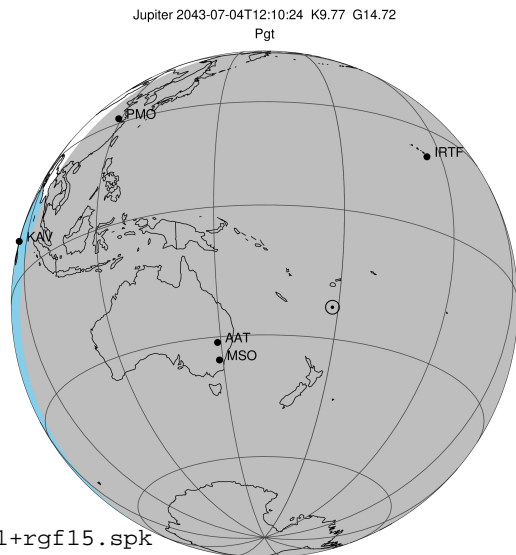


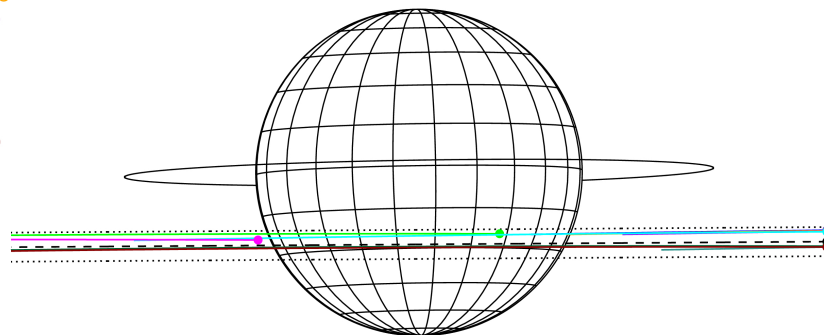
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-04T12:10:24.090
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116862634484382336
 2Mass ID (if available) : 17435528-2304365

Jupiter 2043-07-04T12:10:24 K9.77 G14.72 Pgt

ICRS Star Coord at Epoch: 17h 43m 55.29155s -23:04:36.68626s
 RUWE (>1.4 is poor) : 1.14
 K magnitude : 9.770
 G magnitude : 14.723
 RP magnitude : 13.472
 BP magnitude : 16.474
 DUPflag : 0
 Distance (au) : 4.275
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.39
 Sun-Target sep (deg) : 164.46
 Sun-Moon sep (deg) : 163.81
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.89
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 10.155
 C/A sky separation (km) : 31487.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



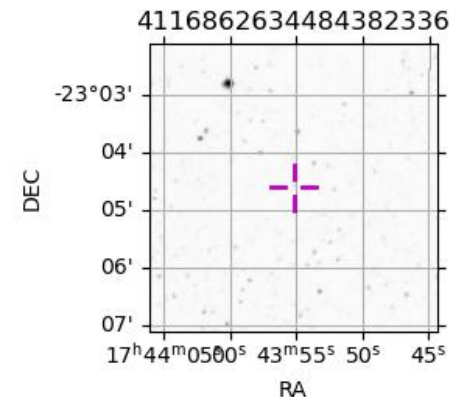
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 ESO
 AAT
 MSO



2043-07-04T12:10:24.0900 α: 17 43 55.2915 δ: -23 04 36.686 C/A ***** PA 0.39 deg v_sky -15.39 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

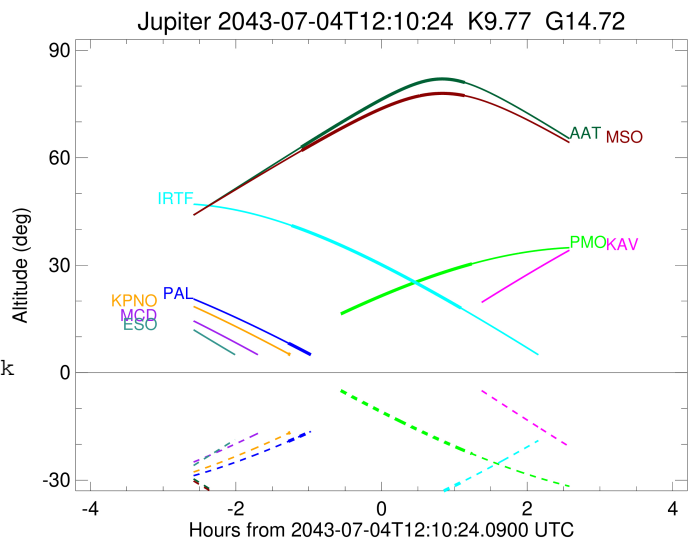
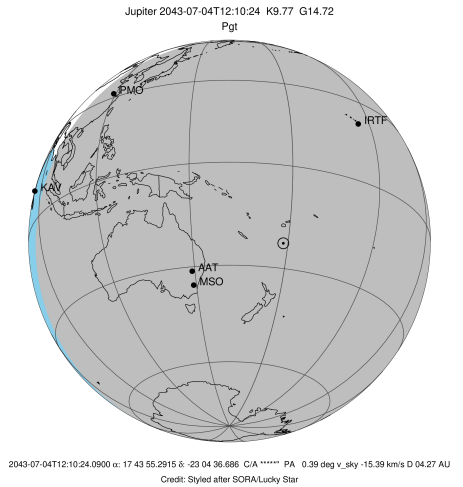
Observable events with sun below -5 deg and altitude above 5 deg

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	+	JUL 04 10:53 - JUL 04 10:53	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 04 13:24 - JUL 04 13:24	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 04 10:53 - JUL 04 10:53	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	JUL 04 10:56 - JUL 04 13:15	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 04 11:04 - JUL 04 13:18	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 04 11:04 - JUL 04 13:18	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T12:04:25.570
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       : 4116862634484382336
2Mass ID (if available) : 17435528-2304365
ICRS Star Coord at Epoch: 17h 43m 55.29155s -23:04:36.68626s
RUWE (>1.4 is poor) : 1.14
K magnitude          : 9.770
G magnitude          : 14.723
RP magnitude         : 13.472
BP magnitude         : 16.474
DUPflag             : 0
Distance (au)        : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.39
Sun-Target sep (deg) : 164.46
Sun-Moon sep (deg)  : 164.70
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.89
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 9.001
C/A sky separation (km) : 27906.1
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
    
```

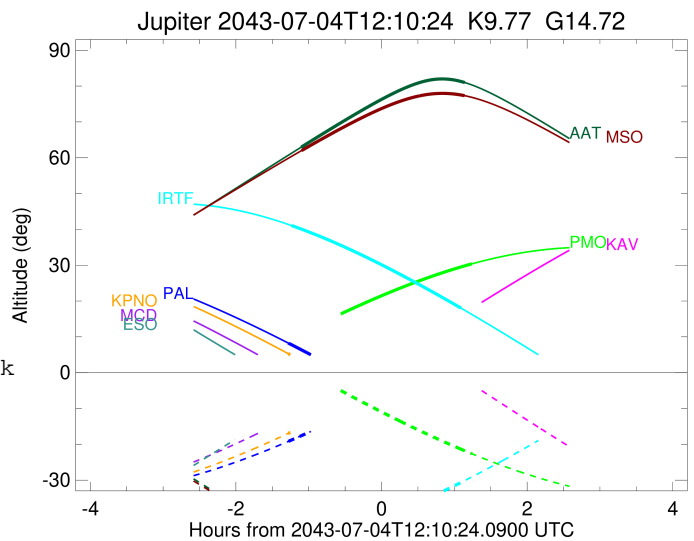
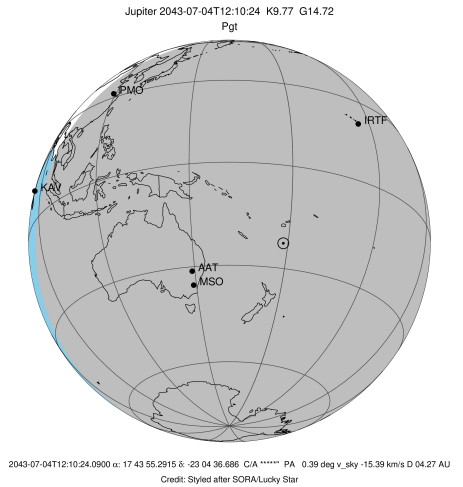


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T10:53:44.885	8.23	-19.16	71490.8	-22.93	-25.78
Jupiter	E	2043-07-04T13:15:41.082	-18.69x	5.23x	71490.8	-23.01	-25.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-04T12:14:30.470
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PMO
Location              : Purple Mtn Obs. Nanking
Latitude (deg)        : 32.06667
E. Longitude (deg)    : 118.82089
Altitude (km)         : 0.364
Gaia source ID        : 4116862634484382336
2Mass ID (if available) : 17435528-2304365
ICRS Star Coord at Epoch: 17h 43m 55.29155s -23:04:36.68626s
RUWE (>1.4 is poor)  : 1.14
K magnitude           : 9.770
G magnitude           : 14.723
RP magnitude          : 13.472
BP magnitude          : 16.474
DUPflag              : 0
Distance (au)         : 4.275
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -15.39
Sun-Target sep (deg)  : 164.46
Sun-Moon sep (deg)    : 163.56
B (ring opening deg)  : -2.41
PA of pole (deg)      : 0.89
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 8.649
C/A sky separation (km) : 26815.6
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
    
```

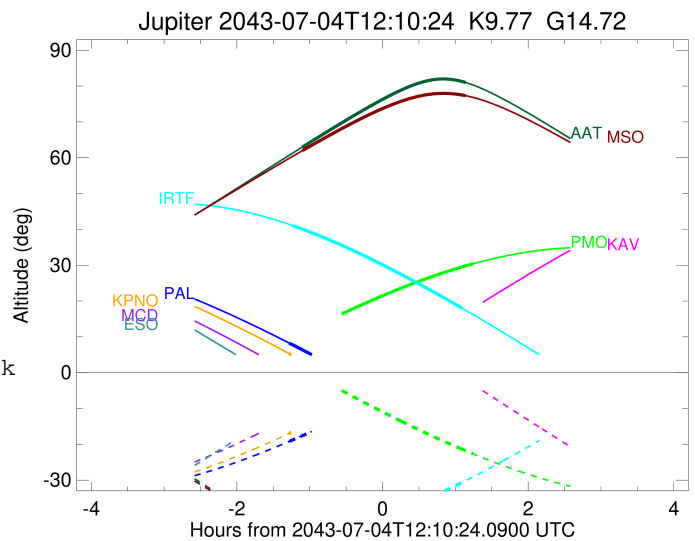
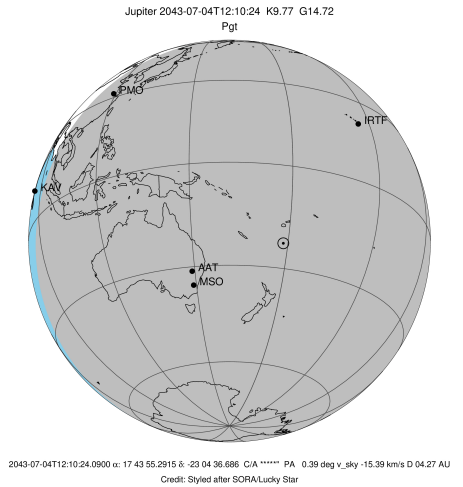


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T11:03:55.090	10.93	1.14x	71490.8	-22.95	-25.81
Jupiter	E	2043-07-04T13:24:45.650	30.36	-22.61	71491.0	-21.20	-23.89

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T12:04:15.320
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       : 4116862634484382336
2Mass ID (if available) : 17435528-2304365
ICRS Star Coord at Epoch: 17h 43m 55.29155s -23:04:36.68626s
RUWE (>1.4 is poor) : 1.14
K magnitude           : 9.770
G magnitude           : 14.723
RP magnitude         : 13.472
BP magnitude         : 16.474
DUPflag              : 0
Distance (au)        : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.39
Sun-Target sep (deg) : 164.46
Sun-Moon sep (deg)  : 164.69
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.89
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 9.099
C/A sky separation (km) : 28211.6
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
    
```

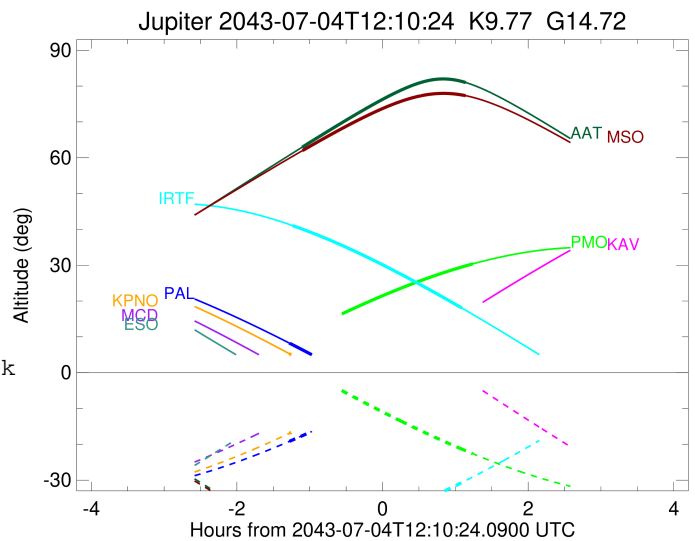
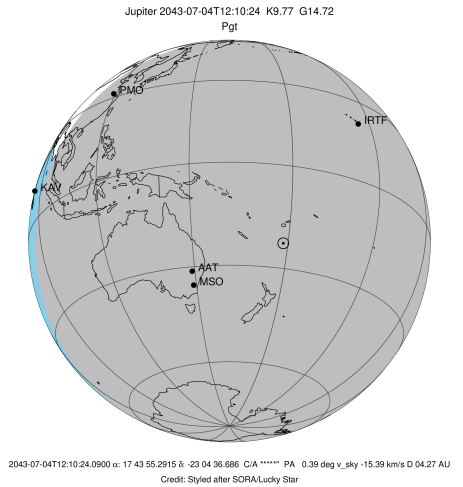


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T10:53:33.973	5.30	-16.95	71490.8	-23.17	-26.05
Jupiter	E	2043-07-04T13:15:32.530	-22.59x	8.76x	71490.8	-23.29	-26.17

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T12:05:51.530
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       : 4116862634484382336
2Mass ID (if available) : 17435528-2304365
ICRS Star Coord at Epoch: 17h 43m 55.29155s -23:04:36.68626s
RUWE (>1.4 is poor) : 1.14
K magnitude           : 9.770
G magnitude           : 14.723
RP magnitude         : 13.472
BP magnitude         : 16.474
DUPflag              : 0
Distance (au)        : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.39
Sun-Target sep (deg) : 164.46
Sun-Moon sep (deg)   : 164.70
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.89
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.948
C/A sky separation (km): 27743.5
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
    
```

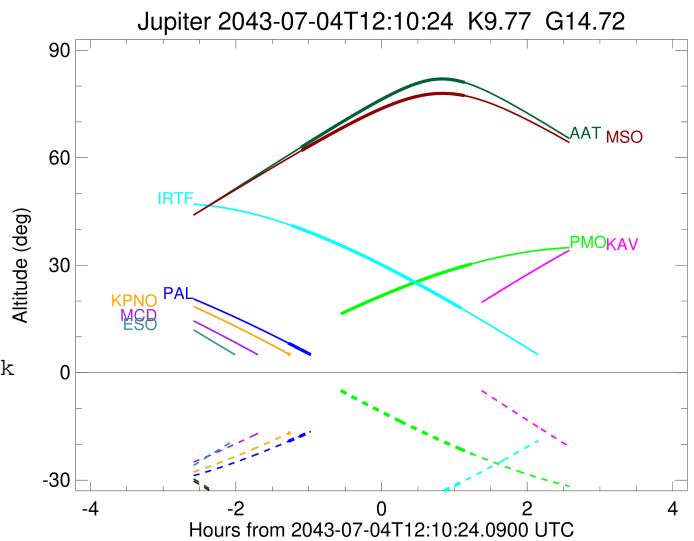
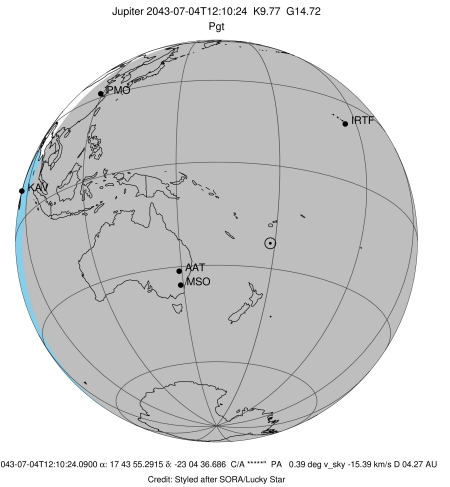


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T10:56:12.652	41.07	-46.82	71490.8	-22.98	-25.84
Jupiter	E	2043-07-04T13:15:56.013	18.01	-30.64	71490.8	-22.79	-25.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T12:11:43.520
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      : 4116862634484382336
2Mass ID (if available) : 17435528-2304365
ICRS Star Coord at Epoch: 17h 43m 55.29155s -23:04:36.68626s
RUWE (>1.4 is poor) : 1.14
K magnitude          : 9.770
G magnitude          : 14.723
RP magnitude         : 13.472
BP magnitude         : 16.474
DUPflag             : 0
Distance (au)       : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.39
Sun-Target sep (deg) : 164.46
Sun-Moon sep (deg)  : 163.87
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.89
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 10.458
C/A sky separation (km) : 32426.5
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
    
```

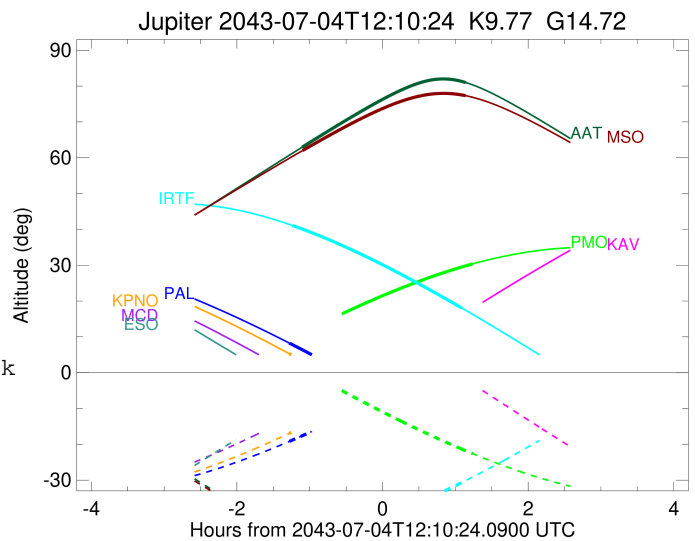
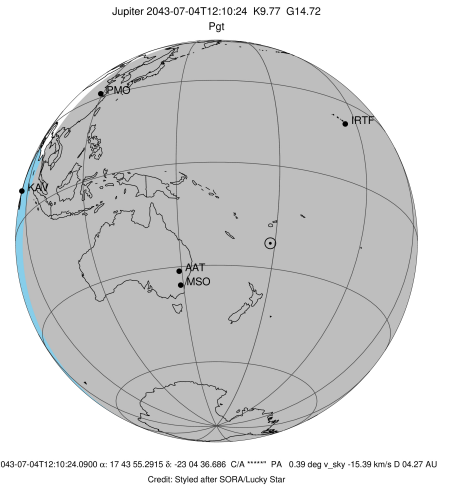


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T11:04:24.166	62.98	-48.54	71490.3	-27.66	-30.88
Jupiter	E	2043-07-04T13:18:58.048	80.98	-76.30	71490.4	-26.40	-29.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T12:11:40.370
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       : 4116862634484382336
2Mass ID (if available) : 17435528-2304365
ICRS Star Coord at Epoch: 17h 43m 55.29155s -23:04:36.68626s
RUWE (>1.4 is poor) : 1.14
K magnitude          : 9.770
G magnitude          : 14.723
RP magnitude         : 13.472
BP magnitude         : 16.474
DUPflag             : 0
Distance (au)        : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.39
Sun-Target sep (deg) : 164.46
Sun-Moon sep (deg)   : 163.85
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.89
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 10.600
C/A sky separation (km): 32866.0
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	2043-07-04T11:04:30.912	61.99	-48.37	71490.2	-28.04	-31.29
Jupiter	E	2043-07-04T13:18:45.255	77.32	-73.63	71490.4	-26.80	-29.96