

Observing Facilities in the VO

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Why

- **ObsTAP / EPN-TAP** have “facility” / “instrument_host_name” keywords respectively. For efficient data mining, a standardization of such nomenclature is needed.
- *The same is true for target names: EPN-TAP is requiring that IAU names are used for bodies in the solar system.*
- There is no official standard for “observation facilities” names. We propose to build such list.
- The goal is to have that list endorsed by a long-lived international alliance, to ensure its sustainability (such as IAU, IVOA, IPDA...).

What

- Facilities are the spacecraft/telescopes:

Grouping of Facilities	Facilities
Institute/Observatory	Telescope
Space Mission	Spacecraft
Institute/University	Experiment Facility
Institute/Project	Field Analogue
Institute/University	Numerical Experiment/Model

- We focus here on “Telescopes” and “Spacecraft” types of facilities
- Grouping of facilities may not always be present, or may not represent a group of colocated facilities (e.g. the LOFAR international stations all over Europe, or the VLA network)

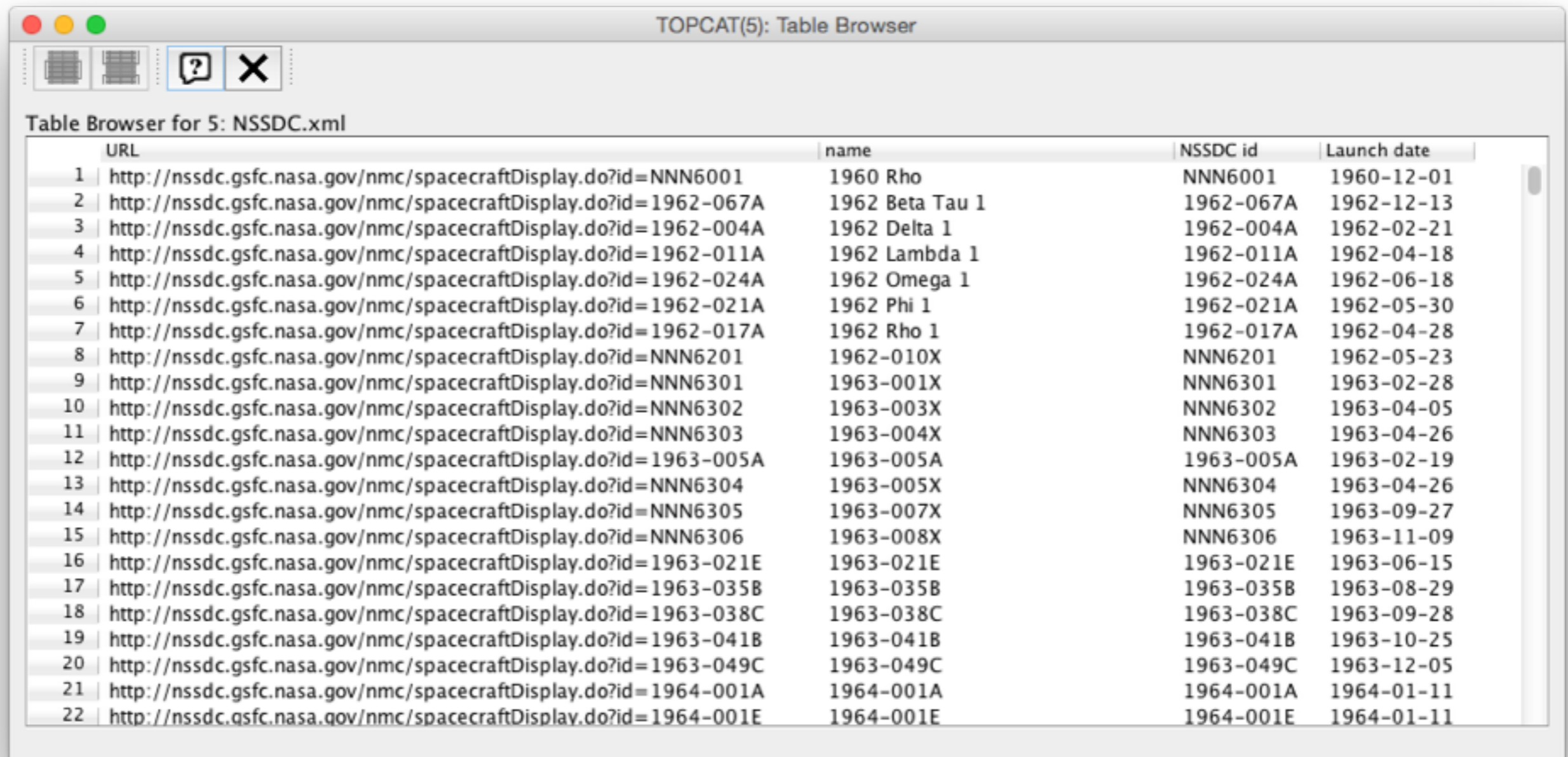
Spacecraft

- Several spacecraft name lists available:
 - NASA/NAIF (Navigation and Ancillary Information Facility)
 - NASA/NSSDC (National Space Science Data Center)
 - NASA/PDS (Planetary Data System)
 - SPASE/SMWG (Solar and Magnetospheric Working Group)
 - SANA (Space Assigned Numbers Authority)
- Not the same names (upper/lower case, but not only) nor same IDs, although most are compiled by NASA entities.
- Spacecraft may also be part of a Mission.
E.g.: *The Cassini-Orbiter and Huygens-Probe are two spacecraft of the Cassini-Huygens Mission.*

Spacecraft lists

NSSDC

7203 items



TOPCAT(5): Table Browser

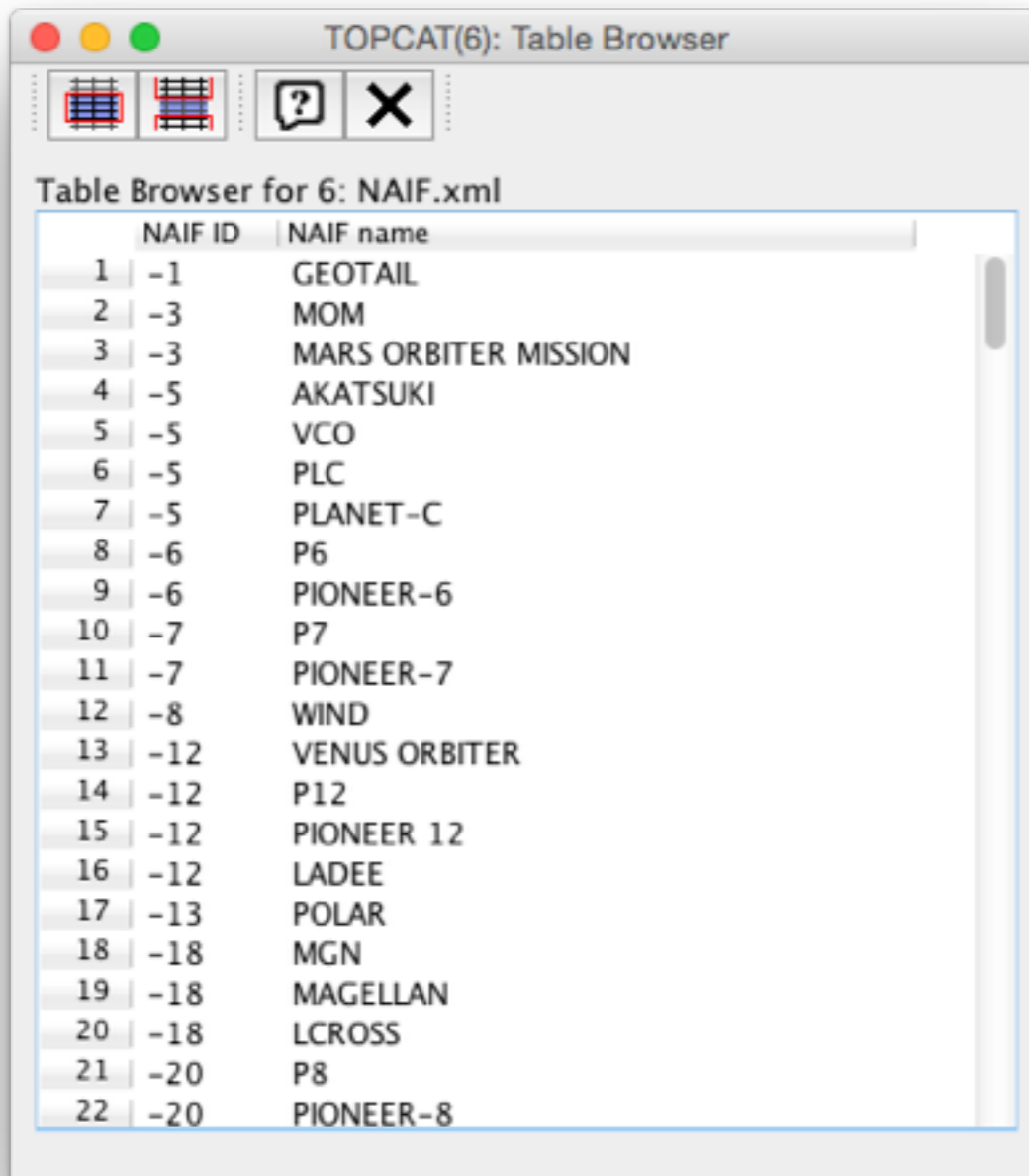
Table Browser for 5: NSSDC.xml

	URL	name	NSSDC id	Launch date
1	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6001	1960 Rho	NNN6001	1960-12-01
2	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1962-067A	1962 Beta Tau 1	1962-067A	1962-12-13
3	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1962-004A	1962 Delta 1	1962-004A	1962-02-21
4	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1962-011A	1962 Lambda 1	1962-011A	1962-04-18
5	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1962-024A	1962 Omega 1	1962-024A	1962-06-18
6	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1962-021A	1962 Phi 1	1962-021A	1962-05-30
7	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1962-017A	1962 Rho 1	1962-017A	1962-04-28
8	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6201	1962-010X	NNN6201	1962-05-23
9	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6301	1963-001X	NNN6301	1963-02-28
10	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6302	1963-003X	NNN6302	1963-04-05
11	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6303	1963-004X	NNN6303	1963-04-26
12	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1963-005A	1963-005A	1963-005A	1963-02-19
13	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6304	1963-005X	NNN6304	1963-04-26
14	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6305	1963-007X	NNN6305	1963-09-27
15	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=NNN6306	1963-008X	NNN6306	1963-11-09
16	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1963-021E	1963-021E	1963-021E	1963-06-15
17	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1963-035B	1963-035B	1963-035B	1963-08-29
18	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1963-038C	1963-038C	1963-038C	1963-09-28
19	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1963-041B	1963-041B	1963-041B	1963-10-25
20	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1963-049C	1963-049C	1963-049C	1963-12-05
21	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1964-001A	1964-001A	1964-001A	1964-01-11
22	http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=1964-001E	1964-001E	1964-001E	1964-01-11

Spacecraft lists

NASA/NAIF

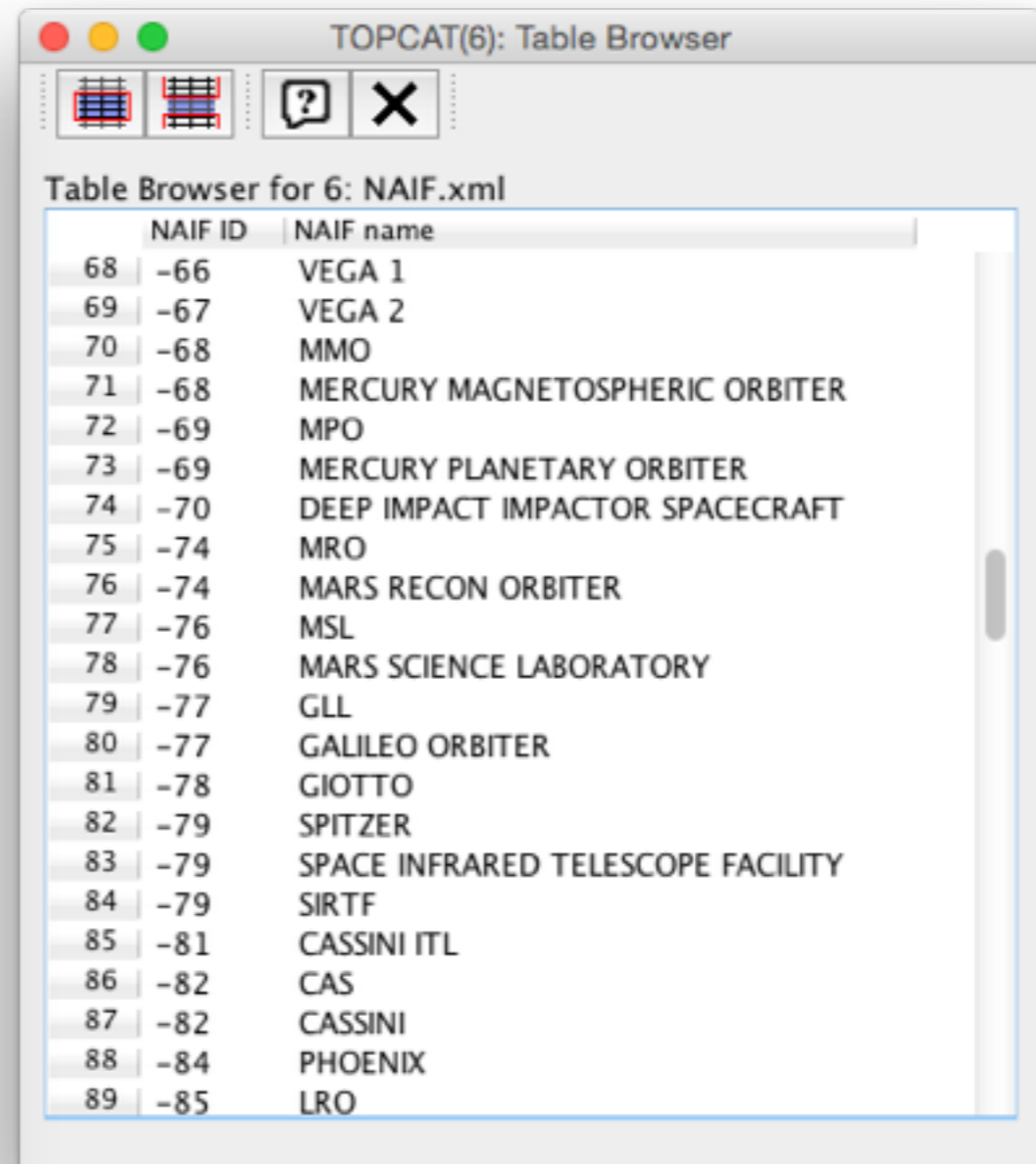
196 items



TOPCAT(6): Table Browser

Table Browser for 6: NAIF.xml

	NAIF ID	NAIF name
1	-1	GEOTAIL
2	-3	MOM
3	-3	MARS ORBITER MISSION
4	-5	AKATSUKI
5	-5	VCO
6	-5	PLC
7	-5	PLANET-C
8	-6	P6
9	-6	PIONEER-6
10	-7	P7
11	-7	PIONEER-7
12	-8	WIND
13	-12	VENUS ORBITER
14	-12	P12
15	-12	PIONEER 12
16	-12	LADEE
17	-13	POLAR
18	-18	MGN
19	-18	MAGELLAN
20	-18	LCROSS
21	-20	P8
22	-20	PIONEER-8



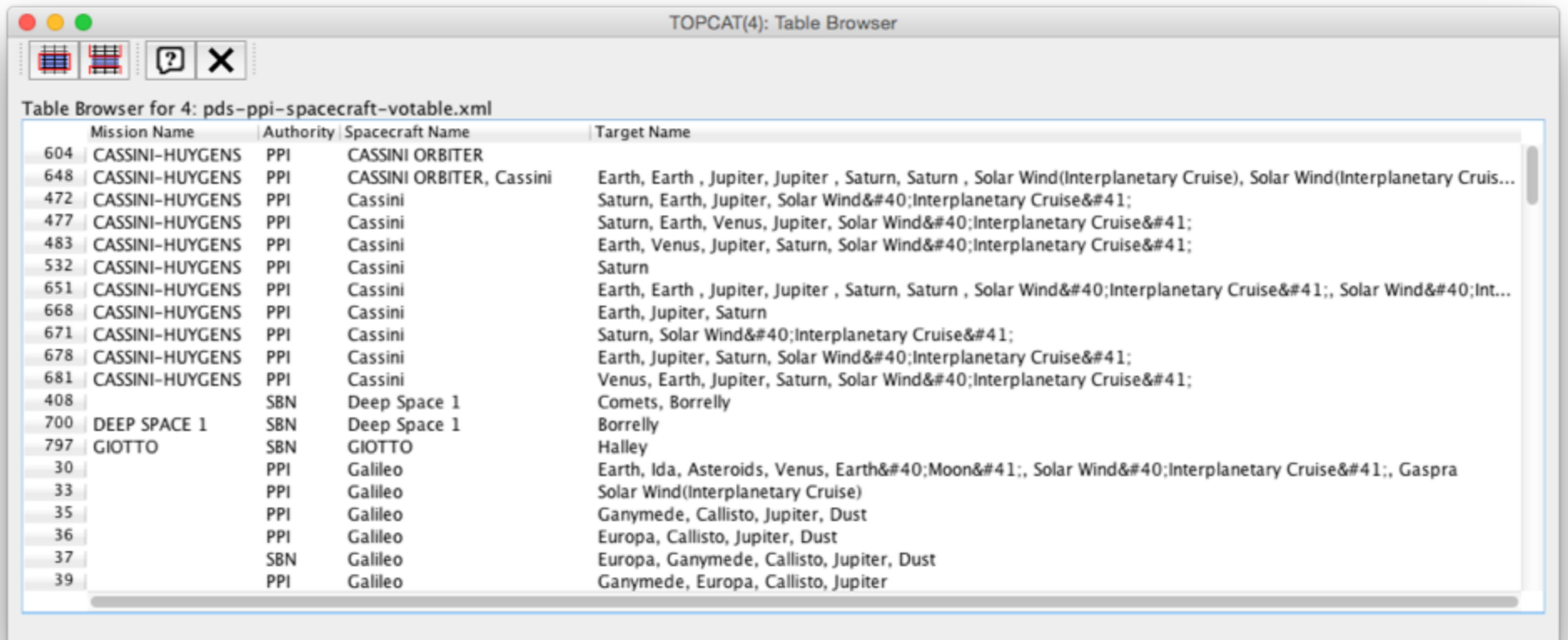
TOPCAT(6): Table Browser

Table Browser for 6: NAIF.xml

	NAIF ID	NAIF name
68	-66	VEGA 1
69	-67	VEGA 2
70	-68	MMO
71	-68	MERCURY MAGNETOSPHERIC ORBITER
72	-69	MPO
73	-69	MERCURY PLANETARY ORBITER
74	-70	DEEP IMPACT IMPACTOR SPACECRAFT
75	-74	MRO
76	-74	MARS RECON ORBITER
77	-76	MSL
78	-76	MARS SCIENCE LABORATORY
79	-77	GLL
80	-77	GALILEO ORBITER
81	-78	GIOTTO
82	-79	SPITZER
83	-79	SPACE INFRARED TELESCOPE FACILITY
84	-79	SIRTF
85	-81	CASSINI ITL
86	-82	CAS
87	-82	CASSINI
88	-84	PHOENIX
89	-85	LRO

Spacecraft lists

NASA/PDS/PPI



TOPCAT(4): Table Browser

Table Browser for 4: pds-ppi-spacecraft-votable.xml

	Mission Name	Authority	Spacecraft Name	Target Name
604	CASSINI-HUYGENS	PPI	CASSINI ORBITER	
648	CASSINI-HUYGENS	PPI	CASSINI ORBITER, Cassini	Earth, Earth , Jupiter, Jupiter , Saturn, Saturn , Solar Wind(Interplanetary Cruise), Solar Wind(Interplanetary Cruis...
472	CASSINI-HUYGENS	PPI	Cassini	Saturn, Earth, Jupiter, Solar Wind(Interplanetary Cruise)
477	CASSINI-HUYGENS	PPI	Cassini	Saturn, Earth, Venus, Jupiter, Solar Wind(Interplanetary Cruise)
483	CASSINI-HUYGENS	PPI	Cassini	Earth, Venus, Jupiter, Saturn, Solar Wind(Interplanetary Cruise)
532	CASSINI-HUYGENS	PPI	Cassini	Saturn
651	CASSINI-HUYGENS	PPI	Cassini	Earth, Earth , Jupiter, Jupiter , Saturn, Saturn , Solar Wind(Interplanetary Cruise), Solar Wind(Int...
668	CASSINI-HUYGENS	PPI	Cassini	Earth, Jupiter, Saturn
671	CASSINI-HUYGENS	PPI	Cassini	Saturn, Solar Wind(Interplanetary Cruise)
678	CASSINI-HUYGENS	PPI	Cassini	Earth, Jupiter, Saturn, Solar Wind(Interplanetary Cruise)
681	CASSINI-HUYGENS	PPI	Cassini	Venus, Earth, Jupiter, Saturn, Solar Wind(Interplanetary Cruise)
408		SBN	Deep Space 1	Comets, Borrelly
700	DEEP SPACE 1	SBN	Deep Space 1	Borrelly
797	GIOTTO	SBN	GIOTTO	Halley
30		PPI	Galileo	Earth, Ida, Asteroids, Venus, Earth(Moon), Solar Wind(Interplanetary Cruise), Gaspra
33		PPI	Galileo	Solar Wind(Interplanetary Cruise)
35		PPI	Galileo	Ganymede, Callisto, Jupiter, Dust
36		PPI	Galileo	Europa, Callisto, Jupiter, Dust
37		SBN	Galileo	Europa, Ganymede, Callisto, Jupiter, Dust
39		PPI	Galileo	Ganymede, Europa, Callisto, Jupiter

*compiled after XML extraction of NASA/PDS4
registry with XLS Transform to VOTABLE formatting*

Spacecraft lists SPASE/SMWG

<http://www.spase-group.org/smwg/explorer/>

The screenshot displays the SPASE/SMWG Explorer interface. The top banner features the SPASE logo on the left and the text "SPACE PHYSICS ARCHIVE SEARCH AND EXTRACT" on the right. Below the banner is a navigation pane on the left with a tree view of spacecraft categories: SMWG, Document, Instrument, and Observatory. Under Observatory, ACE is selected. The main content area shows the "Overview" tab for ACE. The page title is "Observatory: ACE" and the version is "SPASE version 2.2.0". The main content includes fields for Observatory ID, Name, Alternate name, Description, Additional information, Contact, Release date, and Prior ID.

Resource Overview ACE

SPASE version 2.2.0

Observatory: ACE

Observatory ID
spase://SMWG/Observatory/ACE [XML](#)

Name
ACE

Alternate name
Advanced Composition Explorer
1997-045A
Explorer 71

Description
The objective of the Advanced Composition Explorer (ACE) is to collect observations of particles of solar, interplanetary, interstellar, and galactic origins, spanning the energy range from that of KeV solar wind ions to galactic cosmic ray nuclei up to 600 MeV/nucleon. Definitive studies will be made of the abundances of essentially all isotopes from H to Zn (Z = 1-30), with exploratory isotope studies extending to Zr (Z = 40). The ACE payload includes six high resolution spectrometers, each designed to provide the optimum charge, mass, or charge-state resolution in its particular energy range. Each spectrometer has a geometry factor optimized for the expected flux levels, so as to provide a collecting power greater by a factor of 10-1000 times that of previous or planned experiments. The payload also includes three additional instruments of standard design to monitor energetic electrons, H and He ions, and a magnetometer. The ACE spacecraft is based on the design of the Charge Composition Explorer, built at JHU/APL for the Active Magnetospheric Particle Tracer Explorer (AMPTE) program. The spacecraft spin axis is pointed towards the Sun to within +/- 20 degrees, and it occupies a halo orbit about the L1 Earth-Sun libration point. Powered by solar cells, the spacecraft has a design life of at least five years, and it returns data in daily tape recorder dumps, received through NASA JPL's Deep Space Network and initially processed at NASA-GSFC. The average data telemetry rate is 6.7 Kbs.

Additional information

[ACE Home Page](#)
ACE mission home page at Caltech with data download

[NSSDC's Master Catalog](#)
Information about the ACE mission

Contact

Role	Person
1. Principal investigator	spase://SMWG/Person/Edward.C.Stone.Jr XML

Release date
2010-08-05 18:19:16

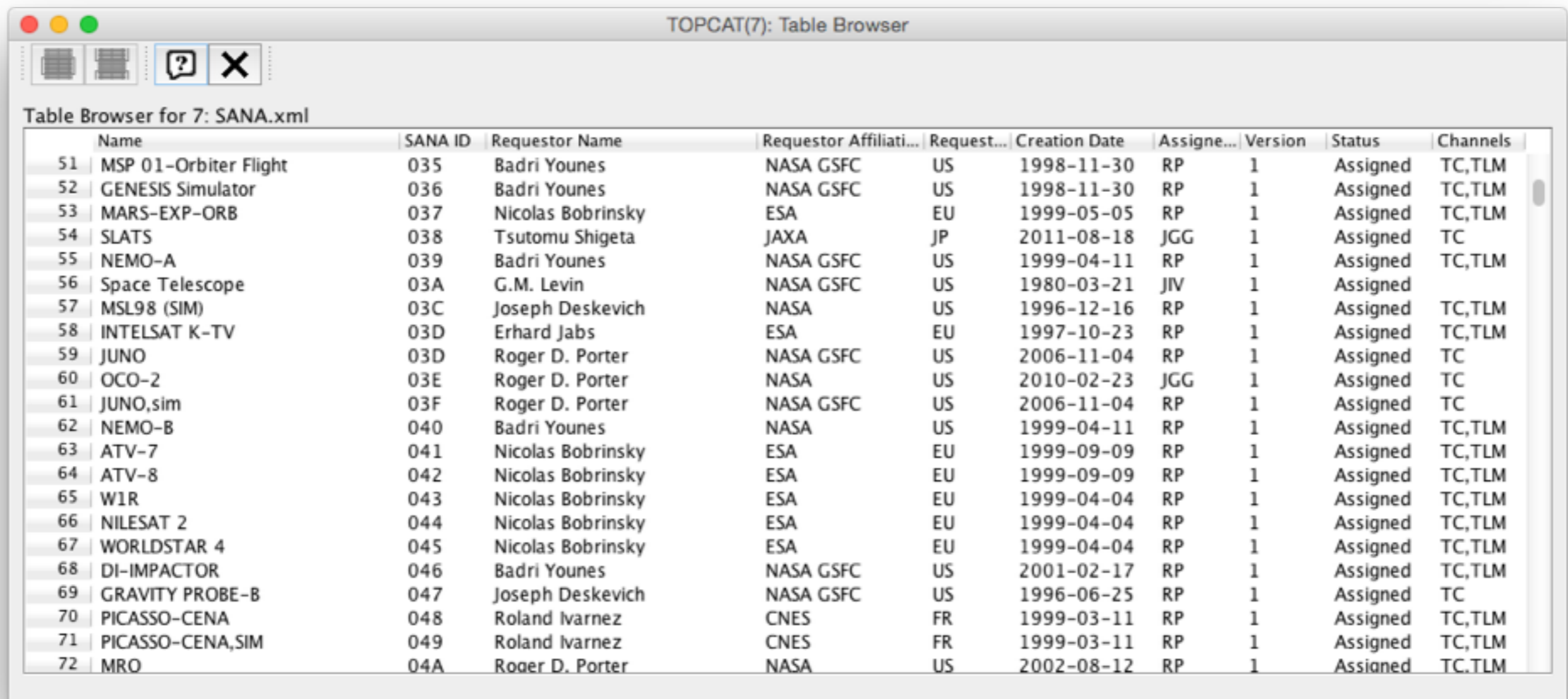
Prior ID
<spase://vspo/observatory/2>

Location

Spacecraft lists

SANA

1053 items



TOPCAT(7): Table Browser

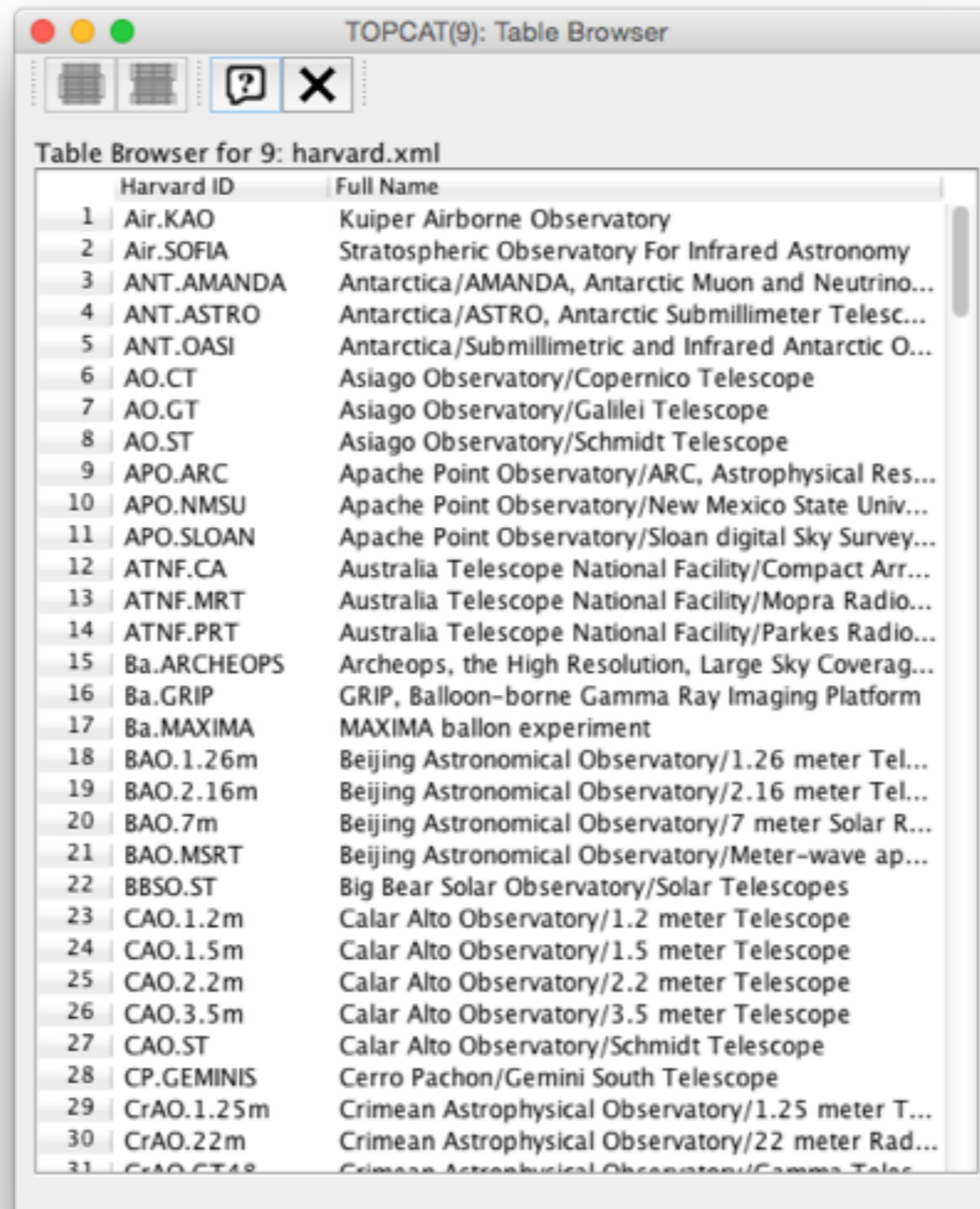
Table Browser for 7: SANA.xml

	Name	SANA ID	Requestor Name	Requestor Affiliati...	Request...	Creation Date	Assigne...	Version	Status	Channels
51	MSP 01-Orbiter Flight	035	Badri Younes	NASA GSFC	US	1998-11-30	RP	1	Assigned	TC,TLM
52	GENESIS Simulator	036	Badri Younes	NASA GSFC	US	1998-11-30	RP	1	Assigned	TC,TLM
53	MARS-EXP-ORB	037	Nicolas Bobrinsky	ESA	EU	1999-05-05	RP	1	Assigned	TC,TLM
54	SLATS	038	Tsutomu Shigeta	JAXA	JP	2011-08-18	JGG	1	Assigned	TC
55	NEMO-A	039	Badri Younes	NASA GSFC	US	1999-04-11	RP	1	Assigned	TC,TLM
56	Space Telescope	03A	G.M. Levin	NASA GSFC	US	1980-03-21	JIV	1	Assigned	
57	MSL98 (SIM)	03C	Joseph Deskevich	NASA	US	1996-12-16	RP	1	Assigned	TC,TLM
58	INTELSAT K-TV	03D	Erhard Jabs	ESA	EU	1997-10-23	RP	1	Assigned	TC,TLM
59	JUNO	03D	Roger D. Porter	NASA GSFC	US	2006-11-04	RP	1	Assigned	TC
60	OCO-2	03E	Roger D. Porter	NASA	US	2010-02-23	JGG	1	Assigned	TC
61	JUNO,sim	03F	Roger D. Porter	NASA GSFC	US	2006-11-04	RP	1	Assigned	TC
62	NEMO-B	040	Badri Younes	NASA	US	1999-04-11	RP	1	Assigned	TC,TLM
63	ATV-7	041	Nicolas Bobrinsky	ESA	EU	1999-09-09	RP	1	Assigned	TC,TLM
64	ATV-8	042	Nicolas Bobrinsky	ESA	EU	1999-09-09	RP	1	Assigned	TC,TLM
65	W1R	043	Nicolas Bobrinsky	ESA	EU	1999-04-04	RP	1	Assigned	TC,TLM
66	NILESAT 2	044	Nicolas Bobrinsky	ESA	EU	1999-04-04	RP	1	Assigned	TC,TLM
67	WORLDSTAR 4	045	Nicolas Bobrinsky	ESA	EU	1999-04-04	RP	1	Assigned	TC,TLM
68	DI-IMPACTOR	046	Badri Younes	NASA GSFC	US	2001-02-17	RP	1	Assigned	TC,TLM
69	GRAVITY PROBE-B	047	Joseph Deskevich	NASA GSFC	US	1996-06-25	RP	1	Assigned	TC
70	PICASSO-CENA	048	Roland Ivarnez	CNES	FR	1999-03-11	RP	1	Assigned	TC,TLM
71	PICASSO-CENA,SIM	049	Roland Ivarnez	CNES	FR	1999-03-11	RP	1	Assigned	TC,TLM
72	MRO	04A	Roger D. Porter	NASA	US	2002-08-12	RP	1	Assigned	TC,TLM

Telescope lists

Harvard/ADS

257 items



TOPCAT(9): Table Browser

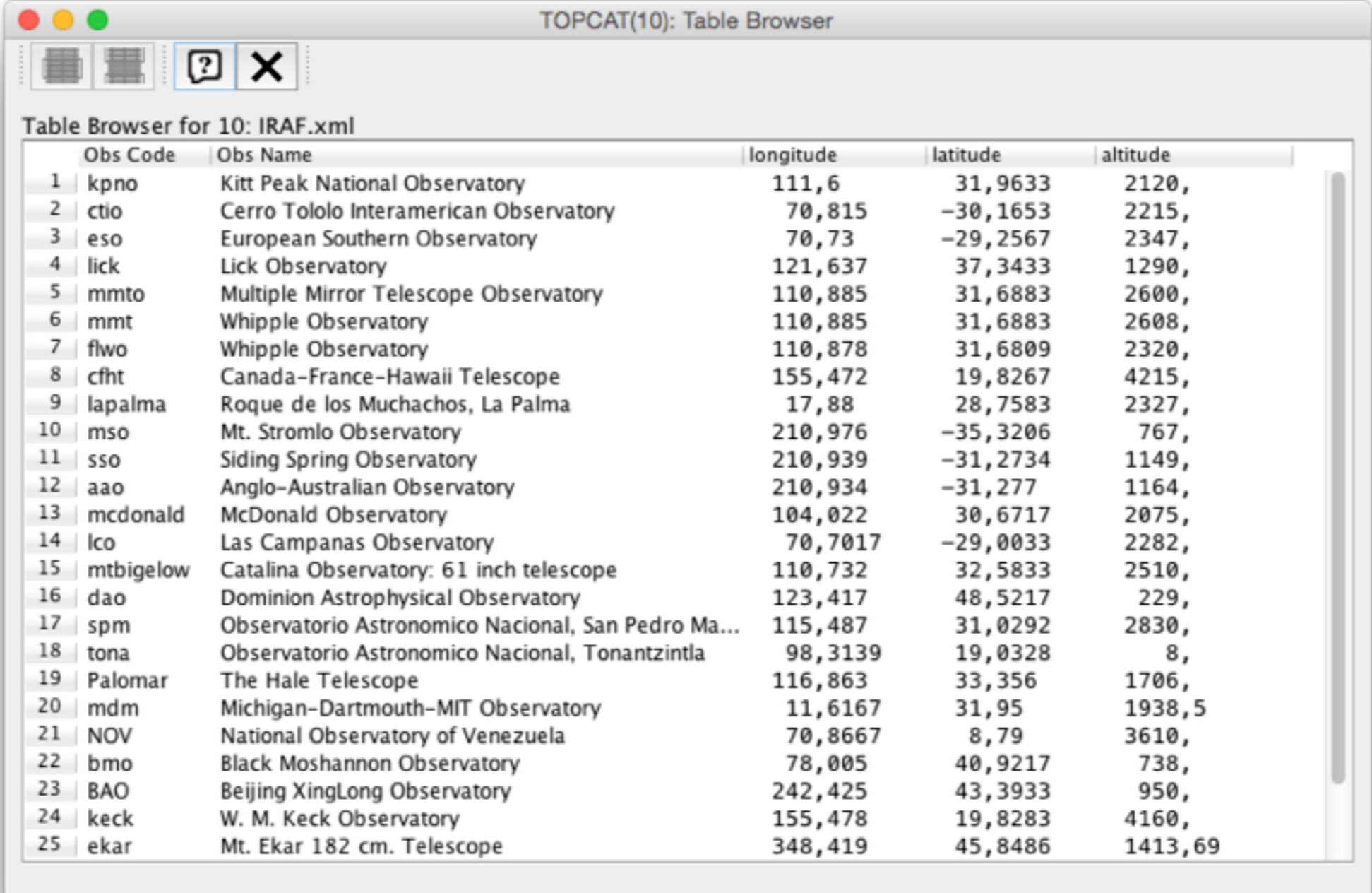
Table Browser for 9: harvard.xml

	Harvard ID	Full Name
1	Air.KAO	Kuiper Airborne Observatory
2	Air.SOFIA	Stratospheric Observatory For Infrared Astronomy
3	ANT.AMANDA	Antarctica/AMANDA, Antarctic Muon and Neutrino...
4	ANT.ASTRO	Antarctica/ASTRO, Antarctic Submillimeter Telesc...
5	ANT.OASI	Antarctica/Submillimetric and Infrared Antarctic O...
6	AO.CT	Asiago Observatory/Copernico Telescope
7	AO.GT	Asiago Observatory/Galilei Telescope
8	AO.ST	Asiago Observatory/Schmidt Telescope
9	APO.ARC	Apache Point Observatory/ARC, Astrophysical Res...
10	APO.NMSU	Apache Point Observatory/New Mexico State Univ...
11	APO.SLOAN	Apache Point Observatory/Sloan digital Sky Survey...
12	ATNF.CA	Australia Telescope National Facility/Compact Arr...
13	ATNF.MRT	Australia Telescope National Facility/Mopra Radio...
14	ATNF.PRT	Australia Telescope National Facility/Parkes Radio...
15	Ba.ARCHOPS	Archeops, the High Resolution, Large Sky Coverag...
16	Ba.GRIP	GRIP, Balloon-borne Gamma Ray Imaging Platform
17	Ba.MAXIMA	MAXIMA balloon experiment
18	BAO.1.26m	Beijing Astronomical Observatory/1.26 meter Tel...
19	BAO.2.16m	Beijing Astronomical Observatory/2.16 meter Tel...
20	BAO.7m	Beijing Astronomical Observatory/7 meter Solar R...
21	BAO.MSRT	Beijing Astronomical Observatory/Meter-wave ap...
22	BBSO.ST	Big Bear Solar Observatory/Solar Telescopes
23	CAO.1.2m	Calar Alto Observatory/1.2 meter Telescope
24	CAO.1.5m	Calar Alto Observatory/1.5 meter Telescope
25	CAO.2.2m	Calar Alto Observatory/2.2 meter Telescope
26	CAO.3.5m	Calar Alto Observatory/3.5 meter Telescope
27	CAO.ST	Calar Alto Observatory/Schmidt Telescope
28	CP.GEMINIS	Cerro Pachon/Gemini South Telescope
29	CrAO.1.25m	Crimean Astrophysical Observatory/1.25 meter T...
30	CrAO.22m	Crimean Astrophysical Observatory/22 meter Rad...
31	CrAO.GT48	Crimean Astrophysical Observatory/Gamma Teles...

Telescope lists

IRAF

58 items



TOPCAT(10): Table Browser

Table Browser for 10: IRAF.xml

	Obs Code	Obs Name	longitude	latitude	altitude
1	kpno	Kitt Peak National Observatory	111,6	31,9633	2120,
2	ctio	Cerro Tololo Interamerican Observatory	70,815	-30,1653	2215,
3	eso	European Southern Observatory	70,73	-29,2567	2347,
4	lick	Lick Observatory	121,637	37,3433	1290,
5	mmt	Multiple Mirror Telescope Observatory	110,885	31,6883	2600,
6	mmt	Whipple Observatory	110,885	31,6883	2608,
7	flwo	Whipple Observatory	110,878	31,6809	2320,
8	cfht	Canada-France-Hawaii Telescope	155,472	19,8267	4215,
9	lapalma	Roque de los Muchachos, La Palma	17,88	28,7583	2327,
10	mso	Mt. Stromlo Observatory	210,976	-35,3206	767,
11	sso	Siding Spring Observatory	210,939	-31,2734	1149,
12	ao	Anglo-Australian Observatory	210,934	-31,277	1164,
13	mcdonald	McDonald Observatory	104,022	30,6717	2075,
14	lco	Las Campanas Observatory	70,7017	-29,0033	2282,
15	mtbigelow	Catalina Observatory: 61 inch telescope	110,732	32,5833	2510,
16	dao	Dominion Astrophysical Observatory	123,417	48,5217	229,
17	spm	Observatorio Astronomico Nacional, San Pedro Ma...	115,487	31,0292	2830,
18	tona	Observatorio Astronomico Nacional, Tonantzintla	98,3139	19,0328	8,
19	Palomar	The Hale Telescope	116,863	33,356	1706,
20	mdm	Michigan-Dartmouth-MIT Observatory	11,6167	31,95	1938,5
21	NOV	National Observatory of Venezuela	70,8667	8,79	3610,
22	bmo	Black Moshannon Observatory	78,005	40,9217	738,
23	BAO	Beijing XingLong Observatory	242,425	43,3933	950,
24	keck	W. M. Keck Observatory	155,478	19,8283	4160,
25	ekar	Mt. Ekar 182 cm. Telescope	348,419	45,8486	1413,69

Telescope lists

IAU/MPC

1864 items

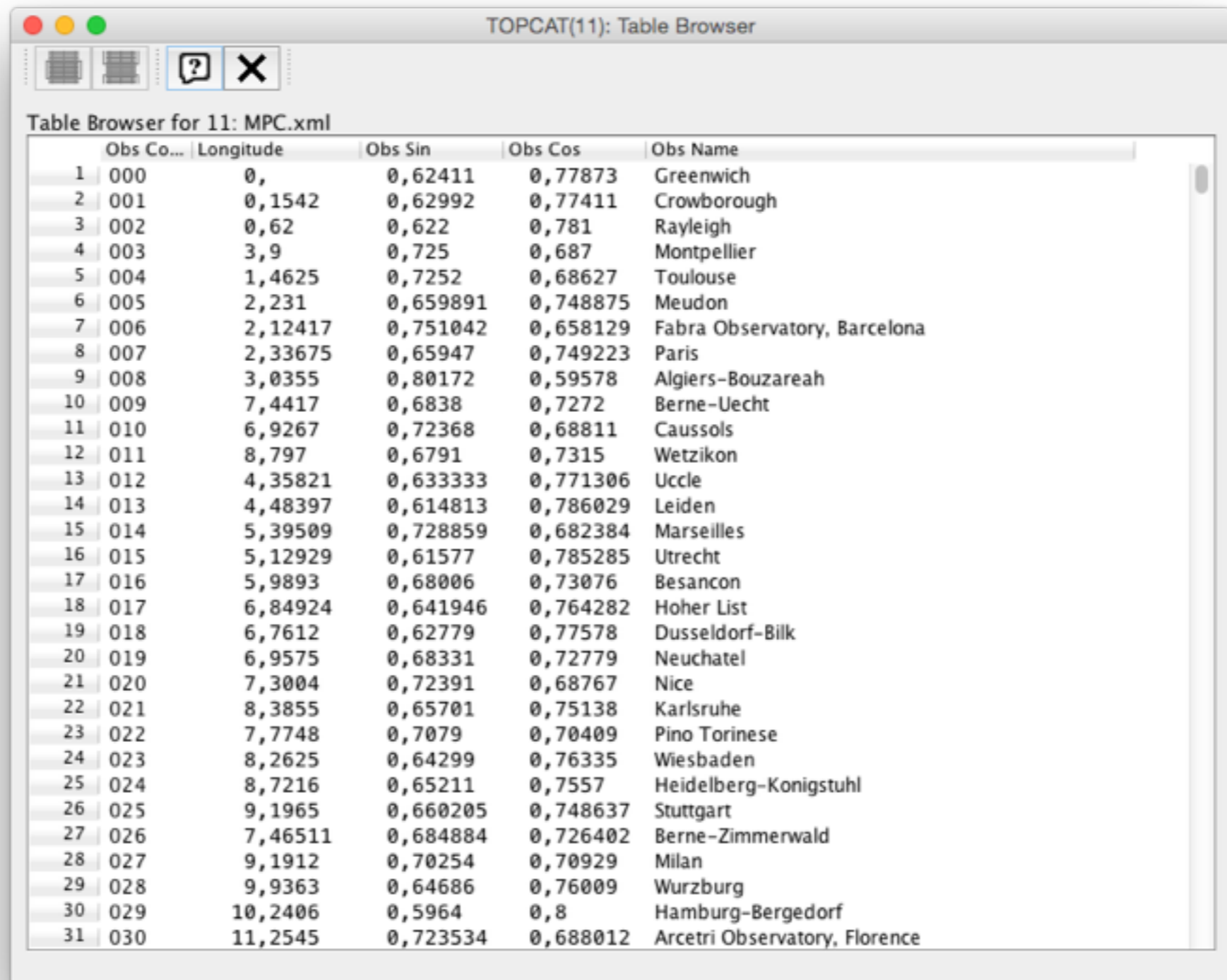
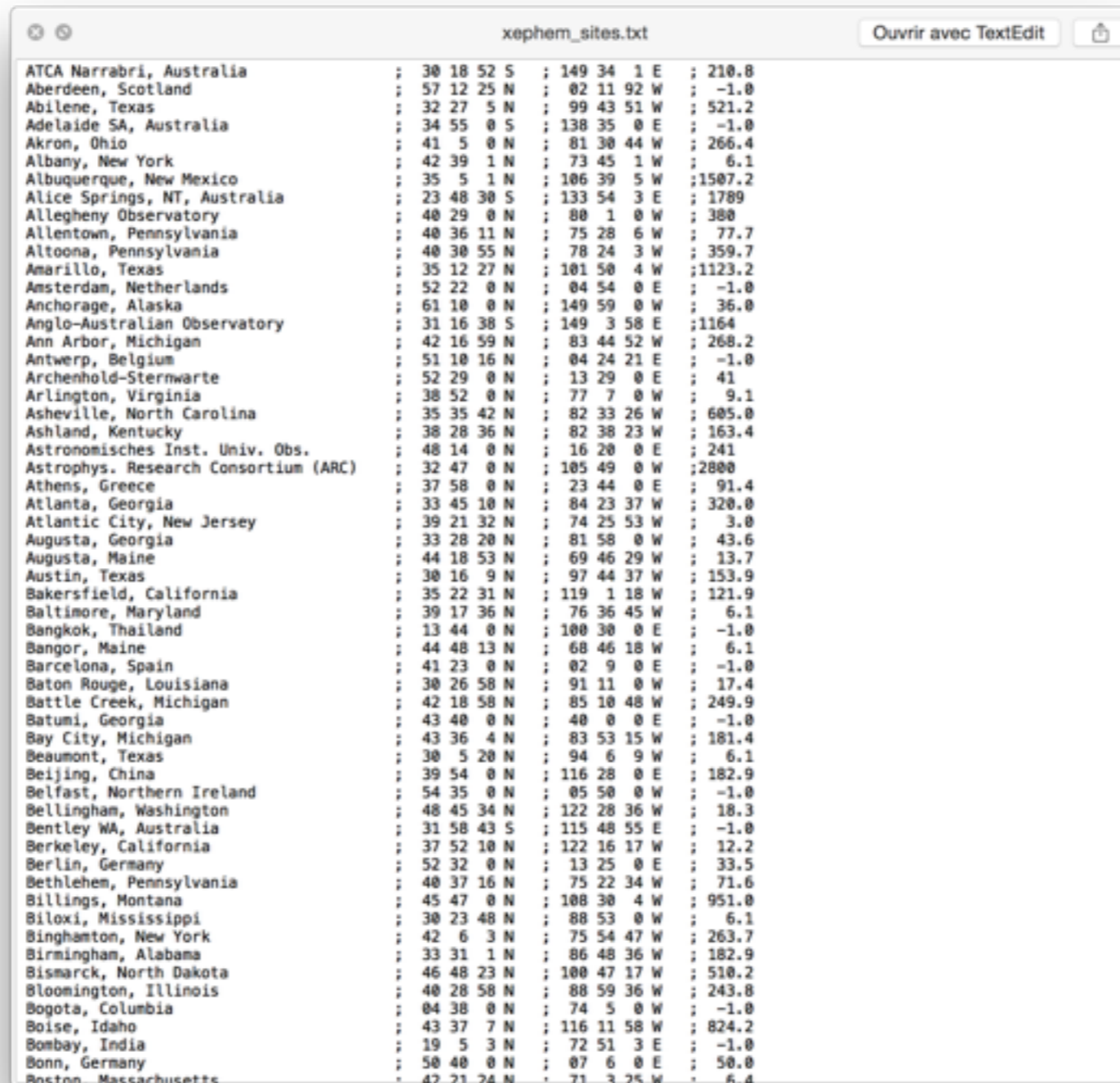


Table Browser for 11: MPC.xml

	Obs Co...	Longitude	Obs Sin	Obs Cos	Obs Name
1	000	0,	0,62411	0,77873	Greenwich
2	001	0,1542	0,62992	0,77411	Crowborough
3	002	0,62	0,622	0,781	Rayleigh
4	003	3,9	0,725	0,687	Montpellier
5	004	1,4625	0,7252	0,68627	Toulouse
6	005	2,231	0,659891	0,748875	Meudon
7	006	2,12417	0,751042	0,658129	Fabra Observatory, Barcelona
8	007	2,33675	0,65947	0,749223	Paris
9	008	3,0355	0,80172	0,59578	Algiers-Bouzareah
10	009	7,4417	0,6838	0,7272	Berne-Uecht
11	010	6,9267	0,72368	0,68811	Caussols
12	011	8,797	0,6791	0,7315	Wetzikon
13	012	4,35821	0,633333	0,771306	Uccle
14	013	4,48397	0,614813	0,786029	Leiden
15	014	5,39509	0,728859	0,682384	Marseilles
16	015	5,12929	0,61577	0,785285	Utrecht
17	016	5,9893	0,68006	0,73076	Besancon
18	017	6,84924	0,641946	0,764282	Hoher List
19	018	6,7612	0,62779	0,77578	Dusseldorf-Bilk
20	019	6,9575	0,68331	0,72779	Neuchatel
21	020	7,3004	0,72391	0,68767	Nice
22	021	8,3855	0,65701	0,75138	Karlsruhe
23	022	7,7748	0,7079	0,70409	Pino Torinese
24	023	8,2625	0,64299	0,76335	Wiesbaden
25	024	8,7216	0,65211	0,7557	Heidelberg-Konigstuhl
26	025	9,1965	0,660205	0,748637	Stuttgart
27	026	7,46511	0,684884	0,726402	Berne-Zimmerwald
28	027	9,1912	0,70254	0,70929	Milan
29	028	9,9363	0,64686	0,76009	Wurzburg
30	029	10,2406	0,5964	0,8	Hamburg-Bergedorf
31	030	11,2545	0,723534	0,688012	Arcetri Observatory, Florence

Telescope lists

xephem



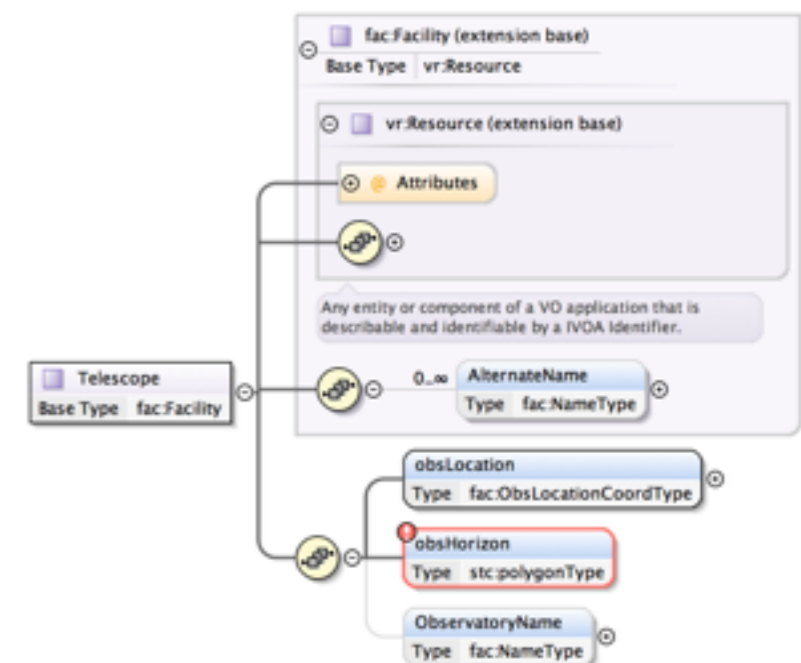
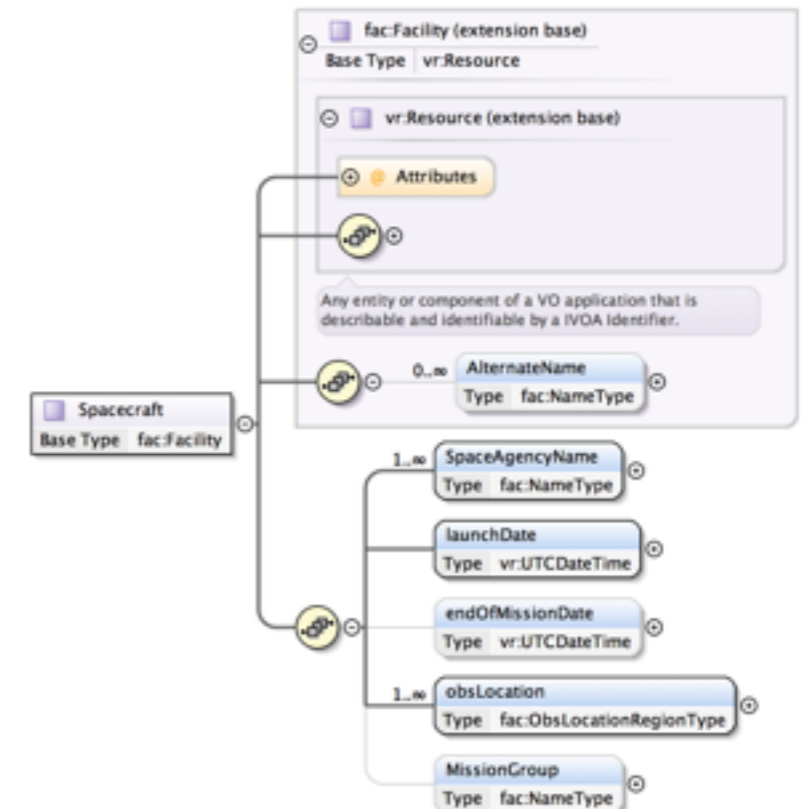
The image shows a screenshot of a text editor window titled "xephem_sites.txt". The window contains a list of telescope sites, each followed by its geographic coordinates (latitude, longitude, and altitude) separated by semicolons. The list includes sites from various countries and regions, such as Australia, Scotland, Texas, and many others. The altitudes are listed in meters.

Site Name	Latitude	Longitude	Altitude (m)
ATCA Narrabri, Australia	30 18 52 S	149 34 1 E	210.8
Aberdeen, Scotland	57 12 25 N	02 11 92 W	-1.0
Abilene, Texas	32 27 5 N	99 43 51 W	521.2
Adelaide SA, Australia	34 55 0 S	138 35 0 E	-1.0
Akron, Ohio	41 5 0 N	81 30 44 W	266.4
Albany, New York	42 39 1 N	73 45 1 W	6.1
Albuquerque, New Mexico	35 5 1 N	106 39 5 W	1507.2
Alice Springs, NT, Australia	23 48 30 S	133 54 3 E	1789
Allegheny Observatory	40 29 0 N	80 1 0 W	380
Allentown, Pennsylvania	40 36 11 N	75 28 6 W	77.7
Altoona, Pennsylvania	40 30 55 N	78 24 3 W	359.7
Amarillo, Texas	35 12 27 N	101 50 4 W	1123.2
Amsterdam, Netherlands	52 22 0 N	04 54 0 E	-1.0
Anchorage, Alaska	61 10 0 N	149 59 0 W	36.0
Anglo-Australian Observatory	31 16 38 S	149 3 58 E	1164
Ann Arbor, Michigan	42 16 59 N	83 44 52 W	268.2
Antwerp, Belgium	51 10 16 N	04 24 21 E	-1.0
Archenhold-Sternwarte	52 29 0 N	13 29 0 E	41
Arlington, Virginia	38 52 0 N	77 7 0 W	9.1
Asheville, North Carolina	35 35 42 N	82 33 26 W	605.0
Ashland, Kentucky	38 28 36 N	82 38 23 W	163.4
Astronomisches Inst. Univ. Obs.	48 14 0 N	16 20 0 E	241
Astrophys. Research Consortium (ARC)	32 47 0 N	105 49 0 W	2800
Athens, Greece	37 58 0 N	23 44 0 E	91.4
Atlanta, Georgia	33 45 10 N	84 23 37 W	320.0
Atlantic City, New Jersey	39 21 32 N	74 25 53 W	3.0
Augusta, Georgia	33 28 20 N	81 58 0 W	43.6
Augusta, Maine	44 18 53 N	69 46 29 W	13.7
Austin, Texas	30 16 9 N	97 44 37 W	153.9
Bakersfield, California	35 22 31 N	119 1 18 W	121.9
Baltimore, Maryland	39 17 36 N	76 36 45 W	6.1
Bangkok, Thailand	13 44 0 N	100 30 0 E	-1.0
Bangor, Maine	44 48 13 N	68 46 18 W	6.1
Barcelona, Spain	41 23 0 N	02 9 0 E	-1.0
Baton Rouge, Louisiana	30 26 58 N	91 11 0 W	17.4
Battle Creek, Michigan	42 18 58 N	85 10 48 W	249.9
Batumi, Georgia	43 40 0 N	40 0 0 E	-1.0
Bay City, Michigan	43 36 4 N	83 53 15 W	181.4
Beaumont, Texas	30 5 20 N	94 6 9 W	6.1
Beijing, China	39 54 0 N	116 28 0 E	182.9
Belfast, Northern Ireland	54 35 0 N	05 50 0 W	-1.0
Bellingham, Washington	48 45 34 N	122 28 36 W	18.3
Bentley WA, Australia	31 58 43 S	115 48 55 E	-1.0
Berkeley, California	37 52 10 N	122 16 17 W	12.2
Berlin, Germany	52 32 0 N	13 25 0 E	33.5
Bethlehem, Pennsylvania	40 37 16 N	75 22 34 W	71.6
Billings, Montana	45 47 0 N	108 30 4 W	951.0
Biloxi, Mississippi	30 23 48 N	88 53 0 W	6.1
Binghamton, New York	42 6 3 N	75 54 47 W	263.7
Birmingham, Alabama	33 31 1 N	86 48 36 W	182.9
Bismarck, North Dakota	46 48 23 N	100 47 17 W	510.2
Bloomington, Illinois	40 28 58 N	88 59 36 W	243.8
Bogota, Columbia	04 38 0 N	74 5 0 W	-1.0
Boise, Idaho	43 37 7 N	116 11 58 W	824.2
Bombay, India	19 5 3 N	72 51 3 E	-1.0
Bonn, Germany	50 40 0 N	07 6 0 E	50.0
Boston, Massachusetts	42 31 24 N	71 3 24 W	6.4

VOFacility

as an extension of VOResource

- Extension of VOResource with addition of:
`<alternateName>` + “namingAuthority” attribute
`<title>Cassini</title>`
`<alternateName>CASSINI</alternateName>`
`<alternateName>Cassini Orbiter</alternateName>`
`<alternateName namingAuthority="naif">-82</alternateName>`
`<alternateName namingAuthority="nssdc">1997-061A</alternateName>`
`<alternateName namingAuthority="pds">co</alternateName>`
- **Spacecraft** = extension of Facility with:
 + LaunchDate + EndOfMissionDate
 + SpaceAgencyName + MissionGroup +
 + ObsLocation [ObsRegion + TimeInterval [StartTime + StopTime]]
- **Telescope** = extension of Facility with:
 + ObservatoryName
 + ObsLocation [long,lat,alt]
 + ObsHorizon [polygon]
- Next: Add Instruments with references to Facilities.
- Next-next:FieldAnalog, Laboratory Experiment and Numerical Experiment



List Compilation

- Compilation started, using match functions of TOPCAT.
- Definition of adequate list format needed
 - long VOTable
 - XML db (registry?),
 - SQL db (TAP interface?)...
- Once standard list is compiled in adequate form:
propose list for endorsement to IPDA/IAU/IVOA
- Then:
build a name-resolver (e.g., SsoDNet @ IMCCE)