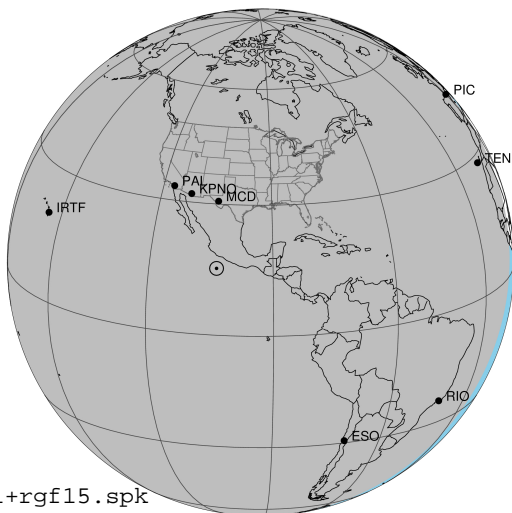


target : Jupiter
target radius (km) : 71492.00
C/A epoch : 2047-11-04T06:36:40.550
Event type : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Gaia source ID : 55494555172986880
2Mass ID (if available) : 03161010+1648422

Jupiter 2047-11-04T06:36:40 K7.61 G10.24 Pgt

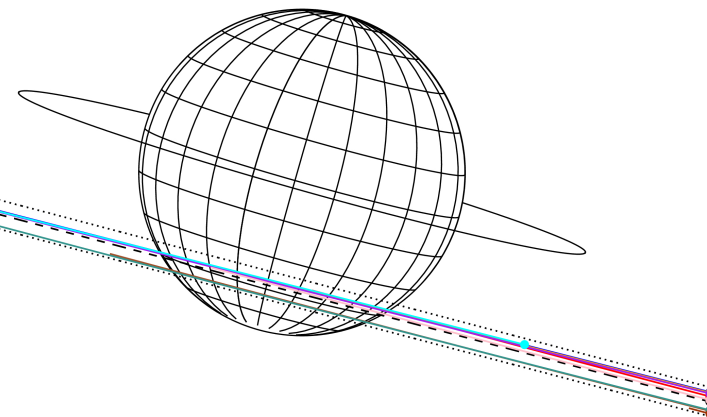
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude : 7.614
G magnitude : 10.242
RP magnitude : 9.451
BP magnitude : 10.925
DUPflag : 0
Distance (au) : 4.012
f0 (km) : 0.00
g0 (km) : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg) : 8.29
B (ring opening deg) : 3.39
PA of pole (deg) : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation (") : 17.732
C/A sky separation (km) : 51592.6
NAIF SPICE kernels : RAJobs\_U111+rgf15.spk
URKALLvl.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp



2047-11-04T06:36:40.5500 a: 03 16 10.1307 & +16 48 41.797 C/A \*\*\*\*\* PA 345.24 deg v\_sky -16.05 km/s D 04.01 AU

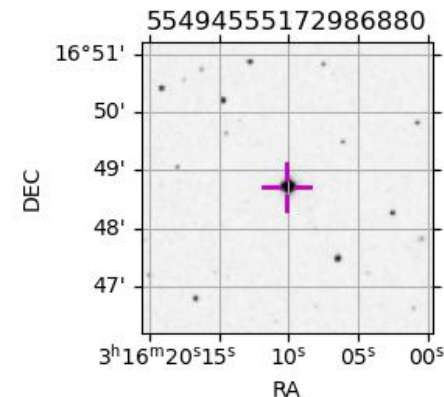
Credit: Styled after SORA/Lucky Star

Earth
PIC
PAL
KPNO
MCD
TEN
IRTF
RIO
ESO
AAT
SAAO



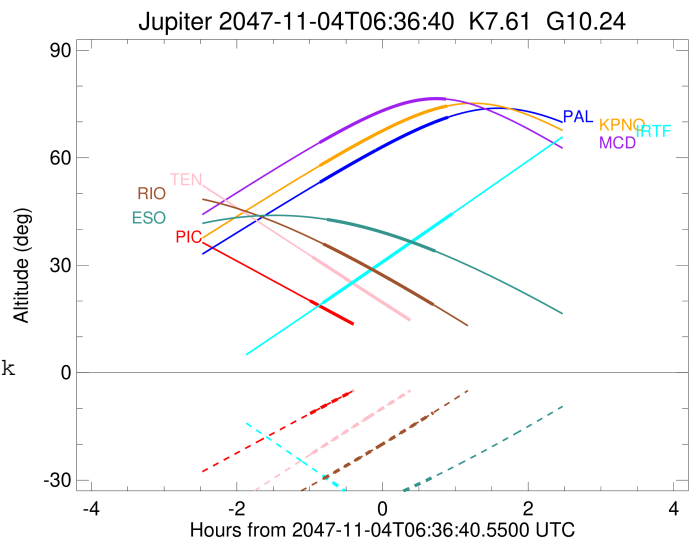
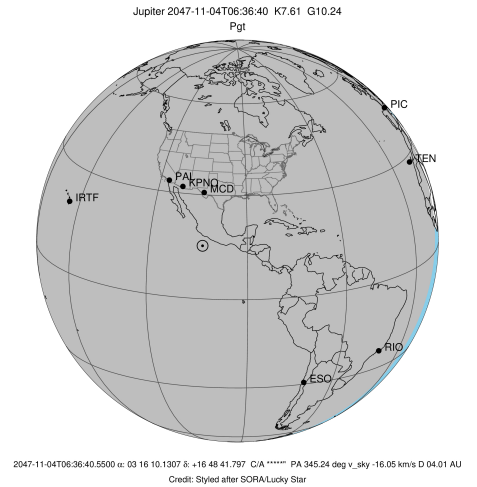
Observable events with sun below -5 deg and altitude above 5 deg

Table with columns: Obs Location, lat, Lon, Target, Observed Events Interval, OCode. Lists various observatories and their observation windows for the event.



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2047-11-04T06:31:11.850
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        : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 7.614
G magnitude           : 10.242
RP magnitude          : 9.451
BP magnitude          : 10.925
DUPflag               : 0
Distance (au)         : 4.012
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg)  : 169.89
Sun-Moon sep (deg)    : 7.43
B (ring opening deg) : 3.39
PA of pole (deg)      : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation (") : 16.746
C/A sky separation (km) : 48726.4
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
    
```

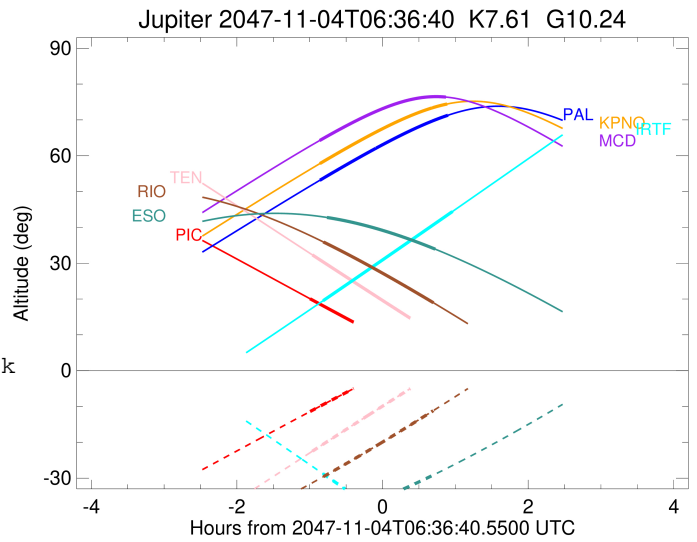
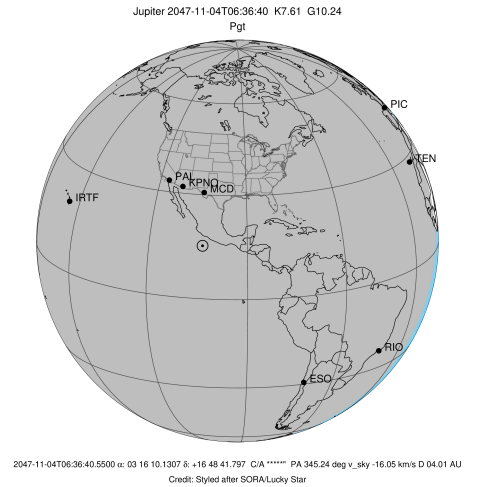


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2047-11-04T05:37:01.528	20.06	-11.40	71484.9	-42.20	-45.92
Jupiter	E	2047-11-04T07:25:36.922	0.72x	7.30x	71484.6	-43.48	-47.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2047-11-04T06:37:54.640
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       : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude          : 7.614
G magnitude          : 10.242
RP magnitude         : 9.451
BP magnitude         : 10.925
DUPflag             : 0
Distance (au)        : 4.012
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg)   : 8.42
B (ring opening deg) : 3.39
PA of pole (deg)     : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation (") : 16.913
C/A sky separation (km) : 49210.2
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
    
```

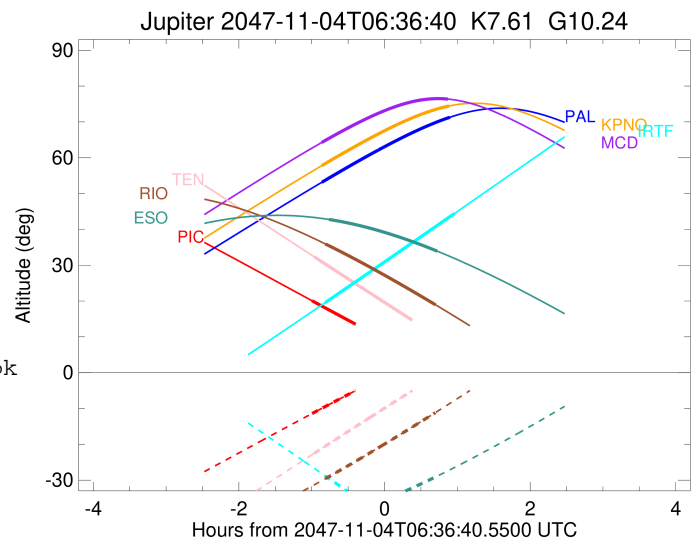
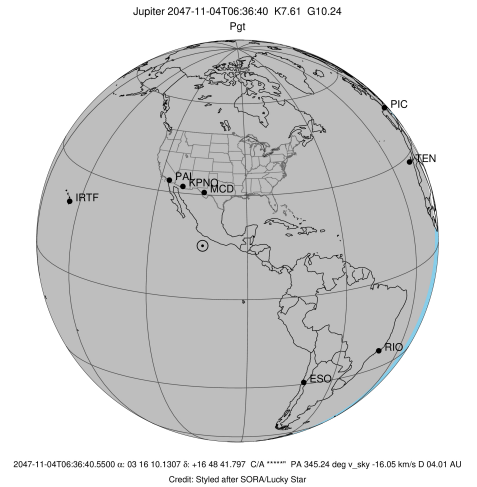


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2047-11-04T05:45:04.037	53.15	-60.17	71485.0	-41.93	-45.65
Jupiter	E	2047-11-04T07:30:37.061	71.29	-72.19	71484.2	-44.83	-48.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2047-11-04T06:37:32.890
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        : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 7.614
G magnitude           : 10.242
RP magnitude          : 9.451
BP magnitude          : 10.925
DUPflag              : 0
Distance (au)         : 4.012
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg)   : 8.40
B (ring opening deg) : 3.39
PA of pole (deg)     : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation (") : 17.015
C/A sky separation (km) : 49507.9
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
    
```

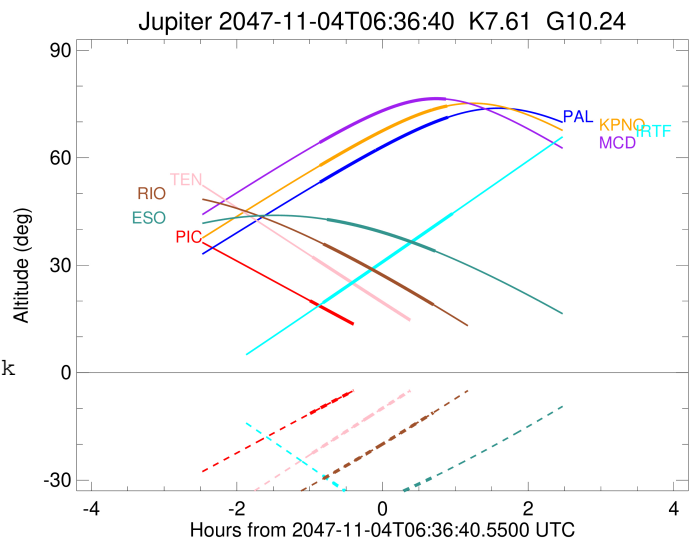
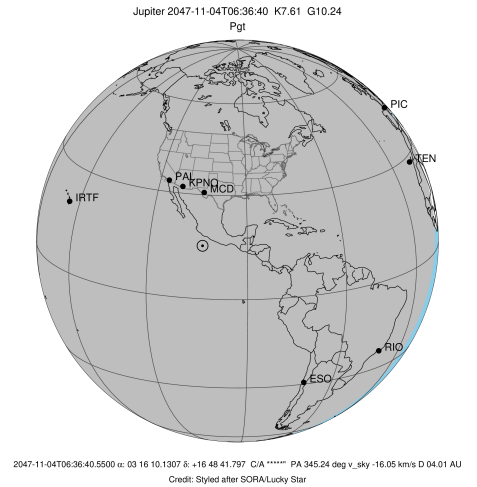


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2047-11-04T05:45:03.875	57.80	-64.65	71484.9	-42.27	-45.99
Jupiter	E	2047-11-04T07:29:55.077	74.43	-72.96	71484.1	-45.14	-48.84

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2047-11-04T06:36:57.360
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       : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 7.614
G magnitude           : 10.242
RP magnitude          : 9.451
BP magnitude          : 10.925
DUPflag              : 0
Distance (au)        : 4.012
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg)   : 8.36
B (ring opening deg) : 3.39
PA of pole (deg)     : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation (") : 17.136
C/A sky separation (km) : 49859.2
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
    
```

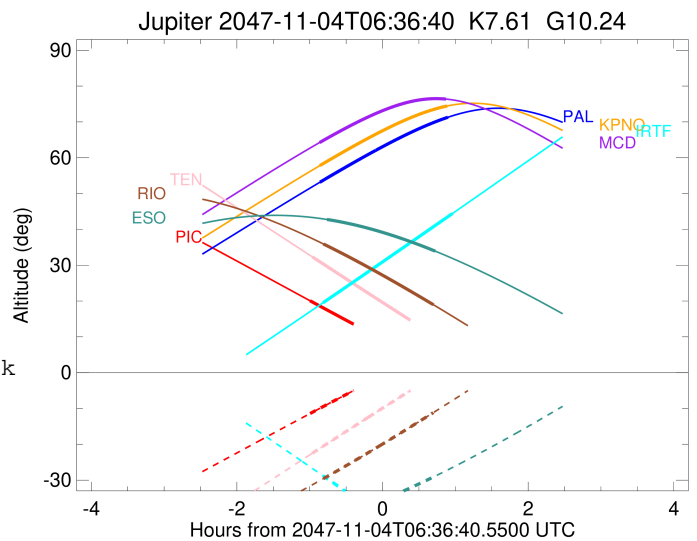
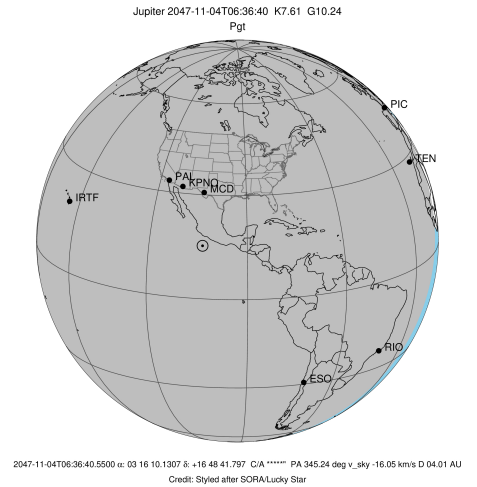


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2047-11-04T05:44:53.756	64.24	-70.35	71484.8	-42.69	-46.41
Jupiter	E	2047-11-04T07:28:56.202	76.36	-71.10	71484.0	-45.50	-49.19

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2047-11-04T06:30:51.360
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        : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 7.614
G magnitude           : 10.242
RP magnitude          : 9.451
BP magnitude          : 10.925
DUPflag               : 0
Distance (au)         : 4.012
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg)   : 7.57
B (ring opening deg) : 3.39
PA of pole (deg)     : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation ("): 17.386
C/A sky separation (km): 50587.1
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
    
```

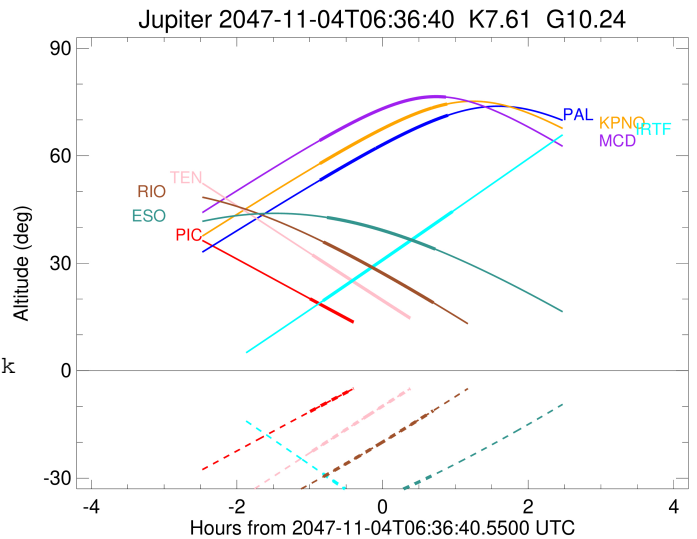
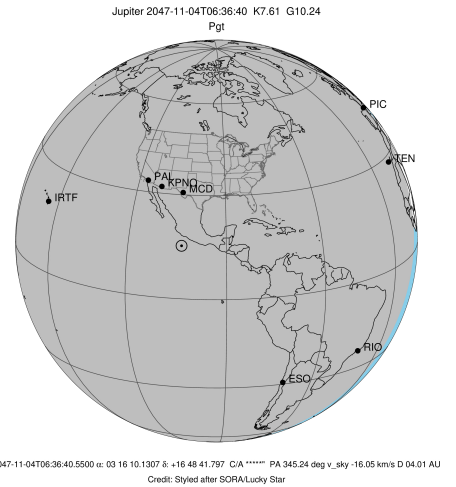


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2047-11-04T05:38:54.795	32.31	-22.48	71484.4	-44.20	-47.91
Jupiter	E	2047-11-04T07:23:03.389	9.57	-0.04x	71484.0	-45.58	-49.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2047-11-04T06:41:09.160
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       : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 7.614
G magnitude           : 10.242
RP magnitude          : 9.451
BP magnitude          : 10.925
DUPflag              : 0
Distance (au)        : 4.012
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg)   : 8.76
B (ring opening deg) : 3.39
PA of pole (deg)     : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation (") : 16.872
C/A sky separation (km) : 49091.1
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
    
```

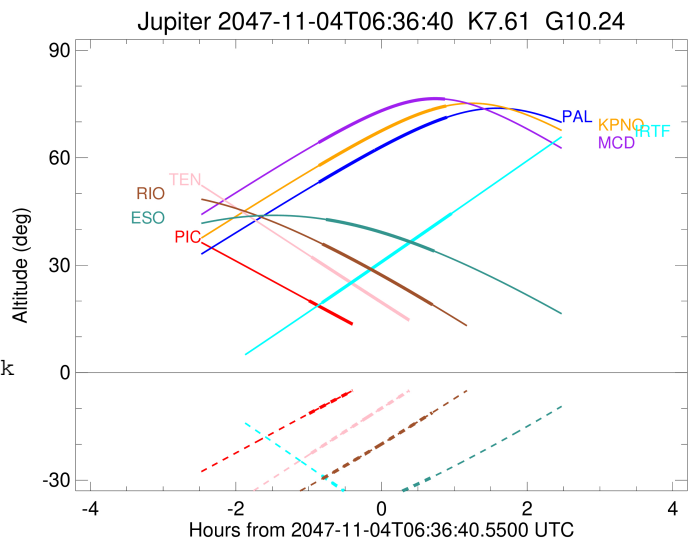
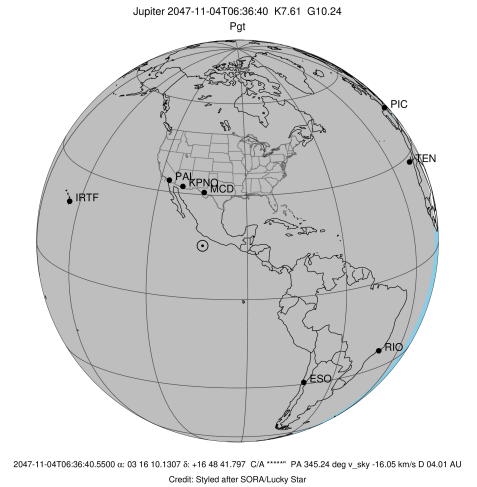


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2047-11-04T05:47:38.045	19.51	-28.77	71485.0	-41.74	-45.46
Jupiter	E	2047-11-04T07:34:22.253	44.43	-53.83	71484.2	-44.84	-48.55

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2047-11-04T06:33:12.650
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       : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 7.614
G magnitude           : 10.242
RP magnitude          : 9.451
BP magnitude          : 10.925
DUPflag              : 0
Distance (au)        : 4.012
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg)   : 8.32
B (ring opening deg) : 3.39
PA of pole (deg)     : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation (") : 19.274
C/A sky separation (km) : 56081.5
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
    
```



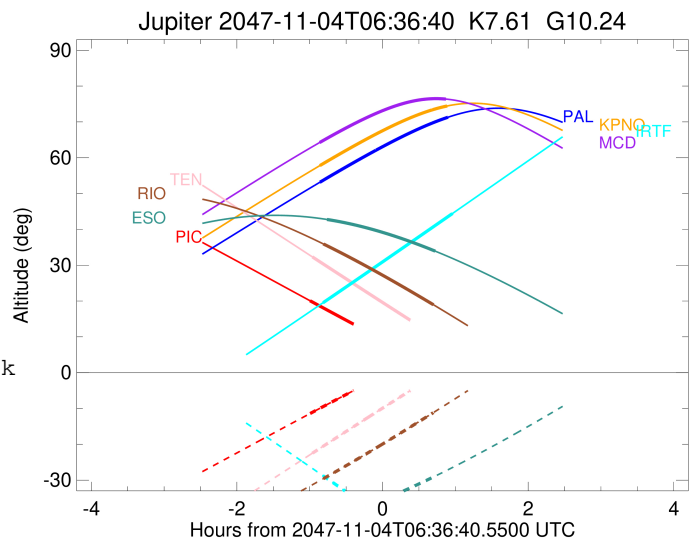
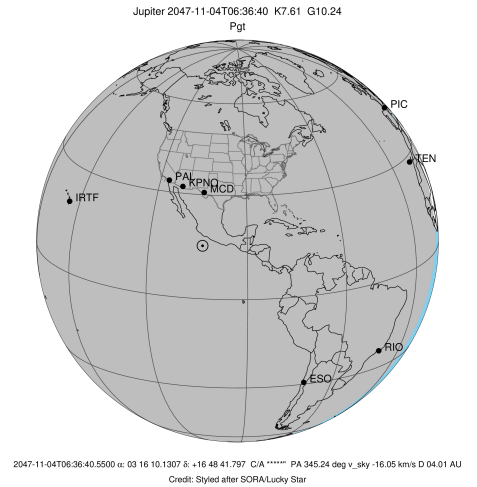
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2047-11-04T05:48:02.003	35.91	-29.57	71482.6	-50.58	-54.15
Jupiter	E	2047-11-04T07:18:32.271	18.98	-11.16	71482.1	-52.41	-55.91



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2047-11-04T06:35:34.130
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      : 55494555172986880
2Mass ID (if available) : 03161010+1648422
ICRS Star Coord at Epoch: 03h 16m 10.13068s +16:48:41.79714s
RUWE (>1.4 is poor) : 1.32
K magnitude          : 7.614
G magnitude          : 10.242
RP magnitude         : 9.451
BP magnitude         : 10.925
DUPflag             : 0
Distance (au)       : 4.012
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 169.89
Sun-Moon sep (deg)  : 8.66
B (ring opening deg) : 3.39
PA of pole (deg)    : -15.75
Pole direction: RA (deg): 268.05723
Dec (deg): 64.49723
C/A sky separation ("): 19.400
C/A sky separation (km): 56446.7
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	2047-11-04T05:51:02.515	42.75	-41.07	71482.5	-50.81	-54.37
Jupiter	E	2047-11-04T07:20:09.124	33.92	-28.87	71481.9	-53.14	-56.60