 | 49 | -25.288 | 8.817 | 46.071 | S11 | LC | |
| | | | | | | | | | | | 370 | -27.856 | | | S11 | LC | |
| | | | | | | | | | | | 229 | -24.898 | 8.666 | 45.862 | S11 | LC | |
| | | | | | | | | | | | 699 | -25.695 | | | S11 | LC | |
| | | | | | | | | | | | 578 | -25.581 | | | S11 | LC | |
| | | | | | | | | | | | 237 | -27.684 | 9.591 | 46.989 | S11 | LC | |
| | | | | | | | | | | | 13 | -25.495 | 8.664 | 46.241 | S11 | LC | |
| | | | | | | | | | | | 83 | -25.560 | | | S11 | LC | |
| | | | | | | | | | | | 564 | -26.598 | 9.210 | 46.597 | S11 | LC | |
| | | | | | | | | | | | 579 | -25.739 | 8.885 | 46.291 | S11 | LC | |
| | | | | | | | | | | | 556 | -24.652 | 8.374 | 45.920 | S11 | LC | |
| | | | | | | | | | | | 565 | -24.361 | 8.415 | 45.833 | S11 | LC | |
| | | | | | | | | | | | 574 | -26.822 | | | S11 | LC | |
| | | | | | | | | | | | 349 | -25.560 | 8.549 | 46.250 | S11 | LC | |
| | | | | | | | | | | | 555 | -25.417 | 8.593 | 46.105 | S11 | LC | |
| | | | | | | | | | | | 676 | -23.600 | | | S11 | LC | |
| | | | | | | | | | | | 680 | -25.888 | | | S11 | LC | |
| | | | | | | | | | | | 158 | -25.326 | 9.189 | 46.107 | S11 | LC | |
| | | | | | | | | | | | 621 | -25.342 | 8.476 | 46.223 | S11 | LC | |
| | | | | | | | | | | | 667 | -25.431 | | | S11 | LC | |
| | | | | | | | | | | | 519 | -25.517 | 8.737 | 46.005 | S11 | LC | |
| | | | | | | | | | | | 196 | -23.487 | 8.049 | 45.327 | S11 | LC | |
| | | | | | | | | | | | 407 | -25.294 | 8.748 | 46.125 | S11 | LC | |
| | | | | | | | | | | | 231 | -26.337 | 8.997 | 46.592 | S11 | LC | |
| | | | | | | | | | | | 530 | -27.489 | 9.180 | 46.942 | S11 | LC | |
| | | | | | | | | | | | 150 | -25.563 | 8.371 | 46.194 | S11 | LC | |
| | | | | | | | | | | | 652 | -24.793 | 8.893 | 46.096 | S11 | LC | |
| 004.382103 | +00.819490 | 2.4329 | 20.701 | 20.102 | 20.118 | 20.073 | 19.976 | 0.146 | -25.793 | 8442 | 626 | -26.408 | 9.099 | 46.549 | S11 | LC | |
| 001.300490 | +00.220337 | 1.2745 | 20.331 | 20.145 | 19.838 | 19.659 | 19.604 | 0.148 | -24.707 | 9321 | 183 | -25.046 | 8.972 | 45.923 | S11 | LC | |

Display data from Schneider+, 2007, VII/252




| Full | Date "Y:M:D" | f_ | MJD d | delT d | Tel | Inst | u_ | Exp s | f_ | sp |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2018-03-06 | | 58183.5 | 72 | MDM Hiltner 2.4m | OSMOS | | 600 | | |
| 2 | 2018-03-08 | | 58185.5 | 74 | MDM Hiltner 2.4m | OSMOS | | 1800 | | |
| 3 | 2018-03-09 | | 58186.5 | 75 | MDM Hiltner 2.4m | OSMOS | | 2700 | | |
| 4 | 2018-03-13 | c | 58190.0 | 79 | Liverpool Telescope 2m | SPRAT | | 600 | | |
| 5 | 2018-03-23 | * | 58200.5 | 89 | APO 3.5m | DIS | | 300 | | |
| 6 | 2018-04-23 | | 58231.6 | 119 | Las Cumbres 2m | FLOYDS | | 1800 | | |
| 7 | 2018-04-24 | | 58232.5 | 120 | Lick Shane 3m | Kast | ~ | 1500 | d | |
| 8 | 2018-05-07 | | 58245.6 | 133 | Las Cumbres 2m | FLOYDS | | 1800 | | |
| 9 | 2018-05-14 | | 58252.5 | 140 | Las Cumbres 2m | FLOYDS | | 1800 | | |
| 10 | 2018-05-28 | | 58266.5 | 153 | Las Cumbres 2m | FLOYDS | | 1800 | | |
| 11 | 2018-06-03 | | 58272.6 | 159 | Las Cumbres 2m | FLOYDS | | 1800 | | |
| 12 | 2018-06-11 | | 58280.6 | 167 | Las Cumbres 2m | FLOYDS | | 1800 | | |
| 13 | 2018-06-13 | * | 58282.5 | 169 | APO 3.5m | DIS | | 600 | | |
| 14 | 2018-06-24 | | 58293.3 | 180 | Las Cumbres 2m | FLOYDS | | 1800 | | |
| 15 | 2018-06-28 | | 58297.5 | 184 | Las Cumbres 2m | FLOYDS | | 3600 | | |
| 16 | 2018-07-06 | | 58305.5 | 192 | Las Cumbres 2m | FLOYDS | | 3600 | | |

**5** — 1 MRT + 3 Data behind Figures inc. **Individual Sp (26 MRTs)** + 1 ASCII

**9,5** — **3 cat. ASCII** From author's archive + 9258 **LC**

# Workflow insights – Value added

7

VLA FF survey
**14 tables ASCII** (inc. from online archive)
+ **Images FITS**

**J/ApJ/910/105** VLA Frontier Fields survey for 3 MACS clusters (Heywood+, 2021)

Similar Catalogs | 2021ApJ...910..105H | ReadMe+ftp | Sgda /fits

| | |
|---|---|
| J/ApJ/910/105/table1 | (c)Coordinates and calibrators for each of the 3 target clusters, as well as the on-source integration times for each of the configuration/band pairings *(3 rows)* |
| J/ApJ/910/105/extend | (c)Positions and integrated flux densities of the extended radio sources in MACS J0416.1-2403 (Table 4), MACS J0717.5+3745 (Table 5) and MACS J1149.5+2223 (Table 6) *(66 rows)* |
| J/ApJ/910/105/opt | (c)3GHz-detected compact radio sources with optical counterparts in MACSJ0416.1-2403, MACSJ0717.5+3745 and MACSJ1149.5+2223 *(1296 rows)* |
| J/ApJ/910/105/rad | (c)3GHz-detected compact radio sources without optical counterpart in MACSJ0416.1-2403, MACSJ0717.5+3745 and MACSJ1149.5+2223 *(670 rows)* |
| J/ApJ/910/105/cband | (c)C-band (6GHz) compact component morphology for sources in MACSJ0416.1-2403, MACSJ0717.5+3745 and MACSJ1149.5+2223 *(262 rows)* |
| J/ApJ/910/105/table3 | (c)Magnifications and demagnified integrated flux densities, peak brightnesses, and effective noise levels for the 13 lensed compact radio sources presented in Figure 6 *(13 rows)* |

Sgda /fits

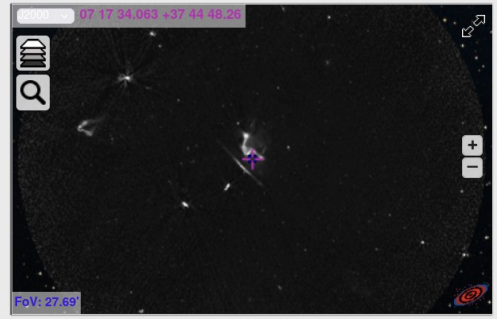
g the VizieR catalogues

series, SED) which comes from publications. This tool is
ervised by the CDS documentalist team (see the

A, SSA, ObsTAP) and can so be queried by VO
ObsCore has been choosen for the documentation.

Simple search | ObsTAP Query

Search by position : 109.3922 +37.7473 radius 1 deg
Search by spectral band : min max nm
Search by time data : start stop (MJD)
Search by catalog: J/ApJ/910/105 Identifier:
Spectrum / Time series Image
500 entries max Search Tar




Show 10 entries Filter
4 entries

| Preview | Target | Data collection | Ra | Dec | Band min (nm) | Band max (nm) | Begin time (MJD) | End time (MJD) | Facility | |
|---|---|---|---|---|---|---|---|---|---|---|
| | MACSJ0717.5+37 | J/ApJ/910/105 | 109.392 | 37.747 | 99,964,154.718 | 99,964,154.718 | 56,601.217 | | EVLA | Header |
| | MACSJ0717.5+37 | J/ApJ/910/105 | 109.392 | 37.747 | 99,964,154.718 | 99,964,154.718 | 56,601.217 | | EVLA | Header |
| | MACSJ0717.5+37 | J/ApJ/910/105 | 109.392 | 37.747 | 49,973,745.624 | 49,973,745.624 | 56,746.880 | | EVLA | Header |
| | MACSJ0717.5+37 | J/ApJ/910/105 | 109.392 | 37.747 | 49,973,745.624 | 49,973,745.624 | 56,746.880 | | EVLA | Header |

# In a nutshell...

- **Balance between quantity and quality** to keep (not always easy...)

- **Half of the annual ingestion** in VizieR is for **AAS journals** (for 1-2 documentalists), in VizieR, **currently 41% of the catalogs** (including large catalogs as Gaia, SDSS...) are AAS journals (it should increase if the ingestion rate stays the same).

- **Time spent** on one catalog is really **variable**
  – It depends of the **content of the catalog** inherent to the data :
  Many tables, many number of columns, many rows, many IDs, many filters, many associated data… will inevitably increase the processing time
  – It depends of the **quality of the catalog** :
  => MRT files are time-savers (especially combined with getapj)
  => Following the Best practice rules (Chen et al. 2022) or at least the 3 points given in « Make your data visible » flyer

- There will always be an **incompressible processing time** inherent in the **value added** to catalogs:
  - Detailed explanations for each column (provenance/content), UCD, METAtag
  - Links between tables of the same catalog, with other catalogs, SIMBAD or other databases
  - Plots & specific treatment for associated data
  - Corrections
  - ...