

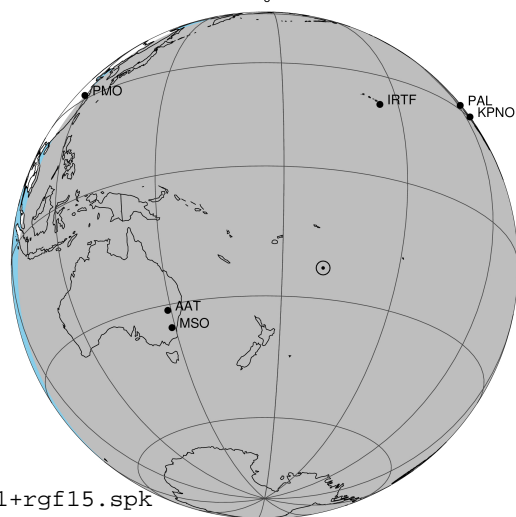
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-02T11:23:28.030
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068845312450619392
 2Mass ID (if available) : 17445908-2304515

Jupiter 2043-07-02T11:23:28 K9.51 G14.71 Pgt

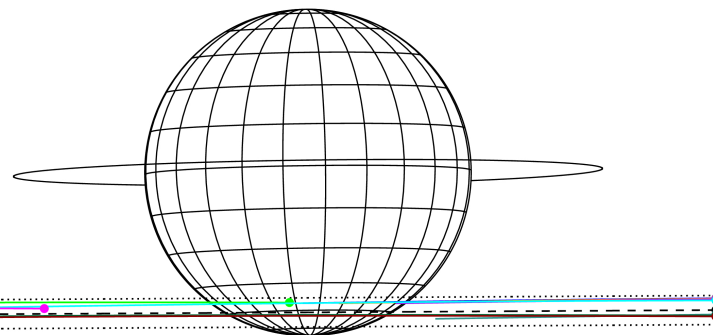
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23°04'51.78645s

RUWE (>1.4 is poor) : 0.93
 K magnitude : 9.506
 G magnitude : 14.710
 RP magnitude : 13.374
 BP magnitude : 16.814
 DUPflag : 0
 Distance (au) : 4.268
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.66
 Sun-Target sep (deg) : 166.64
 Sun-Moon sep (deg) : 134.33
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.78
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 19.796
 C/A sky separation (km) : 61274.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-02T11:23:28 K9.51 G14.71
 Pgt



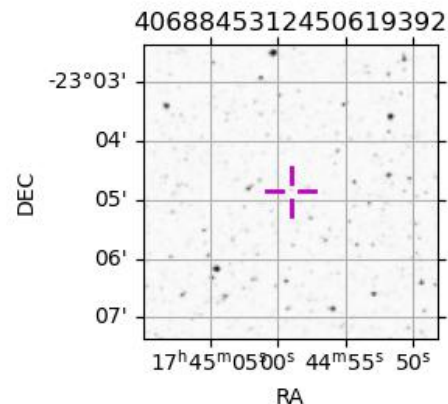
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 RIO
 ESO
 AAT
 MSO



2043-07-02T11:23:28.0300 α: 17 44 59.0700 δ: -23 04 51.786 C/A ***** PA 0.32 deg v_sky -15.66 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

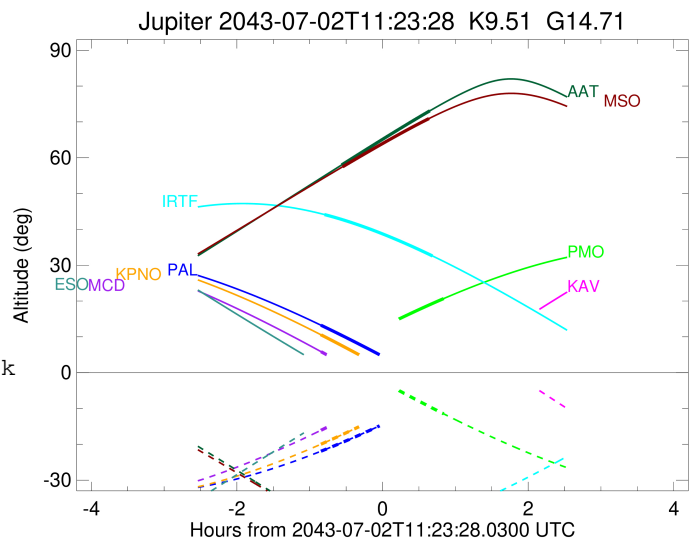
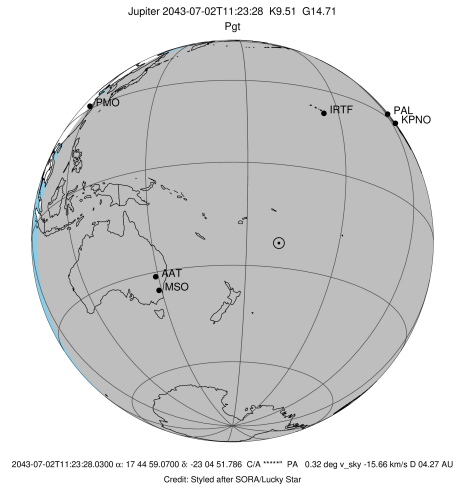
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+	JUL 02 10:32 - JUL 02 10:32	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 02 12:13 - JUL 02 12:13	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 02 10:32 - JUL 02 10:32	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	JUL 02 10:32 - JUL 02 10:32	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	JUL 02 10:35 - JUL 02 12:04	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 02 10:49 - JUL 02 12:02	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 02 10:50 - JUL 02 12:01	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T11:17:44.720
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        : 4068845312450619392
2Mass ID (if available) : 17445908-2304515
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23:04:51.78645s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.506
G magnitude           : 14.710
RP magnitude          : 13.374
BP magnitude          : 16.814
DUPflag              : 0
Distance (au)         : 4.268
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.66
Sun-Target sep (deg)  : 166.64
Sun-Moon sep (deg)    : 134.95
B (ring opening deg) : -2.41
PA of pole (deg)      : 0.78
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 18.484
C/A sky separation (km) : 57215.2
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
    
```

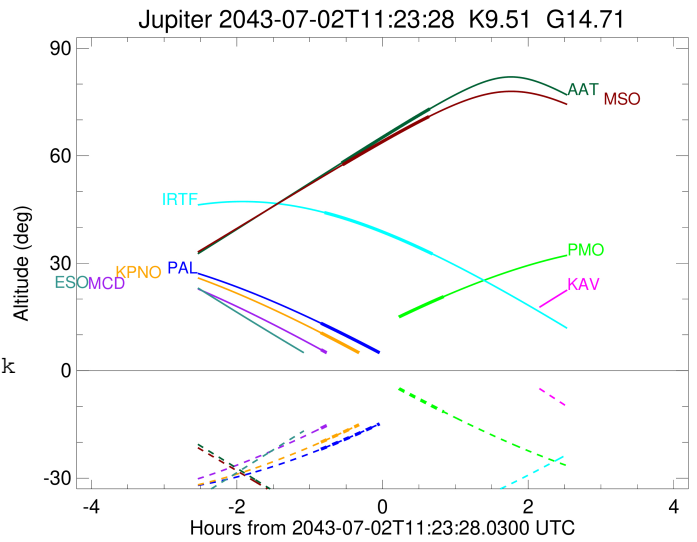
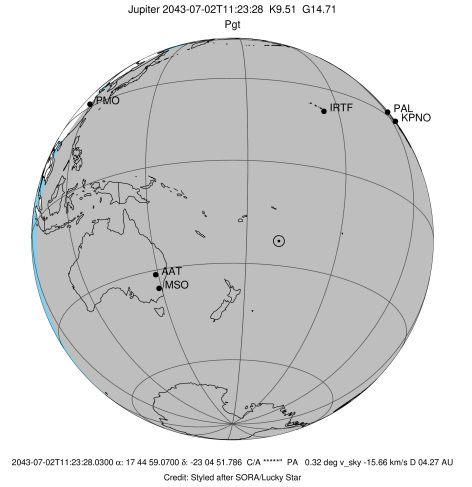


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T10:32:43.049	13.25	-21.93	71486.9	-53.07	-56.54
Jupiter	E	2043-07-02T12:02:59.338	-2.70x	-7.89	71486.9	-53.17	-56.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T11:28:42.300
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       : 4068845312450619392
2Mass ID (if available) : 17445908-2304515
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23:04:51.78645s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 9.506
G magnitude           : 14.710
RP magnitude          : 13.374
BP magnitude          : 16.814
DUPflag              : 0
Distance (au)        : 4.268
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.66
Sun-Target sep (deg) : 166.64
Sun-Moon sep (deg)   : 134.02
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.78
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 18.409
C/A sky separation (km) : 56981.8
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
    
```

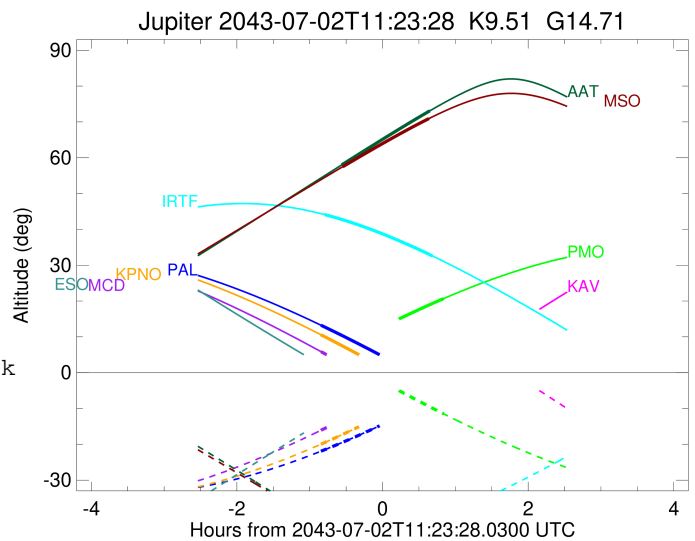
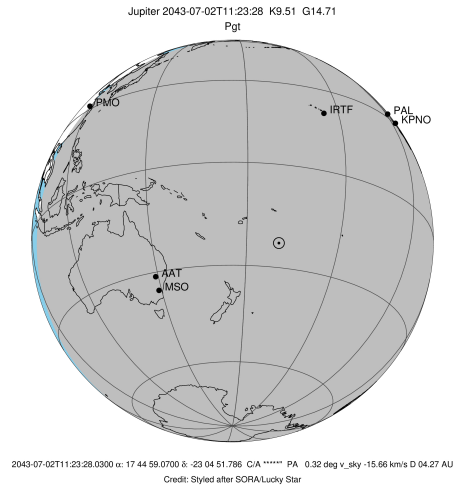


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T10:43:20.786	5.72	5.11x	71486.8	-53.73	-57.16
Jupiter	E	2043-07-02T12:13:53.106	20.68	-11.49	71487.1	-51.91	-55.42

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T11:17:26.500
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      : 4068845312450619392
2Mass ID (if available) : 17445908-2304515
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23:04:51.78645s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.506
G magnitude          : 14.710
RP magnitude         : 13.374
BP magnitude         : 16.814
DUPflag             : 0
Distance (au)        : 4.268
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.66
Sun-Target sep (deg) : 166.64
Sun-Moon sep (deg)  : 134.94
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.78
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 18.576
C/A sky separation (km) : 57500.5
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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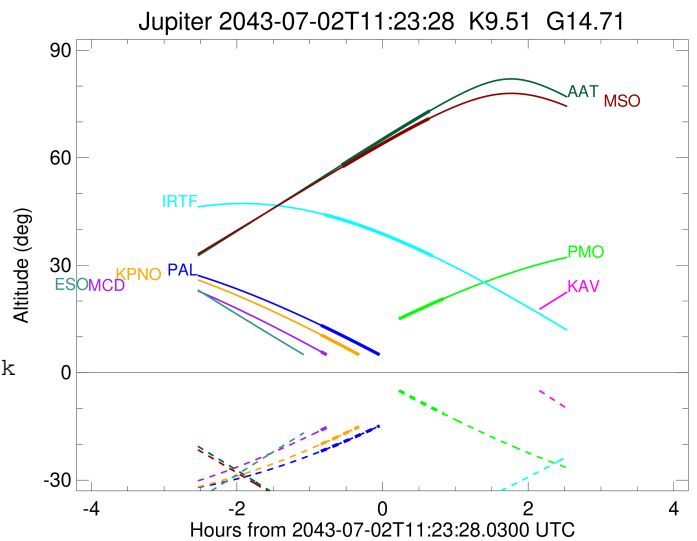
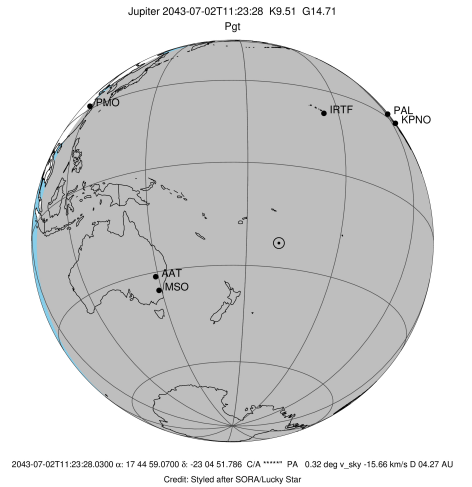


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T10:32:43.875	10.58	-19.97	71486.8	-53.42	-56.87
Jupiter	E	2043-07-02T12:02:22.563	-6.04x	-5.01	71486.8	-53.57	-57.01

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T11:17:08.050
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      : 4068845312450619392
2Mass ID (if available) : 17445908-2304515
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23:04:51.78645s
RUWE (>1.4 is poor) : 0.93
K magnitude         : 9.506
G magnitude         : 14.710
RP magnitude        : 13.374
BP magnitude        : 16.814
DUPflag            : 0
Distance (au)       : 4.268
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.66
Sun-Target sep (deg) : 166.64
Sun-Moon sep (deg)  : 134.90
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.78
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 18.698
C/A sky separation (km) : 57876.1
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
    
```

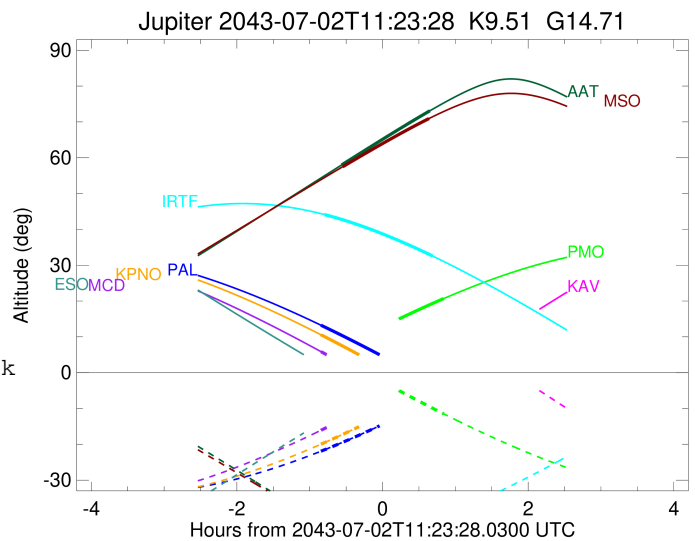
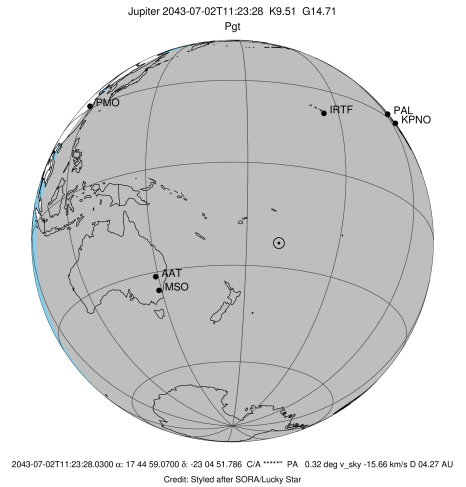


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T10:32:49.561	5.86	-16.07	71486.8	-53.90	-57.32
Jupiter	E	2043-07-02T12:01:40.431	-11.44x	-0.09x	71486.8	-54.10	-57.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T11:20:09.430
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       : 4068845312450619392
2Mass ID (if available) : 17445908-2304515
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23:04:51.78645s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 9.506
G magnitude          : 14.710
RP magnitude         : 13.374
BP magnitude         : 16.814
DUPflag             : 0
Distance (au)        : 4.268
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.66
Sun-Target sep (deg) : 166.64
Sun-Moon sep (deg)   : 135.11
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.78
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 18.484
C/A sky separation (km) : 57215.1
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
    
```

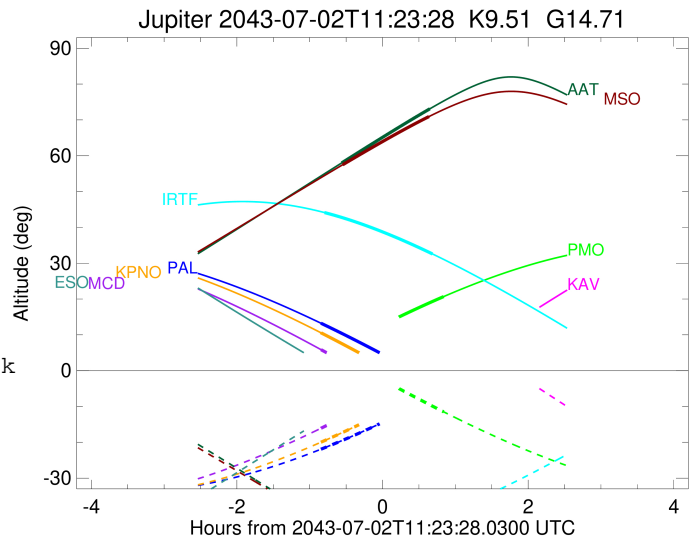
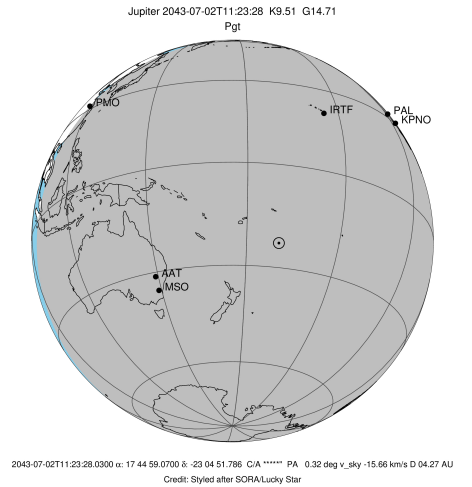


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T10:35:45.099	44.12	-47.21	71486.9	-53.32	-56.77
Jupiter	E	2043-07-02T12:04:41.155	32.57	-40.96	71486.9	-52.98	-56.45

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T11:26:16.900
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      : 4068845312450619392
2Mass ID (if available) : 17445908-2304515
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23:04:51.78645s
RUWE (>1.4 is poor) : 0.93
K magnitude         : 9.506
G magnitude         : 14.710
RP magnitude        : 13.374
BP magnitude        : 16.814
DUPflag            : 0
Distance (au)       : 4.268
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.66
Sun-Target sep (deg) : 166.64
Sun-Moon sep (deg)  : 134.70
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.78
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 20.153
C/A sky separation (km) : 62380.1
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
    
```

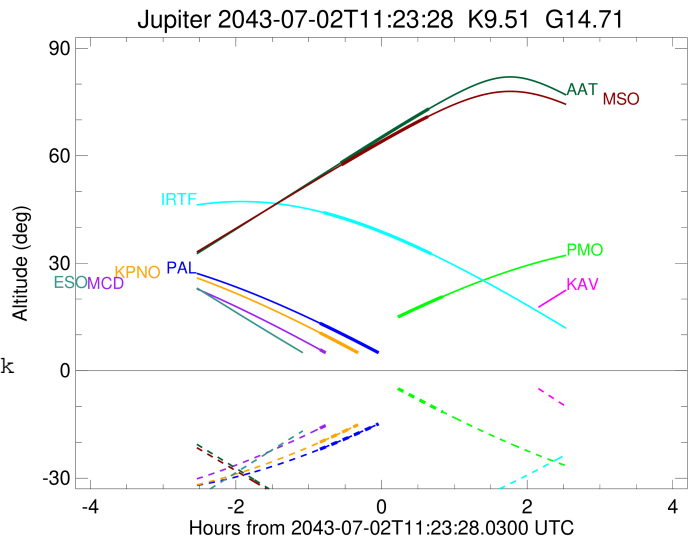
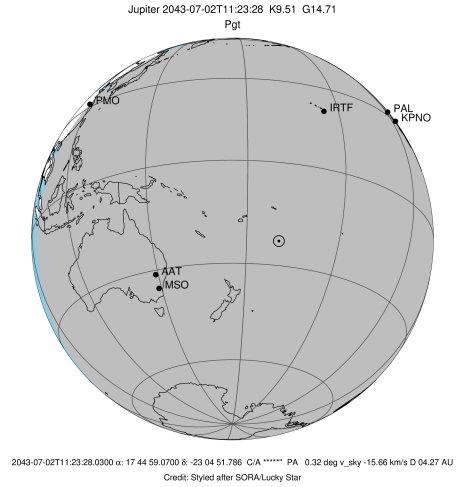


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T10:49:57.941	58.02	-45.59	71485.8	-61.41	-64.37
Jupiter	E	2043-07-02T12:02:32.409	73.10	-61.08	71486.0	-60.02	-63.08


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T11:26:09.880
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      : 4068845312450619392
2Mass ID (if available) : 17445908-2304515
ICRS Star Coord at Epoch: 17h 44m 59.07003s -23:04:51.78645s
RUWE (>1.4 is poor) : 0.93
K magnitude         : 9.506
G magnitude         : 14.710
RP magnitude        : 13.374
BP magnitude        : 16.814
DUPflag            : 0
Distance (au)       : 4.268
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.66
Sun-Target sep (deg) : 166.64
Sun-Moon sep (deg)  : 134.70
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.78
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 20.293
C/A sky separation (km) : 62812.9
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	2043-07-02T10:50:37.744	57.47	-45.68	71485.8	-62.11	-65.02
Jupiter	E	2043-07-02T12:01:38.853	70.91	-60.02	71485.9	-60.74	-63.75