

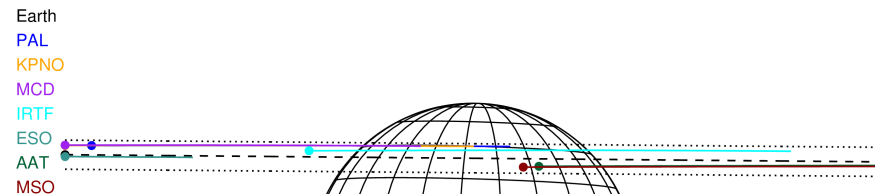
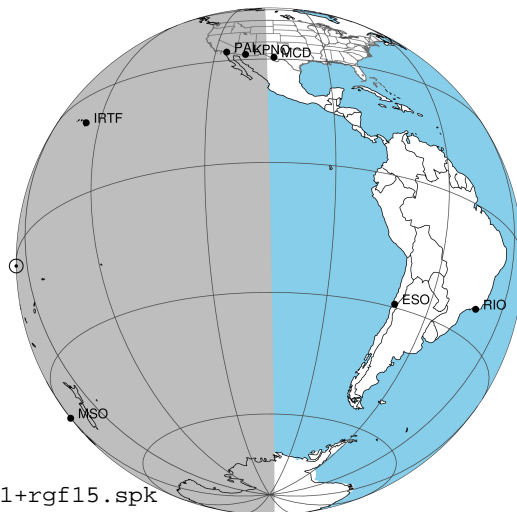
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-03-23T13:07:25.030  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4066595917761688320  
 2Mass ID (if available) : 18075355-2258375

Jupiter 2043-03-23T13:07:25 K9.98 G13.85 Pgt

ICRS Star Coord at Epoch: 18h 07m 53.54935s -22:58:38.01022s

RUWE (>1.4 is poor) : 0.92  
 K magnitude : 9.981  
 G magnitude : 13.850  
 RP magnitude : 12.817  
 BP magnitude : 14.944  
 DUPflag : 0  
 Distance (au) : 5.195  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 12.98  
 Sun-Target sep (deg) : 90.38  
 Sun-Moon sep (deg) : 112.80  
 B (ring opening deg) : -2.47  
 PA of pole (deg) : -1.69  
 Pole direction: RA (deg): 268.05664  
 Dec (deg): 64.49732  
 C/A sky separation (") : 12.582  
 C/A sky separation (km) : 47406.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-03-23T13:07:25 K9.98 G13.85  
 Pgt

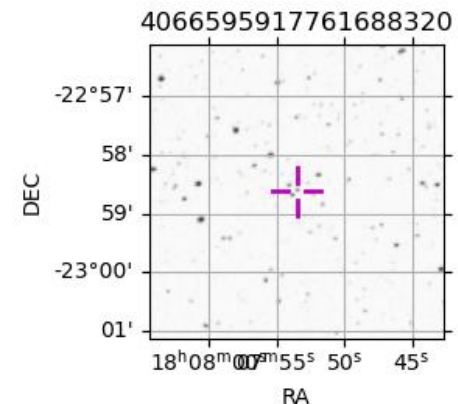


2043-03-23T13:07:25.0300 a: 18 07 53.5494 & -22 58 38.010 C/A \*\*\*\*\* PA 179.49 deg v\_sky +12.98 km/s D 05.20 AU

Credit: Styled after SORA/Lucky Star

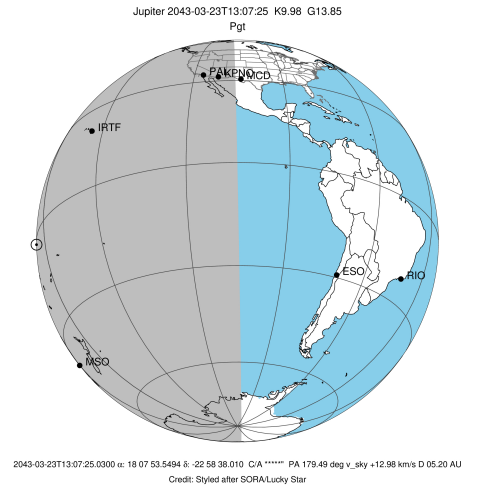
Observable events with sun below -5 deg and altitude above 5 deg

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	+	MAR 23 12:02 - MAR 23 12:02	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	MAR 23 12:02 - MAR 23 12:02	Pin
MCD	McDonald Obs. 2.7m	30.7	256.0	+	MAR 23 12:03 - MAR 23 12:03	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	MAR 23 11:55 - MAR 23 14:06	Pie
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	+	MAR 23 14:12 - MAR 23 14:12	Pne
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAR 23 14:12 - MAR 23 14:12	Pne

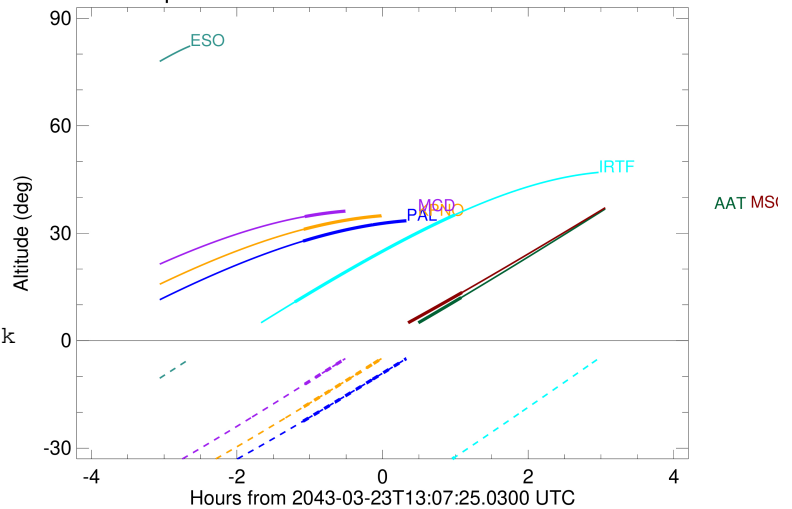


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-03-23T13:05:55.960
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        : 4066595917761688320
2Mass ID (if available) : 18075355-2258375
ICRS Star Coord at Epoch: 18h 07m 53.54935s -22:58:38.01022s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.981
G magnitude           : 13.850
RP magnitude          : 12.817
BP magnitude          : 14.944
DUPflag              : 0
Distance (au)         : 5.195
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 12.98
Sun-Target sep (deg)  : 90.38
Sun-Moon sep (deg)   : 113.33
B (ring opening deg) : -2.47
PA of pole (deg)     : -1.69
Pole direction: RA (deg): 268.05664
Dec (deg): 64.49732
C/A sky separation (") : 13.978
C/A sky separation (km) : 52668.5
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
    
```



Jupiter 2043-03-23T13:07:25 K9.98 G13.85

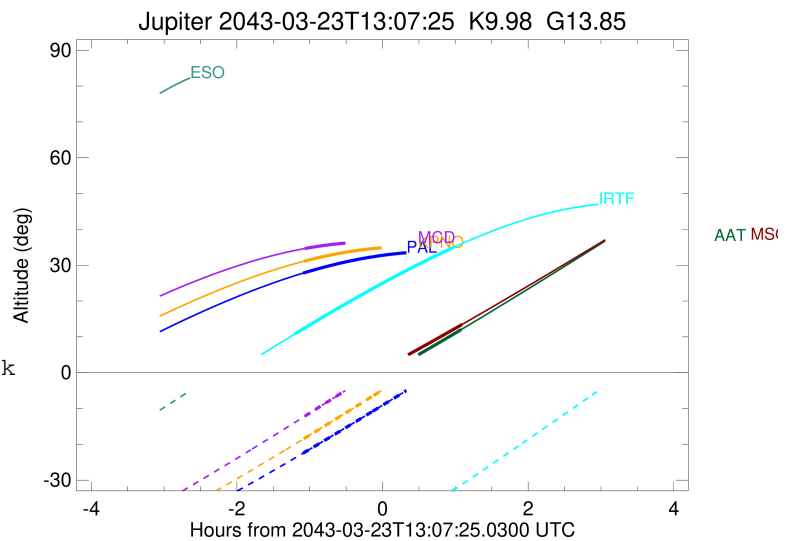
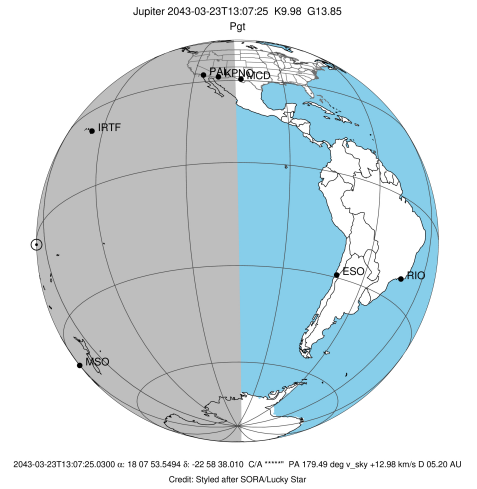


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-03-23T12:02:01.015	27.79	-22.48	71487.7	46.01	49.69
Jupiter	E	2043-03-23T14:10:04.817	33.72	3.99x	71487.3	48.60	52.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-03-23T13:06:38.180
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       : 4066595917761688320
2Mass ID (if available) : 18075355-2258375
ICRS Star Coord at Epoch: 18h 07m 53.54935s -22:58:38.01022s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.981
G magnitude           : 13.850
RP magnitude          : 12.817
BP magnitude          : 14.944
DUPflag              : 0
Distance (au)        : 5.195
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 12.98
Sun-Target sep (deg) : 90.38
Sun-Moon sep (deg)   : 113.33
B (ring opening deg) : -2.47
PA of pole (deg)     : -1.69
Pole direction: RA (deg): 268.05664
Dec (deg): 64.49732
C/A sky separation (") : 13.962
C/A sky separation (km) : 52606.9
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
    
```

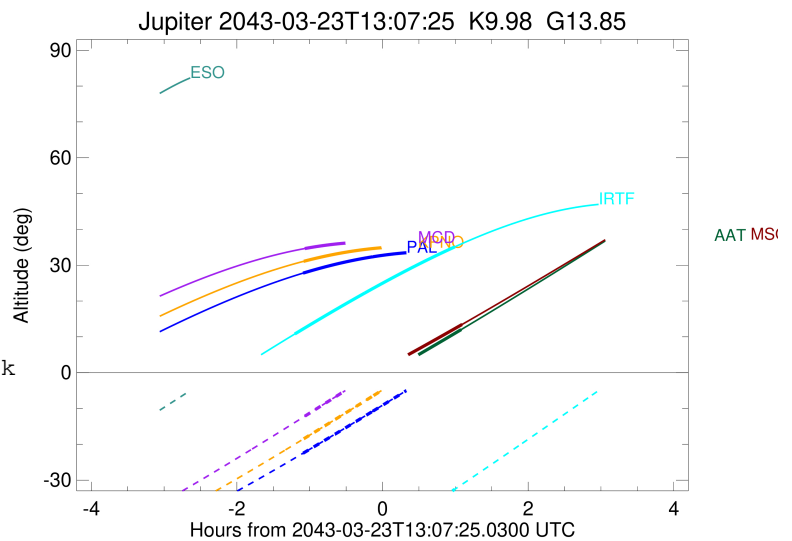
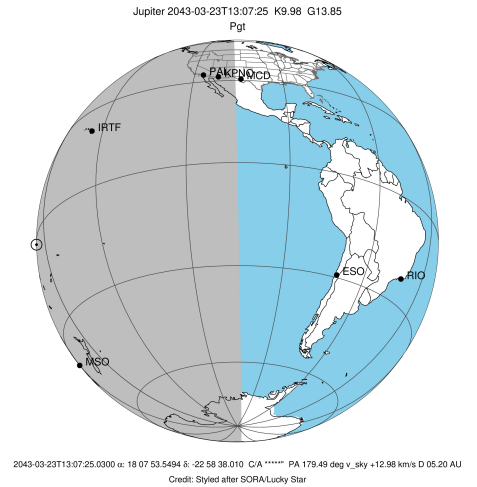


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-03-23T12:02:32.491	31.09	-18.45	71487.7	45.99	49.68
Jupiter	E	2043-03-23T14:10:54.676	34.49	8.67x	71487.3	48.46	52.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-03-23T13:07:42.110
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        : 4066595917761688320
2Mass ID (if available) : 18075355-2258375
ICRS Star Coord at Epoch: 18h 07m 53.54935s -22:58:38.01022s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.981
G magnitude           : 13.850
RP magnitude          : 12.817
BP magnitude          : 14.944
DUPflag              : 0
Distance (au)         : 5.195
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 12.98
Sun-Target sep (deg)  : 90.38
Sun-Moon sep (deg)   : 113.31
B (ring opening deg) : -2.47
PA of pole (deg)     : -1.69
Pole direction: RA (deg): 268.05664
Dec (deg): 64.49732
C/A sky separation (") : 13.941
C/A sky separation (km) : 52526.9
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
    
```

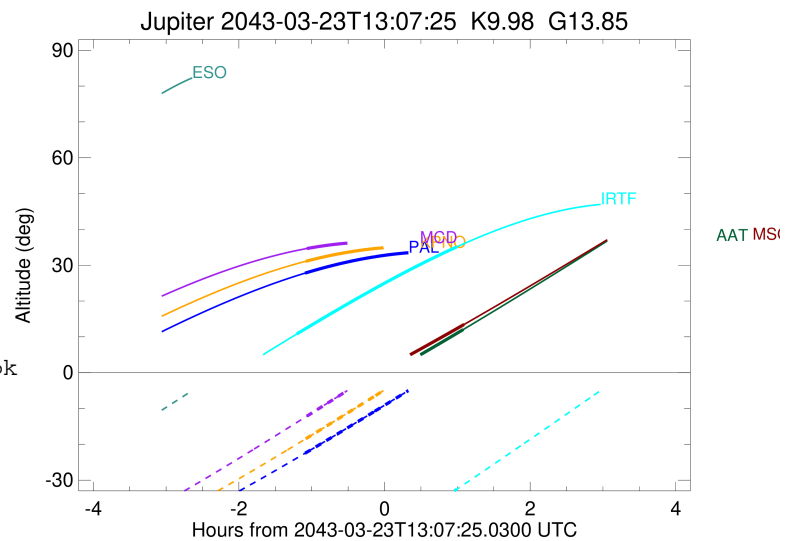
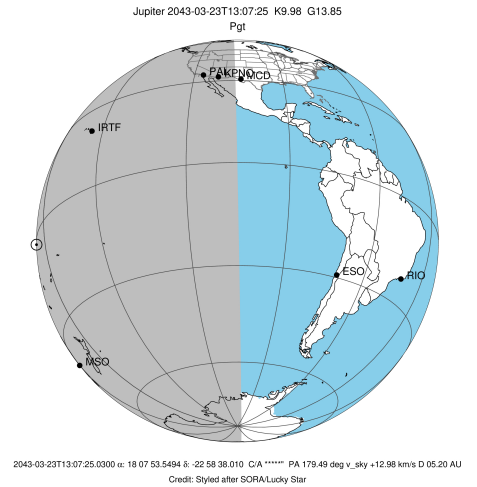


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-03-23T12:03:24.562	34.65	-12.15	71487.7	45.99	49.68
Jupiter	E	2043-03-23T14:12:05.644	33.99	15.50x	71487.4	48.27	51.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-03-23T13:00:43.660
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)        : 19.82622
E. Longitude (deg)    : 204.52800
Altitude (km)         : 4.168
Gaia source ID        : 4066595917761688320
2Mass ID (if available) : 18075355-2258375
ICRS Star Coord at Epoch: 18h 07m 53.54935s -22:58:38.01022s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.981
G magnitude           : 13.850
RP magnitude          : 12.817
BP magnitude          : 14.944
DUPflag              : 0
Distance (au)         : 5.195
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 12.98
Sun-Target sep (deg) : 90.38
Sun-Moon sep (deg)   : 113.43
B (ring opening deg) : -2.47
PA of pole (deg)     : -1.69
Pole direction: RA (deg): 268.05664
Dec (deg): 64.49732
C/A sky separation (") : 13.508
C/A sky separation (km) : 50896.8
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
    
```

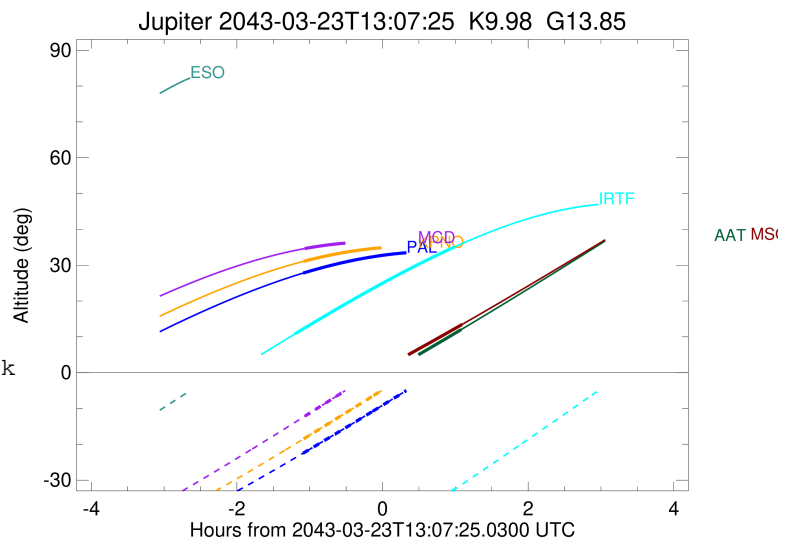
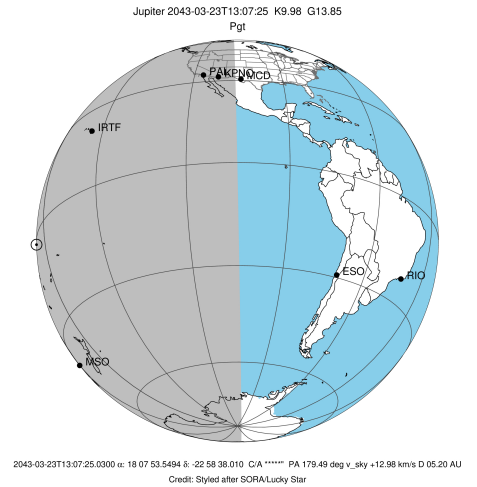


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-03-23T11:55:10.124	10.80	-60.25	71488.0	43.51	47.23
Jupiter	E	2043-03-23T14:06:56.327	35.10	-32.56	71487.5	47.03	50.70

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-03-23T13:00:02.060
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       : 4066595917761688320
2Mass ID (if available) : 18075355-2258375
ICRS Star Coord at Epoch: 18h 07m 53.54935s -22:58:38.01022s
RUWE (>1.4 is poor) : 0.92
K magnitude          : 9.981
G magnitude          : 13.850
RP magnitude         : 12.817
BP magnitude         : 14.944
DUPflag             : 0
Distance (au)        : 5.195
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 12.98
Sun-Target sep (deg) : 90.38
Sun-Moon sep (deg)   : 113.08
B (ring opening deg) : -2.47
PA of pole (deg)     : -1.69
Pole direction: RA (deg): 268.05664
Dec (deg): 64.49732
C/A sky separation (") : 11.625
C/A sky separation (km) : 43803.5
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
    
```

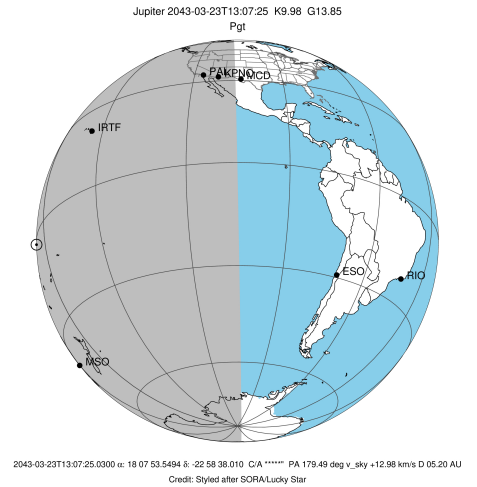


x: target alt < 5.0 deg or sun > -5.0 deg

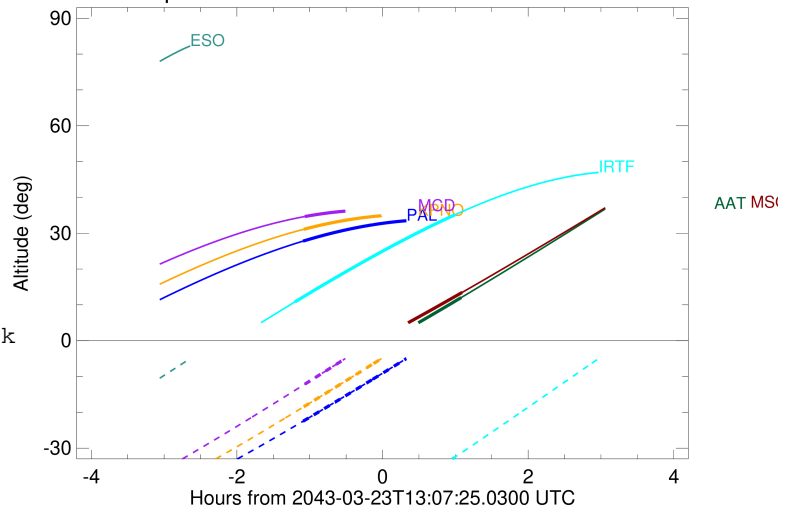
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-03-23T11:48:34.987	-14.85x	-45.03	71489.1	35.96	39.58
Jupiter	E	2043-03-23T14:12:17.621	12.03	-60.02	71488.6	39.60	43.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-03-23T13:00:21.760
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        : 4066595917761688320
2Mass ID (if available) : 18075355-2258375
ICRS Star Coord at Epoch: 18h 07m 53.54935s -22:58:38.01022s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.981
G magnitude           : 13.850
RP magnitude          : 12.817
BP magnitude          : 14.944
DUPflag              : 0
Distance (au)         : 5.195
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 12.98
Sun-Target sep (deg) : 90.38
Sun-Moon sep (deg)   : 113.10
B (ring opening deg) : -2.47
PA of pole (deg)     : -1.69
Pole direction: RA (deg): 268.05664
Dec (deg): 64.49732
C/A sky separation (") : 11.541
C/A sky separation (km) : 43485.2
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
    
```



Jupiter 2043-03-23T13:07:25 K9.98 G13.85



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	2043-03-23T11:48:33.345	-12.33x	-42.59	71489.2	35.66	39.28
Jupiter	E	2043-03-23T14:12:57.329	13.45	-55.99	71488.7	39.25	42.95