



SIMBAD - Overview

- **An astronomical object database**
 - **7,000,000 objects**
 - **17,000,000 identifiers**
 - **270,000 bibliographical references**
- **Queries**
 - **By object name**
 - **By coordinates**
 - **By criteria (250 different criteria)**
 - **By references (bibcode)**
 - **Through scripts**
 - **Through a C language library**

SIMBAD – data content

Basic data

HD 3 -- Star in double system

Other object types: *i* () , * (HR, AG, AGKR, BD, CSI, FK5, GC, GCRV, UV (TD1)

ICRS coord. (ep=J2000) : 00 05 09.75853 +45 13 44.5109 (Optical)

FK5 coord. (ep=J2000 eq=2000) : 00 05 09.759 +45 13 44.51 (Optical) [2.

FK4 coord. (ep=B1950 eq=1950) : 00 02 34.99 +44 57 03.6 (Optical) [17.2

Gal coord. (ep=J1900) : 114.4451 -16.8783 (Optical) [34.13 34.1

Proper motions mas/yr [error ellipse]: -26.84 -19.81 [0.34 0.34 0] A [2007A&A...47](#)

Radial velocity / Redshift / cz : V(km/s) -18 [5] / z(-) -0.000060 [0.000017

Parallax mas: 7.22 [0.53] A [2007A&A...474..653V](#)

Spectral type: A1Vn D [2007A&A...463..671R](#)

Fluxes (6) :

U 6.840 [0.010]	C 1991A&AS...89..4150
B 6.770 [0.007]	C 1991A&AS...89..4150
V 6.710 [0.009]	C 1991A&AS...89..4150
J 6.466 [0.029]	C 2003yCat.2246....0C
H 6.481 [0.020]	C 2003yCat.2246....0C
K 6.437 [0.021]	C 2003yCat.2246....0C



References

[1994A&AS..104..121H](#)
Astron. Astrophys., Suppl. Ser., 104, 121-143 (1994)
Reliable photometric reductions to the standard UBV (or uvby) system.
HARMANEC P., HORN J. and JUZA K.

Comments & notes:
notes: Objects in IC 4665 and NGC 7092 without cross-id. not identified, not in Simbad.
flags: (abstract)

[1993A&AS..101..599C](#)
Astron. Astrophys., Suppl. Ser., 101, 599-619 (1993)
An atlas of Balmer lines (H-delta and H-gamma).
CANANZI K., AUGARDE R. and LEQUEUX J.

[1991A&AS...89..4150](#) [d , 1]
Astron. Astrophys., Suppl. Ser., 89, 415-419 (1991)
UBV photometry of stars whose positions are accurately known. VI.
OJA T.

Comments & notes:
notes: <in CDS catalogue: II/182>

Identifiers

HR 1	FK5 4009
ADS 46 A	GC 54
AG+44 7	GCRV 35
AGKR 40	GEN# +1.00000003
BD+44 4550	GSC 03246-01952
CCDM J00052+4514A	HD 3
CSI+44 4550 1	HIC 424

Measurements

[hbet1](#) (2)

	Hbet	nmes	rrrr	reference
m	2.860	3		1998A&AS..129..431H
	2.860	3		1972A&AS....5..109C

[orv](#) (2)

	RVel.	Q (Nmes)	Rem.	Or Dis	reference
m	-18	C (6		##	1953GCRV..C.....0W
	-18.5	(6			1939PDD0....1...71Y

[plx](#) (2)

	plx :m.e R	reference
	0.007:000	2007A&A...474..653V
	0.007:000	1997A&A...323L..49P

[pm](#) (5)

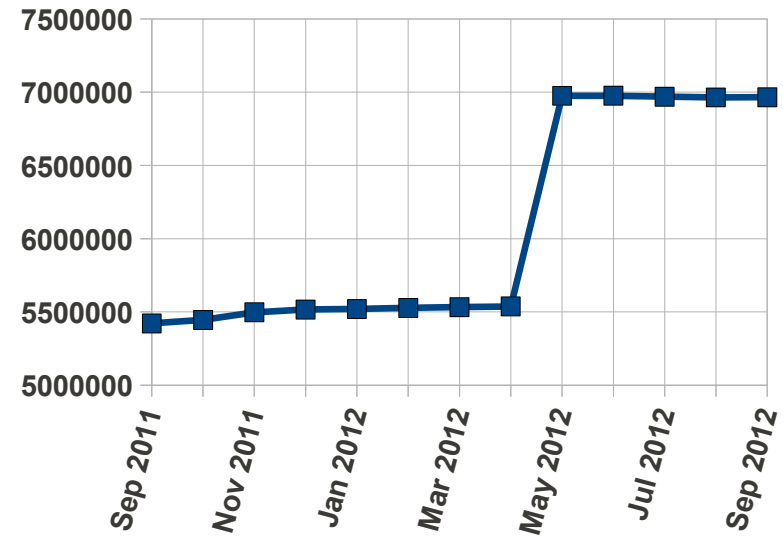
	pm-ra [m.e]	pm-de [m.e]	syst	reference
	-0.027[0.000]	-0.020[0.000]	ICRS	2007A&A...474..653V
	-0.038[0.009]	-0.008[0.008]	FK4	1971IAUCo...7..153L
	-0.030[0.002]	-0.011[0.003]	FK4	1978IAUCo...48..505C
	-0.016[]	-0.017[]	FK4	1933GCGat.C.....0B
	-0.029[]	-0.011[]	FK4	1952N30...C.....0M

Simbad – content evolution

- Object increase over the last 12 months

→ Integration of the Tycho catalogue

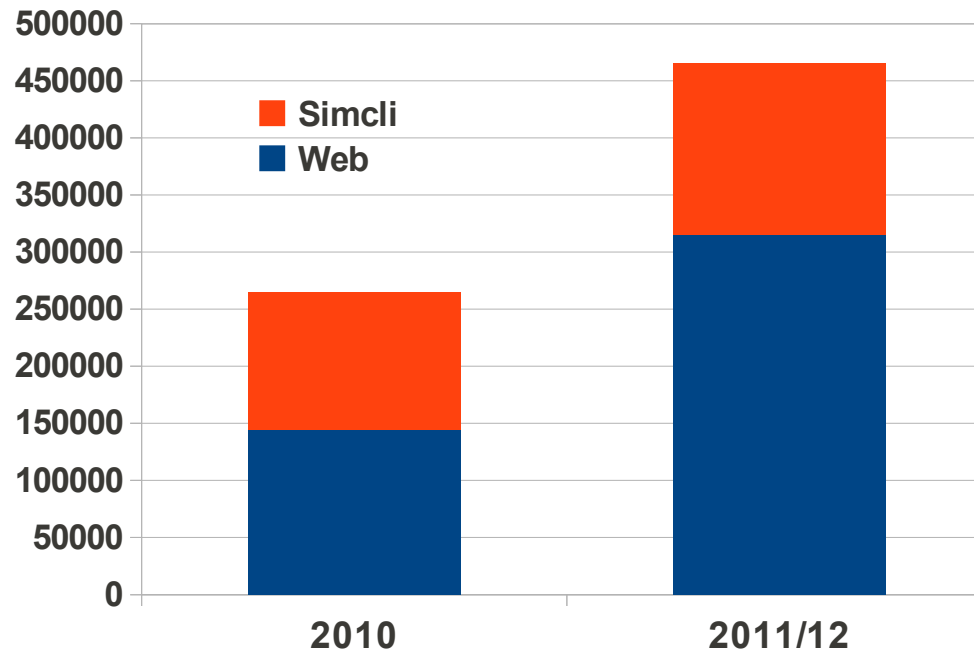
- Important addition of magnitudes (> 18.5 today) in 13 wavelengths



- Addition of about 170,000 distance measurements
- Hierarchical links implemented for 330,000 objects
→ Adds new work to the *documentalists*

SIMBAD – Usage statistics

- **Queries/day :**
 - **Web accesses : 315,000 (2010: 145,000)**
 - **Simcli (client C library) : 150,000 (2010: 120,000)**
- ➔ **465,000 queries / day**



- **Different IP addresses : 2,012,000 (on C classes: 1,084,000)**

SIMBAD – software evolution : Reference sorting

- Flags have been added to a couple (object-reference), allowing to sort a list of references
 - by date (current situation)
 - by presence of the object in the title, the abstract or the list of keywords
 - By presence of the object in a table, which means that there is likely additional data available in the paper

Sort reference summaries by : [\(when available\)](#)

Date Title|Abstract|Keyword In table

send the bibcodes to ADS

[2012A&A...537A.120Z](#) (in ..., table)
Astron. Astrophys., 537A, 120-120 (2012)
Rotational velocities of A-type stars. IV. Evolution of rotational velocities.
ZOREC J. and ROYER F.
Comments & notes:
flags: (abstract)
files: <Available at CDS: table1.dat>

SIMBAD - software evolution : TAP interface

- TAP : Table Access Protocol. An IVOA protocol
- Execute queries using ADQL language, a SQL dialect
- Allows interactive and batch processing
- Implemented in January 2012. Already about 180 queries/day

The screenshot displays the SIMBAD TAP interface. On the left, there are three panels: 'Execution options' with fields for 'Query name' (Example 5), 'Format' (VOTable), and 'Max records' (All), along with checkboxes for 'Batch mode' and 'Check before start'; 'TAP resources' with links for 'List of tables (in XML)', 'Capabilities', 'Availability', 'ASynchronous query resource', and 'Synchronous query resource'; and 'Help' with links for 'What is TAP?', 'ADQL cheat sheet', and 'Simbad tables'. The main area is titled 'ADQL QUERY TO EXECUTE (or choose an example: Search cone)'. It contains a text area with the following SQL query:

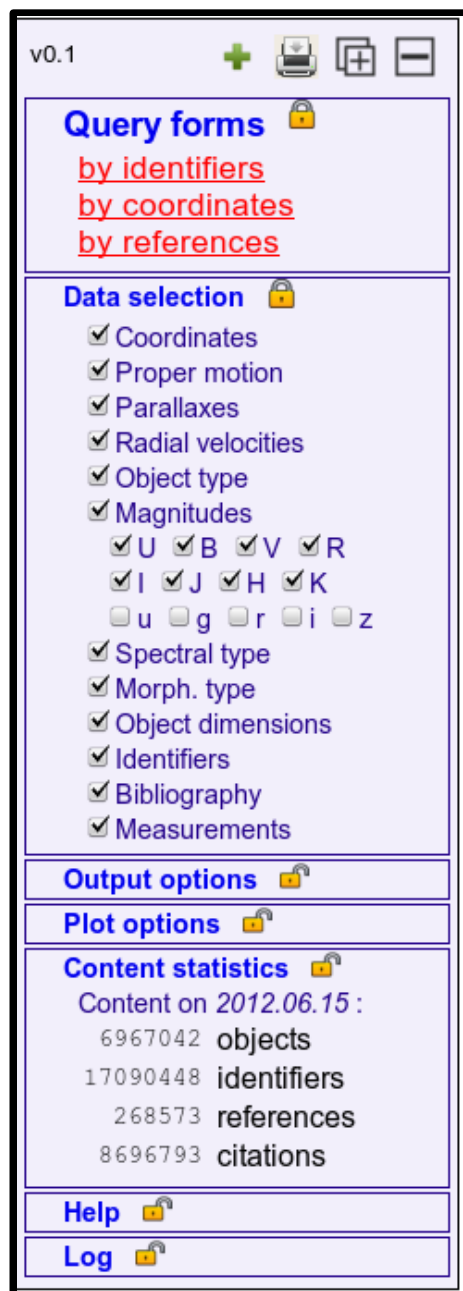
```
-- Display basic data about objects contained in a given circle and whose mag B < 9.0.
SELECT basic.OID,
       RA,
       DEC,
       main_id AS "Main identifier",
       coo_bibcode AS "BiblioReference",
       nbref AS "NbReferences",
       plx_value as "Parallax",
       rvz_radvel as "Radial velocity",
       galdim_majaxis,
       galdim_minaxis,
       galdim_angle AS "Galaxy ellipse angle"
FROM basic JOIN flux ON oidref = oid
WHERE filter = 'B'
      AND flux < 9.0
      AND CONTAINS(POINT('ICRS', RA, DEC), CIRCLE('ICRS', 10, 5, 1)) = 1
ORDER BY "Main identifier";
```

 Below the query is a 'Check!' button and the text 'Correct query!'. At the bottom of the query editor are 'Start!' and 'Clear' buttons. Below the query editor is a section titled 'LIST OF YOUR TAP QUERIES'. It features a toolbar with 'Show 10 entries', 'Refresh', 'Properties', 'Abort', 'Destroy', and 'Results' buttons, and a search field. The table below has columns for ID, Name, Start, Duration, Phase, and Destruction. The data rows are:

ID	Name	Start	Duration	Phase	Destruction
1347827725791A	Example 5	22:35:25	16s 197ms	EXECUTING	22:35:25 on 17/09/2012
1347827641599A	Example 3	22:34:01	75ms	COMPLETED	22:34:01 on 17/09/2012
1347827622106A	Example 2	22:33:42	11s 151ms	COMPLETED	22:33:42 on 17/09/2012
1347827610051A	Example 1	22:33:30	90ms	COMPLETED	22:33:30 on 17/09/2012

 At the bottom, it says 'Showing 1 to 4 of 4 entries' and has navigation buttons for 'First', 'Previous', '1', 'Next', and 'Last'.

SIMBAD – software evolution : Web interface



- A major evolution of the web interface is ongoing
 - Moving many functionalities from the server side to the user/browser side
 - Using HTML5/Javascript/JSON/CSS technologies
 - Easier to use and faster response time

SIMBAD – new Web Interface

- New features like local statistics, reference filtering

References (3468)

3468 references from to

163 references from 1987 to 2012 containing gamma-ray

[1987ApJ...318L..51C](#)
Calculated gamma-ray line fluxes from the type II supernova 1987A.
CHAN K.W. and LINGENFELTER R.E.
Astrophys. J., 318, L51L0 (1987)

[1987ApJ...320L..19G](#)
Prospects for observations of nucleosynthetic gamma-ray lines and continuum from SN 1987A.
GEHRELS N., MacCALLUM C.J. and LEVENTHAL M.
Astrophys. J., 320, L19L0 (1987)

[1988A&A...193L..11R](#)
VHE gamma-ray observations of SN 1987A during November 1987.
RAUBENHEIMER B.C., DE JAGER O.C., NEL H.I., NORTH A.R. and VAN URK G.
Astron. Astrophys., 193, L11L0 (1988)

[1988A&A...197L...7K](#)
Hard X-rays and gamma-rays from SN 1987A and mixing of the supernova ejecta.
KUMAGAI S., ITOH M., SHIGEYAMA T., NOMOTO K. and NISHIMURA J.
Astron. Astrophys., 197, L7L0 (1988)

- number of references by year
- number of references by author
- number of references by journal

of references / year

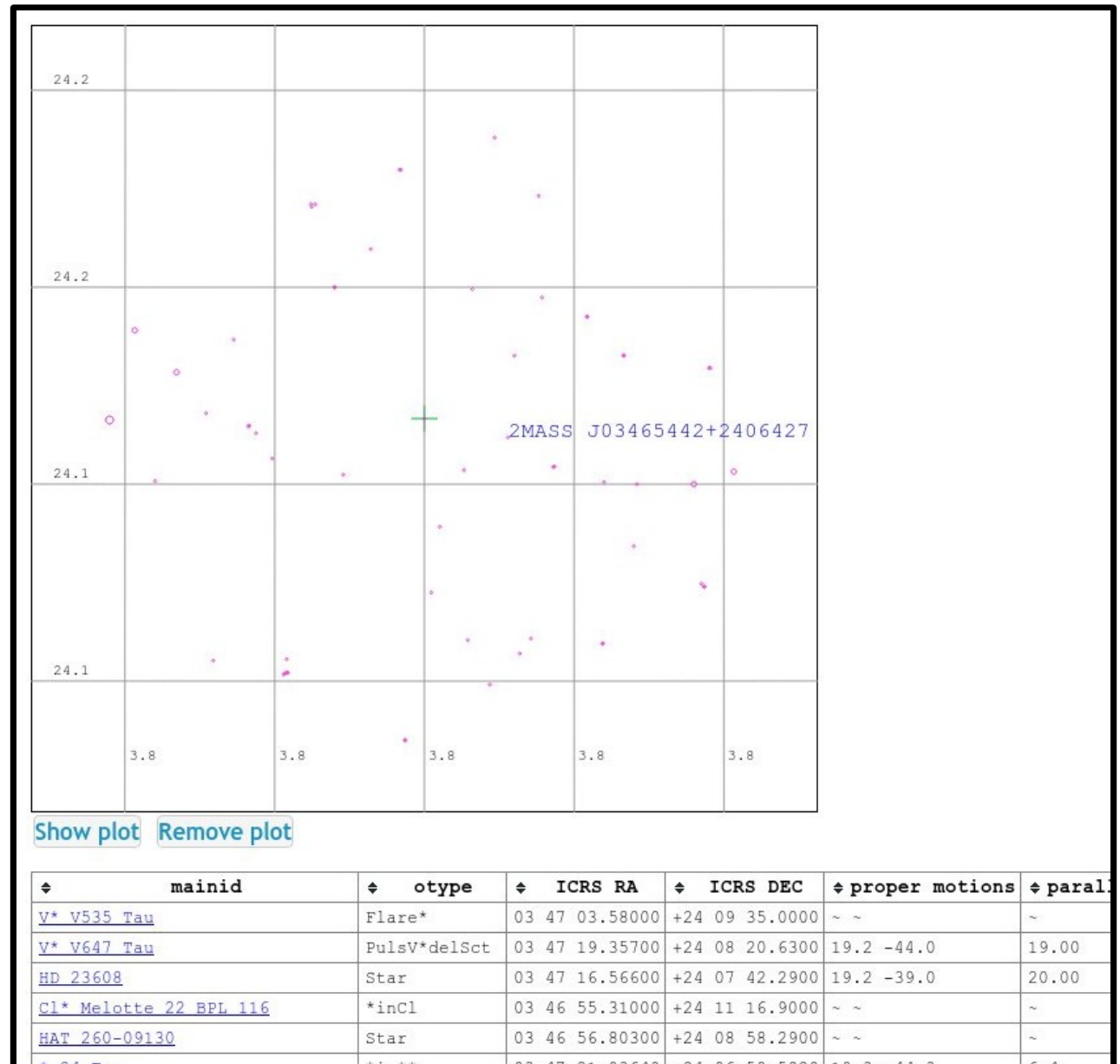
Year	Number of references
1987	100
1988	350
1989	280
1990	180
1991	150
1992	140
1993	150
1994	150
1995	130
1996	100
1997	120
1998	130
1999	110
2000	120
2001	110
2002	100
2003	110
2004	120
2005	130
2006	110
2007	120
2008	110
2009	100
2010	110
2011	100
2012	50

of references by first author

Author	Number of references
CHEVALIER R.A.	35
CHUGAI N.N.	25
BURROWS A.	15

SIMBAD – new Web interface

- New interactive chart with very fast creation time



SIMBAD – next steps

- **Launching the new web interface in 2013**
- **Rewriting and reorganizing the online help and user's guide**
- **Improving the links between SIMBAD and VizieR**
- **...**