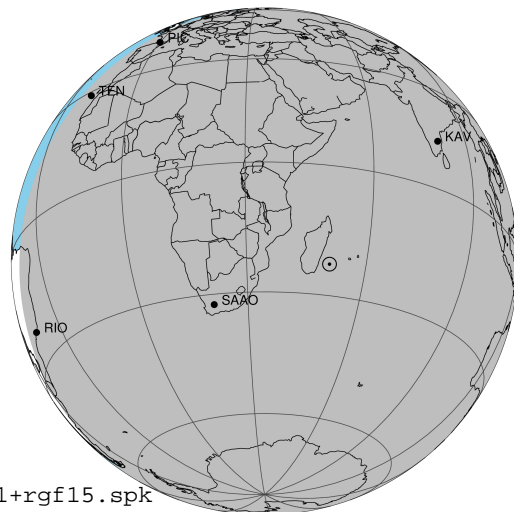


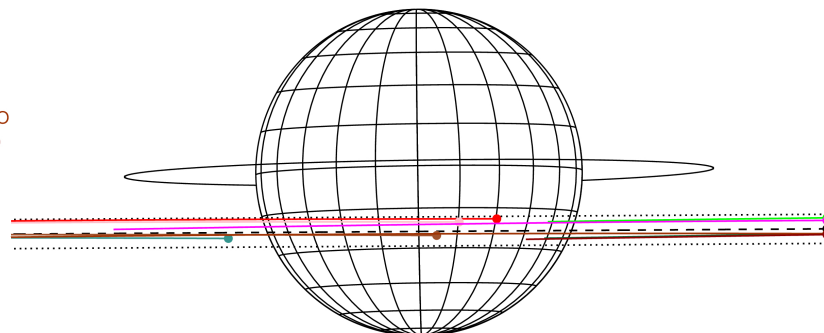
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-03T20:42:01.270
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068825589951568640
 2Mass ID (if available) : 17441540-2304365

Jupiter 2043-07-03T20:42:01 K8.26 G14.62 Pgt

ICRS Star Coord at Epoch: 17h 44m 15.39020s -23°04'36.69278s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 8.255
 G magnitude : 14.618
 RP magnitude : 13.071
 BP magnitude : 18.177
 DUPflag : 0
 Distance (au) : 4.273
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.48
 Sun-Target sep (deg) : 165.15
 Sun-Moon sep (deg) : 154.54
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.86
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 8.335
 C/A sky separation (km) : 25829.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



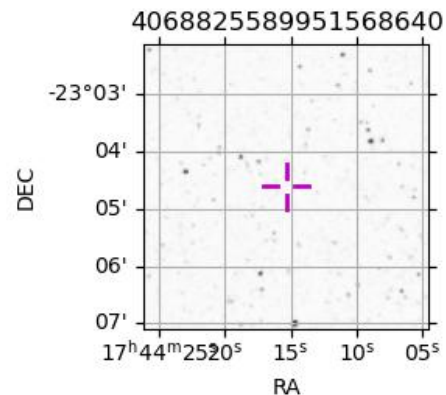
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-07-03T20:42:01.2700 a: 17 44 15.39020 s: -23 04 36.693 C/A 8.347" PA 0.37 deg v_sky -15.48 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

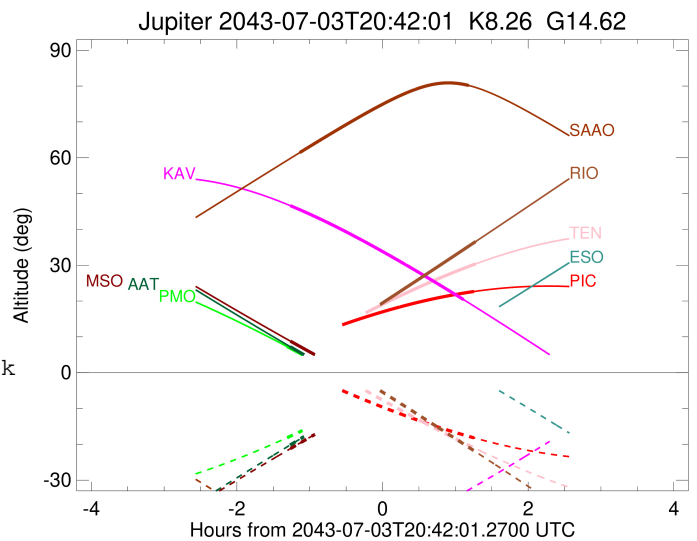
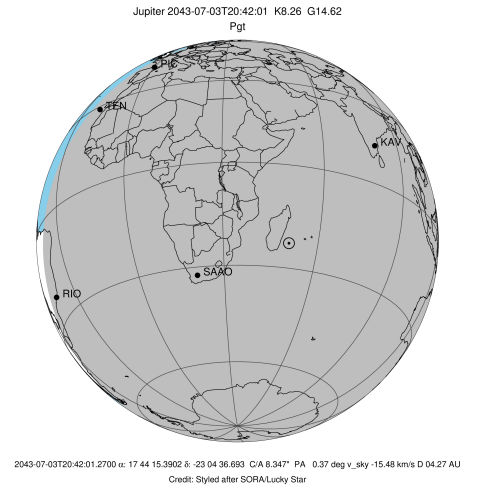
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 03 21:57 - JUL 03 21:57	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 03 19:23 - JUL 03 19:23	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 21:58 - JUL 03 21:58	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 03 19:26 - JUL 03 21:48	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 03 21:58 - JUL 03 21:58	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 03 19:25 - JUL 03 19:25	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 03 19:33 - JUL 03 21:52	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 03 19:26 - JUL 03 19:26	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T20:44:55.240
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        : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 8.255
G magnitude           : 14.618
RP magnitude          : 13.071
BP magnitude          : 18.177
DUPflag              : 0
Distance (au)         : 4.273
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg)  : 165.15
Sun-Moon sep (deg)    : 154.41
B (ring opening deg)  : -2.41
PA of pole (deg)      : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 6.560
C/A sky separation (km) : 20327.2
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
    
```

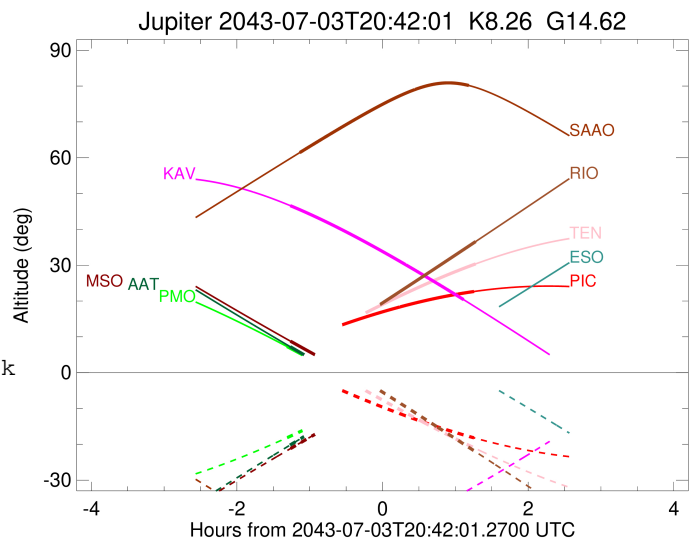
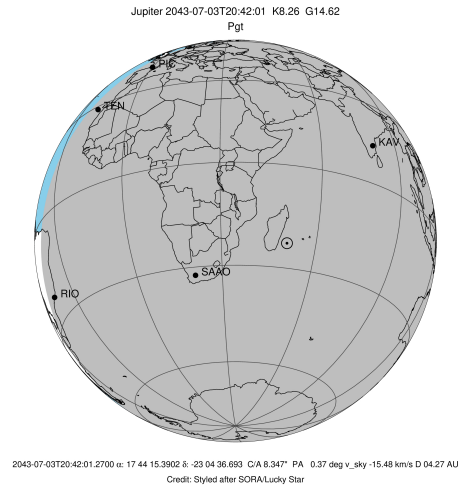


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T19:32:19.461	8.74	0.52x	71491.3	-17.32	-19.62
Jupiter	E	2043-07-03T21:57:16.177	22.65	-18.18	71491.4	-15.81	-17.93

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T20:36:00.460
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      : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.255
G magnitude          : 14.618
RP magnitude         : 13.071
BP magnitude         : 18.177
DUPflag             : 0
Distance (au)       : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.15
Sun-Moon sep (deg)  : 155.33
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.248
C/A sky separation (km): 22460.6
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
    
```

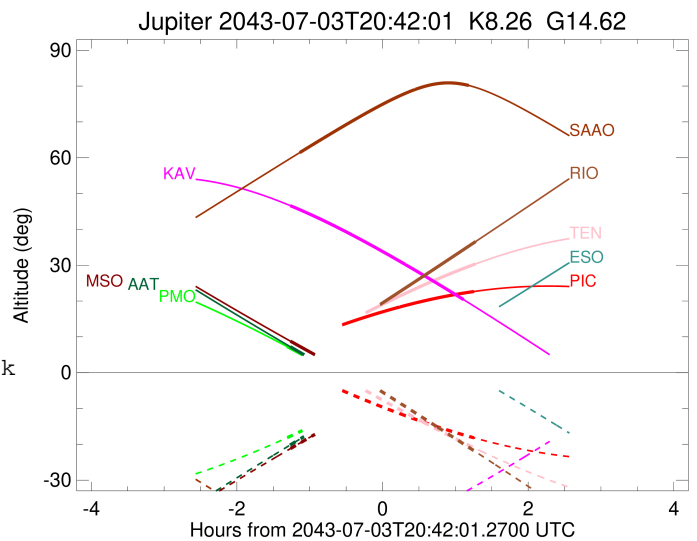
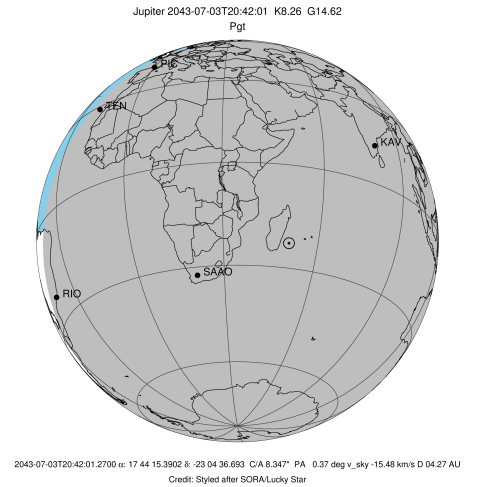


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T19:23:28.118	7.27	-18.14	71491.2	-18.24	-20.63
Jupiter	E	2043-07-03T21:49:09.813	-21.06x	7.93x	71491.2	-18.38	-20.78

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T20:46:49.840
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        : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 8.255
G magnitude           : 14.618
RP magnitude          : 13.071
BP magnitude          : 18.177
DUPflag              : 0
Distance (au)         : 4.273
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.15
Sun-Moon sep (deg)   : 154.16
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 6.986
C/A sky separation (km): 21646.7
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
    
```

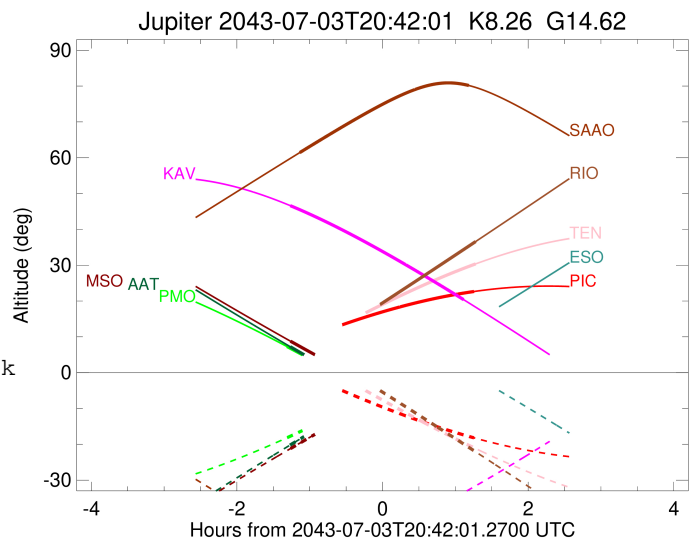
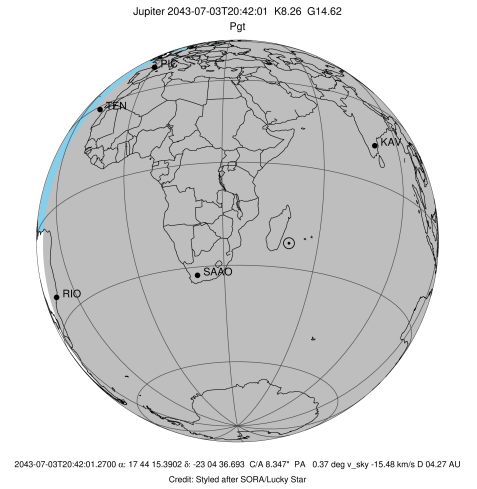


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T19:34:29.228	6.94	5.62x	71491.2	-18.60	-21.03
Jupiter	E	2043-07-03T21:58:44.932	30.36	-21.18	71491.3	-16.74	-18.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T20:37:14.910
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      : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.255
G magnitude          : 14.618
RP magnitude         : 13.071
BP magnitude         : 18.177
DUPflag             : 0
Distance (au)       : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.15
Sun-Moon sep (deg)  : 155.46
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.349
C/A sky separation (km): 22772.7
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
    
```

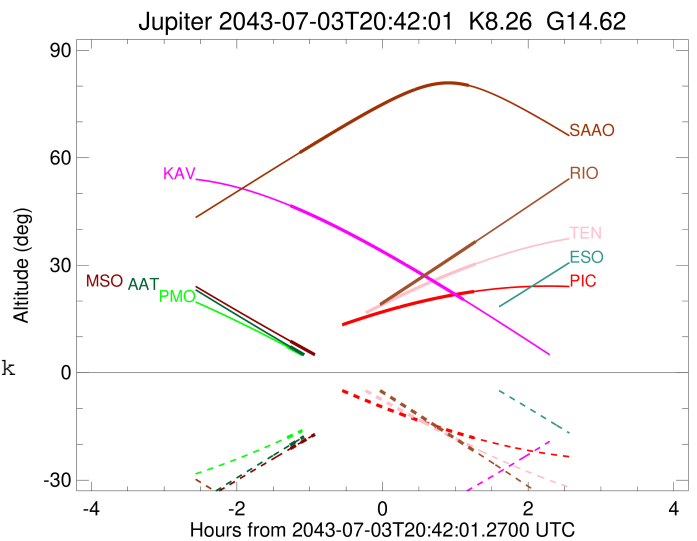
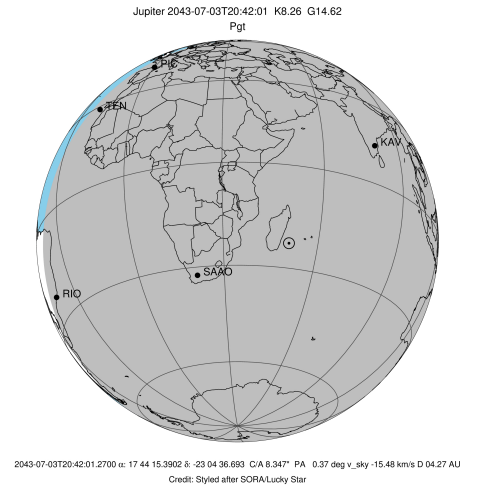


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T19:26:02.891	46.61	-53.45	71491.2	-18.69	-21.13
Jupiter	E	2043-07-03T21:48:54.943	20.37	-33.50	71491.2	-18.58	-21.00

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T20:48:28.320
Event type          : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code       : RIO
Location            : Rio de Janeiro
Latitude (deg)      : -22.89506
E. Longitude (deg)  : 316.77708
Altitude (km)       : 0.033
Gaia source ID      : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.255
G magnitude          : 14.618
RP magnitude         : 13.071
BP magnitude         : 18.177
DUPflag             : 0
Distance (au)        : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.15
Sun-Moon sep (deg)  : 153.85
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 8.892
C/A sky separation (km) : 27553.2
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
    
```

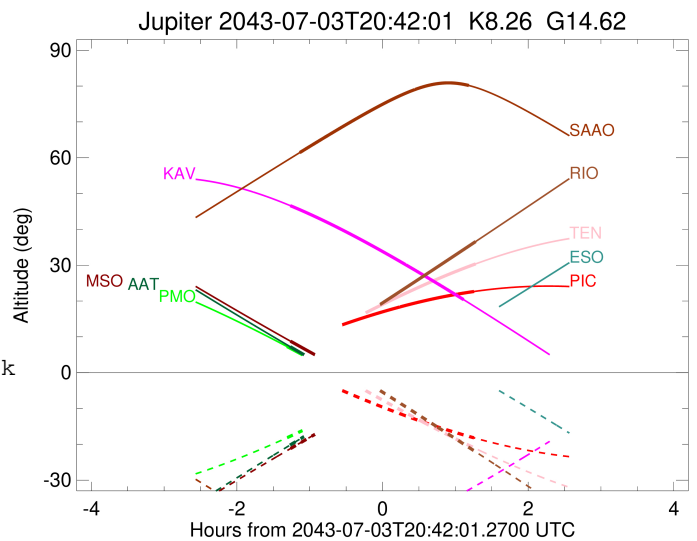
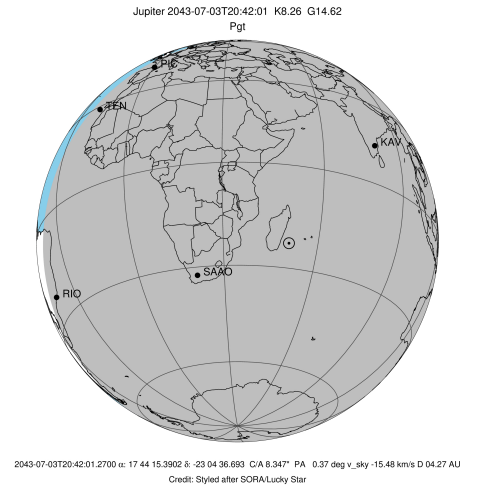


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T19:37:37.981	5.48	7.95x	71490.7	-23.75	-26.68
Jupiter	E	2043-07-03T21:58:45.133	36.59	-22.09	71490.9	-21.59	-24.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T20:36:18.760
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      : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.255
G magnitude          : 14.618
RP magnitude         : 13.071
BP magnitude         : 18.177
DUPflag             : 0
Distance (au)       : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.15
Sun-Moon sep (deg)  : 155.09
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 9.582
C/A sky separation (km) : 29693.8
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
    
```

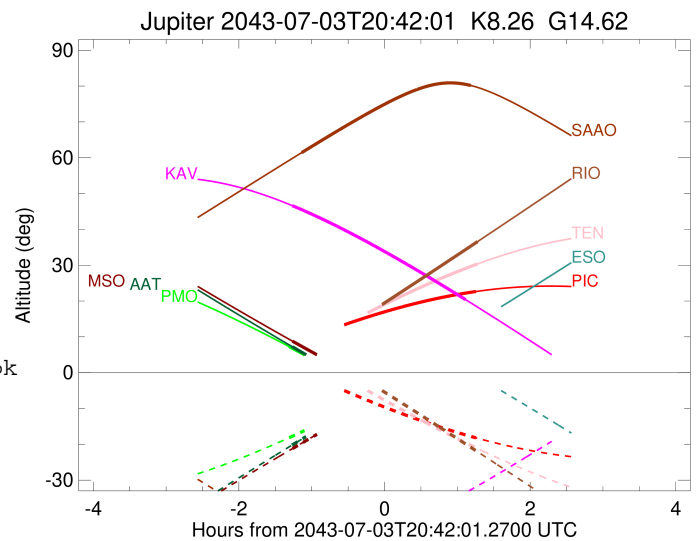
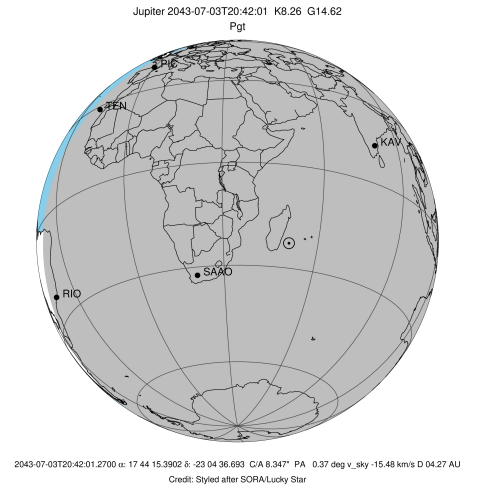


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T19:25:50.695	7.27	-20.21	71490.6	-24.45	-27.43
Jupiter	E	2043-07-03T21:47:20.243	-18.32x	7.47x	71490.6	-24.52	-27.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T20:43:25.070
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        : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 8.255
G magnitude           : 14.618
RP magnitude          : 13.071
BP magnitude          : 18.177
DUPflag              : 0
Distance (au)         : 4.273
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.15
Sun-Moon sep (deg)   : 154.75
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.680
C/A sky separation (km): 26897.4
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
    
```

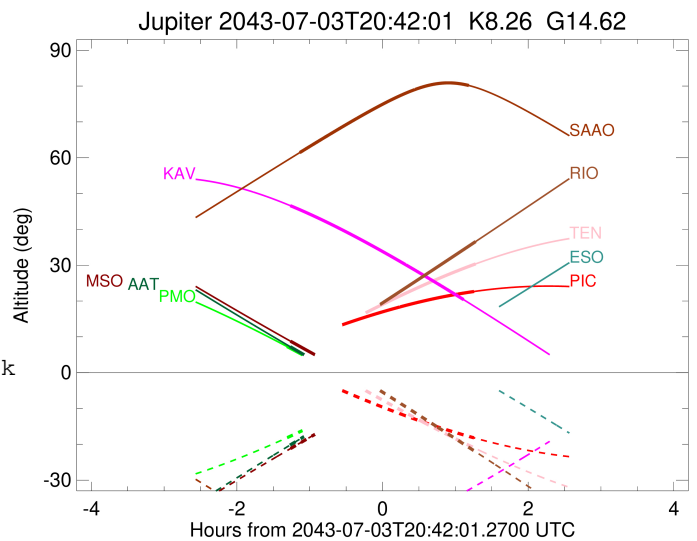
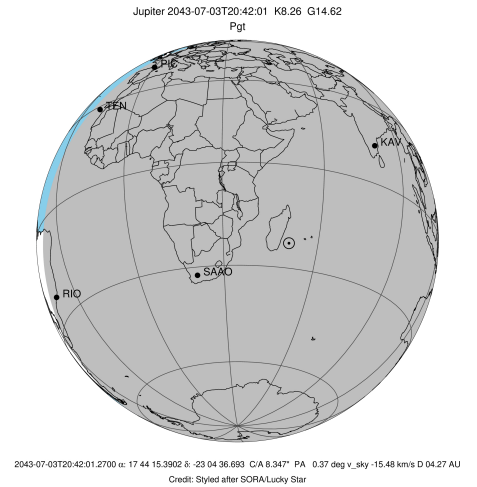


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T19:33:46.809	61.41	-47.81	71490.8	-22.78	-25.62
Jupiter	E	2043-07-03T21:52:57.595	80.17	-75.87	71490.9	-21.54	-24.27


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T20:36:34.020
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      : 4068825589951568640
2Mass ID (if available) : 17441540-2304365
ICRS Star Coord at Epoch: 17h 44m 15.39020s -23:04:36.69278s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.255
G magnitude          : 14.618
RP magnitude         : 13.071
BP magnitude         : 18.177
DUPflag             : 0
Distance (au)       : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.15
Sun-Moon sep (deg)  : 155.07
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.681
C/A sky separation (km) : 30000.7
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	2043-07-03T19:26:16.290	8.77	-21.18	71490.6	-24.74	-27.75
Jupiter	E	2043-07-03T21:47:23.552	-15.52x	5.26x	71490.6	-24.77	-27.78