

What people think first when they hear 'Munich'

Munich / München

- Octoberfest
 - Hofbräuhaus
 - Fairy Tale King Ludwig II
- } Munich Beer



Most people think first the famous football-club!
The club wins nearly every year the German Mastership:



Saison	Platz	Tore	Punkte	Zuschauerschnitt
2012/13	1	98:18	91	71.000
2013/14	1	94:23	90	71.131
2014/15	1	80:18	79	72.966
2015/16	1	80:17	88	75.006
2016/17	1	89:22	82	75.000
2017/18	1	92:28	84	75.000

Grün unterlegt: Gewinn der deutschen Meisterschaft

After 6 titles the 'German Mastership is boring' - only a Double with the 'German Cup' is still interesting:

DOUBLEGEWINNER

Jahr	Doublegewinner	Ergebnis Pokalfinale
2012	Borussia Dortmund	5:2 gegen den FC Bayern München
2013	FC Bayern München	3:2 gegen den VfB Stuttgart
2014	FC Bayern München	2:0 n.V. gegen Borussia Dortmund
2016	FC Bayern München	4:3 n.E. gegen Borussia Dortmund

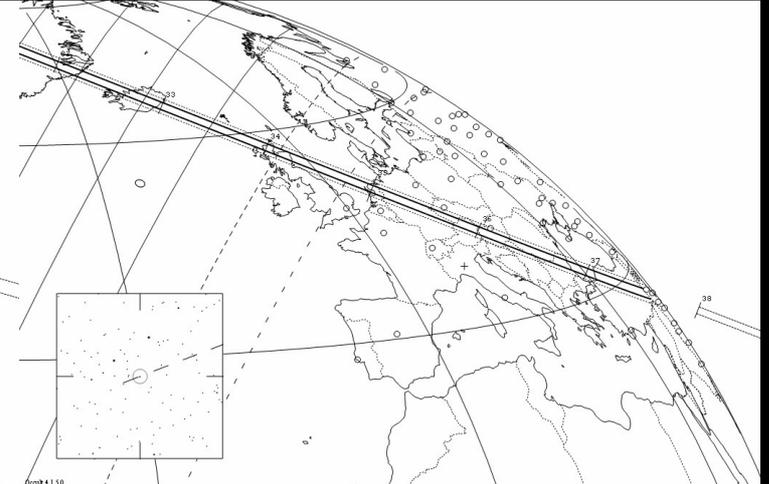
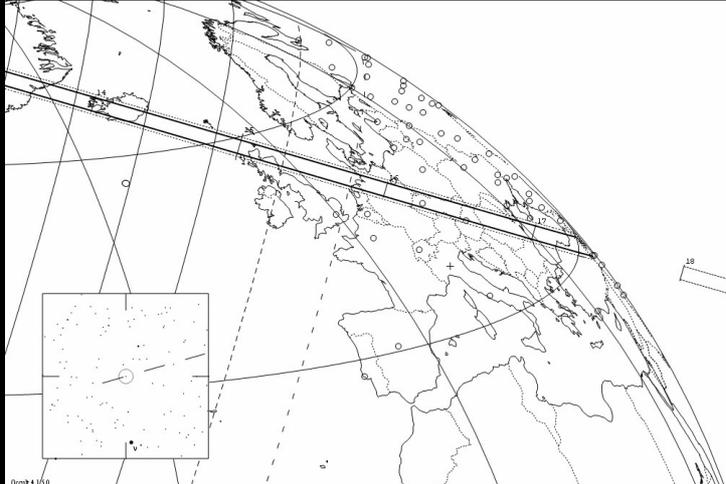




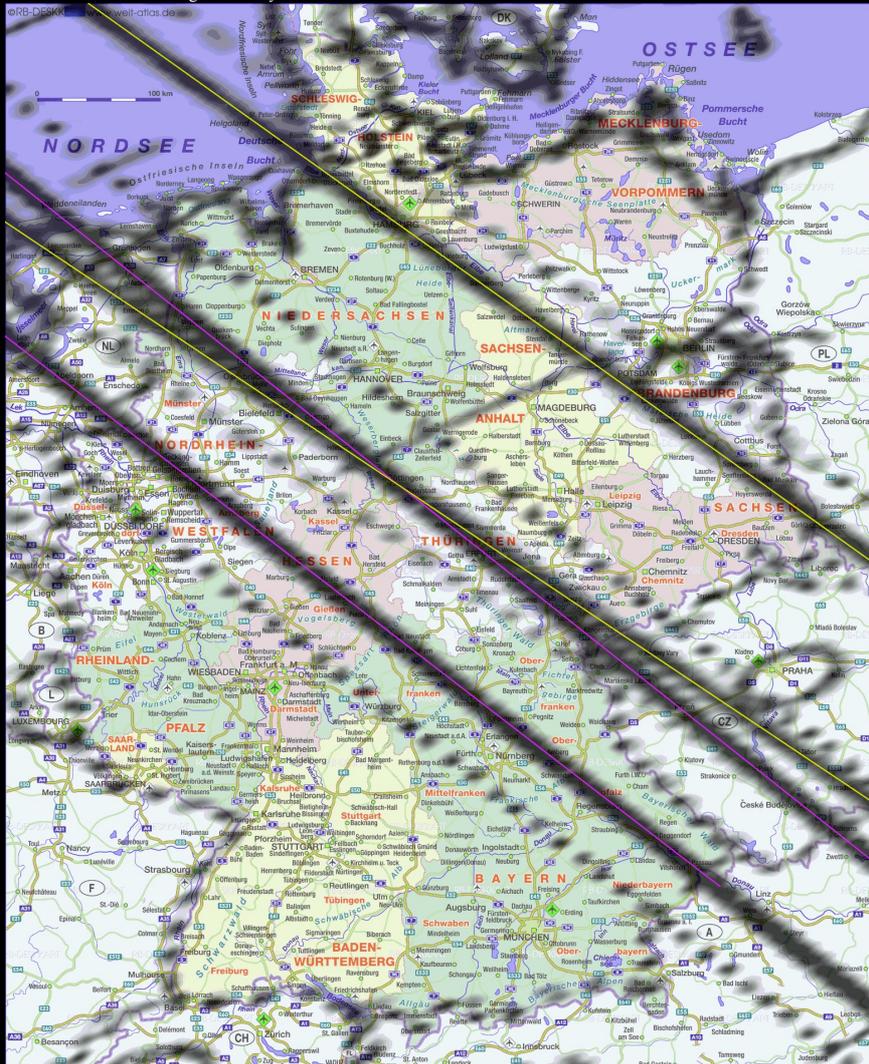
Occultations by Minor Planets are science, but it has also elements of sports.
 A Double in a year is nothing special - but a Double in a night is an interesting target.

At Pentecost 2015 there was a chance of a Double in only 20 minutes!

58 Concordia occults TYC 0835-00181-1 on 2015 May 23 from 21h 11m to 21h 17m UT				656 Beagle occults TYC 0839-00959-1 on 2015 May 23 from 21h 30m to 21h 38m UT			
Mag = 10.4	Mp = 10.8	Mr = 10.2	Max Duration = 5.4 secs	Mag = 9.6	Mp = 10.9	Mr = 8.9	Max Duration = 3.7 secs
RA = 7 49 23.064 (20200)	Dec = 2 59 48.2	PA = 102.8m	Hourly dMag = 0.058*	RA = 10 40 7.6276 (20200)	Dec = 8 22 40.852	PA = 91.241	Hourly dMag = 0.030*
Parall. Dist = 2.5734	ILIM = 28.447	ILIM = 28.447	Hourly dDec = -10.92"	Parall. Dist = 2.5734	ILIM = 29	ILIM = 29	Hourly dDec = -10.67"
Prediction of 2015 Apr 24.0	E 0.016" ± 0.013" in PA 99	E 0.016" ± 0.013" in PA 99		Prediction of 2015 Apr 24.0	E 0.021" ± 0.015" in PA 106	E 0.021" ± 0.015" in PA 106	

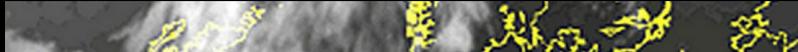


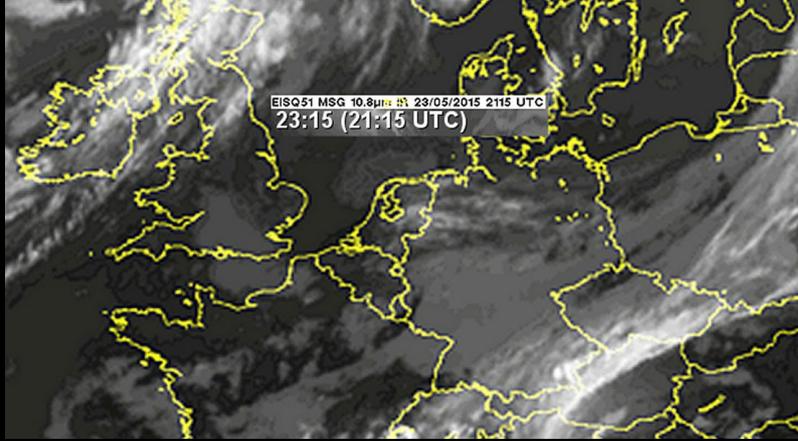
The violett line is 656-Beagle and the yellow line is 58-Concordia.



Position und Zeit wurden durch Abfilmen eines GPS-Gerätes ermittelt

Unfortunately the weather was bad.



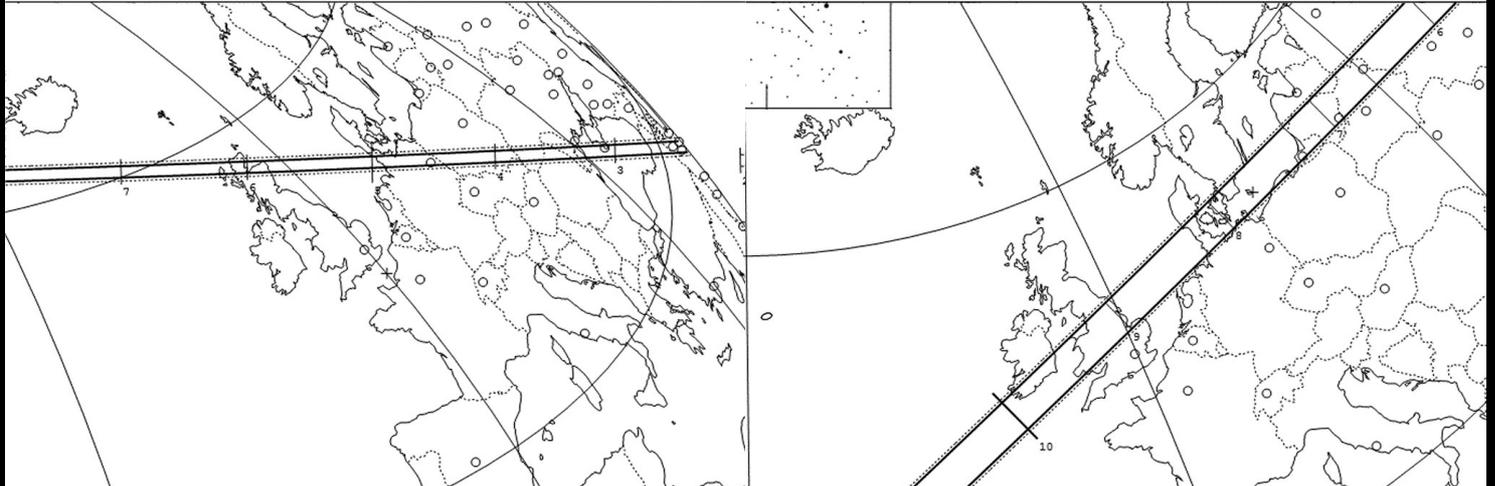


Nevertheless it was possible to take a positive observation of Beagle in a cloudhole in Rheda-Wiedenbrück.

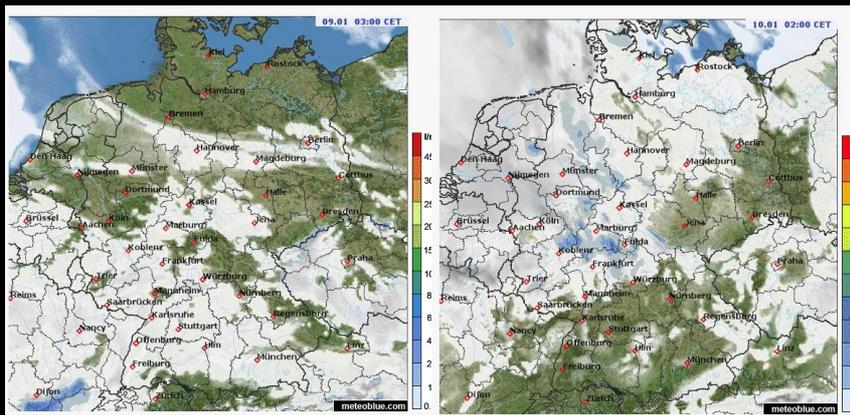


A Chance this year was the Double of 138-Tolosa and 372-Palma in North-Germany. The time difference was 23 hours.

138 Tolosa occults TYC 1869-00408-1 on 2018 Jan 9 from 2h 2m to 2h 18m UT			372 Palma occults TYC 3764-02615-1 on 2018 Jan 10 from 1h 2m to 1h 20m UT		
Mag = 8.8	Max Duration = 5.5 sec	Asteroid: (in DAMIT, ISM)	Mag = 10.1	Max Duration = 15.8 sec	Asteroid: (in DAMIT, ISM)
RA = 8 26 19.1031 (J2000)	Sun: Mag Drop = 4.0	Mag = 12.8	RA = 6 24 41.9421 (J2000)	Sun: Mag Drop = 11.7 deg	Mag = 10.8
Dec = 26 21 27.929	Moon: Diam = 136 deg	Parallax = 4.228	RA = 6 24 41.8488	Moon: Diam = 111 deg	Diam = 190km, 0.175°
TOP Data: 6 26 30 26 21 58	Hourly GMA = -2.2654	Hourly GMA = -2.2654	TOP Data: 6 26 30 62 40 30	Hourly GMA = -3.018	Hourly GMA = -3.018
Prediction of 2017 Dec 15.0	E 0.021° 0.013° in PA 85	dMSE = -0.68°	Prediction of 2017 Dec 15.0	E 0.026° 0.014° in PA 73	dMSE = -26.59°



Unfortunately the weather changed dramatically in this 23 hours. - So I've got no positive result.



The conclusion is: The weather ist to bad in Germany. Better chances are in South-Europe.

For traveling by airplane a light equipment is needed. An inspiration was the speech of Eberhard Bredner in Guildford 2016. He presented his small equipment for the solar eclipse last year and I tried to develop a comparable solution.

■ Travelling and observing with small equipment
(Eberhard Bredner, IOTA-ES, DOA, Club Eclipse)

"From Mars to theta Librae and nothing".

This will be basic information on the use of portable equipment. I also hope to give some hints for the more experienced observers.

ESOP35 - Guildford 2016



The optic is a small 80mm f/5 Fraunhofer made in China . The weight is much smaller as the weight of my 72mm Apochromat and for occultations no high magnification is needed.
An advantage is the finder-shoe.



The counterweight is an water-bottle.





For recording a little hand-held recorder could be used....but the display is very small.



For the First Light a suitable Double was found in Steve-Prestons 'Best-Off'-Liste for 16.5.2017

Asteroid Occultation Prediction: X Mozilla Firefox-Startseite X +

www.asteroidoccultation.com

Misc Links:
[Steve's pick of best events for 2016](#)
[Steve's pick of best events for 2017](#)

Summary Occelmtt Files for Occult:
 The following occelmtt files include all of the future events
 *** Use right-click in your browser to save these files directly to disk or you may experience problems with the format of these files when you try to display the events with the Occult Asteroids module.
[Occelmtt File for version 3.6 and later of Occult.](#)

Star & Hourly
 Griffith Observatory

Best Asteroid Occultation Events X Mozilla Firefox-Startseite X +

www.asteroidoccultation.com/2017-Best-Events.htm

BEST EVENTS:

2017 May 04: (407) Arachne / HIP 75272 (m6.5)
 0.23 pw uncertainty
 Argentina, Chile, New Guinea

2017 May 12: (25) Phocaea / TYC 0508-00919-1 (m9.7)
 0.22 pw uncertainty
 Brazil, Peru

2017 May 14: (212) Medea / HIP 42471 (m8.3)
 0.22 pw uncertainty
 SE Asia, India

2017 May 16: (12) Victoria / HIP 64952 (m9.1)
 0.16 pw uncertainty
 Brazil, Colombia, Central America

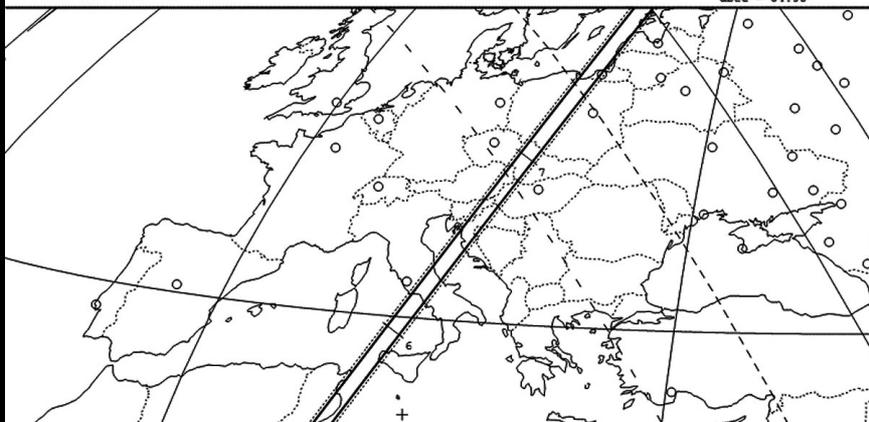
2017 May 16: (25) Phocaea / TYC 1074-01143-1 (m11.2)
 0.21 pw uncertainty
 Europe, Africa

2017 May 16: (386) Siegena / TYC 0832-00644-1 (m9.9)
 0.13 pw uncertainty
 SW Asia, Europe

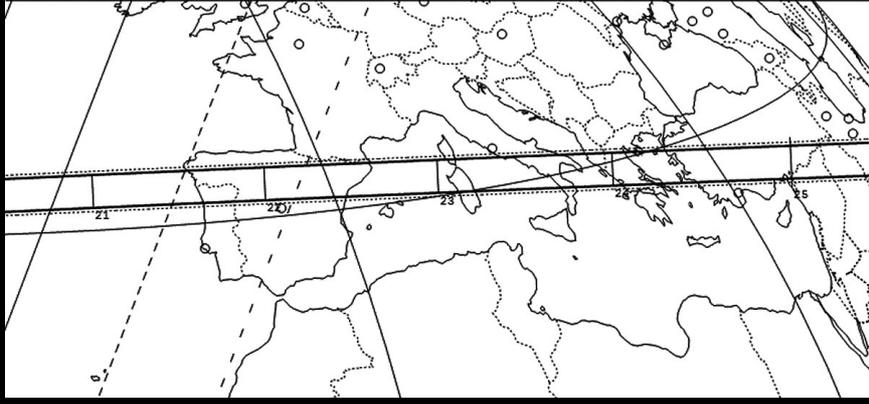
2017 May 17: (3) Juno / TYC 5141-02016-1 (m10.7)
 0.11 pw uncertainty

25 Phocaea occults TYC 1074-01143-1 on 2017 May 16 from 2h 0m to 2h 10m UT

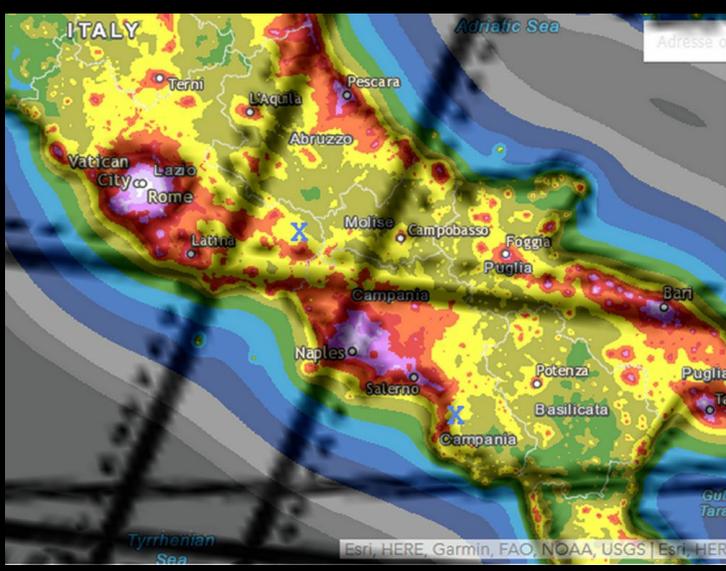
Star:	Max Duration = 4.1 secs	Asteroid: (in DAMIT, ISAM)
Mv = 11.2	Mag Drop = 0.7	Mag = 11.1
RA = 20 23 20.6388 (J2000)	Sun : Dist = 103 deg	Dia = 75km, 0.079"
Dec = 8 47 21.0716	Moon: Dist = 30 deg	Parallax = 6.682"
[of Date: 20 24 11, 8 50 42]	: illum = 77 %	Hourly dRA = 2.888s
Prediction of 2016 Oct 11.0	E 0.022"x 0.008" in PA 81	dDec = 54.98"



386 Siegena occults TYC 0832-00644-1 on 2017 May 16 from 20h 13m to 20h 26m UT
 Star: Mv = 9.9 Max Duration = 11.3 secs Asteroid: (in DAMIT, ISAM)
 RA = 9 56 26.6475 (J2000) Sun : Dist = 91 deg Mag = 13.3 Dia = 166km, 0.075"
 Dec = 11 54 59.345 Moon : Dist = 154 deg Parallax = 2.891"
 [of Date: 9 57 22 11 49 59] : illum = 71 % Hourly dRA = 1.618s
 Prediction of 2017 May 1.0 E 0.012"x 0.008" in PA 89 Hourly dDec = 1.12"



The time difference is 18 hours. The crosspoint was near Pompeji. An interesting target for a small holiday.



The wether prediction was positive:

https://www.meteoblue.com/de/wetter/voorhersage/woche/neapel_balnen_31773941day-2

Wetter Neapel

Kampanien, Italien, 40.86°N 14.25°O 17m ü NN

Vorhersage	Mo	Di	Mi	Do	Fr	Sa	So
7-Tage-Wetter							
14-Tage-Wetter							
Aktuelles Wetter	23 °C	24 °C	24 °C	25 °C	24 °C	24 °C	
Webcams	18 °C	18 °C	18 °C	16 °C	19 °C	18 °C	20 °C
Meteogramme	13 km/h	15 km/h	18 km/h	15 km/h	17 km/h	12 km/h	18 km/h
Multimodal	8h	7h	11h	11h	12h	8h	

Die Verlässlichkeit dieser Vorhersage ist **mittel**. Wir empfehlen einen Blick auf das [Multimodal](#).

Smartphone Apps: Jetzt die brandneue [meteoblue App für android](#) oder die aktualisierte [App für iPhone und iPad](#) kostenlos runterladen.

Dienstag

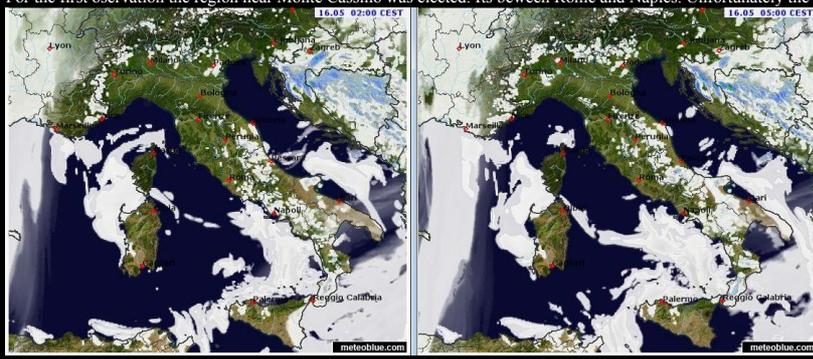
02 ⁰⁰	05 ⁰⁰	08 ⁰⁰	11 ⁰⁰	14 ⁰⁰	17 ⁰⁰	20 ⁰⁰	23 ⁰⁰
20°	18°	21°	24°	24°	23°	22°	20°
21°	18°	20°	22°	22°	21°	20°	18°
ONO	ONO	NO	NO	NNO	NNO	NNO	NO
4-12	5-12	10-17	15-24	10-15	9-13	8-22	6-27

The equipment take place in a simple sport-bag.

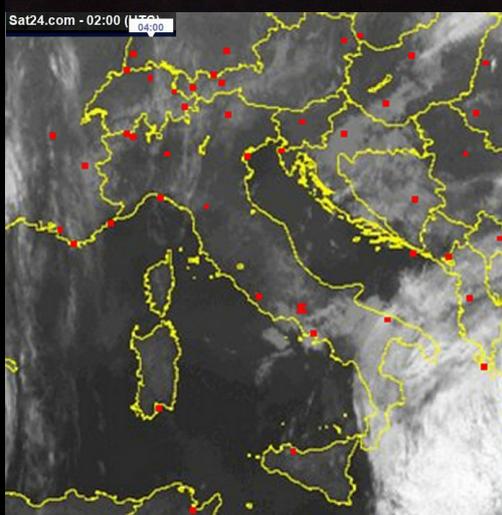




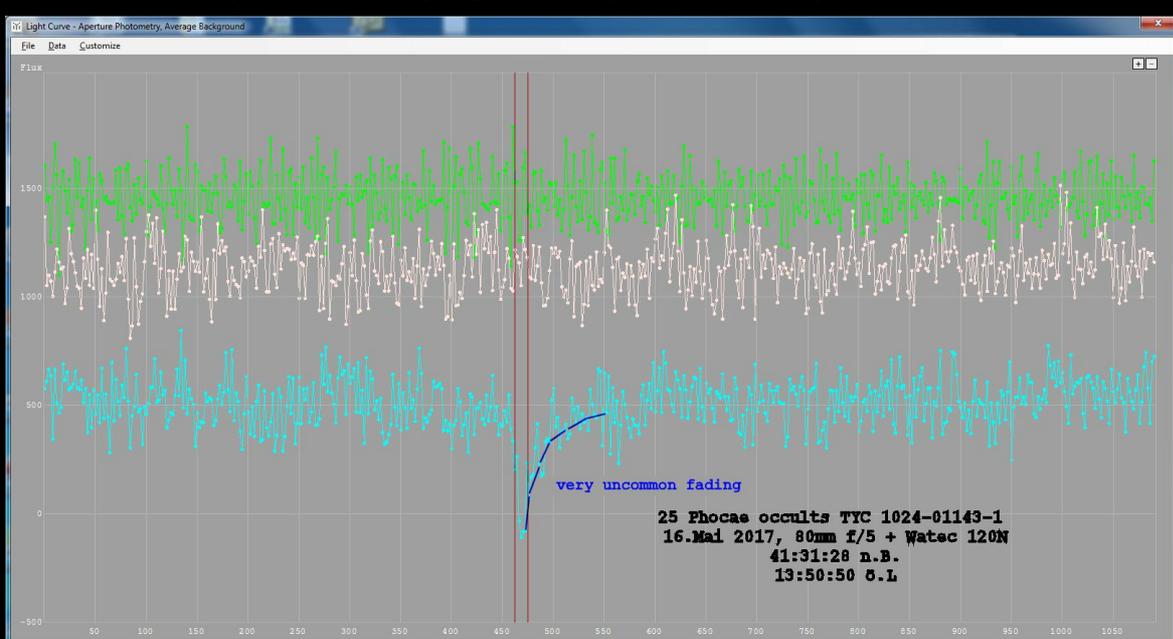
For the first observation the region near Monte Cassino was elected. Its between Rome and Naples. Unfortunately the weather predictions were unsure.



15 min before the occultation the sky gets clear.



There was a short but positive signal with an uncommon long fading. Cause the small optic the framerate was 3,125 fps.



The fading was longer than the occultation of 2 s.

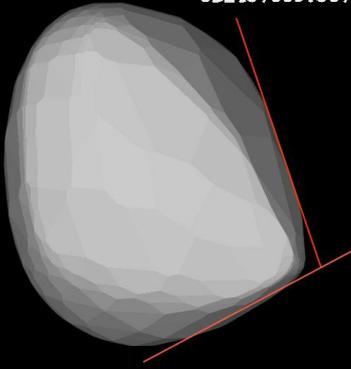
The star has only 11 mag. The spectral class is M0. But at 11 mag a red giant is too small for a significant surface-fading.

GSC2.3	NISM000025	[NS0-9A-Z] Identification of the object (Note 1) (meta.id:meta.main)	
Vmag	11.15 mag	Magnitude in V photographic band (green) (phot.mag:em.opt.V)	B-V = 1,47 M0-Stern
Bmag	12.62 mag	Magnitude in B band (Johnson blue) (phot.mag:em.opt.B)	

More suitable is a flat borderline.

View of Damit at the occultation time:

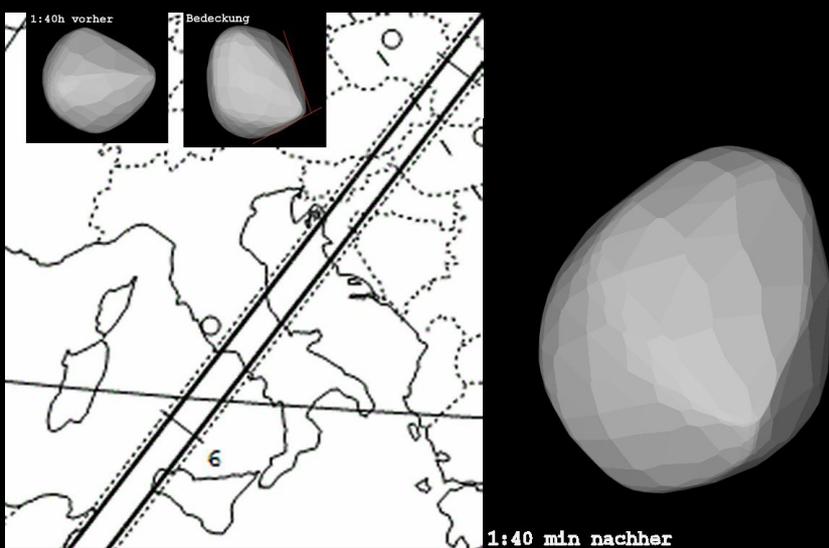
Bedeckungszeitpunkt 25 Phocaea at JD2457889.5875



astro.troja.mff.cuni.cz/projects/asteroids3D/php.php/scripts/ob_sky_projection&model_id=697&jd=2457889.5875

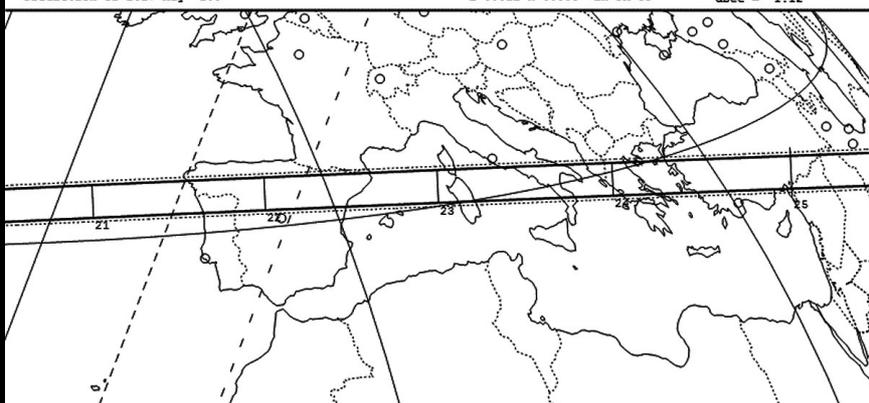
The profile 1:40 h before the occultation fits better to shadow path. Maybe there is cumulative time error in the DAMIT-dataset.

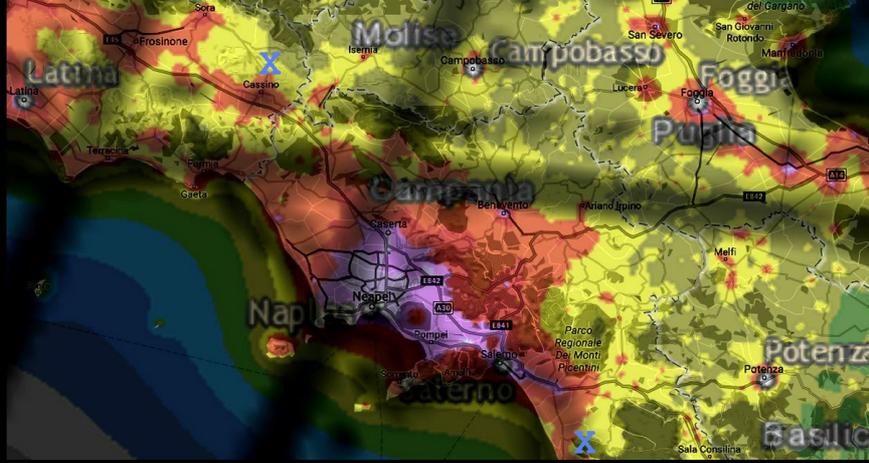
Other observations would be useful. Unfortunately there were no other known observers active in that night.



For the second observation I changed the position an observed near Paestum.

386 Siegena occults TYC 0832-00644-1 on 2017 May 16 from 20h 13m to 20h 26m UT		
Star:	Max Duration = 11.3 secs	Asteroid: (in DAMIT, ISAM)
Rv = 9.9	Mag Drop = 3.4	Mag = 13.3
RA = 9 56 26.6475 (J2000)	Sun : Dist = 51 deg	Dist = 166km, 0.075"
Dec = 11 54 59.345	Moon: Dist = 154 deg	Parallax = 2.891"
[of Date: 9 57 22, 11 49 59]	illum = 71 %	Hourly dRA = 1.618s
Prediction of 2017 May 1.0	E 0.012"x 0.008" in PA 89	dDec = 1.12"





In Paestum is famous for the ruins of three greek temples build 500 before Christ.



and a nice museum



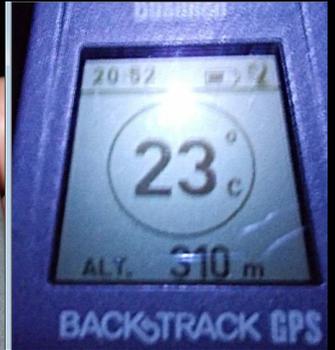


One of the groves show the painting of the famous diver:

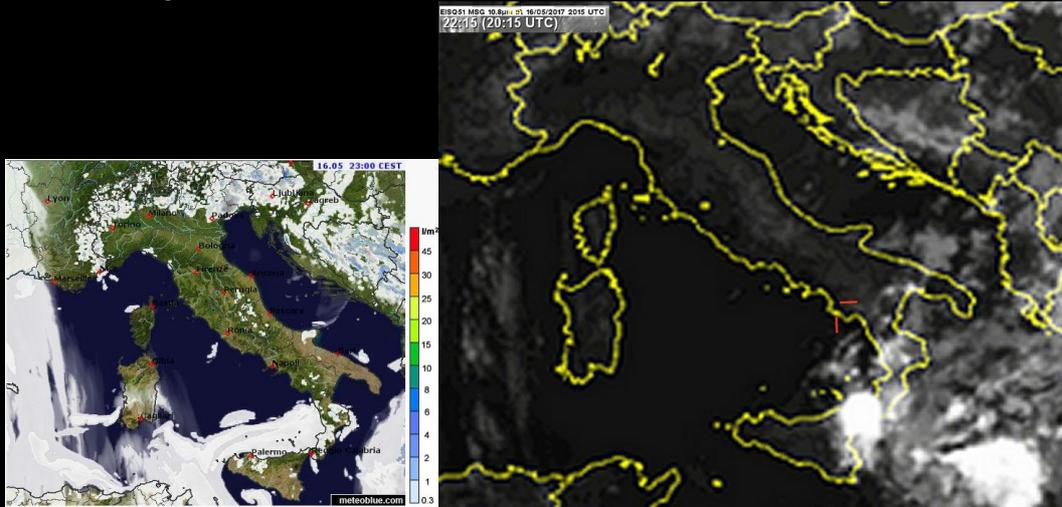




The observation place was nearby the Abbey Santuario Madonna del Granato.

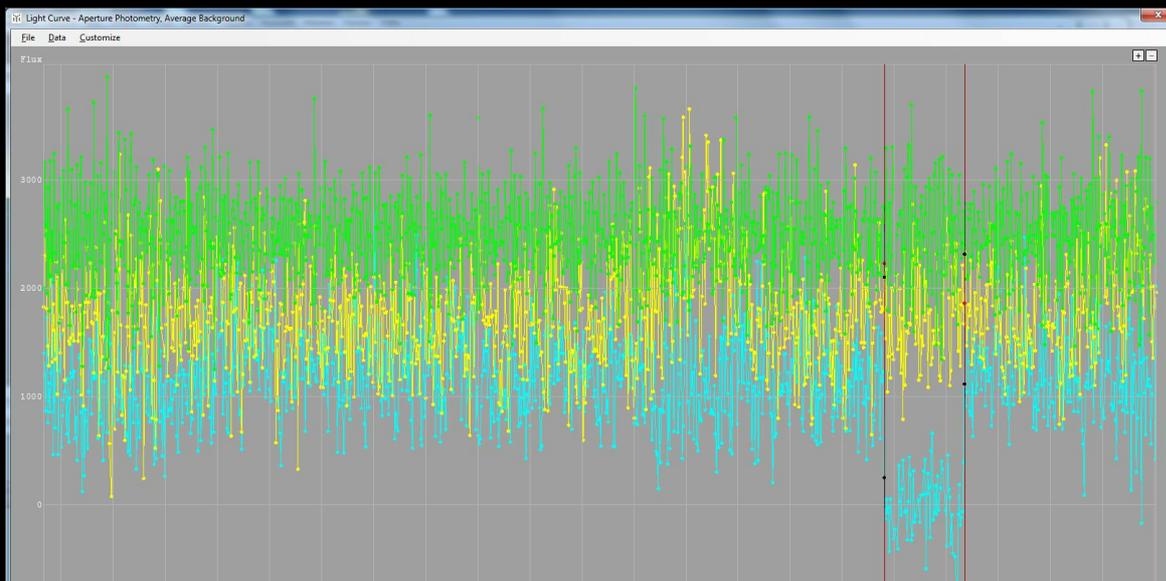


The weather was perfect.



A problem was wind-shaking.

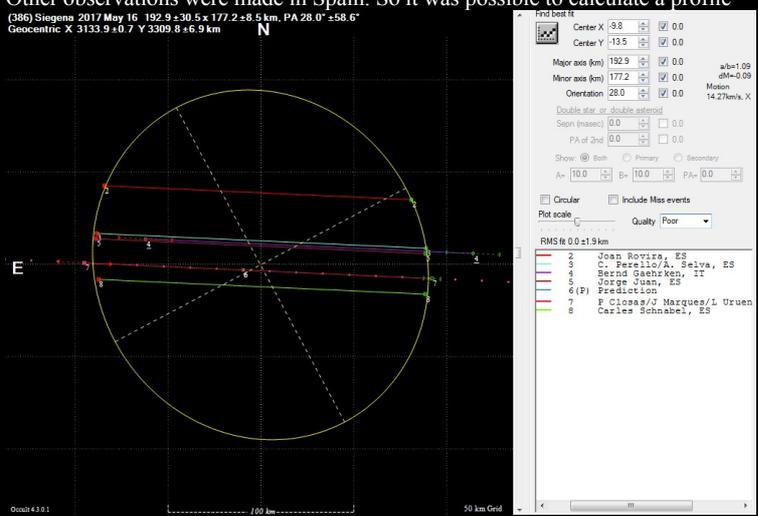
Video: 386siegenb.wmv



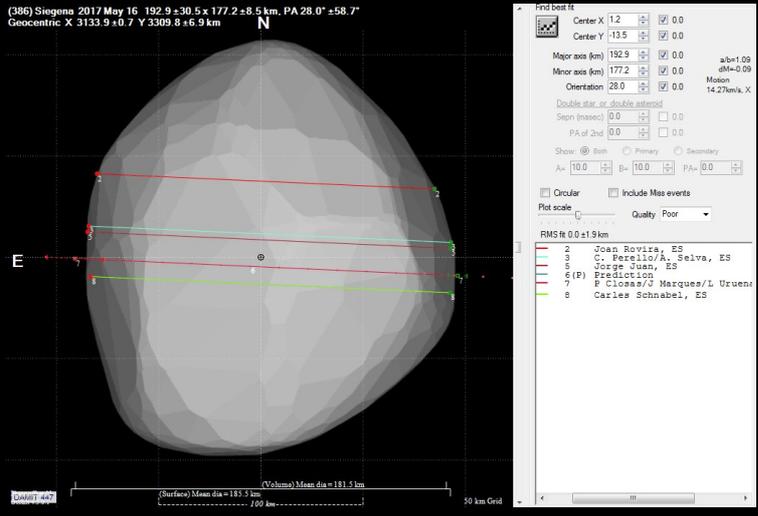


The occultation was long, with 12,32s longer than the expected value of 11,3s.
 So the occultation was near the central line.

Other observations were made in Spain. So it was possible to calculate a profile



The diameter fits well to the value of the DAMIT-data-source



Both measurements are added to the Euraster-Dataset. So the Double was perfect!

Web: <http://www.euraster.net/results/2017/>

2017/05/16 | 386 | Siegena | TYC 0832-00644-1

chords_raw_data, with DAMIT model
 192.9 km +/- 30.5 x 177.2 km +/- 8.5, PA 28.0 deg +/- 58.6

Observer	Time	Chord	Model	VID	ES	E	N	WS	
P+	prediction	20:22:32	20:22:32			02 00 00	N 41 23 17	0 WS	
O+	Jorge Juan	20:17:05	20:23:20	M406	VID	E 01 45 55.0	N 41 32 21.4	420 WS	
12.44	20:22:24.87	0.03	20:22:37.31	0.03					
O+	Carles Schnabel	20:20:18	20:24:54	M250	VID	E 01 50 18.0	N 41 18 23.8	297 WS	
12.33	20:22:25.98	0.03	20:22:38.31	0.03					
O+	P. Closas et al	20:22:03	20:23:00	L150	VID	E 02 02 36.8	N 41 23 03.1	51 WS	
13.12	20:22:26.23	0.96	20:22:39.35	0.32					
Observation with J. Marques/L. Uruena.;									
O+	C. Perello/A. Selva	20:21:32	20:24:40	M500	VID	E 02 05 24.6	N 41 33 00.2	224 WS	
12.42	20:22:26.47	0.02	20:22:38.89	0.02					
O+	Joan Rovira	20:18:01	20:26:05	M200	VID	E 02 05 45.1	N 41 49 05.4	827 WS	
11.58	20:22:26.04	0.02	20:22:37.62	0.02					
O+	Bernd Gaehrken	20:21:30	20:25:00	L80	VID	E 15 03 48	N 40 25 48	310 WS	
12.32	20:23:30.56	1	20:23:42.88	1					
Unreliable time source (computer alone).;									
O-	Dariusz Miller	20:14:30	20:26:00	M270	VIS	E 21 09 21.5	N 52 14 13.6	93 WS	

2017/05/16 | 25 | Phocaea | TYC 1074-01143-1

Observer	Time	Chord	Model	VID	ES	E	N	WS
P+	prediction	02:06:12	02:06:12			13 43 45	N 41 15 59	0 WS
O+	Bernd Gaehrken	02:05:00	02:08:00	L80	VID	E 13 50 50	N 41 31 28	114 WS
2.24	02:06:13.28		02:06:15.52					

2017/05/15 | 32135 | 2000 LF18 | 4UC418-141040

Next target: The Triple...?

It's difficult. The club of 'Bayern München' win the Triple of 'German Mastership', 'German Cup' and 'Champions League' only one year.

Three crossing shadow-paths in 24 hours are nearly impossible.

...but maybe one day with the better Gaia-Dataset and some hours driving with the car, there will be a chance...



All informations are available at:
www.astrode.de/esop18a.htm