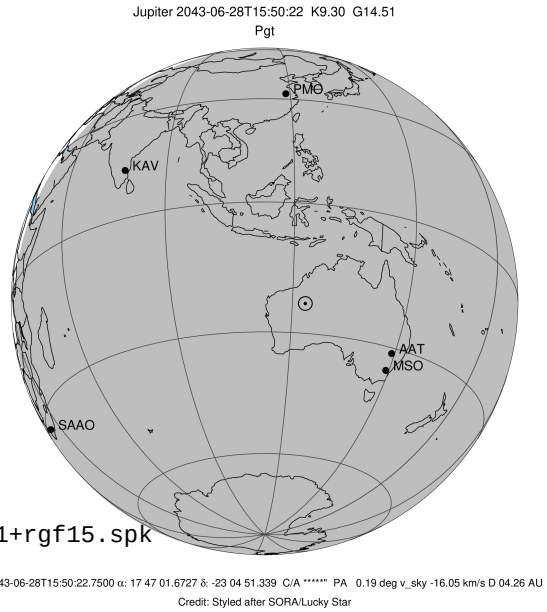
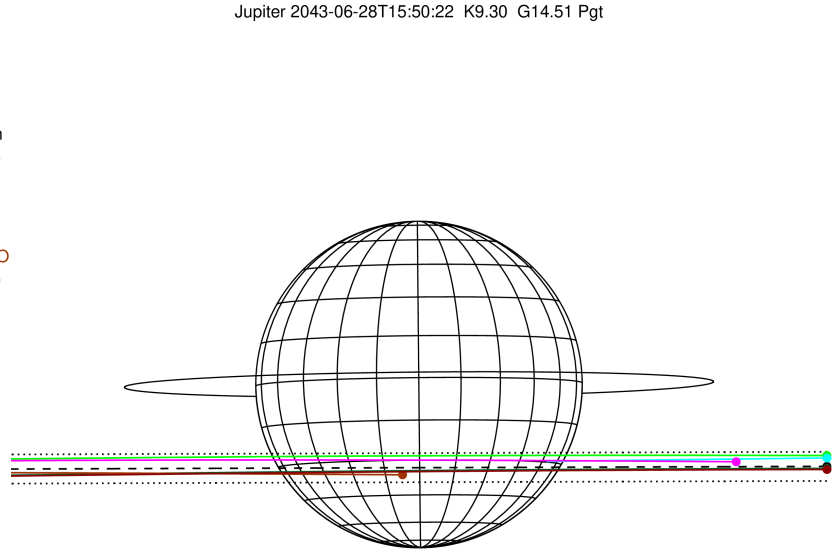
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 12:19:13 2023

target : Jupiter
target radius (km) : 71492.00
C/A epoch : 2043-06-28T15:50:22.750
Event type : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Gaia source ID : 4068790405568436992
2Mass ID (if available) : 17470167-2304511

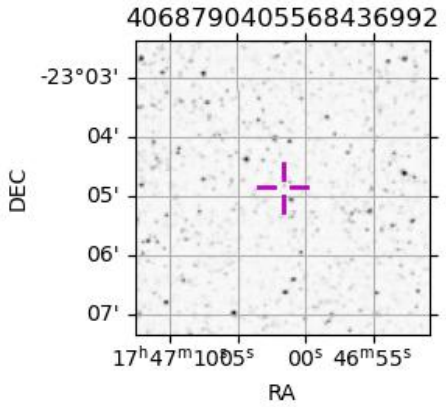
ICRS Star Coord at Epoch: 17h 47m 01.67270s -23:04:51.33863s
RUWE (>1.4 is poor) : 0.92
K magnitude : 9.304
G magnitude : 14.511
RP magnitude : 13.163
BP magnitude : 16.681
DUPflag : 0
Distance (au) : 4.258
f0 (km) : 0.00
g0 (km) : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 170.74
Sun-Moon sep (deg) : 80.80
B (ring opening deg) : -2.42
PA of pole (deg) : 0.56
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 11.801
C/A sky separation (km) : 36443.0
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp



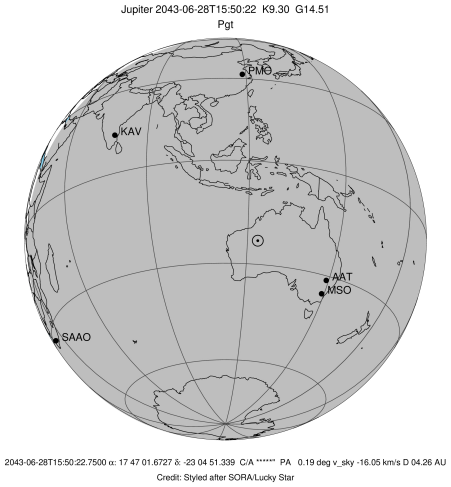

Observable events with sun below -5 deg and altitude above 5 deg

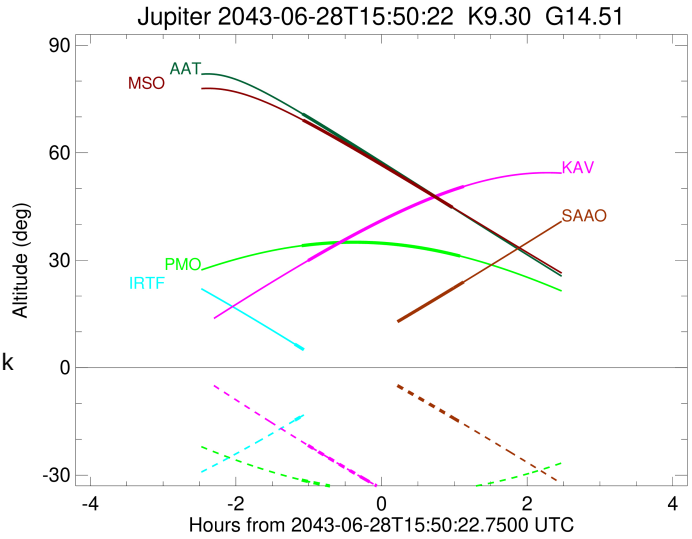
| Obs | Location | lat | Elon | Target | Observed Events Interval | OEcode |
|---|---|---|---|---|---|---|
| PIC | Pic du Midi | 42.9 | 0.1 | \| \| | | Pnn |
| PAL | Palomar Mt (200") | 33.4 | 243.1 | \| \| | | Pnn |
| PMO | Purple Mtn Obs. Nanking | 32.1 | 118.8 | \| + + \| | JUN 28 14:44 - JUN 28 16:54 | 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 | \| + \| | JUN 28 14:39 - JUN 28 14:39 | Pin |
| KAV | Kavalur Observatory | 12.6 | 78.8 | \| + + \| | JUN 28 14:49 - JUN 28 16:58 | Pie |
| 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 | \| + + \| | JUN 28 14:45 - JUN 28 16:48 | Pie |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8 | \| + \| | JUN 28 16:57 - JUN 28 16:57 | Pne |
| MSO | Mt. Stromlo Observatory | -35.3 | 149.0 | \| + + \| | JUN 28 14:45 - JUN 28 16:48 | Pie |



Jupiter_2043-06-28T15_50_22.7500_PMO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:18:54 2023

```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2043-06-28T15:49:48.100
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          : 4068790405568436992
2Mass ID (if available) : 17470167-2304511
ICRS Star Coord at Epoch: 17h 47m 01.67270s -23:04:51.33863s
RUWE (>1.4 is poor)     :   0.92
K magnitude             :  9.304
G magnitude             : 14.511
RP magnitude            : 13.163
BP magnitude            : 16.681
DUPflag                 : 0
Distance (au)           :  4.258
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    : -16.05
Sun-Target sep (deg)    :  170.74
Sun-Moon sep (deg)      :   81.33
B (ring opening deg)    :   -2.42
PA of pole (deg)        :    0.56
Pole direction: RA (deg): 268.05669
Dec (deg):  64.49732
C/A sky separation (")  :  10.115
C/A sky separation (km) :  31234.2
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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
```

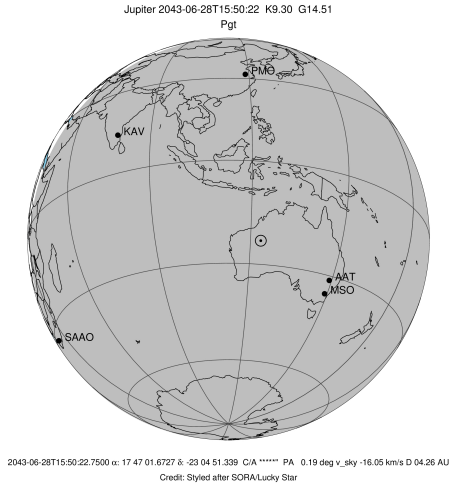


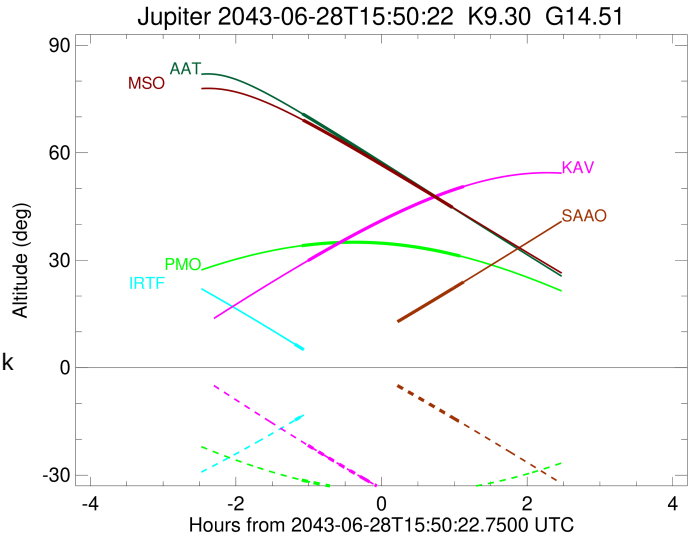

x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---|---|---|---|---|---|---|---|
| Jupiter | I | 2043-06-28T14:44:41.341 | 34.05 | -31.36 | 71490.4 | -26.28 | -29.40 |
| Jupiter | E | 2043-06-28T16:54:58.258 | 31.17 | -33.72 | 71490.5 | -25.64 | -28.72 |

Jupiter_2043-06-28T15_50_22.7500_IRTF.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:27:11 2023




target : Jupiter
target radius (km) : 71492.00
C/A epoch : 2043-06-28T15:43:45.520
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 : 4068790405568436992
2Mass ID (if available) : 17470167-2304511
ICRS Star Coord at Epoch: 17h 47m 01.67270s -23:04:51.33863s
RUWE (>1.4 is poor) : 0.92
K magnitude : 9.304
G magnitude : 14.511
RP magnitude : 13.163
BP magnitude : 16.681
DUPflag : 0
Distance (au) : 4.258
f0 (km) : 0.00
g0 (km) : 0.00
skyplane vel. (km/s) : -16.05
Sun-Target sep (deg) : 170.74
Sun-Moon sep (deg) : 80.51
B (ring opening deg) : -2.42
PA of pole (deg) : 0.56
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 11.160
C/A sky separation (km) : 34462.4
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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

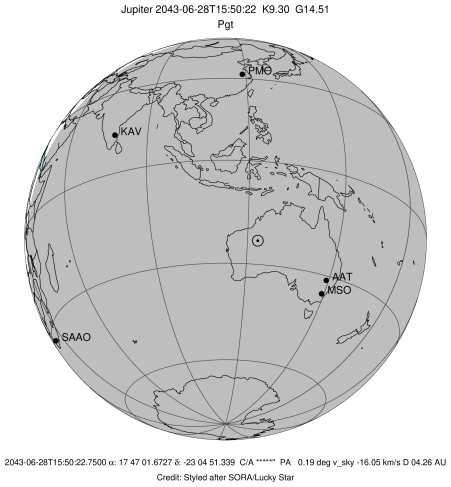


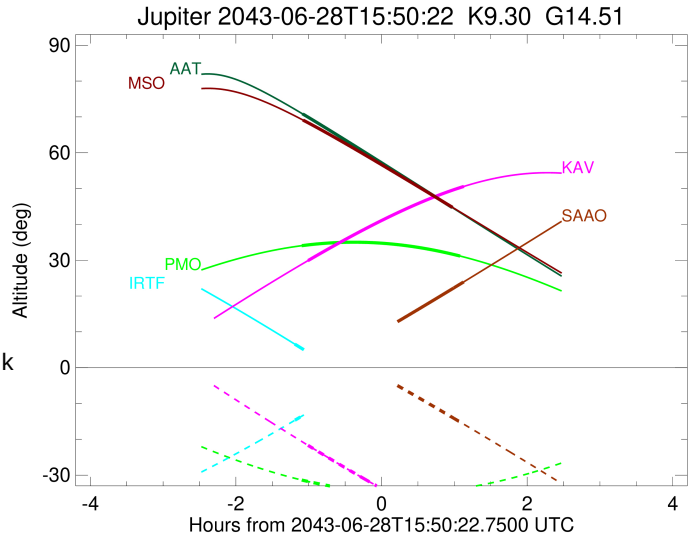

x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---|---|---|---|---|---|---|---|
| Jupiter | I | 2043-06-28T14:39:00.732 | 6.55 | -14.67 | 71490.2 | -28.56 | -31.85 |
| Jupiter | E | 2043-06-28T16:49:01.776 | -21.84x | 12.88x | 71490.1 | -29.03 | -32.34 |

Jupiter_2043-06-28T15_50_22.7500_KAV.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:29:11 2023

```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2043-06-28T15:54:08.150
Event type              : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code           : KAV
Location                : Kavalur Observatory
Latitude (deg)          :  12.57556
E. Longitude (deg)      :  78.83167
Altitude (km)           :   0.722
Gaia source ID          : 4068790405568436992
2Mass ID (if available) : 17470167-2304511
ICRS Star Coord at Epoch: 17h 47m 01.67270s -23:04:51.33863s
RUWE (>1.4 is poor)     :   0.92
K magnitude             :  9.304
G magnitude             : 14.511
RP magnitude            : 13.163
BP magnitude            : 16.681
DUPflag                 : 0
Distance (au)           :  4.258
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    : -16.05
Sun-Target sep (deg)    :  170.74
Sun-Moon sep (deg)      :   81.51
B (ring opening deg)    :   -2.42
PA of pole (deg)        :    0.56
Pole direction: RA (deg): 268.05669
Dec (deg):  64.49732
C/A sky separation (")  :  10.729
C/A sky separation (km) :  33130.3
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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
```

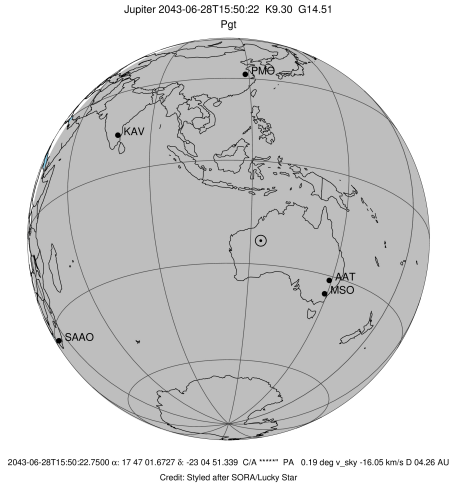


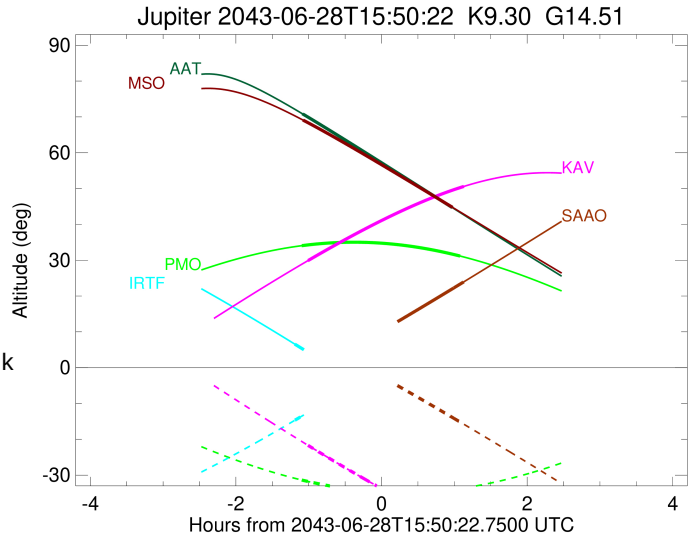

x: target alt < 5.0 deg or sun > -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---|---|---|---|---|---|---|---|
| Jupiter | I | 2043-06-28T14:49:46.914 | 29.88 | -21.67 | 71490.2 | -28.36 | -31.63 |
| Jupiter | E | 2043-06-28T16:58:13.577 | 50.58 | -45.29 | 71490.4 | -26.95 | -30.12 |

Jupiter_2043-06-28T15_50_22.7500_AAT.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:35:17 2023



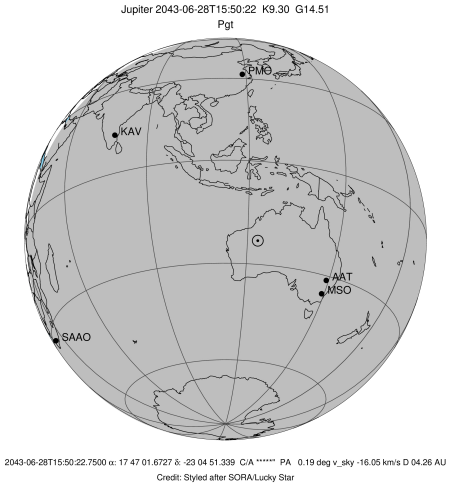

```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2043-06-28T15:46:54.810
Event type              : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code           : AAT
Location                : Siding Spring (AAT)
Latitude (deg)          : -31.27703
E. Longitude (deg)      : 149.06608
Altitude (km)           :   1.164
Gaia source ID          : 4068790405568436992
2Mass ID (if available) : 17470167-2304511
ICRS Star Coord at Epoch: 17h 47m 01.67270s -23:04:51.33863s
RUWE (>1.4 is poor)     :   0.92
K magnitude             :  9.304
G magnitude             : 14.511
RP magnitude            : 13.163
BP magnitude            : 16.681
DUPflag                 : 0
Distance (au)           :  4.258
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    : -16.05
Sun-Target sep (deg)    :  170.74
Sun-Moon sep (deg)      :   81.53
B (ring opening deg)    :   -2.42
PA of pole (deg)        :    0.56
Pole direction: RA (deg): 268.05669
Dec (deg):  64.49732
C/A sky separation (")  :  12.216
C/A sky separation (km) :  37724.0
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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
```



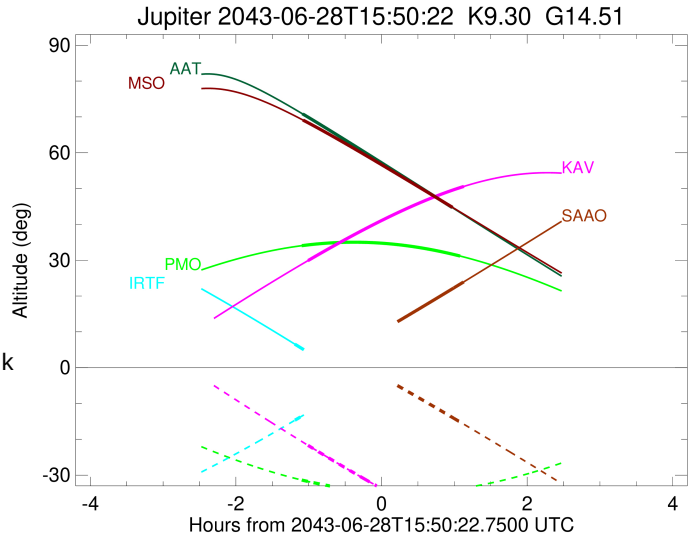

x: target alt <  5.0 deg or  sun >  -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---|---|---|---|---|---|---|---|
| Jupiter | I | 2043-06-28T14:45:16.675 | 70.85 | -78.44 | 71489.8 | -31.94 | -35.41 |
| Jupiter | E | 2043-06-28T16:48:47.785 | 44.67 | -53.39 | 71489.8 | -31.82 | -35.28 |

Jupiter_2043-06-28T15_50_22.7500_SAAO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:37:21 2023



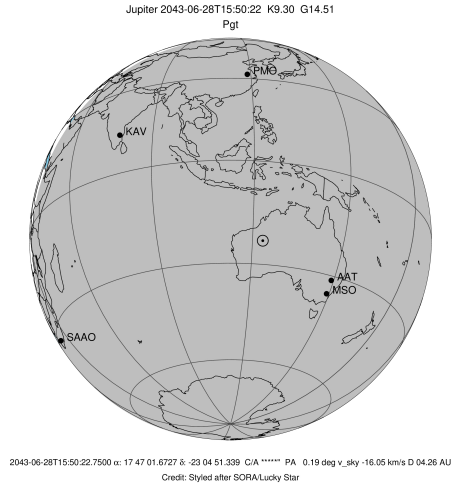

```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2043-06-28T15:56:22.610
Event type              : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code           : SAAO
Location                : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)          : -32.37953
E. Longitude (deg)      :  20.81070
Altitude (km)           :   1.768
Gaia source ID          : 4068790405568436992
2Mass ID (if available) : 17470167-2304511
ICRS Star Coord at Epoch: 17h 47m 01.67270s -23:04:51.33863s
RUWE (>1.4 is poor)     :   0.92
K magnitude             :  9.304
G magnitude             : 14.511
RP magnitude            : 13.163
BP magnitude            : 16.681
DUPflag                 : 0
Distance (au)           :  4.258
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    : -16.05
Sun-Target sep (deg)    :  170.74
Sun-Moon sep (deg)      :   81.09
B (ring opening deg)    :   -2.42
PA of pole (deg)        :    0.56
Pole direction: RA (deg): 268.05669
Dec (deg):  64.49732
C/A sky separation (")  :  12.822
C/A sky separation (km) :  39593.6
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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
```



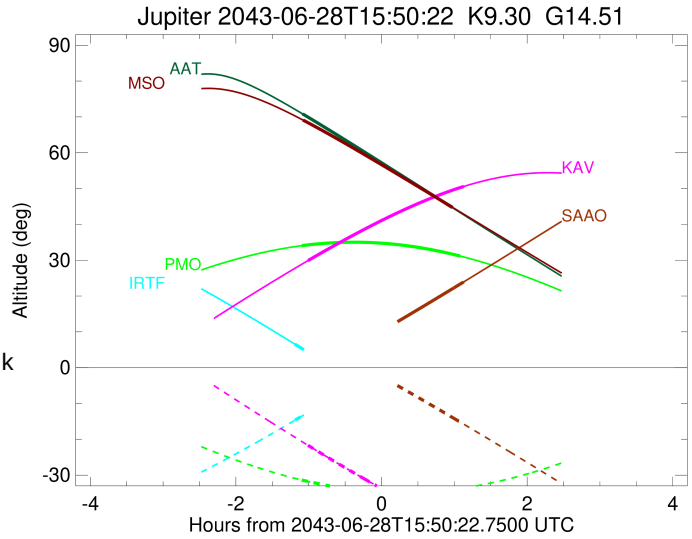

x: target alt <  5.0 deg or  sun >  -5.0 deg

| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|---|---|---|---|---|---|---|---|
| Jupiter | I | 2043-06-28T14:54:21.783 | -0.61x | 7.78x | 71489.4 | -34.51 | -38.10 |
| Jupiter | E | 2043-06-28T16:57:59.175 | 23.91 | -15.74 | 71489.7 | -32.68 | -36.19 |

Jupiter_2043-06-28T15_50_22.7500_MSO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:39:26 2023




```
target                  : Jupiter
target radius (km)      :  71492.00
C/A epoch               : 2043-06-28T15:47:04.180
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          : 4068790405568436992
2Mass ID (if available) : 17470167-2304511
ICRS Star Coord at Epoch: 17h 47m 01.67270s -23:04:51.33863s
RUWE (>1.4 is poor)     :   0.92
K magnitude             :  9.304
G magnitude             : 14.511
RP magnitude            : 13.163
BP magnitude            : 16.681
DUPflag                 : 0
Distance (au)           :  4.258
f0 (km)                 :       0.00
g0 (km)                 :       0.00
skyplane vel. (km/s)    : -16.05
Sun-Target sep (deg)    :  170.74
Sun-Moon sep (deg)      :   81.52
B (ring opening deg)    :   -2.42
PA of pole (deg)        :    0.56
Pole direction: RA (deg): 268.05669
Dec (deg):  64.49732
C/A sky separation (")  :  12.353
C/A sky separation (km) :  38147.0
NAIF SPICE kernels      : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat440l.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
ura116.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 | 2043-06-28T14:45:38.516 | 69.12 | -75.48 | 71489.7 | -32.35 | -35.84 |
| Jupiter | E | 2043-06-28T16:48:43.971 | 44.78 | -53.10 | 71489.7 | -32.20 | -35.68 |