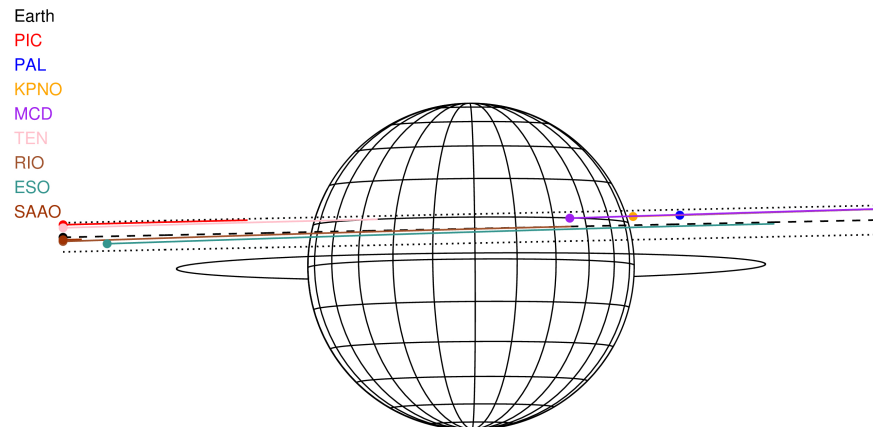


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-17T07:44:26.860
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068887781037474304
 2Mass ID (if available) : 17480282-2252125

Jupiter 2031-03-17T07:44:26 K9.19 G14.47 Pgt

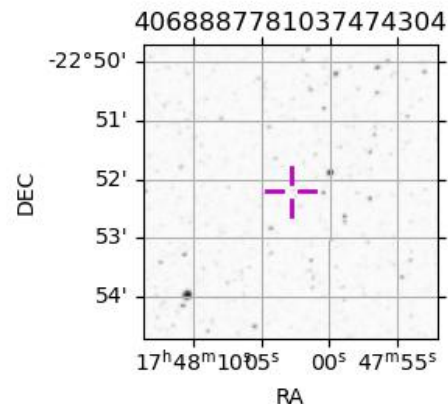
ICRS Star Coord at Epoch: 17h 48m 02.81850s -22:52:12.58339s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 9.190
 G magnitude : 14.466
 RP magnitude : 13.140
 BP magnitude : 16.480
 DUPflag : 0
 Distance (au) : 5.237
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 13.75
 Sun-Target sep (deg) : 88.84
 Sun-Moon sep (deg) : 12.89
 B (ring opening deg) : -2.63
 PA of pole (deg) : 0.45
 Pole direction: RA (deg): 268.05700
 Dec (deg): 64.49651
 C/A sky separation (") : 4.367
 C/A sky separation (km) : 16583.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



2031-03-17T07:44:26.8600 cc: 17 48 02.8185 s: -22 52 12.583 C/A 4.356" PA 181.22 deg v_sky +13.75 km/s D 05.24 AU
 Credit: Styled after SORA/Lucky Star

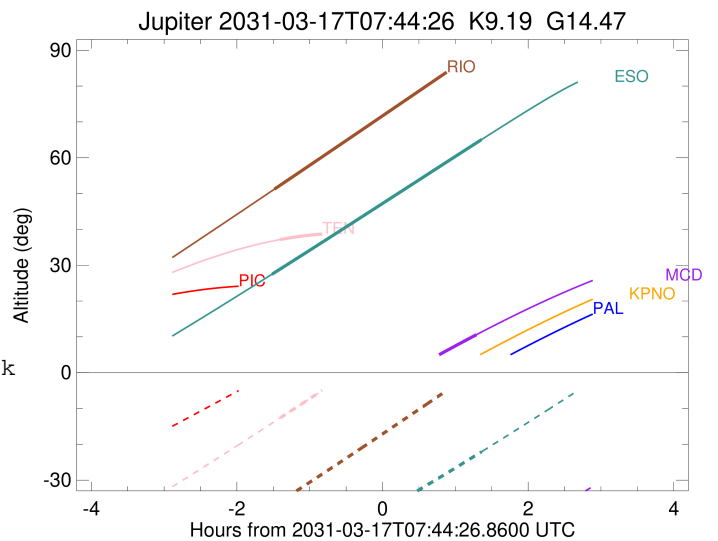
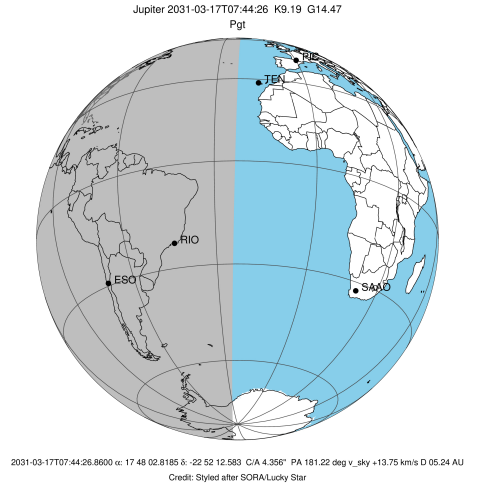
Observable events with sun below -5 deg and altitude above 5 deg

| 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 | | | 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 | + | MAR 17 09:01 - MAR 17 09:01 | Pne |
| TEN | Teide Obs./Tenerife | 28.3 | 343.5 | + | MAR 17 06:20 - MAR 17 06:20 | Pin |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | | | Pnn |
| KAV | Kavalur Observatory | 12.6 | 78.8 | | | Pnn |
| RIO | Rio de Janeiro | -22.9 | 316.8 | + | MAR 17 06:15 - MAR 17 06:15 | Pin |
| ESO | European Southern Obs. (3.6m) | -29.3 | 289.3 | + | MAR 17 06:13 - MAR 17 09:06 | 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 | | | Pnn |



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T07:37:30.610
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       : 4068887781037474304
2Mass ID (if available) : 17480282-2252125
ICRS Star Coord at Epoch: 17h 48m 02.81850s -22:52:12.58339s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.190
G magnitude           : 14.466
RP magnitude          : 13.140
BP magnitude          : 16.480
DUPflag              : 0
Distance (au)        : 5.237
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 13.75
Sun-Target sep (deg) : 88.84
Sun-Moon sep (deg)   : 13.59
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation ("): 5.200
C/A sky separation (km): 19749.1
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
    
```

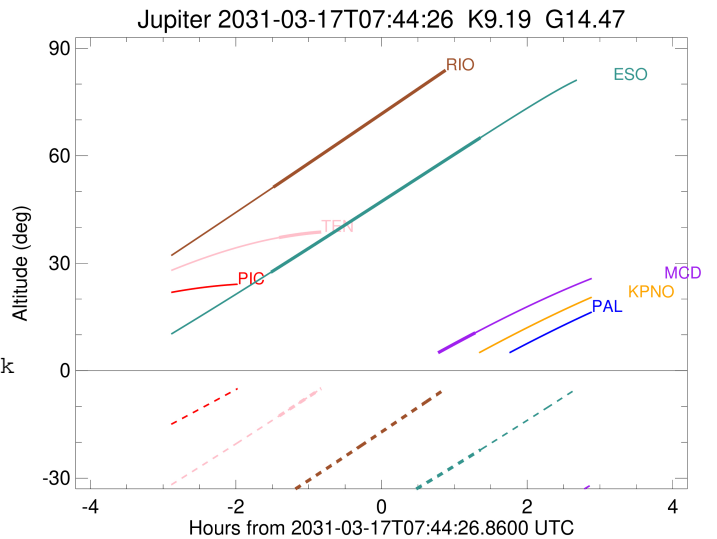
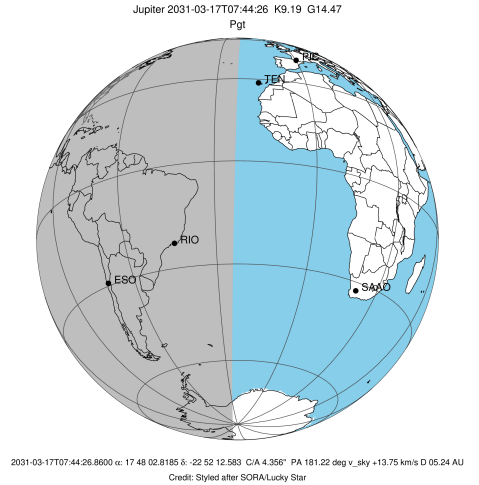


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|---------|---------|---------|---------|--------------|
| Jupiter | I | 2031-03-17T06:14:30.219 | -22.28x | -58.58 | 71491.4 | 14.61 | 16.59 |
| Jupiter | E | 2031-03-17T09:01:35.200 | 10.55 | -49.77 | 71491.2 | 17.41 | 19.71 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-17T07:45:11.770
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        : 4068887781037474304
2Mass ID (if available) : 17480282-2252125
ICRS Star Coord at Epoch: 17h 48m 02.81850s -22:52:12.58339s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 9.190
G magnitude           : 14.466
RP magnitude          : 13.140
BP magnitude          : 16.480
DUPflag              : 0
Distance (au)         : 5.236
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 13.75
Sun-Target sep (deg) : 88.84
Sun-Moon sep (deg)   : 12.80
B (ring opening deg) : -2.63
PA of pole (deg)     : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (") : 5.670
C/A sky separation (km) : 21534.4
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
    
```

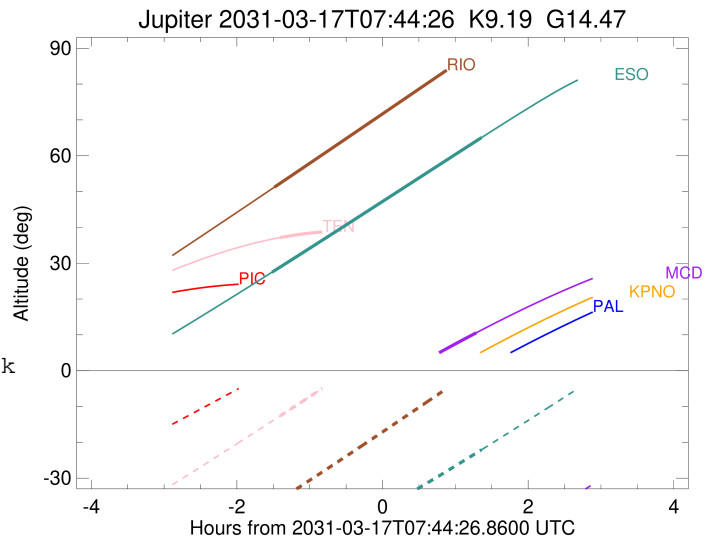
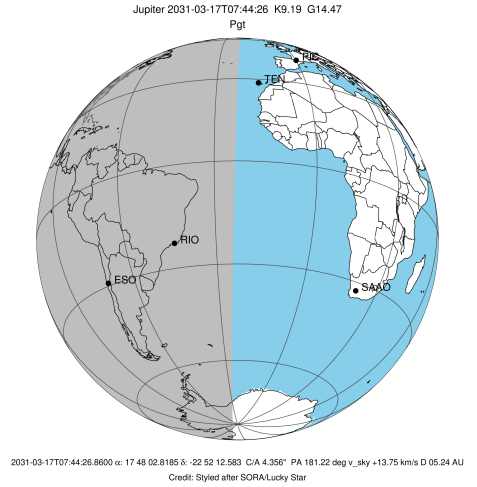


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2031-03-17T06:20:06.779 | 37.16 | -12.63 | 71491.2 | 16.67 | 18.89 |
| Jupiter | E | 2031-03-17T09:10:21.691 | 32.12 | 24.59x | 71491.1 | 18.10 | 20.48 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-17T07:41:51.170
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      : 4068887781037474304
2Mass ID (if available) : 17480282-2252125
ICRS Star Coord at Epoch: 17h 48m 02.81850s -22:52:12.58339s
RUWE (>1.4 is poor) : 1.00
K magnitude         : 9.190
G magnitude         : 14.466
RP magnitude        : 13.140
BP magnitude        : 16.480
DUPflag            : 0
Distance (au)       : 5.237
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 13.75
Sun-Target sep (deg) : 88.84
Sun-Moon sep (deg)  : 13.41
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (" ) : 4.322
C/A sky separation (km) : 16414.9
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
    
```

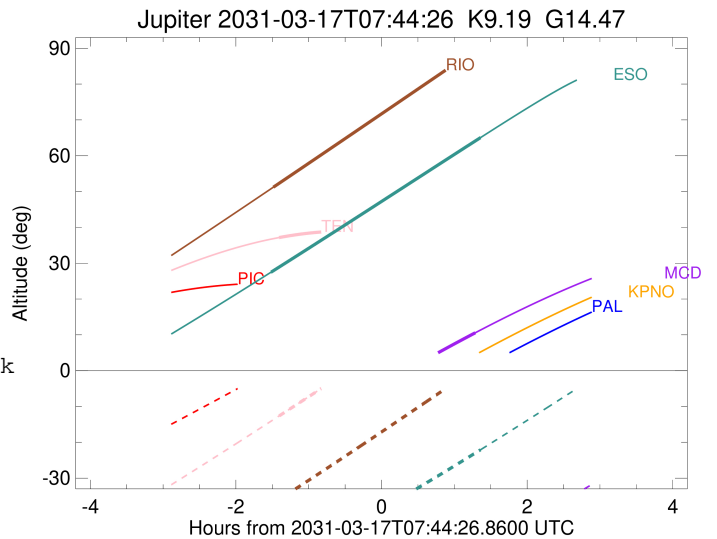
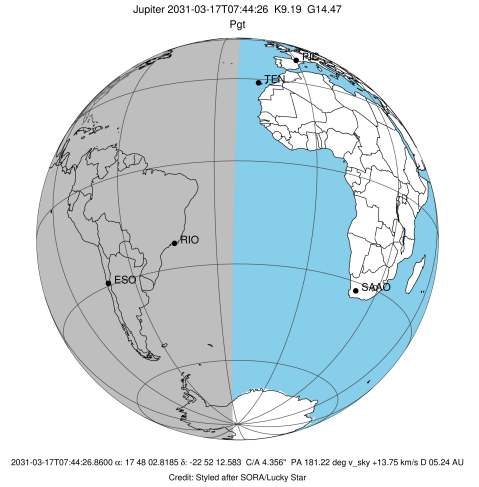


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2031-03-17T06:15:19.673 | 51.21 | -36.97 | 71491.6 | 12.10 | 13.76 |
| Jupiter | E | 2031-03-17T09:08:57.605 | 88.81 | 2.29x | 71491.4 | 14.18 | 16.10 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-17T07:39:14.420
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      : 4068887781037474304
2Mass ID (if available) : 17480282-2252125
ICRS Star Coord at Epoch: 17h 48m 02.81850s -22:52:12.58339s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 9.190
G magnitude          : 14.466
RP magnitude         : 13.140
BP magnitude         : 16.480
DUPflag             : 0
Distance (au)       : 5.237
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 13.75
Sun-Target sep (deg) : 88.84
Sun-Moon sep (deg)  : 13.71
B (ring opening deg) : -2.63
PA of pole (deg)    : 0.45
Pole direction: RA (deg): 268.05700
Dec (deg): 64.49651
C/A sky separation (" ) : 3.971
C/A sky separation (km) : 15082.2
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 | 2031-03-17T06:13:23.425 | 27.48 | -53.73 | 71491.7 | 10.81 | 12.32 |
| Jupiter | E | 2031-03-17T09:06:01.868 | 65.04 | -22.08 | 71491.5 | 13.37 | 15.19 |