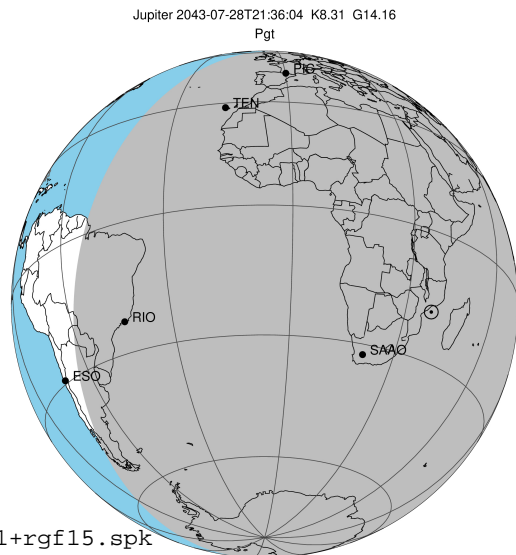


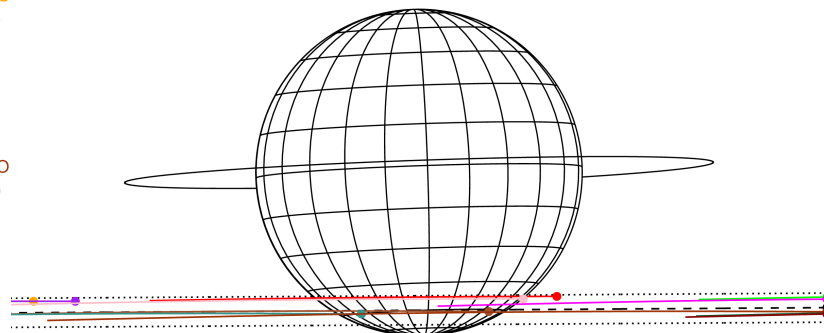
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-28T21:36:04.230
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116699116503857280
 2Mass ID (if available) : 17333907-2303251

Jupiter 2043-07-28T21:36:04 K8.31 G14.16 Pgt

ICRS Star Coord at Epoch: 17h 33m 39.04455s -23°03:25.58066s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 8.315
 G magnitude : 14.159
 RP magnitude : 12.716
 BP magnitude : 16.944
 DUPflag : 0
 Distance (au) : 4.446
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -9.23
 Sun-Target sep (deg) : 138.83
 Sun-Moon sep (deg) : 125.23
 B (ring opening deg) : -2.37
 PA of pole (deg) : 2.00
 Pole direction: RA (deg): 268.05671
 Dec (deg): 64.49731
 C/A sky separation (") : 18.716
 C/A sky separation (km) : 60351.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



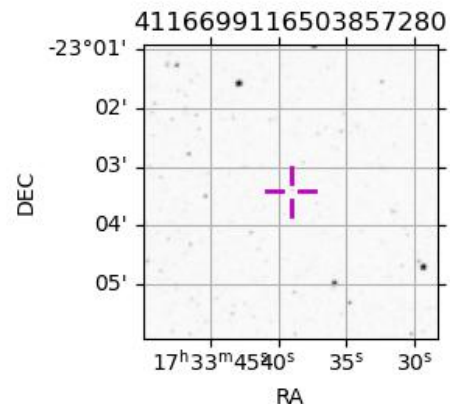
Earth
 PIC
 PMO
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-07-28T21:36:04.2300 cc: 17 33 39.0445 s: -23 03 25.581 C/A ***** PA 0.36 deg v_sky -9.23 km/s D 04.45 AU
 Credit: Styled after SORA/Lucky Star

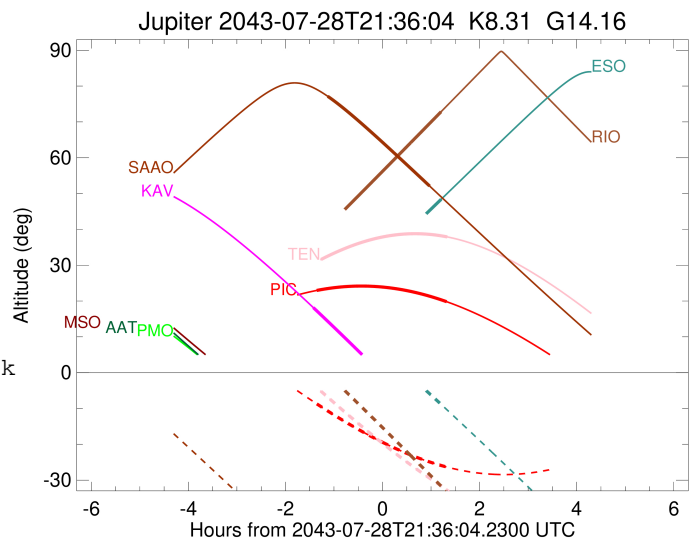
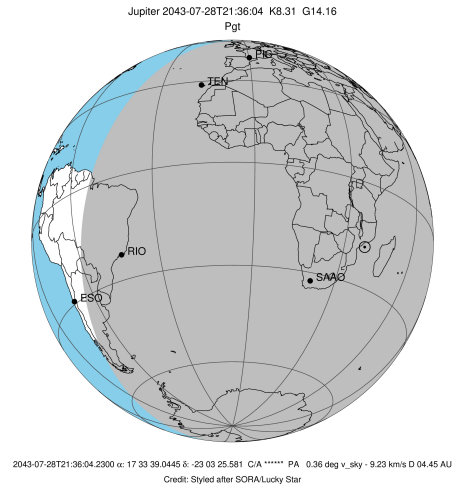
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 28 20:14 - JUL 28 22:55	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 28 20:20 - JUL 28 22:55	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUL 28 20:10 - JUL 28 20:10	Pin
RIO	Rio de Janeiro	-22.9	316.8	+	JUL 28 22:48 - JUL 28 22:48	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	JUL 28 22:48 - JUL 28 22:48	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 28 20:28 - JUL 28 22:34	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-28T21:35:01.080
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      : 4116699116503857280
2Mass ID (if available) : 17333907-2303251
ICRS Star Coord at Epoch: 17h 33m 39.04455s -23:03:25.58066s
RUWE (>1.4 is poor) : 0.93
K magnitude         : 8.315
G magnitude         : 14.159
RP magnitude        : 12.716
BP magnitude        : 16.944
DUPflag            : 0
Distance (au)       : 4.446
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -9.23
Sun-Target sep (deg) : 138.83
Sun-Moon sep (deg)  : 125.61
B (ring opening deg) : -2.37
PA of pole (deg)    : 2.00
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 16.917
C/A sky separation (km) : 54548.5
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
    
```

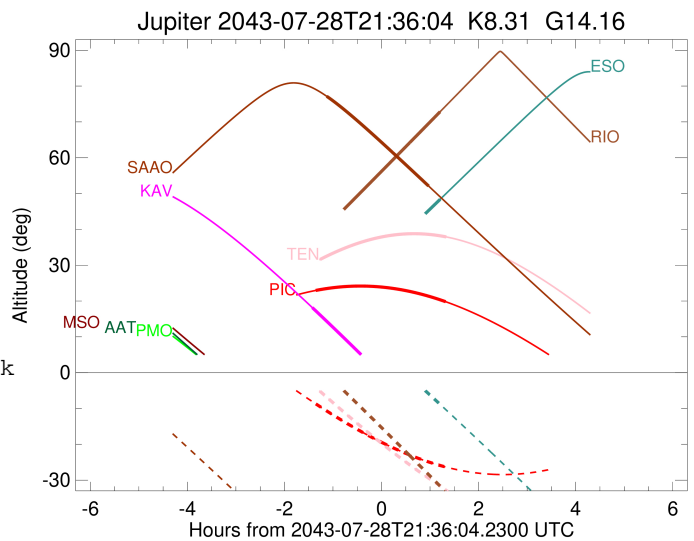
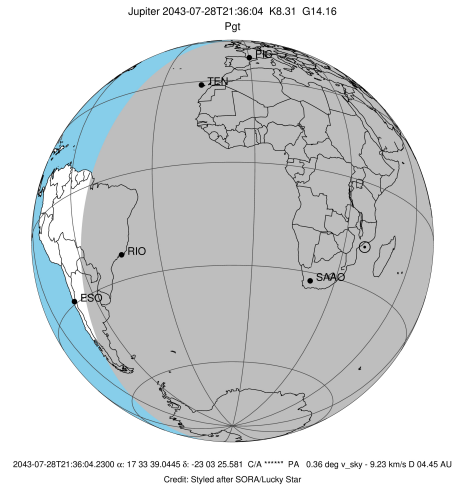


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-28T20:14:50.198	22.95	-8.71	71487.3	-51.36	-54.90
Jupiter	E	2043-07-28T22:55:27.833	19.80	-26.33	71487.7	-48.26	-51.90

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-28T21:38:03.760
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      : 4116699116503857280
2Mass ID (if available) : 17333907-2303251
ICRS Star Coord at Epoch: 17h 33m 39.04455s -23:03:25.58066s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.315
G magnitude          : 14.159
RP magnitude         : 12.716
BP magnitude         : 16.944
DUPflag             : 0
Distance (au)       : 4.446
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.23
Sun-Target sep (deg) : 138.83
Sun-Moon sep (deg)  : 125.64
B (ring opening deg) : -2.37
PA of pole (deg)    : 2.00
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 17.185
C/A sky separation (km) : 55413.5
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
    
```

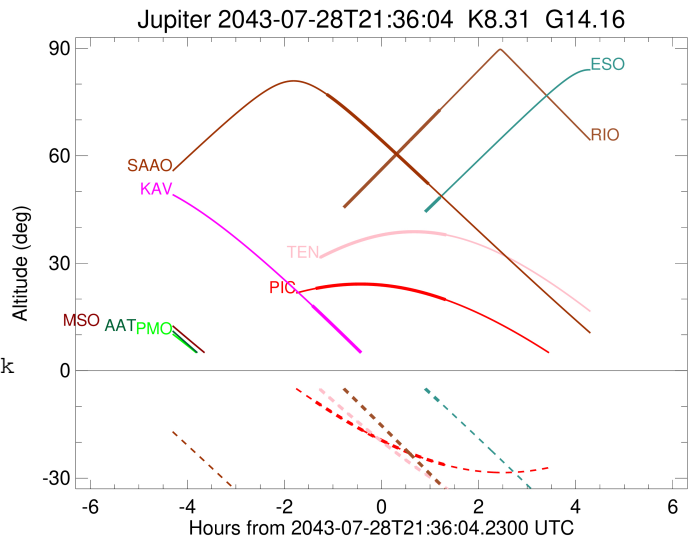
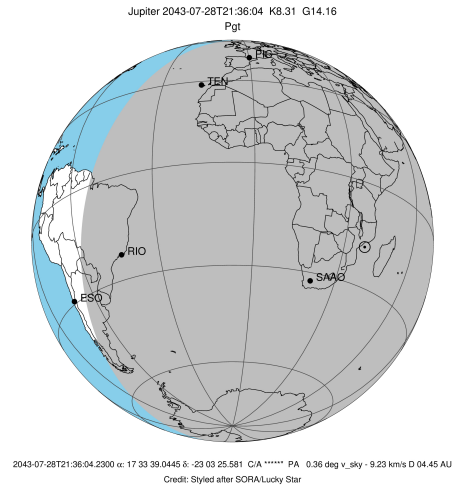


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-28T20:20:05.637	31.59	-5.19	71487.1	-52.71	-56.19
Jupiter	E	2043-07-28T22:55:58.647	37.90	-32.61	71487.6	-49.12	-52.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-28T21:22:55.920
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        : 4116699116503857280
2Mass ID (if available) : 17333907-2303251
ICRS Star Coord at Epoch: 17h 33m 39.04455s -23:03:25.58066s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.315
G magnitude           : 14.159
RP magnitude          : 12.716
BP magnitude          : 16.944
DUPflag              : 0
Distance (au)         : 4.446
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.23
Sun-Target sep (deg) : 138.83
Sun-Moon sep (deg)   : 125.79
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.00
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 18.217
C/A sky separation (km): 58739.5
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
    
```

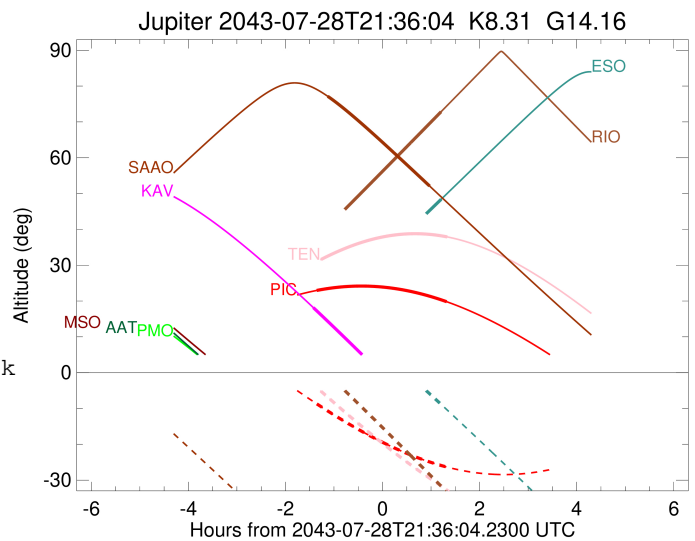
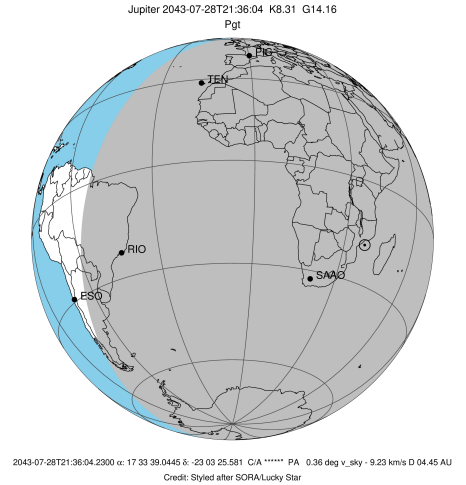


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-28T20:10:35.386	18.15	-53.05	71486.7	-55.78	-59.11
Jupiter	E	2043-07-28T22:36:35.073	-14.32x	-26.24	71486.9	-54.65	-58.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-28T21:43:16.330
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       : 4116699116503857280
2Mass ID (if available) : 17333907-2303251
ICRS Star Coord at Epoch: 17h 33m 39.04455s -23:03:25.58066s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.315
G magnitude          : 14.159
RP magnitude         : 12.716
BP magnitude         : 16.944
DUPflag             : 0
Distance (au)        : 4.446
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.23
Sun-Target sep (deg) : 138.83
Sun-Moon sep (deg)   : 125.58
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.00
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 18.837
C/A sky separation (km): 60740.4
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
    
```

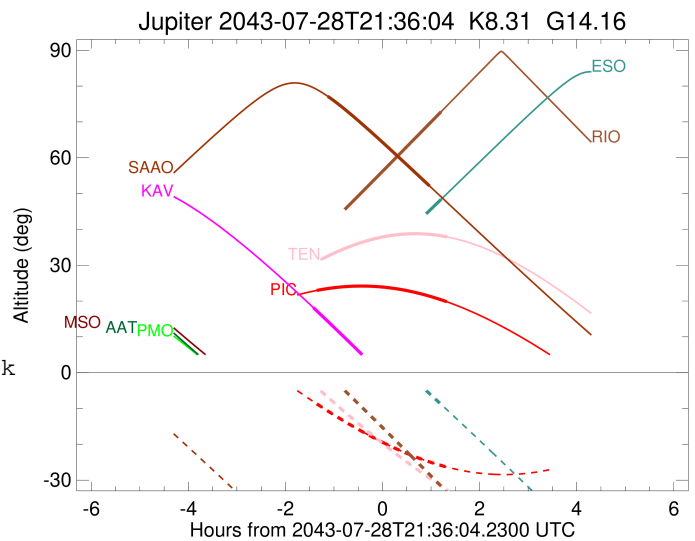
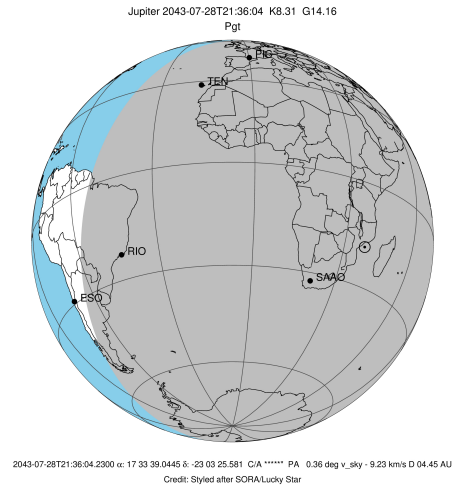


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-28T20:37:40.017	42.87	-2.43x	71486.2	-60.42	-63.45
Jupiter	E	2043-07-28T22:48:28.660	72.83	-31.66	71486.7	-56.01	-59.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-28T21:46:35.960
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     : 4116699116503857280
2Mass ID (if available) : 17333907-2303251
ICRS Star Coord at Epoch: 17h 33m 39.04455s -23:03:25.58066s
RUWE (>1.4 is poor) : 0.93
K magnitude         : 8.315
G magnitude         : 14.159
RP magnitude        : 12.716
BP magnitude        : 16.944
DUPflag            : 0
Distance (au)      : 4.446
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -9.23
Sun-Target sep (deg) : 138.83
Sun-Moon sep (deg) : 125.22
B (ring opening deg) : -2.37
PA of pole (deg)   : 2.00
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 19.284
C/A sky separation (km) : 62182.3
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
    
```

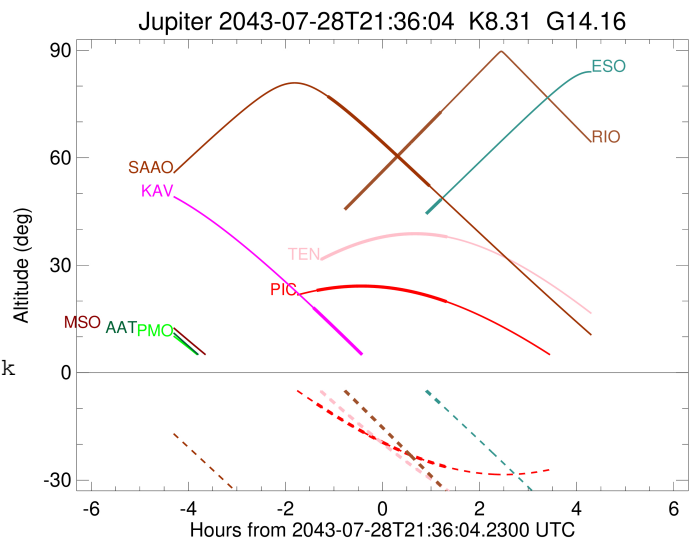
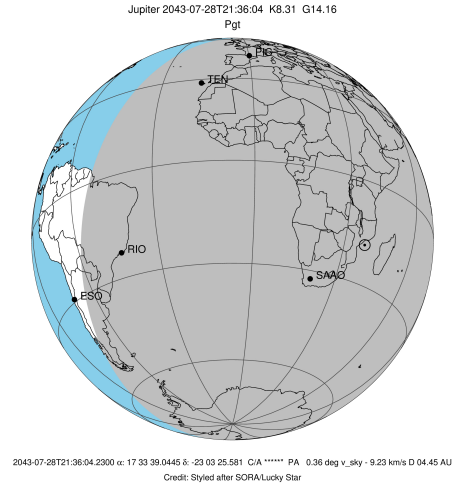


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-28T20:44:01.159	21.50	15.85x	71485.9	-62.89	-65.74
Jupiter	E	2043-07-28T22:48:35.799	48.39	-8.86	71486.5	-57.94	-61.14

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-28T21:31:01.630
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       : 4116699116503857280
2Mass ID (if available) : 17333907-2303251
ICRS Star Coord at Epoch: 17h 33m 39.04455s -23:03:25.58066s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.315
G magnitude           : 14.159
RP magnitude          : 12.716
BP magnitude          : 16.944
DUPflag              : 0
Distance (au)        : 4.446
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.23
Sun-Target sep (deg) : 138.83
Sun-Moon sep (deg)   : 126.17
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.00
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 19.095
C/A sky separation (km): 61571.9
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	2043-07-28T20:28:15.356	77.16	-56.93	71486.1	-60.73	-63.74
Jupiter	E	2043-07-28T22:34:12.935	52.11	-76.47	71486.4	-58.26	-61.44