

VO standards for Telescope Visibility and Observing Plans



INTEGRAL

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Matthias Ehle¹, Carlos Gabriel¹



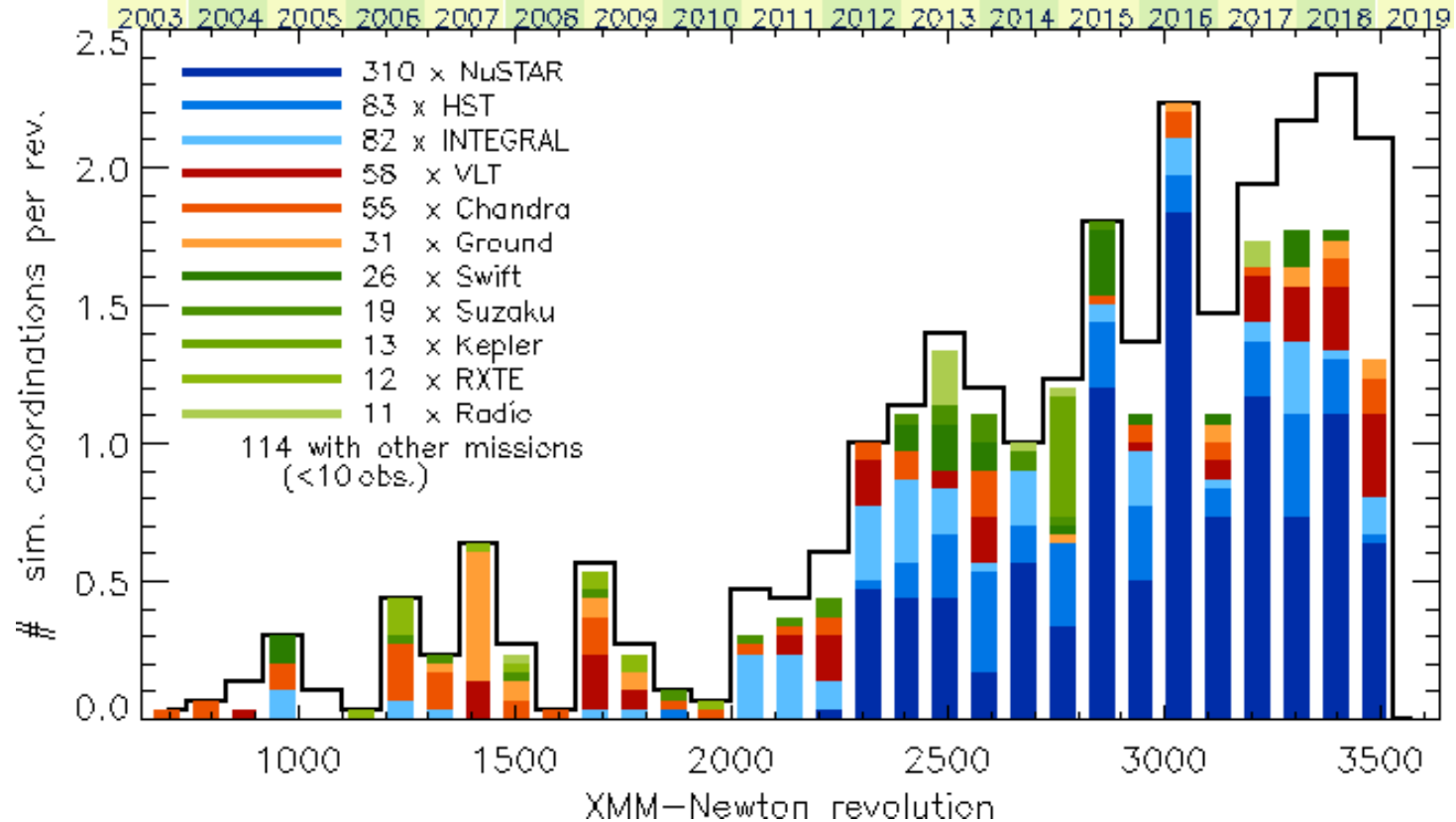
XMM-Newton

¹European Space Astronomy Centre (ESAC), Villafranca del Castillo, Spain

²European Space TEchnology Center (ESTEC), Noordwijk, The Netherlands

Increasing Demand for Coordinated observations

Evolution for XMM-Newton

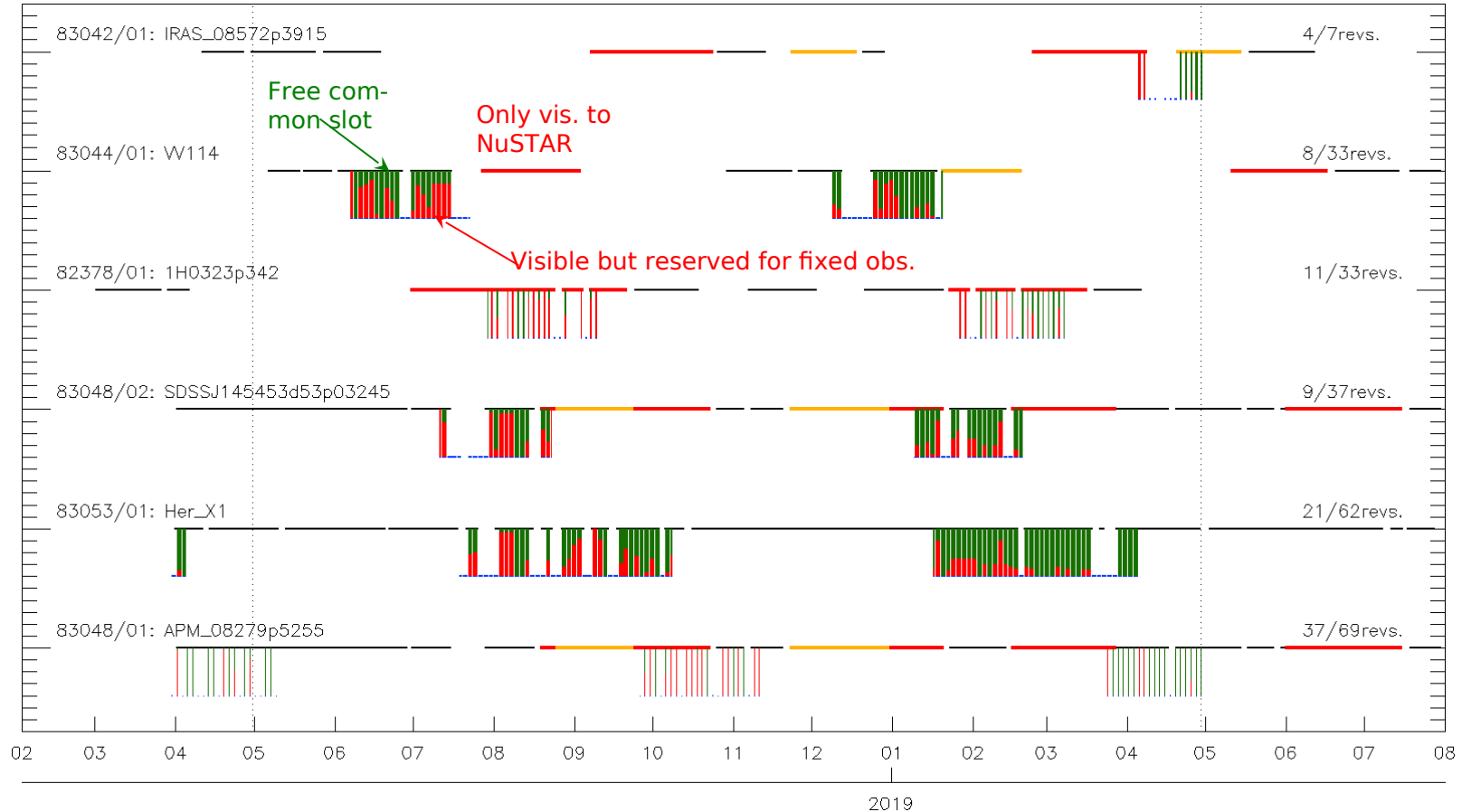


Basic Elements for Coordination:

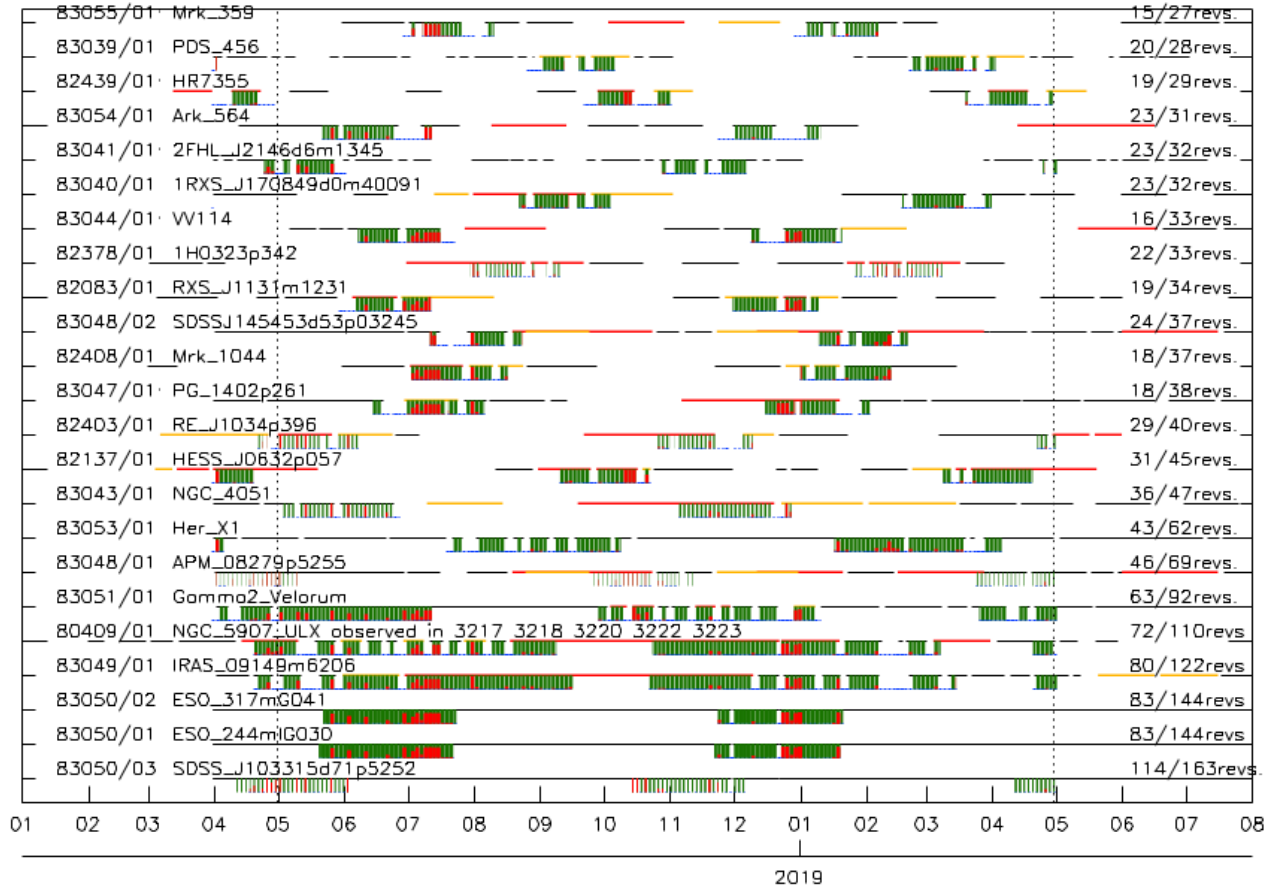
+ Common Visibility

+ Respecting time-constrained observations

Example: common XMM/NuSTAR Visibility/planning



Example: common XMM/NuSTAR Visibility/planning



All information needed to plan an observation (via AO or ToO) is currently in facilities own web pages.

Target
Visibility
Constraints

Instrument
characteristics

BUT

Short-term
schedule

Observations
info

Long-term
schedule

This information is usually shown in a web page statically and is only accessible through forms that have to be manually filled in.

All information about Target Visibility Checks is there...



The screenshot shows the ESO website's 'Object Observability' tool. The header features the ESO logo and the tagline 'ESO — Reaching New Heights in Astronomy' with a row of international flags. The navigation bar includes 'Public', 'Science', 'User Portal', 'Contact', and 'Site Map'. A search bar is present with a 'Go!' button. The main content area is titled 'Object Observability' and includes a breadcrumb trail: 'Science Users Information > Observing with ESO Telescopes > Observing Tools and Services > Calendars and Calculators > Observability'. The page text states: 'See also: [Object Observability](#) - [Airmasses](#) - [Daily Almanac](#) - [Sky Calendar](#)'. It explains that the tool provides object observability tables based on site, object coordinates, and observing period. A 'Compute' button is visible. The footer of the tool section credits John Thorstensen from Dartmouth College.



All information about Target Visibility Checks is there...



European Southern Observatory

ESO — Reaching New Heights in Astronomy

Public Science User Portal Contact Site Map Search Go!

Science Users Information > Observing with ESO Telescopes > Observing Tools and Services > Calendars and Calculators > Observability 12 Oct 2017

Object Observability

See also: [Object Observability - Airmasses](#) - [Daily Almanac](#) - [Sky Calendar](#)

This tool provides object observability tables based on site, object coordinates and observing period. Times are given for the local time, including daylight saving times when applicable.

Select site, object coordinates and observing period; then press **Compute**.

More detailed information is provided in a separate document Notes for SkyCalc by John Thorstensen.

Site:

Dates (yyyy mm dd):
From: To:

Object Coordinates (J2000)
RA: Dec:

SkyCalc provided by courtesy of John Thorstensen, Dartmouth College. John.Thorstensen@dartmouth.edu

The ESO Sky Calendar Tool

[HOME](#) [INDEX](#) [SEARCH](#) [HELP](#) [NEWS](#)

See also [Object Observability](#) - [Airmasses](#) - [Daily Almanac](#) - [Ephemerides](#)

Observability for 05 23 34.5 -69 45 22

Paranal Observatory (VLT)

RA & dec: 5 23 34.5, -69 45 22, epoch 2000.0
Site long&lat: +4 41 36.8 (h.m.s) West, -24 37 30 North.

Shown: local eve, date, moon phase, hr ang and sec.z at (1) eve, twilight, (2) nighttime center of night, and (3) morning twilight; then comes number of nighttime hours during which object is at sec.z less than 3, 2, and 1.5. Night (and twilight) is defined by sun altitude < -18.0 degrees.

Date (eve)	moon	eve	HA	sec.z	cent	HA	sec.z	morn	night	hrs@sec.z:
										<3 <2 <1.5
2017 Nov 3	F	-0 52	2.1	-2 45	1.6	+1 21	1.5	8.0	6.0	3.3
2017 Nov 17	N	-5 44	2.4	-1 49	1.5	+2 07	1.5	7.8	6.7	3.8

SkyCalc provided by courtesy of John Thorstensen, Dartmouth College. John.Thorstensen@dartmouth.edu

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All information about Target Visibility Checks is there...



XMM-NEWTON MULTI-TARGET VISIBILITY CHECKER

YOU CAN LOOKUP SIMBAD OR NED AGAIN, OR RUN THE VISIBILITY CHECKER USING THE RESULTS RETURNED BELOW.

Target Name (eg: Abell 1750)

Please note: there is a 30 second timeout should SIMBAD or NED not respond.

SIMBAD LOOKUP RESULTS:

If you are happy with these results, complete the "Visibility Details" and Submit

TARGET DETAILS

Target Name Target name or identifier for output (eg: Abell 1750)
RA Decimal degrees or HH:MM:SS.S (eg: 13:30:52.5)
Dec Decimal degrees or DD:MM:SS.S (eg: -01:50:27.0)

VISIBILITY DETAILS

Select either
Revolution Range First Revolution default is AO17 revolution range: 3369 to 3551
Last Revolution
or
Date Range From Date default is AO17 range: 01 May 2018 - 30 Apr 2019
To Date
Minimum visibility (minimum time the bin must be visible. Default is 5000 s)

The ESO Sky Calendar Tool

[HOME](#) [INDEX](#) [SEARCH](#) [HELP](#) [NEWS](#)

See also [Object Observability](#) - [Airmasses](#) - [Daily Almanac](#) - [Ephemerides](#)

Observability for 05 23 34.5 -69 45 22

Paranal Observatory (VLT)

RA & dec: 5 23 34.5, -69 45 22, epoch 2000.0
Site long&lat: +4 41 36.8 (h.m.s) West, -24 37 30 North.

Shown: local eve, date, moon phase, hr ang and sec.z at (1) eve, twilight, (2) natural center of night, and (3) morning twilight; then comes number of nighttime hours during which object is at sec.z less than 3, 2, and 1.5. Night (and twilight) is defined by sun altitude < -18.0 degrees.

Date (eve)	moon	eve	cent	morn	night	hrs@sec.z:				
		HA	sec.z	HA	sec.z	<3	<2	<1.5		
2017 Nov 3	F	-6 52	3.1	-2 45	1.6	+1 21	1.5	8.0	6.0	3.3
2017 Nov 17	N	-5 44	2.4	-1 49	1.5	+2 07	1.5	7.8	6.7	3.8

[SkyCalc](#) provided by courtesy of John Thorstensen, Dartmouth College. John.Thorstensen@dartmouth.edu

Slide 9



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TARGET DETAILS

Target Name Target name or identifier for output (eg: Abell 1750)

RA Decimal degrees or HH:MM:SS.S (eg: 13:30:52.5)

Dec Decimal degrees or DD:MM:SS.

VISIBILITY DETAILS

Select either

Revolution Range First Revolution default is AO17 rev

Last Revolution

or

Date Range From Date default is

To Date

Minimum visibility (minimum time the bin must be v

XMM-NEWTON AO17 TARGET VISIBILITY CHECKER

VIEWING CONSTRAINTS FOR XMM-NEWTON

Visible corners	Bin Size	Solar Aspect Angle Range	Min Earth Angle
All four	2° x 2°	70° - 110°	42°

SEARCH CRITERIA FOR ALL TARGETS

Min Vis (s)	Start Orbit	End Orbit	Start Date	End Date
5000	3369	3551	01-May-2018	29-Apr-2019

Targets that are only visible for a small fraction of an orbit are only visible at the start or end of a revolution (see columns Visibility Start/End Phase) and therefore have a higher likelihood for increased background radiation.

See also [Object Observability - Airmasses - Daily Almanac](#)

Observability for 05 23 34.5 -69 45 22

Paranal Observatory (VLT)

RA & dec: 5 23 34.5, -69 45 22, epoch 2000.0

Site long&lat: +4 41 36.8 (h.m.s) West, -24 37 30 North

Shown: local eve. date, moon phase, hr ang and sec.z at (2) natural center of night, and (3) morning twilight; t nighttime hours during which object is at sec.z less than the Night (and twilight) is defined by sun altitude < -18.0

Date (eve) moon eve HA sec.z cent morn HA sec.z

2017 Nov 3	F	-6 52	3.1	-2 45	1.6	+1 21
2017 Nov 17	N	-5 44	2.4	-1 49	1.5	+2 07

SEARCH RESULTS PER TARGET

Target Name	RA	Dec
M31	10.6647	41.2687

Rev.	Vis. Start (yyy-mm-dd hh:mm)	Vis. Window Duration (s)	Vis. End (yyy-mm-dd hh:mm)	Rounded Vis. (s)	Visibility Start Phase	Visibility End Phase	Solar Aspect Angle(°)	Mean Astronomical Position Angle(°)
3397	2018-06-28 02:58	27036	2018-06-28 10:29	25000	0.76	71.3	74.2	
3398	2018-06-29 12:49	78126	2018-06-30 10:31	75000	0.47	9.2	72.6	
3399	2018-07-01 12:42	78063	2018-07-02 10:23	75000	0.47	9.2	74.2	
3400	2018-07-03 12:35	77939	2018-07-04 10:14	75000	0.47	9.2	75.7	
3401	2018-07-05 12:29	77804	2018-07-06 10:06	75000	0.47	9.2	77.3	
3402	2018-07-07 12:22	77715	2018-07-08 09:58	75000	0.47	9.2	78.8	
3403	2018-07-09 12:15	78302	2018-07-10 10:00	75000	0.47	9.3	80.4	
3404	2018-07-11 12:07	78348	2018-07-12 09:53	75000	0.47	9.3	82.0	

All information about Target Visibility Checks is there...



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Home > Astronomy > Object Visibility

Object Visibility – STARALT

Staralt is a program that shows the observability of objects in various ways: either you can plot altitude against time for a particular night (**Staralt**), or plot the path of your objects across the sky for a particular night (**Startrack**), or plot how altitude changes over a year (**Starobs**), or get a table with the best observing date for each object (**Starmult**). For further information, click on the "help" button at the bottom of the page.

Mode Staralt ▾

Night 12 ▾ October ▾ 2017 ▾ or date when the local night starts. *Staralt, Startrack only.*

Observatory La Silla Observatory (Chile) ▾
 Select one above or specify your own site with this format:
 Longitude(°East) Latitude(°) Altitude(metres) UTC offset(hours)
 Ex.: 289.2767 -30.2283 2725 -4

Coordinates 50.0 -70.2

Formats can be any of these:
 name hh mm ss tdd mm ss
 name hh:mm:ss tdd:mm:ss
 name ddd.ddd dd.ddd
 name must be a single word with no dots, avoid using single numbers. Every entry must be in the same format, do not use different formats with different entries. We recommend a maximum of 100 targets per submission.

RA & dec: 5 23 34.5, -69 45 22, epoch 2000.0
 Site longlat: +4 41 36.8 (h.m.s) West, -24 37 30 North
 Shown: local eve. date, moon phase, hr ang and sec.z at (2) natural center of night, and (3) morning twilight; t nighttime hours during which object is at sec.z less than the Night (and twilight) is defined by sun altitude < -18.0
 Date (eve) moon eve cent morn
 2017 Nov 3 F -0 52 3.1 -2 45 1.6 +1 21
 2017 Nov 17 N -5 44 2.4 -1 49 1.5 +2 07

Rev.	(yyyy-mm-dd hh:mm)	Duration (s)	Vis. End (yyyy-mm-dd hh:mm)	Rounded Vis. (s)	Visibility Start Phase	Visibility End Phase	Solar Aspect Angle(°)	Mean Astronomical Position Angle(°)
3397	2018-06-28 02:58	27036	2018-06-28 10:29	25000	0.76	0.92	71.3	74.2
3398	2018-06-29 12:49	78126	2018-06-30 10:31	75000	0.47	0.92	72.6	72.8
3399	2018-07-01 12:42	78063	2018-07-02 10:23	75000	0.47	0.92	74.2	71.7
3400	2018-07-03 12:35	77939	2018-07-04 10:14	75000	0.47	0.92	75.7	70.6
3401	2018-07-05 12:29	77804	2018-07-06 10:06	75000	0.47	0.92	77.3	69.5
3402	2018-07-07 12:22	77715	2018-07-08 09:58	75000	0.47	0.92	78.8	68.5
3403	2018-07-09 12:15	78302	2018-07-10 10:00	75000	0.47	0.93	80.4	67.4
3404	2018-07-11 12:07	78348	2018-07-12 09:53	75000	0.47	0.93	82.0	66.3

TY CHECKER

TS RETURNED BELOW.

Go!

XMM-NEWTON AO17 TARGET VISIBILITY CHECKER

VIEWING CONSTRAINTS FOR XMM-NEWTON

Visible corners	Bin Size	Solar Aspect Angle Range	Min Earth Angle
All four	2" x 2"	70° - 110°	42°

SEARCH CRITERIA FOR ALL TARGETS

Min Vis (s)	Start Orbit	End Orbit	Start Date	End Date
5000	3369	3551	01-May-2018	29-Apr-2019

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Mode Staralt

Night 12 October 2017 or date when the local night starts. *Staralt, Startrack only.*

Observatory La Silla Observatory (Chile)
 Select one above or specify your own site with this format:
 Longitude(°East) Latitude(°) Altitude(metres) UTC offset(hours)
 Ex.: 289.2767 -30.2283 2725 -4

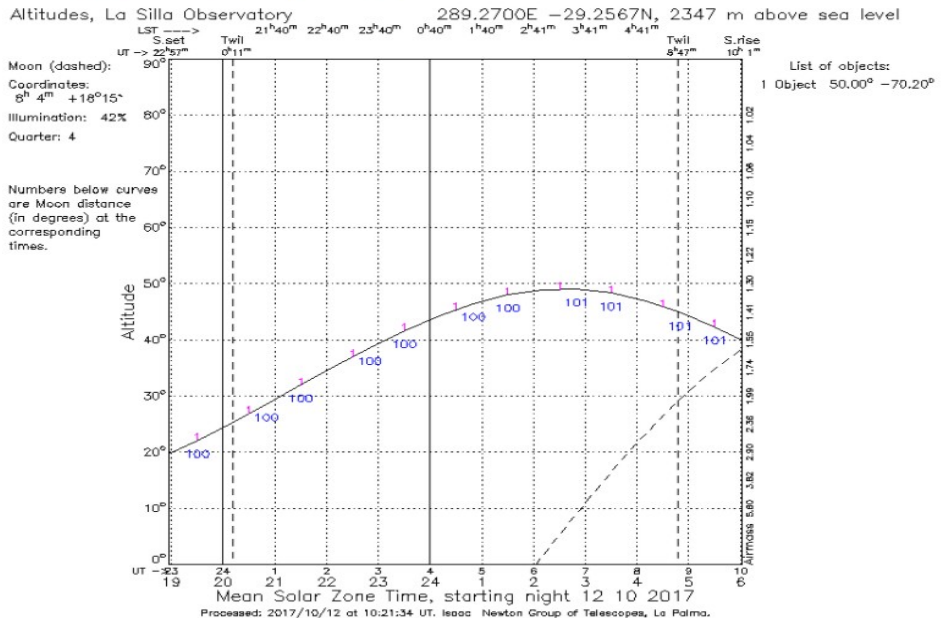
Coordinates 50.0 -70.2

Formats can be any of these:
 name hh mm ss ±dd mm ss
 name hh:mm:ss ±dd:mm:ss
 name ddd.ddd dd.ddd
 name must be a single word with no dots, avoid using single numbers. Every entry must be in the same format, do not use different formats with different entries. We recommend a maximum of 100 targets per submission.

Rev.	(yyyy-mm-dd hh:mm)	Duration (s)	Vis. (yyyy-mm)
3397	2018-06-28 02:58	27036	2018-06-28 10:29
3398	2018-06-29 12:49	78126	2018-06-30 10:31
3399	2018-07-01 12:42	78063	2018-07-02 10:23
3400	2018-07-03 12:35	77939	2018-07-04 10:14
3401	2018-07-05 12:29	77804	2018-07-06 10:06
3402	2018-07-07 12:22	77715	2018-07-08 09:58
3403	2018-07-09 12:15	78302	2018-07-10 10:00
3404	2018-07-11 12:07	78348	2018-07-12 09:53

TY CHECKER

TS RETURNED BELOW.




75000	0.47	0.92	77.3	69.5
75000	0.47	0.92	78.8	68.5
75000	0.47	0.93	80.4	67.4
75000	0.47	0.93	82.0	66.3

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.. and information about scheduled observations...





Observational Raw Data Query Results

SCIENCE ARCHIVE FACILITY

View as text | Instrument specific interface | ESO Archives Overview | Archive FES | Locking Facility (XMM) | ESO HOME

To request data please select the datasets in the results table by marking the checkbox in the left-most column, then press the Request marked datasets button. (This will be prompted for your ESO User Portal username and password. If you do not yet have an ESO User Portal account, please fill out the registration form.) Datasets for which the proprietary period is over are highlighted in green and are publicly available. Datasets that are still under the proprietary period are highlighted in red and can only be downloaded by the corresponding PI. Datasets that are not yet available in the Archive are marked with 'N/A'.

Request marked datasets
Reset
World
Map/Plot
Metadata
View/Print
New Query
Programs
Your Requests






M	Mark	HDR	OBJECT	Target Ra, Dec	Program ID	Instrument	Category	Type	Mode	Dataset ID	Release Date	TPL ID	TPL START	Exptime	Filter	MAJ-OBS	Airmass	Ambient	
			HDP1007	01:02:56.80 - 02:28:08.3	003A-COSMOS	HAPP	SCIENCE	STAR/YSOs	ECHELLE	HAPP0217-10-007015010.B04	Oct 8 2016	HAPP_001_000_001	2017-10-007015-014	600.016		5803A-000020	1.87	DMM/Zero1	
PPST for October 8th, 2017 (DoY 281)																			
													139.12	600.000		5803A-000020	1.291	DMM/Zero1	
													128.93	303.138		5803A-001120	1.000	DMM/Zero1	
													135.07	221.888		5803A-000493	1.273	DMM/Zero1	
													147.00	600.000		5803A-011710	1.353	DMM/Zero1	
													01.51	600.000		5803A-000020	1.108	DMM/Zero1	
													136.08	600.000		5803A-001704	1.241	DMM/Zero1	
													118.34	700.768		5803A-000493	1.127	DMM/Zero1	
													142.43	600.000		5803A-010000	1.181	DMM/Zero1	
													158.97	726.016		5803A-010701	1.054	DMM/Zero1	
													103.05	600.000		5803A-000493	1.279	DMM/Zero1	
													102.01	601.548		5803A-000493	1.334	DMM/Zero1	
													130.02	514.000		5803A-000020	1.334	DMM/Zero1	

Notes:

- Click on target ID to see a summary for all segments belonging to that target ID.
- Click on segment number to see information for just that segment.
- PPST time is calculated from begin to end. This does not take slewing into account.
- SAA Cold - Observation performed during passage through the South Atlantic Anomaly (SAA) to avoid XRT passive cooling. No data is collected during SAA passages.

October 8th, 2017


PPST

European Space Agency
European Space Agency

.. and information about scheduled observations...





SCIENCE ARCHIVE FACILITY

Observational Raw Data Query Results

Home
Instrument specific Software
ESO Archives Overview
Archive Files
Locks Facility HOME
ESO HOME

To request data please select the datasets in the results table by marking the checkbox in the left-most column, then press the Request marked datasets button.
 (You will be prompted for your ESO User Portal username and password. If you do not yet have an ESO User Portal account, please fill out the registration form.)
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Request marked datasets
Reset
Help
Help/FAQ
Help/Registry
View Query
Programs
Your Requests

M	Mark	HDR	OBJECT	Target Ra, Dec	Program ID	Instrument	Categories	Type	Mode	Dataset ID	Release Date	TPL ID	TPL START	Exptime	Filter	MAJ-OBS	Airmass	Ambient
<input type="checkbox"/>		Teacher	HDP1007	01:02:26.80 - 02:28:06.3	003A-COSMOS	HARPS	SCIENCE	STAR/SKY	ECHelle	HARPS_0017-10-0710:50:19:04	Oct 8 2016	HARPS_001_006_01	2017-10-07T10:50:14	600.016		58034.00000	1.167	DMM (Secret)
PPST for October 8th, 2017 (DoY 281)																		
<input type="checkbox"/>													130:12	800.000		58034.00000	1.201	DMM (Secret)
<input type="checkbox"/>													128:03	305.100		58034.00120	1.000	DMM (Secret)
<input type="checkbox"/>													130:07	221.800		58034.00493	1.273	DMM (Secret)
<input type="checkbox"/>													147:08	650.000		58034.04170	1.350	DMM (Secret)
<input type="checkbox"/>													101:51	800.000		58034.00000	1.100	DMM (Secret)

Notes:
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 SAA Cold - Observation performed during passage through the South-Atlantic Anomaly (SAA) to avoid XRT passive cooling. No data is collected during SAA passages.

Begin	End	Target ID	Seq.	Target Name	R.A.	Dec.	RA1	XRT Mode	UVOT Mode	Filter	Ypos	Time (s)
2017-10-08 00:00:00	2017-10-08 00:31:00	25376	6	SAA-Cold-281-00	87.58772	180.00000	136.41463	Auto	000000		100	1200
2017-10-08 00:31:00	2017-10-08 00:31:00	12138	1	25377nj	87.58772	180.00000	136.41463	Auto	002222		70	600
2017-10-08 00:31:00	2017-10-08 00:41:00	82078	5	Swift 0456.1-4505	74.06829	-45.07250	138.72515	PC	001334		45	600
2017-10-08 00:31:00	2017-10-08 00:33:00	82111	1	8209N	148.06641	68.36862	138.79653	Auto	001001		60	300
2017-10-08 00:33:00	2017-10-08 01:09:00	82024	7	2PMAS1216.4346470420	243.61552	-47.08750	232.20975	Auto	001132		90	900
2017-10-08 01:09:00	2017-10-08 01:28:00	82050	2	SDSS J1836.3-0941	18.07775	-9.07722	136.01681	Auto	001001		90	300
2017-10-08 01:28:00	2017-10-08 01:01:00	25376	8	SAA-Cold-281-00	87.58772	180.00000	136.41463	Auto	000000		100	1300
2017-10-08 01:01:00	2017-10-08 01:15:00	82078	6	Swift 0456.1-4505	74.06829	-45.07250	138.72515	Auto	001001		45	600

Search Results




Chandra X-ray Center

New Search

Search Results

Retrieval List

Help



Add Products to Retrieval List
 Primary package
 Secondary package
 Custom selection

View Observation Information

Select all / Unselect all

Subject	Row	Seq Num	Obs ID	Instrument	Grating	Appr Exp	Exposure	Target Name	PI Name	RA	Dec	Status	Data Mode	Exp Mode	Avg. Cnt. Rate	Ext. Cnt	Start Date	Public Release Date	Proposal	Type	Obs Cycle	Prop. Cycle	Science Category	Joint	Grd. Num
<input type="checkbox"/>	1	703152	17566	HRC-S	LETG	35.0	34.8	ASASSN-141	Miller	12 48 15.20	-17 46 26.20	archived			61.23	2130972	2014-12-08 23:20:28	2014-12-10 06:43:58	15708488	DDT	15	15	ACTIVE GALAXIES AND QUASARS	None	
<input type="checkbox"/>	2	703152	17567	HRC-S	LETG	45.0	44.46	ASASSN-141	Miller	12 48 15.20	-17 46 26.20	archived			68.49	3044836	2014-12-11 08:45:20	2014-12-12 05:20:16	15708488	DDT	15	15	ACTIVE GALAXIES AND QUASARS	None	
<input type="checkbox"/>	3	703277	18345	ACIS-S	NONE	25.0	23.84	ASASSN-141	Maksym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	1.37	32575	2016-01-28 14:39:01	2017-01-29 08:31:06	17700613	GO	17	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	4	703278	18346	ACIS-S	NONE	60.0	58.47	ASASSN-141	Maksym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.15	125356	2016-08-03 13:07:31	2017-08-04 12:41:18	17700613	GO	17	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	5	703279	18347	ACIS-S	NONE	15.0	14.67	ASASSN-141	Maksym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.08	30482	2017-08-03 18:31:04	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	6	703279	20127	ACIS-S	NONE	25.0	25.9	ASASSN-141	Maksym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.09	54034	2017-08-04 08:21:10	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	7	703279	20128	ACIS-S	NONE	40.0	39.01	ASASSN-141	Maksym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.10	81754	2017-08-05 14:16:16	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
		Totals				0.00	0.00								0										

.. and information about scheduled observations...



Observational Raw Query Re

SCIENCE ARCHIVE FACILITY

How to use: Instrument-specific Software | OBS Levels Explorer | Archive File | Lockin Facility (XMM) | ...

To request data please select the datasets in the results table by marking the checkbox in the left-most column, then press the Request marked datasets button. (You will be prompted for your ESO User Portal username and password. If you do not yet have an ESO User Portal account, please fill out the registration form.) Datasets for which the proprietary period is over are highlighted in green and are publicly available. Datasets that are still under the proprietary period are highlighted in red and can only be downloaded by the corresponding PI. Datasets that are not yet available in the Archive are marked with a 'N/A'.

XMM-Newton Observation Search

Observation_ID

Target Name	RA	Dec	Pos_Angle
Obs_Duration	Obs_Start_Time	Obs_End_Time	Rev IB
Exposures' details			
Instrument - Filter - Mode (Exp_ID)	Start	Sched_dur	Exec_dur
0804270901			
XMM-RM11	14:20:08.10	+52:28:54.1	327:47:25.7
22000 sec	2017-05-29@20:59:30	2017-05-30@03:06:10	3200 E3

Request marked datasets

Legend: Marked | Unmarked

M	Mode	HDR	OBJECT	Target RA, Dec	Program ID	Instrument	Category	Type	Mode	Dataset ID	Release Date	TPL ID	TPL START	Exptime	Filter	MAJ-OBS	Airmass	Ambient
<input type="checkbox"/>	Teacher		HD1907	01:02:06.80 - 02:08:06.80	0804-0001A	HARPS	SCIENCE	STAR/SOLAR	ECHELLE	HARPS-010-010710-0101804	Oct 8 2016	HARPS_010_000_01	2017-10-08T10:14:00	600.016		58034-00000	1.091	DMM (Secret)

PPST for October 8th, 2017 (DoY 281)

Notes: Click on target ID to see a summary for all elements belonging to that target ID. Click on segment number to see information for just that segment. PPST time is calculated from begin to end. This does not take slewing into account. SAA Code - Observation performed during passage through the South-Atlantic Anomaly (SAA) to avoid XRT passive coating. No data is collected during SAA passages.

Target Name	RA	Dec	Pos_Angle
Obs_Duration	Obs_Start_Time	Obs_End_Time	Rev IB
Exposures' details			
Instrument - Filter - Mode (Exp_ID)	Start	Sched_dur	Exec_dur
0804270901			
XMM-RM11	14:20:08.10	+52:28:54.1	327:47:25.7
22000 sec	2017-05-29@20:59:30	2017-05-30@03:06:10	3200 E3
OM - UVW1 - Full Low (006)	29@21:17:42	05-7868	
OM - UVW1 - Full Low (007)	29@23:29:31	05-7868	
OM - UVW1 - Full Low (008)	30@01:41:20	05-5056	
M1 - THIN1 - Full Frame (001)	29@21:16:37	05-20881	
M2 - THIN1 - Full Frame (002)	29@21:17:11	05-20852	
PN - THIN1 - Full Frame (003)	29@21:39:49	05-19509	
IR -- Spectro + O (004)		05-20986	

Search Results

Chandra X-ray Center

View Observation Information

Add Products to Retrieval List

Primary package
Secondary package
Custom selection

Select	#Row	Seq Num	Obs ID	Instrument	Grating	Appr Exp	Exposure	Target Name	PI Name	RA	Dec	Status	Data Mode	Exp Mode	Avg Cnt Rate	Ext Cnt	Start Date	Public Release Date	Proposal	Type	Obs Cycle	Prop Cycle	Science Category	Joint	Grd Num
<input type="checkbox"/>	1	703152	17566	HRC-S	LETG	35.0	34.8	ASASSN-141	Miller	12 48 15.20	-17 46 26.20	archived			61.23	2130972	2014-12-08 23:20:28	2014-12-10 06:43:58	15708488	DDT	15	15	ACTIVE GALAXIES AND QUASARS	None	
<input type="checkbox"/>	2	703152	17567	HRC-S	LETG	45.0	44.46	ASASSN-141	Miller	12 48 15.20	-17 46 26.20	archived			68.49	3044836	2014-12-11 08:45:20	2014-12-12 05:20:16	15708488	DDT	15	15	ACTIVE GALAXIES AND QUASARS	None	
<input type="checkbox"/>	3	703277	18345	ACIS-S	NONE	25.0	23.84	ASASSN-141	Makym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	1.37	32575	2016-01-28 14:39:01	2017-01-29 08:31:06	17700613	GO	17	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	4	703278	18346	ACIS-S	NONE	60.0	58.47	ASASSN-141	Makym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.15	125536	2016-08-03 13:07:31	2017-08-04 12:41:18	17700613	GO	17	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	5	703279	18347	ACIS-S	NONE	15.0	14.67	ASASSN-141	Makym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.08	30482	2017-08-03 18:31:04	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	6	703279	20127	ACIS-S	NONE	25.0	25.9	ASASSN-141	Makym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.09	54034	2017-08-04 08:21:10	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
<input type="checkbox"/>	7	703279	20128	ACIS-S	NONE	40.0	39.01	ASASSN-141	Makym	12 48 15.20	-17 46 26.50	observed	VFAINT	TE	2.10	81754	2017-08-05 14:16:16	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO	
Totals										12 48 15.20	-17 46 26.50	observed	VFAINT	TE		0									

Chandra Data Archive

Search Results | Retrieval List | Help

Select	#Row	Seq Num	Obs ID	Instrument	Grating	Appr Exp	Exposure	Target Name	PI Name	RA	Dec	Status	Data Mode	Exp Mode	Avg Cnt Rate	Ext Cnt	Start Date	Public Release Date	Proposal	Type	Obs Cycle	Prop Cycle	Science Category	Joint	Grd Num
<input type="checkbox"/>	10102	54100		XMM-EPIC		1.00				13 02 54.00	58034-00000	1.00	DMM (Secret)												

Chandra

.. and information about scheduled observations...





Atacama Large Millimeter/submillimeter Array

In search of our Cosmic Origins





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Search Site

ALMA Status Page

Weather Conditions at AOS

Current Date	Current Time	Location	Humidity	Temperature	Dewpoint	Wind Direction	Wind Speed	Pressure
2017/10/12	11:08:37 UTC	Central Weather Station	23.60 %	-4.83 ° C	-22.52 ° C	307.00 °	5.10 m/s	553.78 hPA

[More...](#)

Recent observations (QA0 Pass)

Project	Source	PI
Magnetic field structure in the bipolar outflow driven by Orion Source I		
2017.1.00497.S	Orion_Source_I	Hirota, Tomoya
ALCHEMI: the ALMA Comprehensive High-resolution Extragalactic Molecular Inventory		
2017.1.00161.L	ngc253	Martin, Sergio
100,000 Molecular Clouds Across the Main Sequence: GMCs as the Drivers of Galaxy Evolution		
2017.1.00886.L	NGC7496	Schinnerer, Eva

Public observations

Project	Source	PI
Protolunar disks around directly imaged young exoplanets		
2015.1.01210.S	PZ_tel	Perez, Sebastian
From Dark to Light: Star Clusters in Formation		
2015.1.01308.S	Serpens_Main_and_Serpens_South	Mundy, Lee
Polarimetric Observation of Centaurus A: Poloidally-dominated Magnetic Field vs. Toroidally-dominated Magnetic Field in the Innermost Jet		
2015.1.00421.S	Cen_A	Nagai, Hiroshi

ALMA



Chandra X-ray Center

New Search



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[Add Products to Retrieval List](#)

 Primary package
 Secondary package
 Custom selection

Select all / Unselect all	Row	Seq Num	Obs ID	Instrument	Grating	Appr Exp	Exposure	Target Name	PI Name	RA	Dec	Status	Data Mode	Exp Mode	Avg Cnt Rate	Ext Cnt	Start Date	Public Release Date	Proposal	Type	Obs Cycle	Prop Cycle	Science Category	Joint	Grid Num				
<input type="checkbox"/>	1	703152	17566	HRC-S	LETG	35.0	34.8	ASASSN-141	Miller	12 48 15.20	+17 46 26.20	archived			61.23	2130972	2014-12-08 23:20:28	2014-12-10 06:43:58	15708488	DDT	15	15	ACTIVE GALAXIES AND QUASARS	None					
<input type="checkbox"/>	2	703152	17567	HRC-S	LETG	45.0	44.46	ASASSN-141	Miller	12 48 15.20	+17 46 26.20	archived			68.49	3044836	2014-12-11 08:45:20	2014-12-12 05:20:16	15708488	DDT	15	15	ACTIVE GALAXIES AND QUASARS	None					
<input type="checkbox"/>	3	703277	18345	ACIS-S	NONE	25.0	23.84	ASASSN-141	Makoyam	12 48 15.20	+17 46 26.50	archived	VFAINT	TE	1.37	32575	2016-01-28 14:39:01	2017-01-29 08:31:06	17700613	GO	17	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO					
<input type="checkbox"/>	4	703278	18346	ACIS-S	NONE	60.0	58.47	ASASSN-141	Makoyam	12 48 15.20	+17 46 26.50	archived	VFAINT	TE	2.15	125536	2016-08-03 13:07:31	2017-08-04 12:41:18	17700613	GO	17	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO					
<input type="checkbox"/>	5	703279	18347	ACIS-S	NONE	15.0	14.67	ASASSN-141	Makoyam	12 48 15.20	+17 46 26.50	observed	VFAINT	TE	2.08	30482	2017-08-03 18:31:04	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO					
<input type="checkbox"/>	6	703279	20127	ACIS-S	NONE	25.0	25.9	ASASSN-141	Makoyam	12 48 15.20	+17 46 26.50	observed	VFAINT	TE	2.09	54034	2017-08-04 08:21:10	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO					
<input type="checkbox"/>	7	703279	20128	ACIS-S	NONE	40.0	39.01	ASASSN-141	Makoyam	12 48 15.20	+17 46 26.50	observed	VFAINT	TE	2.10	81754	2017-08-05 14:16:16	2018-08-06 16:01:08	17700613	GO	18	17	ACTIVE GALAXIES AND QUASARS	XMM-NRAO					
Totals																	0												

Chandra

.... and planned observations



Integral Target and Scheduling Information

Schedule: All executed Current revolution (1872) Future schedule Revolution 1872 to 1872 Show... show plot ☑

Schedule for revolution 1872

(this list is also available in csv-format, click [here](#) to download)

Rev	Start time (UTC)	End time (UTC)	Principal Investigator	Science	Mode	Aperture	Spectral Elements	Exposure Time(sec)	OL	EX	Observation
1872	2017-10-10 13:29:15	09-Oct-2017 18:49:29	---	Preliminary EST Observing Timeline Report for SMI: 1728884	---	---	---	---	---	---	01 / 0022 P
1872	2017-10-10 17:13:34	09-Oct-2017 22:10:00	---	SMI Start: 2017.28812210:00 (15-OCT-2017 22:10:00), End: 2017.28609090:00 (23-OCT-2017 06:00:00)	---	---	---	---	---	---	09 / 0011
1872	2017-10-11 08:16:46	2017-10-11 08:16:46	---	---	---	---	---	---	---	---	21 / 0039
1872	2017-10-11 12:26:36	2017-10-11 12:26:36	---	---	---	---	---	---	---	---	01 / 0038
1872	2017-10-11 13:27:21	2017-10-11 13:27:21	---	---	---	---	---	---	---	---	21 / 0040
1872	2017-10-11 15:00:12	2017-10-11 15:00:12	---	---	---	---	---	---	---	---	21 / 0040
1872	2017-10-11 18:41:00	2017-10-11 18:41:00	---	---	---	---	---	---	---	---	29 / 0008
1872	2017-10-12 09:06:16	2017-10-12 09:06:16	---	---	---	---	---	---	---	---	21 / 0041
1872	2017-10-12 13:16:06	2017-10-12 13:16:06	---	---	---	---	---	---	---	---	21 / 0042

XMM-Newton Short-Term Schedule

Short Term Schedule



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Observing Schedules
 This is the confirmed schedule of XMM-Newton observations. This sequence of observations has been uploaded to the spacecraft and will execute autonomously unless interrupted by a new schedule. Target of Opportunity, or instrument and spacecraft anomalies. This schedule will cover various time ranges depending on the exposure time goal of the observations, but will usually be for a period of at least one week.

The times reported here are the start and end of the on-target period (day of year UTC). The estimated exposure time takes into account Earth occultation and the SAA passage time where detector background is increased. The end time of the observation is the start of the slew to the next target. Please examine the NUSTAR Axi-Flow Timeline (AFT) for the log of past observations.

Table Header Explanations

obs_start	obs_end	sequenceid	Name	J2000_RA	J2000_Dec	Exp	Notes
2017:281:19:05:02	2017:283:00:30:00	90301021006	Kepler	262.671620	-21.491957	60.6	DDT
2017:283:01:11:23	2017:283:02:40:00	Sol_17282_AR2683_POS11		195.15715	-6.38520	3.4	ToO
2017:283:02:40:32	2017:283:04:20:00	90311210001	Sol_17282_AR2683_POS12	195.21879	-6.41062	3.4	ToO
2017:283:04:20:32	2017:283:05:50:00	90311210002	Sol_17282_AR2683_POS13	195.28046	-6.43604	3.4	ToO
2017:283:06:55:11	2017:284:09:20:00	60376001002	2MASX19301380p3410495	292.557500	34.180500	55.3	Extragalactic Legacy Survey
2017:284:09:45:09	2017:284:20:35:00	60360008002	SDSSJ152132421p39120649	230.3874232	39.2007671	22.0	Extragalactic Legacy Survey
2017:284:21:10:03	2017:285:21:00:00	90301320002	NGC_6440	267.218083	-20.358944	49.5	ToO
2017:285:21:20:06	2017:286:08:20:00	30302020004	GRS_1915p105	288.79813	10.94578	21.9	(2/4) coordinated with XMM and VLT
2017:286:08:35:06	2017:286:19:30:00	60160701002	2MASX18560128p1538059	284.00210000	15.63200000	23.3	BAT AGN
2017:286:20:55:11	2017:287:15:05:00	60376007002	UGC606728	176.316800	79.681500	61.4	Extragalactic Legacy Survey
2017:287:15:05:11	2017:288:03:00:00	60368001002	NGC_1144	43.80083	-10.18361	22.0	
2017:288:04:05:09	2017:288:23:00:00	60301004002	ESO_103m35	279.58458	-65.4275	50.3	
2017:288:23:30:08	2017:290:05:45:00	30301026002	AX_1841d0m0536	280.25179	-5.59625	59.7	phase constrained
2017:290:06:00:04	2017:290:17:00:00	60160670002	2E1739d1m1210	265.47600000	-12.19700000	25.5	BAT AGN
2017:290:17:15:01	2017:291:04:20:00	30363001002	GX_3p1	266.98333	-26.56361	21.8	

Long Range Observatory Schedule
 This is the latest NuSTAR long-term schedule. Observations have been sorted into one-week intervals, taking into account Sun, Moon, required exposure time, and other constraints. So the date is the Monday of the week in which the observation is scheduled to begin.

E.g. An observation with a date 2017-12-18 in this table is scheduled to have the observation starting sometime between 2017-12-18 0000Z and 2017-12-25 0000Z.

Currently the schedule is driven by the large number of observations coordinated with other observatories and the need to complete the NuSTAR Guest Observer programs. The exposure goal for targets allotted within one week may appear to fill more than the available NuSTAR exposure time but that (week average is 330 ks per week) but many observations start in one week and complete in the following week.

Targets of opportunity and any instrument or spacecraft anomalies may also cause the observing times of targets to shift. This long-term schedule is our present estimate of the future order of observations. Please be aware of the uncertainties.

TO = Target of Opportunity DDT = Directors Discretionary Time NO3 = NuSTAR GO cycle-3 I15 = INTEGRAL GO cycle-15
 X16 = XMM-Newton GO cycle-16 C18 = Chandra GO cycle-18 ELS/GLS = Extragalactic/Galactic legacy surveys

Slide 17



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High energy: AGILE Chandra Fermi INTEGRAL NuSTAR RXTE Suzaku Swift XMM-Newton

Other: Herschel Spitzer

Filter: Search Show: saa-cold-*

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today **February 2019** month week day

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	31	1	2
Spinning Mode						
Muscae Region, 282.5	MAXI J1348-630			MAXI J1348-630		
Muscae Region, 282.5						
3	4	5	6	7	8	9
Spinning Mode						
MAXI J1348-630	MAXI J1348-630					
OMC FF #32						
10	11	12	13	14	15	16
Spinning Mode						
MAXI J1348-630	Galactic Center		Galactic Center	Gal. Bulge region	Galactic Center	
	Galactic Center			Galactic Center		
	Gal. Bulge region					
17	18	19	20	21	22	23
Spinning Mode						
Perseus OB2 (2)						
Crab						







**It's the
economy,
Stupid!**

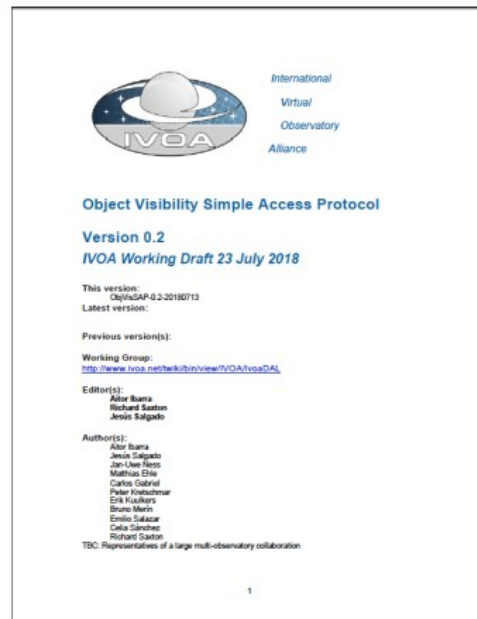


1. Initial note modified to create ObjVisSAP v0.5 WD

<http://www.ivoa.net/documents/ObjVisSAP/>

Properties:

2. S*AP protocol – different implementation at different observatories (adaptation)
3. Based on “parameter=value” approach
4. Basic interface:
 - a. Coordinates
 - b. Time Range



ObsLocTAP: Observation Locator Table Access Protocol

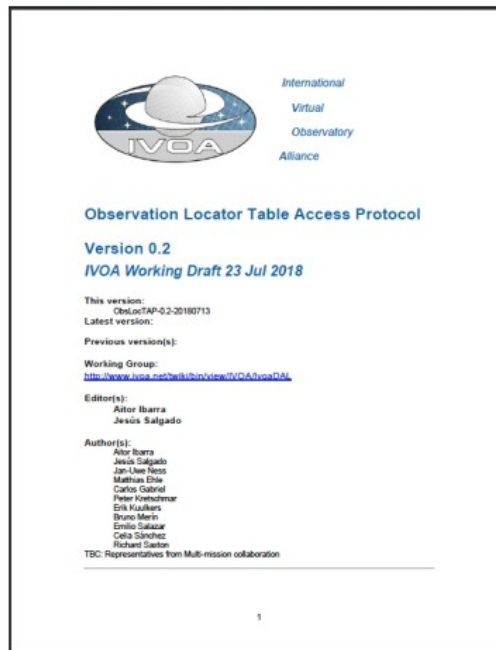


1. Initial note modified to create
ObsLocTAP v0.5 WD

<http://www.ivoa.net/documents/ObsLocTAP/>

Properties:

2. TAP protocol – Similar to ObsTAP
3. Data Model contains:
 - a. Observation Characterization
 - b. Axes:
 - Spatial Coverage
 - Spectral Coverage
 - Polarization
 - c. Observatory provenance



- Initial definition by ESAC team, then discussed with about 60 supporting partners (observatory operators, platform operators, institutions, scientists etc.)
 - Workshop held on 21st September 2018 in ESAC
- Consolidated protocol descriptions presented to Virtual Observatory
 - Positive response, certification only a matter of time
- INTEGRAL has provided a prototype used here to demonstrate how it works:

Use Case:

I have a target and want to know how long I have to wait until it can be observed by multiple observatories

Demonstration for INTEGRAL



Example URL Query:

GRS 1915+105 right now
RA=288.8, DEC=10.95

cURL -s "<http://integral.esa.int/isocweb/typ.html?startDate=26-04-2019&endDate=26-05-2019&duration=12.600&action=predict&ra=288.8&dec=10.95&format=json>"

cURL -s "<http://integral.esa.int/isocweb/typ.html?startDate=26-04-2019&endDate=26-05-2019&duration=12.600&action=predict&ra=288.8&dec=10.95&format=json>"

Output in JSON Format

Demonstration for INTEGRAL



```
jness-Lenovo-G50-80:> curl -s "http://integral.esa.int/isocweb/tvp.html?startDate=26-04-2019&&endDate=26-05-2019&duration=12.600&action=predict&ra=288.8&dec=10.95&format=json" | sed '/^$/d'  
{ "RA": "288.8", "RAHMS": "19:15:12.00",  
  "DEC": "10.95", "DECHMS": "+10:57:00.0",  
  "START_DATE": "2019-04-26",  
  "END_DATE": "2019-05-26",  
  "DITHER_PATTERN": "Raster",  
  "MINIMUM_DURATION": "12.6",  
  "TOTAL_DURATION": "1417164",  
  "INTERVALS":  
  [  
    {"revolution" : "2083", "start": "2019-04-24 14:07:48 GMT",  
     "end": "2019-04-26 18:25:00 GMT", "duration": "188232"}  
    /  
    {"revolution" : "2084", "start": "2019-04-27 05:56:36 GMT",  
     "end": "2019-04-29 10:14:40 GMT", "duration": "188284"}  
    /  
    {"revolution" : "2085", "start": "2019-04-29 21:45:43 GMT",  
     "end": "2019-05-02 02:05:08 GMT", "duration": "188365"}  
    /  
    {"revolution" : "2086", "start": "2019-05-02 13:35:23 GMT",  
     "end": "2019-05-04 17:56:04 GMT", "duration": "188441"}  
    /  
    {"revolution" : "2087", "start": "2019-05-05 05:25:42 GMT",  
     "end": "2019-05-07 09:46:48 GMT", "duration": "188466"}  
    /  
    {"revolution" : "2088", "start": "2019-05-07 21:16:20 GMT",  
     "end": "2019-05-10 01:36:28 GMT", "duration": "188408"}  
    /  
    {"revolution" : "2089", "start": "2019-05-10 13:06:24 GMT",  
     "end": "2019-05-12 17:25:02 GMT", "duration": "188318"}  
    /  
    {"revolution" : "2090", "start": "2019-05-13 04:55:13 GMT",  
     "end": "2019-05-14 08:19:23 GMT", "duration": "98650"}  
  ]  
}
```



Demonstration for INTEGRAL

```
#!/bin/bash
```

```
out=`mktemp tempXXXXXX` || exit 1  
trap "rm -f $out*" 0 1 2 3 5
```

```
ra=$1  
if test x${2} = x; then  
    echo Need to provide coordinates in decimal units  
    exit 1  
else  
    dec=$2  
fi
```

```
root="http://integral.esa.int/isocweb/tvp.html"
```

```
dstart=$(date +%d-%m-%Y) ←  
dend=$(date -d "+30 days" +%d-%m-%Y) ←
```

```
#dstart="08-02-2019"
```

```
echo "${root}?startDate=${dstart}&duration=12,600&action=predict&endDate=${dend}&coordinates=equatorial&ra=${ra}&dec=${dec}&format=json"
```

```
curl -s "${root}?startDate=${dstart}&duration=12,600&action=predict&endDate=${dend}&coordinates=equatorial&ra=${ra}&dec=${dec}&format=json" > $out.json  
less $out.json | jq '.INTERVALS[].revolution' | cut -d'"' -f2 > $out.rev  
less $out.json | jq '.INTERVALS[].start' | cut -d'"' -f2 > $out.start  
less $out.json | jq '.INTERVALS[].end' | cut -d'"' -f2 > $out.end
```

```
n=$(wc -l $out.rev | cut -d' ' -f1)  
d=$(date +%y-%m-%d)  
d=${dstart}
```

```
echo "Visibility from Today ($d) to ${dend}"
```

```
for ((i=1; i<n; i++)); do  
    a=$(sed -n "${i},${i} p" $out.rev)  
    b=$(sed -n "${i},${i} p" $out.start)  
    c=$(sed -n "${i},${i} p" $out.end)  
    echo " $a $b $c"
```

```
done
```

Bash script

Take RA/Dec as input

Display visibility intervals

from today to 30 days in future



Demonstration for INTEGRAL

```
#!/bin/bash
```

```
out=`mktemp tempXXXXXX` || exit 1  
trap "rm -f $out*" 0 1 2 3 5
```

```
ra=$1  
if test x${2} = x; then  
    echo Need to provide coordinates in decimal units  
    exit 1  
else  
    dec=$2  
fi
```

```
root="http://integral.esa.int/isocweb/tvp.html"
```

```
dstart=$(date +%d-%m-%Y) ←  
dend=$(date -d "+30 days" +%d-%m-%Y) ←
```

```
#dstart="08-02-2019"
```

```
echo "${root}?startDate=${dstart}&duration=12,600&action=predict&endDate=${dend}&coordinates=equatorial&ra=${ra}&dec=${dec}&format=json"
```

```
curl -s "${root}?startDate=${dstart}&duration=12,600&action=predict&endDate=${dend}&coordinates=equatorial&ra=${ra}&dec=${dec}&format=json" > $out.json  
less $out.json | jq '.INTERVALS[.].revolution' | cut -d'"' -f2 > $out.rev  
less $out.json | jq '.INTERVALS[.].start' | cut -d'"' -f2 > $out.start  
less $out.json | jq '.INTERVALS[.].end' | cut -d'"' -f2 > $out.end
```

```
n=$(wc -l $out.rev | cut -d' ' -f1)  
d=$(date +%y-%m-%d)  
d=${dstart}  
echo "Visibility from Today ($d) to ${dend}"  
for ((i=1; i<n; i++)); do  
    a=$(sed -n "${i},${i} p" $out.rev)  
    b=$(sed -n "${i},${i} p" $out.start)  
    c=$(sed -n "${i},${i} p" $out.end)  
    echo " $a $b $c"  
done
```

Bash script

Take RA/Dec as input

Display visibility intervals

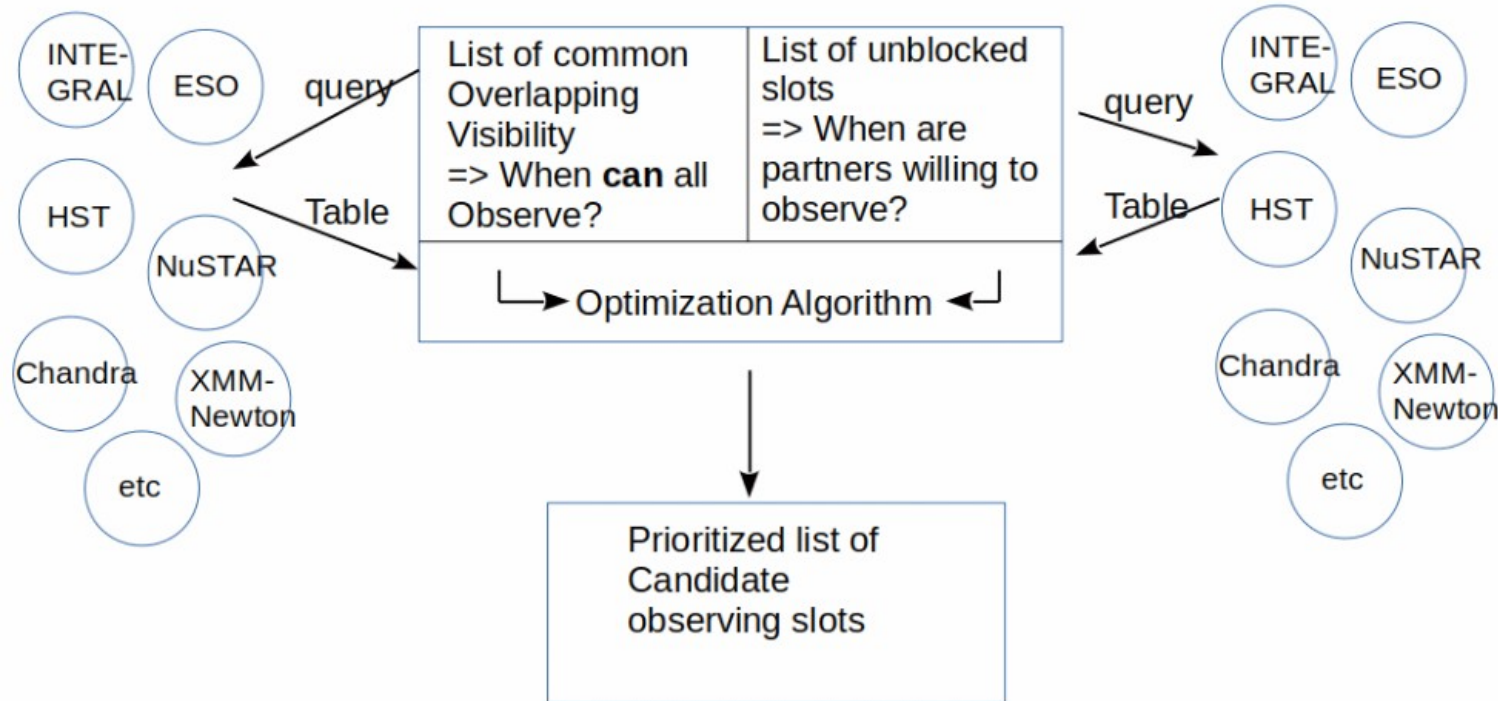
from today to 30 days in future

```
> ./too.sh 288.8 10.95  
Visibility from Today (26-04-2019) to 26-05-2019  
2083 2019-04-24 14:07:48 GMT 2019-04-26 18:25:00 GMT  
2084 2019-04-27 05:56:36 GMT 2019-04-29 10:14:40 GMT  
2085 2019-04-29 21:45:43 GMT 2019-05-02 02:05:08 GMT  
2086 2019-05-02 13:35:23 GMT 2019-05-04 17:56:04 GMT  
2087 2019-05-05 05:25:42 GMT 2019-05-07 09:46:48 GMT  
2088 2019-05-07 21:16:20 GMT 2019-05-10 01:36:28 GMT  
2089 2019-05-10 13:06:24 GMT 2019-05-12 17:25:02 GMT
```

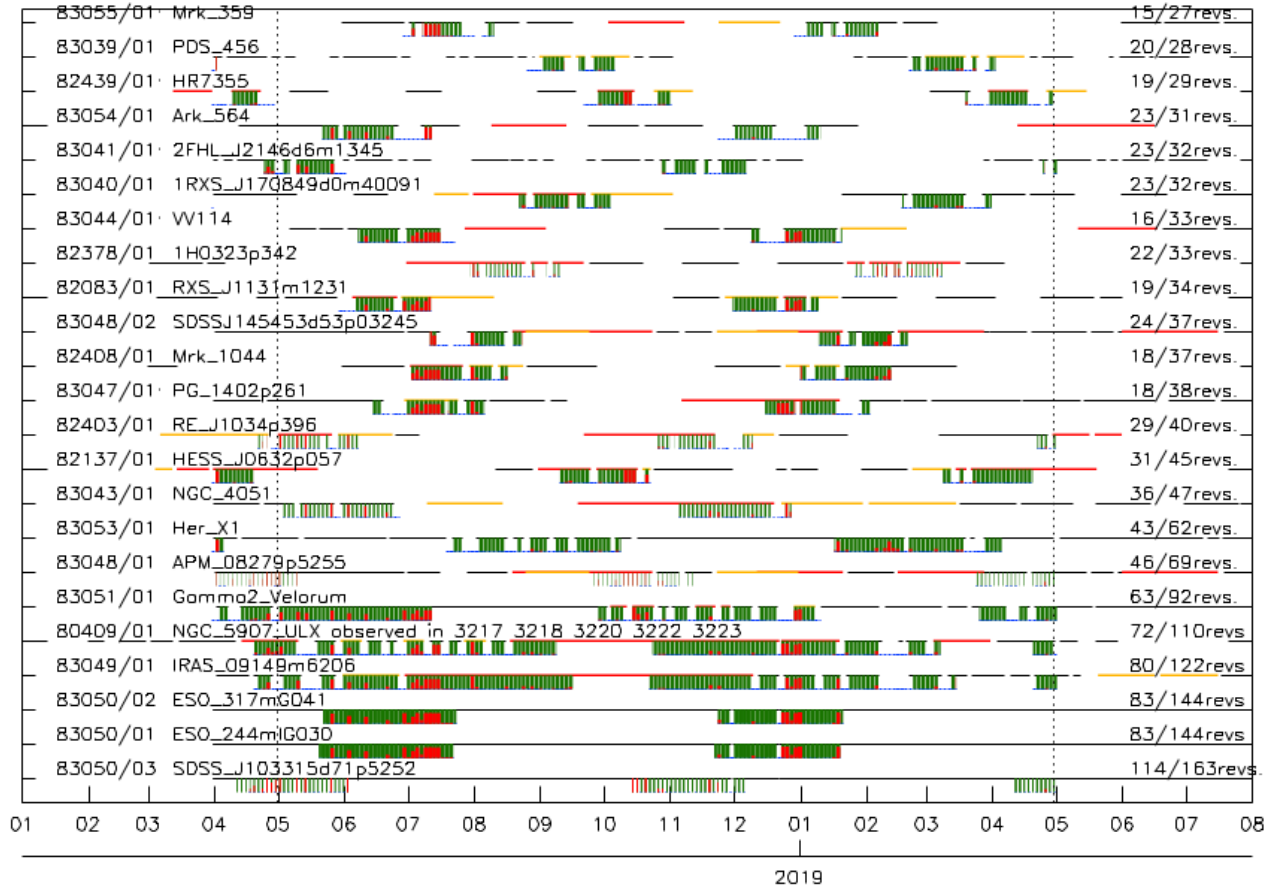
Visibility Services ObjVisSAP

Observation Services ObsLocTAP

Use Cases
Tools, Clients, Apps etc:



Example: common XMM/NuSTAR Visibility/planning



Summary

- Increasing demand for multi-mission coordinations
- Challenges:
 - Diverse formats of hard constraints (visibility)
=> Needed to find common slots
 - Diverse formats of observing plans
=> Needed to find common slots with lowest scientific impact
- Solutions:
Standard of visibility and observing information
=> machine readable, interface with optimization routines (clients)

- Implementation status:
 - INTEGRAL: public test version (see examples)
 - GAIA: Implemented ObjVisSAP (access to scanning laws)
 - Chandra: Implemented both services (testing phase)
- Applications:
 - ASTERICS: Working on Multimessenger Platform
 - Visualization of Observing Plans and visibility in Sky.esa.int

Always happy to welcome new collaborators!

You can help us to convince observing facilities to implement VO services