

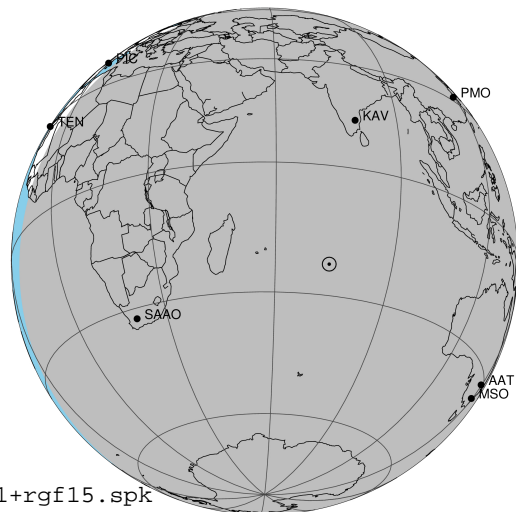
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-03T19:10:30.640
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068825551199998720
 2Mass ID (if available) : 17441740-2304257

Jupiter 2043-07-03T19:10:30 K9.49 G14.97 Pgt

ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s

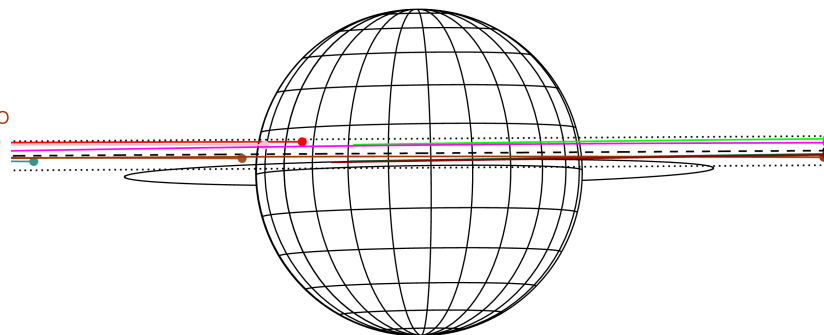
RUWE (>1.4 is poor) : 1.03
 K magnitude : 9.494
 G magnitude : 14.965
 RP magnitude : 13.567
 BP magnitude : 17.288
 DUPflag : 0
 Distance (au) : 4.272
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.49
 Sun-Target sep (deg) : 165.22
 Sun-Moon sep (deg) : 153.62
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.85
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 2.725
 C/A sky separation (km) : 8442.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-03T19:10:30 K9.49 G14.97
 Pgt



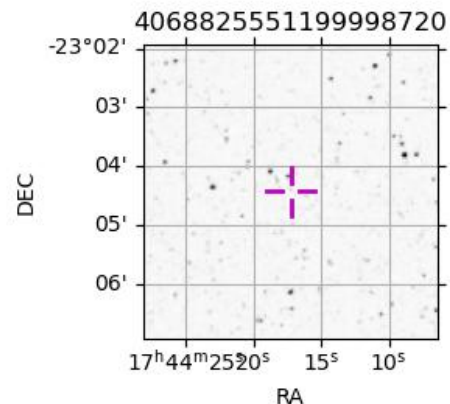
2043-07-03T19:10:30.6400 at: 17 44 17.3832 s: -23 04 25.809 C/A 2.713" PA 180.36 deg v_sky -15.49 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



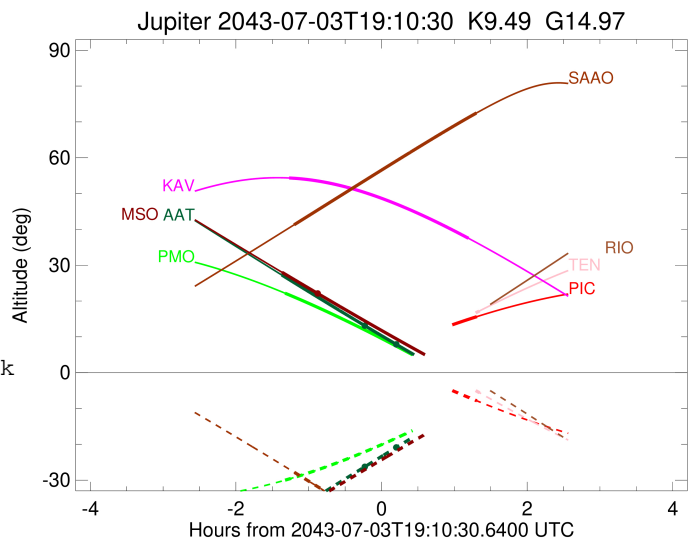
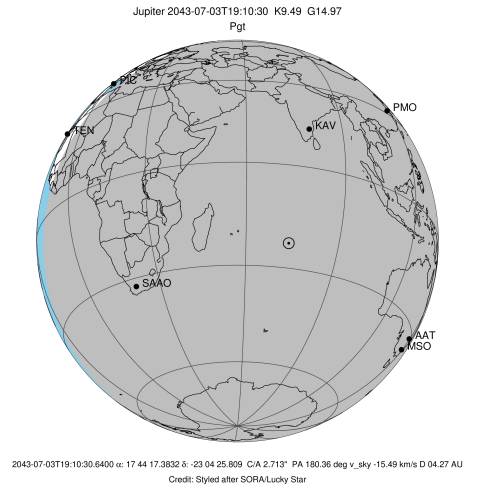
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 03 20:29 - JUL 03 20:29	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 03 17:51 - JUL 03 17:51	Pin
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	+	JUL 03 20:31 - JUL 03 20:31	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUL 03 17:54 - JUL 03 20:22	Pie
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	+	JUL 03 17:48 - JUL 03 17:48	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUL 03 17:58 - JUL 03 20:28	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 03 17:48 - JUL 03 17:48	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:14:36.130
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      : 4068825551199998720
2Mass ID (if available) : 17441740-2304257
ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 9.494
G magnitude          : 14.965
RP magnitude         : 13.567
BP magnitude         : 17.288
DUPflag             : 0
Distance (au)       : 4.272
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.49
Sun-Target sep (deg) : 165.22
Sun-Moon sep (deg)  : 153.21
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.85
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 4.336
C/A sky separation (km) : 13434.4
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
    
```

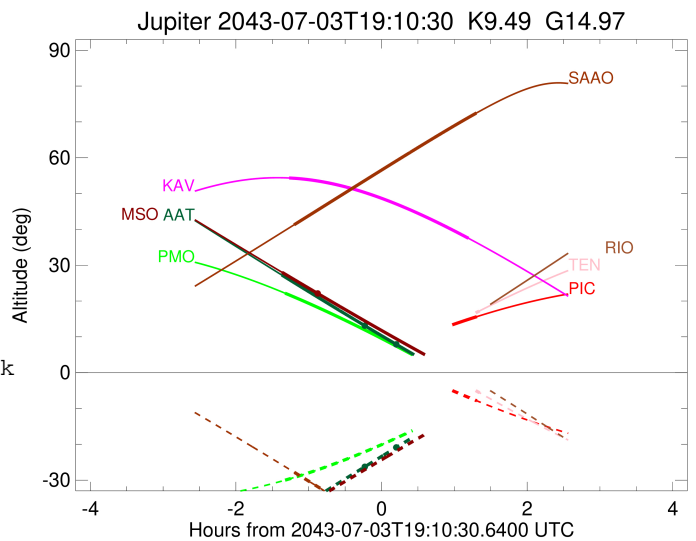
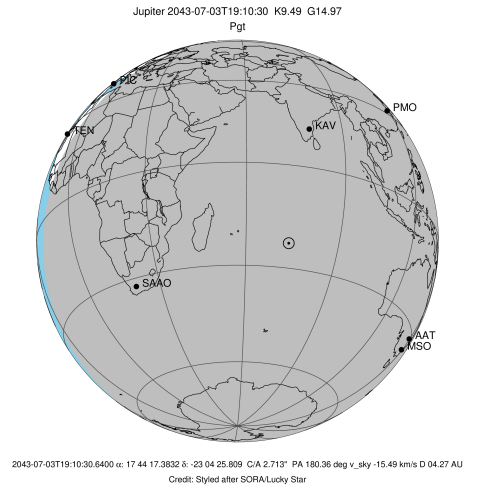


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T17:59:42.968	-5.23x	16.02x	71491.8	9.89	11.27
Jupiter	E	2043-07-03T20:29:05.068	15.64	-7.86	71491.7	11.67	13.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:05:34.880
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       : 4068825551199998720
2Mass ID (if available) : 17441740-2304257
ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 9.494
G magnitude          : 14.965
RP magnitude         : 13.567
BP magnitude         : 17.288
DUPflag             : 0
Distance (au)        : 4.272
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.49
Sun-Target sep (deg) : 165.22
Sun-Moon sep (deg)   : 154.45
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.85
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 4.067
C/A sky separation (km) : 12602.7
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
    
```

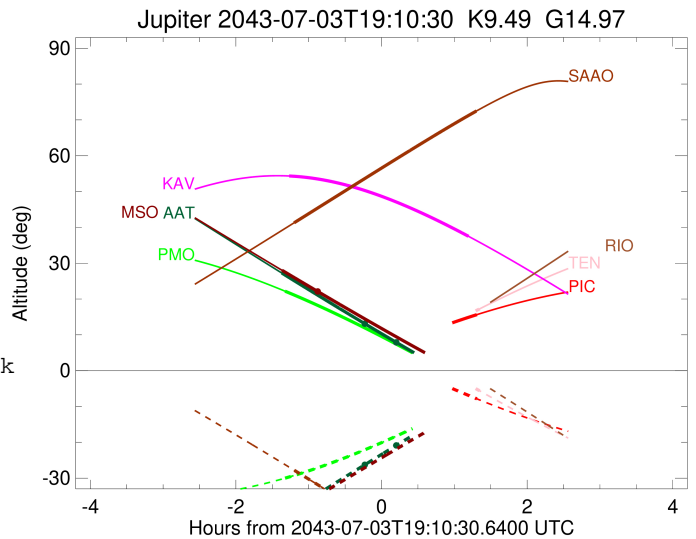
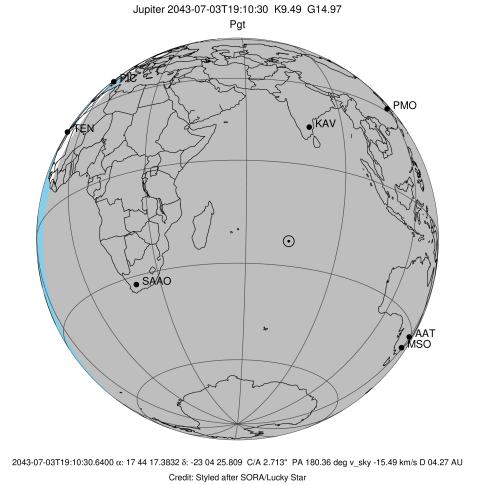


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T17:51:02.750	22.18	-30.00	71491.8	10.09	11.50
Jupiter	E	2043-07-03T20:20:40.318	-3.37x	-8.65	71491.8	10.10	11.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:16:09.680
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      : 4068825551199998720
2Mass ID (if available) : 17441740-2304257
ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 9.494
G magnitude          : 14.965
RP magnitude         : 13.567
BP magnitude         : 17.288
DUPflag             : 0
Distance (au)        : 4.272
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.49
Sun-Target sep (deg) : 165.22
Sun-Moon sep (deg)   : 152.95
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.85
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 3.829
C/A sky separation (km): 11863.5
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
    
```

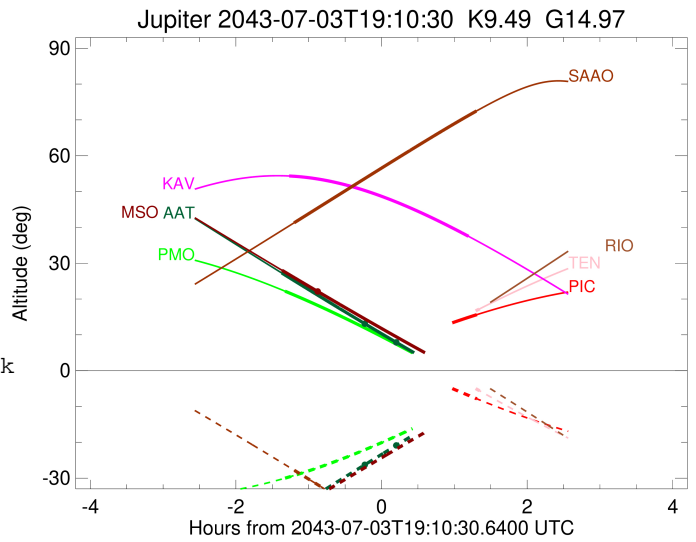
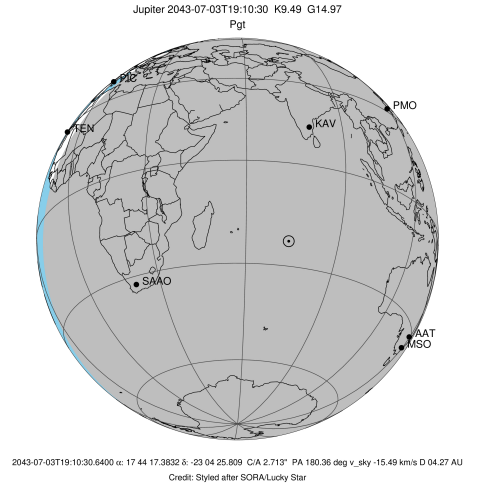


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T18:00:34.691	-11.82x	25.26x	71491.8	8.47	9.66
Jupiter	E	2043-07-03T20:31:09.854	17.21	-5.58	71491.7	10.55	12.02

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:08:10.860
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      : 4068825551199998720
2Mass ID (if available) : 17441740-2304257
ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 9.494
G magnitude          : 14.965
RP magnitude         : 13.567
BP magnitude         : 17.288
DUPflag             : 0
Distance (au)       : 4.272
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.49
Sun-Target sep (deg) : 165.22
Sun-Moon sep (deg)  : 154.34
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.85
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 3.872
C/A sky separation (km) : 11997.6
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
    
```

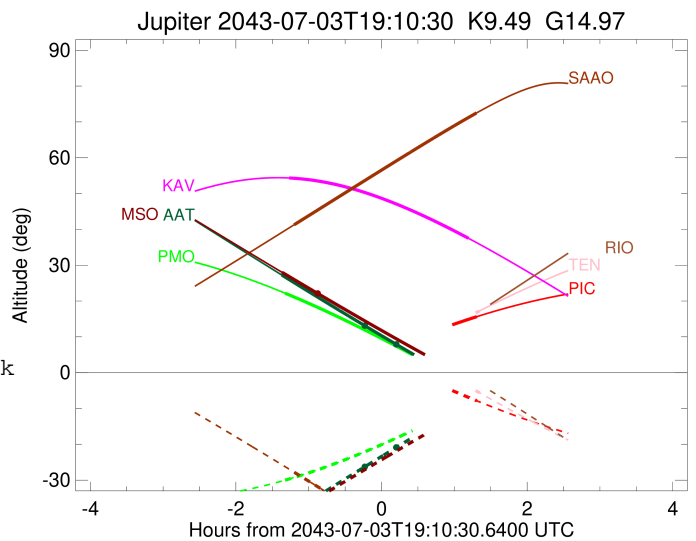
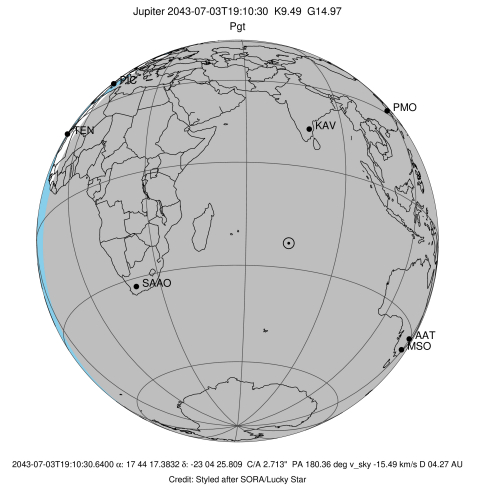


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T17:54:26.034	54.34	-52.16	71491.8	9.29	10.59
Jupiter	E	2043-07-03T20:22:11.704	37.50	-47.88	71491.8	9.82	11.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:04:41.450
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       : 4068825551199998720
2Mass ID (if available) : 17441740-2304257
ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 9.494
G magnitude           : 14.965
RP magnitude          : 13.567
BP magnitude          : 17.288
DUPflag              : 0
Distance (au)         : 4.272
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.49
Sun-Target sep (deg)  : 165.22
Sun-Moon sep (deg)   : 154.39
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.85
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.748
C/A sky separation (km) : 5414.9
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
    
```

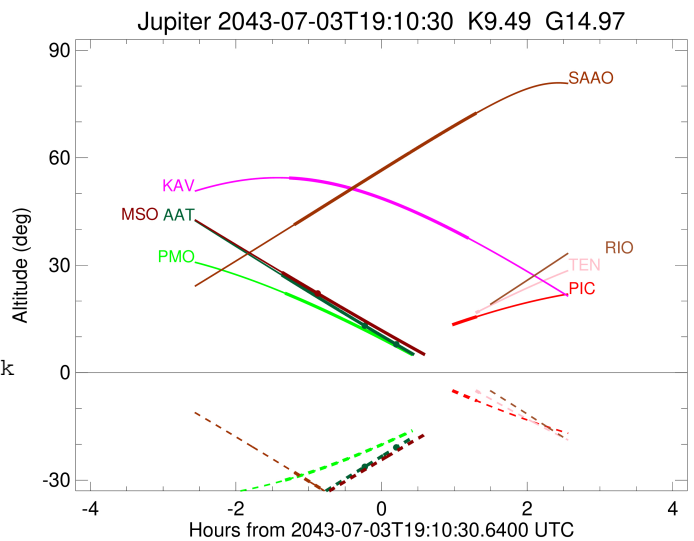
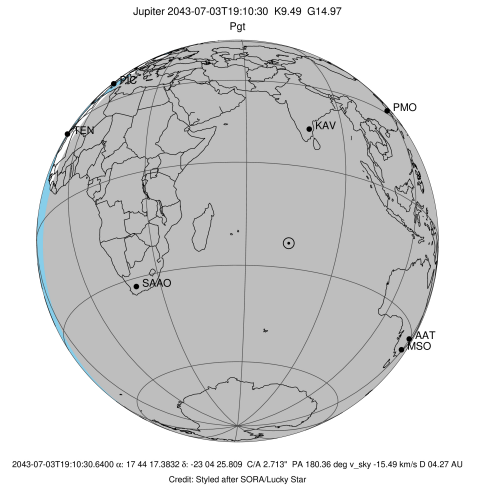


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T17:48:18.613	27.26	-40.74	71492.0	4.41	5.04
Jupiter	E	2043-07-03T20:21:45.400	-3.50x	-8.86	71492.0	4.26	4.87

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:13:51.240
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      : 4068825551199998720
2Mass ID (if available) : 17441740-2304257
ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 9.494
G magnitude          : 14.965
RP magnitude         : 13.567
BP magnitude         : 17.288
DUPflag             : 0
Distance (au)       : 4.272
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.49
Sun-Target sep (deg) : 165.22
Sun-Moon sep (deg)  : 153.51
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.85
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 2.269
C/A sky separation (km): 7029.3
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
    
```

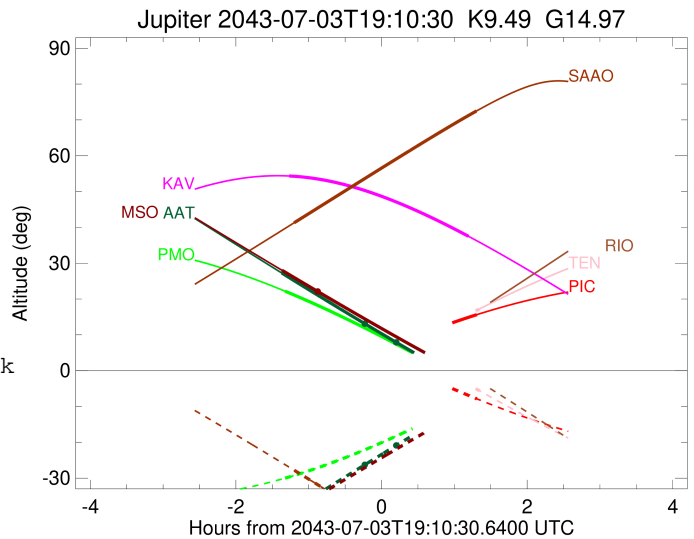
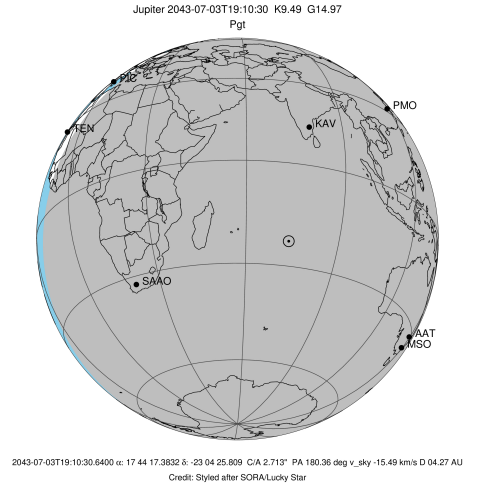


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T17:58:37.969	41.30	-27.80	71491.9	4.75	5.43
Jupiter	E	2043-07-03T20:28:45.118	72.48	-59.38	71491.9	6.37	7.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T19:04:56.950
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       : 4068825551199998720
2Mass ID (if available) : 17441740-2304257
ICRS Star Coord at Epoch: 17h 44m 17.38321s -23:04:25.80860s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 9.494
G magnitude           : 14.965
RP magnitude          : 13.567
BP magnitude          : 17.288
DUPflag              : 0
Distance (au)        : 4.272
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.49
Sun-Target sep (deg) : 165.22
Sun-Moon sep (deg)   : 154.36
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.85
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 1.636
C/A sky separation (km): 5070.0
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
    
```



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	2043-07-03T17:48:31.606	28.02	-40.95	71492.0	4.11	4.70
Jupiter	E	2043-07-03T20:22:01.679	-1.50x	-10.30	71492.0	4.01	4.58