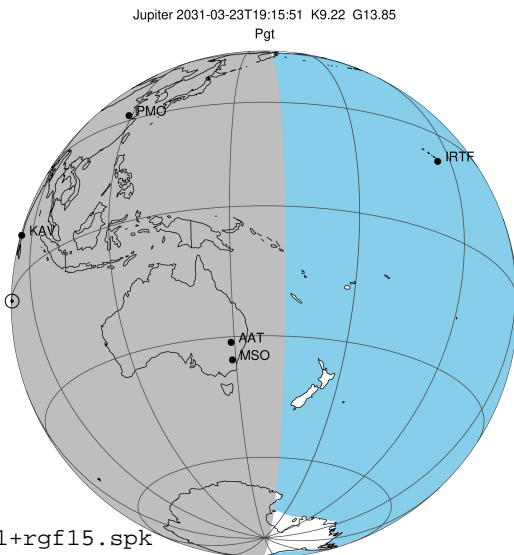


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-23T19:15:51.670
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068898501282493696
 2Mass ID (if available) : 17501435-2252426

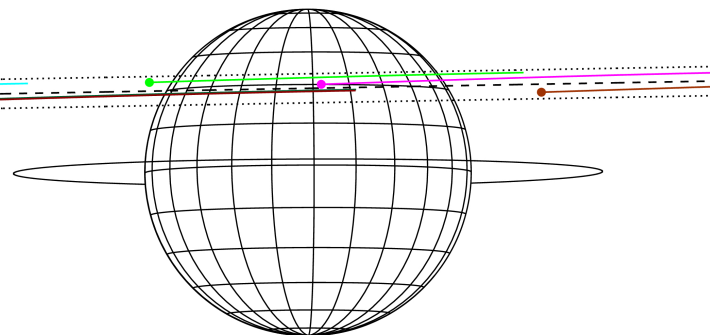
Jupiter 2031-03-23T19:15:51 K9.22 G13.85 Pgt

ICRS Star Coord at Epoch: 17h 50m 14.36022s -22:52:42.67615s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 9.219
 G magnitude : 13.848
 RP magnitude : 12.664
 BP magnitude : 15.348
 DUPflag : 0
 Distance (au) : 5.132
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 10.66
 Sun-Target sep (deg) : 94.78
 Sun-Moon sep (deg) : 102.73
 B (ring opening deg) : -2.62
 PA of pole (deg) : 0.21
 Pole direction: RA (deg): 268.05699
 Dec (deg): 64.49651
 C/A sky separation (") : 9.907
 C/A sky separation (km) : 36870.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



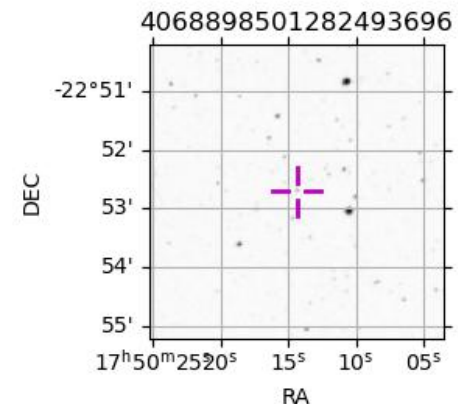
2031-03-23T19:15:51.6700 ex: 17 50 14.36022 s: -22 52 42.676 C/A 9.8967 PA 181.02 deg v_sky +10.67 km/s D 05.13 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PMO
 IRTF
 KAV
 AAT
 SAAO
 MSO



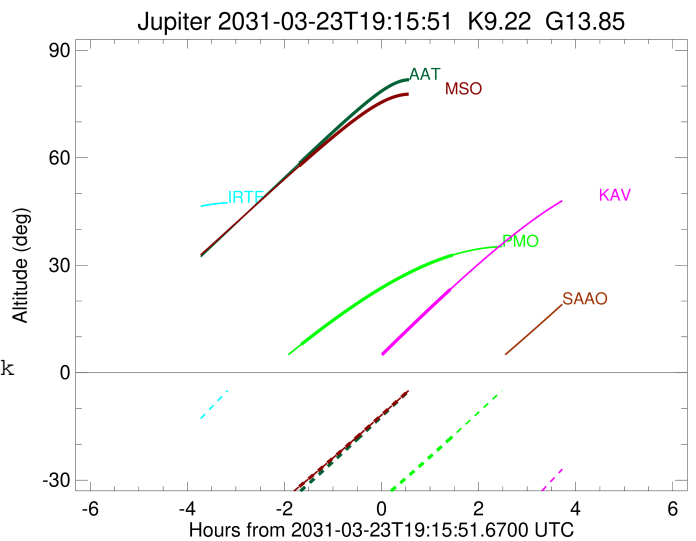
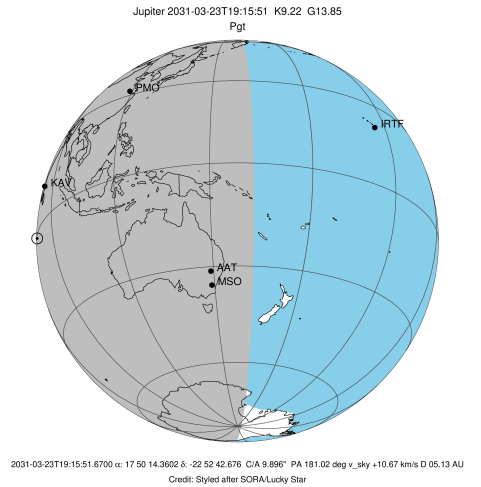
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	MAR 23 17:36 - MAR 23 20:43	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	+	MAR 23 20:40 - MAR 23 20:40	Pne
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	+	MAR 23 17:34 - MAR 23 17:34	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAR 23 17:34 - MAR 23 17:34	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-23T19:09:35.070
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      : 4068898501282493696
2Mass ID (if available) : 17501435-2252426
ICRS Star Coord at Epoch: 17h 50m 14.36022s -22:52:42.67615s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 9.219
G magnitude          : 13.848
RP magnitude         : 12.664
BP magnitude         : 15.348
DUPflag             : 0
Distance (au)       : 5.132
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 10.66
Sun-Target sep (deg) : 94.78
Sun-Moon sep (deg)  : 102.99
B (ring opening deg) : -2.62
PA of pole (deg)    : 0.21
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 11.155
C/A sky separation (km) : 41516.9
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
    
```

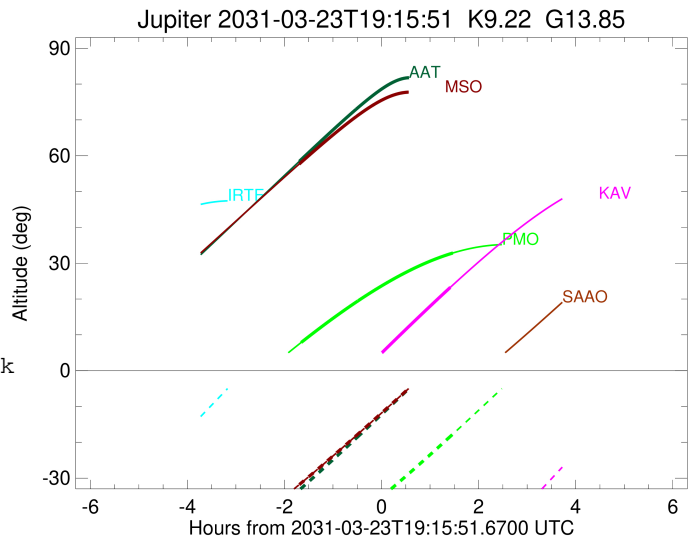
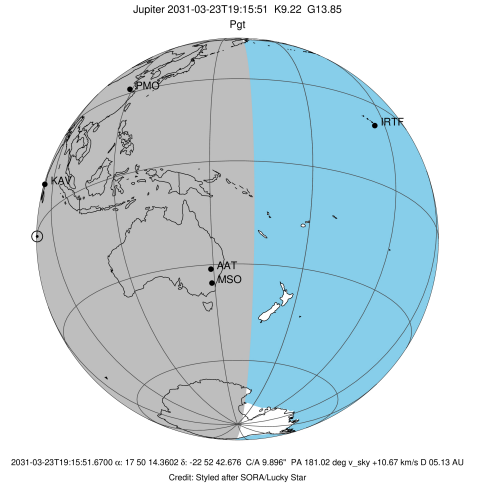


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-23T17:36:37.049	7.87	-51.27	71489.1	33.97	37.53
Jupiter	E	2031-03-23T20:43:50.416	32.83	-17.75	71488.6	36.70	40.35

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-23T19:05:12.080
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KAV
Location              : Kavalur Observatory
Latitude (deg)        : 12.57556
E. Longitude (deg)   : 78.83167
Altitude (km)         : 0.722
Gaia source ID        : 4068898501282493696
2Mass ID (if available) : 17501435-2252426
ICRS Star Coord at Epoch: 17h 50m 14.36022s -22:52:42.67615s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.219
G magnitude           : 13.848
RP magnitude          : 12.664
BP magnitude          : 15.348
DUPflag              : 0
Distance (au)         : 5.132
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 10.66
Sun-Target sep (deg) : 94.78
Sun-Moon sep (deg)   : 102.61
B (ring opening deg) : -2.62
PA of pole (deg)     : 0.21
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 10.318
C/A sky separation (km) : 38401.5
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
    
```

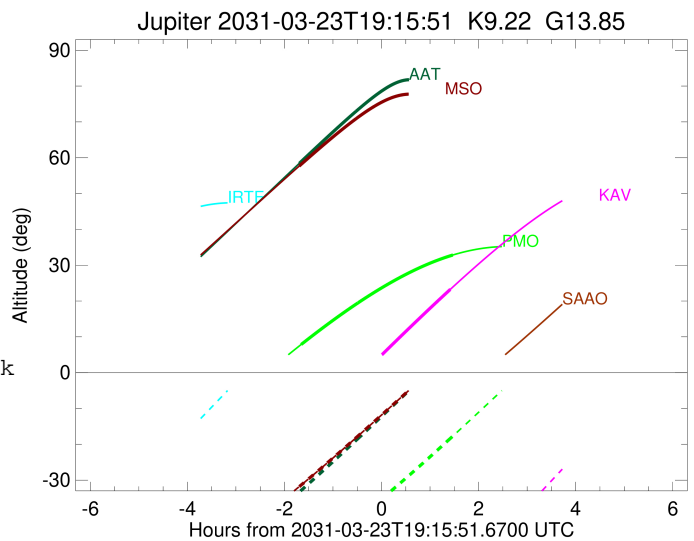
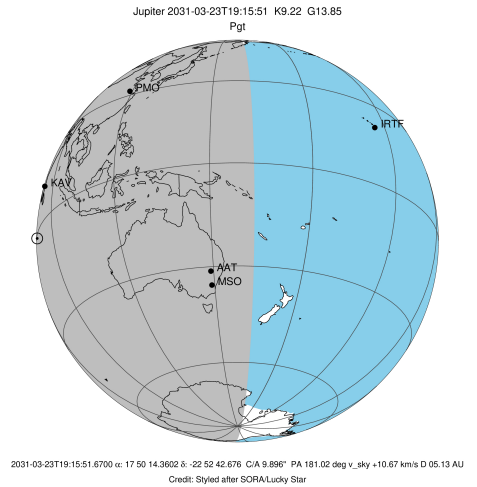


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-23T17:31:26.705	-18.77x	-65.96	71489.5	30.71	34.12
Jupiter	E	2031-03-23T20:40:57.505	23.26	-59.51	71489.0	34.17	37.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-23T19:14:20.200
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       : 4068898501282493696
2Mass ID (if available) : 17501435-2252426
ICRS Star Coord at Epoch: 17h 50m 14.36022s -22:52:42.67615s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.219
G magnitude           : 13.848
RP magnitude         : 12.664
BP magnitude         : 15.348
DUPflag              : 0
Distance (au)        : 5.132
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 10.66
Sun-Target sep (deg) : 94.78
Sun-Moon sep (deg)   : 103.61
B (ring opening deg) : -2.62
PA of pole (deg)     : 0.21
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 9.651
C/A sky separation (km) : 35918.5
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
    
```

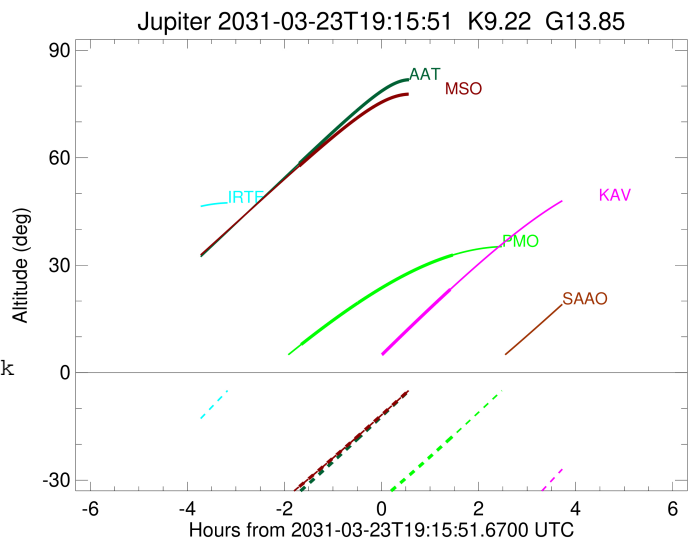
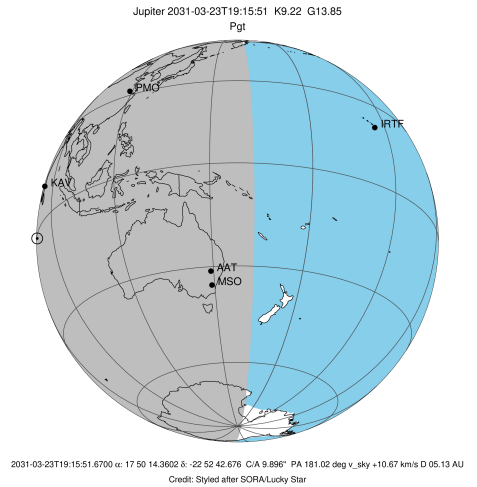


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-23T17:34:18.779	58.43	-33.30	71489.8	28.97	32.28
Jupiter	E	2031-03-23T20:55:00.238	73.62	8.93x	71489.5	30.92	34.34

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-23T19:14:24.770
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        : 4068898501282493696
2Mass ID (if available) : 17501435-2252426
ICRS Star Coord at Epoch: 17h 50m 14.36022s -22:52:42.67615s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 9.219
G magnitude           : 13.848
RP magnitude          : 12.664
BP magnitude          : 15.348
DUPflag              : 0
Distance (au)         : 5.132
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 10.66
Sun-Target sep (deg)  : 94.78
Sun-Moon sep (deg)    : 103.59
B (ring opening deg) : -2.62
PA of pole (deg)      : 0.21
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 9.533
C/A sky separation (km) : 35479.2
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	2031-03-23T17:34:09.133	57.67	-31.81	71489.8	28.58	31.86
Jupiter	E	2031-03-23T20:55:18.376	71.48	8.44x	71489.6	30.51	33.91