Forthcoming Lucky Star predictions

Josselin Desmars[1] and the Lucky Star Team

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ESOP XXXVIII
31.08.2019 - 01.09.2019

Objects

- TNOs, Centaurs and Trojans (~ 360)
- chosen by their scientific interests, size, current position in the sky, ...

Ephemeris

- Using NIMA ephemeris
- Update regularly with astrometric positions from Brazil, Spain, ...
- and with previous positive occultations

Predictions

- Predictions of stellar occultations for the current year

Lucky Star predictions webpage

http://lesia.obspm.fr/lucky-star/

l'Observatoire de Paris | LESIA

Laboratoire d'Études Spatiales et d'Instrumentation en Astrophysique

ERC Lucky Star project

Predictions of stellar occultations by TNOs and Centaurs in 2019

← Predictions for 2018 Predictions for 2020 →

This page presents the prediction of occultations by selected TNOs and Centaurs for 2019. These predictions are made in the framework of Lucky Star project (led by B. Sicardy) and in collaboration with groups from Paris, Meudon, Granada and Rio.

For specific campaigns, you can have a look to campaigns page.

Information about the predictions can be found in Assafin et al. (2010) for Pluto system predictions, Assafin et al. (2012) for the TNO predictions, Camargo et al. (2014) for TNO and Centaur predictions. Ephemerides of the selected objects come from Desmars et al. (2015) and they are regularly updated (see 'Ephemerides' section) thanks to observations from Minor Planet Center and our own observations made at ESO, Pic du Midi, Calar Alto, Sierra Nevada and Observatorio do Pico dos Dias, and also from astrometric positions coming from the Dark Energy Survey (Banda-Huarca et al., 2019). Predictions make use of Gaia DR2 (Gaia Collaboration, 2018) for the position of the stars and the proper motions.

You can choose to display the events only visible for a specific place

IMPORTANT: If you plan to observe one of these predicted events, please contact J. Desmars .

Date filter:

2019-09-01 — 2019-11-02

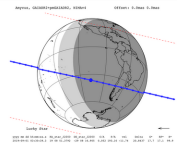
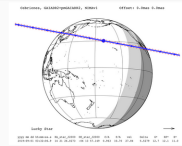
Object filter :

Magnitude filter:

4.0 — 18.0

Zone Selection :

(East-Asia, Europe & North Africa, Oceania, Southern Africa, North America, South America)

Date	Object	G* mag	Zone	Map
2019-Sep-01 03:30	Amycus	17.7	South America	
2019-Sep-01 03:32	Cebriones	12.7	North America	
				

predictions, Camargo et al. (2014) for TNO and Centaur predictions. Ephemerides of the selected objects come from Desmars et al. (2015) and they are regularly updated (see 'Ephemerides' section) thanks to observations from Minor Planet Center and our own observations made at ESO, Pic du Midi, Calar Alto, Sierra Nevada and Observatorio do Pico dos Dias, and also from astrometric positions coming from the Dark Energy Survey (Banda-Huarca et al., 2019). Predictions make use of Gaia DR2 (Gaia Collaboration, 2018) for the position of the stars and the proper motions.

You can choose to display the events only visible for a specific place

Longitude: 2,230067 ° (East positive) **Latitude:** 48,805004 ° (North positive) submit

IMPORTANT: If you plan to observe one of these predicted events, please contact J. Desmars .

Date filter:

2019-09-01 2019-11-02

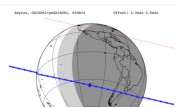
Object filter :

Magnitude filter:

4.0 18.0

Zone Selection :

(East-Asia, Europe & North Africa, Oceania, Southern Africa, North America, South America)

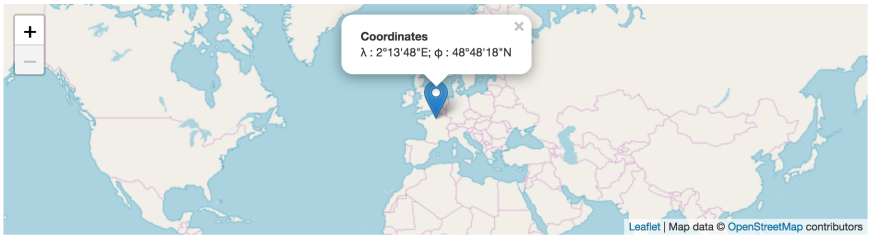
Date	Object	G* mag	Zone	Map
2019-Sep-01 03:30	Amycus	17.7	South America	

Predictions of stellar occultations by TNOs and Centaurs in 2019

← Back to the main predictions page

This page presents the prediction of occultations by selected TNOs and Centaurs for 2019 for the place with the following coordinates:

Longitude: 02°13'48.2"E **Latitude: 48°48'18.0"N**



Events for which the sun is below the horizon (i.e. sun's elevation smaller than 0°) and the object is above the horizon (i.e. object's elevation greater than 0°), are displayed in the following table.

Date filter: 2019-08-24 2019-10-25

Object filter :

Magnitude filter: 7.0 18.0

Object elevation:

Probability:

Date filter:

2019-08-24 — 2019-10-25

Object filter :

Magnitude filter:

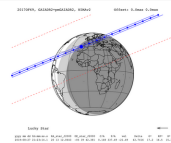
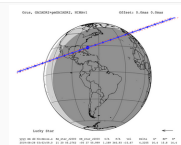
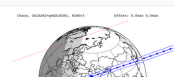
7.0 — 18.0

Object elevation:

10° — 90°

Probability:

3 % — 100 %

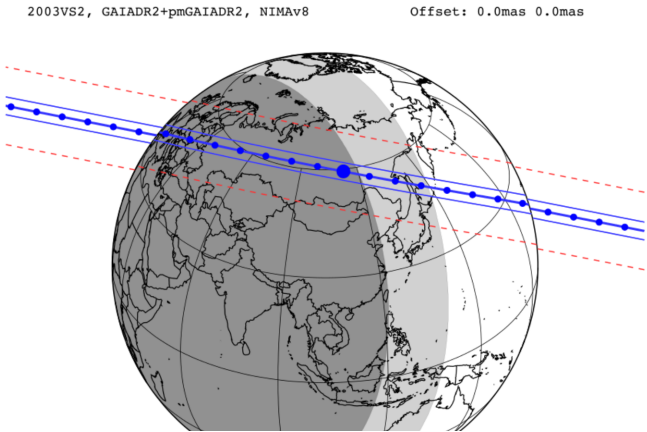
Date	Object	G* mag	H_{obj}	Probability	Map
2019-Aug-27 21:23	2017OF69	17.2	33.4°	5.6%	
2019-Aug-28 03:02	Orus	16.4	13.3°	5.3%	
2019 Sep 02 03:39	Chaos	17.7	43.3°	4.1%	

Occultation by 2003VS2 (2019-10-22)

Link to the global page

Map | Circumstances | Star & Object | Sky Map | Interactive Map

Occultation map



Occultation circumstances

top

Local circumstances

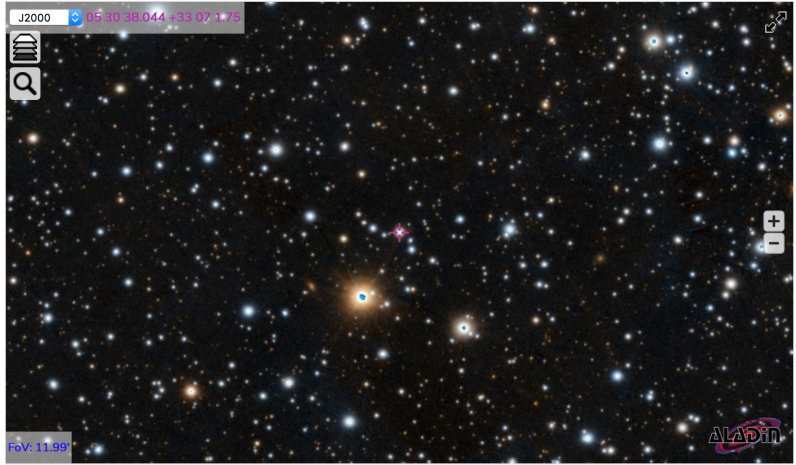
Longitude	02°13'48.2"E
Latitude	48°48'18.0"N
Mid-time	20h43m15s ± 02m35s
Impact parameter	613 ± 876 km
Object elevation	18.9°
Expected duration	0s
Object azimut	61°
Sun elevation	-38.1°
Probability of occultation	18.5%

Global circumstances

Date	Tue. 22 Oct. 2019 20:36:56
Star position (ICRF)	05 30 38.0442 +33 07 01.748
C/A	0.110 arcsec
P/A	11.08 °
velocity	-13.01 km/s

Sky map (Aladin)

top

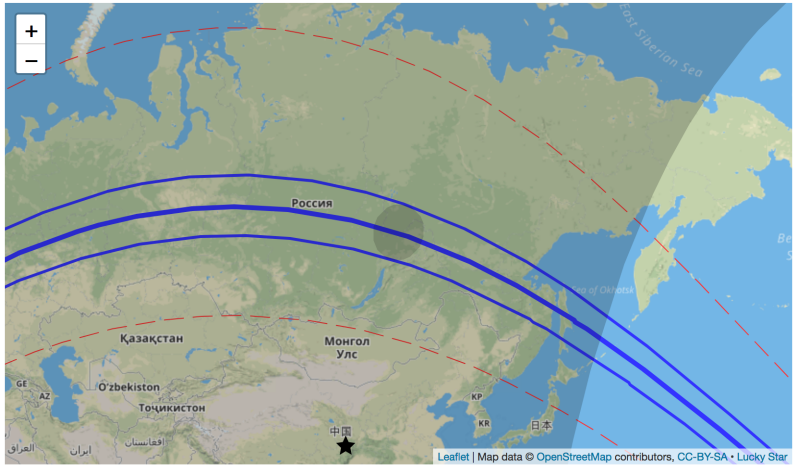


link to sky-map

For declination above -25 °, Pan-STARRS survey is displayed by default whereas below -25 °, DSS is displayed.

Interactive Map

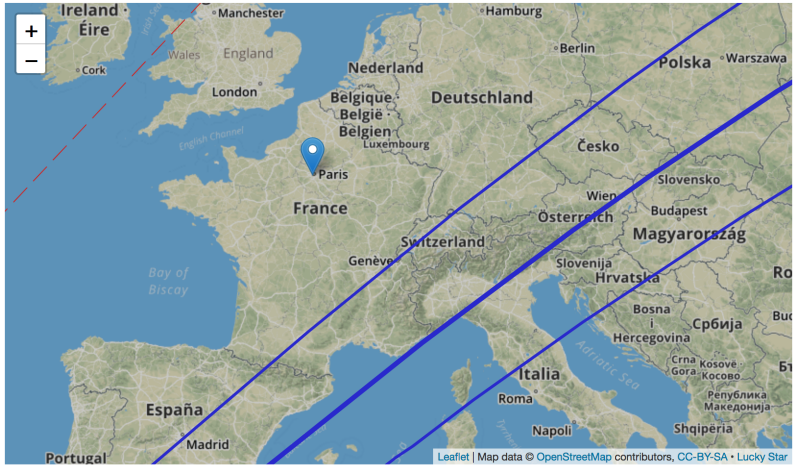
top



The large blue line represents the centrality of the nominal prediction. The thin blue lines represent the body's limits of the nominal prediction. Red dotted lines show the 1-σ uncertainty on the body's limits. The grey area represents the night part on Earth and the light blue area represents the region on Earth where the object is not visible. The shadow at mid-time for the selected place is displayed. The Sun symbol

Interactive Map

top



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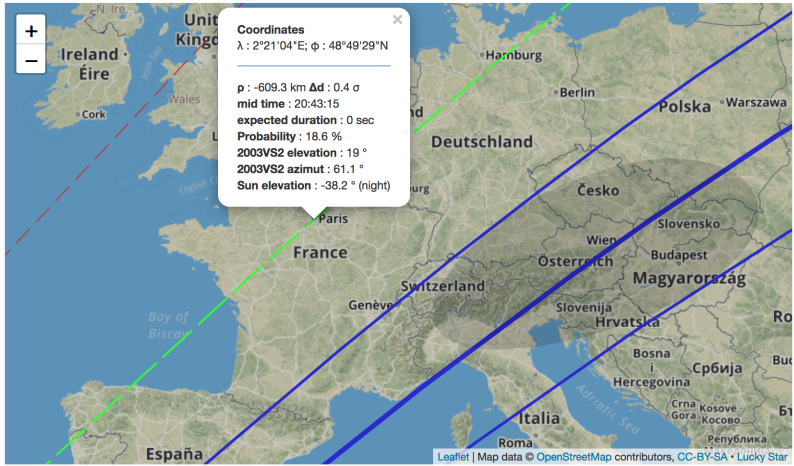
Interactive Map

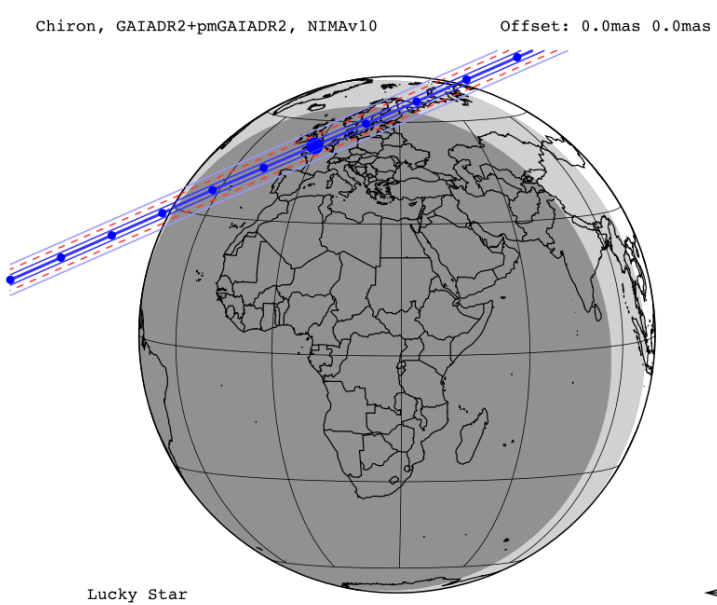
top



The large blue line represents the centrality of the nominal prediction. The thin blue lines represent the body's limits of the nominal prediction. Red dotted lines show the 1-σ uncertainty on the body's limits. The grey area represents the night part on Earth and the light blue area represents the region on Earth where the object is not visible. The shadow at mid-time for the selected place is displayed. The Sun symbol

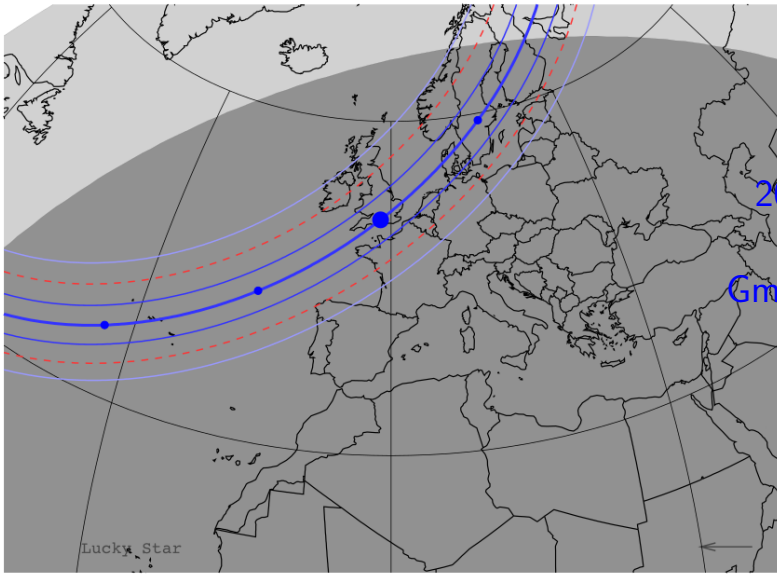
Forthcoming Lucky Star occultations

2019



2019.09.08
Chiron
Gmag$* = 16.7$

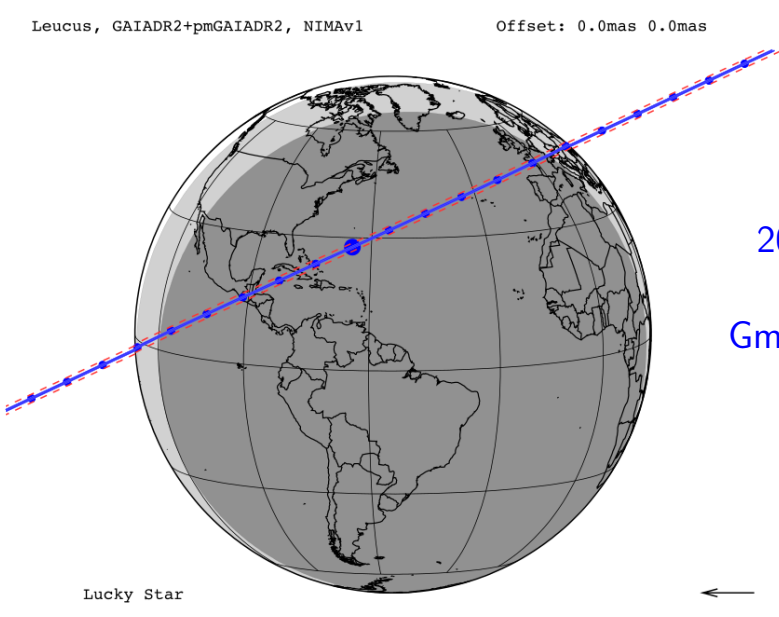
yyyy mm dd hh:mm:ss.s	RA_star_J2000	DE_star_J2000	C/A	P/A	vel	Delta	G*	RP*	H*
2019-09-08 23:04:26.5	00 10 12.7430	+04 37 04.914	0.392	336.30	-22.80	17.8500	16.7	16.1	15.0



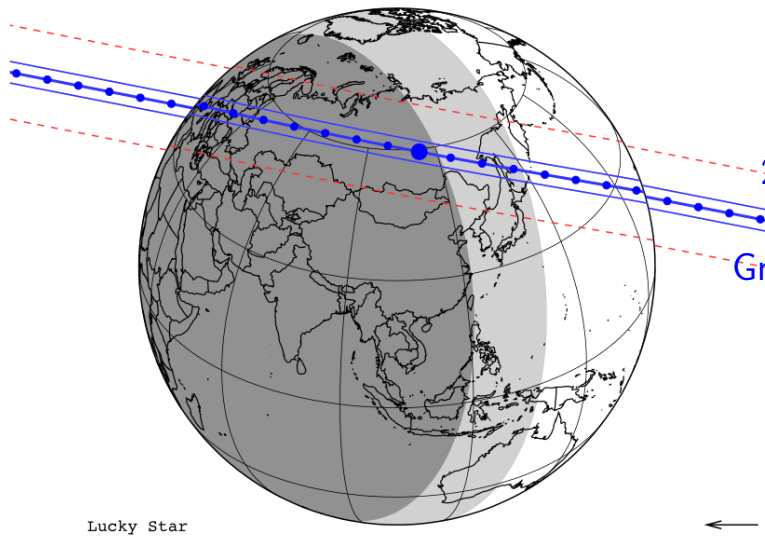
2019.09.08

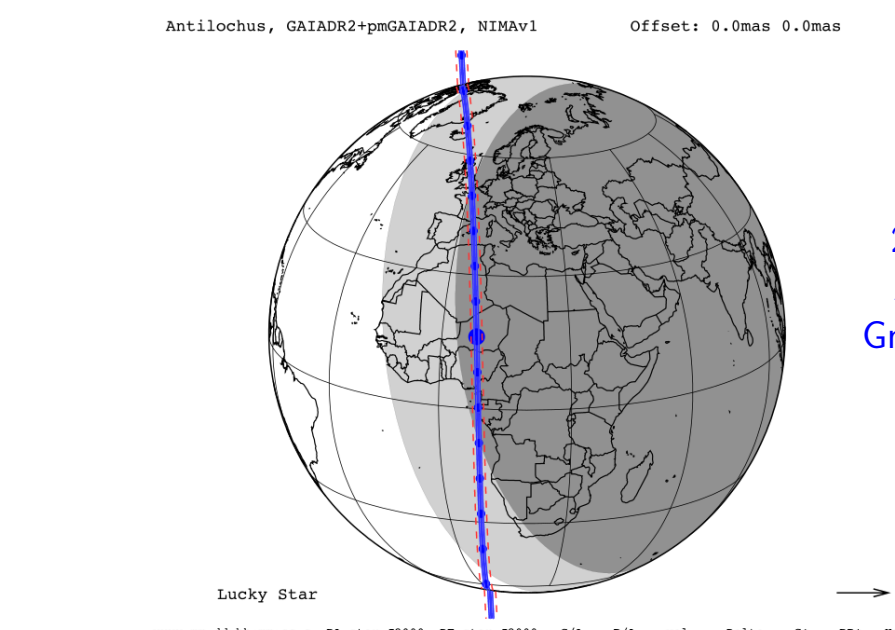
Chiron

$Gmag* = 16.7$

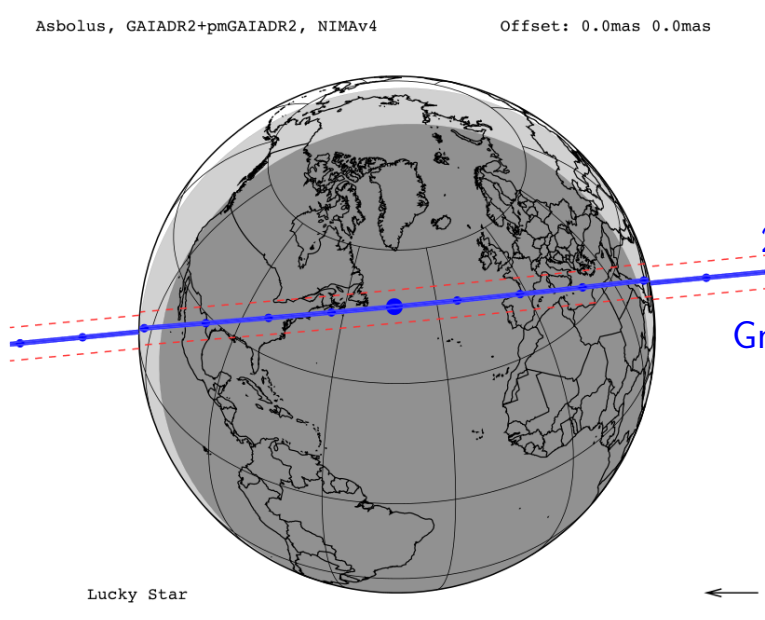


2019.09.12
Leucus
Gmag$* = 13.6$

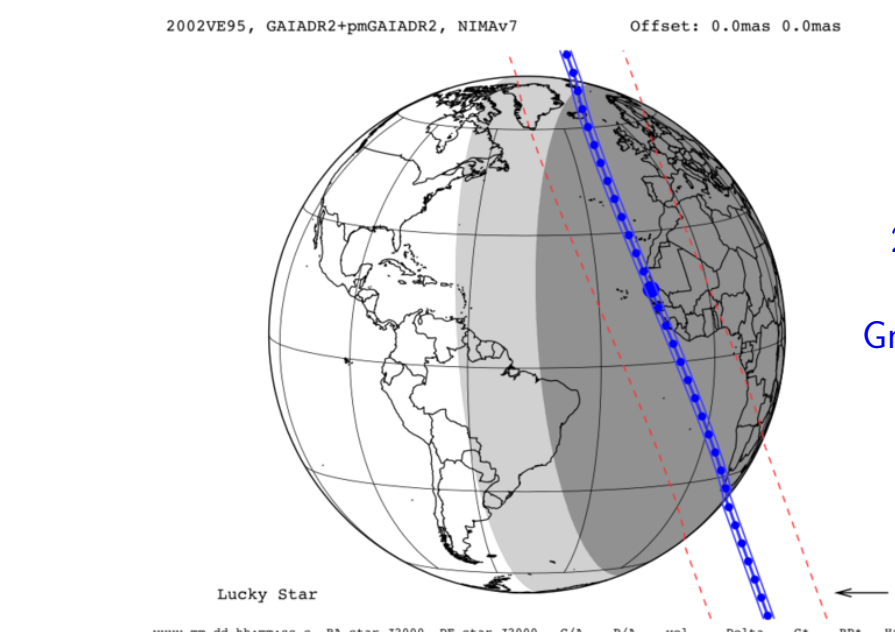

2003VS2, GAIADR2+pmGAIADR2, NIMAv8
Offset: 0.0mas 0.0mas
2019.10.22
2003VS2
Gmag∗ = 13.7
Lucky Star
yyyy mm dd hh:mm:ss.s RA_star_J2000 DE_star_J2000 C/A P/A vel Delta G* RP* H*
2019-10-22 20:36:56.5 05 30 38.0442 +33 07 01.748 0.110 11.08 -13.01 36.1211 13.7 12.8 10.7



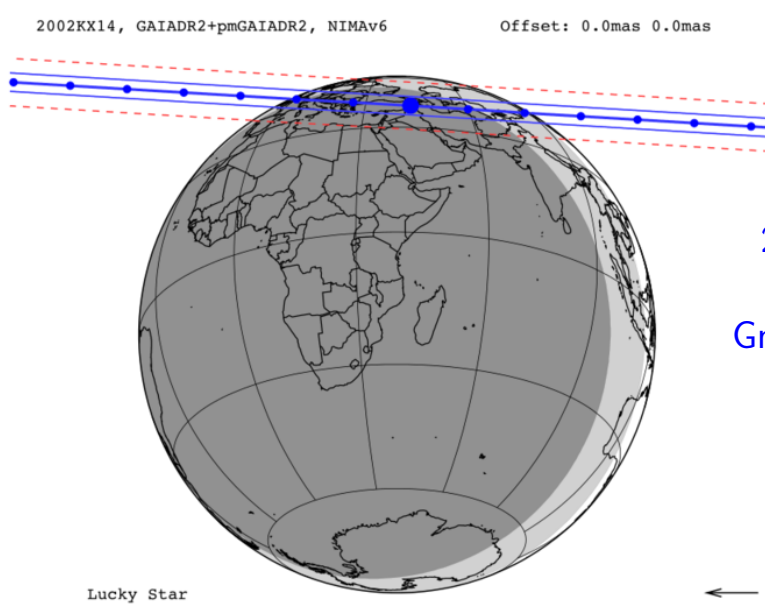
2019.10.30
Antilochus
Gmag$* = 13.3$


Asbolus, GAIADR2+pmGAIADR2, NIMAv4
Offset: 0.0mas 0.0mas
2019.12.17
Asbolus
Gmag∗ = 15.0
Lucky Star
yyyy mm dd hh:mm:ss.s RA_star_J2000 DE_star_J2000 C/A P/A vel Delta G* RP* H*
2019-12-17 02:25:41.2 05 13 31.1886 +40 53 17.635 0.043 354.56 -25.81 21.6656 15.0 14.2 12.6

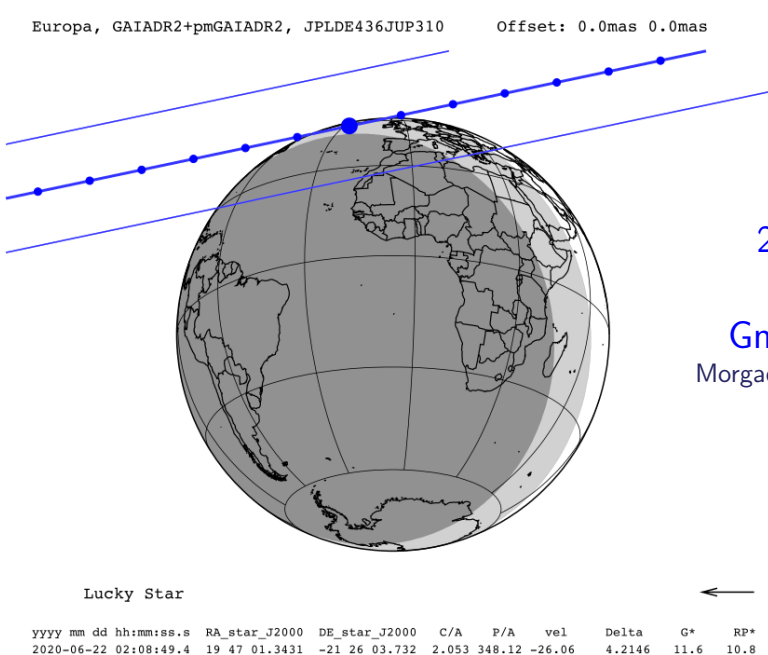
2020



2020.03.06
2002VE95
Gmag$*$ = 15.8



2020.05.26
2002KX14
Gmag$*$ = 14.7

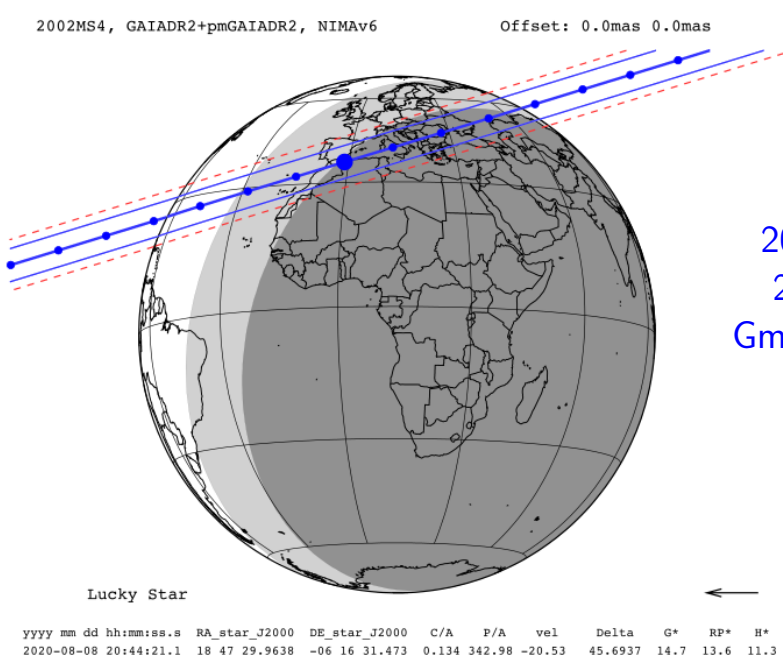


2020.06.22

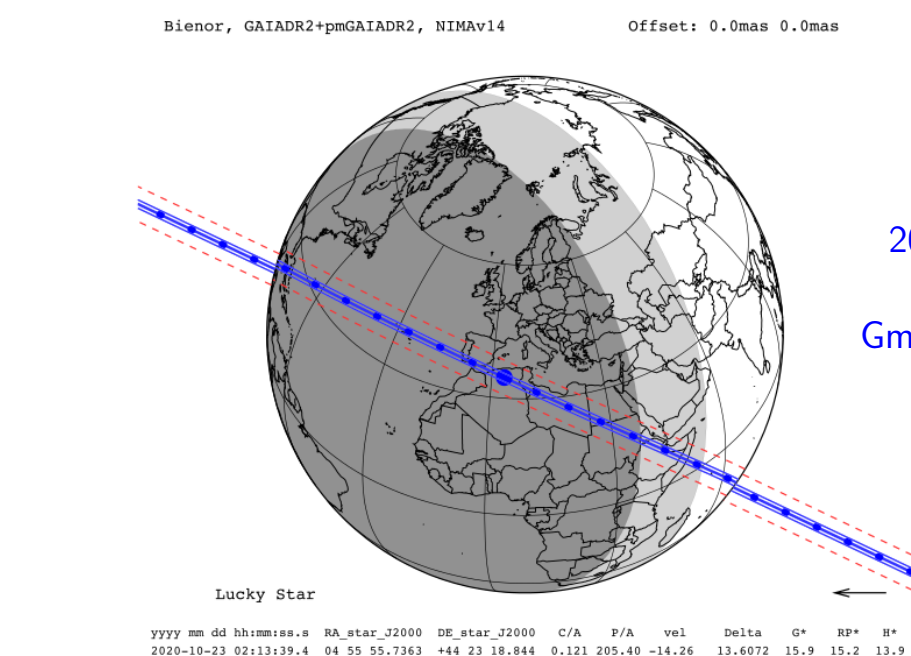
Europa

Gmag$* = 11.3$

Morgado *et al.* A&A 2019

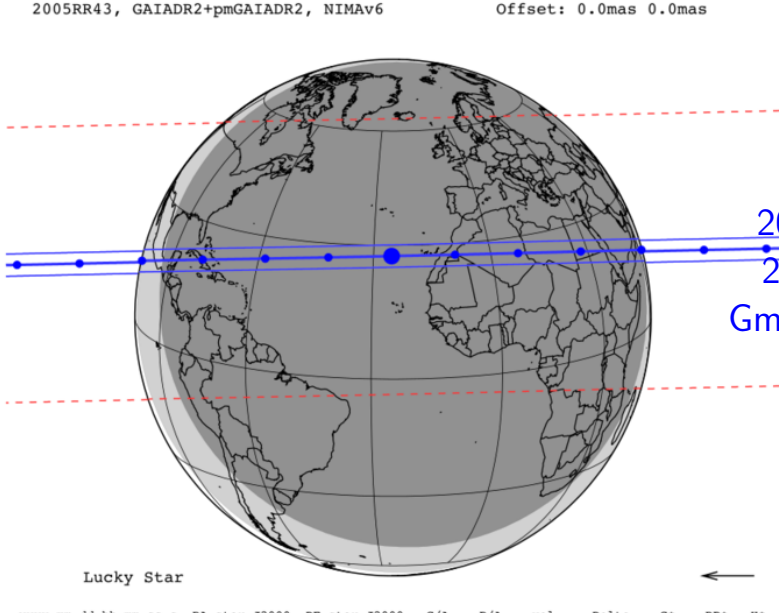


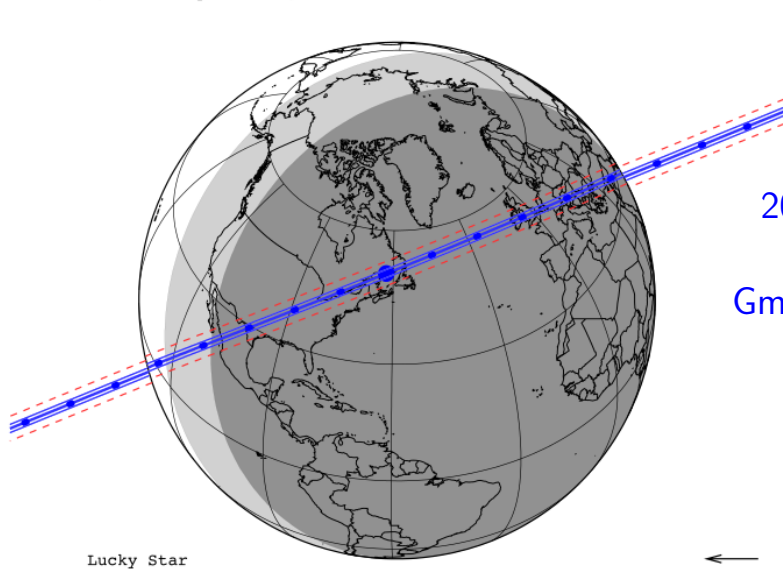
2020.08.08
2002MS4
Gmag$* = 14.7$



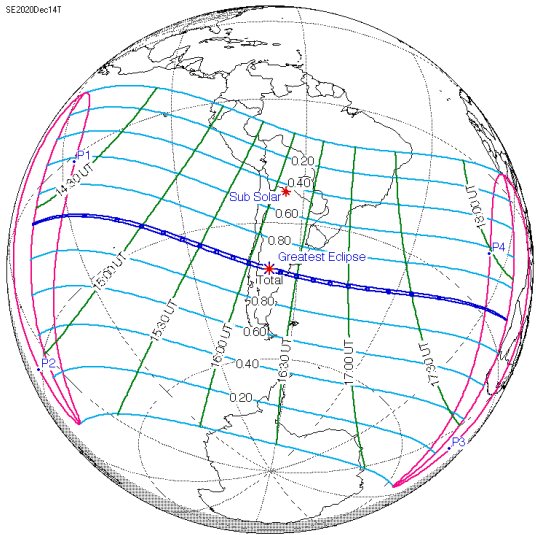
2020.10.23
Bienor
Gmag$* = 15.9$

... a dense December 2020 ...


2005RR43, GAIADR2+pmGAIADR2, NIMAv6
Offset: 0.0mas 0.0mas
2020.12.11
2005RR43
Gmag∗ = 15.3
Lucky Star
yyyy mn dd hh:mm:ss.s RA_star_J2000 DE_star_J2000 C/A P/A vel Delta G* RP* H*
2020-12-11 01:00:46.0 04 39 55.2807 +13 44 56.652 0.053 358.79 -25.73 38.9447 15.3 14.3 12.1



2020.12.29
Bienor
Gmag$* = 13.3$



2020.12.14

Moon

mag $= -26.7$

NASA F .Espenak


2020.12.21
Jupiter and Saturn
Great conjunction (6')
NO OCCULTATION !!

Thank you / Merci !