

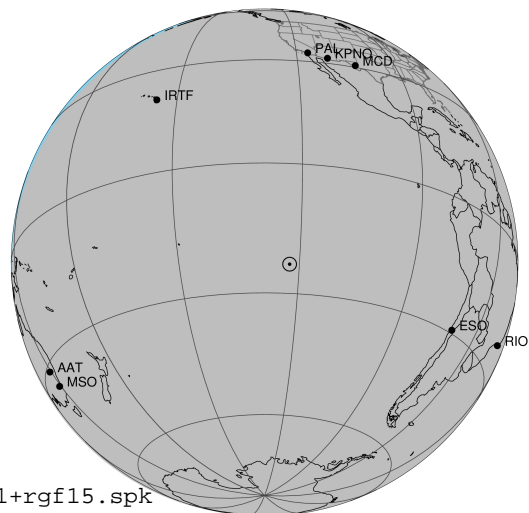
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-06-25T08:12:18.050
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068868951893922944
 2Mass ID (if available) : 17485059-2304337

Jupiter 2043-06-25T08:12:18 K9.94 G14.87 Pgt

ICRS Star Coord at Epoch: 17h 48m 50.57438s -23°04:34.00532s

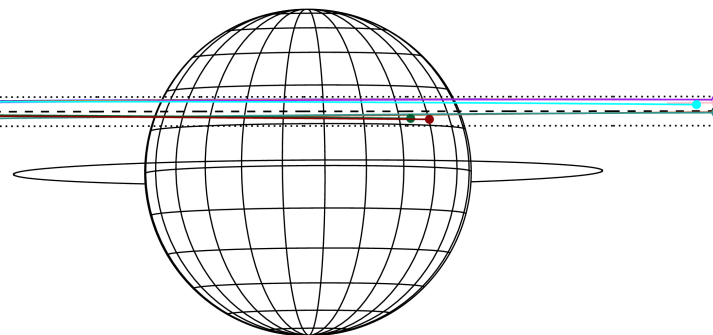
RUWE (>1.4 is poor) : 0.97
 K magnitude : 9.941
 G magnitude : 14.874
 RP magnitude : 13.642
 BP magnitude : 16.570
 DUPflag : 0
 Distance (au) : 4.252
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.28
 Sun-Target sep (deg) : 174.32
 Sun-Moon sep (deg) : 37.44
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.36
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 8.677
 C/A sky separation (km) : 26761.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-06-25T08:12:18 K9.94 G14.87
 Pgt



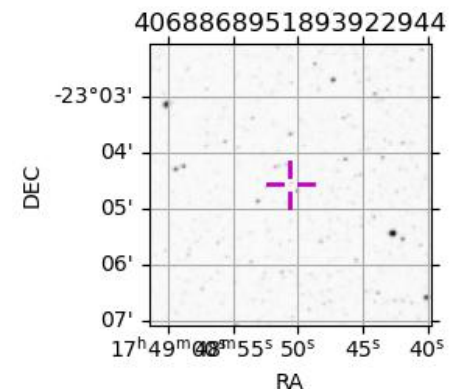
2043-06-25T08:12:18.0500 at: 17 48 50.5744 s: -23 04 34.005 C/A 8.666" PA 180.05 deg v_sky -16.28 km/s D 04.25 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 MSO



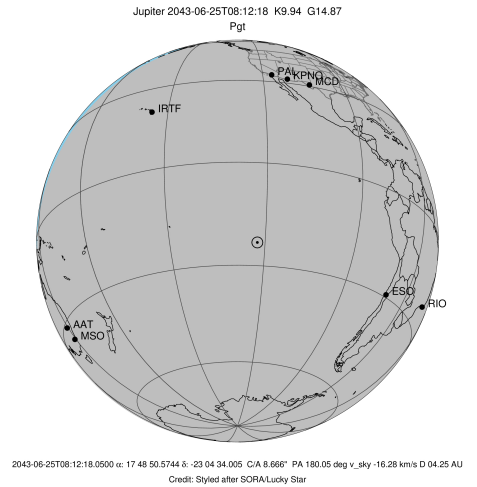
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JUN 25 07:07 - JUN 25 09:15	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUN 25 07:06 - JUN 25 09:14	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUN 25 07:05 - JUN 25 09:14	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUN 25 07:10 - JUN 25 09:19	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	JUN 25 06:58 - JUN 25 06:58	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 25 07:00 - JUN 25 09:15	Pie
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUN 25 09:26 - JUN 25 09:26	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUN 25 09:25 - JUN 25 09:25	Pne

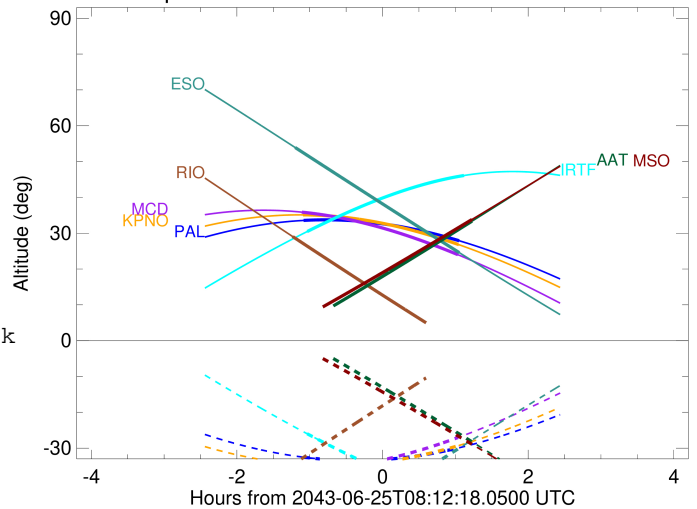


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-25T08:11:15.440
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       : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.941
G magnitude           : 14.874
RP magnitude          : 13.642
BP magnitude          : 16.570
DUPflag              : 0
Distance (au)        : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)   : 37.72
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 10.381
C/A sky separation (km) : 32016.5
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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Jupiter 2043-06-25T08:12:18 K9.94 G14.87

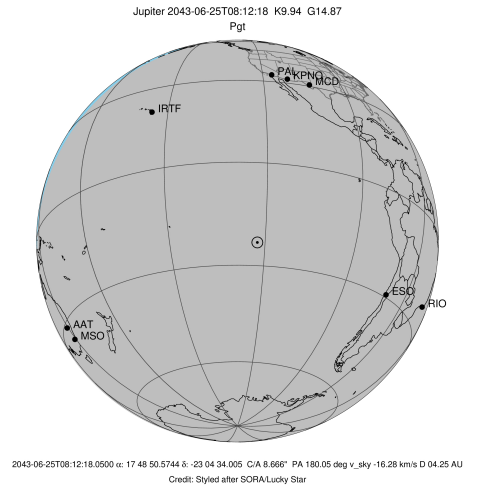


x: target alt < 5.0 deg or sun > -5.0 deg

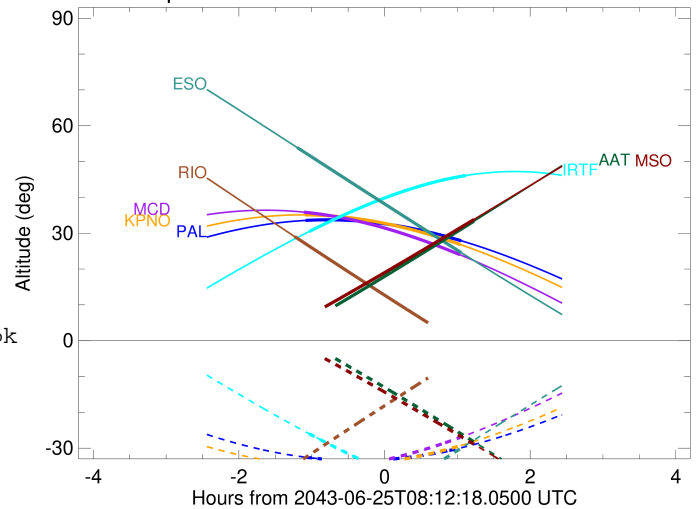
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T07:07:17.749	33.56	-32.53	71490.4	26.30	29.43
Jupiter	E	2043-06-25T09:15:18.480	27.91	-29.90	71490.4	26.71	29.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-25T08:10:47.090
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       : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.941
G magnitude           : 14.874
RP magnitude          : 13.642
BP magnitude          : 16.570
DUPflag              : 0
Distance (au)        : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)   : 37.66
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 10.337
C/A sky separation (km) : 31881.2
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 2043-06-25T08:12:18 K9.94 G14.87

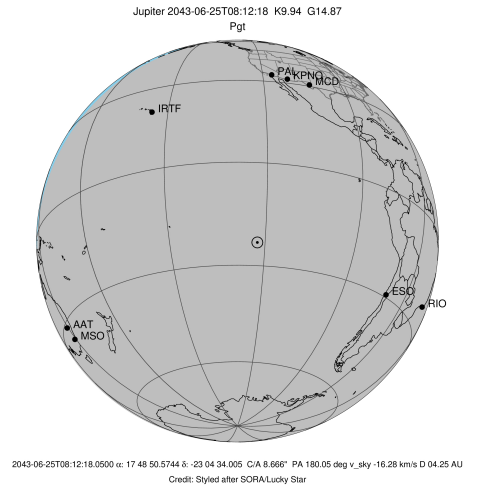


x: target alt < 5.0 deg or sun > -5.0 deg

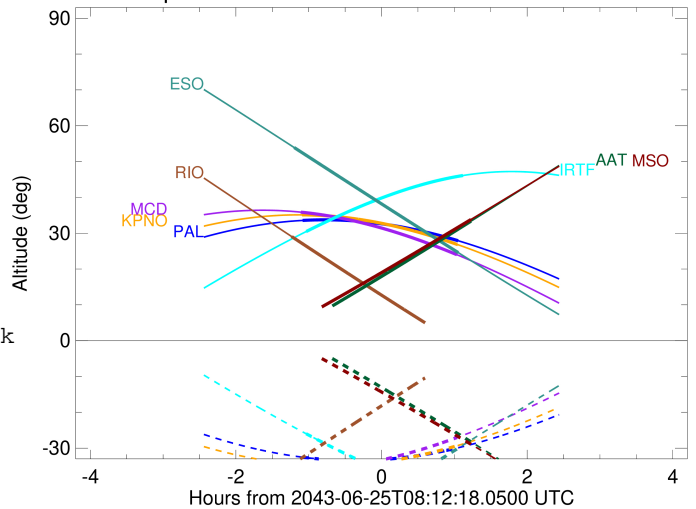
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T07:06:45.885	35.11	-34.57	71490.4	26.23	29.35
Jupiter	E	2043-06-25T09:14:55.899	26.83	-29.29	71490.4	26.54	29.69

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T08:10:07.190
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      : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.941
G magnitude          : 14.874
RP magnitude         : 13.642
BP magnitude         : 16.570
DUPflag             : 0
Distance (au)       : 4.252
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)  : 37.57
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 10.278
C/A sky separation (km) : 31697.5
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 2043-06-25T08:12:18 K9.94 G14.87

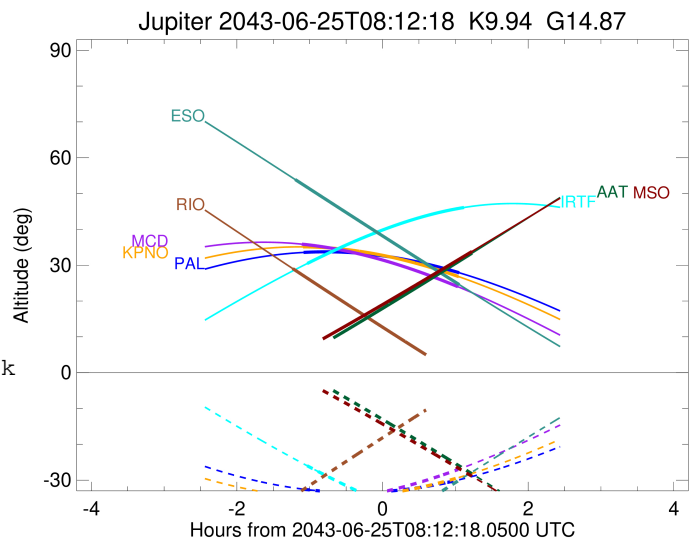
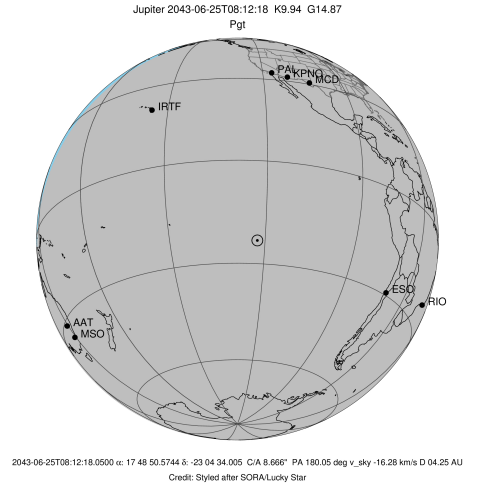


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T07:05:59.269	35.87	-36.09	71490.4	26.13	29.25
Jupiter	E	2043-06-25T09:14:25.929	23.99	-27.05	71490.4	26.31	29.44

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T08:14:51.750
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       : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.941
G magnitude           : 14.874
RP magnitude          : 13.642
BP magnitude          : 16.570
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)   : 38.19
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 10.007
C/A sky separation (km): 30863.4
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
    
```

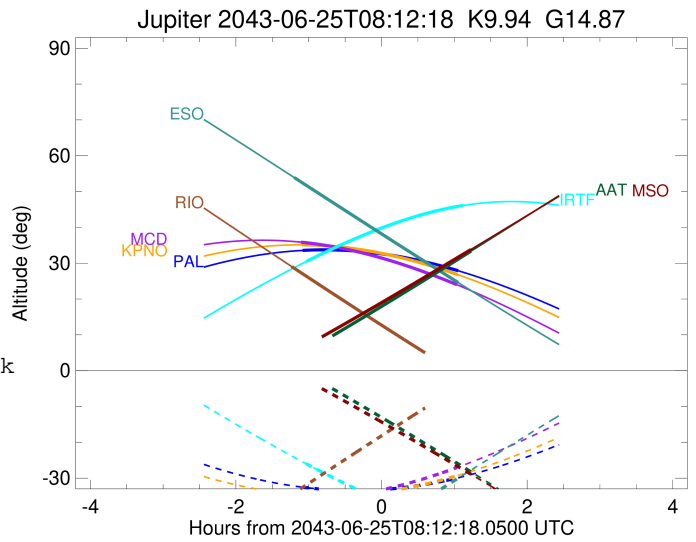
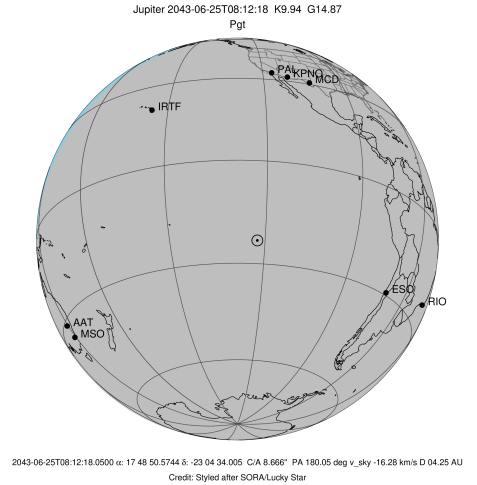


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T07:10:14.235	30.46	-25.98	71490.6	24.91	27.93
Jupiter	E	2043-06-25T09:19:17.374	46.09	-44.08	71490.5	26.04	29.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T08:06:34.970
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      : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.941
G magnitude          : 14.874
RP magnitude        : 13.642
BP magnitude        : 16.570
DUPflag            : 0
Distance (au)       : 4.252
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)  : 36.86
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 8.014
C/A sky separation (km) : 24716.4
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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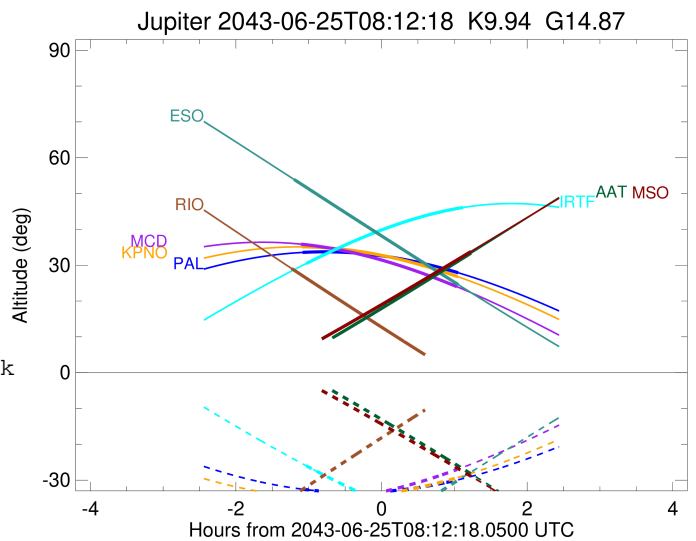
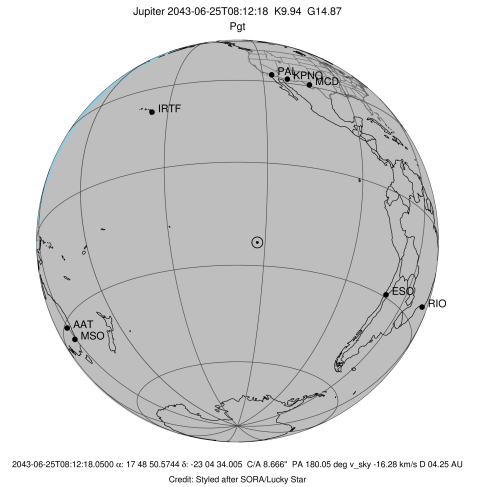


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T06:58:21.012	29.04	-34.58	71491.0	20.46	23.08
Jupiter	E	2043-06-25T09:15:20.922	-0.74x	-4.61x	71491.1	19.93	22.50

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T08:07:44.840
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       : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.941
G magnitude           : 14.874
RP magnitude          : 13.642
BP magnitude          : 16.570
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)   : 37.22
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.136
C/A sky separation (km): 25092.1
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
    
```

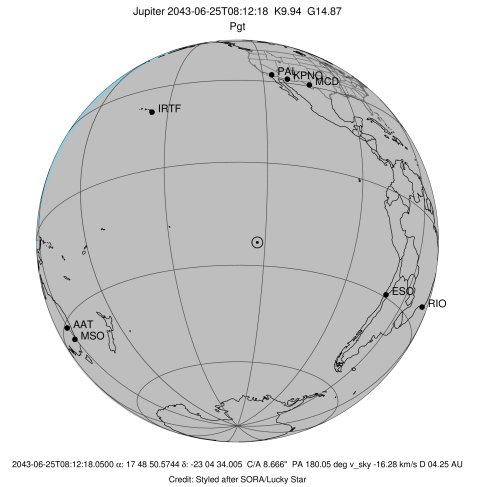


x: target alt < 5.0 deg or sun > -5.0 deg

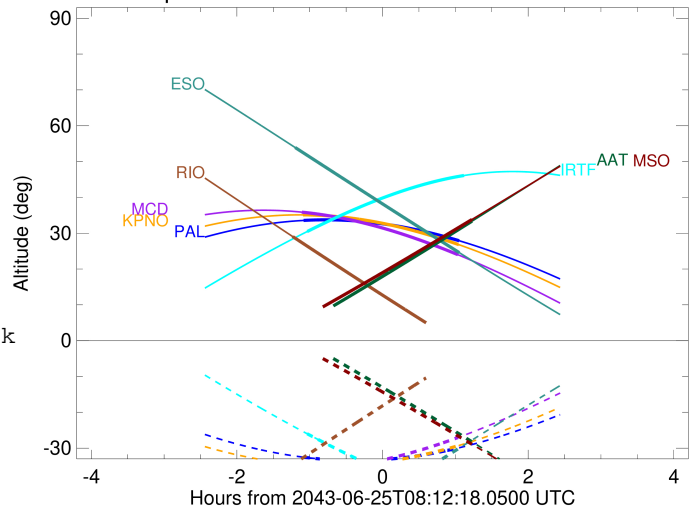
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T07:00:18.386	53.92	-59.35	71491.0	20.63	23.27
Jupiter	E	2043-06-25T09:15:36.002	24.57	-29.98	71491.0	20.34	22.94


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T08:17:35.830
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : AAT
Location            : Siding Spring (AAT)
Latitude (deg)      : -31.27703
E. Longitude (deg)  : 149.06608
Altitude (km)       : 1.164
Gaia source ID      : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.941
G magnitude          : 14.874
RP magnitude         : 13.642
BP magnitude         : 16.570
DUPflag             : 0
Distance (au)       : 4.252
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)  : 38.19
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.810
C/A sky separation (km): 24088.1
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 2043-06-25T08:12:18 K9.94 G14.87

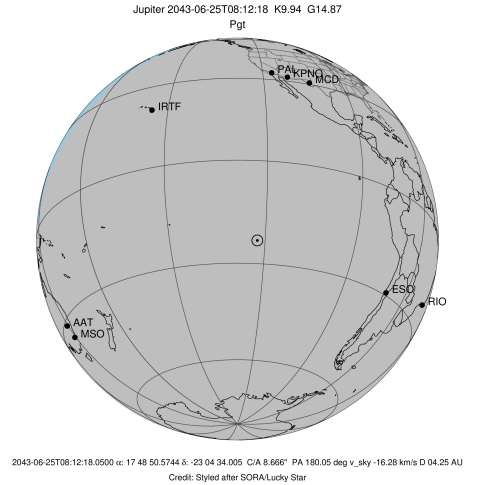


x: target alt < 5.0 deg or sun > -5.0 deg

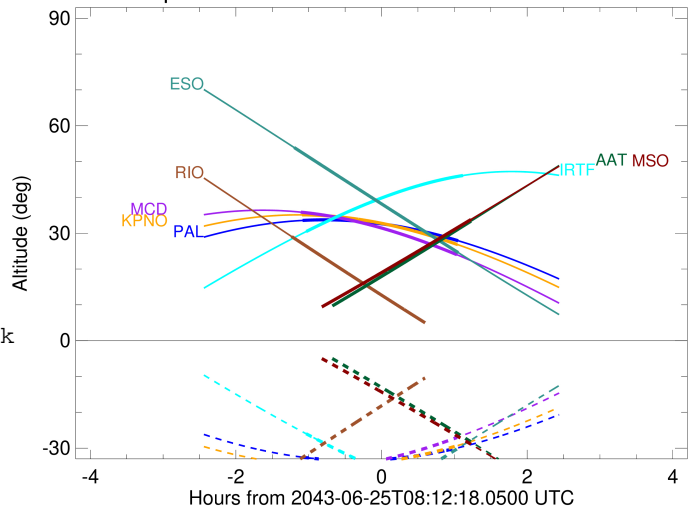
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-25T07:08:41.899	5.11	-0.55x	71491.2	18.81	21.27
Jupiter	E	2043-06-25T09:26:01.179	33.35	-28.22	71491.0	20.50	23.12


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-25T08:17:21.880
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : MSO
Location             : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 4068868951893922944
2Mass ID (if available) : 17485059-2304337
ICRS Star Coord at Epoch: 17h 48m 50.57438s -23:04:34.00532s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.941
G magnitude           : 14.874
RP magnitude         : 13.642
BP magnitude         : 16.570
DUPflag              : 0
Distance (au)        : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.28
Sun-Target sep (deg) : 174.32
Sun-Moon sep (deg)   : 38.17
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.36
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.692
C/A sky separation (km): 23723.3
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 2043-06-25T08:12:18 K9.94 G14.87



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	2043-06-25T07:08:19.746	6.62	-2.28x	71491.2	18.53	20.95
Jupiter	E	2043-06-25T09:25:56.612	33.81	-28.90	71491.0	20.17	22.76