

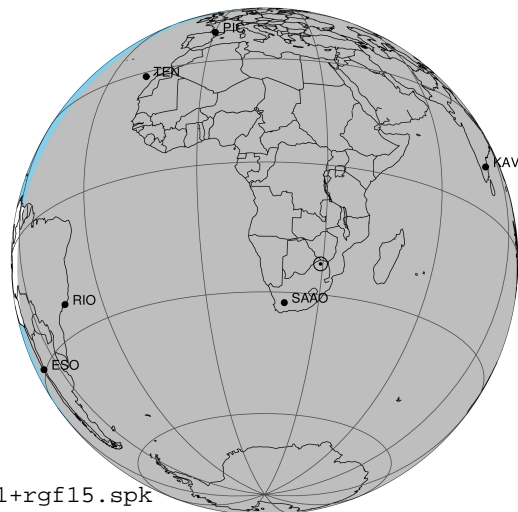
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-01T22:06:16.270  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068844831413974912  
 2Mass ID (if available) : 17451666-2304323

Jupiter 2043-07-01T22:06:16 K9.96 G14.89 Pgt

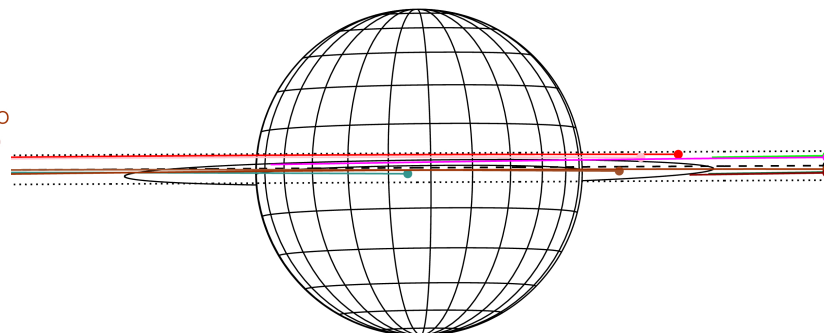
ICRS Star Coord at Epoch: 17h 45m 16.65314s -23°04'32.64598s

RUWE (>1.4 is poor) : 0.96  
 K magnitude : 9.955  
 G magnitude : 14.893  
 RP magnitude : 13.633  
 BP magnitude : 16.689  
 DUPflag : 0  
 Distance (au) : 4.266  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -15.72  
 Sun-Target sep (deg) : 167.23  
 Sun-Moon sep (deg) : 126.33  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : 0.75  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 0.673  
 C/A sky separation (km) : 2081.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-07-01T22:06:16 K9.96 G14.89  
 Pgt



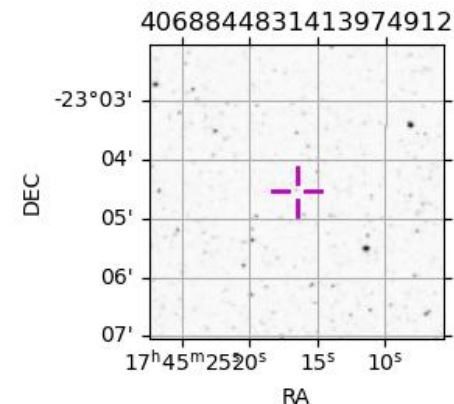
Earth  
 PIC  
 PMO  
 TEN  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



2043-07-01T22:06:16.2700 at: 17 45 16.6531 s: -23 04 32.646 C/A 0.661" PA 180.31 deg v\_sky -15.72 km/s D 04.27 AU  
 Credit: Styled after SORA/Lucky Star

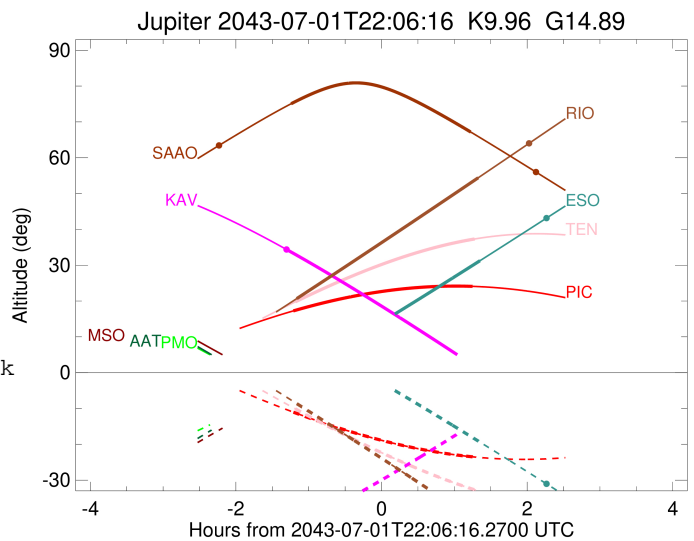
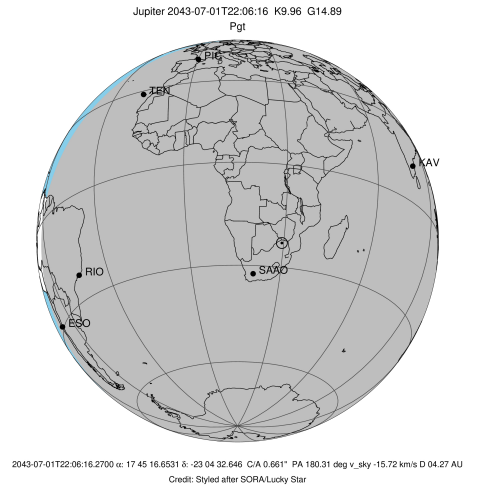
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 01 20:53 - JUL 01 23:21	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 01 20:55 - JUL 01 23:23	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUL 01 20:46 - JUL 01 20:46	Pin
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 01 20:56 - JUL 01 23:25	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUL 01 23:27 - JUL 01 23:27	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 01 20:51 - JUL 01 23:19	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-01T22:07:32.820
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        : 4068844831413974912
2Mass ID (if available) : 17451666-2304323
ICRS Star Coord at Epoch: 17h 45m 16.65314s -23:04:32.64598s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.955
G magnitude           : 14.893
RP magnitude          : 13.633
BP magnitude          : 16.689
DUPflag               : 0
Distance (au)         : 4.266
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.72
Sun-Target sep (deg)  : 167.23
Sun-Moon sep (deg)   : 126.53
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.75
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 2.531
C/A sky separation (km) : 7830.7
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
    
```

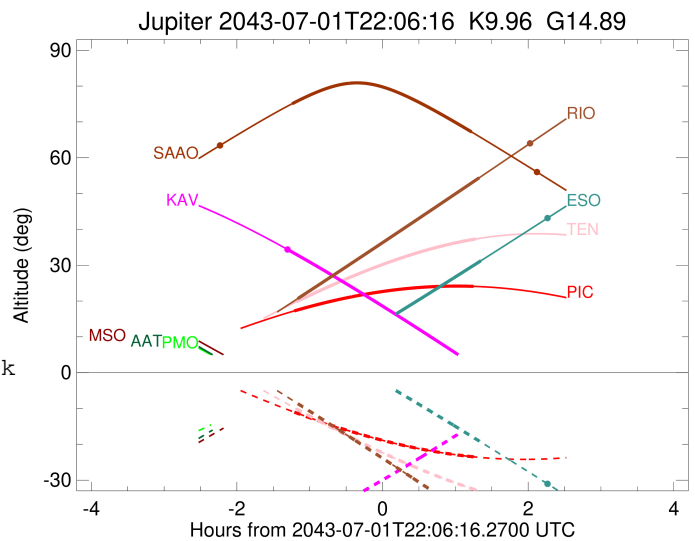
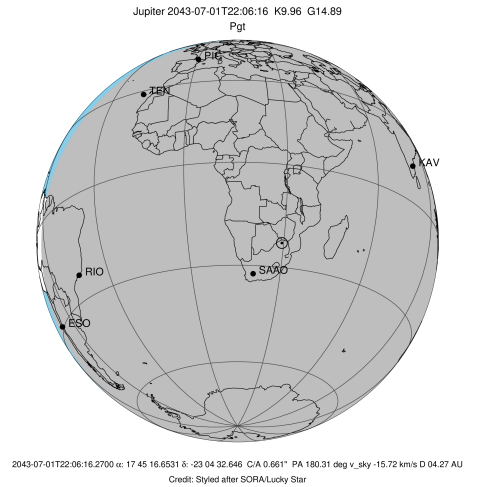


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T20:53:40.841	17.25	-11.03	71491.9	5.64	6.44
Jupiter	E	2043-07-01T23:21:18.475	24.09	-23.49	71491.9	6.77	7.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-01T22:09:19.830
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        : 4068844831413974912
2Mass ID (if available) : 17451666-2304323
ICRS Star Coord at Epoch: 17h 45m 16.65314s -23:04:32.64598s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.955
G magnitude           : 14.893
RP magnitude          : 13.633
BP magnitude          : 16.689
DUPflag              : 0
Distance (au)         : 4.266
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.72
Sun-Target sep (deg)  : 167.23
Sun-Moon sep (deg)   : 126.46
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.75
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 2.175
C/A sky separation (km) : 6730.0
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
    
```

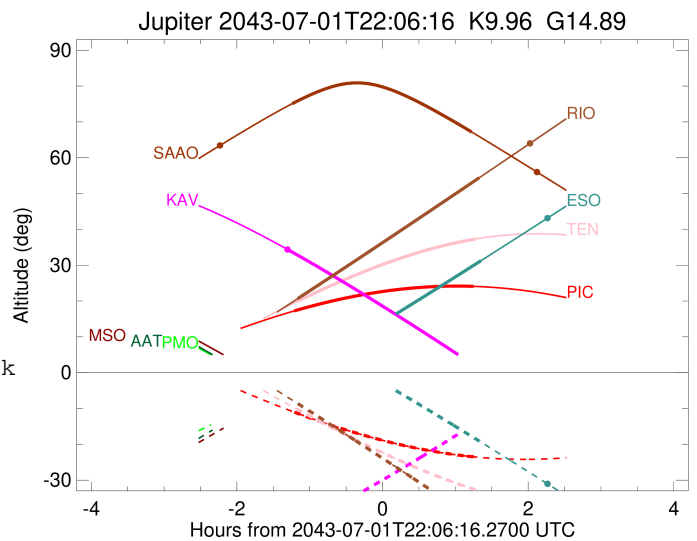
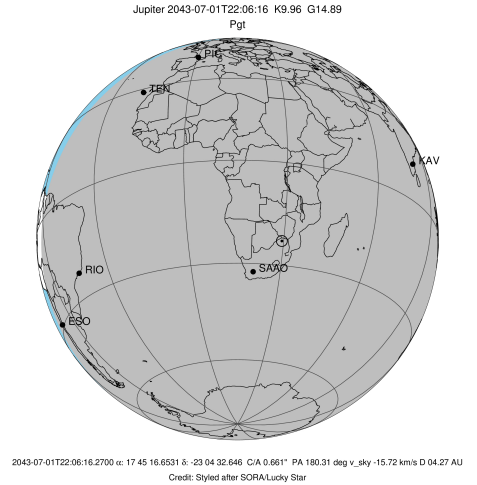


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T20:55:21.113	19.79	-10.11	71491.9	4.58	5.23
Jupiter	E	2043-07-01T23:23:01.339	37.31	-32.69	71491.9	6.05	6.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-01T22:00:30.040
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        : 4068844831413974912
2Mass ID (if available) : 17451666-2304323
ICRS Star Coord at Epoch: 17h 45m 16.65314s -23:04:32.64598s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.955
G magnitude           : 14.893
RP magnitude          : 13.633
BP magnitude          : 16.689
DUPflag              : 0
Distance (au)         : 4.266
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.72
Sun-Target sep (deg)  : 167.23
Sun-Moon sep (deg)   : 127.11
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.75
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.457
C/A sky separation (km) : 4507.2
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
    
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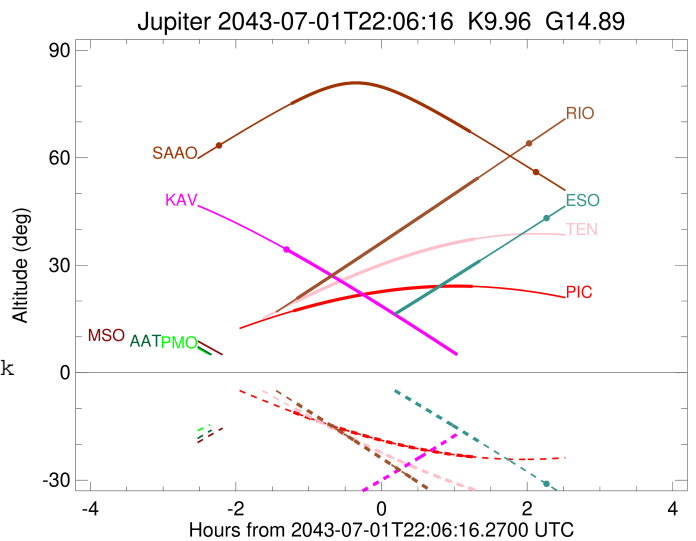
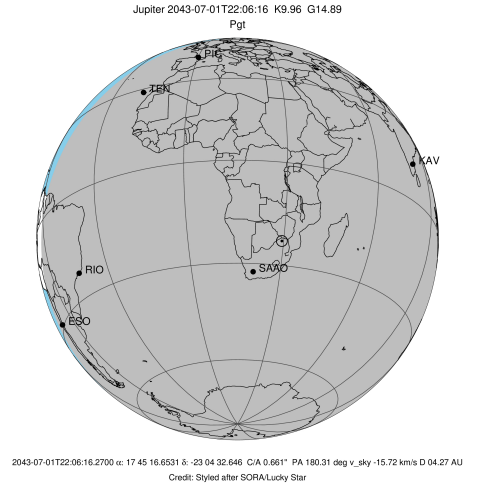


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T20:46:11.139	34.73	-44.26	71492.0	3.67	4.19
Jupiter	E	2043-07-01T23:15:26.696	3.50x	-15.70	71492.0	3.45	3.94

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T22:11:30.750
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      : 4068844831413974912
2Mass ID (if available) : 17451666-2304323
ICRS Star Coord at Epoch: 17h 45m 16.65314s -23:04:32.64598s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.955
G magnitude          : 14.893
RP magnitude         : 13.633
BP magnitude         : 16.689
DUPflag             : 0
Distance (au)       : 4.266
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.72
Sun-Target sep (deg) : 167.23
Sun-Moon sep (deg)  : 126.33
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.75
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 0.340
C/A sky separation (km) : 1050.6
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
    
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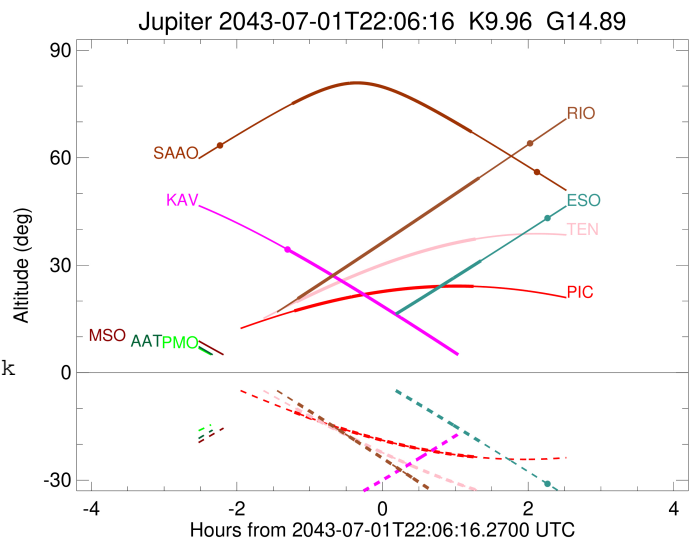
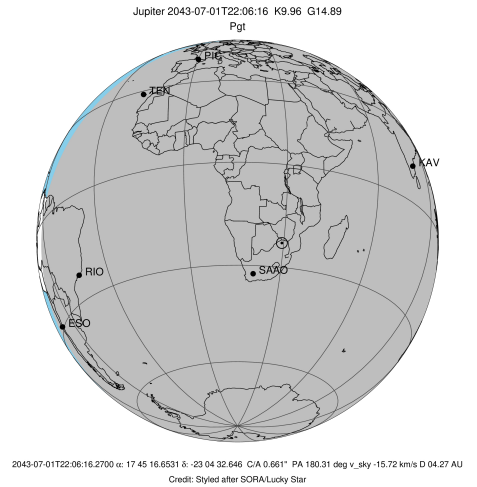


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T20:56:33.350	20.70	-8.66	71492.0	-0.16	-0.18
Jupiter	E	2043-07-01T23:25:56.853	54.39	-41.72	71492.0	1.73	1.98

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-01T22:12:09.350
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      : 4068844831413974912
2Mass ID (if available) : 17451666-2304323
ICRS Star Coord at Epoch: 17h 45m 16.65314s -23:04:32.64598s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.955
G magnitude          : 14.893
RP magnitude         : 13.633
BP magnitude         : 16.689
DUPflag             : 0
Distance (au)       : 4.266
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.72
Sun-Target sep (deg) : 167.23
Sun-Moon sep (deg)  : 126.00
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.75
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 0.186
C/A sky separation (km) : 575.9
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
    
```

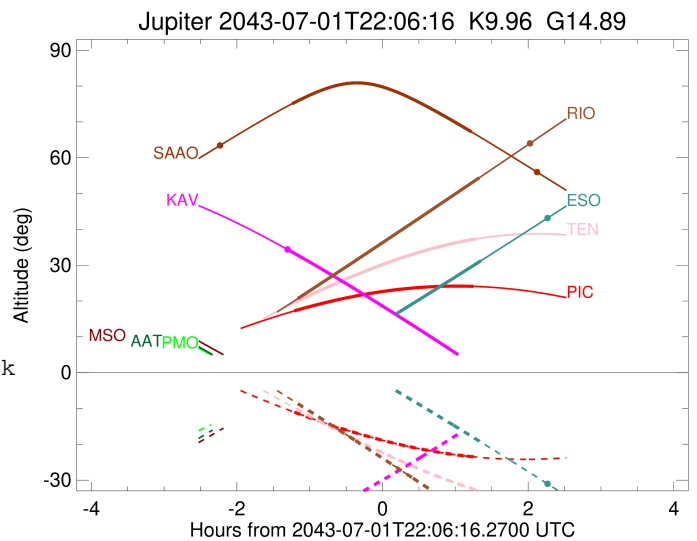
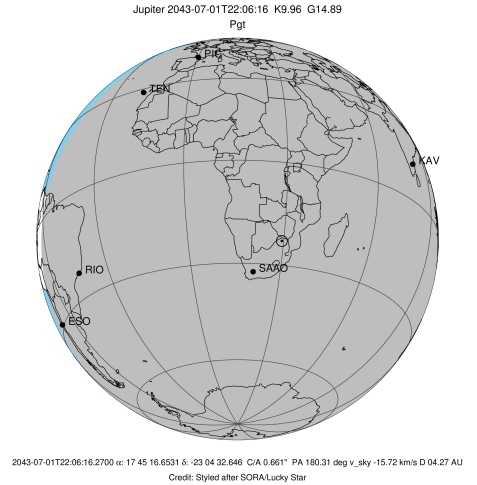


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-01T20:56:14.877	-0.08x	10.52x	71492.0	-1.48	-1.70
Jupiter	E	2043-07-01T23:27:27.222	31.26	-19.40	71492.0	0.54	0.61

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-01T22:05:45.510
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        : 4068844831413974912
2Mass ID (if available) : 17451666-2304323
ICRS Star Coord at Epoch: 17h 45m 16.65314s -23:04:32.64598s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.955
G magnitude           : 14.893
RP magnitude          : 13.633
BP magnitude          : 16.689
DUPflag              : 0
Distance (au)         : 4.266
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.72
Sun-Target sep (deg)  : 167.23
Sun-Moon sep (deg)    : 127.15
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.75
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 0.344
C/A sky separation (km) : 1064.0
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	2043-07-01T20:51:50.139	75.07	-64.31	71492.0	0.37	0.42
Jupiter	E	2043-07-01T23:19:45.447	67.18	-77.42	71492.0	1.16	1.33