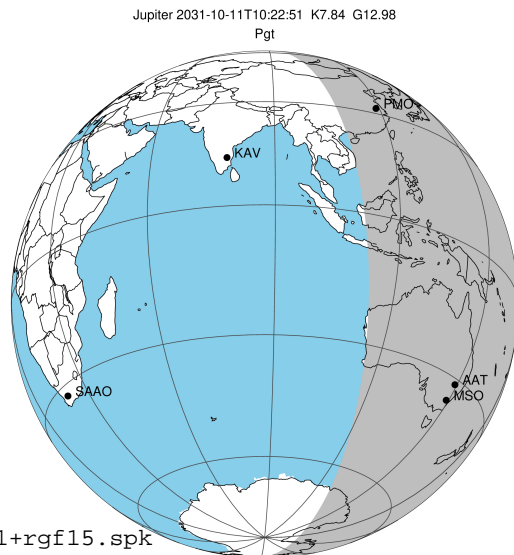


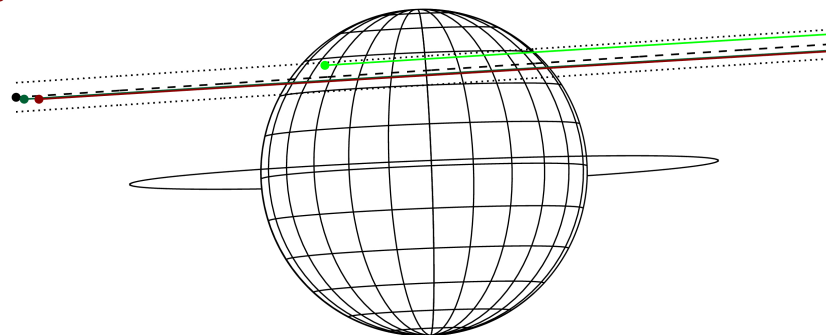
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-10-11T10:22:51.930  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4111432588848173696  
 2Mass ID (if available) : 17303530-2306294

Jupiter 2031-10-11T10:22:51 K7.84 G12.98 Pgt

ICRS Star Coord at Epoch: 17h 30m 35.31643s -23:06:29.58656s  
 RUWE (>1.4 is poor) : 0.82  
 K magnitude : 7.844  
 G magnitude : 12.978  
 RP magnitude : 11.701  
 BP magnitude : 14.839  
 DUPflag : 0  
 Distance (au) : 5.569  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 25.34  
 Sun-Target sep (deg) : 65.77  
 Sun-Moon sep (deg) : 123.04  
 B (ring opening deg) : -2.29  
 PA of pole (deg) : 2.33  
 Pole direction: RA (deg): 268.05682  
 Dec (deg): 64.49652  
 C/A sky separation (") : 11.019  
 C/A sky separation (km) : 44509.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



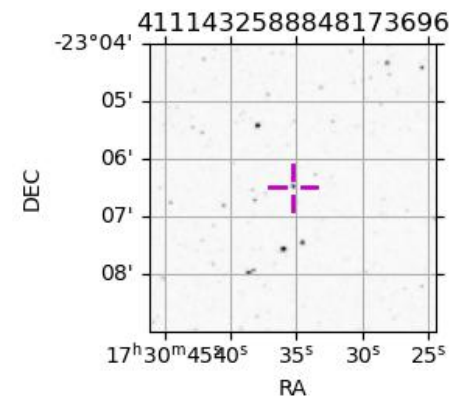
Earth  
 PMO  
 AAT  
 MSO



2031-10-11T10:22:51.9300 a: 17 30 35.3164 & -23 06 29.587 C/A \*\*\*\*\* PA 183.73 deg v\_sky +25.34 km/s D 05.57 AU  
 Credit: Styled after SORA/Lucky Star

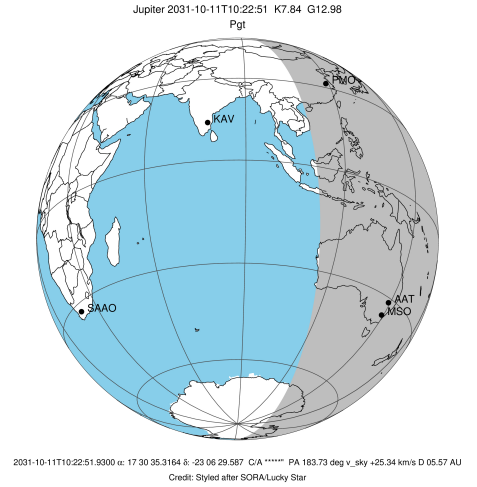
Observable events with sun below -5 deg and altitude above 5 deg

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			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	OCT 11 10:58 - OCT 11 10:58	Pne
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 11 09:48 - OCT 11 11:04	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	OCT 11 09:47 - OCT 11 11:04	Pie

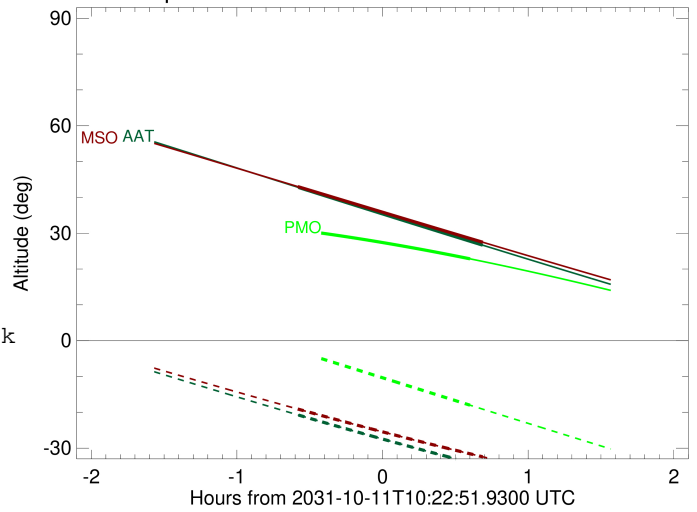


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-11T10:24:36.600
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        : 4111432588848173696
2Mass ID (if available) : 17303530-2306294
ICRS Star Coord at Epoch: 17h 30m 35.31643s -23:06:29.58656s
RUWE (>1.4 is poor) : 0.82
K magnitude           : 7.844
G magnitude           : 12.978
RP magnitude          : 11.701
BP magnitude          : 14.839
DUPflag              : 0
Distance (au)         : 5.569
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 25.34
Sun-Target sep (deg) : 65.77
Sun-Moon sep (deg)   : 123.15
B (ring opening deg) : -2.29
PA of pole (deg)     : 2.33
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (" ) : 12.275
C/A sky separation (km) : 49580.7
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
    
```



Jupiter 2031-10-11T10:22:51 K7.84 G12.98

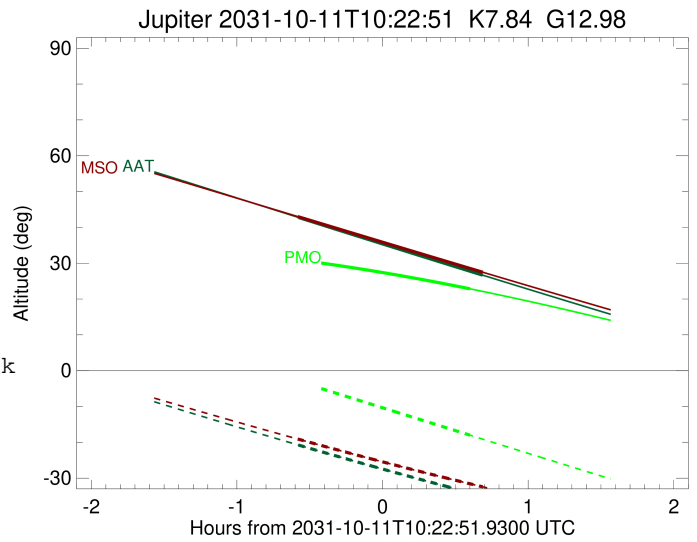
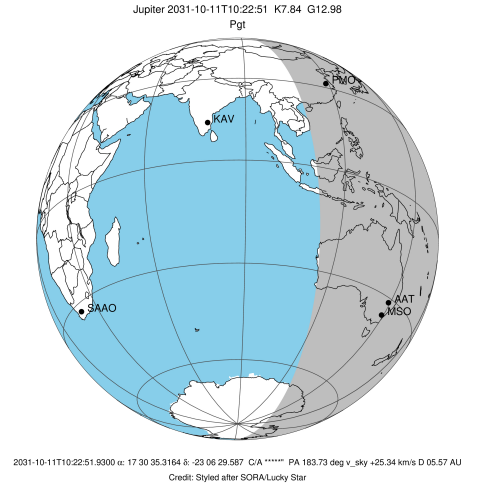


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-11T09:50:14.051	30.72	-3.44x	71488.7	42.58	46.30
Jupiter	E	2031-10-11T10:58:55.715	22.84	-18.01	71488.4	45.10	48.80

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-11T10:26:15.740
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       : 4111432588848173696
2Mass ID (if available) : 17303530-2306294
ICRS Star Coord at Epoch: 17h 30m 35.31643s -23:06:29.58656s
RUWE (>1.4 is poor) : 0.82
K magnitude          : 7.844
G magnitude          : 12.978
RP magnitude         : 11.701
BP magnitude         : 14.839
DUPflag             : 0
Distance (au)        : 5.569
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 25.34
Sun-Target sep (deg) : 65.77
Sun-Moon sep (deg)   : 123.12
B (ring opening deg) : -2.29
PA of pole (deg)     : 2.33
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (") : 10.591
C/A sky separation (km) : 42779.5
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
    
```

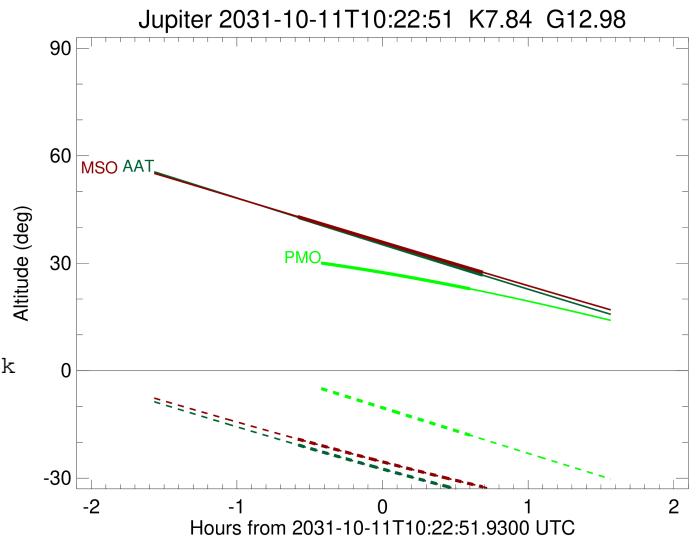
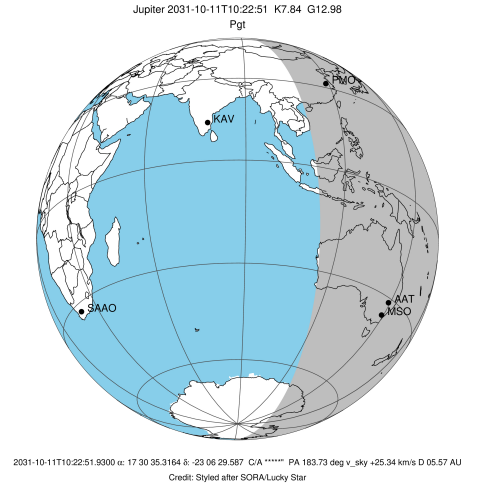


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-11T09:48:14.453	42.76	-20.76	71489.6	35.59	39.21
Jupiter	E	2031-10-11T11:04:10.606	26.65	-34.92	71489.3	37.82	41.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-11T10:26:07.460
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       : 4111432588848173696
2Mass ID (if available) : 17303530-2306294
ICRS Star Coord at Epoch: 17h 30m 35.31643s -23:06:29.58656s
RUWE (>1.4 is poor) : 0.82
K magnitude           : 7.844
G magnitude           : 12.978
RP magnitude         : 11.701
BP magnitude         : 14.839
DUPflag              : 0
Distance (au)        : 5.569
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 25.34
Sun-Target sep (deg) : 65.77
Sun-Moon sep (deg)   : 123.14
B (ring opening deg) : -2.29
PA of pole (deg)     : 2.33
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation ("): 10.492
C/A sky separation (km): 42380.0
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	2031-10-11T09:47:55.242	43.02	-19.08	71489.6	35.18	38.78
Jupiter	E	2031-10-11T11:04:13.437	27.47	-32.42	71489.3	37.43	41.10