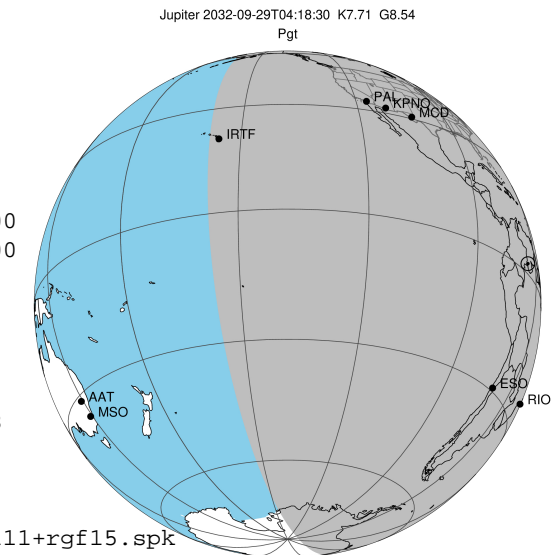


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2032-09-29T04:18:30.330
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6771863566831090816
 2Mass ID (if available) : 19354088-2209596

Jupiter 2032-09-29T04:18:30 K7.71 G8.54 Pgt

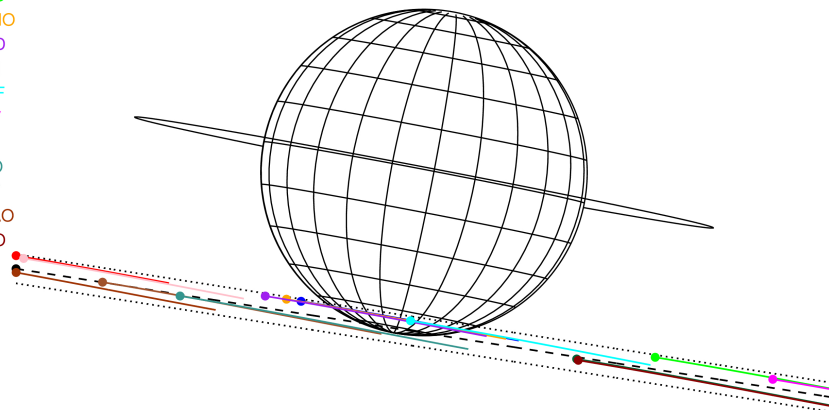
ICRS Star Coord at Epoch: 19h 35m 40.85856s -22:10:00.55672s

RUWE (>1.4 is poor) : 4.19
 K magnitude : 7.712
 G magnitude : 8.540
 RP magnitude : 8.224
 BP magnitude : 8.717
 DUPflag : 0
 Distance (au) : 4.746
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 5.23
 Sun-Target sep (deg) : 105.93
 Sun-Moon sep (deg) : 163.67
 B (ring opening deg) : -1.05
 PA of pole (deg) : -10.83
 Pole direction: RA (deg): 268.05658
 Dec (deg): 64.49657
 C/A sky separation (") : 20.172
 C/A sky separation (km) : 69432.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



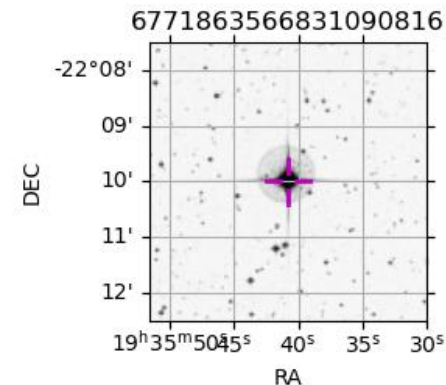
2032-09-29T04:18:30.3300 α: 19 35 40.8586 δ: -22 10 00.557 C/A ***** PA 351.05 deg v_sky + 5.23 km/s D 0.475 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 PMO
 KPNO
 MCD
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



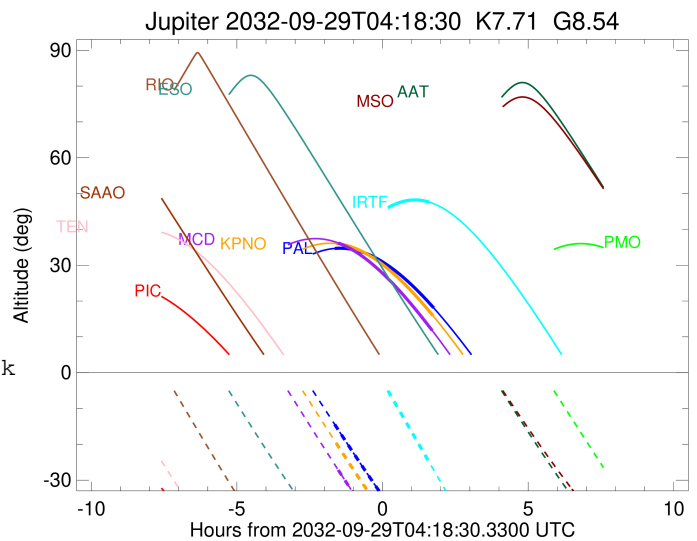
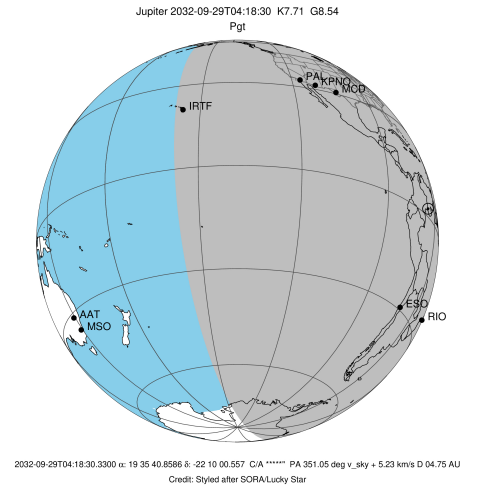
Observable events with sun below -5 deg and altitude above 5 deg

| 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 | + + | SEP 29 02:39 - SEP 29 06:03 | Pie |
| PMO | Purple Mtn Obs. Nanking | 32.1 | 118.8 | | | Pnn |
| KPNO | Kitt Peak Natl Obs | 32.0 | 248.4 | + + | SEP 29 02:42 - SEP 29 06:02 | Pie |
| MCD | McDonald Obs. 2.7m | 30.7 | 256.0 | + + | SEP 29 02:47 - SEP 29 06:01 | Pie |
| TEN | Teide Obs./Tenerife | 28.3 | 343.5 | | | Pnn |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | + | SEP 29 05:54 - SEP 29 05:54 | Pne |
| 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 |



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-09-29T04:22:50.190
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        : 6771863566831090816
2Mass ID (if available) : 19354088-2209596
ICRS Star Coord at Epoch: 19h 35m 40.85856s -22:10:00.55672s
RUWE (>1.4 is poor) : 4.19
K magnitude           : 7.712
G magnitude           : 8.540
RP magnitude          : 8.224
BP magnitude          : 8.717
DUPflag               : 0
Distance (au)         : 4.746
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.23
Sun-Target sep (deg)  : 105.93
Sun-Moon sep (deg)    : 163.22
B (ring opening deg) : -1.05
PA of pole (deg)      : -10.83
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 18.816
C/A sky separation (km) : 64764.9
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
    
```

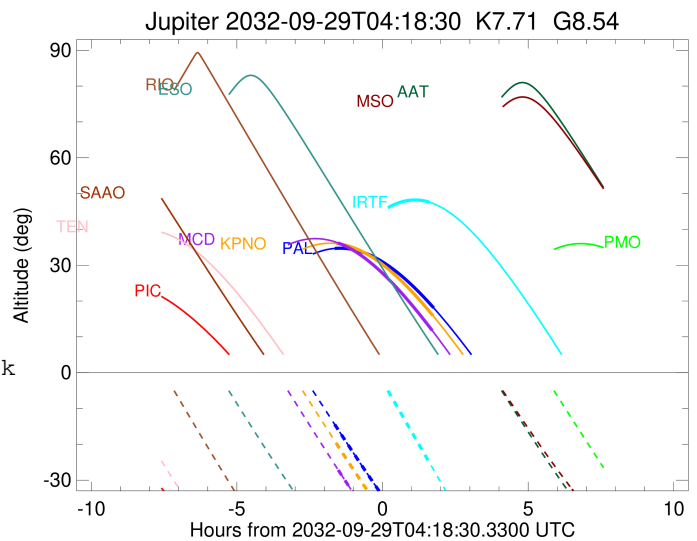
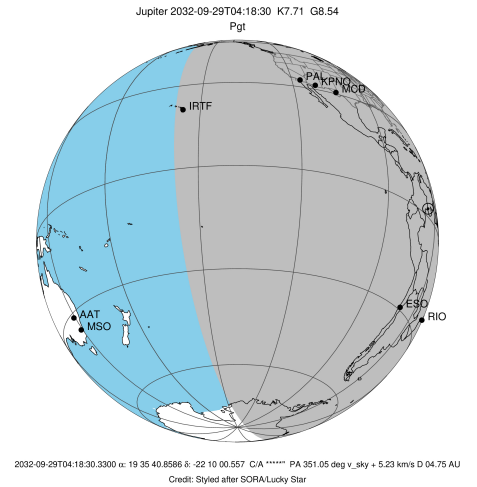


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2032-09-29T02:39:57.362 | 34.67 | -14.43 | 71490.7 | -65.79 | -68.40 |
| Jupiter | E | 2032-09-29T06:03:49.099 | 18.10 | -52.40 | 71490.8 | -64.59 | -67.30 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2032-09-29T04:23:49.120
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       : 6771863566831090816
2Mass ID (if available) : 19354088-2209596
ICRS Star Coord at Epoch: 19h 35m 40.85856s -22:10:00.55672s
RUWE (>1.4 is poor) : 4.19
K magnitude           : 7.712
G magnitude           : 8.540
RP magnitude          : 8.224
BP magnitude          : 8.717
DUPflag              : 0
Distance (au)        : 4.746
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.23
Sun-Target sep (deg) : 105.93
Sun-Moon sep (deg)   : 163.17
B (ring opening deg) : -1.05
PA of pole (deg)     : -10.83
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 18.890
C/A sky separation (km) : 65022.4
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
    
```

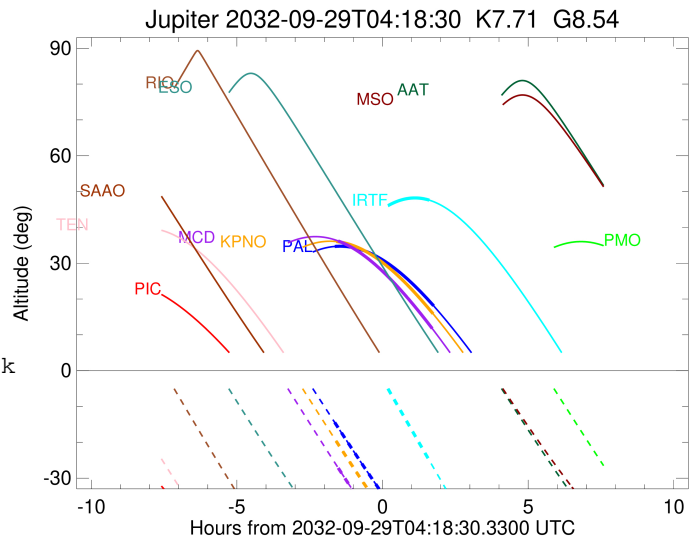
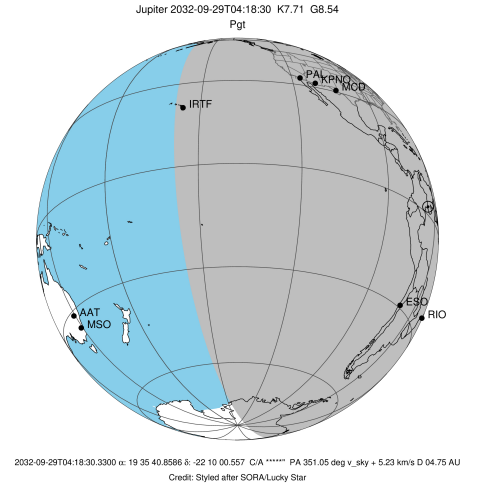


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2032-09-29T02:42:51.697 | 36.04 | -19.62 | 71490.7 | -66.12 | -68.70 |
| Jupiter | E | 2032-09-29T06:02:40.912 | 15.87 | -56.06 | 71490.8 | -65.18 | -67.84 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-09-29T04:25:13.190
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      : 6771863566831090816
2Mass ID (if available) : 19354088-2209596
ICRS Star Coord at Epoch: 19h 35m 40.85856s -22:10:00.55672s
RUWE (>1.4 is poor) : 4.19
K magnitude          : 7.712
G magnitude          : 8.540
RP magnitude         : 8.224
BP magnitude         : 8.717
DUPflag             : 0
Distance (au)        : 4.746
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.23
Sun-Target sep (deg) : 105.93
Sun-Moon sep (deg)  : 163.11
B (ring opening deg) : -1.05
PA of pole (deg)    : -10.83
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 18.992
C/A sky separation (km) : 65373.6
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
    
```

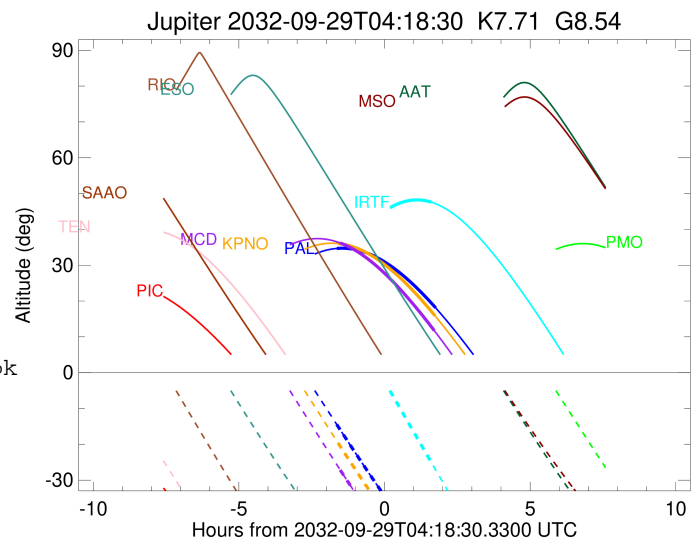
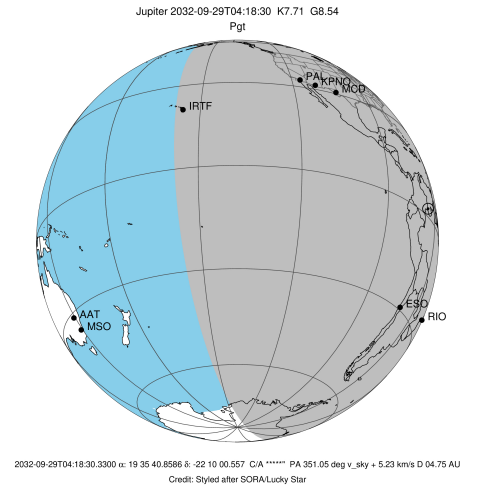


x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2032-09-29T02:47:07.427 | 36.21 | -27.13 | 71490.7 | -66.59 | -69.13 |
| Jupiter | E | 2032-09-29T06:01:00.227 | 11.75 | -60.15 | 71490.7 | -65.97 | -68.56 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2032-09-29T04:14:06.250
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      : 6771863566831090816
2Mass ID (if available) : 19354088-2209596
ICRS Star Coord at Epoch: 19h 35m 40.85856s -22:10:00.55672s
RUWE (>1.4 is poor) : 4.19
K magnitude          : 7.712
G magnitude          : 8.540
RP magnitude         : 8.224
BP magnitude         : 8.717
DUPflag             : 0
Distance (au)       : 4.746
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 5.23
Sun-Target sep (deg) : 105.93
Sun-Moon sep (deg)  : 163.76
B (ring opening deg) : -1.05
PA of pole (deg)    : -10.83
Pole direction: RA (deg): 268.05658
Dec (deg): 64.49657
C/A sky separation (") : 18.899
C/A sky separation (km) : 65050.1
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 | 2032-09-29T02:33:34.919 | 30.71 | 22.13x | 71490.7 | -67.61 | -70.05 |
| Jupiter | E | 2032-09-29T05:54:55.353 | 47.59 | -25.06 | 71490.8 | -64.24 | -66.98 |