

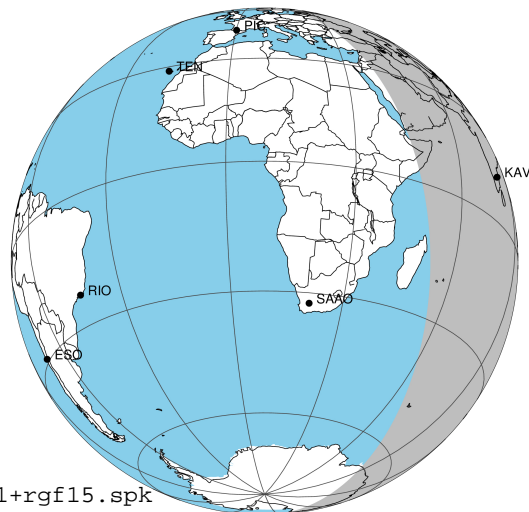
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-10-31T14:33:12.710  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068803771512468992  
 2Mass ID (if available) : 17452499-2317094

Jupiter 2031-10-31T14:33:12 K9.33 G14.91 Pgt

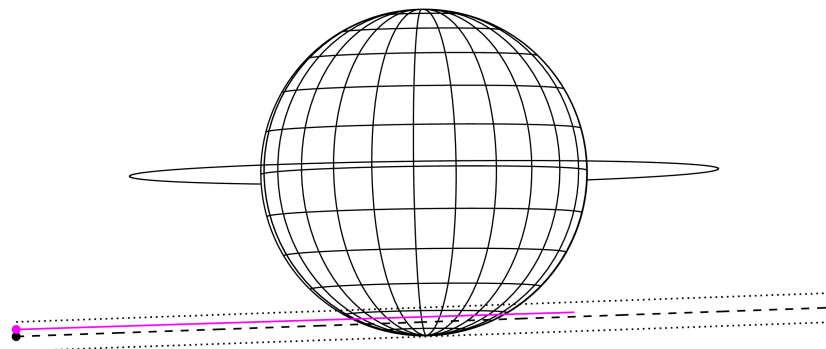
ICRS Star Coord at Epoch: 17h 45m 24.98174s -23:17:09.65738s

RUWE (>1.4 is poor) : 1.06  
 K magnitude : 9.333  
 G magnitude : 14.914  
 RP magnitude : 13.464  
 BP magnitude : 17.240  
 DUPflag : 0  
 Distance (au) : 5.828  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 32.71  
 Sun-Target sep (deg) : 49.13  
 Sun-Moon sep (deg) : 146.35  
 B (ring opening deg) : -2.21  
 PA of pole (deg) : 0.73  
 Pole direction: RA (deg): 268.05681  
 Dec (deg): 64.49652  
 C/A sky separation (") : 15.490  
 C/A sky separation (km) : 65468.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-10-31T14:33:12 K9.33 G14.91  
 Pgt



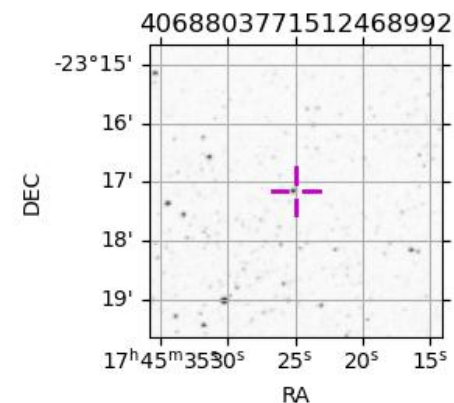
Earth  
 KAV



2031-10-31T14:33:12.7100 α: 17 45 24.9817 δ: -23 17 09.657 C/A \*\*\*\*\* PA 2.03 deg v\_sky +32.71 km/s D 05.83 AU  
 Credit: Styled after SORA/Lucky Star

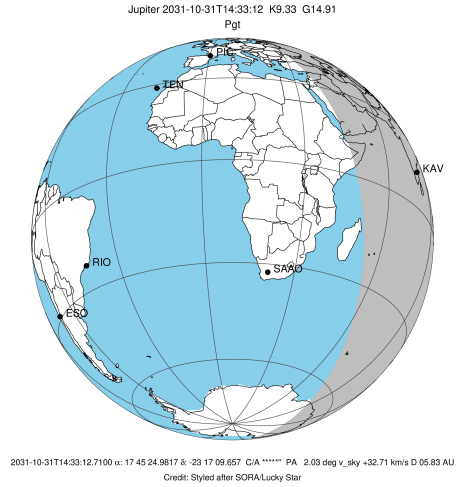
Observable events with sun below -5 deg and altitude above 5 deg

| 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 |        |                             | Pnn   |
| PMO  | Purple Mtn Obs. Nanking           | 32.1  | 118.8 |        |                             | Pnn   |
| 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  | + +    | OCT 31 14:18 - OCT 31 14:53 | 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 |        |                             | Pnn   |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8  |        |                             | Pnn   |
| MSO  | Mt. Stromlo Observatory           | -35.3 | 149.0 |        |                             | Pnn   |

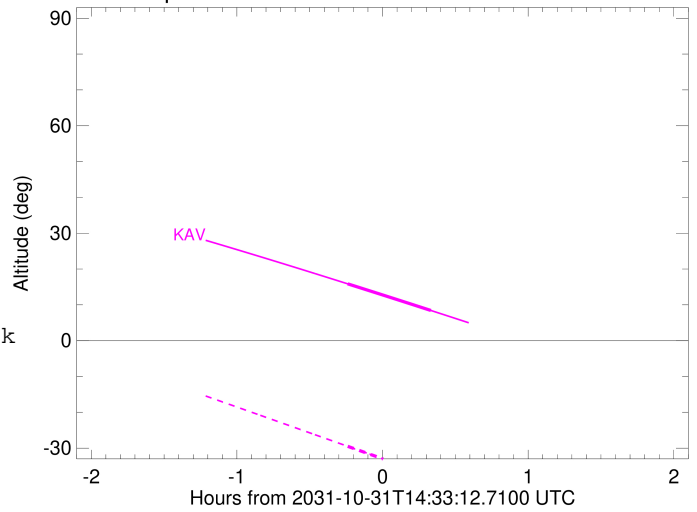


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-31T14:36:00.470
Event type          : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code       : KAV
Location            : Kavalur Observatory
Latitude (deg)      : 12.57556
E. Longitude (deg)  : 78.83167
Altitude (km)       : 0.722
Gaia source ID      : 4068803771512468992
2Mass ID (if available) : 17452499-2317094
ICRS Star Coord at Epoch: 17h 45m 24.98174s -23:17:09.65738s
RUWE (>1.4 is poor) : 1.06
K magnitude          : 9.333
G magnitude          : 14.914
RP magnitude         : 13.464
BP magnitude         : 17.240
DUPflag             : 0
Distance (au)       : 5.828
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 32.71
Sun-Target sep (deg) : 49.13
Sun-Moon sep (deg)  : 147.17
B (ring opening deg) : -2.21
PA of pole (deg)    : 0.73
Pole direction: RA (deg): 268.05681
Dec (deg): 64.49652
C/A sky separation (") : 14.953
C/A sky separation (km) : 63200.9
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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Jupiter 2031-10-31T14:33:12 K9.33 G14.91



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   | 2031-10-31T14:18:54.014 | 15.86 | -29.50  | 71486.7 | -63.07  | -65.90       |
| Jupiter | E   | 2031-10-31T14:53:05.807 | 8.44  | -37.75  | 71486.9 | -61.06  | -64.04       |