

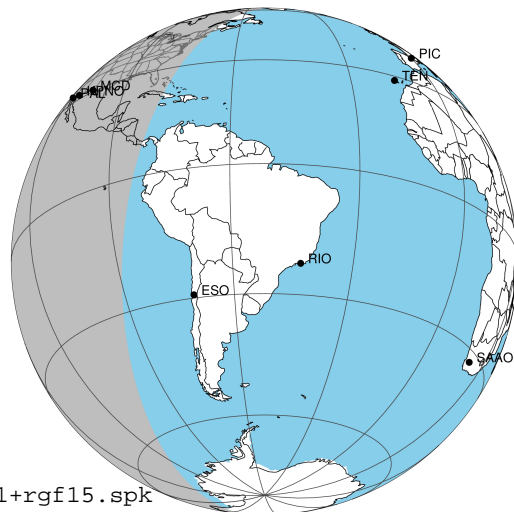
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-02-07T11:47:03.030
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4111704206917102464
 2Mass ID (if available) : 17262585-2240066

Jupiter 2031-02-07T11:47:03 K8.73 G14.64 Pgt

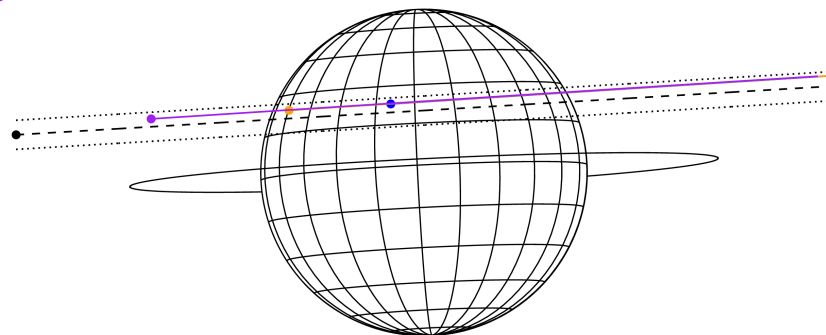
ICRS Star Coord at Epoch: 17h 26m 25.83847s -22:40:06.65035s

RUWE (>1.4 is poor) : 1.11
 K magnitude : 8.731
 G magnitude : 14.645
 RP magnitude : 13.192
 BP magnitude : 17.376
 DUPflag : 0
 Distance (au) : 5.814
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 29.89
 Sun-Target sep (deg) : 55.81
 Sun-Moon sep (deg) : 124.59
 B (ring opening deg) : -2.69
 PA of pole (deg) : 2.78
 Pole direction: RA (deg): 268.05703
 Dec (deg): 64.49651
 C/A sky separation (") : 6.430
 C/A sky separation (km) : 27113.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-02-07T11:47:03 K8.73 G14.64
 Pgt



Earth
 PAL
 KPNO
 MCD

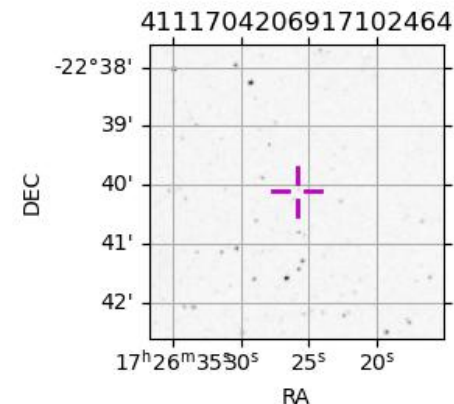


2031-02-07T11:47:03.0300 cc: 17 26 25.8385 s: -22 40 06.650 C/A 6.421" PA 153.41 deg v_sky +29.89 km/s D 05.81 AU

Credit: Styled after SORA/Lucky Star

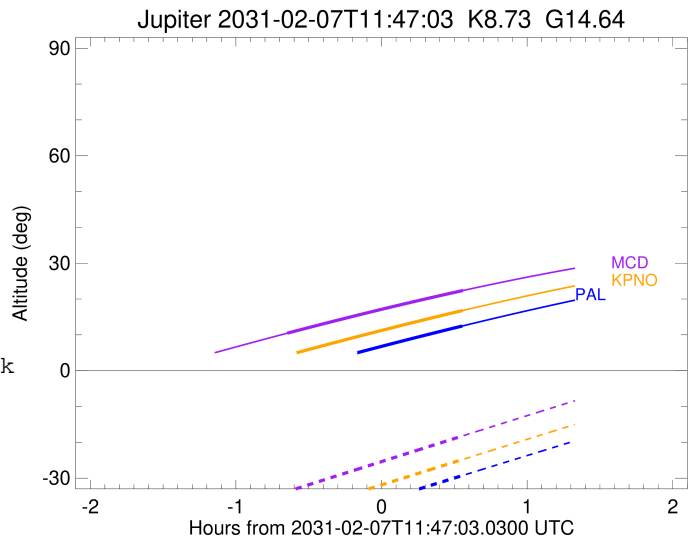
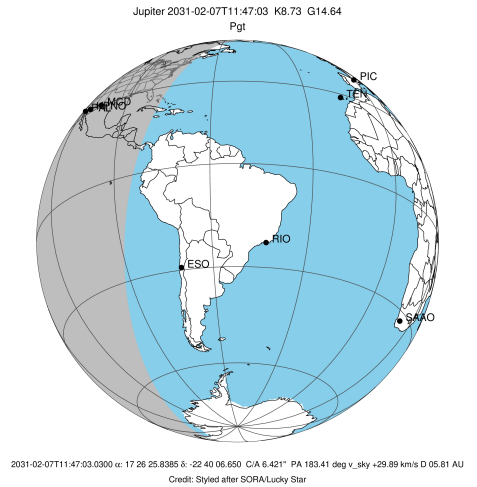
Observable events with sun below -5 deg and altitude above 5 deg

| 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 | + | FEB 07 12:20 - FEB 07 12:20 | Pne |
| PMO | Purple Mtn Obs. Nanking | 32.1 | 118.8 | | | Pnn |
| KPNO | Kitt Peak Natl Obs | 32.0 | 248.4 | + | FEB 07 12:20 - FEB 07 12:20 | Pne |
| MCD | McDonald Obs. 2.7m | 30.7 | 256.0 | + + | FEB 07 11:08 - FEB 07 12:20 | Pie |
| TEN | Teide Obs./Tenerife | 28.3 | 343.5 | | | Pnn |
| 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 | | | Pnn |
| ESO | European Southern Obs. (3.6m) | -29.3 | 289.3 | | | Pnn |
| 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 |



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target                : Jupiter
target radius (km)    : 71492.00
C/A epoch             : 2031-02-07T11:44:08.170
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        : 4111704206917102464
2Mass ID (if available) : 17262585-2240066
ICRS Star Coord at Epoch: 17h 26m 25.83847s -22:40:06.65035s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 8.731
G magnitude           : 14.645
RP magnitude          : 13.192
BP magnitude          : 17.376
DUPflag              : 0
Distance (au)         : 5.814
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 29.89
Sun-Target sep (deg)  : 55.81
Sun-Moon sep (deg)    : 125.06
B (ring opening deg) : -2.69
PA of pole (deg)     : 2.78
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 7.330
C/A sky separation (km) : 30905.9
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
    
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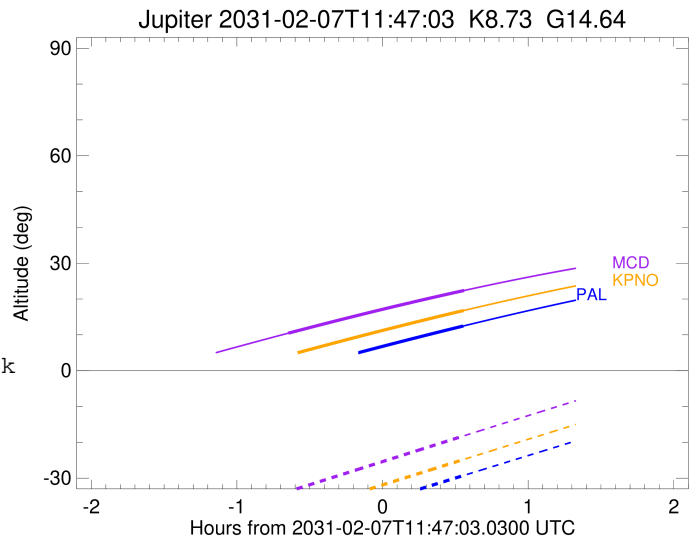
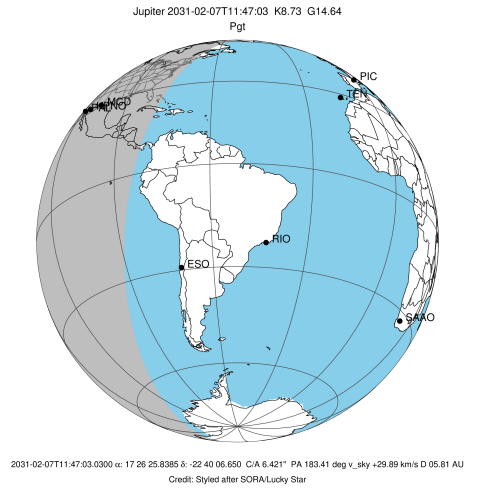


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|--------|---------|---------|---------|--------------|
| Jupiter | I | 2031-02-07T11:08:02.697 | -0.31x | -44.33 | 71490.3 | 24.66 | 27.66 |
| Jupiter | E | 2031-02-07T12:20:18.581 | 12.46 | -29.29 | 71490.0 | 26.49 | 29.63 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-02-07T11:44:13.180
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        : 4111704206917102464
2Mass ID (if available) : 17262585-2240066
ICRS Star Coord at Epoch: 17h 26m 25.83847s -22:40:06.65035s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 8.731
G magnitude           : 14.645
RP magnitude          : 13.192
BP magnitude          : 17.376
DUPflag              : 0
Distance (au)         : 5.814
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 29.89
Sun-Target sep (deg)  : 55.81
Sun-Moon sep (deg)   : 125.11
B (ring opening deg) : -2.69
PA of pole (deg)     : 2.78
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (") : 7.347
C/A sky separation (km) : 30979.4
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
    
```

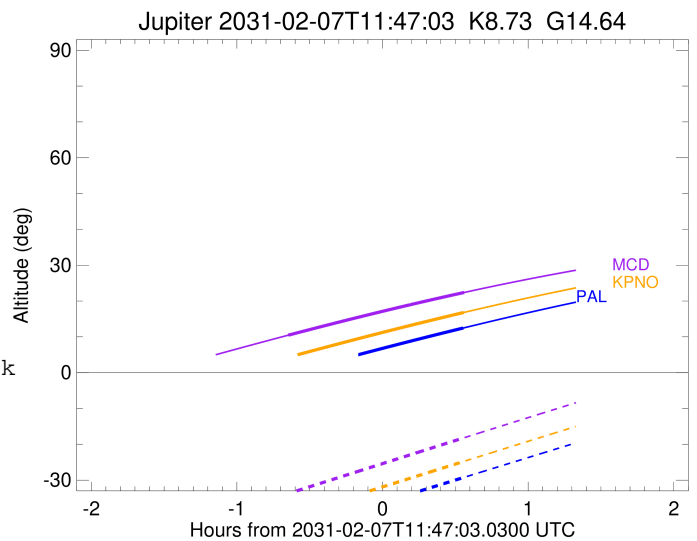
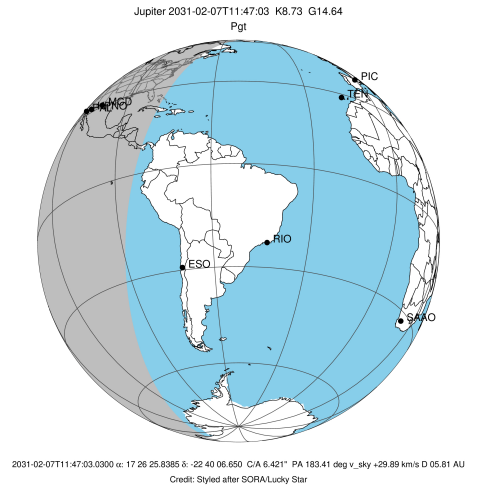


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2031-02-07T11:08:06.244 | 4.27x | -40.15 | 71490.3 | 24.73 | 27.74 |
| Jupiter | E | 2031-02-07T12:20:24.943 | 16.78 | -24.80 | 71490.0 | 26.55 | 29.70 |

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-07T11:44:24.480
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       : 4111704206917102464
2Mass ID (if available) : 17262585-2240066
ICRS Star Coord at Epoch: 17h 26m 25.83847s -22:40:06.65035s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 8.731
G magnitude           : 14.645
RP magnitude         : 13.192
BP magnitude         : 17.376
DUPflag             : 0
Distance (au)        : 5.814
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 29.89
Sun-Target sep (deg) : 55.81
Sun-Moon sep (deg)  : 125.15
B (ring opening deg) : -2.69
PA of pole (deg)    : 2.78
Pole direction: RA (deg): 268.05703
Dec (deg): 64.49651
C/A sky separation (" ) : 7.384
C/A sky separation (km) : 31134.3
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 | 2031-02-07T11:08:16.405 | 10.47 | -33.73 | 71490.3 | 24.88 | 27.89 |
| Jupiter | E | 2031-02-07T12:20:37.113 | 22.37 | -18.18 | 71490.0 | 26.67 | 29.83 |