

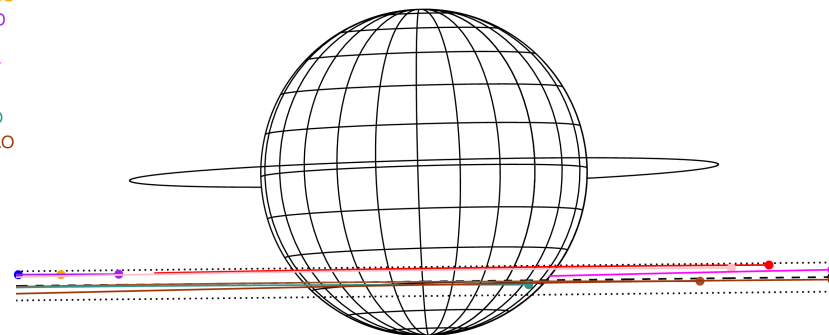
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-17T23:17:55.640
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116719801032892160
 2Mass ID (if available) : 17373448-2303526

Jupiter 2043-07-17T23:17:55 K8.42 G14.48 Pgt

ICRS Star Coord at Epoch: 17h 37m 34.47949s -23:03:53.04619s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 8.417
 G magnitude : 14.478
 RP magnitude : 12.995
 BP magnitude : 17.531
 DUPflag : 0
 Distance (au) : 4.351
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -12.57
 Sun-Target sep (deg) : 150.16
 Sun-Moon sep (deg) : 18.23
 B (ring opening deg) : -2.39
 PA of pole (deg) : 1.58
 Pole direction: RA (deg): 268.05670
 Dec (deg): 64.49732
 C/A sky separation (") : 15.127
 C/A sky separation (km) : 47735.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



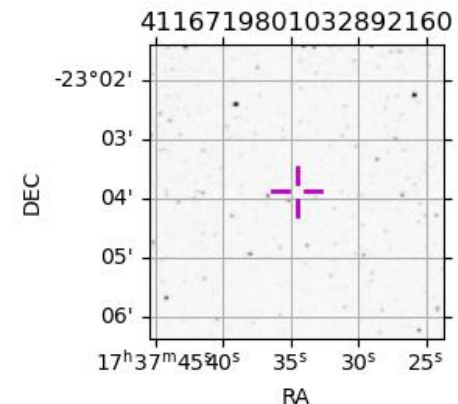
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO



2043-07-17T23:17:55.6400 α: 17 37 34.4795 δ: -23 03 53.046 C/A ***** PA 0.62 deg v_sky -12.57 km/s D 04.35 AU
 Credit: Styled after SORA/Lucky Star

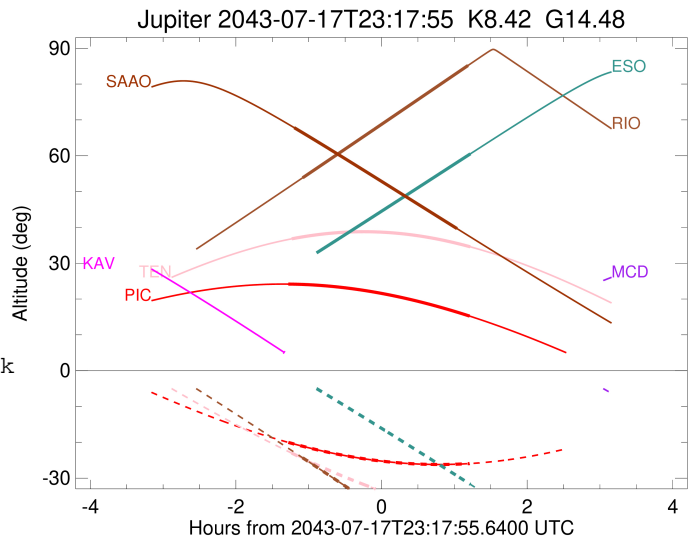
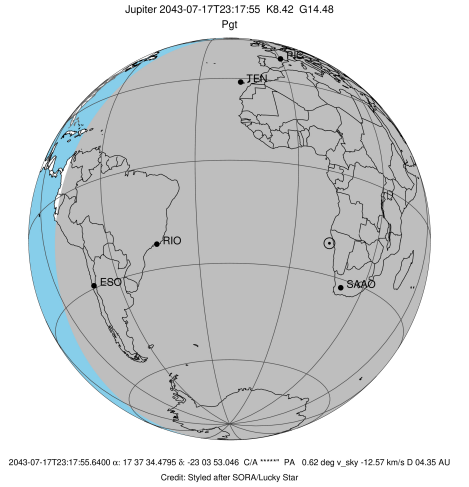
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 17 22:01 - JUL 18 00:30	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 17 22:04 - JUL 18 00:31	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUL 17 21:57 - JUL 17 21:57	Pin
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 17 22:12 - JUL 18 00:29	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUL 18 00:31 - JUL 18 00:31	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 17 22:06 - JUL 18 00:20	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-17T23:15:41.760
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       : 4116719801032892160
2Mass ID (if available) : 17373448-2303526
ICRS Star Coord at Epoch: 17h 37m 34.47949s -23:03:53.04619s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.417
G magnitude           : 14.478
RP magnitude          : 12.995
BP magnitude          : 17.531
DUPflag              : 0
Distance (au)         : 4.351
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.57
Sun-Target sep (deg) : 150.16
Sun-Moon sep (deg)   : 18.75
B (ring opening deg) : -2.39
PA of pole (deg)     : 1.58
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 13.316
C/A sky separation (km): 42020.6
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
    
```

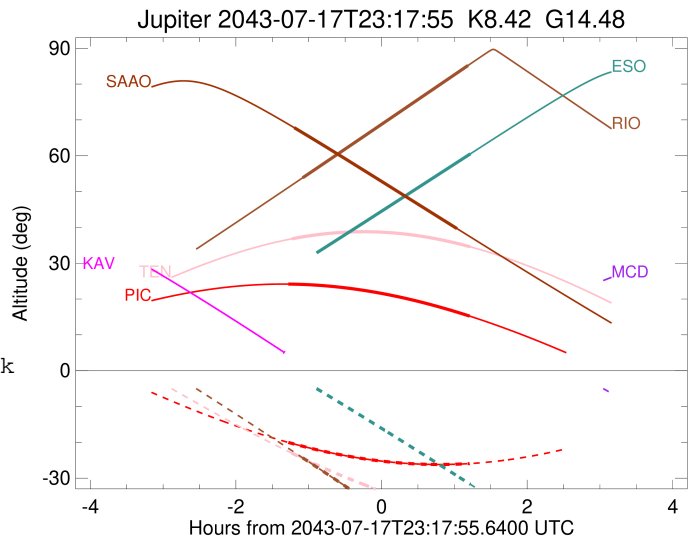
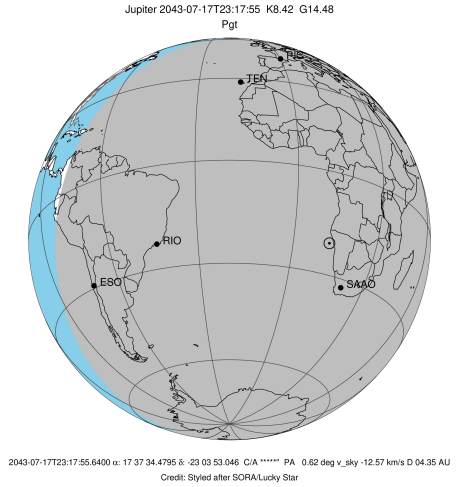


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-17T22:01:06.295	24.16	-20.02	71489.2	-36.82	-40.47
Jupiter	E	2043-07-18T00:30:34.823	15.23	-25.93	71489.4	-35.29	-38.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-17T23:17:28.780
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       : 4116719801032892160
2Mass ID (if available) : 17373448-2303526
ICRS Star Coord at Epoch: 17h 37m 34.47949s -23:03:53.04619s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.417
G magnitude          : 14.478
RP magnitude         : 12.995
BP magnitude         : 17.531
DUPflag             : 0
Distance (au)        : 4.351
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.57
Sun-Target sep (deg) : 150.16
Sun-Moon sep (deg)   : 18.63
B (ring opening deg) : -2.39
PA of pole (deg)     : 1.58
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 13.553
C/A sky separation (km) : 42767.2
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
    
```

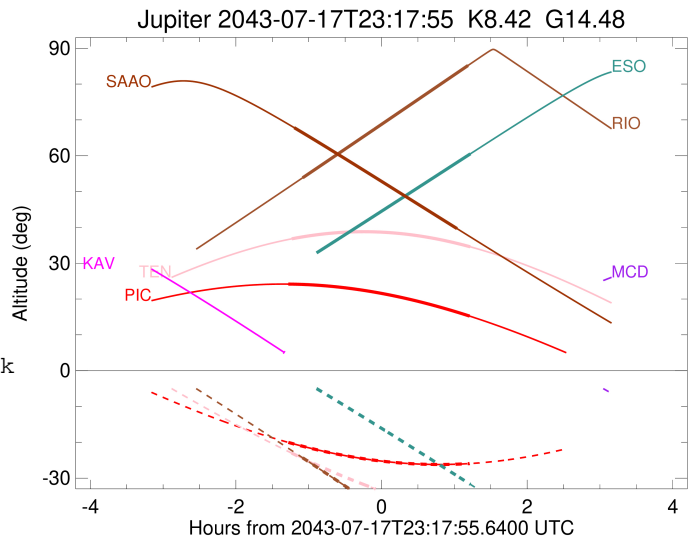
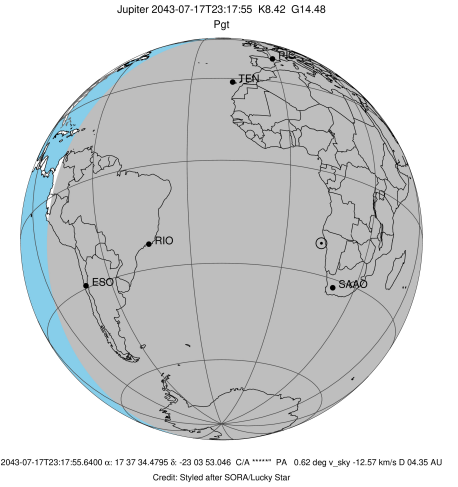


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-17T22:04:01.515	36.80	-23.03	71489.1	-37.74	-41.41
Jupiter	E	2043-07-18T00:31:02.942	34.57	-39.81	71489.3	-35.90	-39.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-17T23:08:51.390
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        : 4116719801032892160
2Mass ID (if available) : 17373448-2303526
ICRS Star Coord at Epoch: 17h 37m 34.47949s -23:03:53.04619s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 8.417
G magnitude           : 14.478
RP magnitude          : 12.995
BP magnitude          : 17.531
DUPflag              : 0
Distance (au)         : 4.351
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.57
Sun-Target sep (deg)  : 150.16
Sun-Moon sep (deg)    : 19.00
B (ring opening deg) : -2.39
PA of pole (deg)      : 1.58
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 14.804
C/A sky separation (km) : 46716.2
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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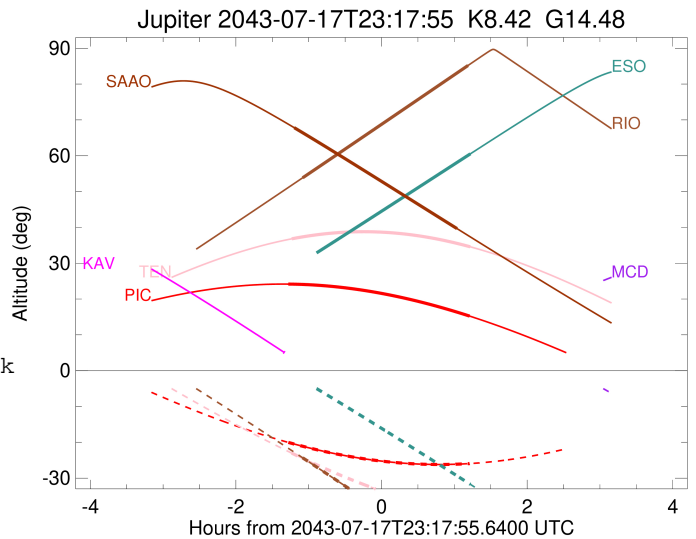
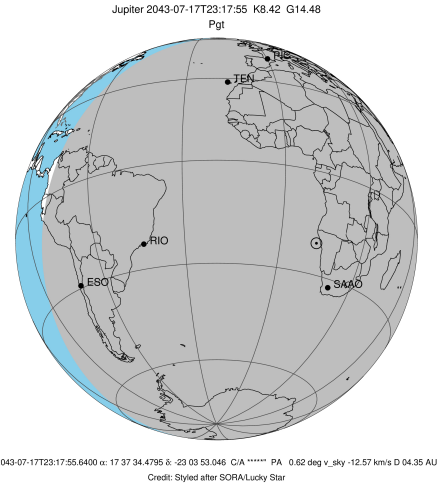


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-17T21:57:15.149	5.21	-33.24	71488.6	-40.91	-44.63
Jupiter	E	2043-07-18T00:21:22.327	-27.55x	-2.25x	71488.7	-40.60	-44.31

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-17T23:21:12.390
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      : 4116719801032892160
2Mass ID (if available) : 17373448-2303526
ICRS Star Coord at Epoch: 17h 37m 34.47949s -23:03:53.04619s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.417
G magnitude          : 14.478
RP magnitude         : 12.995
BP magnitude         : 17.531
DUPflag             : 0
Distance (au)       : 4.351
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.57
Sun-Target sep (deg) : 150.16
Sun-Moon sep (deg)  : 18.19
B (ring opening deg) : -2.39
PA of pole (deg)    : 1.58
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 15.175
C/A sky separation (km) : 47885.2
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
    
```

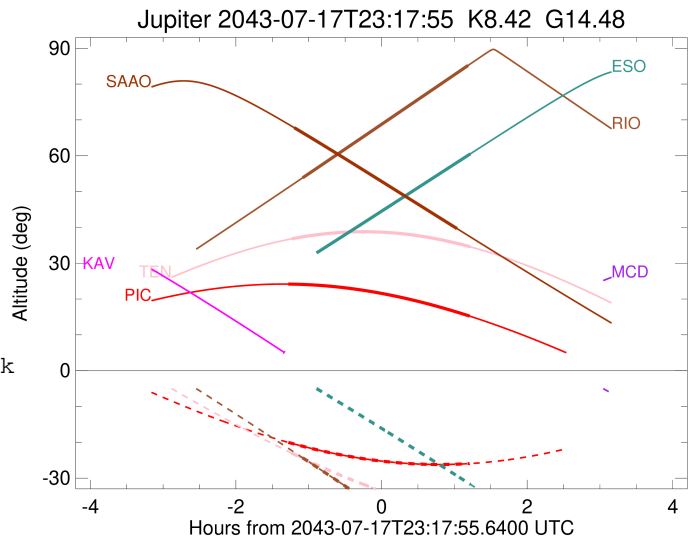
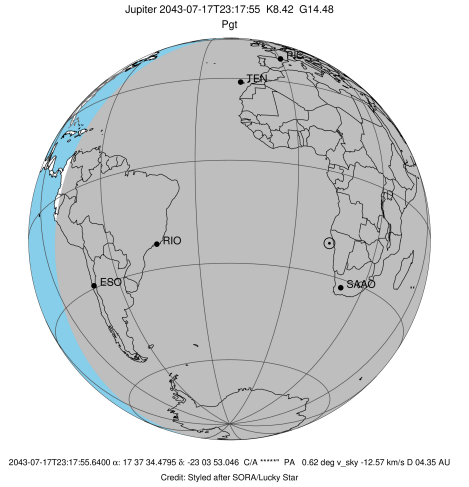


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-17T22:12:56.001	53.83	-24.31	71488.3	-43.35	-47.07
Jupiter	E	2043-07-18T00:29:16.724	85.20	-55.30	71488.6	-40.87	-44.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-17T23:24:07.020
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      : 4116719801032892160
2Mass ID (if available) : 17373448-2303526
ICRS Star Coord at Epoch: 17h 37m 34.47949s -23:03:53.04619s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.417
G magnitude          : 14.478
RP magnitude         : 12.995
BP magnitude         : 17.531
DUPflag             : 0
Distance (au)       : 4.351
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.57
Sun-Target sep (deg) : 150.16
Sun-Moon sep (deg)  : 17.82
B (ring opening deg) : -2.39
PA of pole (deg)    : 1.58
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 15.586
C/A sky separation (km): 49184.4
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
    
```

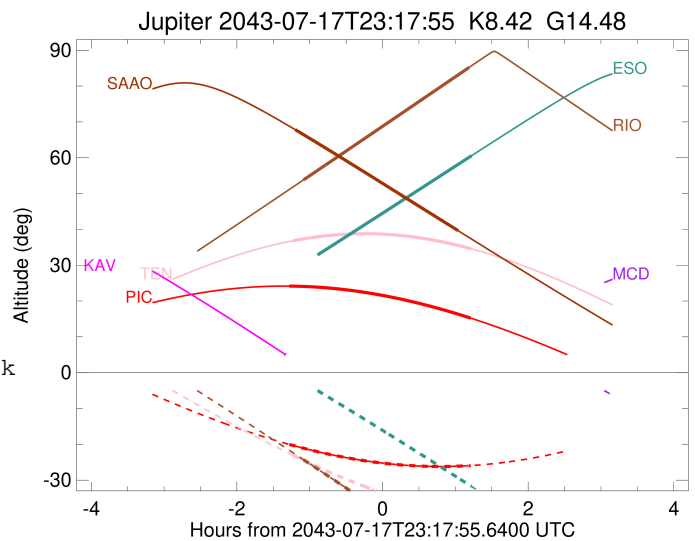
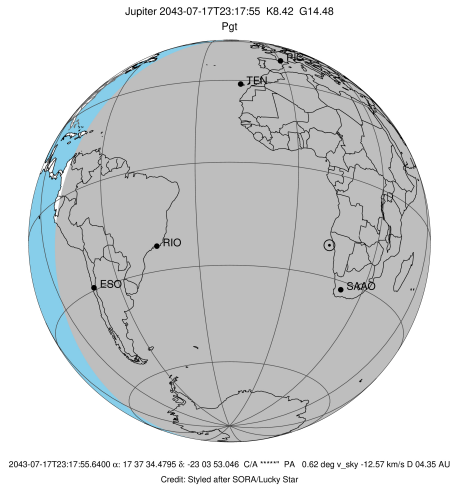


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-17T22:16:34.359	31.18	-3.41x	71488.1	-44.98	-48.69
Jupiter	E	2043-07-18T00:31:14.097	60.54	-31.75	71488.5	-42.00	-45.72

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-17T23:12:51.600
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      : 4116719801032892160
2Mass ID (if available) : 17373448-2303526
ICRS Star Coord at Epoch: 17h 37m 34.47949s -23:03:53.04619s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.417
G magnitude          : 14.478
RP magnitude         : 12.995
BP magnitude         : 17.531
DUPflag             : 0
Distance (au)       : 4.351
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.57
Sun-Target sep (deg) : 150.16
Sun-Moon sep (deg)  : 18.88
B (ring opening deg) : -2.39
PA of pole (deg)    : 1.58
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 15.595
C/A sky separation (km) : 49211.9
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	2043-07-17T22:06:00.267	67.82	-76.16	71488.2	-44.06	-47.78
Jupiter	E	2043-07-18T00:20:09.961	39.65	-65.67	71488.4	-43.00	-46.72