

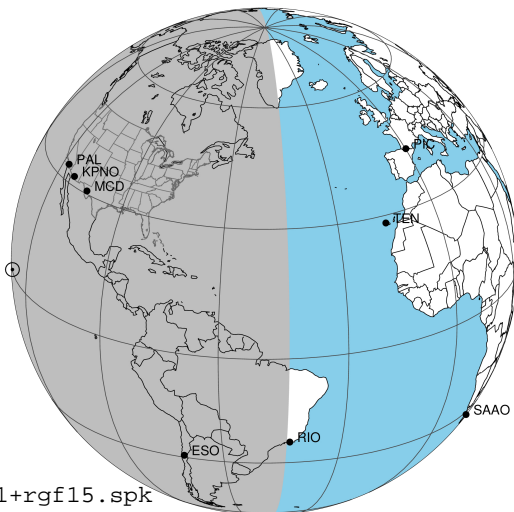
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2036-09-23T08:47:07.490  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 3404218330380459904  
 2Mass ID (if available) : 05382545+2243578

Jupiter 2036-09-23T08:47:07 K9.42 G13.52 Pgt

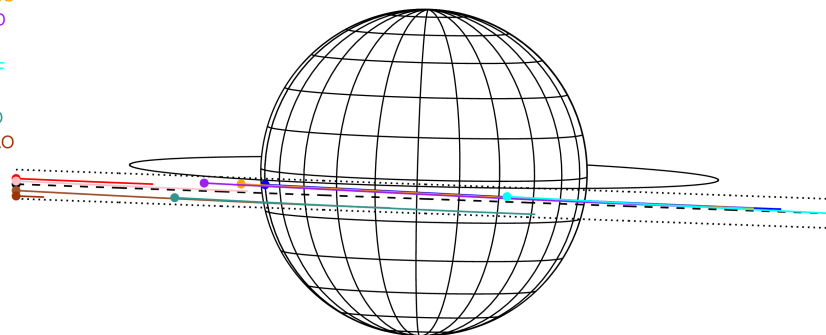
ICRS Star Coord at Epoch: 05h 38m 25.45590s +22:43:57.82169s

RUWE (>1.4 is poor) : 1.05  
 K magnitude : 9.421  
 G magnitude : 13.524  
 RP magnitude : 12.437  
 BP magnitude : 14.757  
 DUPflag : 0  
 Distance (au) : 4.873  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 9.75  
 Sun-Target sep (deg) : 95.38  
 Sun-Moon sep (deg) : 139.02  
 B (ring opening deg) : 2.73  
 PA of pole (deg) : -1.49  
 Pole direction: RA (deg): 268.05634  
 Dec (deg): 64.49686  
 C/A sky separation (") : 3.269  
 C/A sky separation (km) : 11550.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2036-09-23T08:47:07 K9.42 G13.52  
 Pgt



Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 RIO  
 ESO  
 SAAO

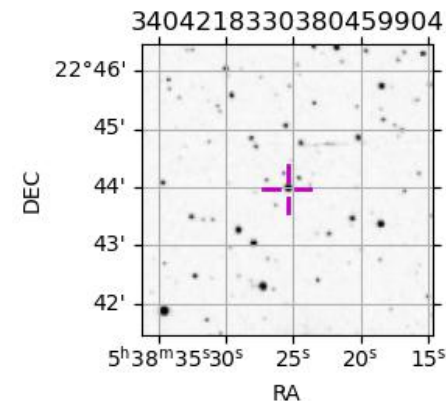


2036-09-23T08:47:07.4900 ra: 05 38 25.4559 s: +22 43 57.822 C/A 3.258" PA 357.93 deg v\_sky + 9.75 km/s D 04.87 AU

Credit: Styled after SORA/Lucky Star

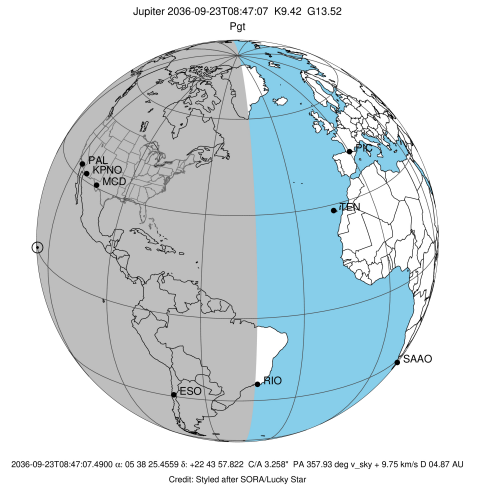
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	SEP 23 10:42 - SEP 23 10:42	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	SEP 23 06:37 - SEP 23 10:43	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	SEP 23 06:36 - SEP 23 10:44	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	SEP 23 10:38 - SEP 23 10:38	Pne
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	SEP 23 06:43 - SEP 23 06:43	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	SEP 23 06:40 - SEP 23 06:40	Pin
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

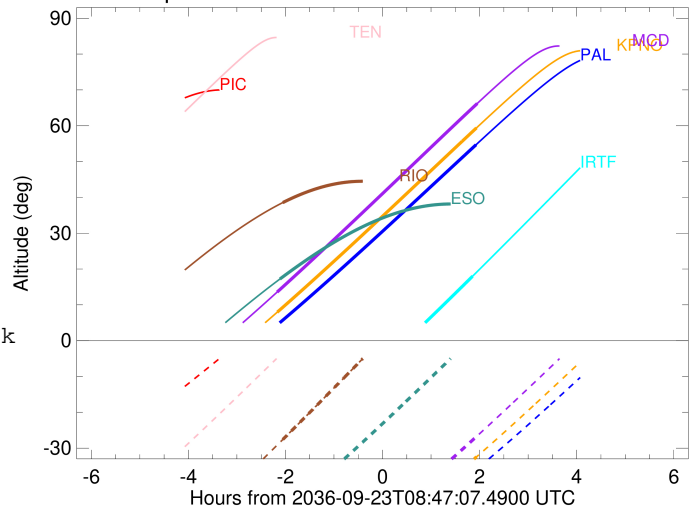


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-09-23T08:38:29.690
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 3404218330380459904
2Mass ID (if available) : 05382545+2243578
ICRS Star Coord at Epoch: 05h 38m 25.45590s +22:43:57.82169s
RUWE (>1.4 is poor) : 1.05
K magnitude         : 9.421
G magnitude         : 13.524
RP magnitude        : 12.437
BP magnitude        : 14.757
DUPflag            : 0
Distance (au)       : 4.873
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 9.75
Sun-Target sep (deg) : 95.38
Sun-Moon sep (deg)  : 138.83
B (ring opening deg) : 2.73
PA of pole (deg)    : -1.49
Pole direction: RA (deg): 268.05634
Dec (deg): 64.49686
C/A sky separation (") : 2.517
C/A sky separation (km) : 8894.2
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



Jupiter 2036-09-23T08:47:07 K9.42 G13.52

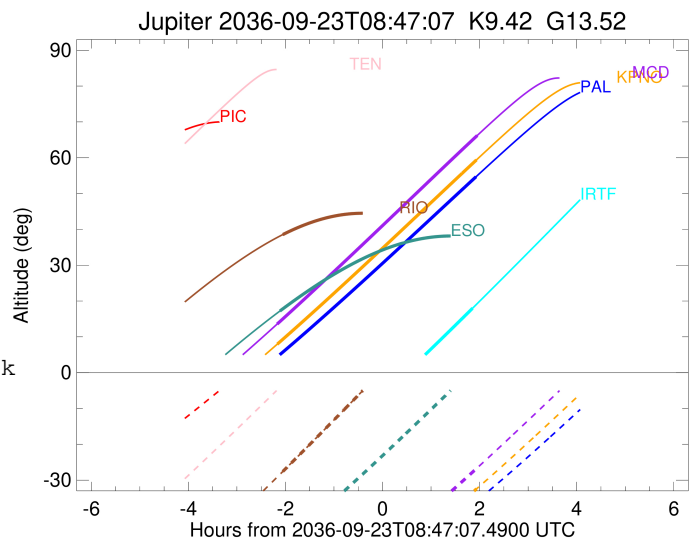
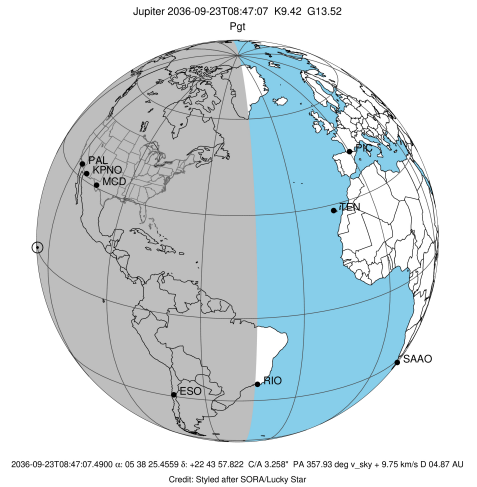


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-09-23T06:37:13.273	4.45x	-54.02	71491.9	-5.68	-6.49
Jupiter	E	2036-09-23T10:42:47.255	54.69	-35.97	71491.8	-8.48	-9.68

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-09-23T08:38:40.430
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 3404218330380459904
2Mass ID (if available) : 05382545+2243578
ICRS Star Coord at Epoch: 05h 38m 25.45590s +22:43:57.82169s
RUWE (>1.4 is poor) : 1.05
K magnitude         : 9.421
G magnitude         : 13.524
RP magnitude        : 12.437
BP magnitude        : 14.757
DUPflag            : 0
Distance (au)       : 4.873
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 9.75
Sun-Target sep (deg) : 95.38
Sun-Moon sep (deg)  : 138.88
B (ring opening deg) : 2.73
PA of pole (deg)    : -1.49
Pole direction: RA (deg): 268.05634
Dec (deg): 64.49686
C/A sky separation (") : 2.605
C/A sky separation (km) : 9207.4
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
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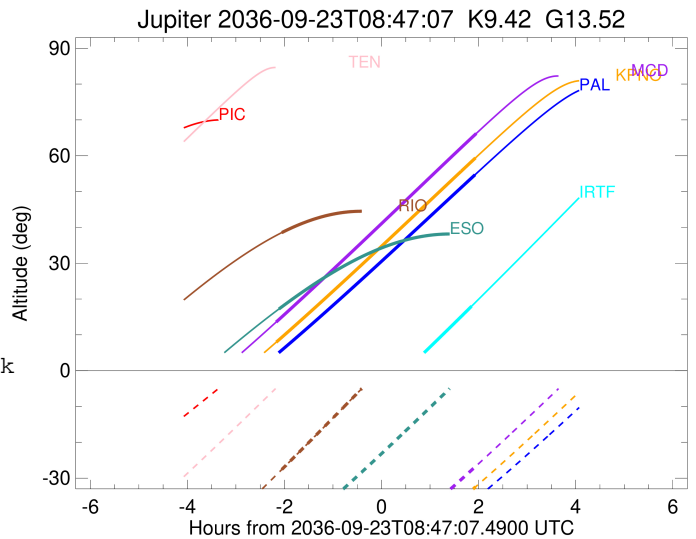
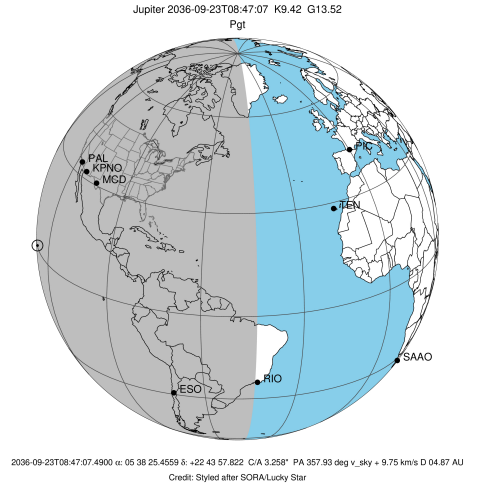


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-09-23T06:37:00.799	7.95	-57.04	71491.9	-5.92	-6.76
Jupiter	E	2036-09-23T10:43:19.710	59.40	-32.44	71491.8	-8.70	-9.93

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-09-23T08:39:09.630
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : MCD
Location             : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 3404218330380459904
2Mass ID (if available) : 05382545+2243578
ICRS Star Coord at Epoch: 05h 38m 25.45590s +22:43:57.82169s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 9.421
G magnitude          : 13.524
RP magnitude         : 12.437
BP magnitude         : 14.757
DUPflag             : 0
Distance (au)        : 4.873
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 9.75
Sun-Target sep (deg) : 95.38
Sun-Moon sep (deg)   : 138.97
B (ring opening deg) : 2.73
PA of pole (deg)     : -1.49
Pole direction: RA (deg): 268.05634
Dec (deg): 64.49686
C/A sky separation (") : 2.714
C/A sky separation (km) : 9590.3
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

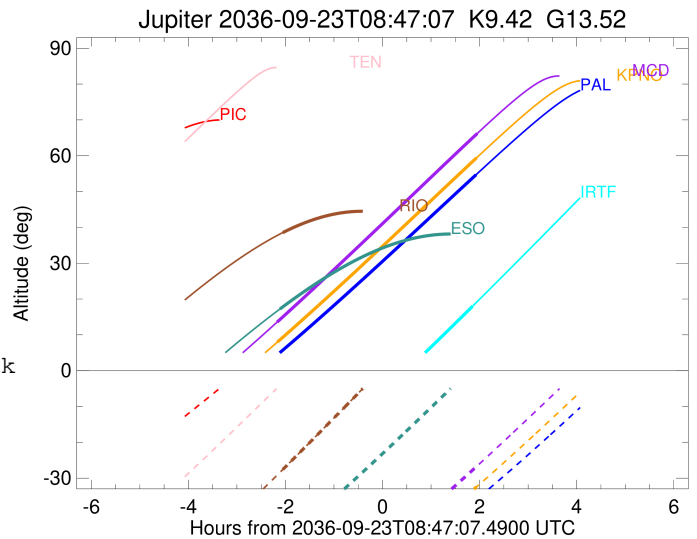
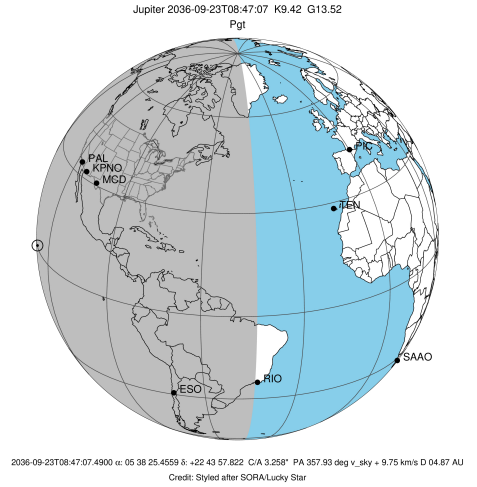


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-09-23T06:36:55.255	13.57	-59.71	71491.9	-6.23	-7.12
Jupiter	E	2036-09-23T10:44:17.486	66.21	-26.56	71491.8	-8.94	-10.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-09-23T08:37:18.980
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 3404218330380459904
2Mass ID (if available) : 05382545+2243578
ICRS Star Coord at Epoch: 05h 38m 25.45590s +22:43:57.82169s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 9.421
G magnitude          : 13.524
RP magnitude         : 12.437
BP magnitude         : 14.757
DUPflag             : 0
Distance (au)       : 4.873
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 9.75
Sun-Target sep (deg) : 95.38
Sun-Moon sep (deg)  : 138.35
B (ring opening deg) : 2.73
PA of pole (deg)    : -1.49
Pole direction: RA (deg): 268.05634
Dec (deg): 64.49686
C/A sky separation (" ) : 2.447
C/A sky separation (km) : 8648.7
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

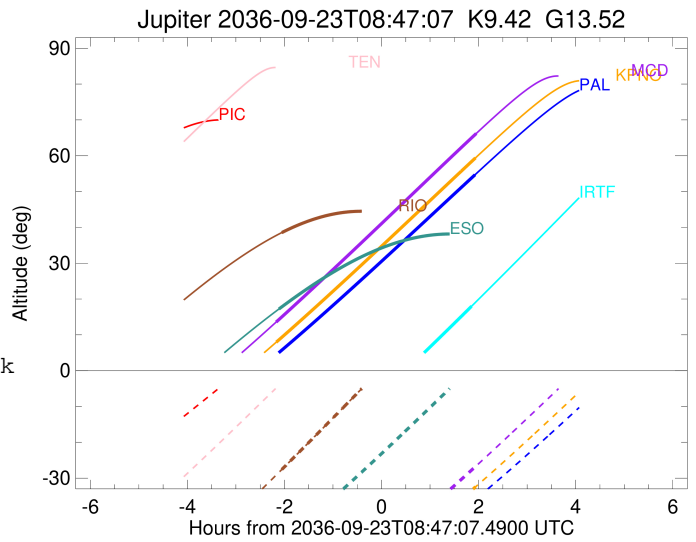
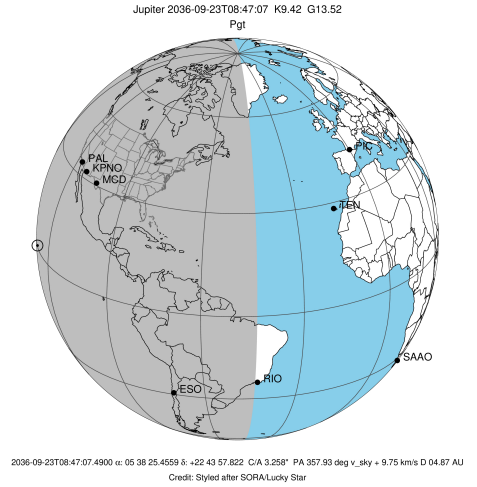


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-09-23T06:39:19.254	-31.04x	-34.01	71491.9	-5.60	-6.40
Jupiter	E	2036-09-23T10:38:23.225	17.96	-69.79	71491.8	-8.49	-9.69

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2036-09-23T08:48:00.700
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : RIO
Location              : Rio de Janeiro
Latitude (deg)       : -22.89506
E. Longitude (deg)   : 316.77708
Altitude (km)        : 0.033
Gaia source ID       : 3404218330380459904
2Mass ID (if available) : 05382545+2243578
ICRS Star Coord at Epoch: 05h 38m 25.45590s +22:43:57.82169s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 9.421
G magnitude           : 13.524
RP magnitude         : 12.437
BP magnitude         : 14.757
DUPflag              : 0
Distance (au)        : 4.873
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 9.75
Sun-Target sep (deg) : 95.38
Sun-Moon sep (deg)   : 139.45
B (ring opening deg) : 2.73
PA of pole (deg)     : -1.49
Pole direction: RA (deg): 268.05634
Dec (deg): 64.49686
C/A sky separation ("): 4.557
C/A sky separation (km): 16102.9
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



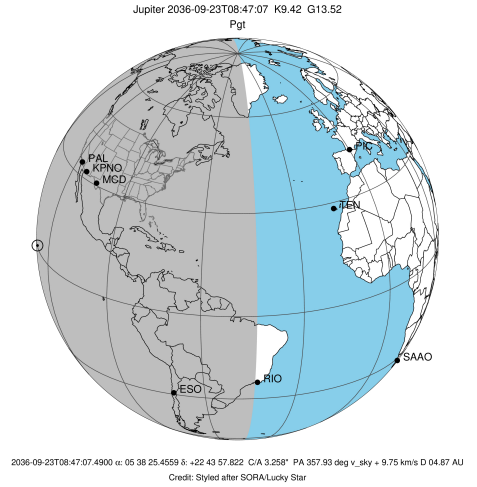
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-09-23T06:43:49.376	38.53	-27.60	71491.6	-12.18	-13.86
Jupiter	E	2036-09-23T10:52:28.610	31.60	29.30x	71491.5	-13.28	-15.10

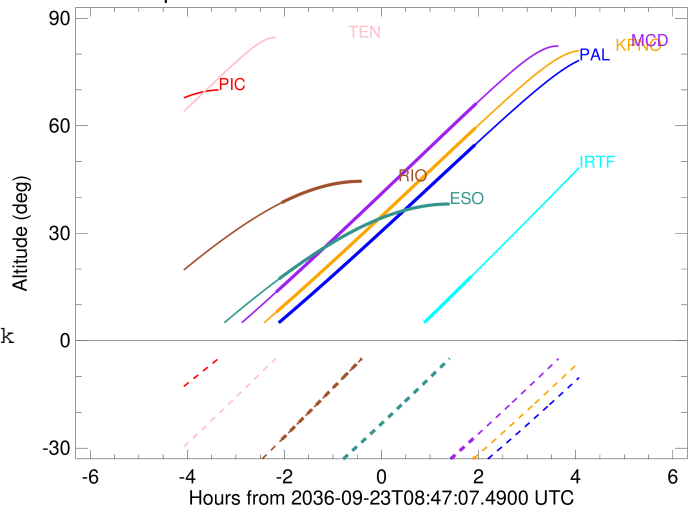


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-09-23T08:43:01.680
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : ESO
Location            : European Southern Obs. (3.6m)
Latitude (deg)      : -29.26097
E. Longitude (deg)  : 289.26831
Altitude (km)       : 2.400
Gaia source ID      : 3404218330380459904
2Mass ID (if available) : 05382545+2243578
ICRS Star Coord at Epoch: 05h 38m 25.45590s +22:43:57.82169s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 9.421
G magnitude          : 13.524
RP magnitude         : 12.437
BP magnitude         : 14.757
DUPflag             : 0
Distance (au)       : 4.873
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 9.75
Sun-Target sep (deg) : 95.38
Sun-Moon sep (deg)  : 139.06
B (ring opening deg) : 2.73
PA of pole (deg)    : -1.49
Pole direction: RA (deg): 268.05634
Dec (deg): 64.49686
C/A sky separation (") : 4.622
C/A sky separation (km) : 16332.3
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



Jupiter 2036-09-23T08:47:07 K9.42 G13.52



x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2036-09-23T06:40:20.529	17.21	-48.06	71491.6	-11.97	-13.63
Jupiter	E	2036-09-23T10:47:24.662	37.46	2.88x	71491.4	-13.96	-15.86