The VizieR Service : Data Contents & Usage

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VizieR Summary

- Data & Metadata contents
- Data access : the VizieR interfaces and the recent evolutions (Gilles Landais)
- Usage of VizieR (some key values)
- Photometric data in VizieR *(SED)*

Introduction

VizieR is the service which gives a unified access to a very large collection of astronomical catalogs & related data:

- Reference catalogs & surveys of astronomical sources in all wavelengths (e.g. SDSS, 2MASS, UCAC, WISE,...)
- Tables (>50-100 rows) from papers published in the astronomical literature from the major journals
- A large variety of astronomical data: astronomical sources, but also results of models (evolutionary, populations, synthetic spectra, ...), of statistical analyses, compilations...

… but with *homogenized descriptions* (metadata)

Quick Definitions

- A catalog = set of one or more related tables (e.g. Observations, sources, references to literature)
- Standardisation of the description

  ⇒ homogenized metadata
- Beside the tables, more data available : spectra, time series, images, cubes... at CDS or outside (via url)

Data Contents

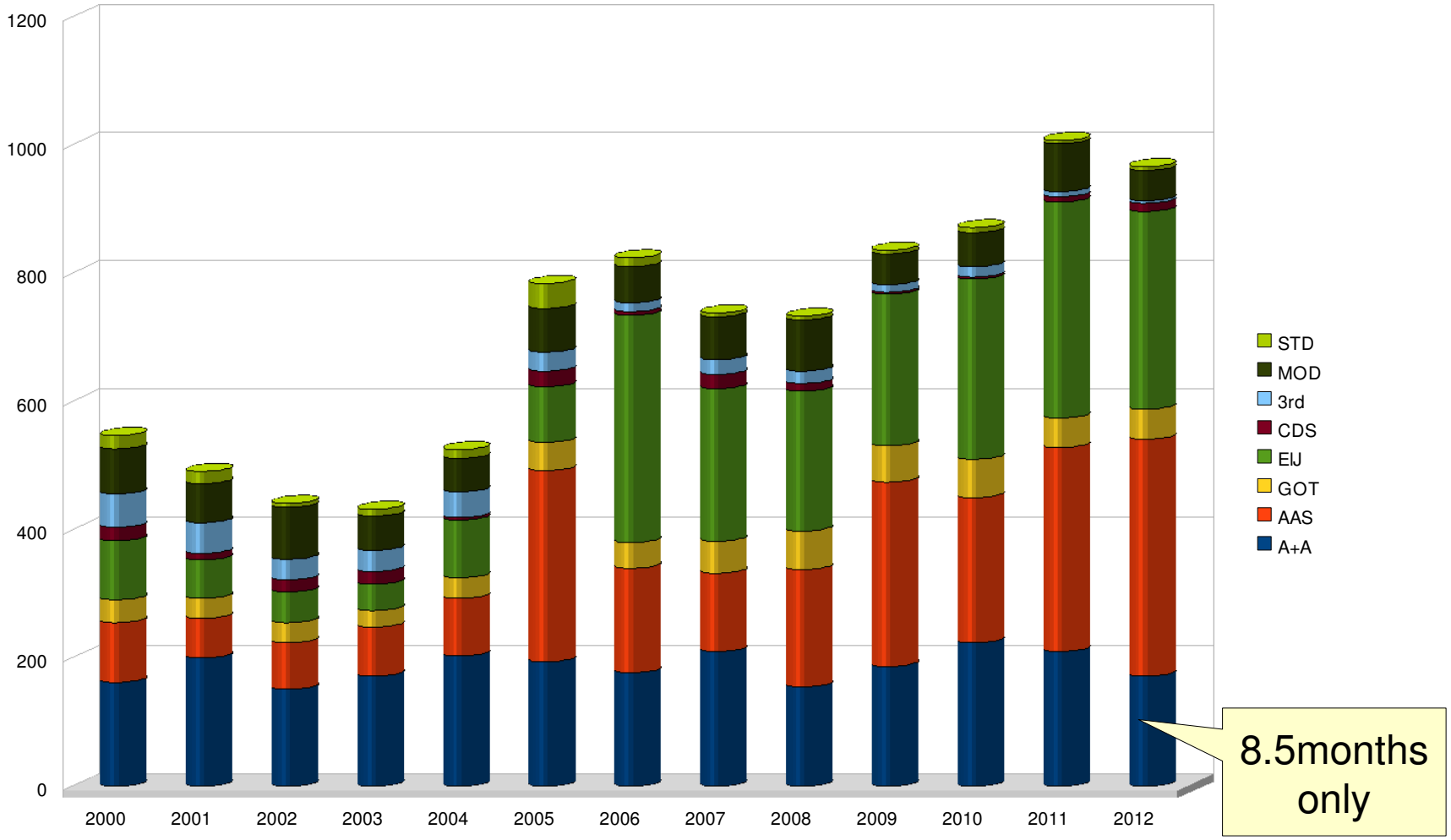
July 2012 : over 10 000 catalogues in VizieR

About 1000 new catalogues each year:

- electronic tables chosen by the A&A Editor
- electronic tables prepared for AAS *(Greg Schwarz)*
- supplied by the author *(esp. MNRAS)*
- at CDS initiatives *(user suggestions, for Simbad)*
- from third parties *(Brian Skiff, H. Andernach)*

+ corrections, errata...

Acquisition of Catalogs



Current Data Contents

	2011	2012	
Catalogs	9204	10357	+13%
tables	20245	22285	+10%
columns	283145	317202	+12%
rows with pos.	6.89G	9.25G	+34%
[obsolete]	+1.80G	+2.05G	+14%
without pos.	133M	175M	+32%

Ingesting New Catalogs

A few steps to ingest a catalog:

- Ensure correctness and quality of VizieR data
  - Comparison with similar catalogs or Simbad data
  - (also interactions from authors / users)
- Proofreading the ReadMe file (basic details like dates of observations, instruments... are there)
- Addition of metadata (saved in dedicated files)

  Unified Column Descriptors

  Links to internal or external ressources
- Preparation of additional graphs

Ingesting new catalogs (2)

What's new :

- Ingestion pipeline now works on Sybase or Postgres databases
- Possibility of « *private catalogs* » (catalogs accessible to a group of registered persons) – tested with the *Gaia Universe Model Snapshot* (GUMS)
- More visualisations of e.g. spectra or time series, eventually prepared as icons in the result pages (example of CoRoT)

Show menu

B/corot/astero CoRoT observation log Release 10 (CoRoT, 2012) **ReadMe+ftp**

Post annotation Stars observed in the asterosismology program *(125 rows)*

Full	_RAJ2000 "h:m:s"	_DEJ2000 "d:m:s"	Img	date1 s	date2 s	CoRoT	SpT	Run	RAJ2000 deg	DEJ2000 deg	size Mbyte	Star
1	06 54 24.72	-01 07 37.1		2007-01-31	2007-04-02	116	A4IV	IRa01	103.60300	-01.12698	14.455	HD 50747
2	06 55 54.24	-01 35 07.3		2007-01-31	2007-04-02	214	A3	IRa01	103.97600	-01.58537	14.455	HD 51106
3	06 51 51.84	-02 10 33.7		2007-01-31	2007-04-02	223	F2	IRa01	102.96600	-02.17604	14.455	HD 50170
4	06 50 49.92	-00 32 27.2		2007-01-31	2007-04-02	20	F2V	IRa01	102.70800	-00.54088	14.443	HD 49933
5	06 54 44.64	-02 07 23.2		2007-02-06	2007-04-02	263	F8	IRa01	103.68600	-02.12311	13.009	HD 292790
6	06 53 02.88	-01 53 01.1		2007-02-06	2007-04-02	187	A0	IRa01	103.26200	-01.88363	13.009	HD 50405
7	06 54 58.80	-02 48 12.9		2007-02-06	2007-04-02	400	G6III	IRa01	103.74500	-02.80359	13.009	HD 50890
8	06 54 50.16	-01 04 14.8		2007-02-03	2007-04-02	123	A2	IRa01	103.70900	-01.07078	13.726	HD 50844
9	06 54 54.72	-01 22 32.8		2007-02-03	2007-04-02	156	B5	IRa01	103.72800	-01.37579	13.723	HD 50846
10	06 54 36.96	-00 27 09.5		2007-02-03	2007-04-02	83	A2	IRa01	103.65400	-00.45264	13.723	HD 50773
11	19 22 21.60	-00 15 08.4		2007-05-11	2007-10-15	8774	G8III	LRc01	290.59000	-00.25234	37.224	HD 181907
12	19 20 56.40	+00 54 53.9		2007-05-11	2007-10-15	8669	A5	LRc01	290.23500	+00.91496	37.218	HD 181555
13	19 18 58.08	+00 59 08.6		2007-05-11	2007-10-15	8527	A2	LRc01	289.74200	+00.98571	37.218	HD 181072

Large catalogs

>10M rows

- Managed by dedicated software to ensure very fast answers from positional searches

⇒ New way of storing / accessing the large catalogs using the Healpix tiling (in connection with the cross-match service)

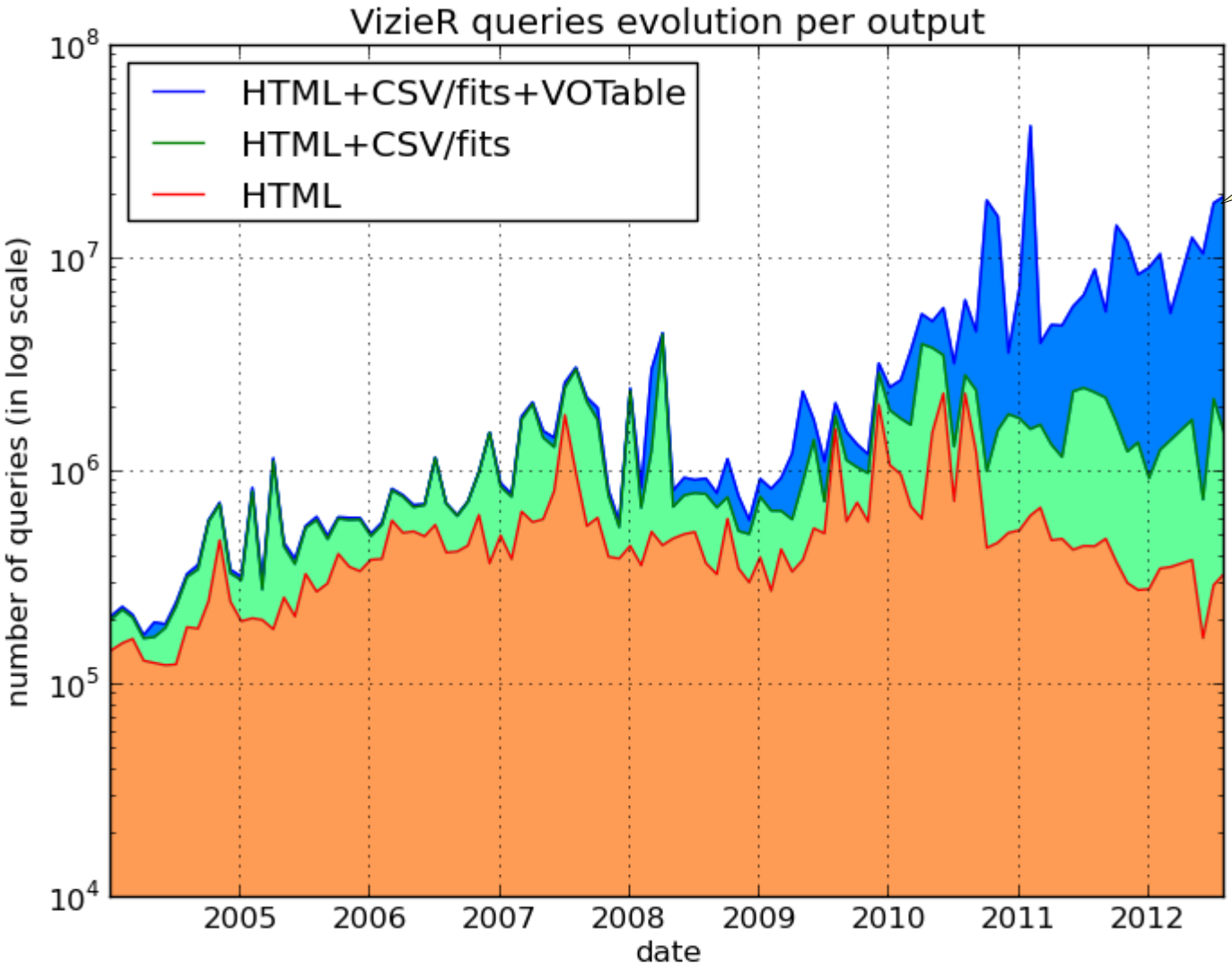
- Addition of 15 such large catalogs [28→45 : +53%] since last CDS Council including: UCAC4 (110M), WISE (563M), UKIDSS-GPS6 (604M), UKIDSS-LAS8 (69M), SDSS (794M), Gaia/GUMS (2.2G)...

Additional Data

Numerous catalogs give an access to non-tabular data:

	2011	2012	
Time series	679	1233	**+81%**
Spectra	232	354	**+52%**
Images	86	106	**+23%**
Data cubes	27	31	
Results of models	37	58	
Observed profiles	14	20	
filters	11	12	

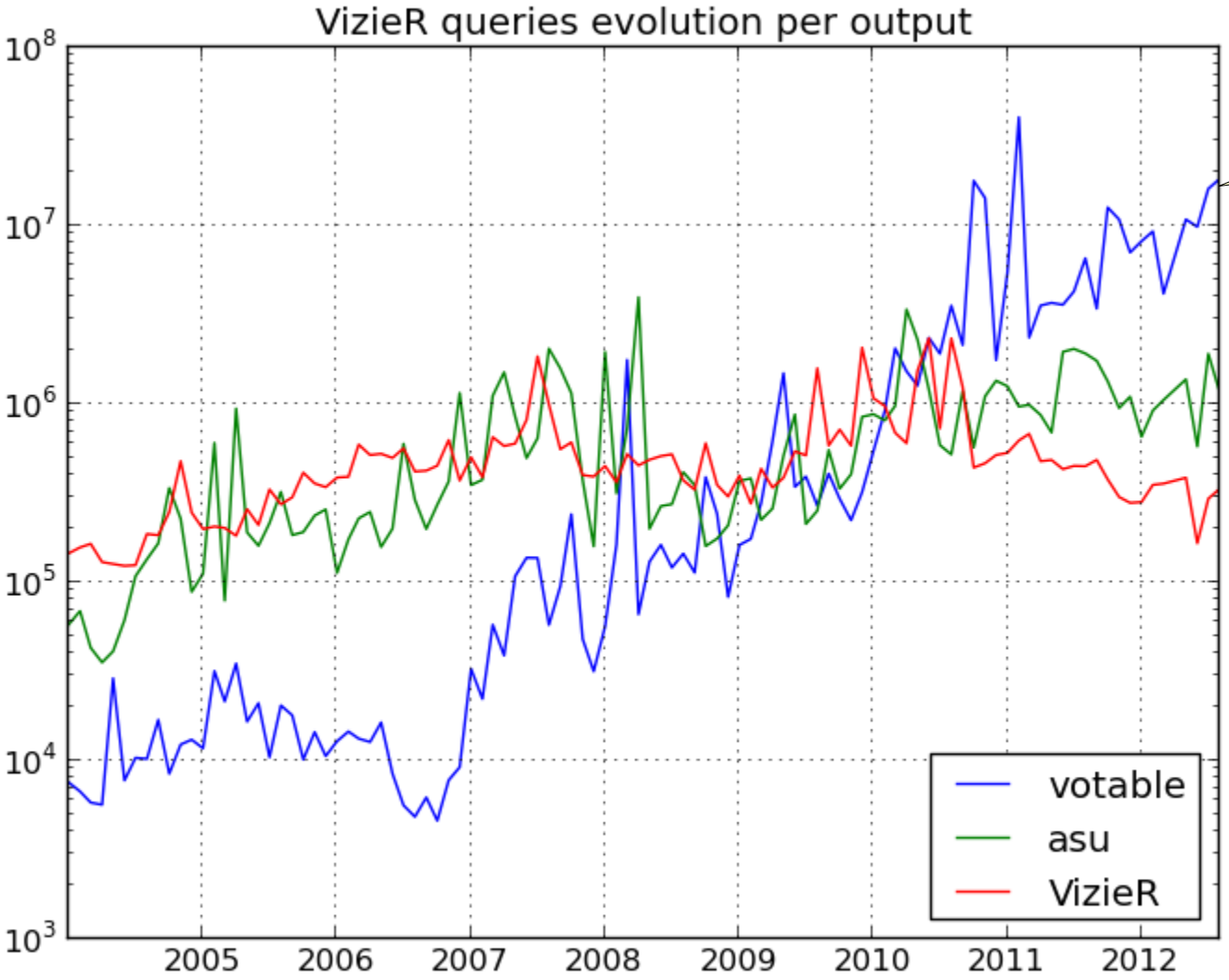
Total Usage



Log scale!

Year	Daily
2010	256k
2011	388k
2012	458k

Usage Statistics



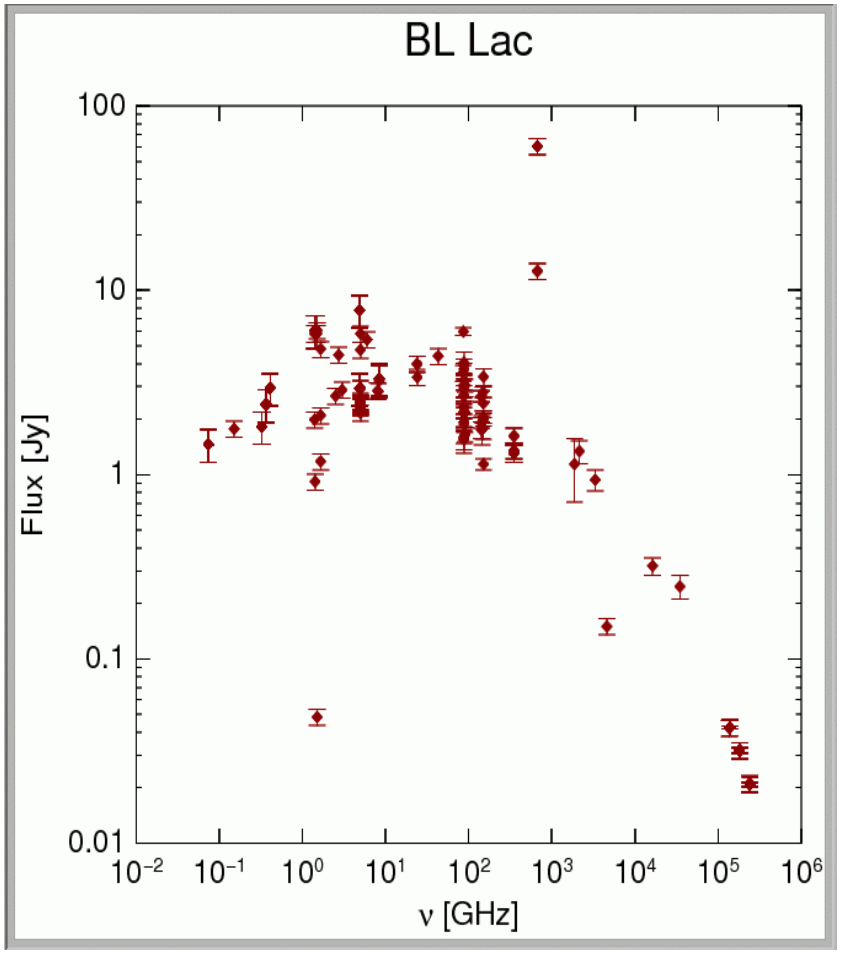
Log scale!

Year	Topcat
2010	46%
2011	68%
2012	67%

Using VizieR for SEDs

- Photometric details added to VizieR metadata:
  - Table METAfilters gathers existing filter characteristics
  - In data tables: specification of filters used, magnitude scale, etc)

⇒ magnitudes & fluxes can be converted into photometric points (search in all catalogs around a position)



SEDs : possible enhancements

- Currently is rather slow (~5s if not in cache)
- Impact on database load is quite significant
  - Not yet widely open
  - Should be improved with positional indexes for all VizieR
- More interactive SED plot (HTML5 capabilities)
- Connection with the *VO Filter Service*