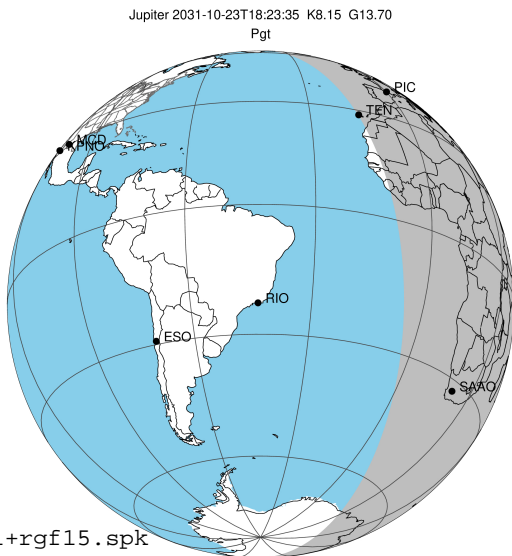


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-10-23T18:23:35.850
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116529791738362240
 2Mass ID (if available) : 17391726-2313180

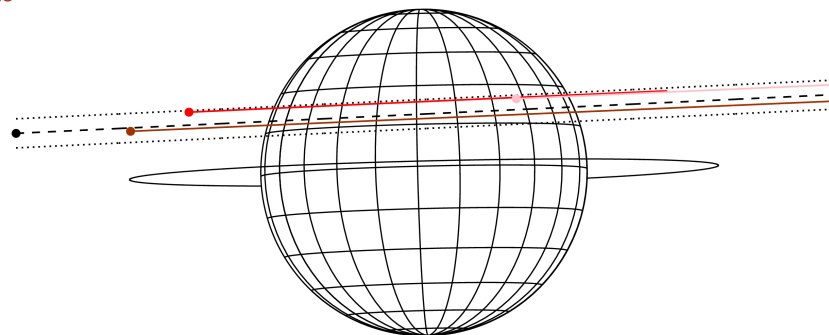
Jupiter 2031-10-23T18:23:35 K8.15 G13.70 Pgt

ICRS Star Coord at Epoch: 17h 39m 17.27137s -23:13:18.12591s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 8.153
 G magnitude : 13.699
 RP magnitude : 12.287
 BP magnitude : 16.185
 DUPflag : 0
 Distance (au) : 5.733
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 30.05
 Sun-Target sep (deg) : 55.54
 Sun-Moon sep (deg) : 40.64
 B (ring opening deg) : -2.25
 PA of pole (deg) : 1.39
 Pole direction: RA (deg): 268.05681
 Dec (deg): 64.49652
 C/A sky separation (") : 6.153
 C/A sky separation (km) : 25584.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



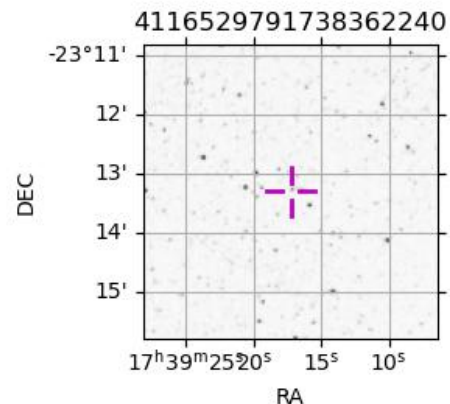
2031-10-23T18:23:35.8500 ex: 17 39 17.2714 s: -23 13 18.126 C/A 6.144" PA 182.71 deg v_sky +30.05 km/s D 05.73 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 TEN
 SAAO



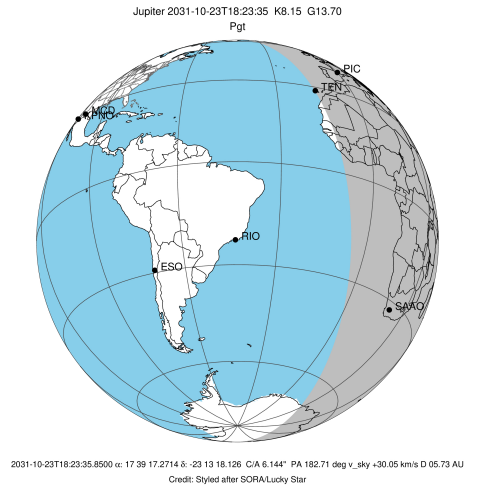
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+ +	OCT 23 17:49 - OCT 23 19:01	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
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	+	OCT 23 19:01 - OCT 23 19:01	Pne
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			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	OCT 23 17:48 - OCT 23 19:04	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

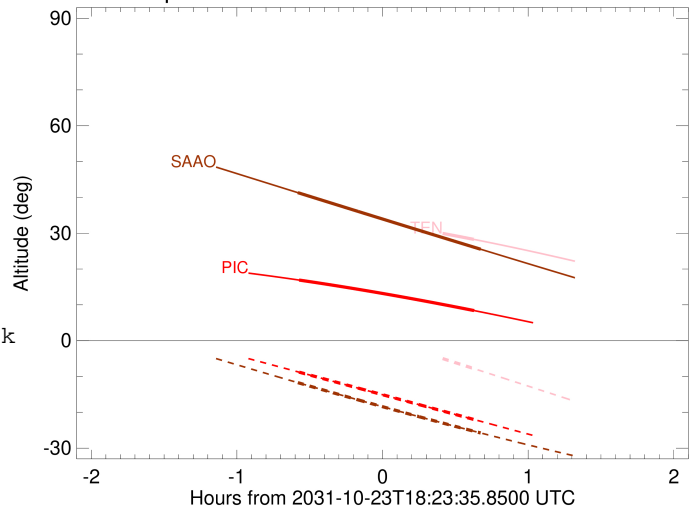


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-23T18:25:17.240
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PIC
Location            : Pic du Midi
Latitude (deg)      : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)       : 2.890
Gaia source ID      : 4116529791738362240
2Mass ID (if available) : 17391726-2313180
ICRS Star Coord at Epoch: 17h 39m 17.27137s -23:13:18.12591s
RUWE (>1.4 is poor) : 0.90
K magnitude          : 8.153
G magnitude          : 13.699
RP magnitude         : 12.287
BP magnitude         : 16.185
DUPflag             : 0
Distance (au)       : 5.733
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 30.05
Sun-Target sep (deg) : 55.54
Sun-Moon sep (deg)  : 40.36
B (ring opening deg) : -2.25
PA of pole (deg)    : 1.39
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 7.465
C/A sky separation (km) : 31040.0
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
    
```



Jupiter 2031-10-23T18:23:35 K8.15 G13.70

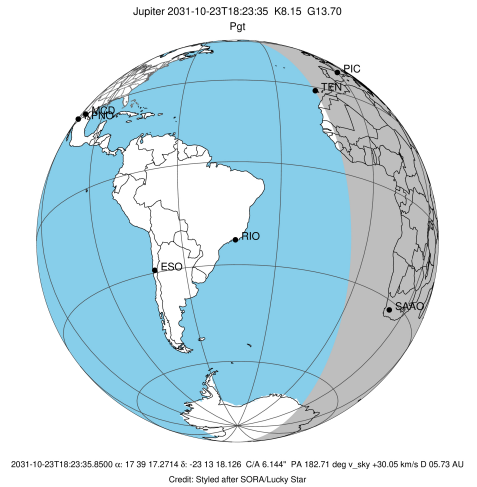


x: target alt < 5.0 deg or sun > -5.0 deg

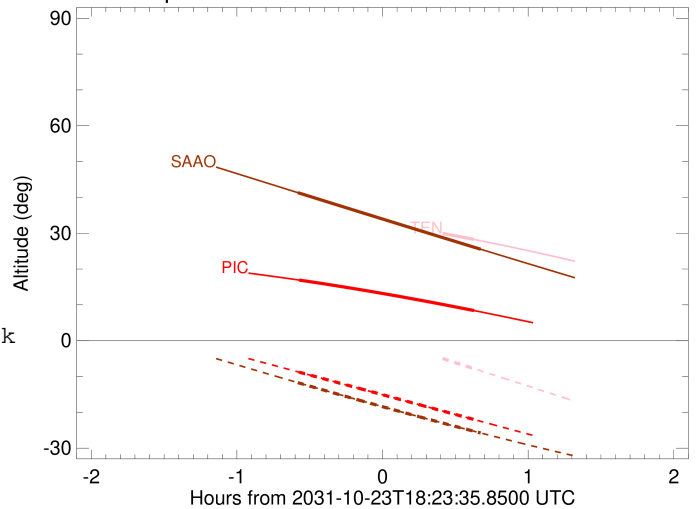
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-23T17:49:14.218	16.91	-8.79	71490.8	24.53	27.52
Jupiter	E	2031-10-23T19:01:16.855	8.41	-22.00	71490.6	26.86	30.02

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-23T18:24:53.930
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : TEN
Location             : Teide Obs./Tenerife
Latitude (deg)       : 28.30050
E. Longitude (deg)   : 343.48909
Altitude (km)        : 2.395
Gaia source ID       : 4116529791738362240
2Mass ID (if available) : 17391726-2313180
ICRS Star Coord at Epoch: 17h 39m 17.27137s -23:13:18.12591s
RUWE (>1.4 is poor) : 0.90
K magnitude          : 8.153
G magnitude          : 13.699
RP magnitude         : 12.287
BP magnitude         : 16.185
DUPflag             : 0
Distance (au)        : 5.733
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 30.05
Sun-Target sep (deg) : 55.54
Sun-Moon sep (deg)   : 40.65
B (ring opening deg) : -2.25
PA of pole (deg)     : 1.39
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 7.320
C/A sky separation (km) : 30438.4
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
    
```



Jupiter 2031-10-23T18:23:35 K8.15 G13.70

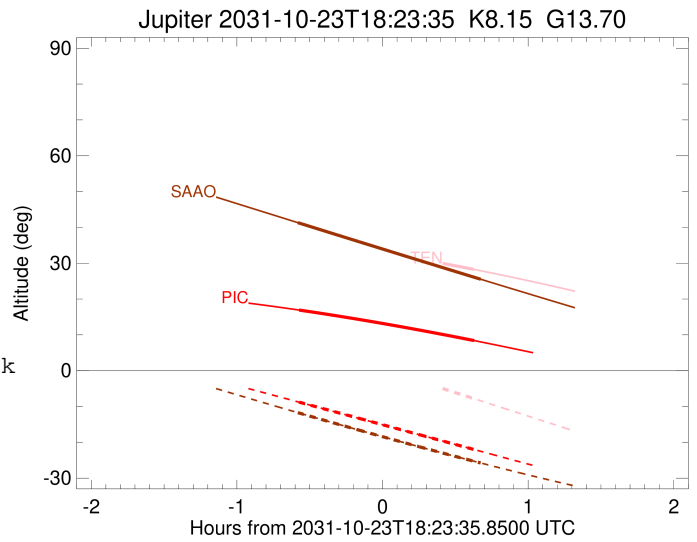
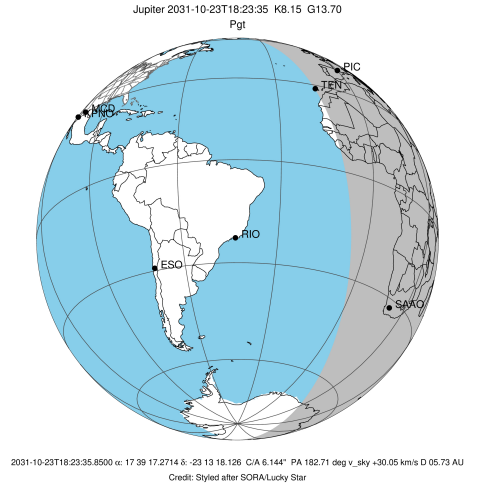


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-23T17:48:32.896	35.99	7.81x	71490.9	23.94	26.88
Jupiter	E	2031-10-23T19:01:12.107	28.27	-7.78	71490.6	26.36	29.50

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-23T18:26:23.780
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : SAAO
Location              : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)        : -32.37953
E. Longitude (deg)    : 20.81070
Altitude (km)         : 1.768
Gaia source ID        : 4116529791738362240
2Mass ID (if available) : 17391726-2313180
ICRS Star Coord at Epoch: 17h 39m 17.27137s -23:13:18.12591s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 8.153
G magnitude           : 13.699
RP magnitude          : 12.287
BP magnitude          : 16.185
DUPflag              : 0
Distance (au)         : 5.733
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 30.05
Sun-Target sep (deg)  : 55.54
Sun-Moon sep (deg)   : 40.46
B (ring opening deg) : -2.25
PA of pole (deg)     : 1.39
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 5.677
C/A sky separation (km) : 23607.7
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	2031-10-23T17:48:42.303	41.31	-11.72	71491.3	18.19	20.57
Jupiter	E	2031-10-23T19:04:00.025	25.53	-25.75	71491.2	20.32	22.92