

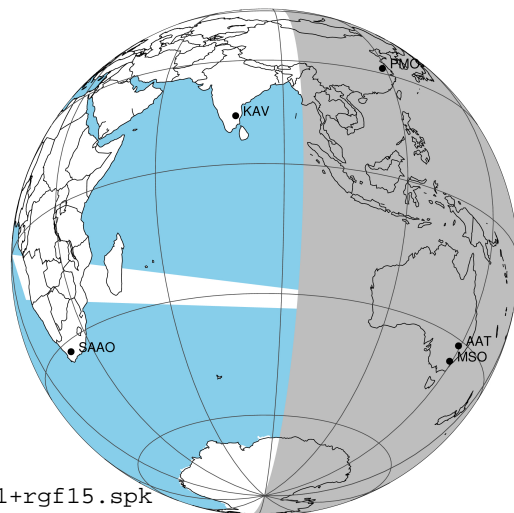
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-09-22T11:35:01.260
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4114625918565629184
 2Mass ID (if available) : 17195518-2255011

Jupiter 2031-09-22T11:35:01 K7.65 G13.51 Pgt

ICRS Star Coord at Epoch: 17h 19m 55.17036s -22:55:01.11902s

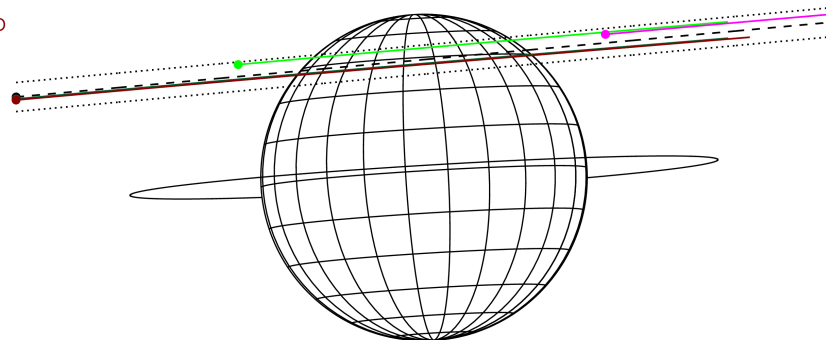
RUWE (>1.4 is poor) : 1.11
 K magnitude : 7.646
 G magnitude : 13.511
 RP magnitude : 12.012
 BP magnitude : 16.717
 DUPflag : 0
 Distance (au) : 5.292
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 17.24
 Sun-Target sep (deg) : 81.94
 Sun-Moon sep (deg) : 12.37
 B (ring opening deg) : -2.36
 PA of pole (deg) : 3.47
 Pole direction: RA (deg): 268.05684
 Dec (deg): 64.49652
 C/A sky separation (") : 13.404
 C/A sky separation (km) : 51443.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-09-22T11:35:01 K7.65 G13.51
 Pgt



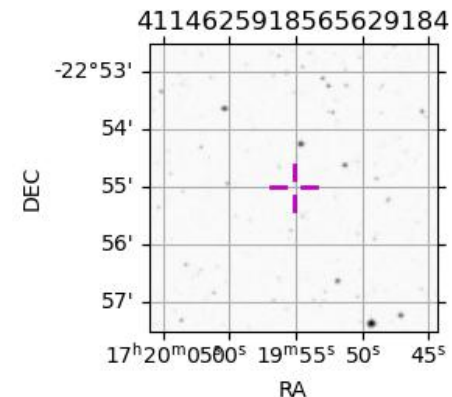
2031-09-22T11:35:01.2600 a: 17 19 55.1704 & -22 55 01.119 C/A ***** PA 185.24 deg v_sky +17.24 km/s D 05.29 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PMO
 KAV
 AAT
 MSO



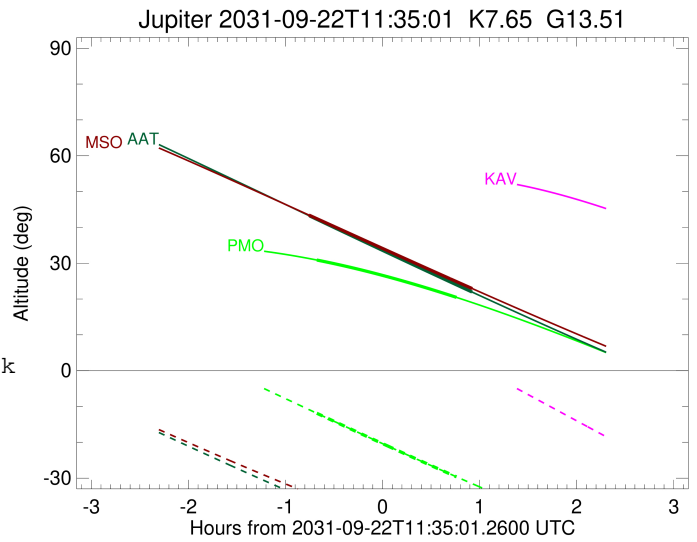
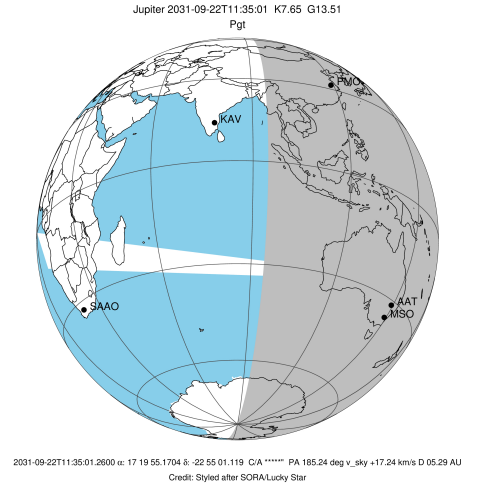
Observable events with sun below -5 deg and altitude above 5 deg

| 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 | | | Pnn |
| PMO | Purple Mtn Obs. Nanking | 32.1 | 118.8 | + + | SEP 22 10:54 - SEP 22 12:20 | Pie |
| KPNO | Kitt Peak Natl Obs | 32.0 | 248.4 | | | Pnn |
| MCD | McDonald Obs. 2.7m | 30.7 | 256.0 | | | Pnn |
| 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 | + + | SEP 22 10:50 - SEP 22 12:30 | Pie |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8 | | | Pnn |
| MSO | Mt. Stromlo Observatory | -35.3 | 149.0 | + + | SEP 22 10:49 - SEP 22 12:30 | Pie |



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target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-09-22T11:37:41.980
Event type             : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code          : PMO
Location               : Purple Mtn Obs. Nanking
Latitude (deg)         : 32.06667
E. Longitude (deg)    : 118.82089
Altitude (km)         : 0.364
Gaia source ID        : 4114625918565629184
2Mass ID (if available) : 17195518-2255011
ICRS Star Coord at Epoch: 17h 19m 55.17036s -22:55:01.11902s
RUWE (>1.4 is poor)  : 1.11
K magnitude            : 7.646
G magnitude            : 13.511
RP magnitude          : 12.012
BP magnitude          : 16.717
DUPflag               : 0
Distance (au)         : 5.292
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : 17.24
Sun-Target sep (deg)  : 81.94
Sun-Moon sep (deg)    : 12.79
B (ring opening deg)  : -2.36
PA of pole (deg)     : 3.47
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 14.732
C/A sky separation (km) : 56541.0
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
    
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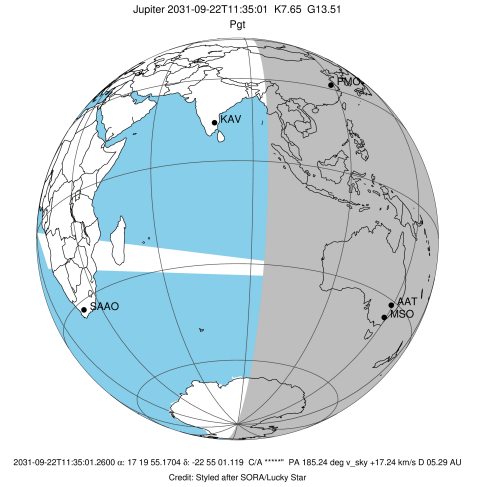


x: target alt < 5.0 deg or sun > -5.0 deg

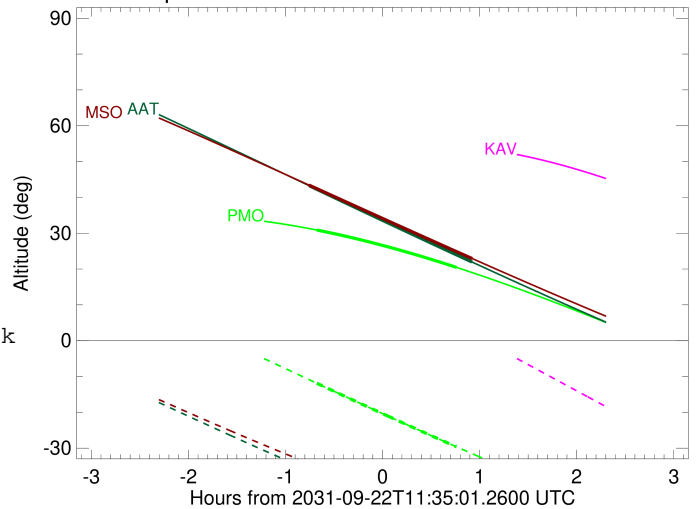
| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2031-09-22T10:54:28.230 | 30.87 | -11.90 | 71487.5 | 50.59 | 54.15 |
| Jupiter | E | 2031-09-22T12:20:47.246 | 20.45 | -29.63 | 71487.1 | 53.74 | 57.17 |

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-22T11:40:18.580
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      : 4114625918565629184
2Mass ID (if available) : 17195518-2255011
ICRS Star Coord at Epoch: 17h 19m 55.17036s -22:55:01.11902s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 7.646
G magnitude          : 13.511
RP magnitude         : 12.012
BP magnitude         : 16.717
DUPflag             : 0
Distance (au)       : 5.292
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 17.24
Sun-Target sep (deg) : 81.94
Sun-Moon sep (deg)  : 13.26
B (ring opening deg) : -2.36
PA of pole (deg)    : 3.47
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation ("): 12.965
C/A sky separation (km): 49759.9
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
    
```



Jupiter 2031-09-22T11:35:01 K7.65 G13.51

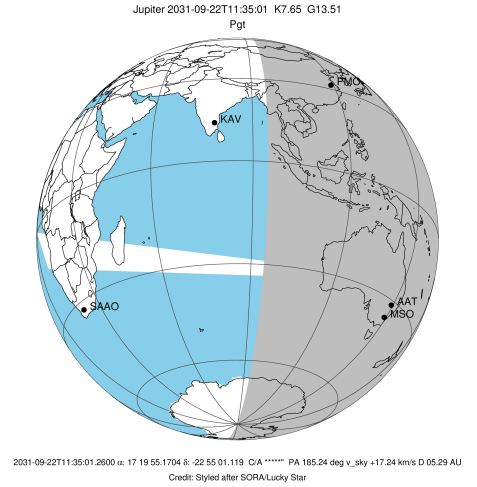


x: target alt < 5.0 deg or sun > -5.0 deg

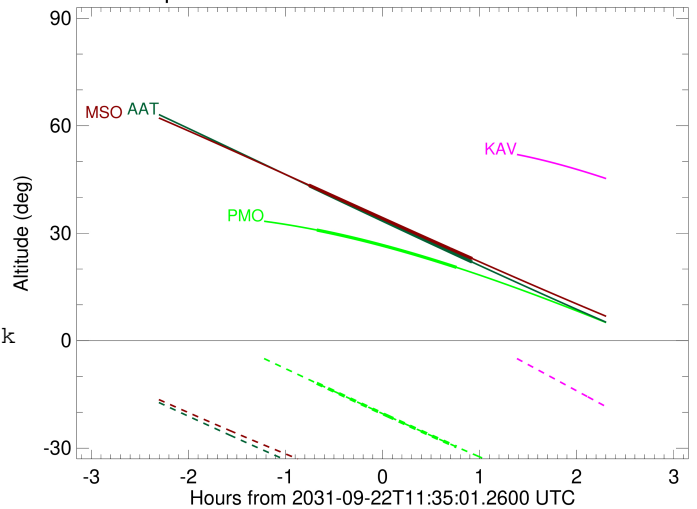
| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---------|-----|-------------------------|-------|---------|---------|---------|--------------|
| Jupiter | I | 2031-09-22T10:50:00.297 | 43.19 | -36.20 | 71488.5 | 42.68 | 46.40 |
| Jupiter | E | 2031-09-22T12:30:19.793 | 21.95 | -53.02 | 71488.2 | 45.38 | 49.08 |

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-22T11:40:06.240
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       : 4114625918565629184
2Mass ID (if available) : 17195518-2255011
ICRS Star Coord at Epoch: 17h 19m 55.17036s -22:55:01.11902s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 7.646
G magnitude           : 13.511
RP magnitude         : 12.012
BP magnitude         : 16.717
DUPflag              : 0
Distance (au)        : 5.292
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 17.24
Sun-Target sep (deg) : 81.94
Sun-Moon sep (deg)   : 13.24
B (ring opening deg) : -2.36
PA of pole (deg)     : 3.47
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 12.861
C/A sky separation (km) : 49358.9
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
    
```



Jupiter 2031-09-22T11:35:01 K7.65 G13.51



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 | 2031-09-22T10:49:26.956 | 43.45 | -34.23 | 71488.6 | 42.21 | 45.93 |
| Jupiter | E | 2031-09-22T12:30:28.886 | 22.91 | -49.75 | 71488.2 | 44.95 | 48.66 |