

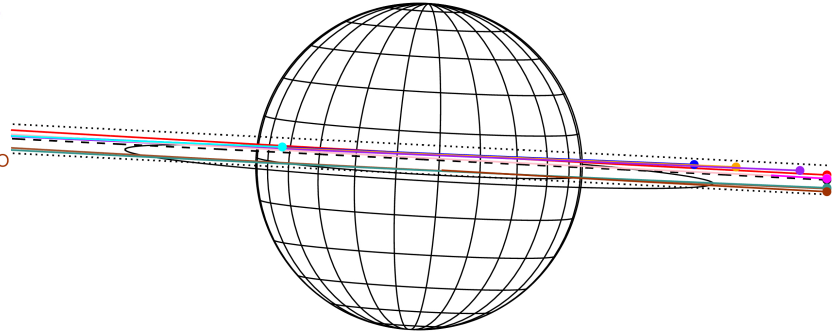
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2036-12-09T03:14:54.580  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 3414767315516927232  
 2Mass ID (if available) : 05212810+2235118

Jupiter 2036-12-09T03:14:54 K8.88 G12.90 Pgt

ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s  
 RUWE (>1.4 is poor) : 1.32  
 K magnitude : 8.880  
 G magnitude : 12.897  
 RP magnitude : 11.789  
 BP magnitude : 14.184  
 DUPflag : 0  
 Distance (au) : 4.108  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -16.85  
 Sun-Target sep (deg) : 175.97  
 Sun-Moon sep (deg) : 69.62  
 B (ring opening deg) : 2.71  
 PA of pole (deg) : -3.31  
 Pole direction: RA (deg): 268.05632  
 Dec (deg): 64.49687  
 C/A sky separation (") : 1.056  
 C/A sky separation (km) : 3146.4  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp



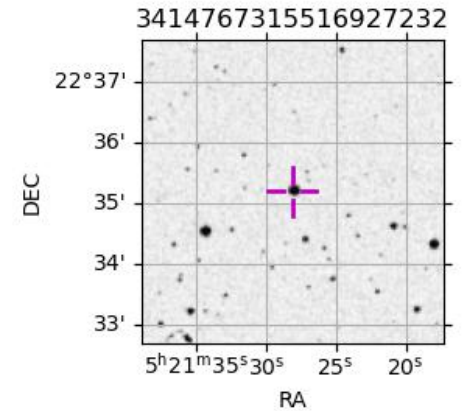
Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 KAV  
 RIO  
 ESO  
 SAAO



2036-12-09T03:14:54.5800 ex: 05 21 28.1001 s: +22 35 11.4759 C/A 1.068" PA 177.11 deg v\_sky -16.85 km/s D 04.11 AU  
 Credit: Styled after SORA/Lucky Star

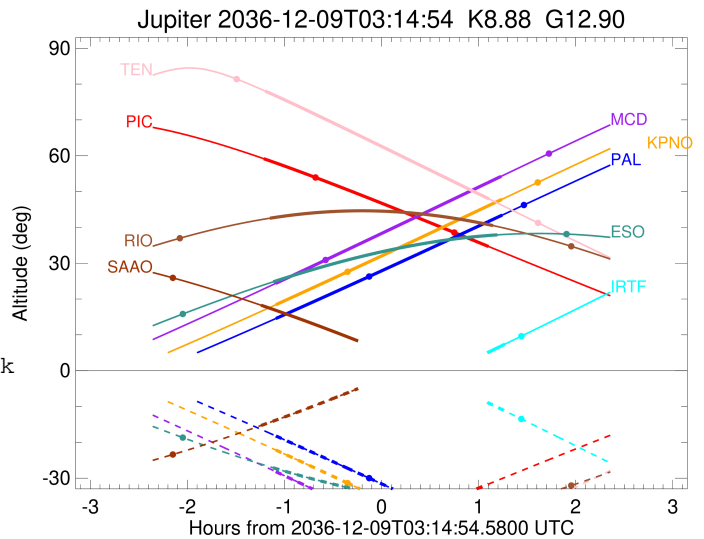
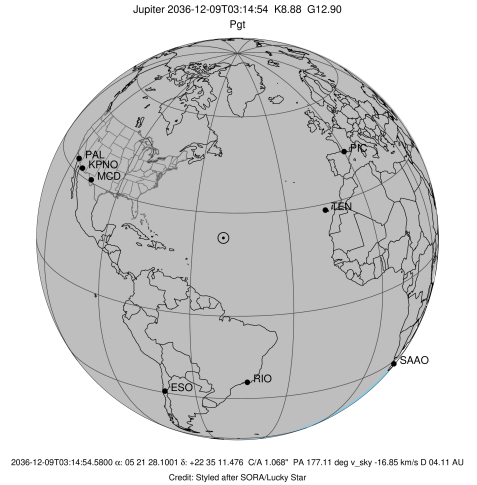
Observable events with sun below -5 deg and altitude above 5 deg

| Obs  | Location                          | lat   | Elon  | Target | Observed Events Interval    | OCode |
|------|-----------------------------------|-------|-------|--------|-----------------------------|-------|
| PIC  | Pic du Midi                       | 42.9  | 0.1   | + +    | DEC 09 02:02 - DEC 09 04:21 | Pie   |
| PAL  | Palomar Mt (200")                 | 33.4  | 243.1 | + +    | DEC 09 02:09 - DEC 09 04:29 | Pie   |
| PMO  | Purple Mtn Obs. Nanking           | 32.1  | 118.8 |        |                             | Pnn   |
| KPNO | Kitt Peak Natl Obs                | 32.0  | 248.4 | + +    | DEC 09 02:09 - DEC 09 04:29 | Pie   |
| MCD  | McDonald Obs. 2.7m                | 30.7  | 256.0 | + +    | DEC 09 02:09 - DEC 09 04:28 | Pie   |
| TEN  | Teide Obs./Tenerife               | 28.3  | 343.5 | + +    | DEC 09 02:03 - DEC 09 04:21 | Pie   |
| IRTF | Mauna Kea/IRTF                    | 19.8  | 204.5 |        | DEC 09 04:31 - DEC 09 04:31 | Pne   |
| KAV  | Kavalur Observatory               | 12.6  | 78.8  |        |                             | Pnn   |
| RIO  | Rio de Janeiro                    | -22.9 | 316.8 | + +    | DEC 09 02:05 - DEC 09 04:23 | Pie   |
| ESO  | European Southern Obs. (3.6m)     | -29.3 | 289.3 | + +    | DEC 09 02:08 - DEC 09 04:26 | Pie   |
| AAT  | Siding Spring (AAT)               | -31.3 | 149.1 |        |                             | Pnn   |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8  | +      | DEC 09 02:00 - DEC 09 02:00 | Pin   |
| MSO  | Mt. Stromlo Observatory           | -35.3 | 149.0 |        |                             | Pnn   |



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-12-09T03:11:27.410
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       : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude          : 8.880
G magnitude          : 12.897
RP magnitude         : 11.789
BP magnitude         : 14.184
DUPflag             : 0
Distance (au)        : 4.108
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg) : 175.97
Sun-Moon sep (deg)   : 70.10
B (ring opening deg) : 2.71
PA of pole (deg)     : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 1.920
C/A sky separation (km): 5719.0
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
    
```

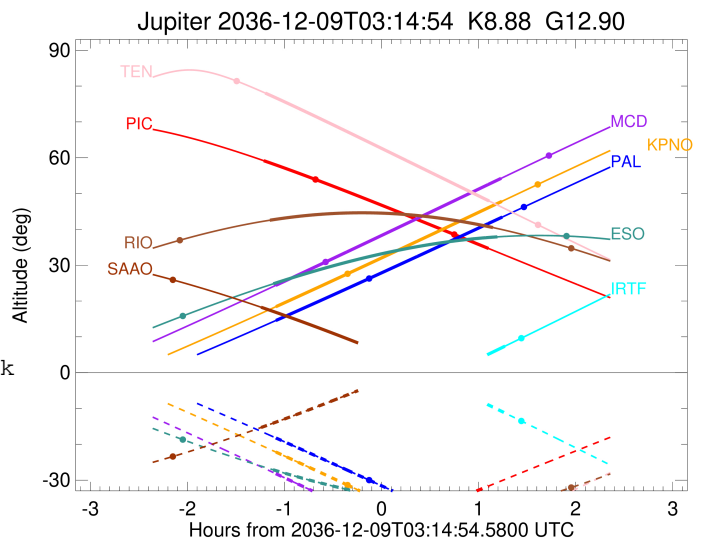
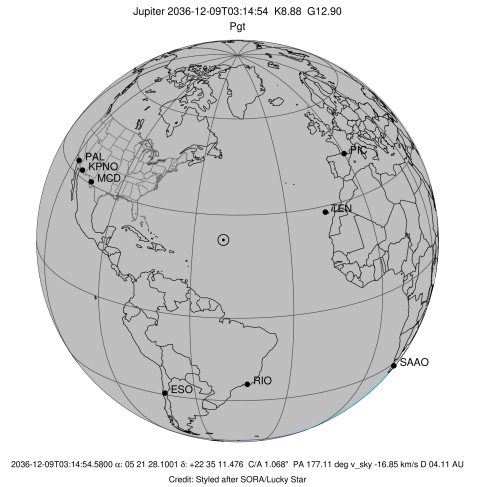


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:02:06.870 | 59.17 | -56.49  | 71491.9 | 4.77    | 5.46         |
| Jupiter | E   | 2036-12-09T04:21:05.073 | 34.66 | -31.65  | 71491.9 | 4.50    | 5.14         |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2036-12-09T03:19:46.580
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        : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 8.880
G magnitude           : 12.897
RP magnitude          : 11.789
BP magnitude          : 14.184
DUPflag              : 0
Distance (au)         : 4.108
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg) : 175.97
Sun-Moon sep (deg)   : 70.30
B (ring opening deg) : 2.71
PA of pole (deg)     : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 1.972
C/A sky separation (km): 5874.2
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
    
```

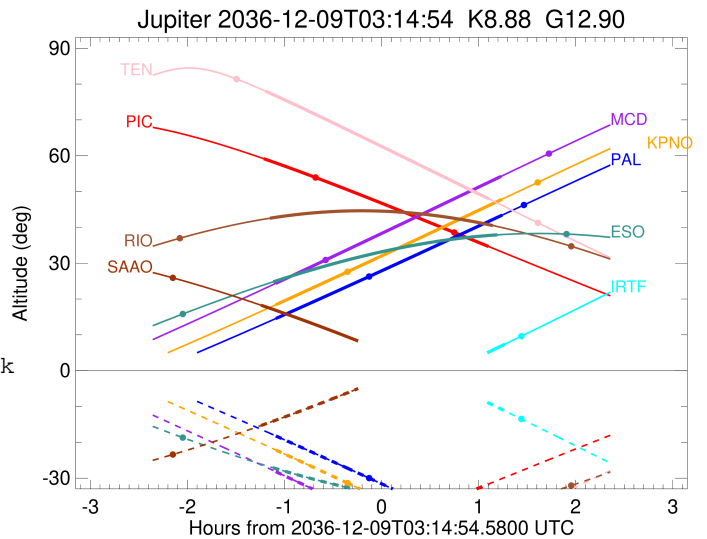
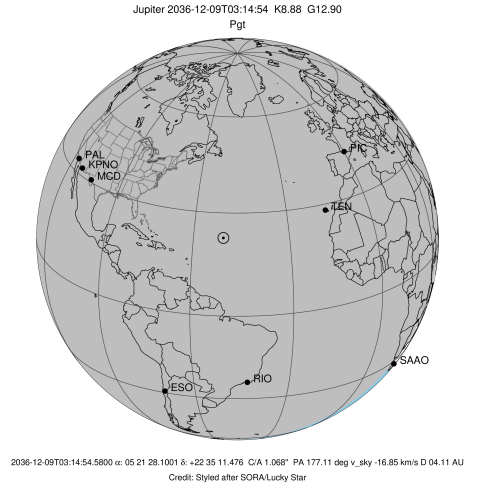


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:09:36.861 | 14.56 | -18.22  | 71491.9 | 5.62    | 6.42         |
| Jupiter | E   | 2036-12-09T04:29:28.274 | 43.41 | -47.12  | 71492.0 | 3.83    | 4.38         |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-12-09T03:19:40.300
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      : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude          : 8.880
G magnitude          : 12.897
RP magnitude         : 11.789
BP magnitude         : 14.184
DUPflag             : 0
Distance (au)       : 4.108
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg) : 175.97
Sun-Moon sep (deg)  : 70.36
B (ring opening deg) : 2.71
PA of pole (deg)    : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (" ) : 1.867
C/A sky separation (km) : 5562.9
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
    
```

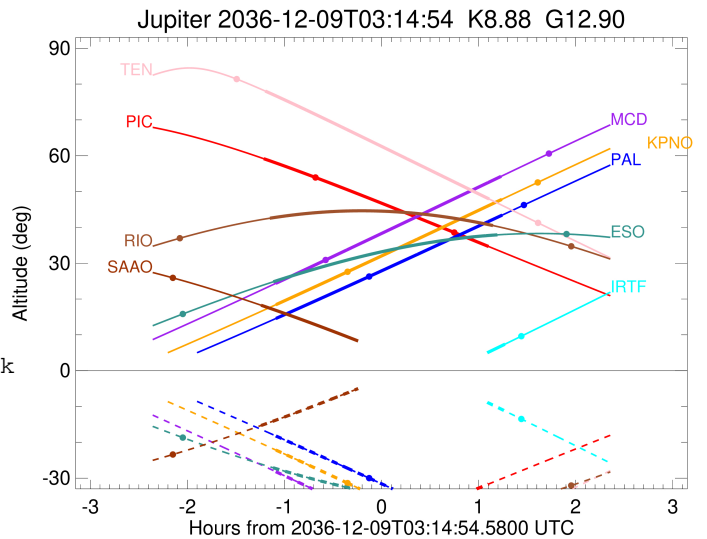
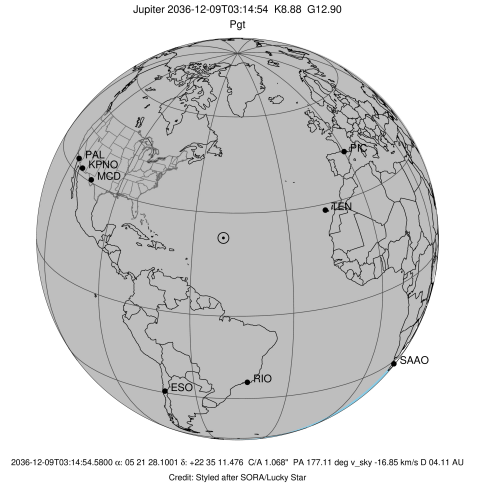


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:09:38.124 | 18.41 | -22.16  | 71491.9 | 5.37    | 6.14         |
| Jupiter | E   | 2036-12-09T04:29:15.196 | 47.80 | -51.56  | 71492.0 | 3.60    | 4.11         |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-12-09T03:19:23.900
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       : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 8.880
G magnitude           : 12.897
RP magnitude         : 11.789
BP magnitude         : 14.184
DUPflag              : 0
Distance (au)        : 4.108
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg) : 175.97
Sun-Moon sep (deg)   : 70.43
B (ring opening deg) : 2.71
PA of pole (deg)     : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 1.740
C/A sky separation (km): 5183.7
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
    
```

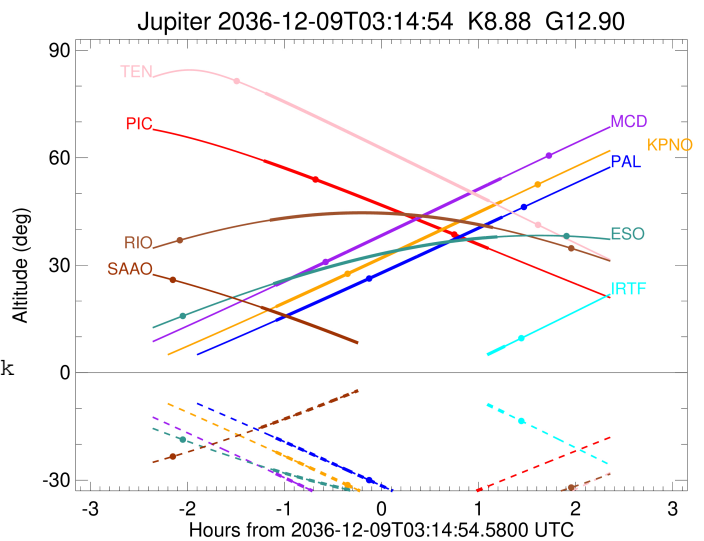
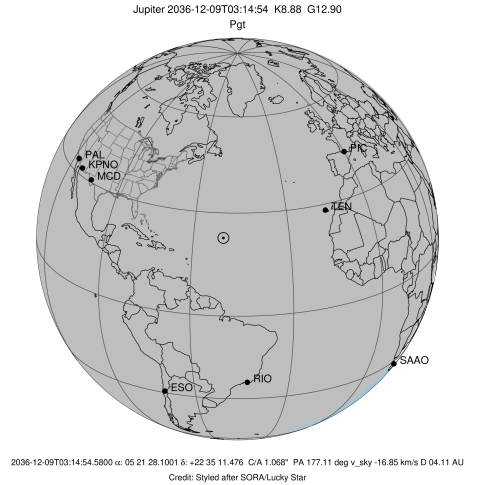


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:09:32.626 | 24.36 | -28.19  | 71491.9 | 5.06    | 5.78         |
| Jupiter | E   | 2036-12-09T04:28:49.623 | 54.24 | -58.02  | 71492.0 | 3.32    | 3.80         |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-12-09T03:12:09.340
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      : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude          : 8.880
G magnitude          : 12.897
RP magnitude         : 11.789
BP magnitude         : 14.184
DUPflag             : 0
Distance (au)       : 4.108
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg) : 175.97
Sun-Moon sep (deg)  : 70.30
B (ring opening deg) : 2.71
PA of pole (deg)    : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (" ) : 1.310
C/A sky separation (km) : 3903.0
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
    
```



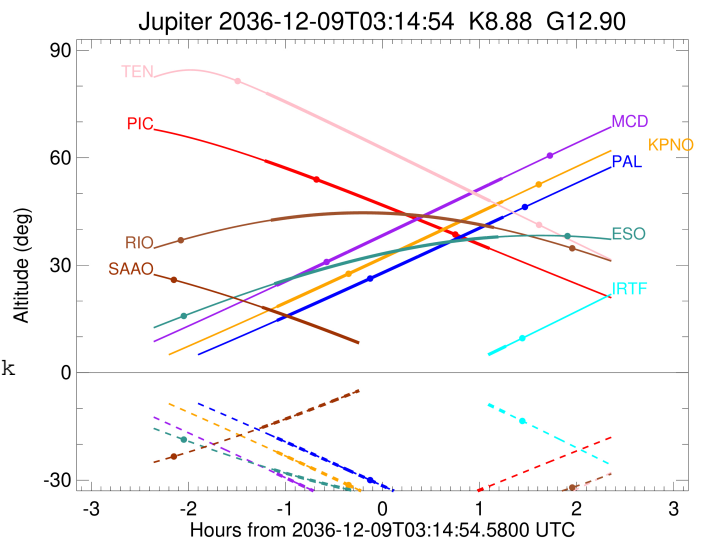
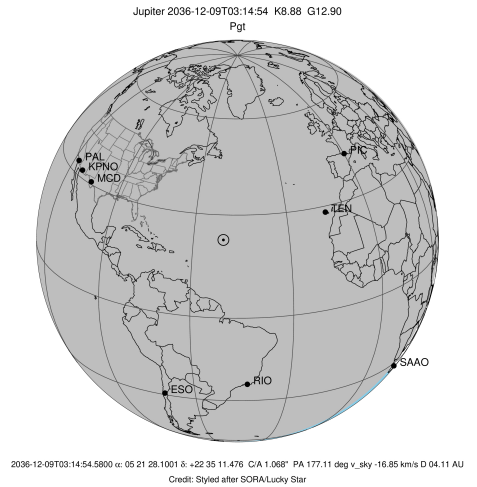
x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:03:08.090 | 78.03 | -74.47  | 71492.0 | 3.41    | 3.90         |
| Jupiter | E   | 2036-12-09T04:21:24.035 | 47.92 | -44.21  | 71492.0 | 2.99    | 3.42         |



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-12-09T03:20:29.420
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       : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 8.880
G magnitude           : 12.897
RP magnitude          : 11.789
BP magnitude          : 14.184
DUPflag              : 0
Distance (au)         : 4.108
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg) : 175.97
Sun-Moon sep (deg)   : 69.76
B (ring opening deg) : 2.71
PA of pole (deg)     : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 2.048
C/A sky separation (km): 6102.8
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
    
```

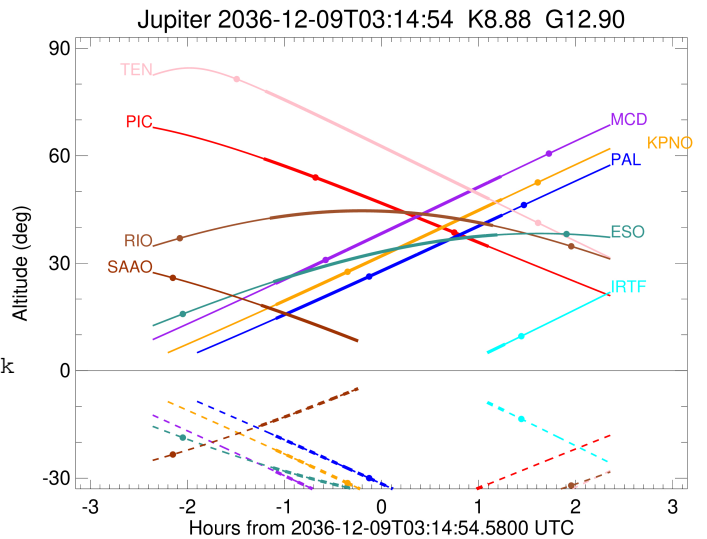
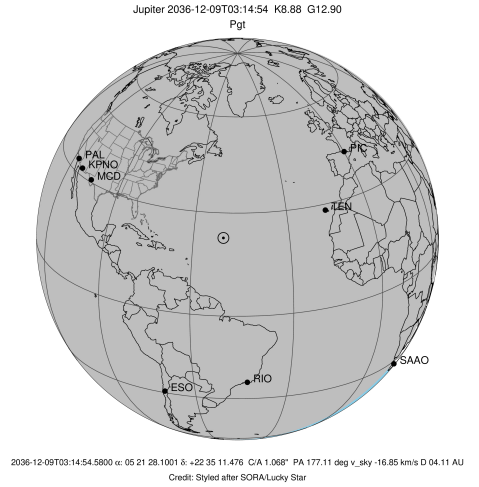


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt     | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|---------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:09:10.796 | -22.16x | 18.62x  | 71491.9 | 5.78    | 6.61         |
| Jupiter | E   | 2036-12-09T04:31:14.825 | 7.40    | -11.26  | 71492.0 | 3.93    | 4.49         |

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2036-12-09T03:14:48.730
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         : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor)  : 1.32
K magnitude            : 8.880
G magnitude            : 12.897
RP magnitude           : 11.789
BP magnitude           : 14.184
DUPflag               : 0
Distance (au)         : 4.108
f0 (km)                : 0.00
g0 (km)                : 0.00
skyplane vel. (km/s)  : -16.85
Sun-Target sep (deg)  : 175.97
Sun-Moon sep (deg)    : 70.28
B (ring opening deg)  : 2.71
PA of pole (deg)      : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (") : 0.469
C/A sky separation (km) : 1397.3
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
    
```



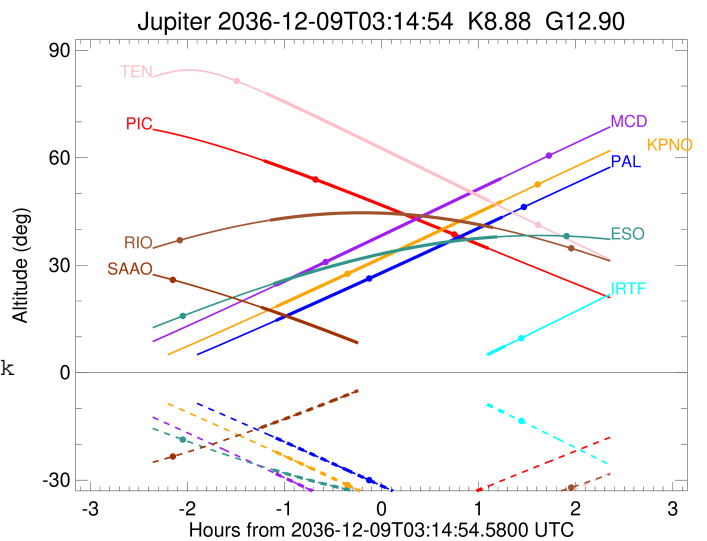
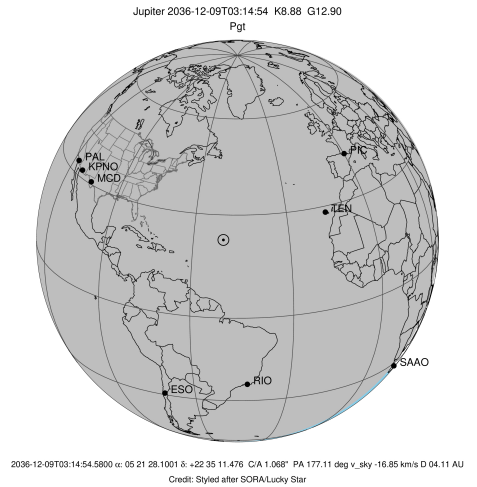
x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:05:51.018 | 42.55 | -43.40  | 71492.0 | -0.59   | -0.67        |
| Jupiter | E   | 2036-12-09T04:23:47.044 | 40.50 | -38.47  | 71492.0 | -1.48   | -1.69        |



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2036-12-09T03:17:21.030
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      : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude          : 8.880
G magnitude          : 12.897
RP magnitude         : 11.789
BP magnitude         : 14.184
DUPflag             : 0
Distance (au)       : 4.108
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg) : 175.97
Sun-Moon sep (deg)  : 70.28
B (ring opening deg) : 2.71
PA of pole (deg)    : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation ("): 0.525
C/A sky separation (km): 1564.6
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
    
```

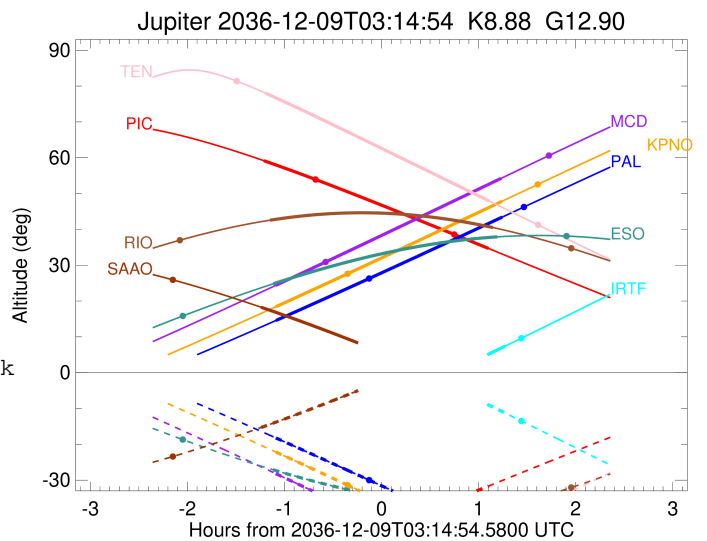
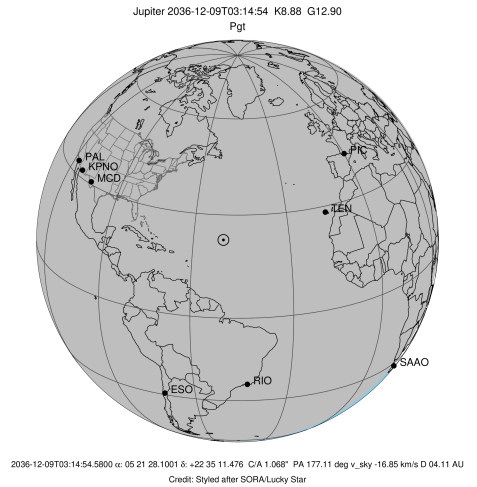


x: target alt < 5.0 deg or sun > -5.0 deg

| Target  | I/E | UTC                     | alt   | alt-sun | radius  | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I   | 2036-12-09T02:08:02.694 | 24.81 | -27.12  | 71492.0 | -0.51   | -0.58        |
| Jupiter | E   | 2036-12-09T04:26:26.571 | 37.91 | -38.00  | 71492.0 | -1.86   | -2.12        |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2036-12-09T03:10:14.280
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        : 3414767315516927232
2Mass ID (if available) : 05212810+2235118
ICRS Star Coord at Epoch: 05h 21m 28.10009s +22:35:11.47595s
RUWE (>1.4 is poor) : 1.32
K magnitude           : 8.880
G magnitude           : 12.897
RP magnitude          : 11.789
BP magnitude          : 14.184
DUPflag              : 0
Distance (au)         : 4.108
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.85
Sun-Target sep (deg)  : 175.97
Sun-Moon sep (deg)    : 69.46
B (ring opening deg) : 2.71
PA of pole (deg)      : -3.31
Pole direction: RA (deg): 268.05632
Dec (deg): 64.49687
C/A sky separation (") : 0.356
C/A sky separation (km) : 1061.7
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   | 2036-12-09T02:00:26.494 | 18.27  | -15.31  | 71492.0 | -0.83   | -0.95        |
| Jupiter | E   | 2036-12-09T04:20:28.207 | -6.71x | 10.23x  | 71492.0 | -0.78   | -0.90        |