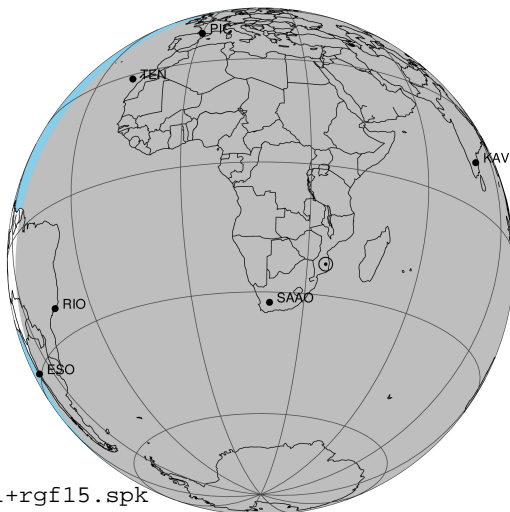


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-03T21:45:48.920
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068825589951601792
 2Mass ID (if available) : 17441404-2304239

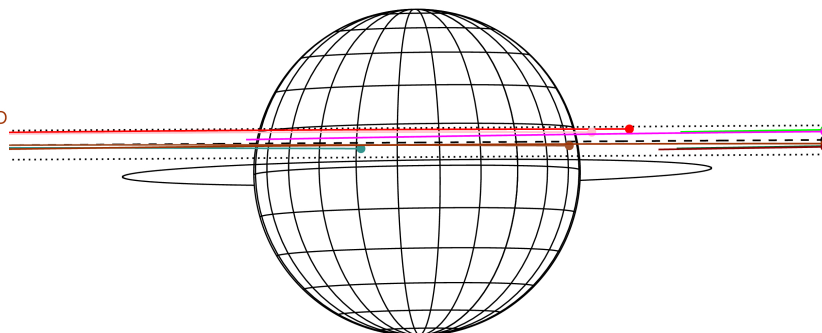
Jupiter 2043-07-03T21:45:48 K8.13 G13.95 Pgt

ICRS Star Coord at Epoch: 17h 44m 14.01098s -23:04:23.99765s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 8.129
 G magnitude : 13.954
 RP magnitude : 12.512
 BP magnitude : 16.763
 DUPflag : 0
 Distance (au) : 4.273
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.47
 Sun-Target sep (deg) : 165.10
 Sun-Moon sep (deg) : 155.19
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.86
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 4.237
 C/A sky separation (km) : 13130.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



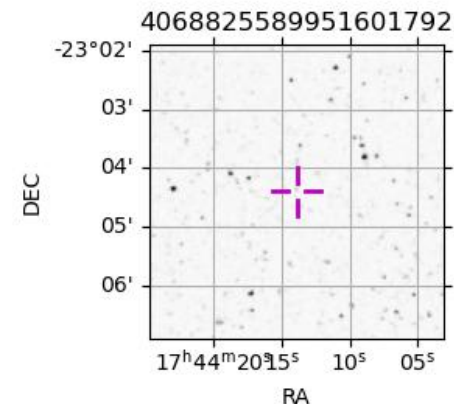
2043-07-03T21:45:48.920 at: 17 44 14.0110 s: -23 04 23.998 C/A 4.226° PA 180.37 deg v_sky -15.47 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



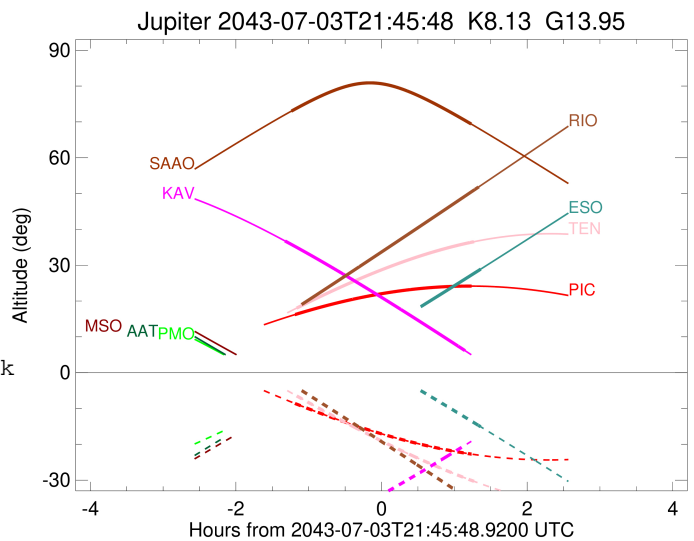
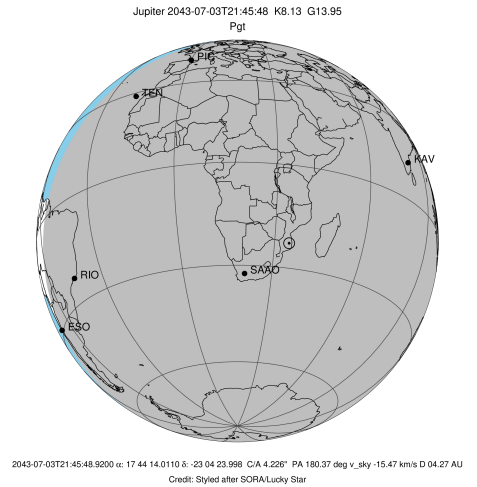
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 03 20:34 - JUL 03 23:00	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 03 20:35 - JUL 03 23:02	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 03 20:26 - JUL 03 22:54	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 03 23:05 - JUL 03 23:05	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 03 23:07 - JUL 03 23:07	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 03 20:31 - JUL 03 22:59	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T21:47:19.380
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        : 4068825589951601792
2Mass ID (if available) : 17441404-2304239
ICRS Star Coord at Epoch: 17h 44m 14.01098s -23:04:23.99765s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 8.129
G magnitude           : 13.954
RP magnitude          : 12.512
BP magnitude          : 16.763
DUPflag              : 0
Distance (au)         : 4.273
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.47
Sun-Target sep (deg)  : 165.10
Sun-Moon sep (deg)    : 155.26
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 6.084
C/A sky separation (km) : 18852.2
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
    
```

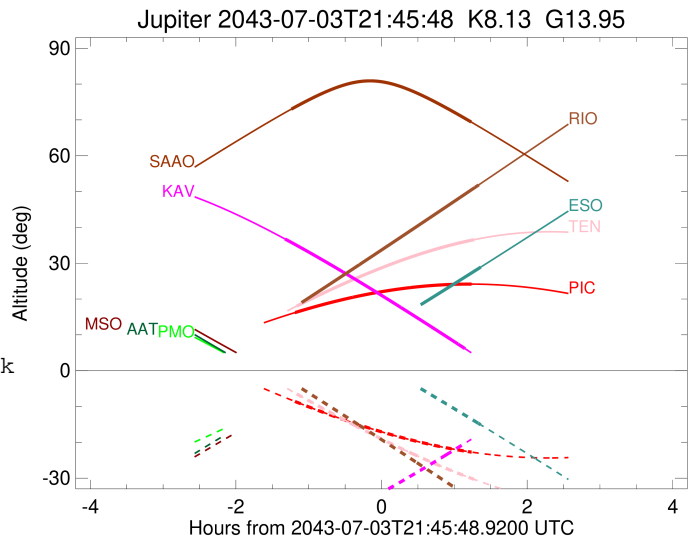
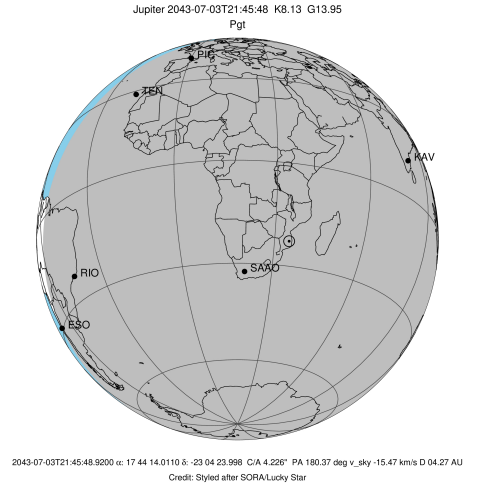


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T20:34:27.021	16.20	-8.59	71491.5	14.56	16.53
Jupiter	E	2043-07-03T23:00:04.371	24.16	-22.74	71491.4	15.84	17.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T21:49:06.640
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      : 4068825589951601792
2Mass ID (if available) : 17441404-2304239
ICRS Star Coord at Epoch: 17h 44m 14.01098s -23:04:23.99765s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.129
G magnitude          : 13.954
RP magnitude         : 12.512
BP magnitude         : 16.763
DUPflag             : 0
Distance (au)       : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.47
Sun-Target sep (deg) : 165.10
Sun-Moon sep (deg)  : 155.04
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 5.717
C/A sky separation (km) : 17716.6
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
    
```

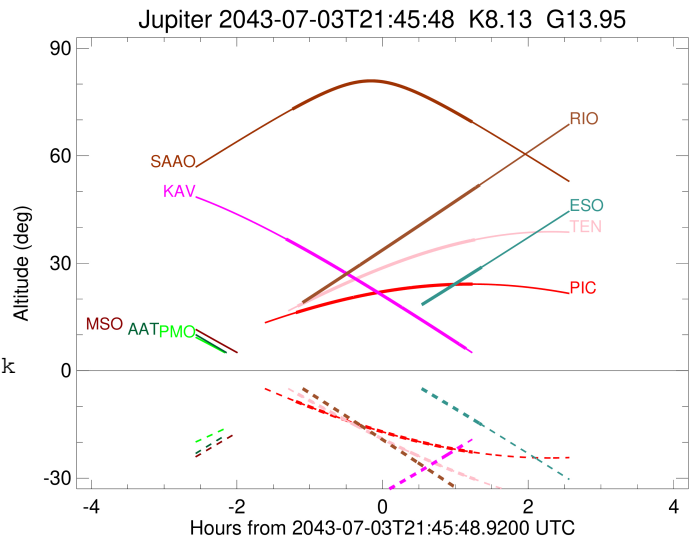
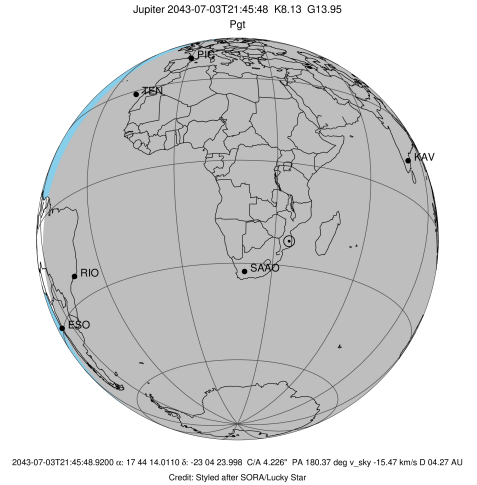


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T20:35:53.815	18.02	-6.49	71491.6	13.44	15.28
Jupiter	E	2043-07-03T23:02:01.197	36.55	-30.33	71491.5	15.07	17.11

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T21:40:14.060
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       : 4068825589951601792
2Mass ID (if available) : 17441404-2304239
ICRS Star Coord at Epoch: 17h 44m 14.01098s -23:04:23.99765s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.129
G magnitude           : 13.954
RP magnitude         : 12.512
BP magnitude         : 16.763
DUPflag              : 0
Distance (au)        : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.47
Sun-Target sep (deg) : 165.10
Sun-Moon sep (deg)   : 156.16
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 5.056
C/A sky separation (km) : 15668.2
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
    
```

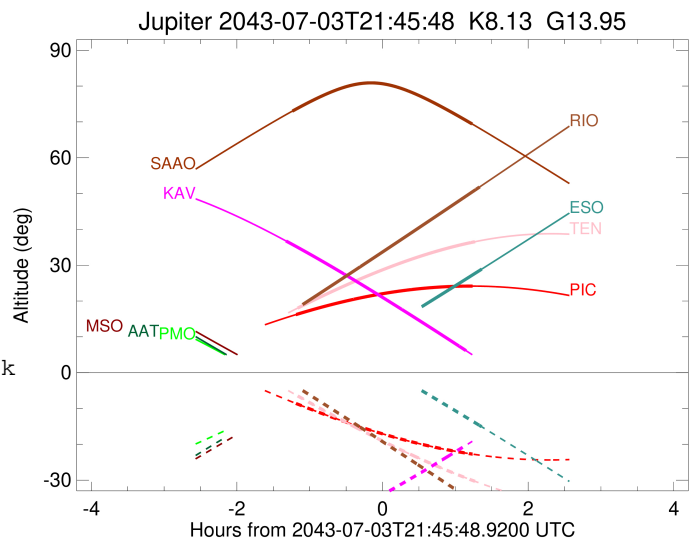
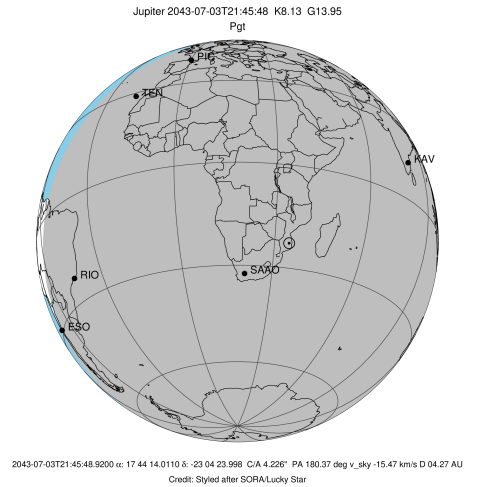


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T20:26:29.267	36.72	-47.30	71491.6	12.64	14.38
Jupiter	E	2043-07-03T22:54:35.602	6.15	-20.26	71491.6	12.54	14.26

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2043-07-03T21:51:11.620
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        : 4068825589951601792
2Mass ID (if available) : 17441404-2304239
ICRS Star Coord at Epoch: 17h 44m 14.01098s -23:04:23.99765s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 8.129
G magnitude           : 13.954
RP magnitude          : 12.512
BP magnitude          : 16.763
DUPflag              : 0
Distance (au)         : 4.273
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.47
Sun-Target sep (deg)  : 165.10
Sun-Moon sep (deg)    : 154.67
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 3.871
C/A sky separation (km) : 11995.6
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
    
```

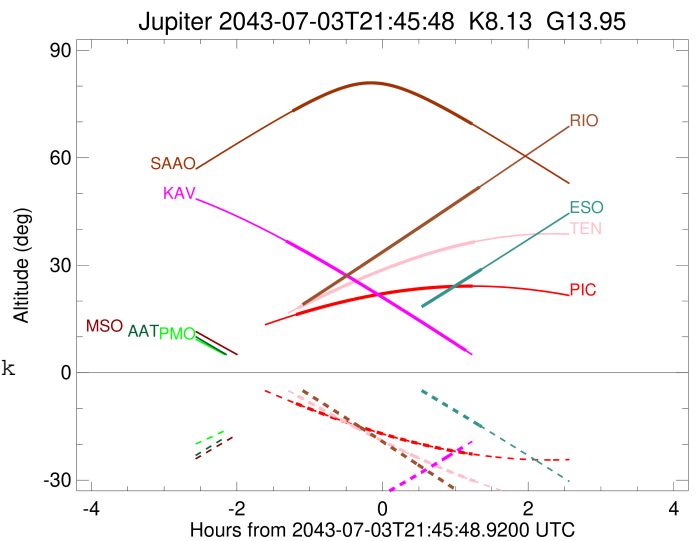
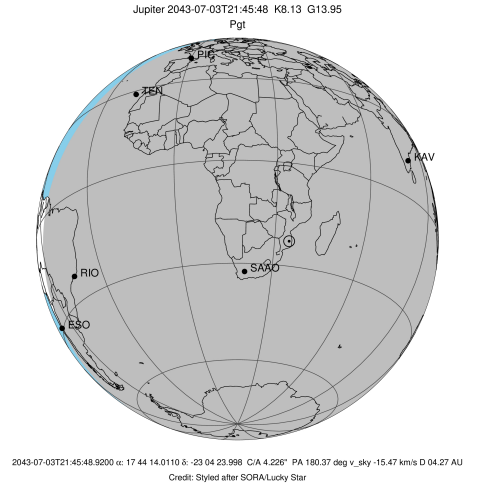


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T20:35:59.840	18.13	-4.14x	71491.8	8.58	9.79
Jupiter	E	2043-07-03T23:05:50.802	51.83	-37.07	71491.7	10.62	12.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T21:51:41.490
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       : 4068825589951601792
2Mass ID (if available) : 17441404-2304239
ICRS Star Coord at Epoch: 17h 44m 14.01098s -23:04:23.99765s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.129
G magnitude           : 13.954
RP magnitude         : 12.512
BP magnitude         : 16.763
DUPflag              : 0
Distance (au)        : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.47
Sun-Target sep (deg) : 165.10
Sun-Moon sep (deg)   : 154.42
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 3.342
C/A sky separation (km): 10357.3
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
    
```

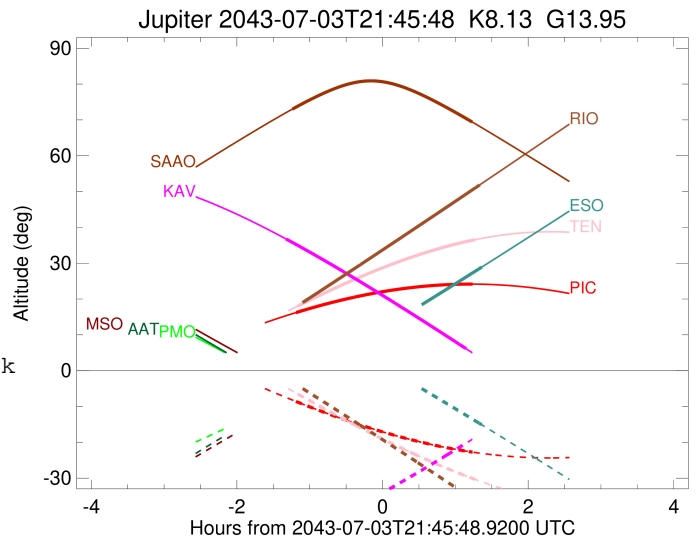
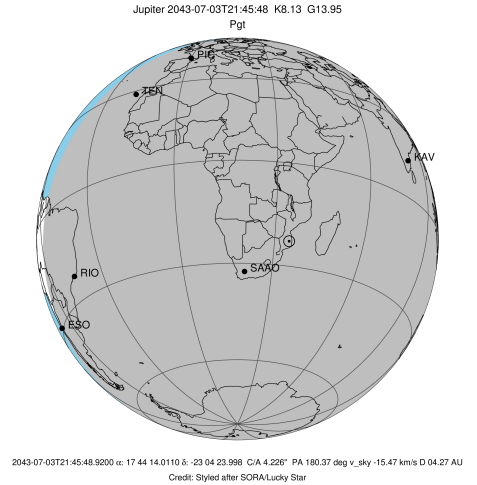


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T20:35:15.315	-2.43x	14.41x	71491.9	7.25	8.27
Jupiter	E	2043-07-03T23:07:30.309	28.88	-15.09	71491.8	9.39	10.70

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T21:45:34.960
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      : 4068825589951601792
2Mass ID (if available) : 17441404-2304239
ICRS Star Coord at Epoch: 17h 44m 14.01098s -23:04:23.99765s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.129
G magnitude          : 13.954
RP magnitude         : 12.512
BP magnitude         : 16.763
DUPflag             : 0
Distance (au)       : 4.273
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.47
Sun-Target sep (deg) : 165.10
Sun-Moon sep (deg)  : 155.60
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 3.911
C/A sky separation (km): 12119.8
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	2043-07-03T20:31:32.343	73.00	-59.96	71491.8	9.19	10.48
Jupiter	E	2043-07-03T22:59:40.723	69.41	-79.83	71491.8	10.13	11.55