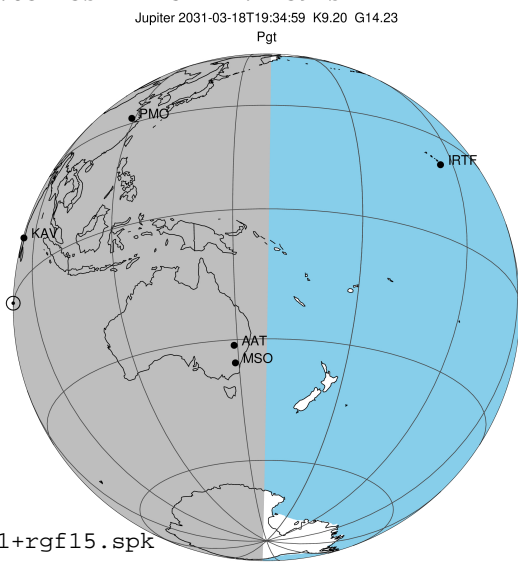


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-18T19:34:59.350
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068889906987970176
 2Mass ID (if available) : 17483583-2252224

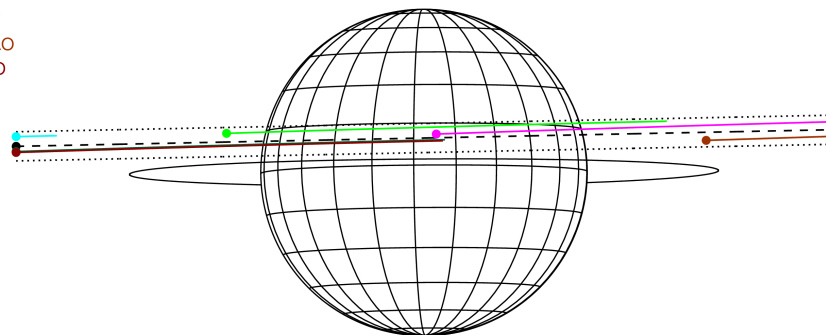
Jupiter 2031-03-18T19:34:59 K9.20 G14.23 Pgt

ICRS Star Coord at Epoch: 17h 48m 35.83213s -22:52:22.47397s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.204
 G magnitude : 14.232
 RP magnitude : 12.948
 BP magnitude : 16.067
 DUPflag : 0
 Distance (au) : 5.212
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 13.05
 Sun-Target sep (deg) : 90.20
 Sun-Moon sep (deg) : 33.89
 B (ring opening deg) : -2.63
 PA of pole (deg) : 0.39
 Pole direction: RA (deg): 268.05699
 Dec (deg): 64.49651
 C/A sky separation (") : 3.994
 C/A sky separation (km) : 15099.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



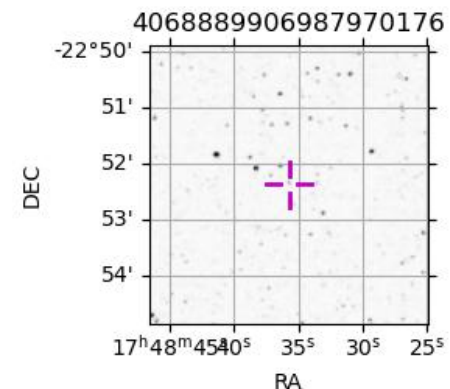
2031-03-18T19:34:59.3500 cc: 17 48 35.8321 s: -22 52 22.474 C/A 3.984" PA 181.17 deg v_sky +13.05 km/s D 05.21 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PMO
 IRTF
 KAV
 AAT
 SAAO
 MSO



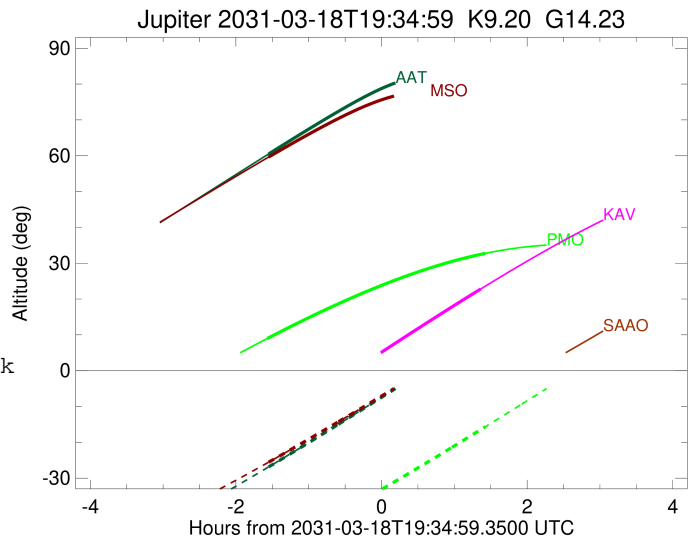
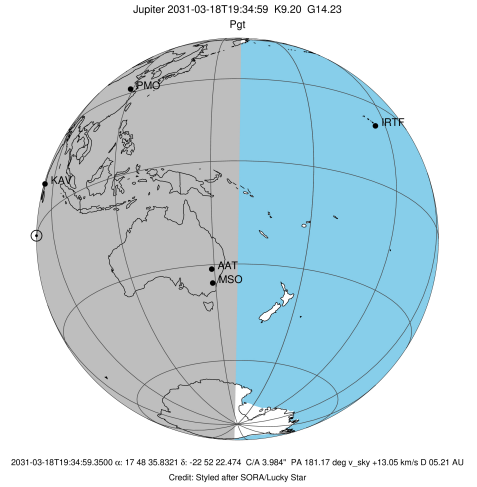
Observable events with sun below -5 deg and altitude above 5 deg

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 18 18:00 - MAR 18 21:00	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 18 20:56 - MAR 18 20:56	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 18 18:01 - MAR 18 18:01	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAR 18 18:01 - MAR 18 18:01	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-18T19:30:13.950
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       : 4068889906987970176
2Mass ID (if available) : 17483583-2252224
ICRS Star Coord at Epoch: 17h 48m 35.83213s -22:52:22.47397s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 9.204
G magnitude          : 14.232
RP magnitude         : 12.948
BP magnitude         : 16.067
DUPflag             : 0
Distance (au)        : 5.212
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.05
Sun-Target sep (deg) : 90.20
Sun-Moon sep (deg)  : 34.49
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.39
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 5.225
C/A sky separation (km) : 19751.9
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
    
```

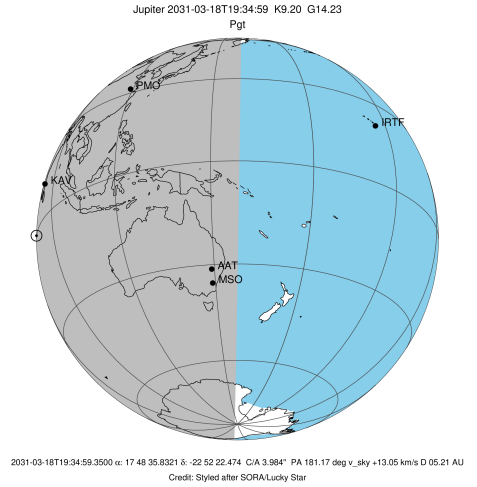


x: target alt < 5.0 deg or sun > -5.0 deg

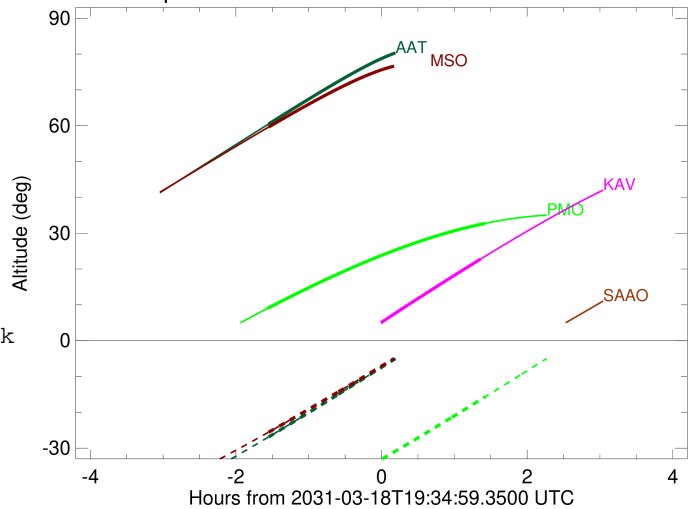
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-18T18:00:53.563	8.98	-49.79	71491.4	14.70	16.68
Jupiter	E	2031-03-18T21:00:30.714	32.74	-15.67	71491.2	17.15	19.43

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-18T19:26:48.820
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        : 4068889906987970176
2Mass ID (if available) : 17483583-2252224
ICRS Star Coord at Epoch: 17h 48m 35.83213s -22:52:22.47397s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 9.204
G magnitude           : 14.232
RP magnitude          : 12.948
BP magnitude          : 16.067
DUPflag              : 0
Distance (au)         : 5.212
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 13.05
Sun-Target sep (deg)  : 90.20
Sun-Moon sep (deg)    : 34.69
B (ring opening deg) : -2.63
PA of pole (deg)      : 0.39
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 4.404
C/A sky separation (km) : 16649.3
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
    
```



Jupiter 2031-03-18T19:34:59 K9.20 G14.23

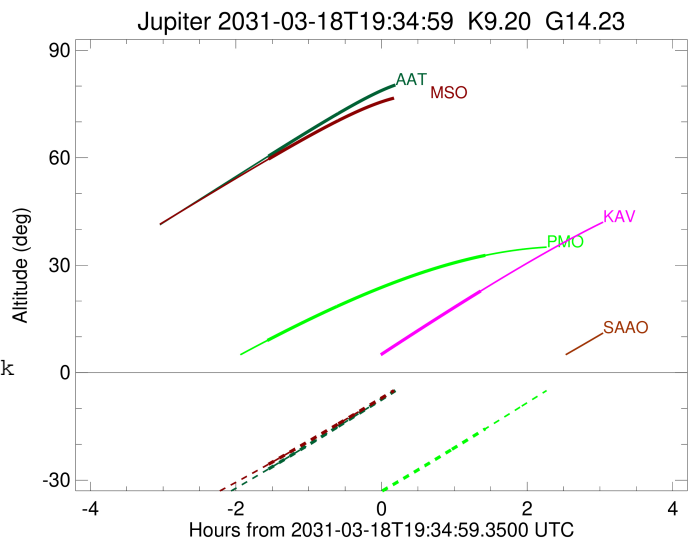
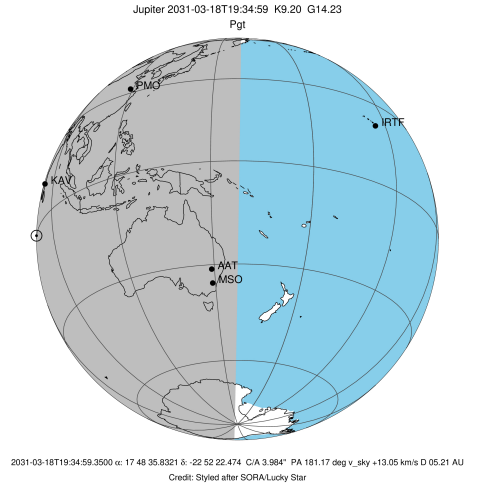


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-18T17:58:16.391	-16.75x	-72.16	71491.6	11.91	13.56
Jupiter	E	2031-03-18T20:56:46.744	22.80	-57.08	71491.4	14.97	16.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-18T19:33:53.130
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       : 4068889906987970176
2Mass ID (if available) : 17483583-2252224
ICRS Star Coord at Epoch: 17h 48m 35.83213s -22:52:22.47397s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 9.204
G magnitude           : 14.232
RP magnitude          : 12.948
BP magnitude          : 16.067
DUPflag              : 0
Distance (au)        : 5.212
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.05
Sun-Target sep (deg) : 90.20
Sun-Moon sep (deg)   : 34.56
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.39
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 3.742
C/A sky separation (km) : 14147.8
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
    
```

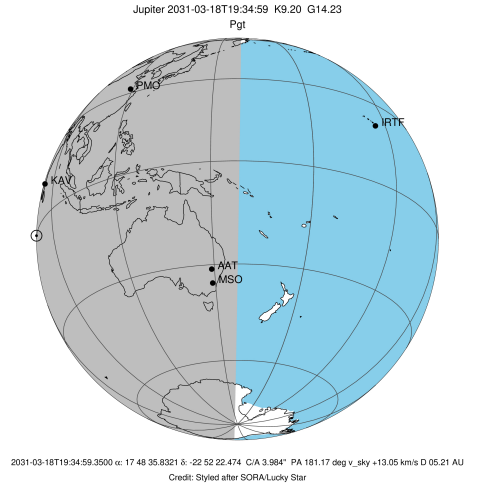


x: target alt < 5.0 deg or sun > -5.0 deg

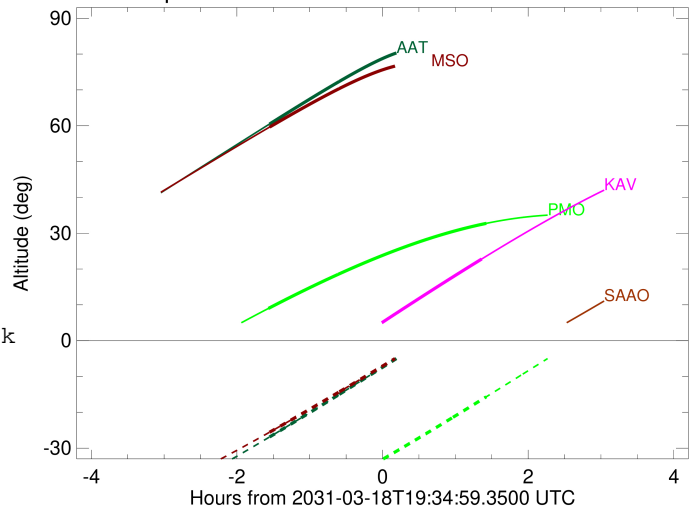
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-18T18:01:50.773	60.46	-26.90	71491.7	10.35	11.80
Jupiter	E	2031-03-18T21:06:21.364	74.88	12.07x	71491.6	12.17	13.85

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-18T19:33:56.520
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        : 4068889906987970176
2Mass ID (if available) : 17483583-2252224
ICRS Star Coord at Epoch: 17h 48m 35.83213s -22:52:22.47397s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 9.204
G magnitude           : 14.232
RP magnitude          : 12.948
BP magnitude          : 16.067
DUPflag               : 0
Distance (au)         : 5.212
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 13.05
Sun-Target sep (deg) : 90.20
Sun-Moon sep (deg)   : 34.55
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.39
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 3.626
C/A sky separation (km) : 13708.4
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 2031-03-18T19:34:59 K9.20 G14.23



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	2031-03-18T18:01:54.772	59.61	-25.56	71491.7	10.01	11.41
Jupiter	E	2031-03-18T21:06:23.639	72.58	11.54x	71491.6	11.82	13.45