

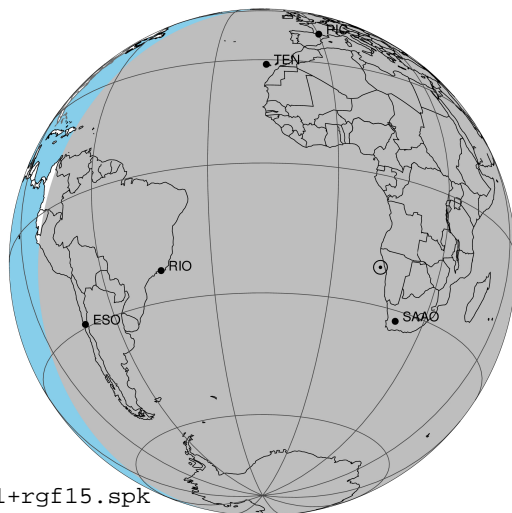
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-15T23:16:00.570
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116722068777463296
 2Mass ID (if available) : 17382551-2303490

Jupiter 2043-07-15T23:16:00 K8.63 G13.82 Pgt

ICRS Star Coord at Epoch: 17h 38m 25.50472s -23°03'49.30902s

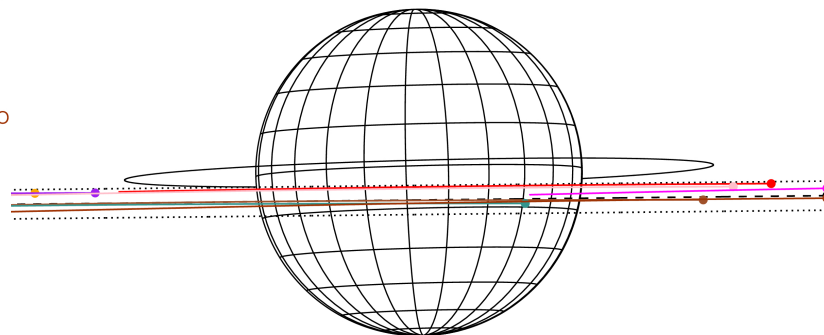
RUWE (>1.4 is poor) : 0.85
 K magnitude : 8.627
 G magnitude : 13.822
 RP magnitude : 12.504
 BP magnitude : 15.831
 DUPflag : 0
 Distance (au) : 4.337
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -13.08
 Sun-Target sep (deg) : 152.26
 Sun-Moon sep (deg) : 41.68
 B (ring opening deg) : -2.40
 PA of pole (deg) : 1.49
 Pole direction: RA (deg): 268.05670
 Dec (deg): 64.49732
 C/A sky separation (") : 3.829
 C/A sky separation (km) : 12043.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-15T23:16:00 K8.63 G13.82
 Pgt



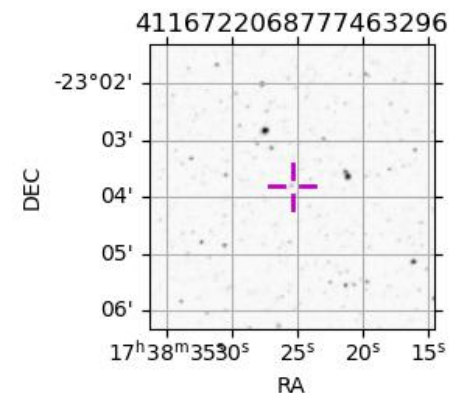
2043-07-15T23:16:00.5700 a: 17 38 25.5047 s: -23 03 49.3090 C/A 3.840" PA 0.61 deg v_sky -13.08 km/s D 04.34 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO



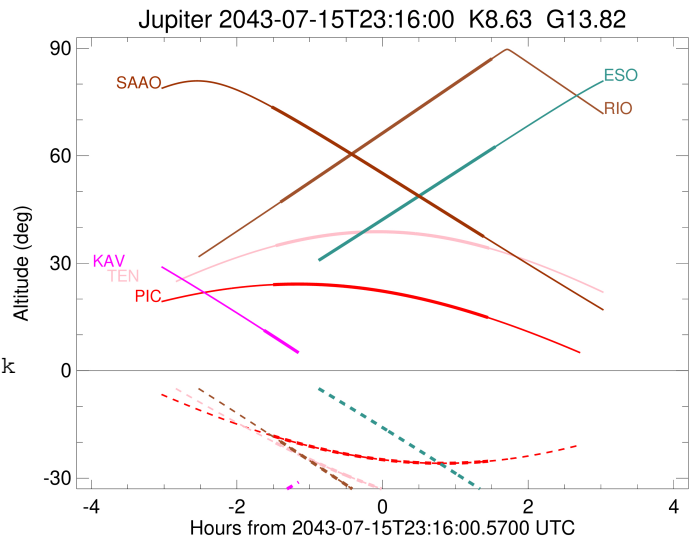
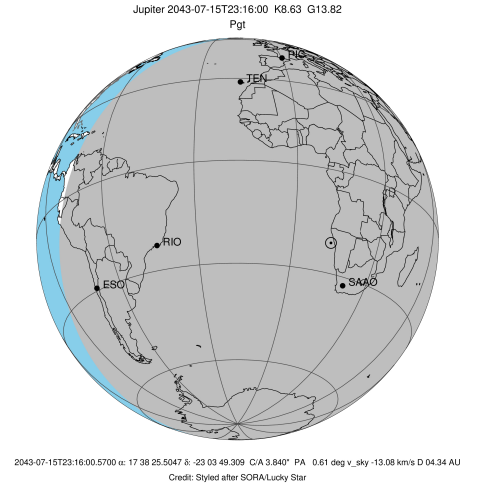
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 15 21:45 - JUL 16 00:42	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 15 21:48 - JUL 16 00:43	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUL 15 21:38 - JUL 15 21:38	Pin
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 15 21:51 - JUL 16 00:46	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUL 16 00:49 - JUL 16 00:49	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 15 21:44 - JUL 16 00:39	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-15T23:14:16.340
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        : 4116722068777463296
2Mass ID (if available) : 17382551-2303490
ICRS Star Coord at Epoch: 17h 38m 25.50472s -23:03:49.30902s
RUWE (>1.4 is poor)  : 0.85
K magnitude           : 8.627
G magnitude           : 13.822
RP magnitude          : 12.504
BP magnitude          : 15.831
DUPflag              : 0
Distance (au)         : 4.337
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg)  : 152.26
Sun-Moon sep (deg)    : 42.10
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.49
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 2.004
C/A sky separation (km) : 6304.5
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
    
```

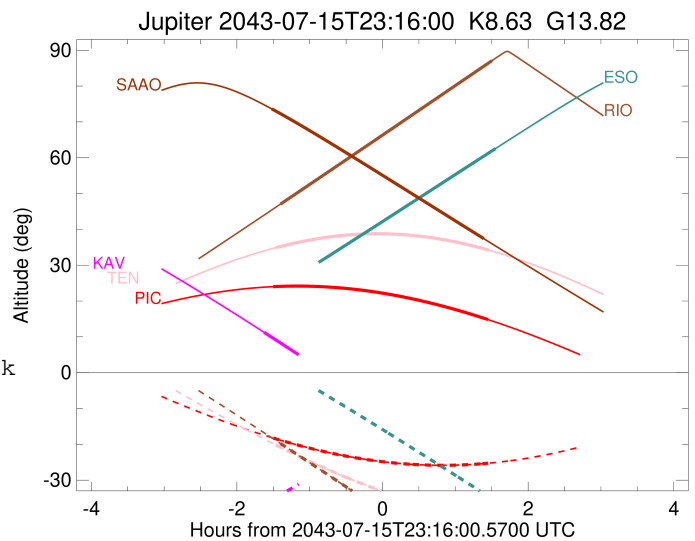
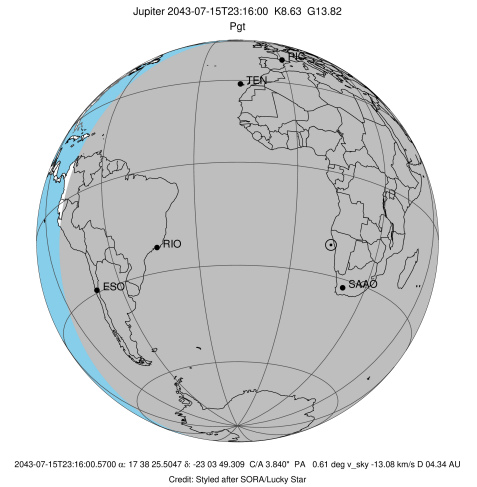


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-15T21:45:54.220	24.01	-18.24	71491.9	-5.88	-6.71
Jupiter	E	2043-07-16T00:42:59.238	14.82	-25.28	71492.0	-4.44	-5.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-15T23:15:55.800
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      : 4116722068777463296
2Mass ID (if available) : 17382551-2303490
ICRS Star Coord at Epoch: 17h 38m 25.50472s -23:03:49.30902s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 8.627
G magnitude          : 13.822
RP magnitude         : 12.504
BP magnitude         : 15.831
DUPflag             : 0
Distance (au)       : 4.337
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 152.26
Sun-Moon sep (deg)  : 42.11
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.49
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 2.249
C/A sky separation (km) : 7073.3
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
    
```

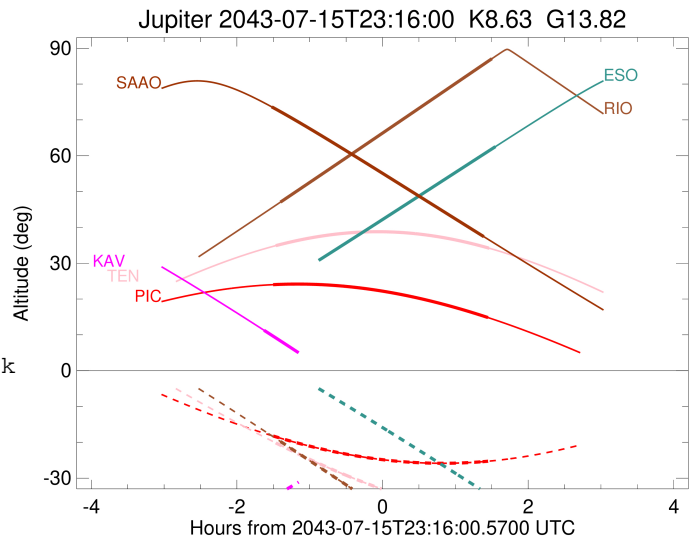
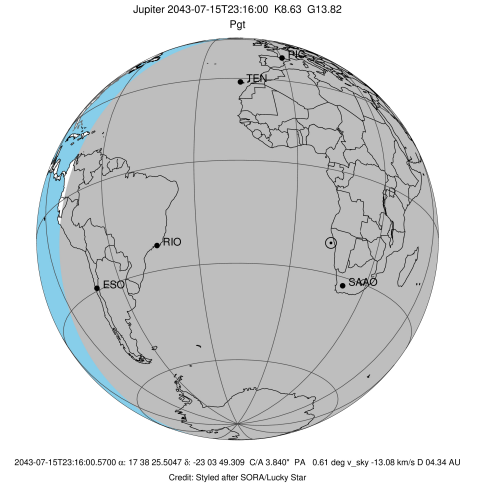


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-15T21:48:04.296	34.89	-20.16	71491.9	-6.68	-7.62
Jupiter	E	2043-07-16T00:43:53.649	34.18	-40.01	71491.9	-4.93	-5.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-15T23:07:55.150
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       : 4116722068777463296
2Mass ID (if available) : 17382551-2303490
ICRS Star Coord at Epoch: 17h 38m 25.50472s -23:03:49.30902s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 8.627
G magnitude           : 13.822
RP magnitude          : 12.504
BP magnitude          : 15.831
DUPflag              : 0
Distance (au)         : 4.337
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg)  : 152.26
Sun-Moon sep (deg)   : 42.22
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.49
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 3.472
C/A sky separation (km): 10919.3
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
    
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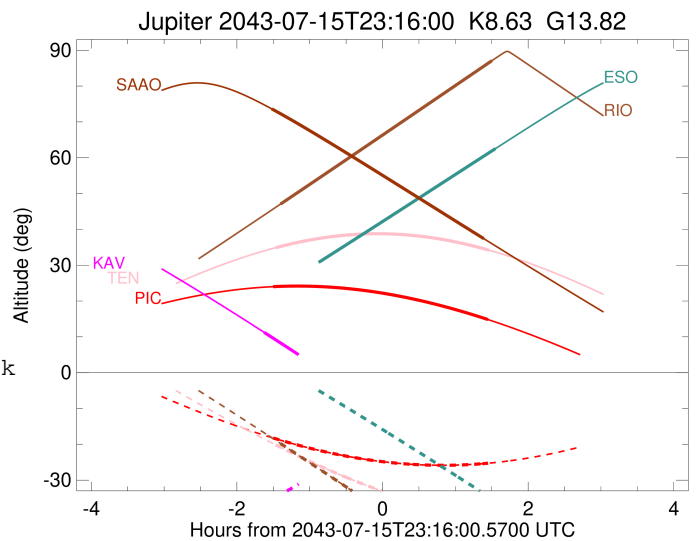
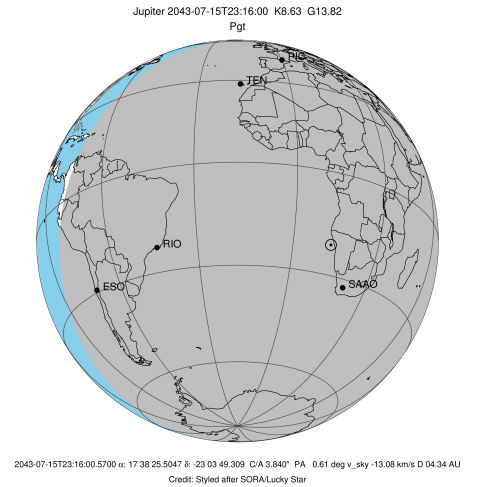


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-15T21:38:22.393	11.28	-36.68	71491.8	-8.89	-10.14
Jupiter	E	2043-07-16T00:38:47.626	-29.56x	1.82x	71491.8	-8.66	-9.88

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-15T23:19:15.100
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       : 4116722068777463296
2Mass ID (if available) : 17382551-2303490
ICRS Star Coord at Epoch: 17h 38m 25.50472s -23:03:49.30902s
RUWE (>1.4 is poor) : 0.85
K magnitude           : 8.627
G magnitude           : 13.822
RP magnitude         : 12.504
BP magnitude         : 15.831
DUPflag              : 0
Distance (au)        : 4.337
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 152.26
Sun-Moon sep (deg)   : 41.96
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.49
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 3.891
C/A sky separation (km): 12237.3
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
    
```

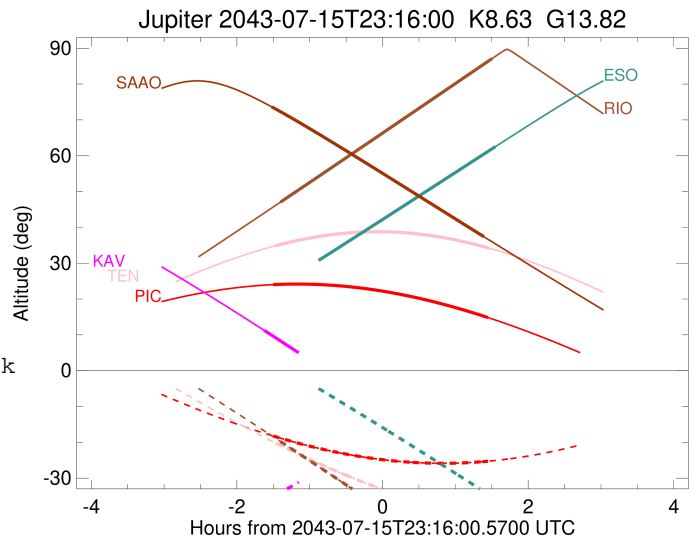
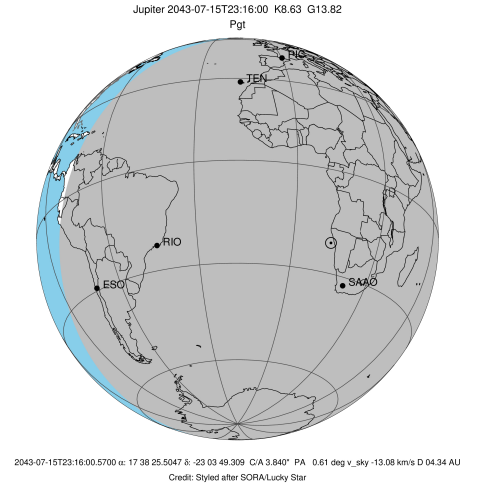


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-15T21:51:54.426	47.04	-19.76	71491.7	-11.15	-12.70
Jupiter	E	2043-07-16T00:46:14.457	87.09	-59.30	71491.8	-8.79	-10.03

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-15T23:21:44.500
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      : 4116722068777463296
2Mass ID (if available) : 17382551-2303490
ICRS Star Coord at Epoch: 17h 38m 25.50472s -23:03:49.30902s
RUWE (>1.4 is poor) : 0.85
K magnitude          : 8.627
G magnitude          : 13.822
RP magnitude         : 12.504
BP magnitude         : 15.831
DUPflag             : 0
Distance (au)       : 4.337
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.08
Sun-Target sep (deg) : 152.26
Sun-Moon sep (deg)  : 41.60
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.49
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 4.315
C/A sky separation (km) : 13573.0
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
    
```

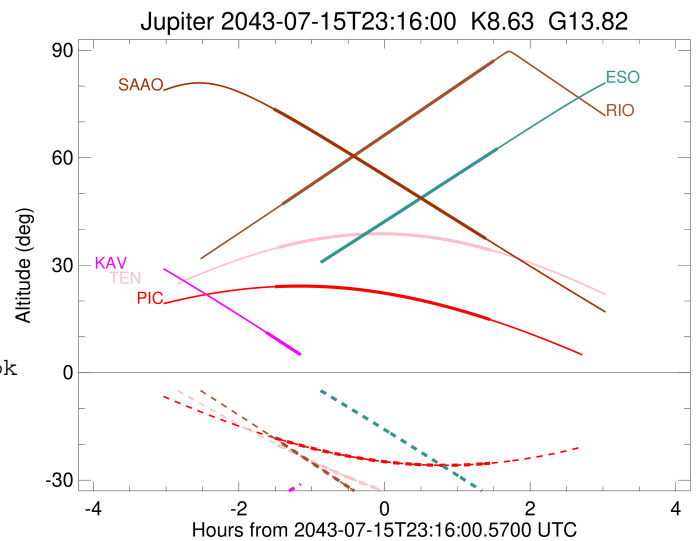
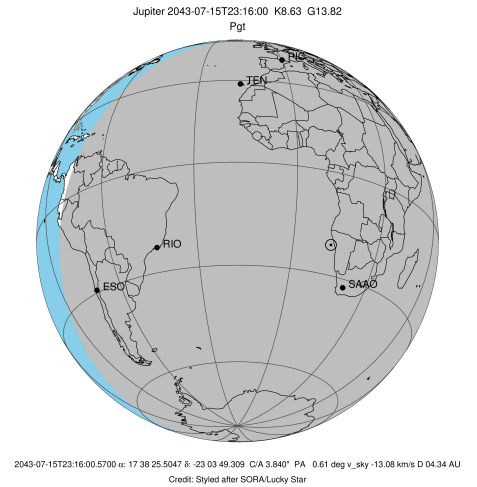


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-15T21:53:37.974	24.41	0.96x	71491.6	-12.42	-14.13
Jupiter	E	2043-07-16T00:49:08.270	62.55	-35.79	71491.8	-9.61	-10.95

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-15T23:11:43.710
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        : 4116722068777463296
2Mass ID (if available) : 17382551-2303490
ICRS Star Coord at Epoch: 17h 38m 25.50472s -23:03:49.30902s
RUWE (>1.4 is poor)  : 0.85
K magnitude           : 8.627
G magnitude           : 13.822
RP magnitude          : 12.504
BP magnitude          : 15.831
DUPflag              : 0
Distance (au)         : 4.337
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -13.08
Sun-Target sep (deg)  : 152.26
Sun-Moon sep (deg)    : 42.52
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.49
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 4.281
C/A sky separation (km) : 13464.5
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	2043-07-15T21:44:42.655	73.64	-73.18	71491.7	-11.44	-13.03
Jupiter	E	2043-07-16T00:39:25.459	37.42	-61.94	71491.7	-10.46	-11.91