

Another reason to have Personal
Predictions of Occultation present in
our Occult Watcher list of
predictions.

And the natural next step if you want to have more events than
the current occultation's feeds are offering to you now.

**32th European Symposium on Occultation Projects (ESOP)
Occultation's Group of Agrupació Astronòmica de Sabadell**

Asteroid's Orbital Elements

- You can decide what feed of Orbital Elements you want to use. All of them allowed by Occult.

[MPCOrb](http://www.minorplanetcenter.org/iau/MPCORB/MPCORB.DAT) → <http://www.minorplanetcenter.org/iau/MPCORB/MPCORB.DAT>

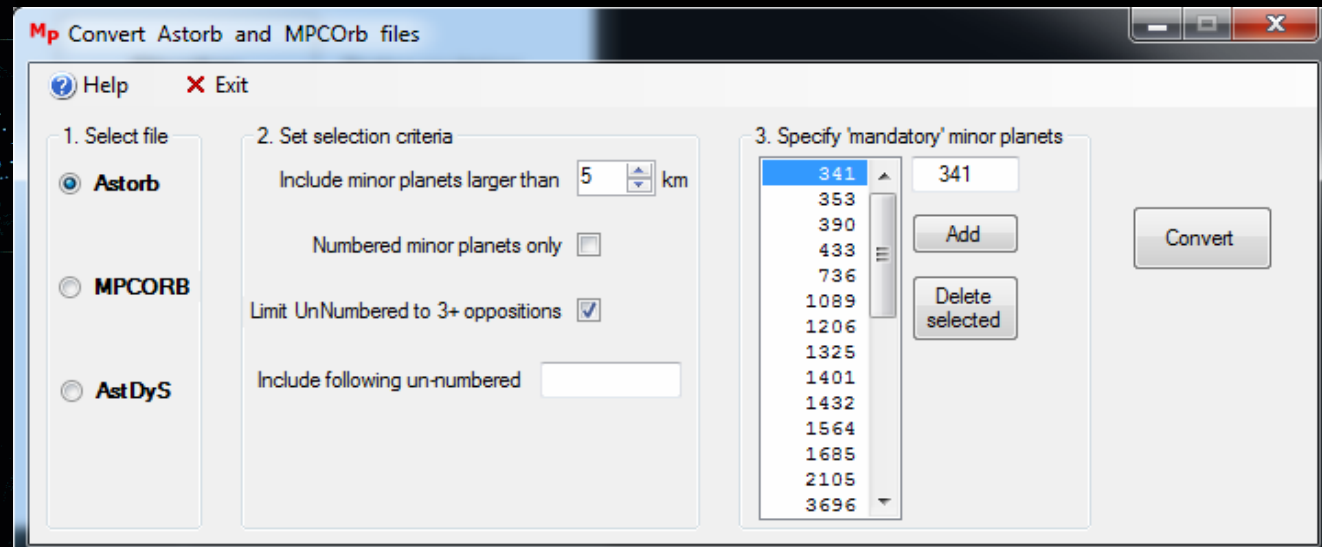
[ASTOrb](http://astorb.klet.org/astorb.dat.gz) → <http://astorb.klet.org/astorb.dat.gz>

[AstDys](http://hamilton.dm.unipi.it/~astdys2/catalogs/allnum.ctc.gz) → <http://hamilton.dm.unipi.it/~astdys2/catalogs/allnum.ctc.gz>

- Or from personal astrometry with your own observations using software like OrbFit or Find_Orb.

How-to... use orbital elements

After download and decompress (if necessary) the asteroid's elements (see previous slide), you can use them in Occult.



How-to... use “personal astrometry”

To use the elements obtained using “personal astrometry”, you have to edit the “User file of minor planets”.

number	Name	epoch y m d	M.A. o	perihelion o	node o	inclination o	e	a [or q]	Magnitudes H0 G	diam(km) max min	src	Error "	# moons
1	Ceres	2013 727.00000	349.171149	72.259034	80.329140	10.594067	0.07592295	2.76718639	3.34 0.12	960.0 908.0	7	0.02	
2	Pallas	2013 727.00000	331.417915	309.940497	173.111863	34.835219	0.23155330	2.77232807	4.13 0.11	554.0 513.0	7	0.02	
3	Juno	2013 727.00000	280.200432	248.330701	169.879315	12.979998	0.25529424	2.67052792	5.33 0.32	290.0 250.0	7	0.02	
4	Vesta	2013 727.00000	245.156578	151.098133	103.851251	7.140449	0.08843191	2.36177485	3.20 0.32	547.0 462.0	7	0.02	
5	Astraea	2013 727.00000	140.963695	358.858892	141.594959	5.367525	0.19079910	2.57470882	6.85 0.15	123.0 103.0	7	0.03	
6	Hebe	2013 727.00000	258.805790	239.376924	138.706767	14.746805	0.20168763	2.42592032	5.71 0.24	197.2	A	0.02	
7	Iris	2013 727.00000	298.511704	145.399060	259.636471	5.524450	0.23044472	2.38609666	5.51 0.15	253.0 186.0	7	0.03	
8	Flora	2013 727.00000	281.094773	285.346287	110.922065	5.887974	0.15617537	2.20162147	6.49 0.28	185.0 140.0	7	0.04	
9	Metis	2013 727.00000	76.048299	5.796359	68.943773	5.575219	0.12262249	2.38570960	6.28 0.17	200.0 120.0	7	0.04	
10	Hygiea	2013 727.00000	139.730308	312.732690	283.416914	3.841916	0.11607067	3.13698636	5.43 0.15	428.5	A	0.03	
11	Parthenope	2013 727.00000	100.220574	195.499233	125.581211	4.626448	0.09890402	2.45374026	6.55 0.15	150.5	A	0.03	
12	Victoria	2013 727.00000	272.846830	69.599261	235.491925	8.369279	0.22133177	2.33333088	7.24 0.22	131.5	A	0.03	
13	Egeria	2013 727.00000	47.831329	79.887886	43.256956	16.540881	0.08386038	2.57610867	6.74 0.15	215.0 192.0	7	0.05	
14	Irene	2013 727.00000	27.156257	97.966887	86.164795	9.118910	0.16580991	2.58640040	6.30 0.15	144.1	A	0.05	
15	Eunomia	2013 727.00000	162.851242	97.583166	293.192292	11.738777	0.18789533	2.64239656	5.28 0.23	256.4	A	0.03	
16	Psyche	2013 727.00000	236.065109	227.121270	150.284304	3.098461	0.13665720	2.92295012	5.90 0.20	207.2	A	0.03	
17	Thetis	2013 727.00000	131.293110	135.495451	125.587373	5.588499	0.13885470	2.47000873	7.76 0.15	82.0 65.0	7	0.03	
18	Melpomene	2013 727.00000	32.005840	228.043283	150.489691	10.127634	0.21822040	2.29591465	6.51 0.25	140.0	A	0.03	
19	Fortuna	2013 727.00000	14.522333	182.411313	211.233959	1.573348	0.15797863	2.44223462	7.13 0.10	230.0 193.0	7	0.04	

For Lunar occultations
Add all minor planets where the mean opposition magnitude is brighter than:

NOTE - adding many asteroids will slow predictions

Import ASTEROIDS

Import COMETS

Manually edit the elements

Number Mean Anomaly perihelion Mags H0 diameters: max min

Name e node G source of dia.

Epoch (y m d) a i positional uncertainty(") Number of moons

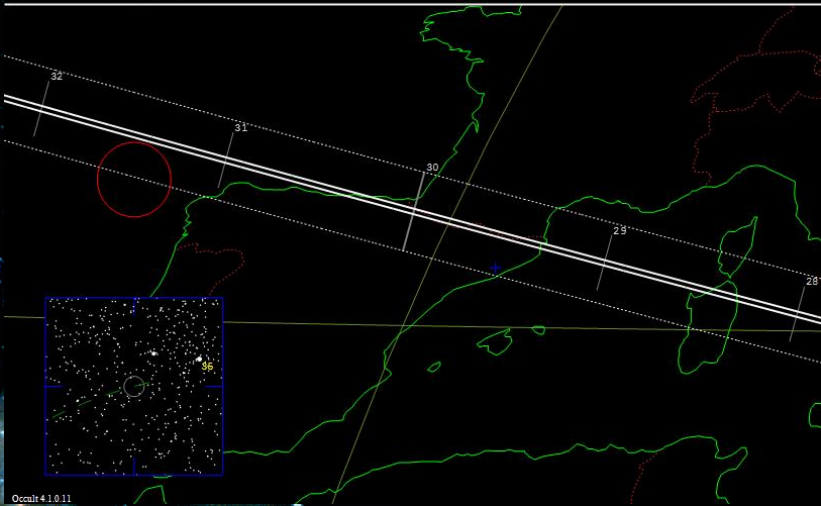
For objects with e > .97, set Epoch = perihelion date (T), Mean Anomaly=0, and a = perihelion distance (q)

The next step was well explained in the first part of this presentation.

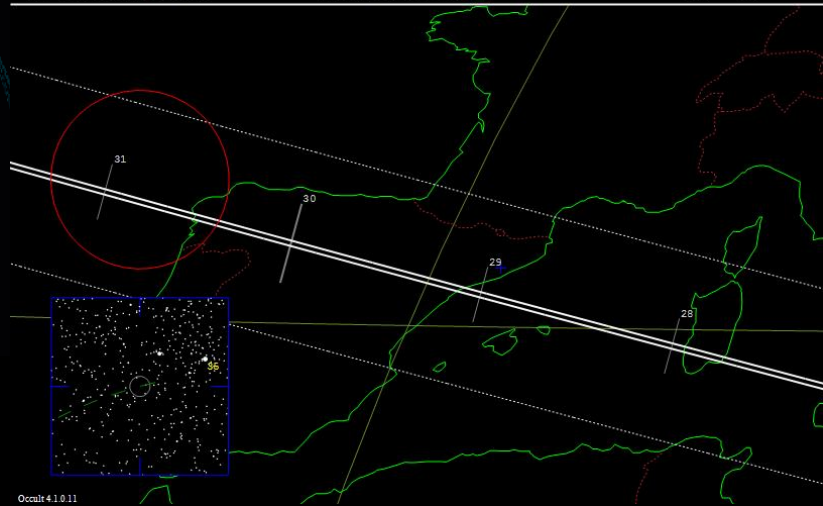
One positive from a Personal feed

2304 Slavia occults 4UC 459-099940 on 2013 Jun 22 from 23h 10m to 23h 35m UT
 Star: Max Duration = 1.6 secs Asteroid:
 Mv = 12.3 Mp = 13.3 Mr = 11.8 Mag = 15.4
 RA = 19 31 53.1830 (J2000) Sun: Dist = 148 deg Dia = 12km, 0.012"
 Dec = 1 38 30.127 Moon: Dist = 36 deg Parallax = 6.386"
 [of Date: 19 32 41, 1 40 24] : illum = 100 % Hourly dRA = -1.690s
 Prediction of 2013 May 31.0 E 0.083" x 0.084" in PA 90 dDec = 6.30"

2304 occults 4UC 459-099940 on 2013 Jun 22 from 23h 9m to 23h 34m UT
 Star: Max Duration = 1.6 secs Asteroid:
 Mv = 12.3 Mp = 13.3 Mr = 11.8 Mag = 15.4
 RA = 19 31 53.1830 (J2000) Sun: Dist = 148 deg Dia = 12km, 0.012"
 Dec = 1 38 30.127 Moon: Dist = 36 deg Parallax = 6.386"
 [of Date: 19 32 41, 1 40 24] : illum = 100 % Hourly dRA = -1.690s
 Prediction of 2013 Jun 12.0 E 0.201" x 0.201" in PA 90 dDec = 6.30"



From Astorb



From AstDys

Personal prediction from OW. Data from Astorb and AstDys processed with Occult.

The most accurate prediction was from AstDys, mainly in the temporal precision:

Astorb (O-C): 87Km (N) and +43s

AstDys (O-C): 83Km (S) and +8s

A natural step forward... IBEROC feed

After our experience with the personal predictions in our Occultation's Group, we decide to have our own feed. Its name will be IBEROC and ~~soon will be part of the Occult Watcher feeds.~~

~~This is already spoken with Hristo Pavlov and the other feed occultation maintainers of Occult Watcher, and could be appear in the next version of Occult Watcher.~~

Why we do it?

- Due to the national nature of our Association, we must provide predictions of occultation for all the national territory (including the Canary Islands).
- Despite the great work behind IOTA and EAOB feeds, we believe that there were not enough occultation events. Even we are seeing some of IBEROC's events are being chosen by observers of the rest of Europe, using the Occult Watcher feed "Planned Observations".

A natural step forward... IBEROC feed



Occult needs to know the center of the area where it will calculate the predictions.

A natural step forward... IBEROC feed

Filter Events

- Remove Duplicated Events
- Remove Events with Magnitude Drop Smaller than 0.30 m
- Remove Mag 16 or Fainter Events with Duration Smaller than 10.0 sec or Rank less than 10
- Remove Mag 15 or Fainter Events with Duration Smaller than 7.0 sec or Rank less than 10
- Remove Mag 14 or Fainter Events with Duration Smaller than 5.0 sec or Rank less than 10
- Remove Mag 13 or Fainter Events with Duration Smaller than 3.0 sec or Rank less than 10
- Remove Mag 12 or Fainter Events with Duration Smaller than 1.0 sec or Rank less than 10
- Remove Mag 11 or Fainter Events with Duration Smaller than 0.8 sec or Rank less than 10
- Remove Mag 10 or Fainter Events with Duration Smaller than 0.3 sec or Rank less than 10

“Dynamic” filtering of the duration in function of the shine of the stars.

“Quality” of the prediction

OK Cancel

A natural step forward... IBEROC feed

OccultWatcher Feed: IBEROC

Event	AstNo	AstName	StarName	StarMag	Dur	Drop	DTFrom	DTTo	SunDist	MoonDist	MoonIll	StarRA	StarDE		
130818	5091	Isakovskij	4UC 360-202339	12.5	2.2	4.12	00:42	01:03	150	0	0	19 50 51.59	-18 06 12.5	PATH	DETAILS
130818	24689	1990 OH1	TYC 2303-01042-1	10.7	4.2	7	01:19	02:05	111	0	0	01 14 01.01	+36 18 06.8	PATH	DETAILS
130818	26369	1999 CG62	TYC 749-00423-1	10.8	0.5	7.4	05:03	05:04	40	0	0	07 04 30.78	+09 10 37.2	PATH	DETAILS
130818	7965	Katsuhiko	TYC 2859-00161-1	12.7	1.3	5.31	05:08	05:15	89	0	0	03 00 15.96	+44 38 41.1	PATH	DETAILS
130818	2263	Shaanxi	4UC 322-080009	12.7	1.8	4.12	20:35	20:39	95	0	0	15 50 43.95	-25 43 26.0	PATH	DETAILS
130819	1505	Koranna	4UC 388-077485	12.3	3	3.35	00:14	00:30	111	0	0	17 12 17.95	-12 29 06.8	PATH	DETAILS
130819	3139	Shantou	4UC 491-136066	13.7	3.4	1.99	01:02	01:17	149	0	0	20 25 24.05	+08 09 57.1	PATH	DETAILS
130819	607	Jenny	4UC 595-021187	12.1	2.1	3.83	01:27	01:29	61	0	0	05 36 18.40	+28 54 02.2	PATH	DETAILS
130819	23977	1999 GW6	TYC 2242-01163-1	12.3	2.2	4.32	04:08	04:37	136	0	0	23 01 07.22	+27 29 02.2	PATH	DETAILS

<http://ocultacions.astrosabadell.org/IBEROC/index.html>

This web page is automatically generated for the software OWFeed Creator by H. Pavlov. Catching the charts previously generated for Occult by D. Herald. And this is the source of the predictions used by OW.

Related URL's and acknowledgements.

- OrbFit software: <http://adams.dm.unipi.it/orbfit/>
- Find_orb: http://www.projectpluto.com/find_orb.htm
- Occult: <http://www.lunar-occultations.com/iota/occult4.htm>
- Occult Watcher:
<http://www.hristopavlov.net/OccultWatcher/OccultWatcher.html>
- IBEROC web page: <http://ocultacions.astrosabadell.org/>

Thanks for your attention

We are grateful to the support received by Hristo Pavlov. To Eric Frappa, David Herald and Emmanuel Thienpont for the suggestions received from them while discussing some features of IBEROC.

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