

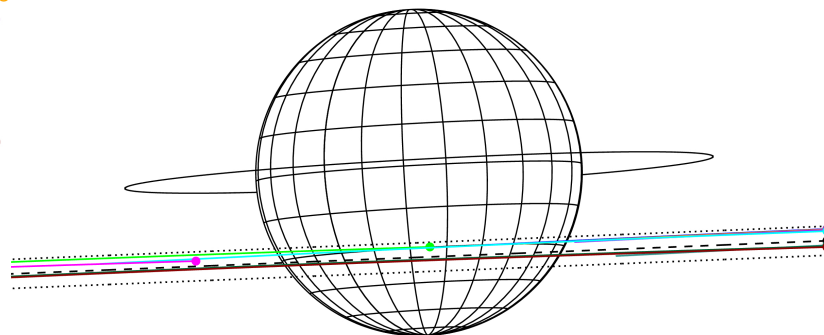
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-07-02T11:36:22.820
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 411164483338057216
 2Mass ID (if available) : 17231934-2244523

Jupiter 2031-07-02T11:36:22 K9.68 G11.93 Pgt

ICRS Star Coord at Epoch: 17h 23m 19.34022s -22:44:52.99457s
 RUWE (>1.4 is poor) : 1.16
 K magnitude : 9.683
 G magnitude : 11.934
 RP magnitude : 11.219
 BP magnitude : 12.491
 DUPflag : 0
 Distance (au) : 4.300
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -14.98
 Sun-Target sep (deg) : 161.56
 Sun-Moon sep (deg) : 14.20
 B (ring opening deg) : -2.57
 PA of pole (deg) : 3.11
 Pole direction: RA (deg): 268.05690
 Dec (deg): 64.49651
 C/A sky separation (") : 11.904
 C/A sky separation (km) : 37128.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



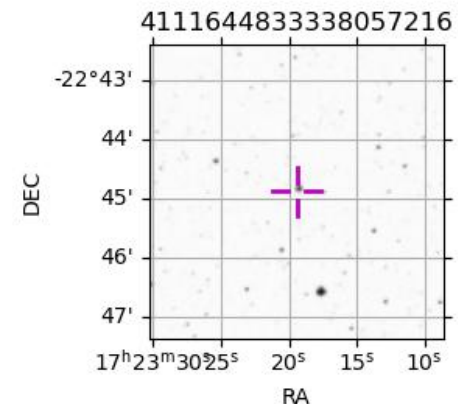
Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 ESO
 AAT
 MSO



2031-07-02T11:36:22.8200 α: 17 23 19.3402 δ: -22 44 52.995 C/A ***** PA 2.33 deg v_sky -14.98 km/s D 04.30 AU
 Credit: Styled after SORA/Lucky Star

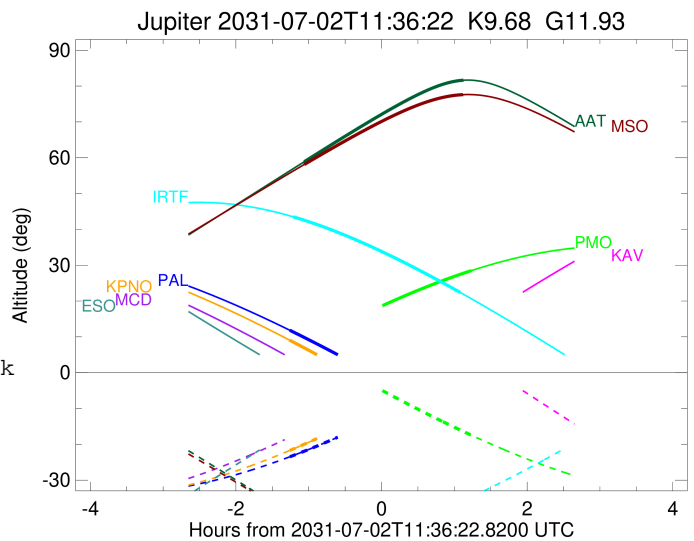
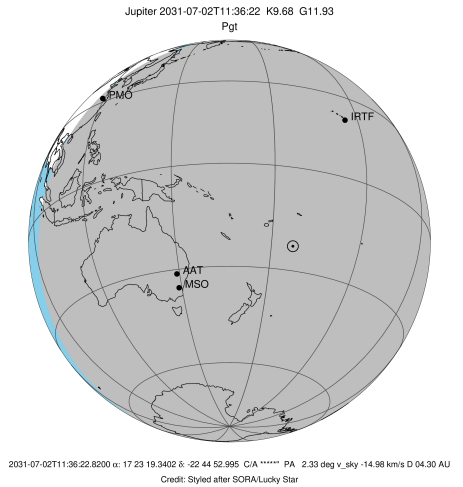
Observable events with sun below -5 deg and altitude above 5 deg

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 02 10:20 - JUL 02 10:20	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 02 12:50 - JUL 02 12:50	Pne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	JUL 02 10:20 - JUL 02 10:20	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 02 10:23 - JUL 02 12:41	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 10:32 - JUL 02 12:43	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 02 10:32 - JUL 02 12:43	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-07-02T11:30:28.080
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        : 4111644833338057216
2Mass ID (if available) : 17231934-2244523
ICRS Star Coord at Epoch: 17h 23m 19.34022s -22:44:52.99457s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.683
G magnitude           : 11.934
RP magnitude          : 11.219
BP magnitude          : 12.491
DUPflag               : 0
Distance (au)         : 4.300
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.98
Sun-Target sep (deg)  : 161.56
Sun-Moon sep (deg)   : 14.94
B (ring opening deg) : -2.57
PA of pole (deg)     : 3.11
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 10.639
C/A sky separation (km) : 33182.5
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
    
```

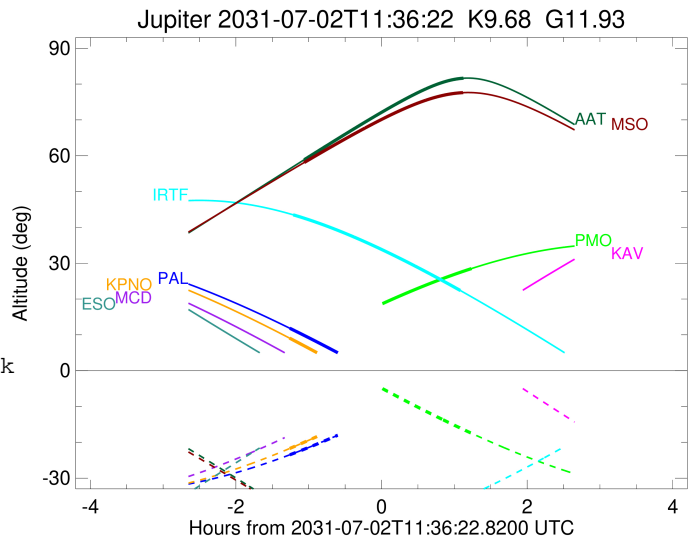
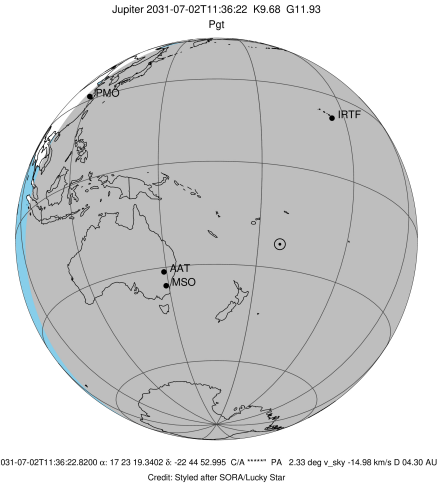


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-02T10:20:49.174	11.84	-23.48	71490.0	-27.91	-31.15
Jupiter	E	2031-07-02T12:40:41.214	-14.11x	-1.17x	71490.1	-27.41	-30.61

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-07-02T11:41:14.850
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       : 4111644833338057216
2Mass ID (if available) : 17231934-2244523
ICRS Star Coord at Epoch: 17h 23m 19.34022s -22:44:52.99457s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.683
G magnitude           : 11.934
RP magnitude         : 11.219
BP magnitude         : 12.491
DUPflag              : 0
Distance (au)        : 4.300
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.98
Sun-Target sep (deg) : 161.56
Sun-Moon sep (deg)   : 13.61
B (ring opening deg) : -2.57
PA of pole (deg)     : 3.11
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation ("): 10.498
C/A sky separation (km): 32743.4
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
    
```

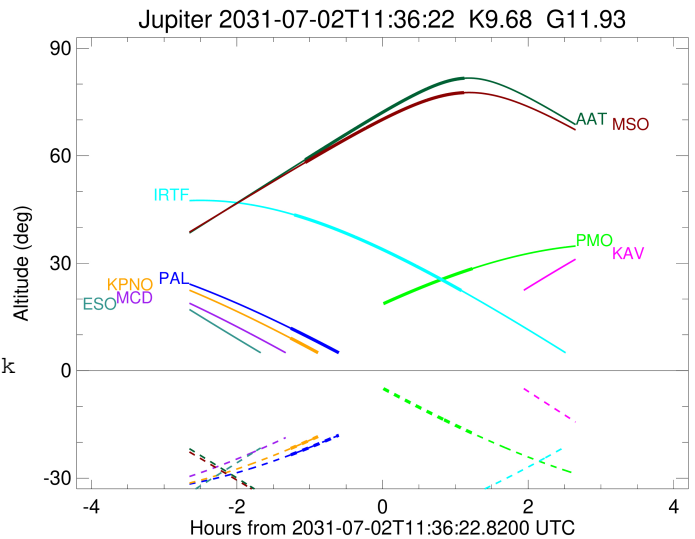
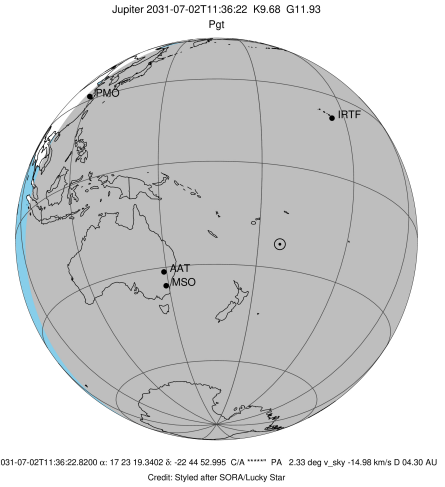


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-02T10:31:35.953	7.75	7.41x	71489.9	-28.51	-31.79
Jupiter	E	2031-07-02T12:50:31.330	28.49	-17.47	71490.2	-26.05	-29.16

```

target           : Jupiter
target radius (km) : 71492.00
C/A epoch       : 2031-07-02T11:30:13.570
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  : 4111644833338057216
2Mass ID (if available) : 17231934-2244523
ICRS Star Coord at Epoch: 17h 23m 19.34022s -22:44:52.99457s
RUWE (>1.4 is poor) : 1.16
K magnitude     : 9.683
G magnitude     : 11.934
RP magnitude    : 11.219
BP magnitude    : 12.491
DUPflag        : 0
Distance (au)   : 4.300
f0 (km)         : 0.00
g0 (km)         : 0.00
skyplane vel. (km/s) : -14.98
Sun-Target sep (deg) : 161.56
Sun-Moon sep (deg) : 14.96
B (ring opening deg) : -2.57
PA of pole (deg) : 3.11
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 10.732
C/A sky separation (km) : 33472.4
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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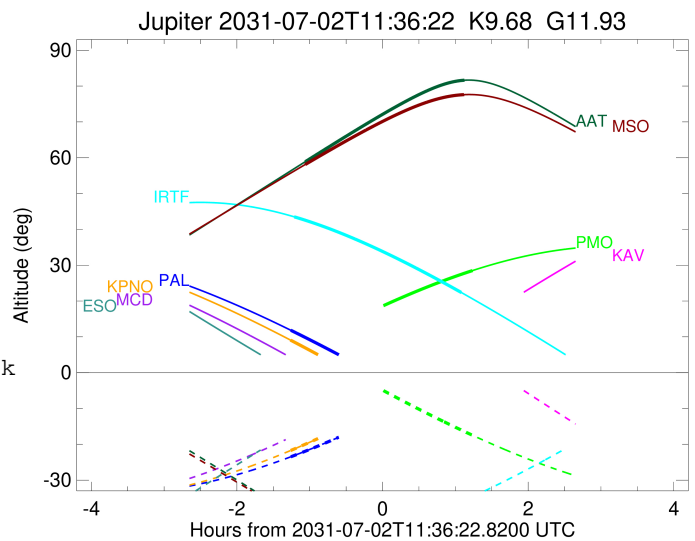
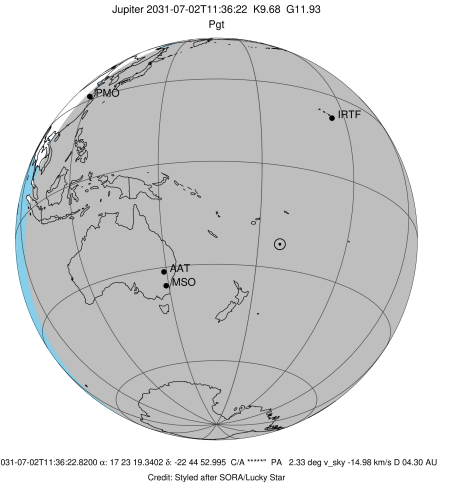


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-02T10:20:36.128	9.08	-21.74	71490.0	-28.14	-31.40
Jupiter	E	2031-07-02T12:40:26.557	-17.89x	2.09x	71490.0	-27.69	-30.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-07-02T11:32:20.670
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        : 4111644833338057216
2Mass ID (if available) : 17231934-2244523
ICRS Star Coord at Epoch: 17h 23m 19.34022s -22:44:52.99457s
RUWE (>1.4 is poor) : 1.16
K magnitude           : 9.683
G magnitude           : 11.934
RP magnitude          : 11.219
BP magnitude          : 12.491
DUPflag              : 0
Distance (au)         : 4.300
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.98
Sun-Target sep (deg)  : 161.56
Sun-Moon sep (deg)   : 14.86
B (ring opening deg) : -2.57
PA of pole (deg)     : 3.11
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 10.628
C/A sky separation (km) : 33149.3
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
    
```

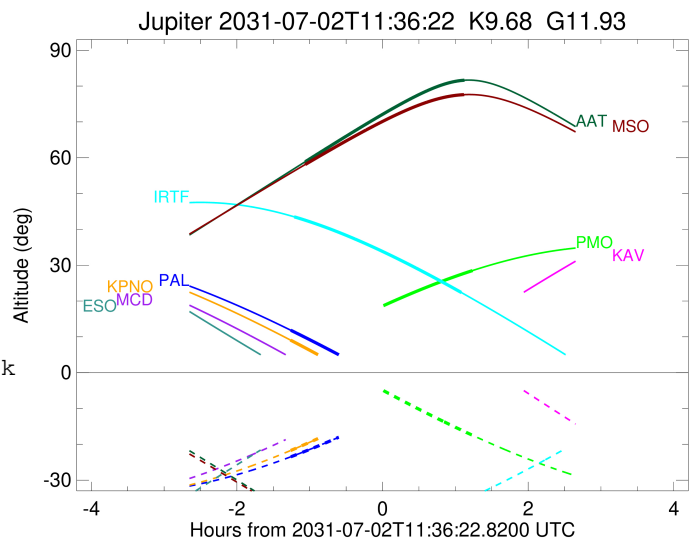
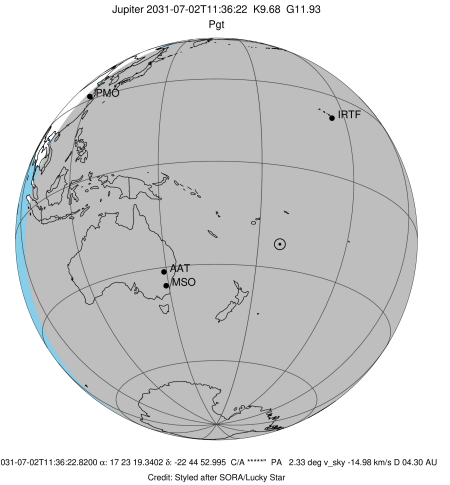


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-02T10:23:43.460	43.49	-47.27	71490.0	-28.14	-31.39
Jupiter	E	2031-07-02T12:41:20.768	22.37	-36.00	71490.1	-27.22	-30.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-07-02T11:38:18.770
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      : 4111644833338057216
2Mass ID (if available) : 17231934-2244523
ICRS Star Coord at Epoch: 17h 23m 19.34022s -22:44:52.99457s
RUWE (>1.4 is poor) : 1.16
K magnitude          : 9.683
G magnitude          : 11.934
RP magnitude         : 11.219
BP magnitude         : 12.491
DUPflag             : 0
Distance (au)       : 4.300
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.98
Sun-Target sep (deg) : 161.56
Sun-Moon sep (deg)  : 14.20
B (ring opening deg) : -2.57
PA of pole (deg)    : 3.11
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (" ) : 12.251
C/A sky separation (km) : 38208.7
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
    
```

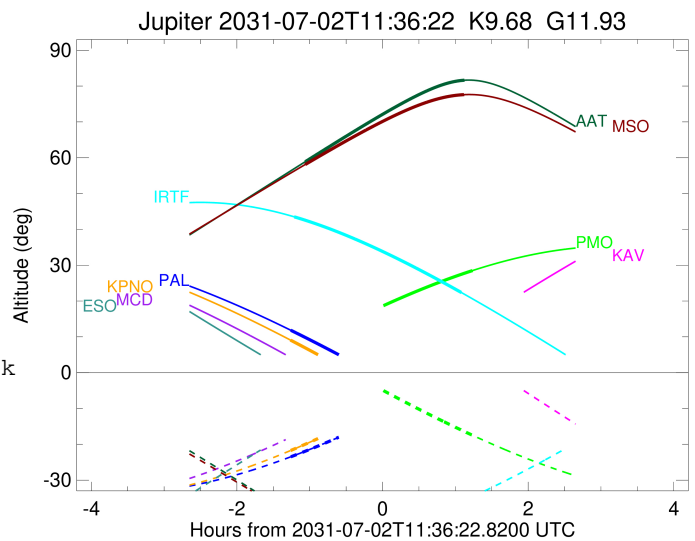
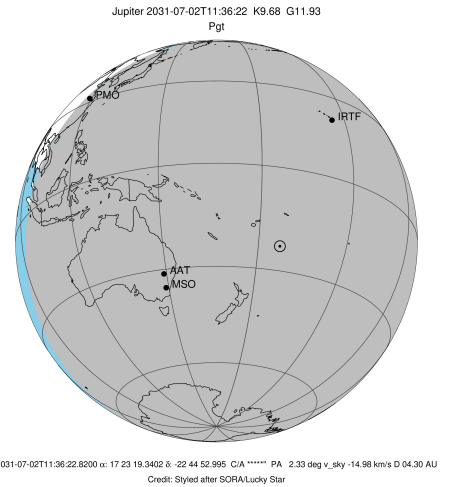


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-02T10:32:42.702	58.88	-41.90	71489.2	-33.35	-36.89
Jupiter	E	2031-07-02T12:43:47.414	81.62	-69.67	71489.5	-31.35	-34.79

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-07-02T11:38:12.960
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        : 4111644833338057216
2Mass ID (if available) : 17231934-2244523
ICRS Star Coord at Epoch: 17h 23m 19.34022s -22:44:52.99457s
RUWE (>1.4 is poor)  : 1.16
K magnitude           : 9.683
G magnitude           : 11.934
RP magnitude          : 11.219
BP magnitude          : 12.491
DUPflag              : 0
Distance (au)         : 4.300
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.98
Sun-Target sep (deg)  : 161.56
Sun-Moon sep (deg)    : 14.22
B (ring opening deg) : -2.57
PA of pole (deg)      : 3.11
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 12.390
C/A sky separation (km) : 38643.2
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	2031-07-02T10:32:50.689	58.13	-42.04	71489.2	-33.75	-37.30
Jupiter	E	2031-07-02T12:43:28.218	77.60	-67.98	71489.5	-31.76	-35.23