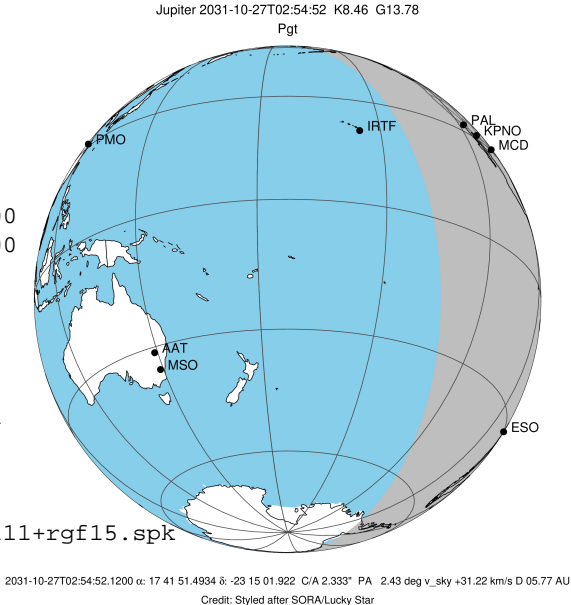


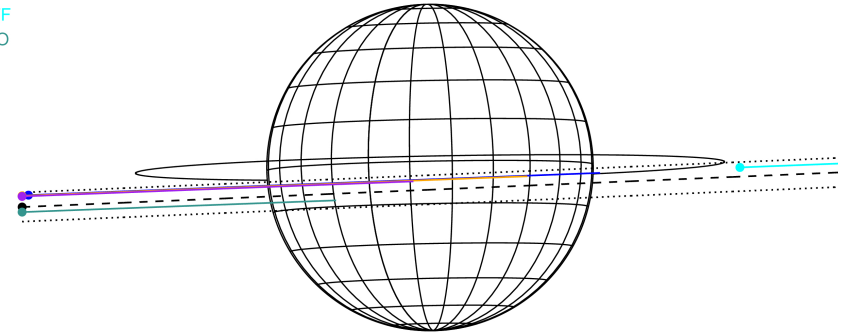
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-10-27T02:54:52.120
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116492988035966592
 2Mass ID (if available) : 17415147-2315017

Jupiter 2031-10-27T02:54:52 K8.46 G13.78 Pgt

ICRS Star Coord at Epoch: 17h 41m 51.49344s -23:15:01.92155s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 8.459
 G magnitude : 13.783
 RP magnitude : 12.735
 BP magnitude : 14.885
 DUPflag : 0
 Distance (au) : 5.775
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 31.22
 Sun-Target sep (deg) : 52.79
 Sun-Moon sep (deg) : 87.07
 B (ring opening deg) : -2.23
 PA of pole (deg) : 1.12
 Pole direction: RA (deg): 268.05681
 Dec (deg): 64.49652
 C/A sky separation (") : 2.325
 C/A sky separation (km) : 9736.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



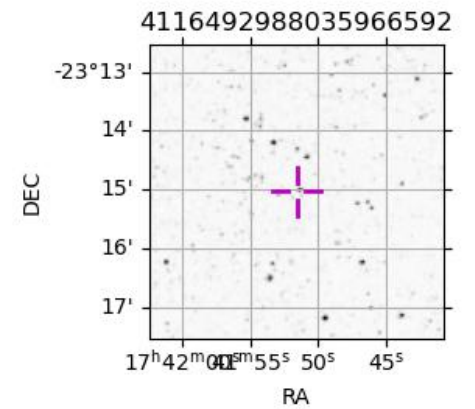
Earth
 PAL
 KPNO
 MCD
 IRTF
 ESO



2031-10-27T02:54:52.1200 a: 17 41 51.4934 s: -23 15 01.922 C/A 2.333" PA 2.43 deg v_sky +31.22 km/s D 05.77 AU
 Credit: Styled after SORA/Lucky Star

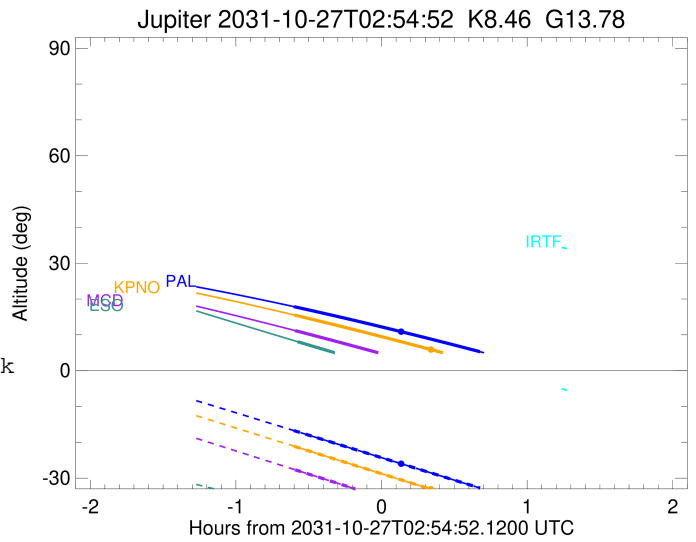
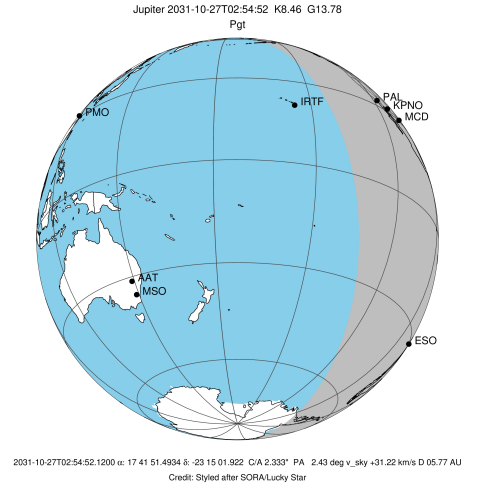
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	OCT 27 02:18 - OCT 27 03:35	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	OCT 27 02:19 - OCT 27 02:19	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	OCT 27 02:19 - OCT 27 02:19	Pin
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	+	OCT 27 02:20 - OCT 27 02:20	Pin
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-27T02:57:08.830
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        : 4116492988035966592
2Mass ID (if available) : 17415147-2315017
ICRS Star Coord at Epoch: 17h 41m 51.49344s -23:15:01.92155s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.459
G magnitude           : 13.783
RP magnitude          : 12.735
BP magnitude          : 14.885
DUPflag              : 0
Distance (au)         : 5.775
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 31.22
Sun-Target sep (deg)  : 52.79
Sun-Moon sep (deg)   : 87.25
B (ring opening deg) : -2.23
PA of pole (deg)     : 1.12
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (" ) : 1.243
C/A sky separation (km) : 5207.3
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
    
```

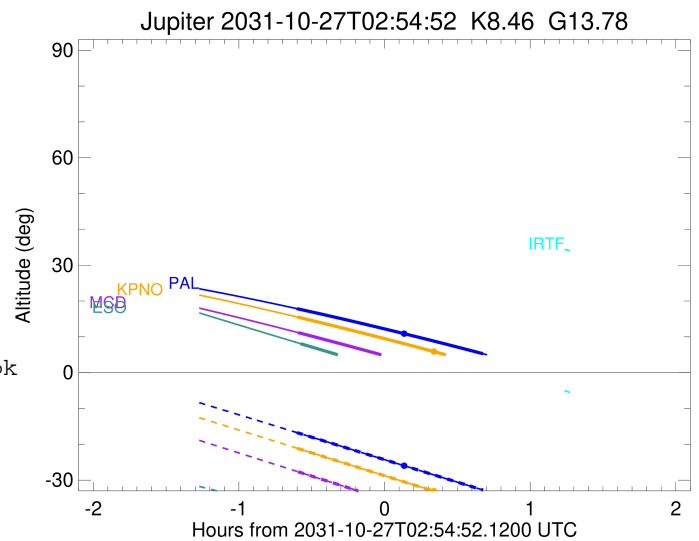
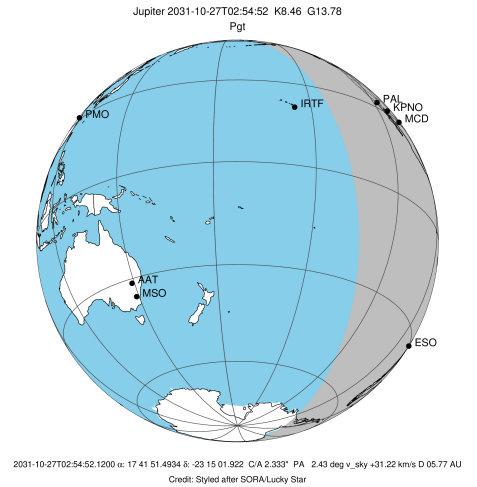


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-27T02:18:46.794	17.87	-16.73	71491.9	-5.28	-6.03
Jupiter	E	2031-10-27T03:35:26.068	5.29	-32.75	71492.0	-3.10	-3.55

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2031-10-27T02:57:19.490
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        : 4116492988035966592
2Mass ID (if available) : 17415147-2315017
ICRS Star Coord at Epoch: 17h 41m 51.49344s -23:15:01.92155s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 8.459
G magnitude           : 13.783
RP magnitude          : 12.735
BP magnitude          : 14.885
DUPflag               : 0
Distance (au)         : 5.775
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : 31.22
Sun-Target sep (deg)  : 52.79
Sun-Moon sep (deg)    : 87.20
B (ring opening deg)  : -2.23
PA of pole (deg)      : 1.12
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 1.305
C/A sky separation (km) : 5466.3
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
    
```

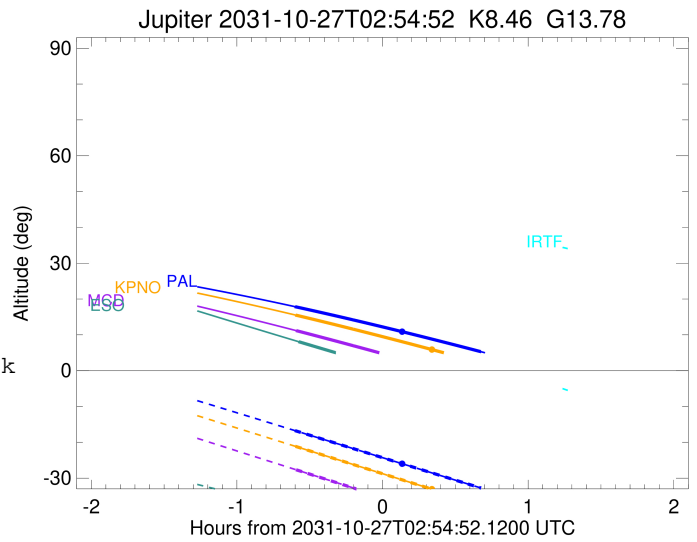
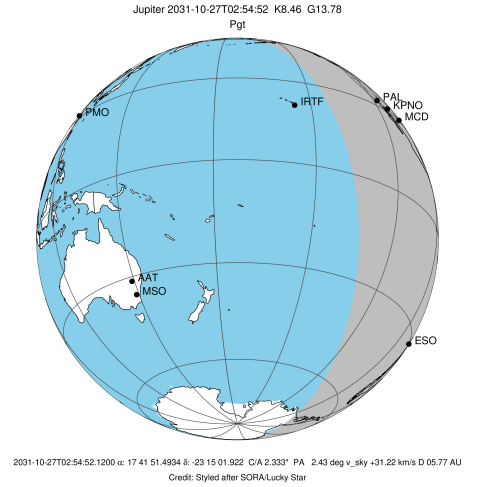


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-27T02:18:59.991	15.52	-21.13	71491.9	-5.46	-6.24
Jupiter	E	2031-10-27T03:35:33.912	2.16x	-37.36	71492.0	-3.33	-3.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-27T02:57:31.480
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        : 4116492988035966592
2Mass ID (if available) : 17415147-2315017
ICRS Star Coord at Epoch: 17h 41m 51.49344s -23:15:01.92155s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.459
G magnitude           : 13.783
RP magnitude          : 12.735
BP magnitude          : 14.885
DUPflag              : 0
Distance (au)         : 5.775
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 31.22
Sun-Target sep (deg)  : 52.79
Sun-Moon sep (deg)    : 87.12
B (ring opening deg) : -2.23
PA of pole (deg)      : 1.12
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 1.388
C/A sky separation (km) : 5813.9
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
    
```

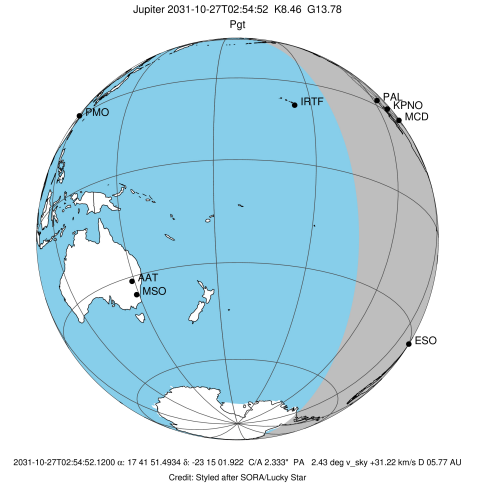


x: target alt < 5.0 deg or sun > -5.0 deg

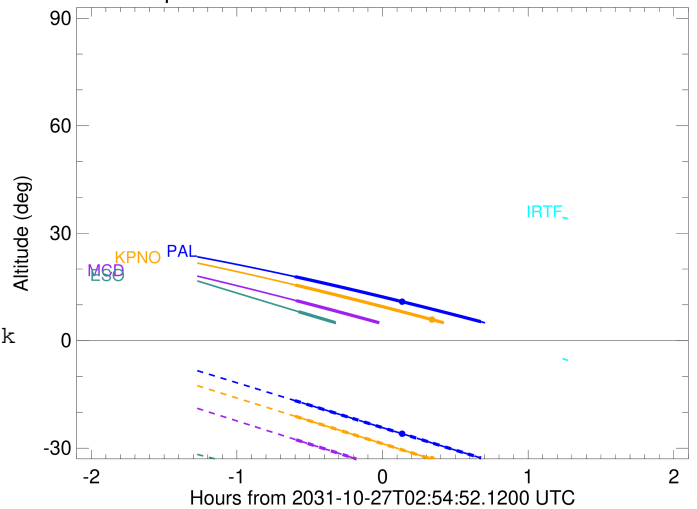
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-27T02:19:16.074	11.18	-27.66	71491.9	-5.72	-6.53
Jupiter	E	2031-10-27T03:35:41.506	-3.04x	-44.00	71492.0	-3.63	-4.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-27T02:57:47.870
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : ESO
Location              : European Southern Obs. (3.6m)
Latitude (deg)        : -29.26097
E. Longitude (deg)    : 289.26831
Altitude (km)         : 2.400
Gaia source ID        : 4116492988035966592
2Mass ID (if available) : 17415147-2315017
ICRS Star Coord at Epoch: 17h 41m 51.49344s -23:15:01.92155s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.459
G magnitude           : 13.783
RP magnitude          : 12.735
BP magnitude          : 14.885
DUPflag              : 0
Distance (au)         : 5.775
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 31.22
Sun-Target sep (deg)  : 52.79
Sun-Moon sep (deg)    : 87.05
B (ring opening deg) : -2.23
PA of pole (deg)      : 1.12
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 3.073
C/A sky separation (km) : 12868.6
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 2031-10-27T02:54:52 K8.46 G13.78



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	2031-10-27T02:20:18.939	8.09	-38.26	71491.7	-11.38	-12.95
Jupiter	E	2031-10-27T03:35:11.408	-6.56x	-46.40	71491.8	-9.34	-10.65