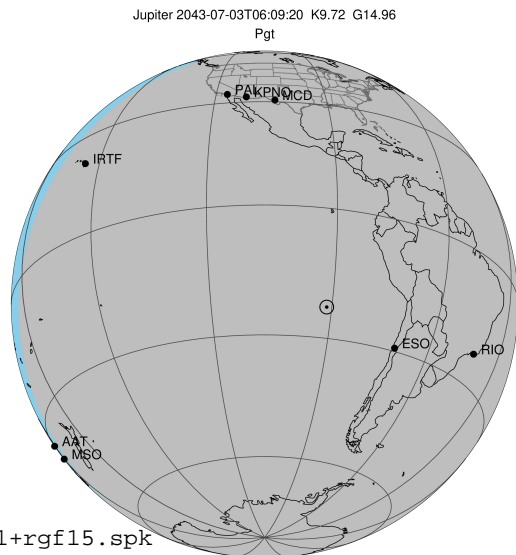


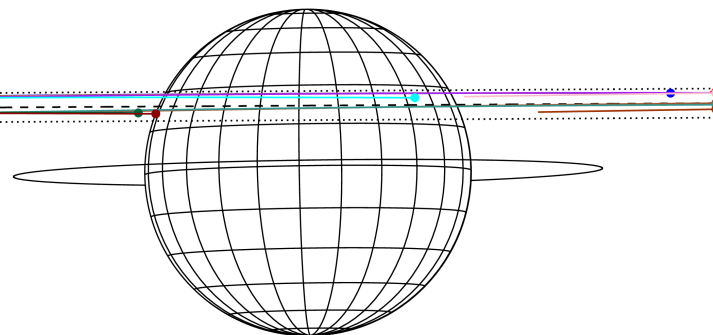
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-03T06:09:20.680
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068825035803082240
 2Mass ID (if available) : 17443439-2304203

Jupiter 2043-07-03T06:09:20 K9.72 G14.96 Pgt

ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 9.721
 G magnitude : 14.958
 RP magnitude : 13.631
 BP magnitude : 17.031
 DUPflag : 0
 Distance (au) : 4.270
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.56
 Sun-Target sep (deg) : 165.80
 Sun-Moon sep (deg) : 145.71
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.82
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A separation (") : 9.464
 C/A sky separation (km) : 29312.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



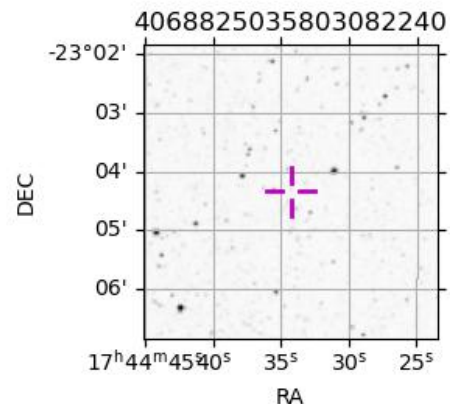
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-07-03T06:09:20.6800 at: 17 44 34.4040 s: -23 04 20.532 C/A 9.453" PA 180.35 deg v_sky -15.56 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

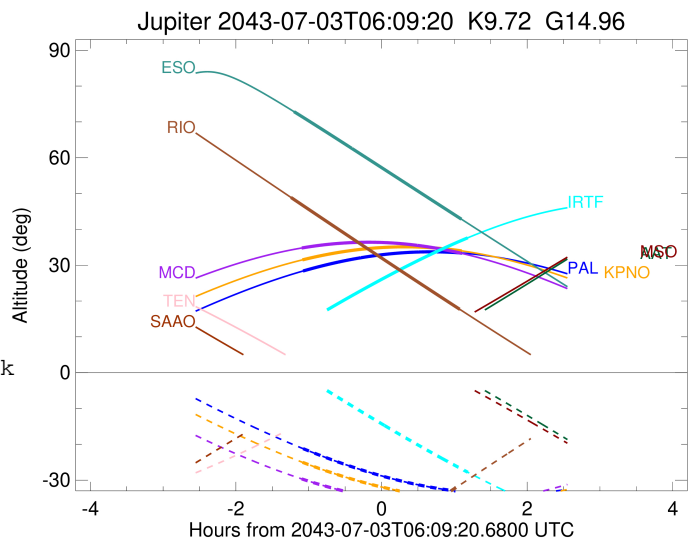
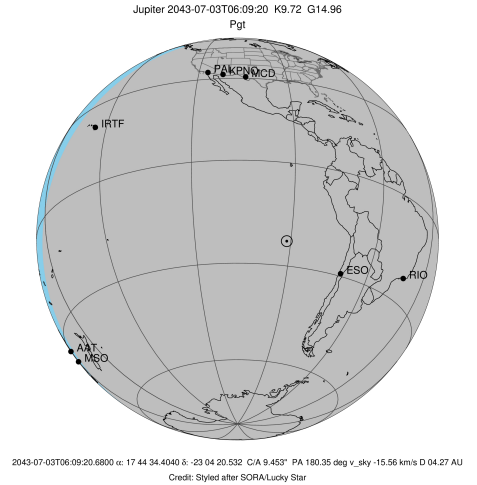
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUL 03 05:04 - JUL 03 07:15	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 03 05:04 - JUL 03 07:15	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 03 05:03 - JUL 03 07:14	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pne
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 03 04:54 - JUL 03 07:13	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 03 04:57 - JUL 03 07:15	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUL 03 07:26 - JUL 03 07:26	Pne



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T06:10:16.420
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 4068825035803082240
2Mass ID (if available) : 17443439-2304203
ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.721
G magnitude           : 14.958
RP magnitude          : 13.631
BP magnitude          : 17.031
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.56
Sun-Target sep (deg) : 165.80
Sun-Moon sep (deg)   : 145.96
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.82
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 11.165
C/A sky separation (km) : 34580.9
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
    
```

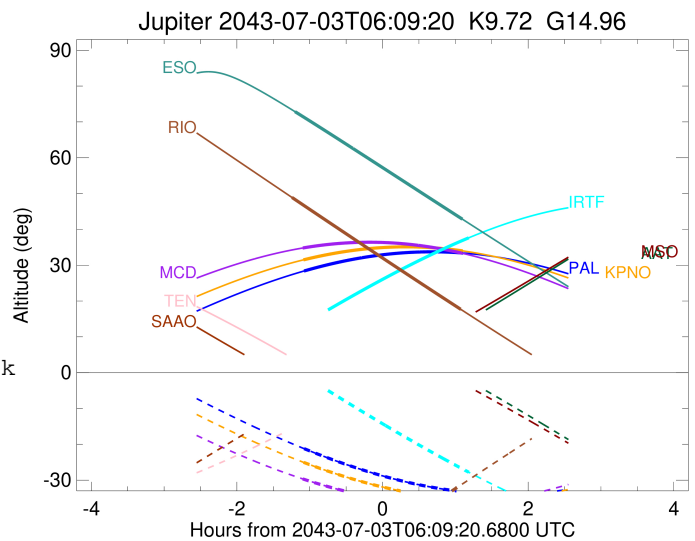
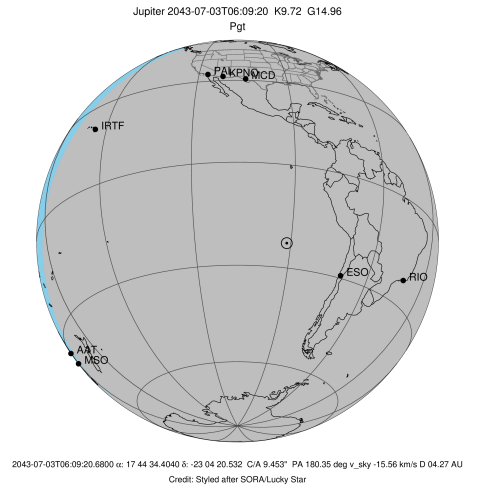


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T05:04:45.691	28.38	-21.21	71490.2	28.25	31.51
Jupiter	E	2043-07-03T07:15:43.886	33.39	-33.22	71490.1	29.39	32.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T06:09:48.200
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 4068825035803082240
2Mass ID (if available) : 17443439-2304203
ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.721
G magnitude           : 14.958
RP magnitude          : 13.631
BP magnitude          : 17.031
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.56
Sun-Target sep (deg)  : 165.80
Sun-Moon sep (deg)   : 146.03
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.82
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 11.145
C/A sky separation (km) : 34518.8
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
    
```

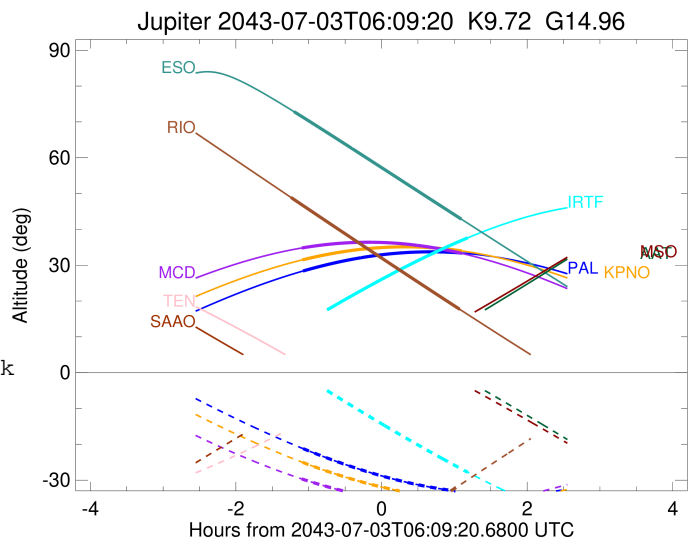
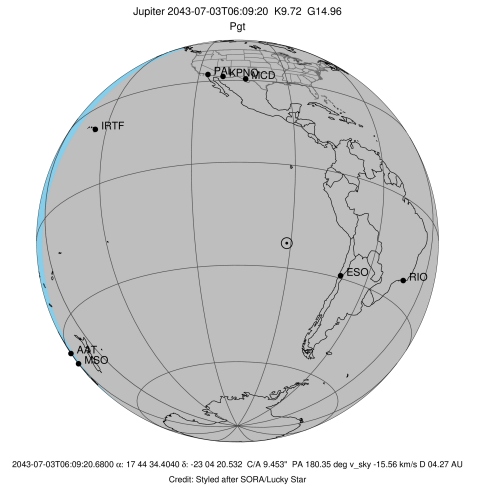


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T05:04:18.993	31.50	-25.03	71490.2	28.24	31.50
Jupiter	E	2043-07-03T07:15:16.485	33.99	-35.13	71490.1	29.29	32.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T06:09:05.820
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)        : 30.67158
E. Longitude (deg)    : 255.97844
Altitude (km)         : 2.075
Gaia source ID        : 4068825035803082240
2Mass ID (if available) : 17443439-2304203
ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.721
G magnitude           : 14.958
RP magnitude          : 13.631
BP magnitude          : 17.031
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.56
Sun-Target sep (deg)  : 165.80
Sun-Moon sep (deg)   : 146.14
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.82
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 11.120
C/A sky separation (km) : 34441.4
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
    
```

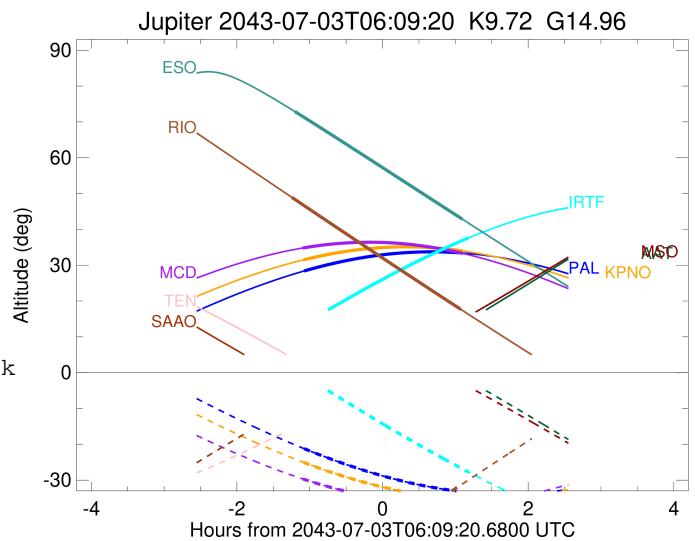
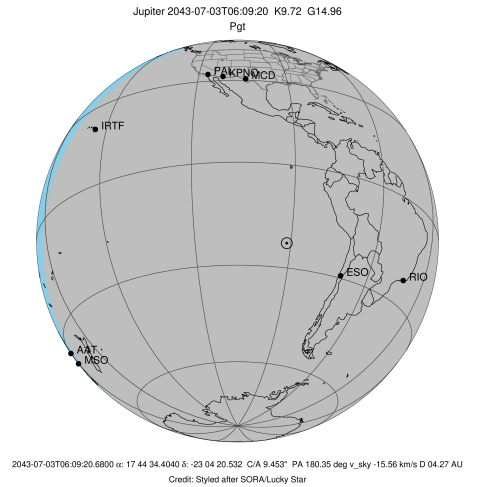


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T05:03:37.222	34.80	-29.66	71490.2	28.24	31.50
Jupiter	E	2043-07-03T07:14:37.010	33.36	-36.43	71490.1	29.14	32.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T06:13:49.230
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 4068825035803082240
2Mass ID (if available) : 17443439-2304203
ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.721
G magnitude          : 14.958
RP magnitude         : 13.631
BP magnitude         : 17.031
DUPflag             : 0
Distance (au)       : 4.270
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.56
Sun-Target sep (deg) : 165.80
Sun-Moon sep (deg)  : 145.42
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.82
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 10.614
C/A sky separation (km) : 32873.8
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
    
```

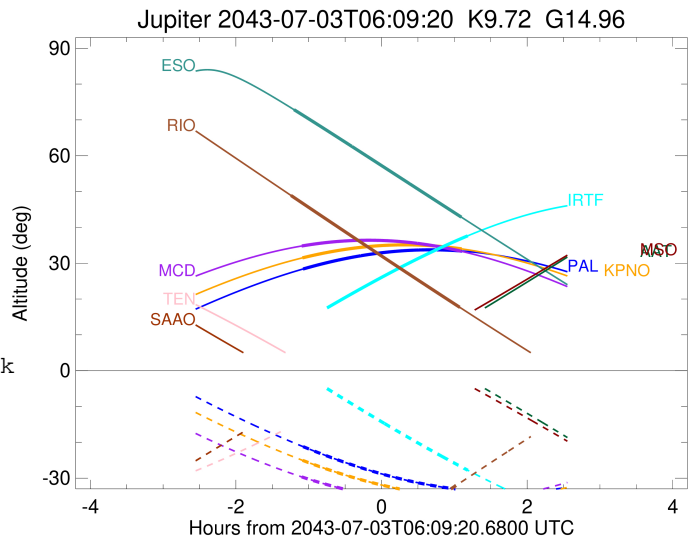
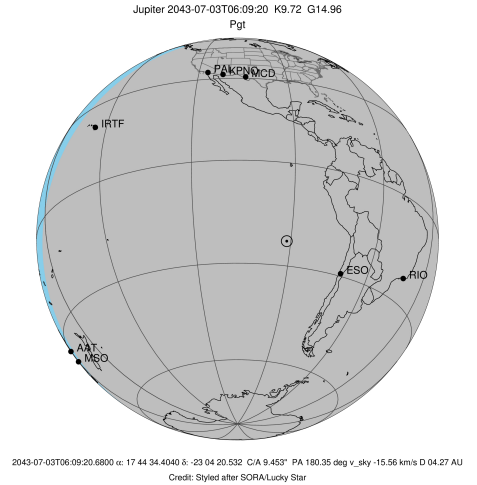


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T05:06:50.646	13.99	-1.26x	71490.4	26.36	29.49
Jupiter	E	2043-07-03T07:20:25.964	37.64	-27.79	71490.2	28.22	31.48

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T06:04:03.440
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        : 4068825035803082240
2Mass ID (if available) : 17443439-2304203
ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.721
G magnitude           : 14.958
RP magnitude          : 13.631
BP magnitude          : 17.031
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.56
Sun-Target sep (deg) : 165.80
Sun-Moon sep (deg)   : 146.67
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.82
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.082
C/A sky separation (km) : 28129.3
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
    
```

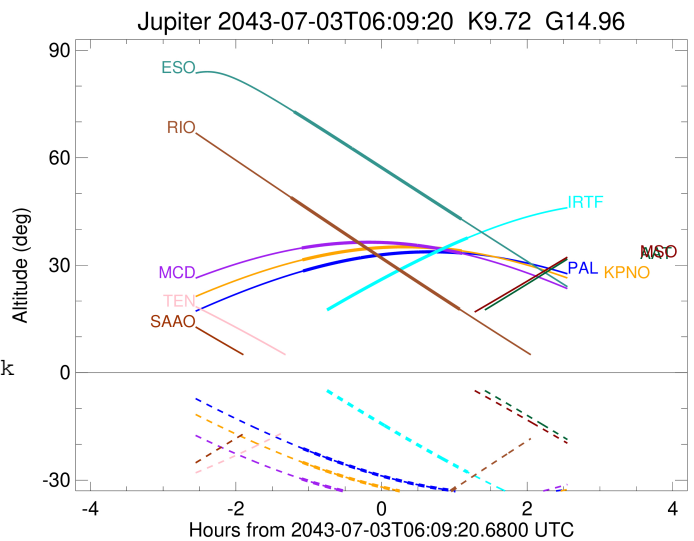
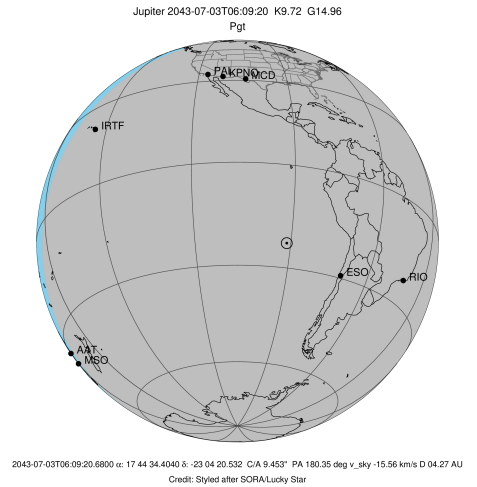


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T04:54:46.475	48.90	-62.93	71490.8	23.16	26.03
Jupiter	E	2043-07-03T07:13:51.722	17.67	-31.37	71490.8	23.05	25.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T06:06:04.750
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        : 4068825035803082240
2Mass ID (if available) : 17443439-2304203
ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.721
G magnitude           : 14.958
RP magnitude          : 13.631
BP magnitude          : 17.031
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.56
Sun-Target sep (deg)  : 165.80
Sun-Moon sep (deg)    : 146.59
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.82
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.122
C/A sky separation (km) : 28251.9
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
    
```

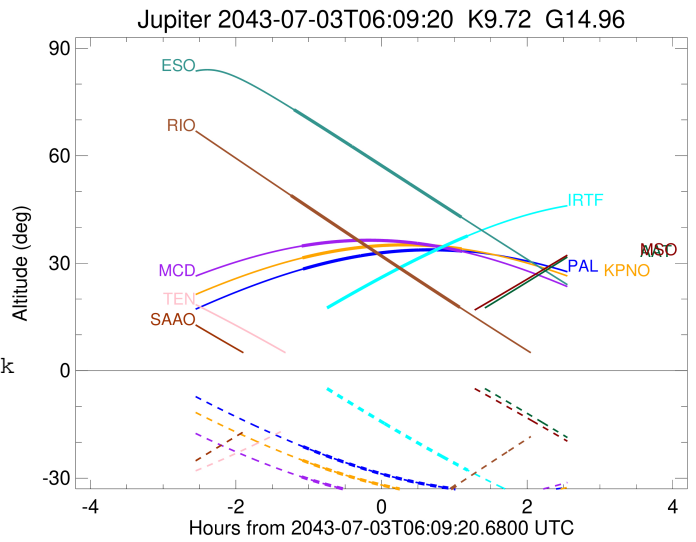
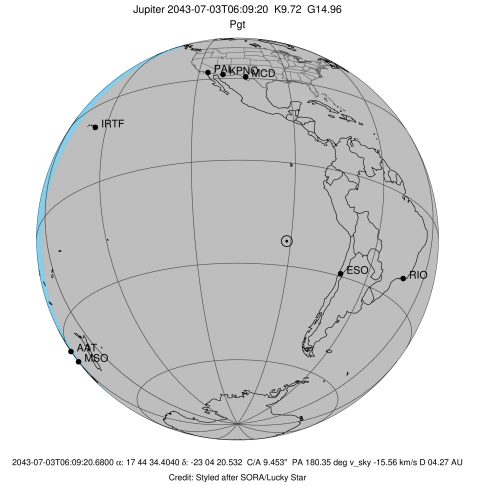


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T04:57:18.376	72.84	-83.45	71490.8	23.03	25.89
Jupiter	E	2043-07-03T07:15:10.522	42.84	-56.32	71490.8	23.34	26.22


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T06:14:31.330
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MSO
Location              : Mt. Stromlo Observatory
Latitude (deg)        : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)         : 0.770
Gaia source ID        : 4068825035803082240
2Mass ID (if available) : 17443439-2304203
ICRS Star Coord at Epoch: 17h 44m 34.40399s -23:04:20.53206s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.721
G magnitude           : 14.958
RP magnitude          : 13.631
BP magnitude          : 17.031
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.56
Sun-Target sep (deg) : 165.80
Sun-Moon sep (deg)   : 145.03
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.82
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 8.225
C/A sky separation (km) : 25474.5
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	2043-07-03T05:02:20.138	-9.35x	18.73x	71491.1	19.87	22.43
Jupiter	E	2043-07-03T07:26:12.447	16.94	-5.02	71490.9	21.88	24.63