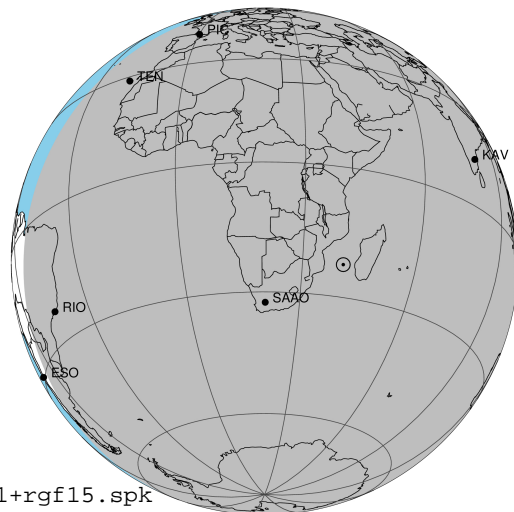


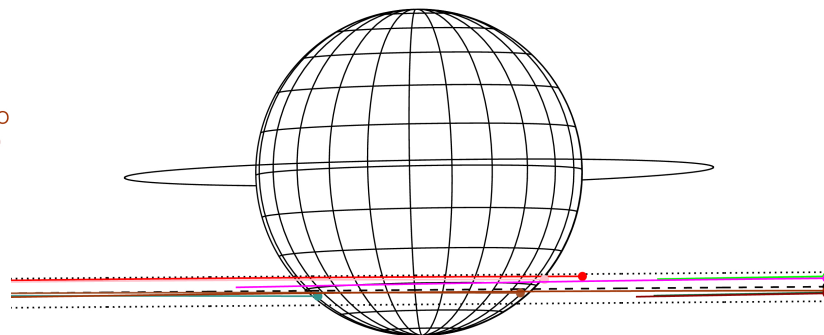
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-06T21:23:38.570  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116871327501642240  
 2Mass ID (if available) : 17424217-2304353

Jupiter 2043-07-06T21:23:38 K8.06 G13.87 Pgt

ICRS Star Coord at Epoch: 17h 42m 42.16433s -23°04:35.67021s  
 RUWE (>1.4 is poor) : 0.78  
 K magnitude : 8.062  
 G magnitude : 13.871  
 RP magnitude : 12.433  
 BP magnitude : 16.628  
 DUPflag : 0  
 Distance (au) : 4.285  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -15.01  
 Sun-Target sep (deg) : 161.90  
 Sun-Moon sep (deg) : 159.26  
 B (ring opening deg) : -2.41  
 PA of pole (deg) : 1.03  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 16.554  
 C/A sky separation (km) : 51443.2  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



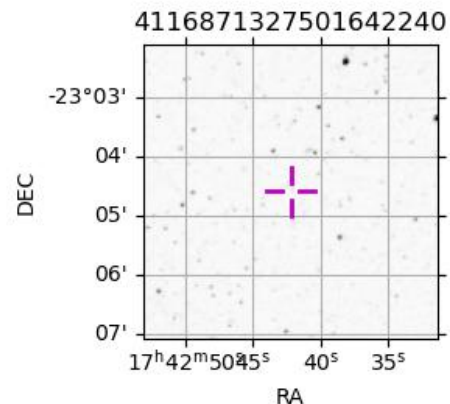
Earth  
 PIC  
 PMO  
 TEN  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



2043-07-06T21:23:38.5700 α: 17 42 42.1643 δ: -23 04 35.670 C/A \*\*\*\*\* PA 0.46 deg v\_sky -15.01 km/s D 04.28 AU  
 Credit: Styled after SORA/Lucky Star

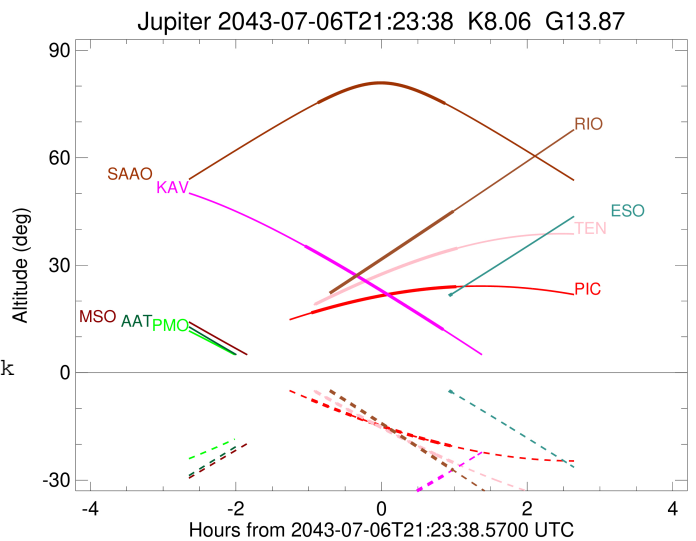
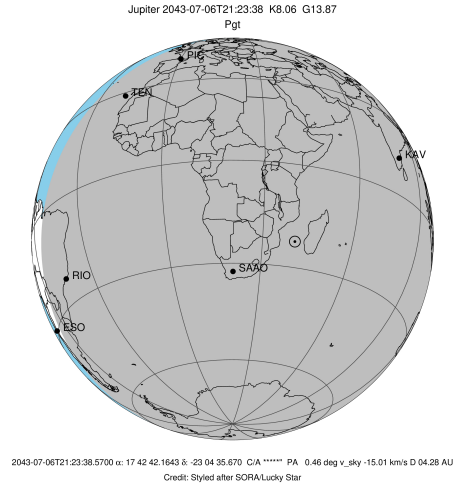
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 06 20:25 - JUL 06 22:25	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
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 06 20:29 - JUL 06 22:26	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 06 20:20 - JUL 06 22:14	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 06 22:22 - JUL 06 22:22	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 06 22:21 - JUL 06 22:21	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 06 20:31 - JUL 06 22:16	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-06T21:25:35.850
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        : 4116871327501642240
2Mass ID (if available) : 17424217-2304353
ICRS Star Coord at Epoch: 17h 42m 42.16433s -23:04:35.67021s
RUWE (>1.4 is poor) : 0.78
K magnitude           : 8.062
G magnitude           : 13.871
RP magnitude          : 12.433
BP magnitude          : 16.628
DUPflag              : 0
Distance (au)         : 4.285
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.01
Sun-Target sep (deg)  : 161.90
Sun-Moon sep (deg)    : 159.83
B (ring opening deg) : -2.41
PA of pole (deg)      : 1.03
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 14.721
C/A sky separation (km) : 45746.6
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
    
```

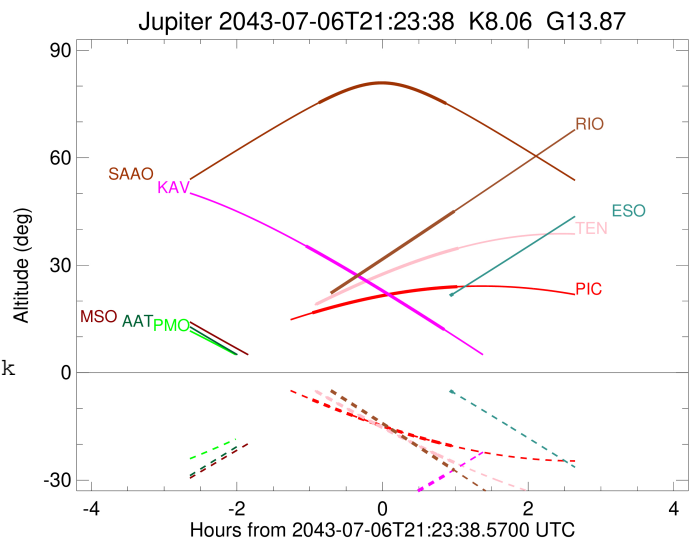
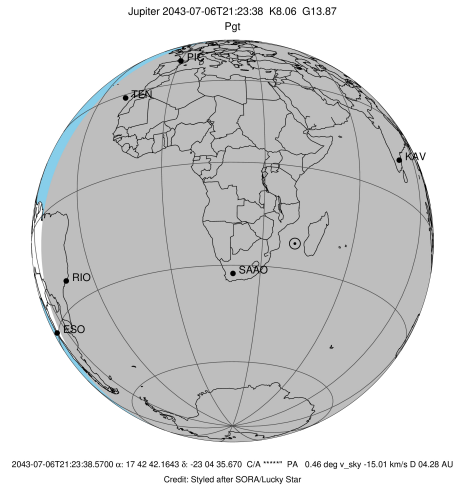


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T20:25:52.587	16.69	-7.57	71488.6	-40.55	-44.26
Jupiter	E	2043-07-06T22:25:13.345	24.00	-20.77	71488.8	-39.06	-42.76

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-06T21:27:39.990
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        : 4116871327501642240
2Mass ID (if available) : 17424217-2304353
ICRS Star Coord at Epoch: 17h 42m 42.16433s -23:04:35.67021s
RUWE (>1.4 is poor) : 0.78
K magnitude           : 8.062
G magnitude           : 13.871
RP magnitude          : 12.433
BP magnitude          : 16.628
DUPflag              : 0
Distance (au)         : 4.285
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.01
Sun-Target sep (deg) : 161.90
Sun-Moon sep (deg)   : 160.07
B (ring opening deg) : -2.41
PA of pole (deg)     : 1.03
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 15.095
C/A sky separation (km) : 46908.9
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
    
```

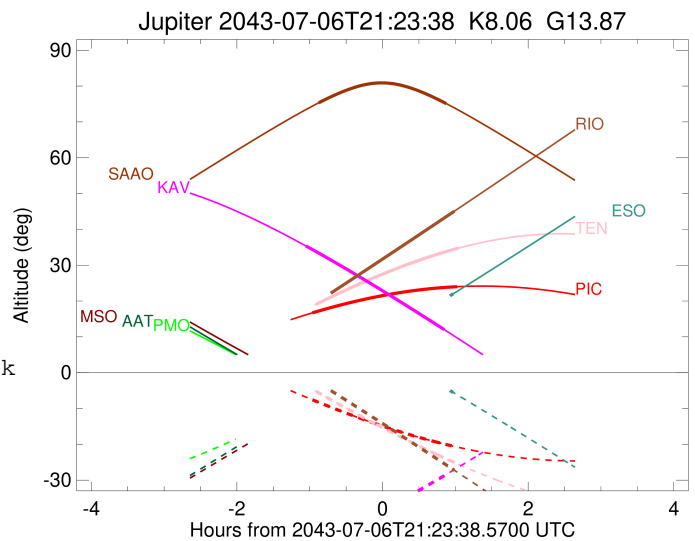
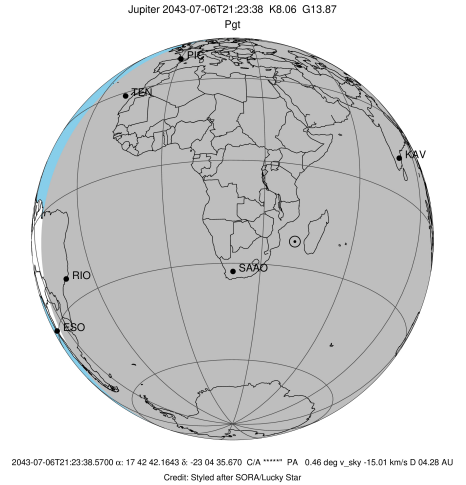


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T20:29:00.145	19.10	-5.22	71488.4	-41.95	-45.67
Jupiter	E	2043-07-06T22:26:06.830	34.75	-25.56	71488.7	-40.10	-43.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-06T21:17:21.380
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       : 4116871327501642240
2Mass ID (if available) : 17424217-2304353
ICRS Star Coord at Epoch: 17h 42m 42.16433s -23:04:35.67021s
RUWE (>1.4 is poor) : 0.78
K magnitude           : 8.062
G magnitude           : 13.871
RP magnitude         : 12.433
BP magnitude         : 16.628
DUPflag              : 0
Distance (au)        : 4.285
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.01
Sun-Target sep (deg) : 161.90
Sun-Moon sep (deg)   : 158.75
B (ring opening deg) : -2.41
PA of pole (deg)     : 1.03
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 15.708
C/A sky separation (km) : 48814.5
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
    
```

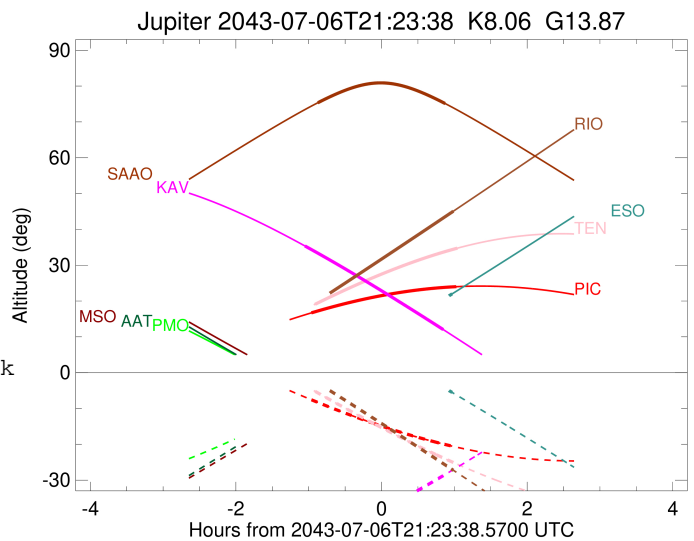
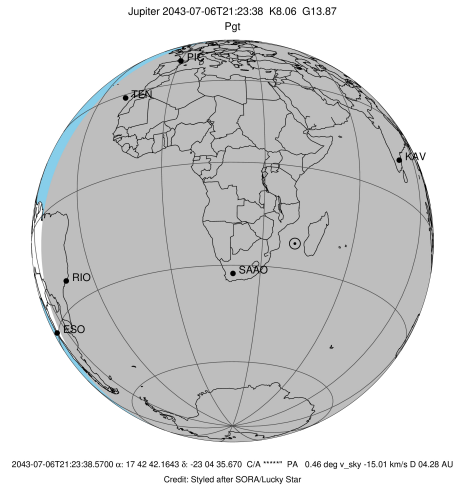


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T20:20:33.499	35.36	-48.39	71488.3	-43.09	-46.80
Jupiter	E	2043-07-06T22:14:32.233	12.02	-28.74	71488.3	-43.05	-46.76

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-06T21:29:59.430
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        : 4116871327501642240
2Mass ID (if available) : 17424217-2304353
ICRS Star Coord at Epoch: 17h 42m 42.16433s -23:04:35.67021s
RUWE (>1.4 is poor) : 0.78
K magnitude           : 8.062
G magnitude           : 13.871
RP magnitude          : 12.433
BP magnitude          : 16.628
DUPflag              : 0
Distance (au)         : 4.285
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.01
Sun-Target sep (deg) : 161.90
Sun-Moon sep (deg)   : 160.13
B (ring opening deg) : -2.41
PA of pole (deg)     : 1.03
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 16.945
C/A sky separation (km): 52659.0
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
    
```

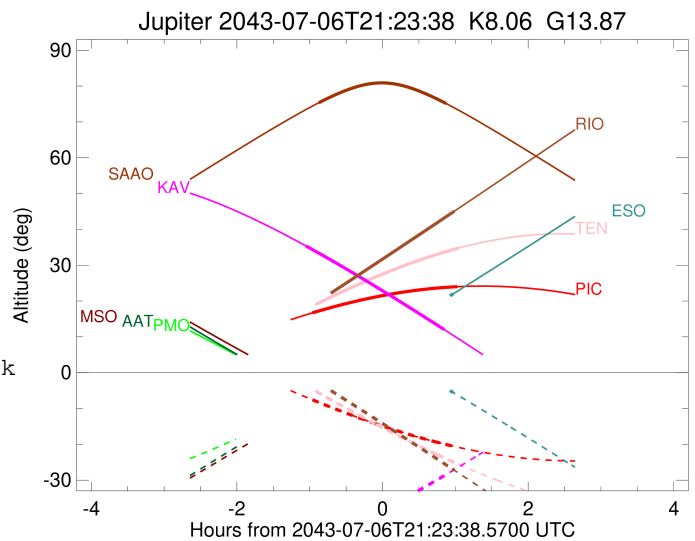
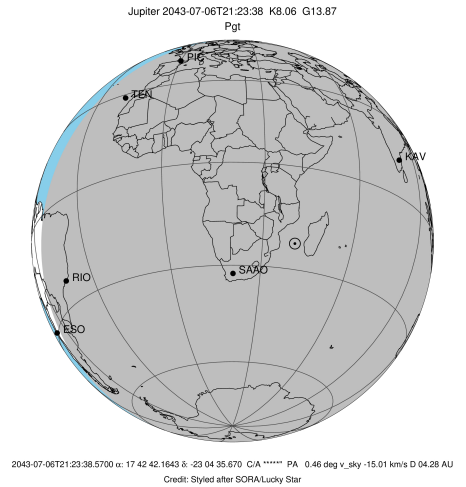


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T20:36:54.070	21.27	-4.11x	71487.5	-48.55	-52.18
Jupiter	E	2043-07-06T22:22:47.177	45.06	-27.23	71487.8	-46.30	-49.98

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T21:30:27.400
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : ESO
Location             : European Southern Obs. (3.6m)
Latitude (deg)       : -29.26097
E. Longitude (deg)   : 289.26831
Altitude (km)        : 2.400
Gaia source ID       : 4116871327501642240
2Mass ID (if available) : 17424217-2304353
ICRS Star Coord at Epoch: 17h 42m 42.16433s -23:04:35.67021s
RUWE (>1.4 is poor) : 0.78
K magnitude           : 8.062
G magnitude           : 13.871
RP magnitude         : 12.433
BP magnitude         : 16.628
DUPflag              : 0
Distance (au)        : 4.285
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.01
Sun-Target sep (deg) : 161.90
Sun-Moon sep (deg)   : 159.97
B (ring opening deg) : -2.41
PA of pole (deg)     : 1.03
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 17.474
C/A sky separation (km): 54304.3
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
    
```

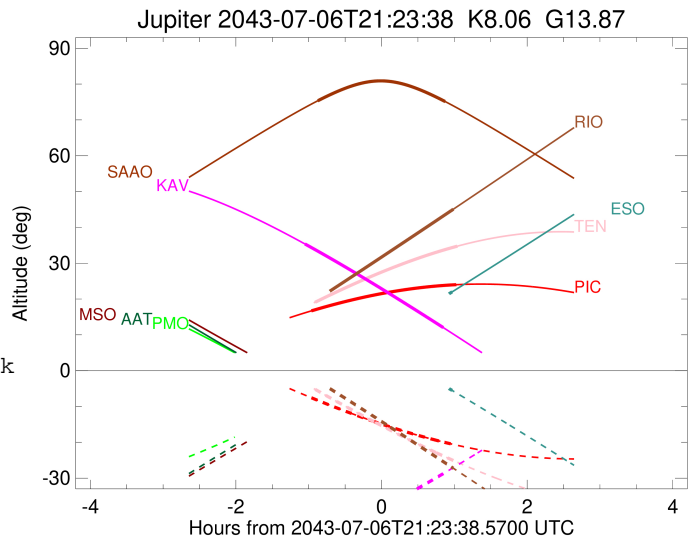
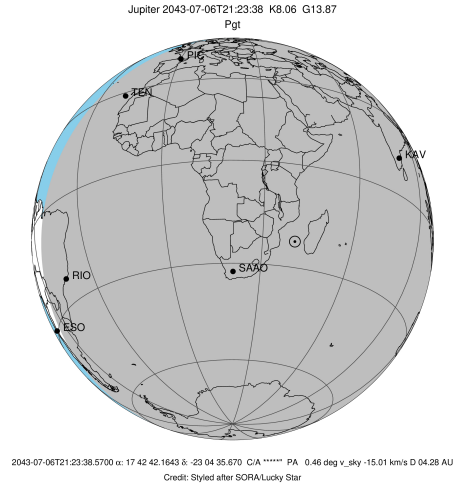


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-06T20:38:41.949	0.84x	14.09x	71487.3	-50.55	-54.11
Jupiter	E	2043-07-06T22:21:54.548	22.01	-5.53	71487.6	-48.20	-51.84

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-06T21:23:37.560
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       : 4116871327501642240
2Mass ID (if available) : 17424217-2304353
ICRS Star Coord at Epoch: 17h 42m 42.16433s -23:04:35.67021s
RUWE (>1.4 is poor) : 0.78
K magnitude           : 8.062
G magnitude           : 13.871
RP magnitude          : 12.433
BP magnitude          : 16.628
DUPflag              : 0
Distance (au)        : 4.285
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.01
Sun-Target sep (deg) : 161.90
Sun-Moon sep (deg)   : 159.56
B (ring opening deg) : -2.41
PA of pole (deg)     : 1.03
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 16.878
C/A sky separation (km): 52452.3
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	2043-07-06T20:31:08.655	75.33	-59.65	71487.6	-47.78	-51.43
Jupiter	E	2043-07-06T22:16:07.670	75.11	-78.88	71487.8	-46.64	-50.31