

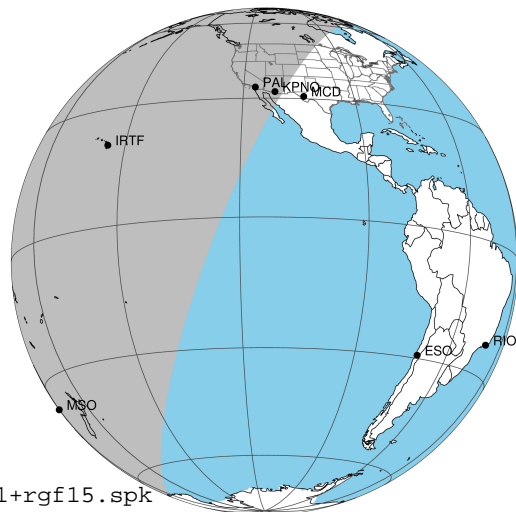
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2041-01-06T14:22:31.270
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3617115289395384064
 2Mass ID (if available) : 13491046-0953509

Jupiter 2041-01-06T14:22:31 K9.24 G10.62 Pgt

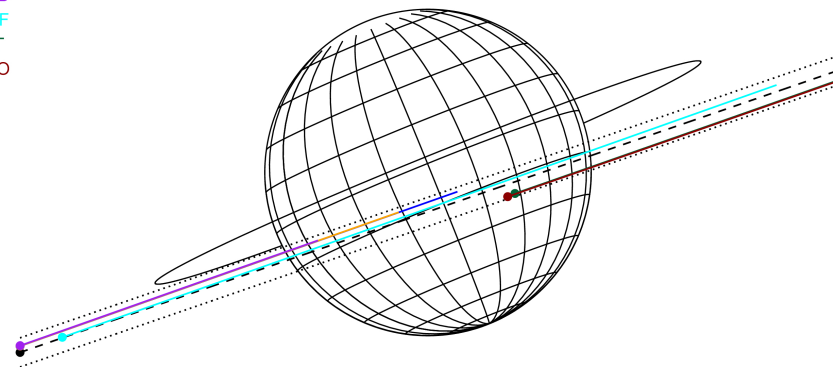
ICRS Star Coord at Epoch: 13h 49m 10.40030s -09:53:51.02101s

RUWE (>1.4 is poor) : 7.22
 K magnitude : 9.240
 G magnitude : 10.622
 RP magnitude : 10.122
 BP magnitude : 10.922
 DUPflag : 0
 Distance (au) : 5.585
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 19.01
 Sun-Target sep (deg) : 77.20
 Sun-Moon sep (deg) : 130.44
 B (ring opening deg) : -2.98
 PA of pole (deg) : 22.10
 Pole direction: RA (deg): 268.05623
 Dec (deg): 64.49718
 C/A sky separation (") : 4.016
 C/A sky separation (km) : 16269.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2041-01-06T14:22:31 K9.24 G10.62
 Pgt



Earth
 PAL
 KPNO
 MCD
 IRTF
 AAT
 MSO

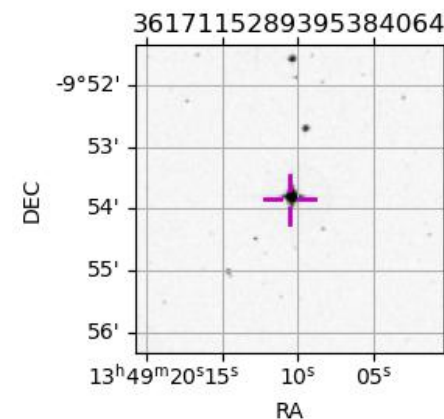


2041-01-06T14:22:31.2700 ± 13 49 10.4003 s: -09 53 51.021 C/A 4.024" PA 19.02 deg v_sky +19.01 km/s D 05.59 AU

Credit: Styled after SORA/Lucky Star

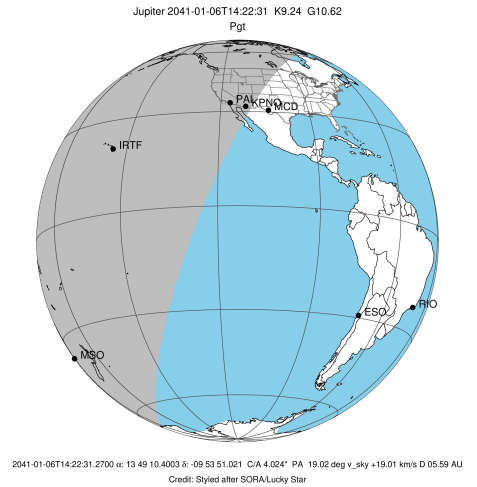
Observable events with sun below -5 deg and altitude above 5 deg

| 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 | + | JAN 06 13:18 - JAN 06 13:18 | Pin |
| PMO | Purple Mtn Obs. Nanking | 32.1 | 118.8 | | | Pnn |
| KPNO | Kitt Peak Natl Obs | 32.0 | 248.4 | + | JAN 06 13:18 - JAN 06 13:18 | Pin |
| MCD | McDonald Obs. 2.7m | 30.7 | 256.0 | + | JAN 06 13:19 - JAN 06 13:19 | Pin |
| TEN | Teide Obs./Tenerife | 28.3 | 343.5 | | | Pnn |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | + + | JAN 06 13:16 - JAN 06 15:20 | Pie |
| 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 | + | JAN 06 15:18 - JAN 06 15:18 | Pne |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8 | | | Pnn |
| MSO | Mt. Stromlo Observatory | -35.3 | 149.0 | + | JAN 06 15:19 - JAN 06 15:19 | Pne |

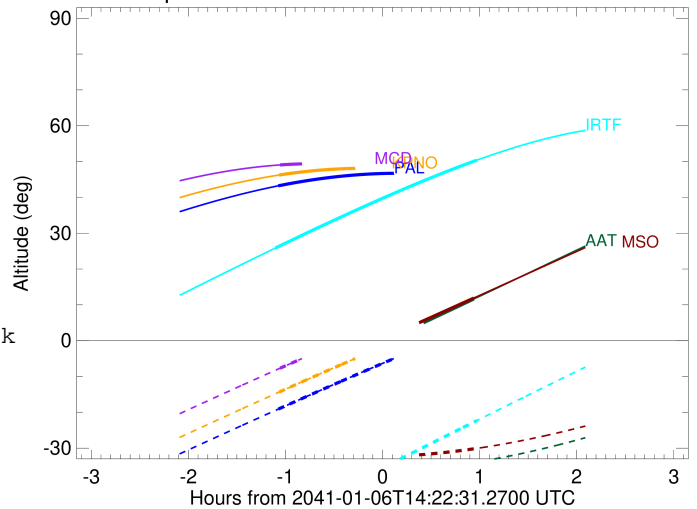


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2041-01-06T14:21:07.990
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       : 3617115289395384064
2Mass ID (if available) : 13491046-0953509
ICRS Star Coord at Epoch: 13h 49m 10.40030s -09:53:51.02101s
RUWE (>1.4 is poor) : 7.22
K magnitude           : 9.240
G magnitude           : 10.622
RP magnitude         : 10.122
BP magnitude         : 10.922
DUPflag              : 0
Distance (au)        : 5.585
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 19.01
Sun-Target sep (deg) : 77.20
Sun-Moon sep (deg)   : 130.77
B (ring opening deg) : -2.98
PA of pole (deg)     : 22.10
Pole direction: RA (deg): 268.05623
Dec (deg): 64.49718
C/A sky separation (") : 3.017
C/A sky separation (km) : 12223.3
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
    
```



Jupiter 2041-01-06T14:22:31 K9.24 G10.62

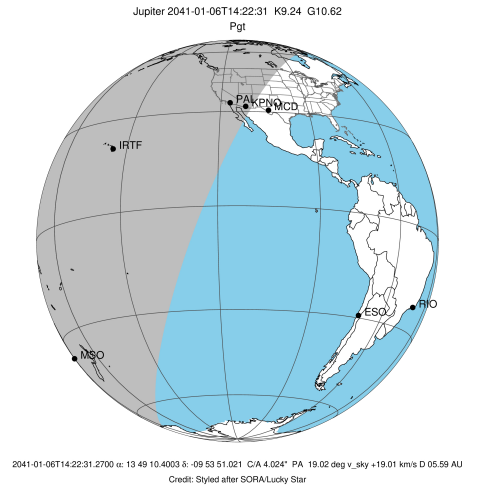


x: target alt < 5.0 deg or sun > -5.0 deg

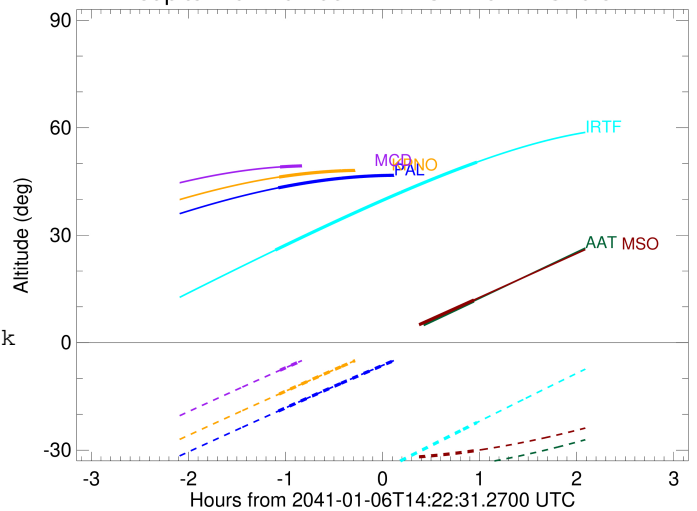
| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2041-01-06T13:18:13.910 | 43.23 | -19.08 | 71491.8 | -7.17 | -8.19 |
| Jupiter | E | 2041-01-06T15:24:08.783 | 45.00 | 5.15x | 71491.4 | -12.54 | -14.27 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2041-01-06T14:21:34.840
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        : 3617115289395384064
2Mass ID (if available) : 13491046-0953509
ICRS Star Coord at Epoch: 13h 49m 10.40030s -09:53:51.02101s
RUWE (>1.4 is poor)  : 7.22
K magnitude           : 9.240
G magnitude           : 10.622
RP magnitude          : 10.122
BP magnitude          : 10.922
DUPflag              : 0
Distance (au)         : 5.585
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : 19.01
Sun-Target sep (deg)  : 77.20
Sun-Moon sep (deg)    : 130.84
B (ring opening deg)  : -2.98
PA of pole (deg)      : 22.10
Pole direction: RA (deg): 268.05623
Dec (deg): 64.49718
C/A sky separation (") : 3.004
C/A sky separation (km) : 12166.7
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
    
```



Jupiter 2041-01-06T14:22:31 K9.24 G10.62

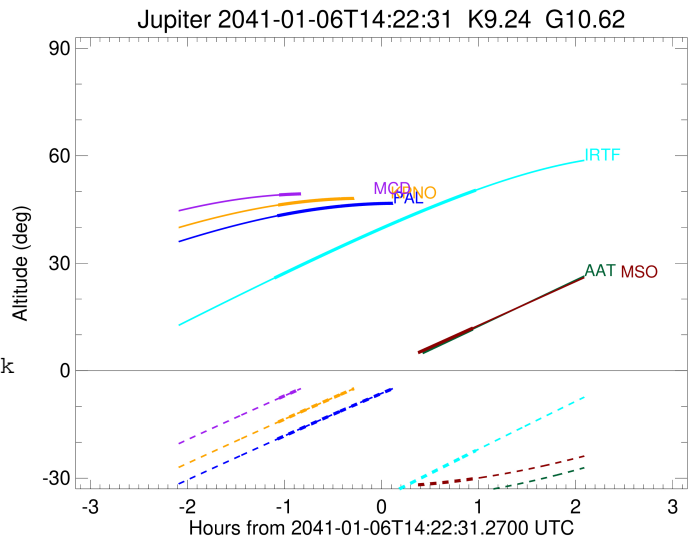
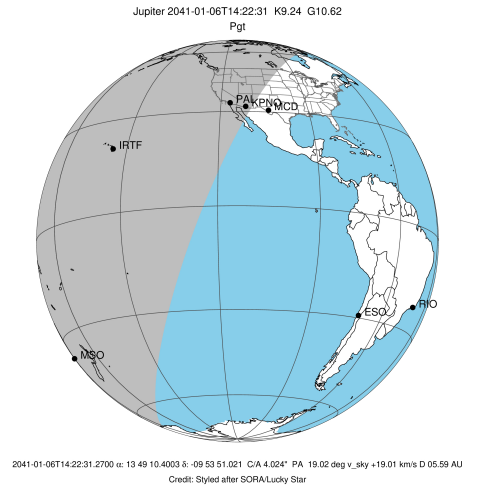


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2041-01-06T13:18:37.726 | 46.23 | -14.35 | 71491.8 | -7.12 | -8.13 |
| Jupiter | E | 2041-01-06T15:24:36.779 | 44.59 | 9.72x | 71491.4 | -12.51 | -14.24 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2041-01-06T14:22:13.400
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       : 3617115289395384064
2Mass ID (if available) : 13491046-0953509
ICRS Star Coord at Epoch: 13h 49m 10.40030s -09:53:51.02101s
RUWE (>1.4 is poor) : 7.22
K magnitude           : 9.240
G magnitude           : 10.622
RP magnitude          : 10.122
BP magnitude          : 10.922
DUPflag              : 0
Distance (au)         : 5.585
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 19.01
Sun-Target sep (deg) : 77.20
Sun-Moon sep (deg)   : 130.91
B (ring opening deg) : -2.98
PA of pole (deg)     : 22.10
Pole direction: RA (deg): 268.05623
Dec (deg): 64.49718
C/A sky separation (") : 2.973
C/A sky separation (km) : 12042.2
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
    
```

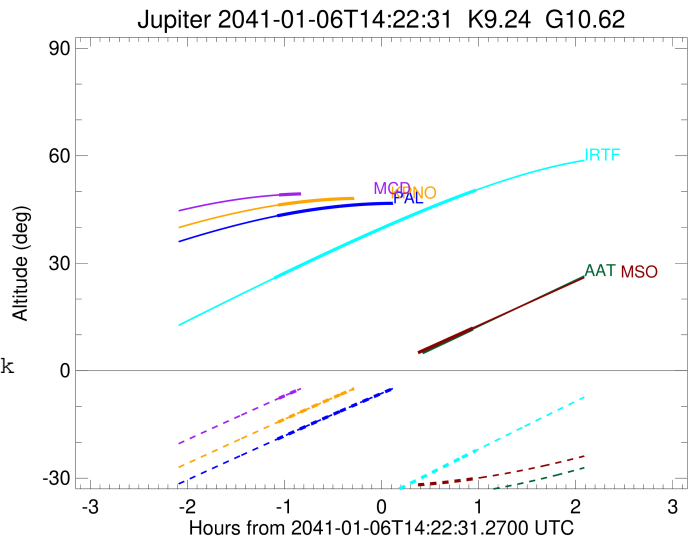
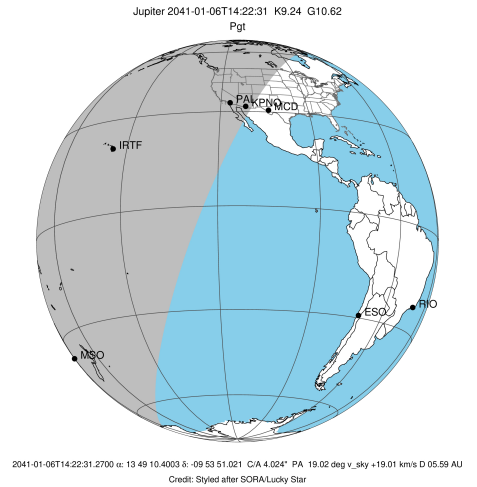


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2041-01-06T13:19:13.248 | 49.05 | -7.69 | 71491.8 | -7.00 | -7.99 |
| Jupiter | E | 2041-01-06T15:25:15.552 | 42.30 | 15.82x | 71491.4 | -12.45 | -14.16 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2041-01-06T14:18:27.700
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        : 3617115289395384064
2Mass ID (if available) : 13491046-0953509
ICRS Star Coord at Epoch: 13h 49m 10.40030s -09:53:51.02101s
RUWE (>1.4 is poor) : 7.22
K magnitude           : 9.240
G magnitude           : 10.622
RP magnitude          : 10.122
BP magnitude          : 10.922
DUPflag              : 0
Distance (au)         : 5.585
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 19.01
Sun-Target sep (deg) : 77.20
Sun-Moon sep (deg)   : 130.44
B (ring opening deg) : -2.98
PA of pole (deg)     : 22.10
Pole direction: RA (deg): 268.05623
Dec (deg): 64.49718
C/A sky separation (") : 3.662
C/A sky separation (km) : 14833.5
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
    
```

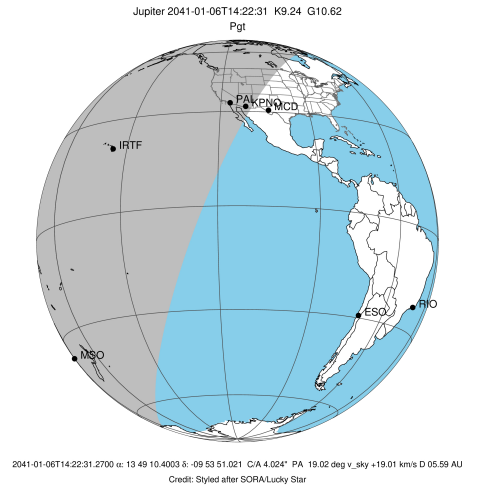


x: target alt < 5.0 deg or sun > -5.0 deg

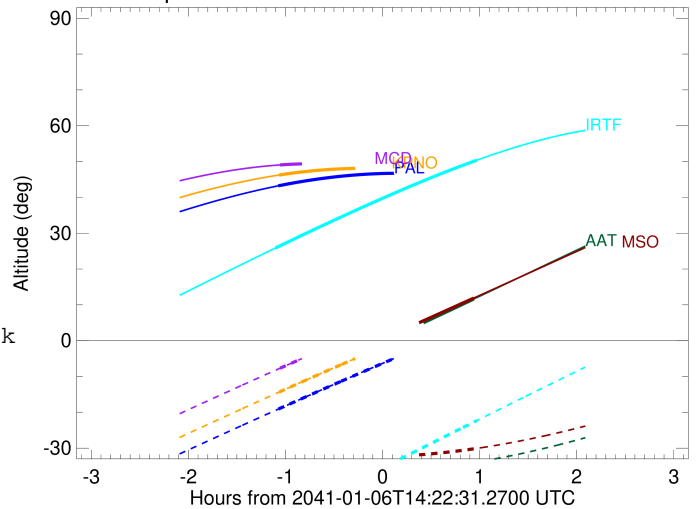
| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2041-01-06T13:16:22.041 | 25.86 | -50.71 | 71491.7 | -9.33 | -10.64 |
| Jupiter | E | 2041-01-06T15:20:53.640 | 50.39 | -22.29 | 71491.2 | -14.55 | -16.53 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2041-01-06T14:19:02.220
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : AAT
Location             : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 3617115289395384064
2Mass ID (if available) : 13491046-0953509
ICRS Star Coord at Epoch: 13h 49m 10.40030s -09:53:51.02101s
RUWE (>1.4 is poor) : 7.22
K magnitude           : 9.240
G magnitude           : 10.622
RP magnitude         : 10.122
BP magnitude         : 10.922
DUPflag              : 0
Distance (au)        : 5.585
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 19.01
Sun-Target sep (deg) : 77.20
Sun-Moon sep (deg)   : 130.09
B (ring opening deg) : -2.98
PA of pole (deg)     : 22.10
Pole direction: RA (deg): 268.05623
Dec (deg): 64.49718
C/A sky separation (") : 5.235
C/A sky separation (km) : 21207.3
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
    
```



Jupiter 2041-01-06T14:22:31 K9.24 G10.62

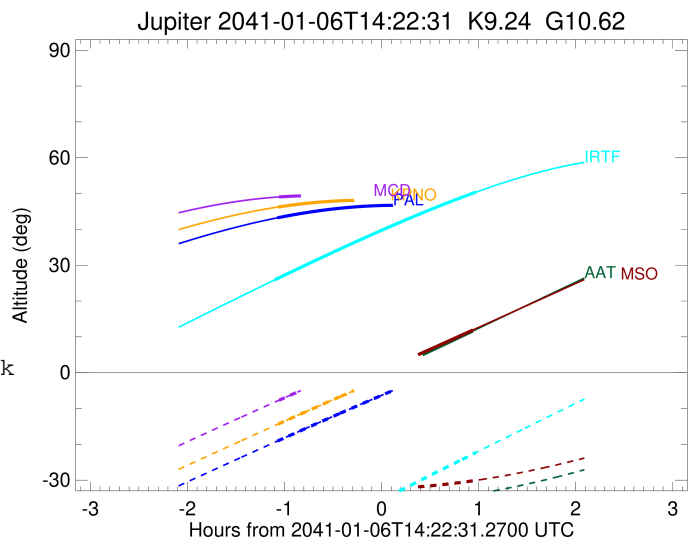
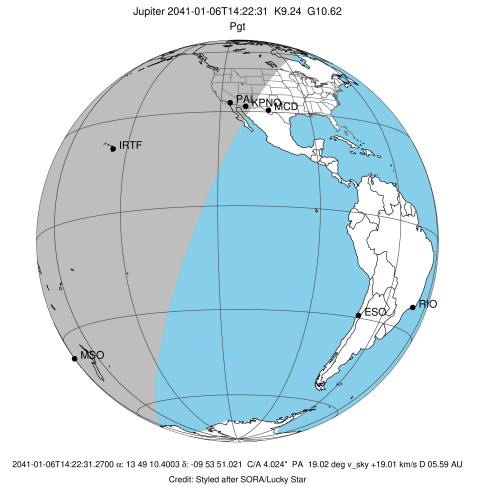


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|---------|---------|---------|---------|--------------|
| Jupiter | I | 2041-01-06T13:19:33.585 | -13.30x | -35.16 | 71491.3 | -14.25 | -16.18 |
| Jupiter | E | 2041-01-06T15:18:52.799 | 11.61 | -33.99 | 71490.6 | -20.11 | -22.70 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2041-01-06T14:19:20.460
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       : 3617115289395384064
2Mass ID (if available) : 13491046-0953509
ICRS Star Coord at Epoch: 13h 49m 10.40030s -09:53:51.02101s
RUWE (>1.4 is poor) : 7.22
K magnitude           : 9.240
G magnitude           : 10.622
RP magnitude         : 10.122
BP magnitude         : 10.922
DUPflag              : 0
Distance (au)        : 5.585
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 19.01
Sun-Target sep (deg) : 77.20
Sun-Moon sep (deg)   : 130.14
B (ring opening deg) : -2.98
PA of pole (deg)     : 22.10
Pole direction: RA (deg): 268.05623
Dec (deg): 64.49718
C/A sky separation (") : 5.301
C/A sky separation (km) : 21471.4
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 | 2041-01-06T13:19:55.141 | -11.83x | -31.25 | 71491.2 | -14.47 | -16.43 |
| Jupiter | E | 2041-01-06T15:19:06.888 | 11.93 | -30.18 | 71490.5 | -20.34 | -22.95 |