

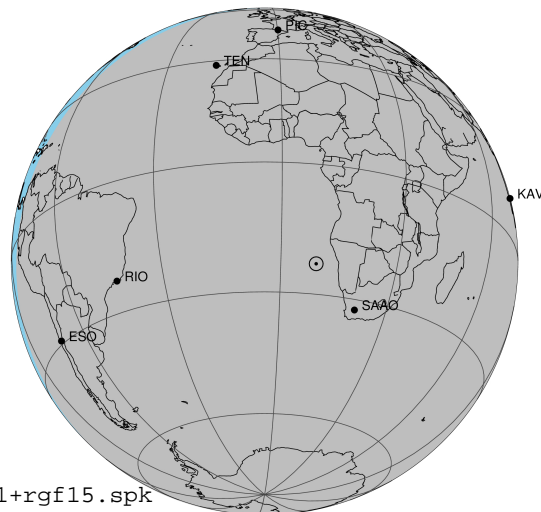
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-06-30T23:28:36.090  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068834244213818368  
 2Mass ID (if available) : 17454677-2304263

Jupiter 2043-06-30T23:28:36 K8.89 G13.35 Pgt

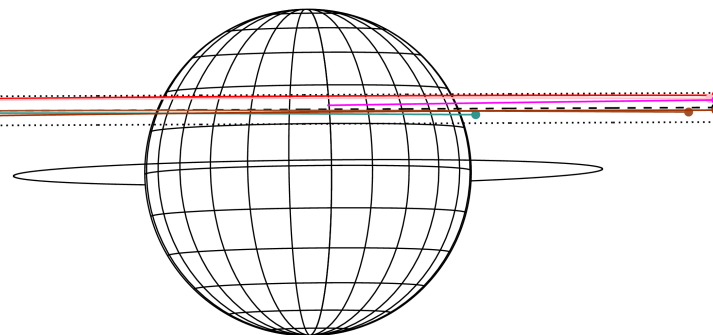
ICRS Star Coord at Epoch: 17h 45m 46.76735s -23:04:26.46652s

RUWE (>1.4 is poor) : 0.90  
 K magnitude : 8.895  
 G magnitude : 13.349  
 RP magnitude : 12.182  
 BP magnitude : 14.762  
 DUPflag : 0  
 Distance (au) : 4.263  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -15.83  
 Sun-Target sep (deg) : 168.25  
 Sun-Moon sep (deg) : 112.86  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : 0.69  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 8.939  
 C/A sky separation (km) : 27641.1  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-06-30T23:28:36 K8.89 G13.35  
 Pgt



Earth  
 PIC  
 MCD  
 TEN  
 KAV  
 RIO  
 ESO  
 SAAO

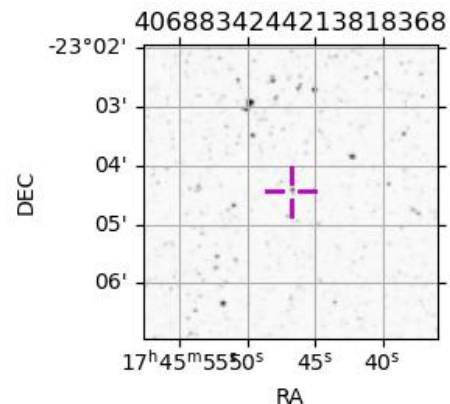


2043-06-30T23:28:36.0900 at: 17 45 46.7673 s: -23 04 26.467 Pgt C/A 8.928" PA 180.27 deg v\_sky -15.83 km/s D 04.26 AU

Credit: Styled after SORA/Lucky Star

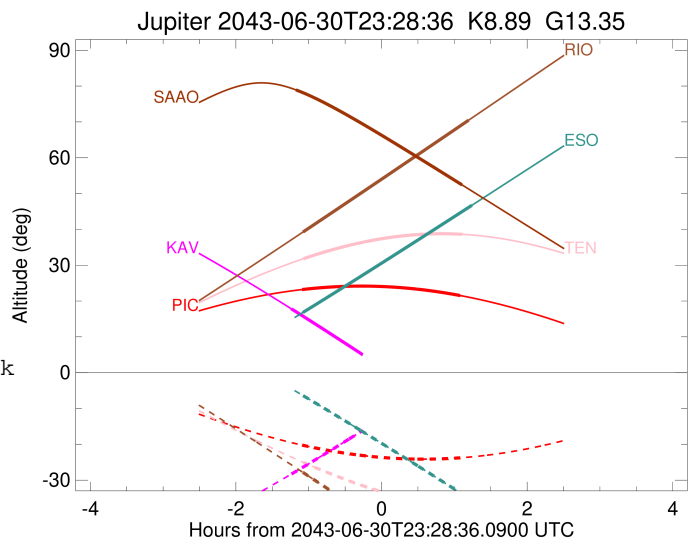
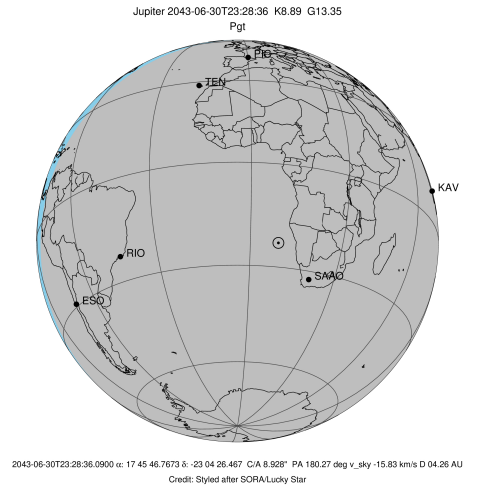
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUN 30 22:23 - JUL 01 00:33	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	+ +	JUN 30 22:24 - JUL 01 00:35	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUN 30 22:14 - JUN 30 22:14	Pin
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUN 30 22:23 - JUL 01 00:40	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 30 22:23 - JUL 01 00:42	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 30 22:18 - JUL 01 00:34	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-30T23:28:16.480
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     : 4068834244213818368
2Mass ID (if available) : 17454677-2304263
ICRS Star Coord at Epoch: 17h 45m 46.76735s -23:04:26.46652s
RUWE (>1.4 is poor) : 0.90
K magnitude        : 8.895
G magnitude        : 13.349
RP magnitude       : 12.182
BP magnitude       : 14.762
DUPflag           : 0
Distance (au)     : 4.263
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 168.25
Sun-Moon sep (deg) : 113.25
B (ring opening deg) : -2.42
PA of pole (deg)   : 0.69
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 10.818
C/A sky separation (km) : 33449.4
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
    
```

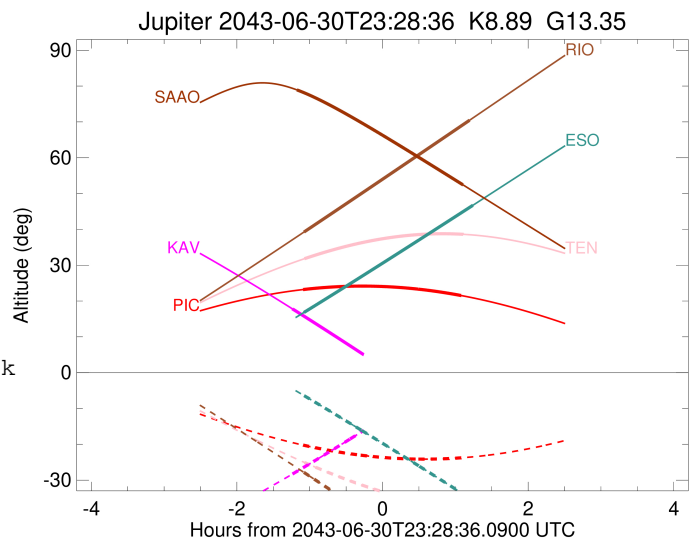
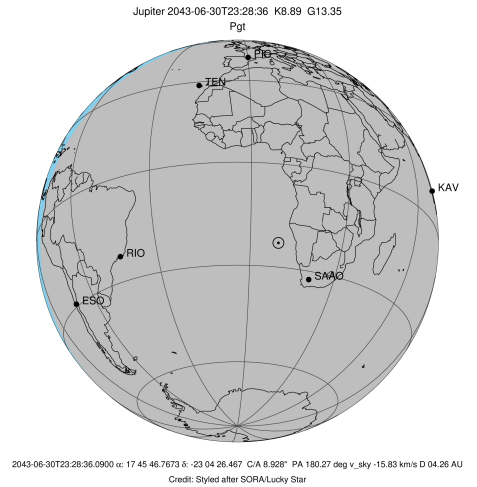


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-30T22:23:07.368	23.19	-20.21	71490.3	27.41	30.62
Jupiter	E	2043-07-01T00:33:28.293	21.53	-23.77	71490.2	28.19	31.45

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-30T23:29:46.920
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       : 4068834244213818368
2Mass ID (if available) : 17454677-2304263
ICRS Star Coord at Epoch: 17h 45m 46.76735s -23:04:26.46652s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 8.895
G magnitude           : 13.349
RP magnitude         : 12.182
BP magnitude         : 14.762
DUPflag              : 0
Distance (au)        : 4.263
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 168.25
Sun-Moon sep (deg)   : 113.34
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.69
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 10.531
C/A sky separation (km) : 32561.6
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
    
```

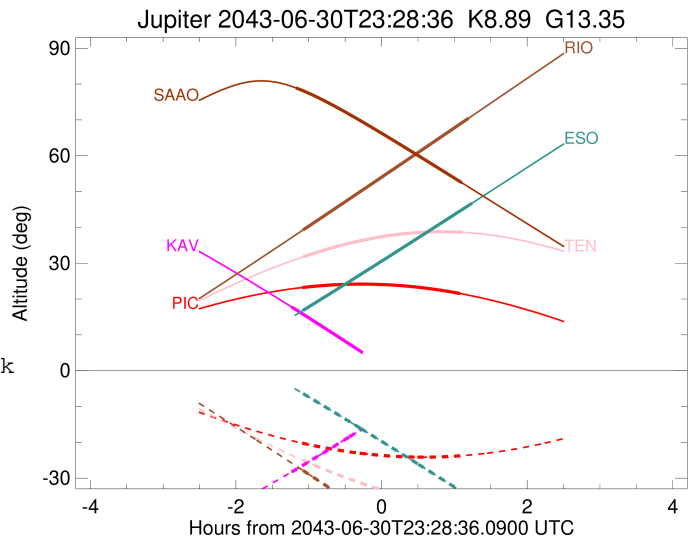
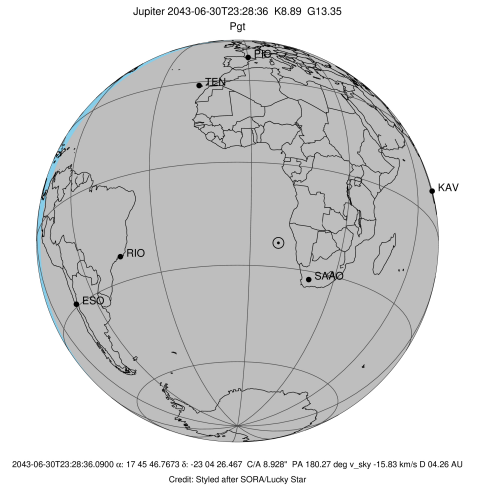


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-30T22:24:19.569	31.81	-25.07	71490.4	26.45	29.59
Jupiter	E	2043-07-01T00:35:09.514	38.62	-38.07	71490.3	27.53	30.75

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-30T23:22:27.810
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        : 4068834244213818368
2Mass ID (if available) : 17454677-2304263
ICRS Star Coord at Epoch: 17h 45m 46.76735s -23:04:26.46652s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 8.895
G magnitude           : 13.349
RP magnitude          : 12.182
BP magnitude          : 14.762
DUPflag              : 0
Distance (au)         : 4.263
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 168.25
Sun-Moon sep (deg)   : 113.26
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.69
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.470
C/A sky separation (km) : 29282.9
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
    
```

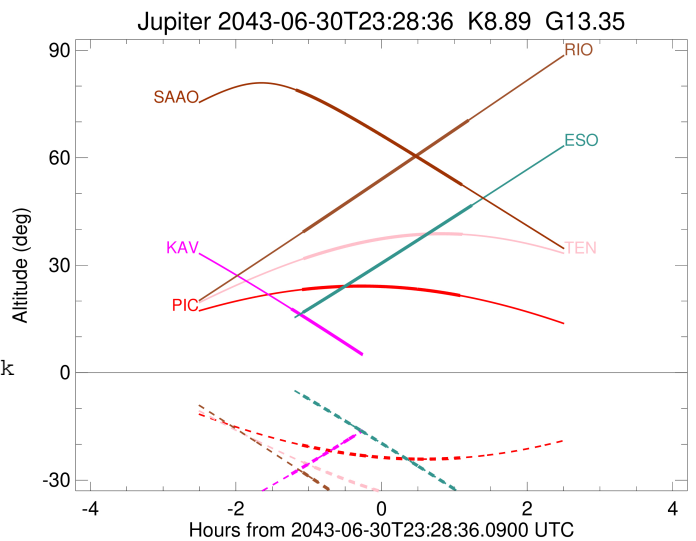
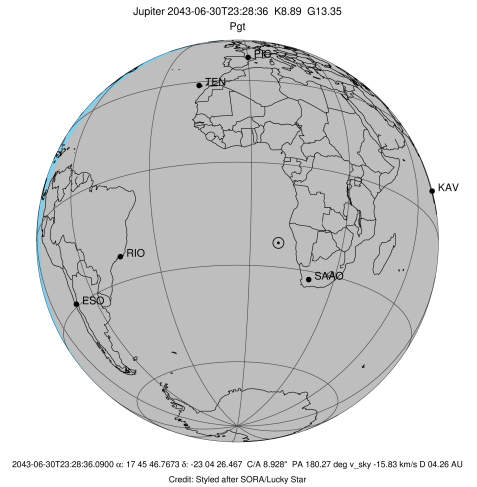


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-30T22:14:22.989	17.81	-28.30	71490.6	24.34	27.31
Jupiter	E	2043-07-01T00:31:07.621	-12.57x	0.99x	71490.7	23.94	26.88

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-30T23:32:15.230
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        : 4068834244213818368
2Mass ID (if available) : 17454677-2304263
ICRS Star Coord at Epoch: 17h 45m 46.76735s -23:04:26.46652s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 8.895
G magnitude           : 13.349
RP magnitude          : 12.182
BP magnitude          : 14.762
DUPflag              : 0
Distance (au)         : 4.263
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 168.25
Sun-Moon sep (deg)   : 113.36
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.69
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.791
C/A sky separation (km): 27181.7
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
    
```

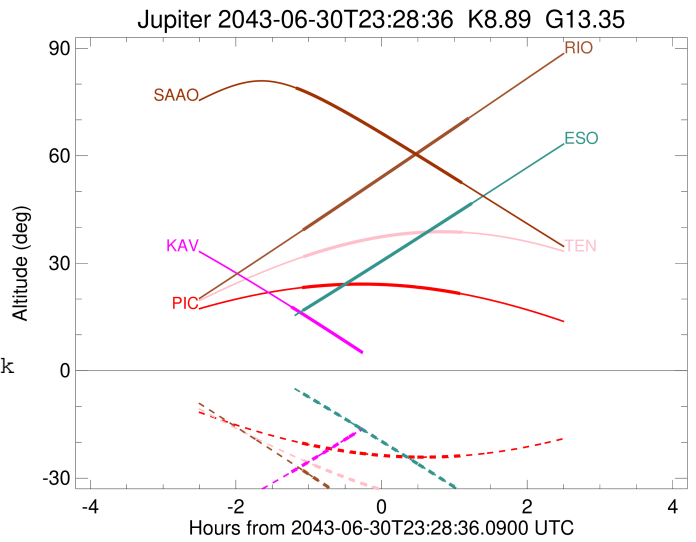
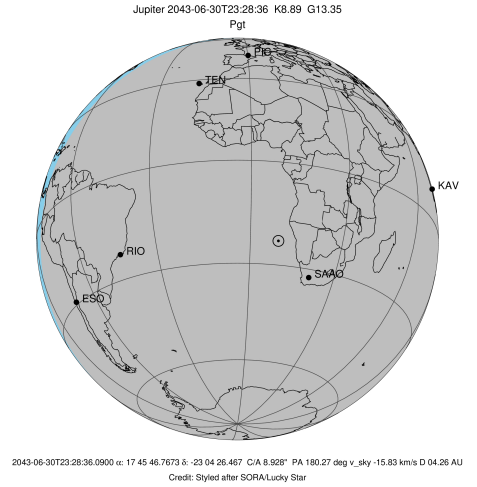


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-30T22:23:52.974	39.25	-27.85	71490.9	21.47	24.19
Jupiter	E	2043-07-01T00:40:19.084	70.45	-58.68	71490.8	23.04	25.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-30T23:33:41.480
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       : 4068834244213818368
2Mass ID (if available) : 17454677-2304263
ICRS Star Coord at Epoch: 17h 45m 46.76735s -23:04:26.46652s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 8.895
G magnitude           : 13.349
RP magnitude          : 12.182
BP magnitude          : 14.762
DUPflag              : 0
Distance (au)         : 4.263
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 168.25
Sun-Moon sep (deg)   : 113.01
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.69
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.310
C/A sky separation (km): 25696.9
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
    
```

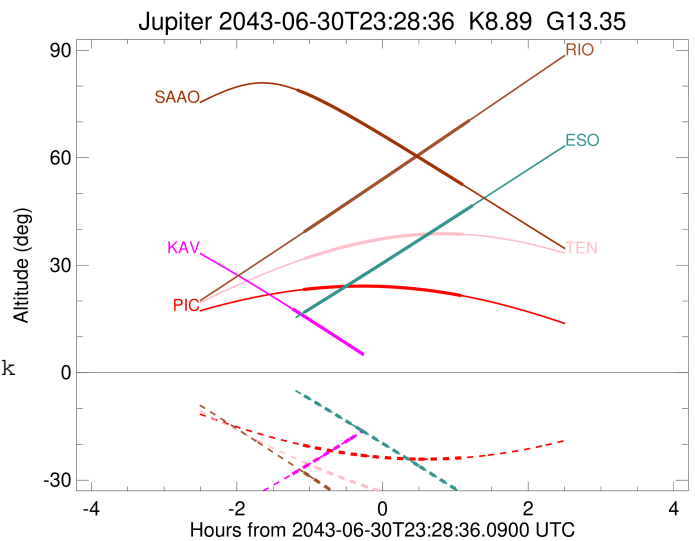
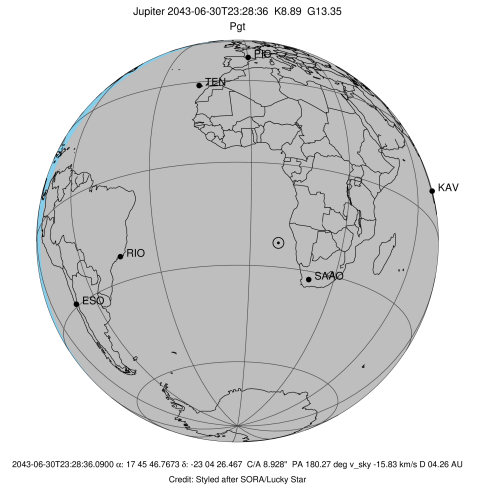


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-30T22:23:56.534	16.82	-6.40	71491.1	20.07	22.66
Jupiter	E	2043-07-01T00:42:59.055	46.69	-35.56	71490.9	21.94	24.70

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-30T23:26:22.720
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        : 4068834244213818368
2Mass ID (if available) : 17454677-2304263
ICRS Star Coord at Epoch: 17h 45m 46.76735s -23:04:26.46652s
RUWE (>1.4 is poor) : 0.90
K magnitude           : 8.895
G magnitude           : 13.349
RP magnitude          : 12.182
BP magnitude          : 14.762
DUPflag              : 0
Distance (au)         : 4.263
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.83
Sun-Target sep (deg) : 168.25
Sun-Moon sep (deg)   : 113.83
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.69
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.553
C/A sky separation (km): 26445.2
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	2043-06-30T22:18:03.379	78.93	-79.66	71490.9	21.41	24.12
Jupiter	E	2043-07-01T00:34:55.235	52.42	-63.19	71490.9	21.82	24.57