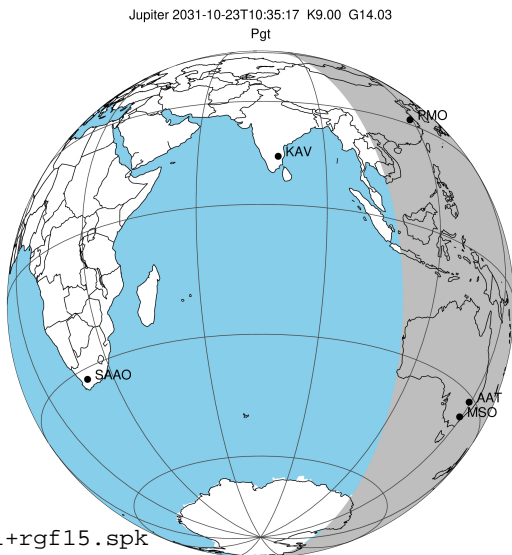


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-10-23T10:35:17.120
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116528589148305920
 2Mass ID (if available) : 17390255-2313144

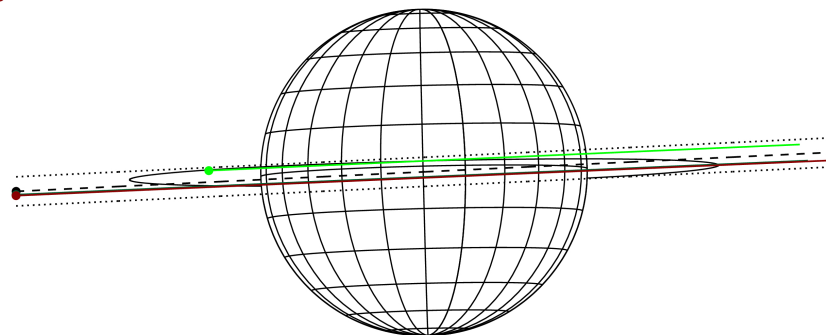
Jupiter 2031-10-23T10:35:17 K9.00 G14.03 Pgt

ICRS Star Coord at Epoch: 17h 39m 02.55796s -23:13:14.57037s
 RUWE (>1.4 is poor) : 0.86
 K magnitude : 9.001
 G magnitude : 14.026
 RP magnitude : 12.782
 BP magnitude : 15.748
 DUPflag : 0
 Distance (au) : 5.729
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 29.94
 Sun-Target sep (deg) : 55.80
 Sun-Moon sep (deg) : 36.11
 B (ring opening deg) : -2.25
 PA of pole (deg) : 1.42
 Pole direction: RA (deg): 268.05681
 Dec (deg): 64.49652
 C/A sky separation (") : 0.067
 C/A sky separation (km) : 277.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



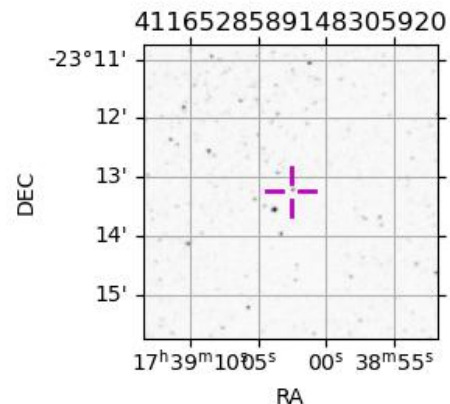
2031-10-23T10:35:17.1200 s: 17.39 02.5580 s: -23 13 14.570 C/A 0.058" PA 182.81 deg v_sky +29.94 km/s D 05.73 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PMO
 AAT
 MSO



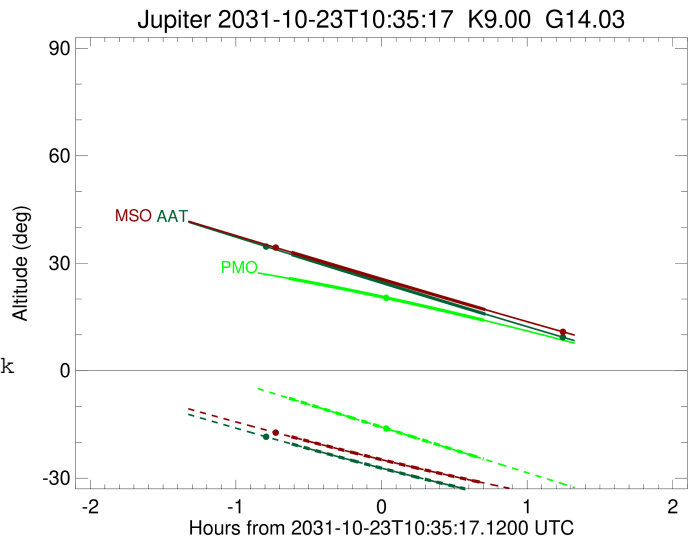
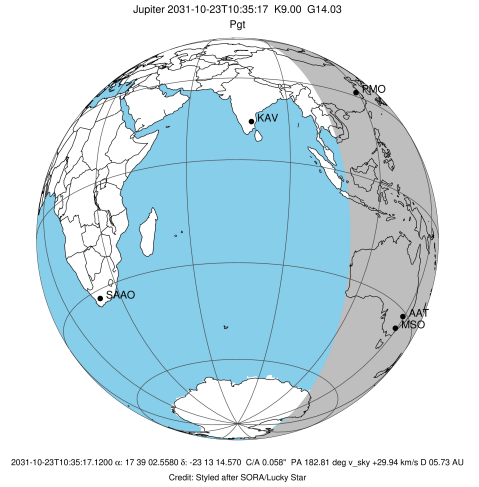
Observable events with sun below -5 deg and altitude above 5 deg

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			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	OCT 23 09:57 - OCT 23 11:17	Pie
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
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			Pnn
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	+ +	OCT 23 09:58 - OCT 23 11:18	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	OCT 23 09:58 - OCT 23 11:18	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-23T10:37:17.520
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      : 4116528589148305920
2Mass ID (if available) : 17390255-2313144
ICRS Star Coord at Epoch: 17h 39m 02.55796s -23:13:14.57037s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 9.001
G magnitude          : 14.026
RP magnitude         : 12.782
BP magnitude         : 15.748
DUPflag             : 0
Distance (au)       : 5.729
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 29.94
Sun-Target sep (deg) : 55.80
Sun-Moon sep (deg)  : 35.79
B (ring opening deg) : -2.25
PA of pole (deg)    : 1.42
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (" ) : 1.217
C/A sky separation (km) : 5055.7
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
    
```

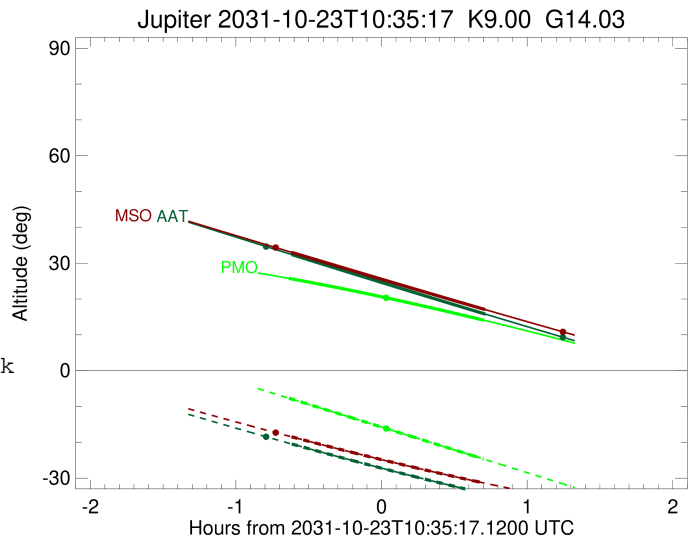
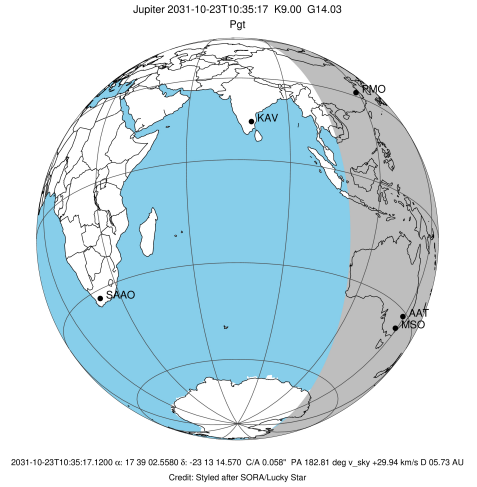


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-23T09:57:10.091	25.75	-7.69	71492.0	2.90	3.31
Jupiter	E	2031-10-23T11:17:20.120	14.10	-24.67	71491.9	5.16	5.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-23T10:38:16.410
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        : 4116528589148305920
2Mass ID (if available) : 17390255-2313144
ICRS Star Coord at Epoch: 17h 39m 02.55796s -23:13:14.57037s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 9.001
G magnitude           : 14.026
RP magnitude          : 12.782
BP magnitude          : 15.748
DUPflag              : 0
Distance (au)         : 5.729
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 29.94
Sun-Target sep (deg) : 55.80
Sun-Moon sep (deg)   : 35.74
B (ring opening deg) : -2.25
PA of pole (deg)     : 1.42
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 0.471
C/A sky separation (km) : 1957.0
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
    
```

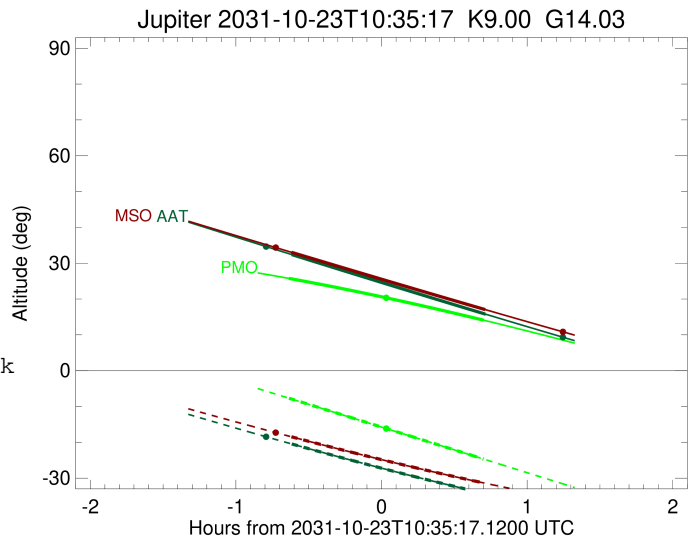
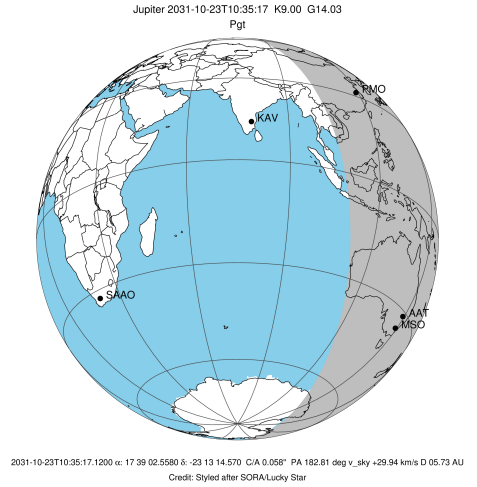


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-23T09:58:17.403	32.40	-20.46	71492.0	-2.61	-2.99
Jupiter	E	2031-10-23T11:18:09.115	15.77	-34.31	71492.0	-0.54	-0.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-23T10:38:08.890
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       : 4116528589148305920
2Mass ID (if available) : 17390255-2313144
ICRS Star Coord at Epoch: 17h 39m 02.55796s -23:13:14.57037s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 9.001
G magnitude           : 14.026
RP magnitude         : 12.782
BP magnitude         : 15.748
DUPflag              : 0
Distance (au)        : 5.729
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 29.94
Sun-Target sep (deg) : 55.80
Sun-Moon sep (deg)   : 35.78
B (ring opening deg) : -2.25
PA of pole (deg)     : 1.42
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 0.562
C/A sky separation (km) : 2333.4
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	2031-10-23T09:58:10.734	33.04	-18.46	71492.0	-2.93	-3.35
Jupiter	E	2031-10-23T11:18:00.996	17.05	-31.43	71492.0	-0.83	-0.95