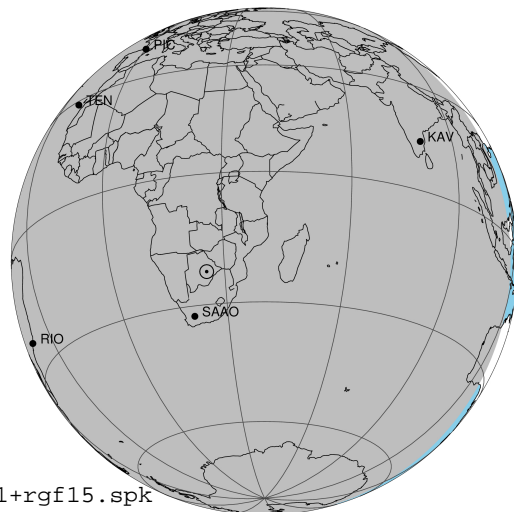


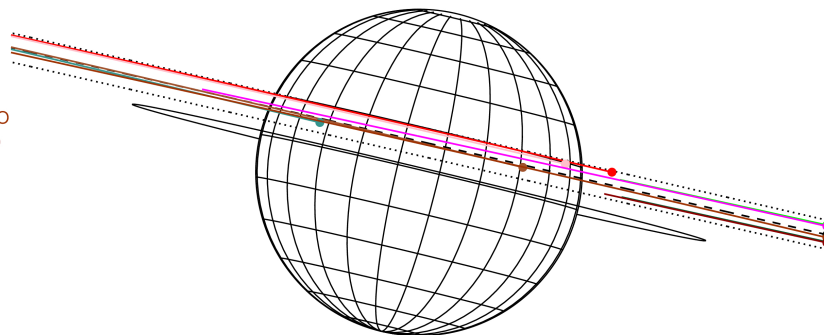
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2032-07-06T22:22:53.370
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6866059445235920384
 2Mass ID (if available) : 20021173-2054237

Jupiter 2032-07-06T22:22:53 K9.76 G12.37 Pgt

ICRS Star Coord at Epoch: 20h 02m 11.73059s -20:54:23.81102s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 9.757
 G magnitude : 12.366
 RP magnitude : 11.585
 BP magnitude : 13.027
 DUPflag : 0
 Distance (au) : 4.148
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.30
 Sun-Target sep (deg) : 166.58
 Sun-Moon sep (deg) : 158.37
 B (ring opening deg) : -0.98
 PA of pole (deg) : -13.38
 Pole direction: RA (deg): 268.05663
 Dec (deg): 64.49655
 C/A sky separation (") : 4.457
 C/A sky separation (km) : 13408.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO

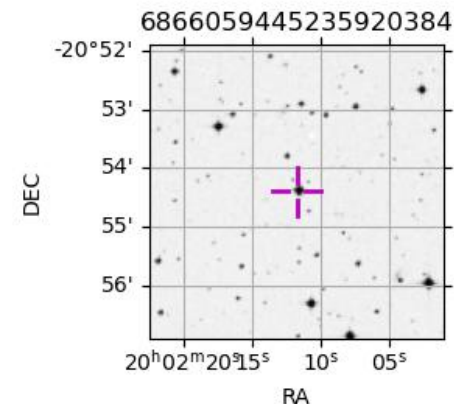


2032-07-06T22:22:53.3700 at: 20 02 11.7306 s: -20 54 23.811 C/A 4.457° PA 167.07 deg v_sky -15.30 km/s D 04.15 AU

Credit: Styled after SORA/Lucky Star

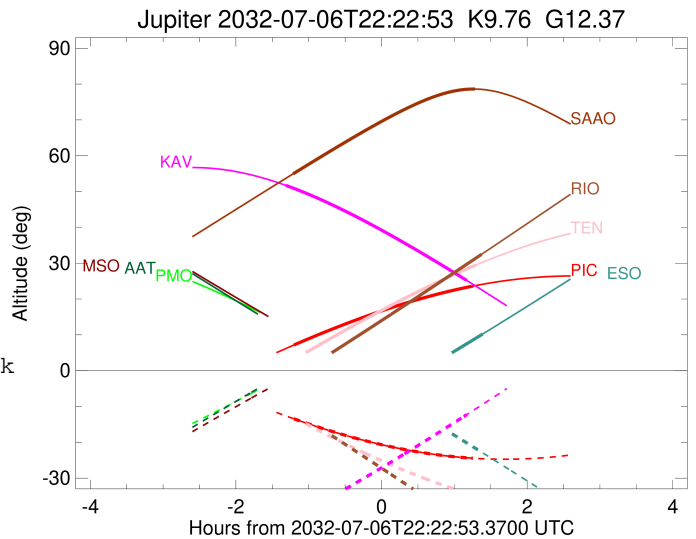
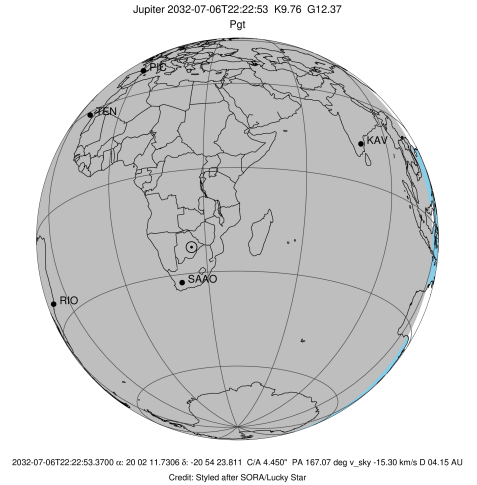
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 06 21:10 - JUL 06 23:38	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 23:40 - JUL 06 23:40	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 06 21:04 - JUL 06 23:32	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 06 23:45 - JUL 06 23:45	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 06 23:46 - JUL 06 23:46	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 06 21:10 - JUL 06 23:39	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-07-06T22:24:41.770
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       : 6866059445235920384
2Mass ID (if available) : 20021173-2054237
ICRS Star Coord at Epoch: 20h 02m 11.73059s -20:54:23.81102s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.757
G magnitude           : 12.366
RP magnitude          : 11.585
BP magnitude          : 13.027
DUPflag              : 0
Distance (au)        : 4.148
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.30
Sun-Target sep (deg) : 166.58
Sun-Moon sep (deg)   : 158.04
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.38
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation ("): 6.406
C/A sky separation (km): 19269.7
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
    
```

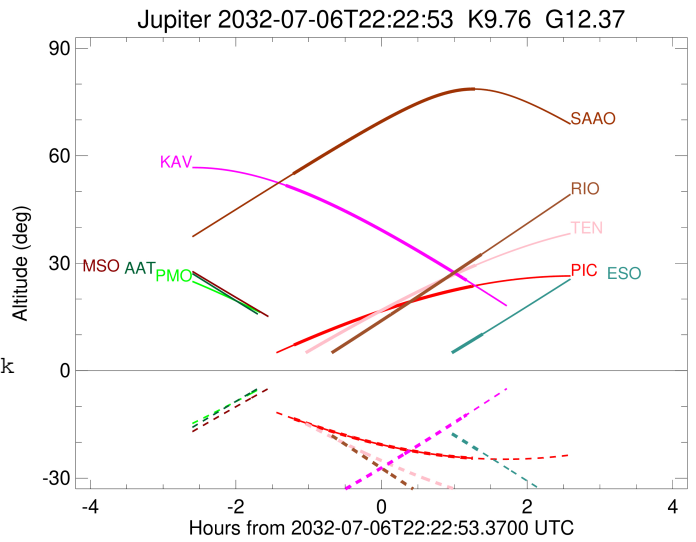
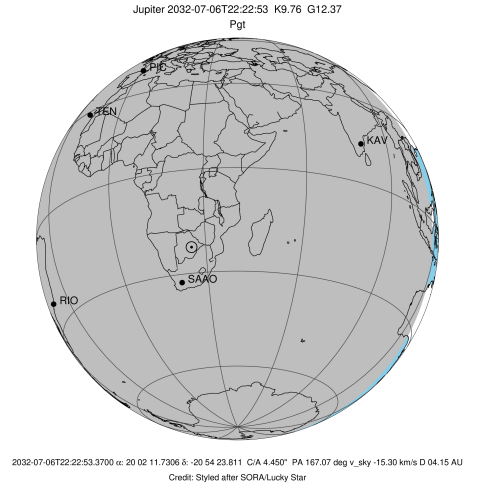


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-06T21:10:47.496	7.17	-13.45	71491.9	15.95	18.08
Jupiter	E	2032-07-06T23:38:17.188	23.61	-24.44	71491.9	15.15	17.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-07-06T22:26:44.670
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       : 6866059445235920384
2Mass ID (if available) : 20021173-2054237
ICRS Star Coord at Epoch: 20h 02m 11.73059s -20:54:23.81102s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.757
G magnitude           : 12.366
RP magnitude         : 11.585
BP magnitude         : 13.027
DUPflag              : 0
Distance (au)        : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.30
Sun-Target sep (deg) : 166.58
Sun-Moon sep (deg)   : 157.83
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.38
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation (") : 6.083
C/A sky separation (km) : 18298.8
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
    
```

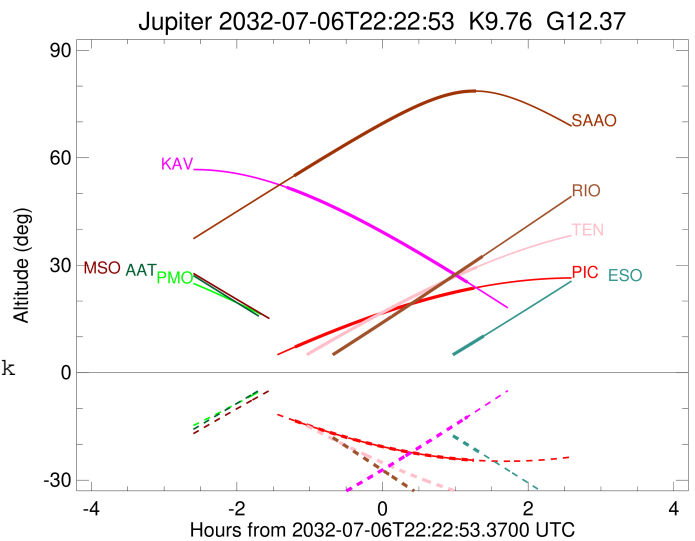
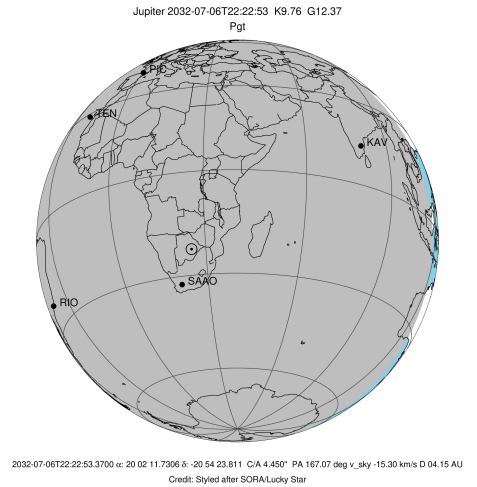


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-06T21:12:21.888	3.40x	-13.34	71491.9	14.95	16.97
Jupiter	E	2032-07-06T23:40:37.411	29.48	-34.84	71491.9	14.51	16.48

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-07-06T22:18:16.730
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        : 6866059445235920384
2Mass ID (if available) : 20021173-2054237
ICRS Star Coord at Epoch: 20h 02m 11.73059s -20:54:23.81102s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.757
G magnitude           : 12.366
RP magnitude          : 11.585
BP magnitude          : 13.027
DUPflag              : 0
Distance (au)         : 4.148
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.30
Sun-Target sep (deg) : 166.58
Sun-Moon sep (deg)   : 159.09
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.38
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation ("): 5.154
C/A sky separation (km): 15502.4
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
    
```

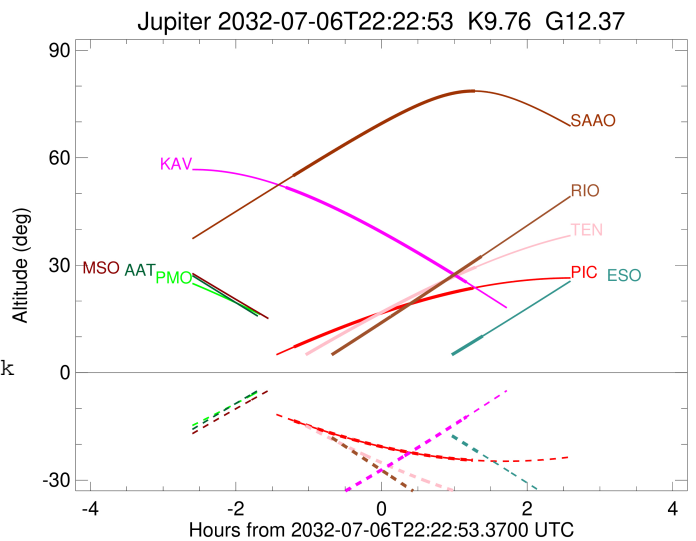
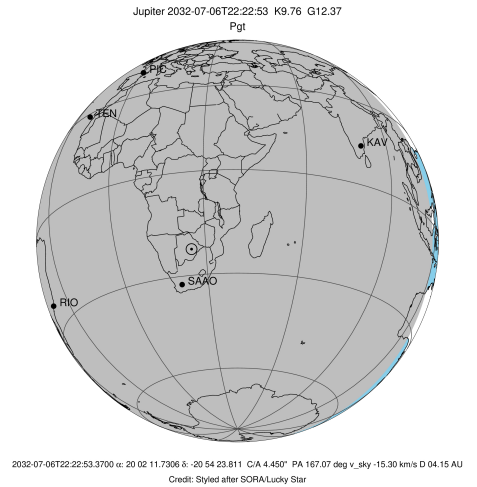


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-06T21:03:59.894	51.72	-41.92	71491.9	13.57	15.43
Jupiter	E	2032-07-06T23:32:59.154	25.21	-12.31	71491.9	11.39	12.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-07-06T22:29:25.890
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       : 6866059445235920384
2Mass ID (if available) : 20021173-2054237
ICRS Star Coord at Epoch: 20h 02m 11.73059s -20:54:23.81102s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.757
G magnitude           : 12.366
RP magnitude          : 11.585
BP magnitude          : 13.027
DUPflag              : 0
Distance (au)        : 4.147
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.30
Sun-Target sep (deg) : 166.58
Sun-Moon sep (deg)   : 157.68
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.38
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation ("): 4.250
C/A sky separation (km): 12783.2
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
    
```

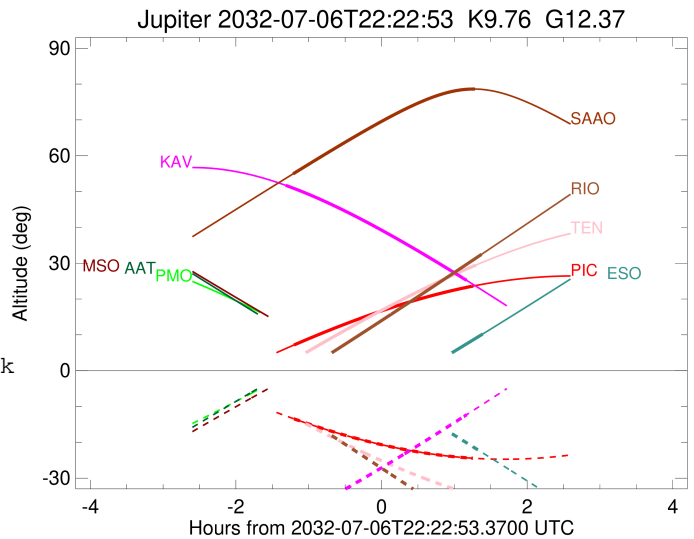
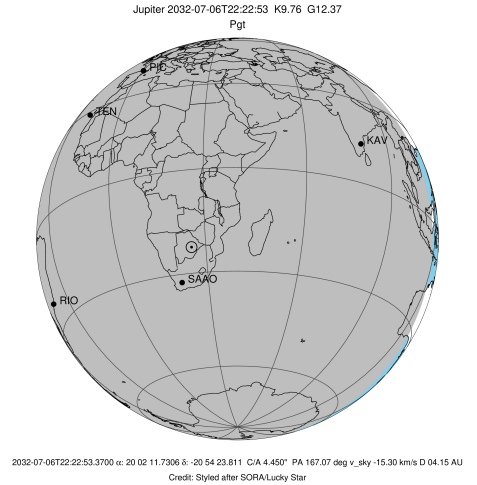


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-06T21:12:53.659	-1.23x	-11.79	71492.0	10.19	11.61
Jupiter	E	2032-07-06T23:45:16.621	32.46	-45.77	71492.0	10.25	11.69

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-07-06T22:29:13.450
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      : 6866059445235920384
2Mass ID (if available) : 20021173-2054237
ICRS Star Coord at Epoch: 20h 02m 11.73059s -20:54:23.81102s
RUWE (>1.4 is poor) : 1.06
K magnitude          : 9.757
G magnitude          : 12.366
RP magnitude         : 11.585
BP magnitude         : 13.027
DUPflag             : 0
Distance (au)       : 4.147
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.30
Sun-Target sep (deg) : 166.58
Sun-Moon sep (deg)  : 157.64
B (ring opening deg) : -0.98
PA of pole (deg)    : -13.38
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation ("): 3.707
C/A sky separation (km): 11151.8
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
    
```

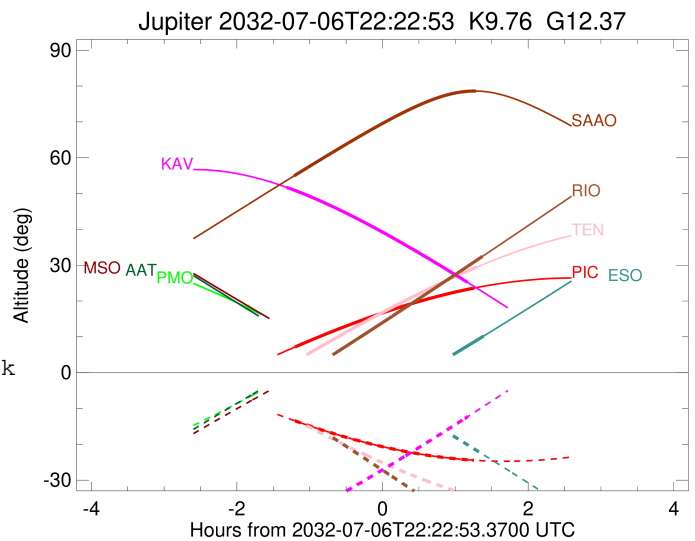
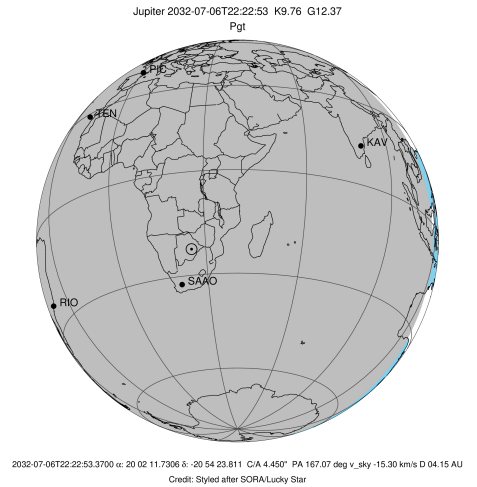


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2032-07-06T21:11:26.745	-19.61x	8.23x	71492.0	8.79	10.03
Jupiter	E	2032-07-06T23:46:19.121	10.24	-22.95	71492.0	9.09	10.37

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-07-06T22:25:04.550
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       : 6866059445235920384
2Mass ID (if available) : 20021173-2054237
ICRS Star Coord at Epoch: 20h 02m 11.73059s -20:54:23.81102s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 9.757
G magnitude           : 12.366
RP magnitude          : 11.585
BP magnitude          : 13.027
DUPflag              : 0
Distance (au)        : 4.148
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.30
Sun-Target sep (deg) : 166.58
Sun-Moon sep (deg)   : 158.45
B (ring opening deg) : -0.98
PA of pole (deg)     : -13.38
Pole direction: RA (deg): 268.05663
Dec (deg): 64.49655
C/A sky separation (") : 4.146
C/A sky separation (km) : 12472.7
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	2032-07-06T21:10:03.430	54.94	-67.54	71492.0	10.55	12.02
Jupiter	E	2032-07-06T23:39:55.269	78.61	-73.89	71492.0	9.35	10.66