

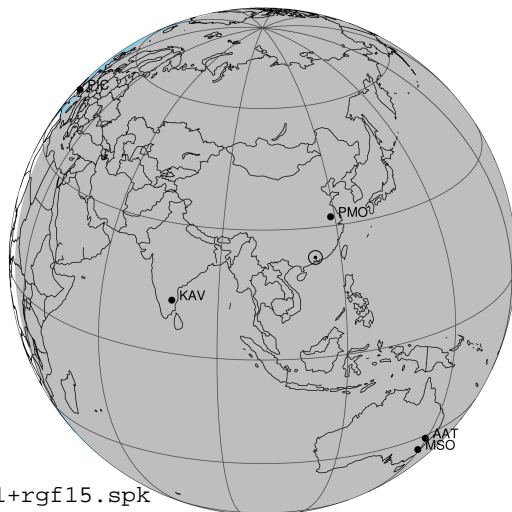
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2048-12-27T16:27:18.340
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3404086320265038336
 2Mass ID (if available) : 05331832+2253596

Jupiter 2048-12-27T16:27:18 K8.26 G11.28 Pgt

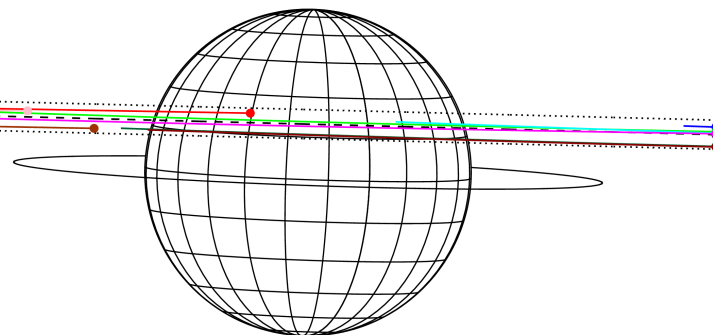
ICRS Star Coord at Epoch: 05h 33m 18.33441s +22:53:59.15564s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 8.257
 G magnitude : 11.279
 RP magnitude : 10.406
 BP magnitude : 12.084
 DUPflag : 0
 Distance (au) : 4.143
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.31
 Sun-Target sep (deg) : 167.94
 Sun-Moon sep (deg) : 94.02
 B (ring opening deg) : 2.53
 PA of pole (deg) : -2.04
 Pole direction: RA (deg): 268.05738
 Dec (deg): 64.49721
 C/A sky separation (") : 7.047
 C/A sky separation (km) : 21176.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2048-12-27T16:27:18 K8.26 G11.28
 Pgt



Earth
 PIC
 PAL
 PMO
 TEN
 IRTF
 KAV
 AAT
 SAAO
 MSO

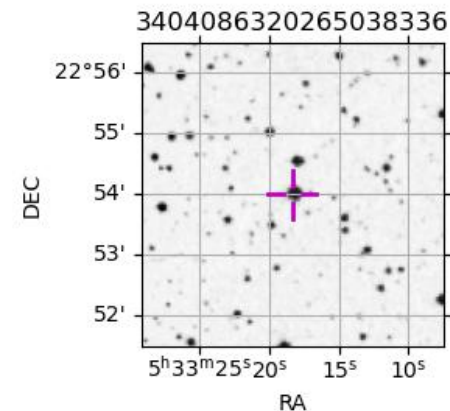


2048-12-27T16:27:18.3400 ex: 05 33 18.3344 s: +22 53 59.1556 C/A 7.058" PA 178.52 deg v_sky -16.31 km/s D 04.14 AU

Credit: Styled after SORA/Lucky Star

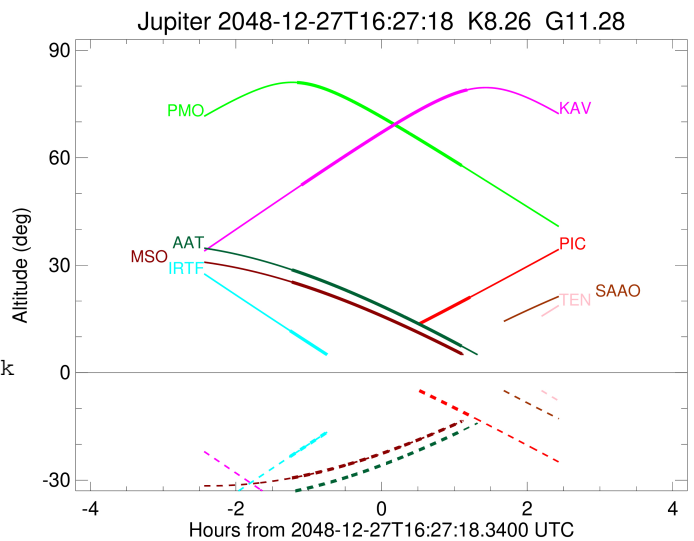
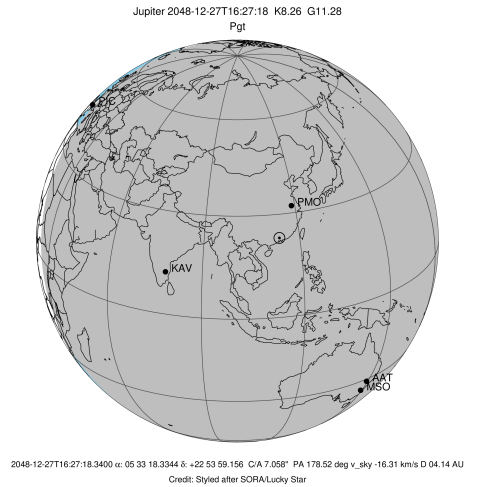
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	DEC 27 17:40 - DEC 27 17:40	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	DEC 27 15:17 - DEC 27 17:33	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	+	DEC 27 15:11 - DEC 27 15:11	Pin
KAV	Kavalur Observatory	12.6	78.8	+	DEC 27 15:21 - DEC 27 17:37	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	+	DEC 27 15:13 - DEC 27 17:33	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	DEC 27 15:13 - DEC 27 17:33	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-27T16:32:08.770
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PIC
Location            : Pic du Midi
Latitude (deg)      : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)       : 2.890
Gaia source ID      : 3404086320265038336
2Mass ID (if available) : 05331832+2253596
ICRS Star Coord at Epoch: 05h 33m 18.33441s +22:53:59.15564s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.257
G magnitude          : 11.279
RP magnitude         : 10.406
BP magnitude         : 12.084
DUPflag             : 0
Distance (au)       : 4.143
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.31
Sun-Target sep (deg) : 167.94
Sun-Moon sep (deg)  : 94.11
B (ring opening deg) : 2.53
PA of pole (deg)    : -2.04
Pole direction: RA (deg): 268.05738
Dec (deg): 64.49721
C/A sky separation (" ) : 8.499
C/A sky separation (km) : 25540.4
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
    
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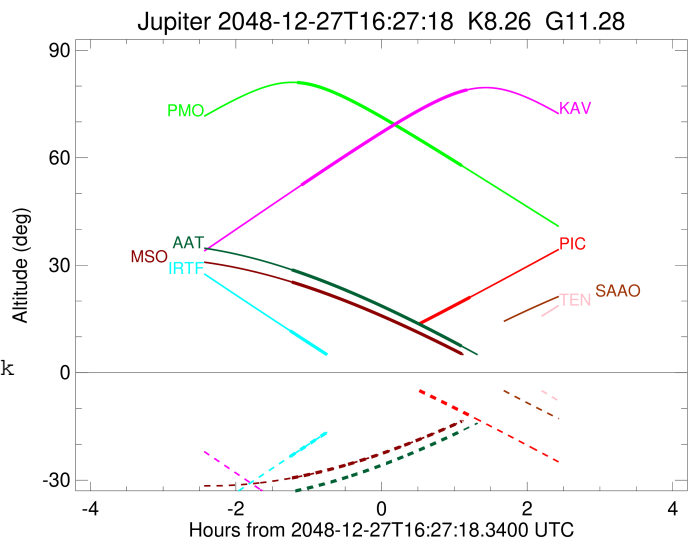
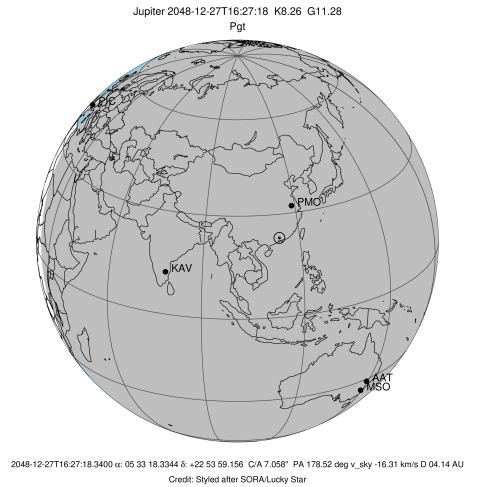


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-27T15:23:28.058	-1.99x	9.16x	71490.8	21.91	24.67
Jupiter	E	2048-12-27T17:40:25.081	21.08	-12.03	71491.0	19.89	22.45

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-27T16:25:31.260
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      : 3404086320265038336
2Mass ID (if available) : 05331832+2253596
ICRS Star Coord at Epoch: 05h 33m 18.33441s +22:53:59.15564s
RUWE (>1.4 is poor) : 1.00
K magnitude         : 8.257
G magnitude         : 11.279
RP magnitude        : 10.406
BP magnitude        : 12.084
DUPflag            : 0
Distance (au)      : 4.143
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -16.31
Sun-Target sep (deg) : 167.94
Sun-Moon sep (deg)  : 94.93
B (ring opening deg) : 2.53
PA of pole (deg)    : -2.04
Pole direction: RA (deg): 268.05738
Dec (deg): 64.49721
C/A sky separation (" ) : 7.400
C/A sky separation (km) : 22238.2
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
    
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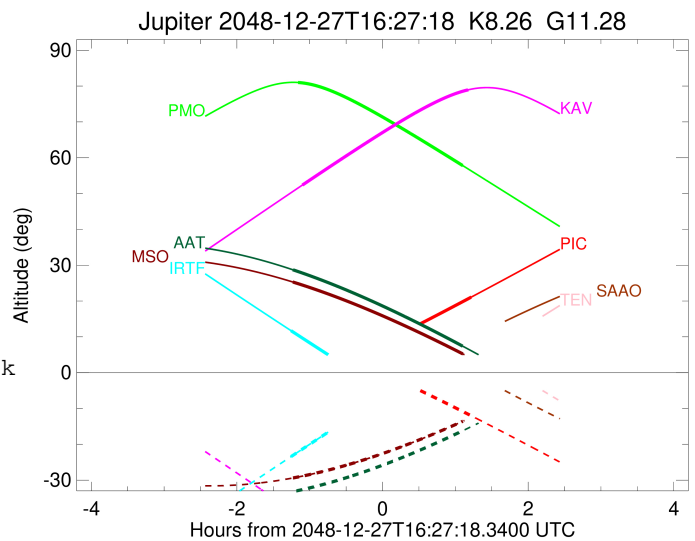
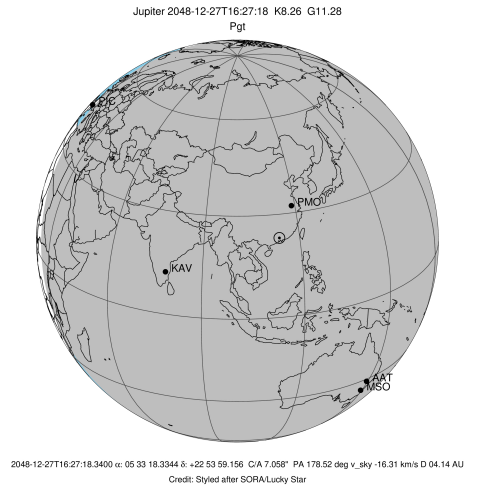


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-27T15:17:44.539	80.99	-76.29	71491.1	18.61	21.04
Jupiter	E	2048-12-27T17:33:27.806	57.79	-68.84	71491.2	17.76	20.10

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-12-27T16:21:00.830
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       : 3404086320265038336
2Mass ID (if available) : 05331832+2253596
ICRS Star Coord at Epoch: 05h 33m 18.33441s +22:53:59.15564s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 8.257
G magnitude           : 11.279
RP magnitude          : 10.406
BP magnitude          : 12.084
DUPflag              : 0
Distance (au)        : 4.143
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.31
Sun-Target sep (deg) : 167.94
Sun-Moon sep (deg)   : 94.01
B (ring opening deg) : 2.53
PA of pole (deg)     : -2.04
Pole direction: RA (deg): 268.05738
Dec (deg): 64.49721
C/A sky separation ("): 7.836
C/A sky separation (km): 23547.0
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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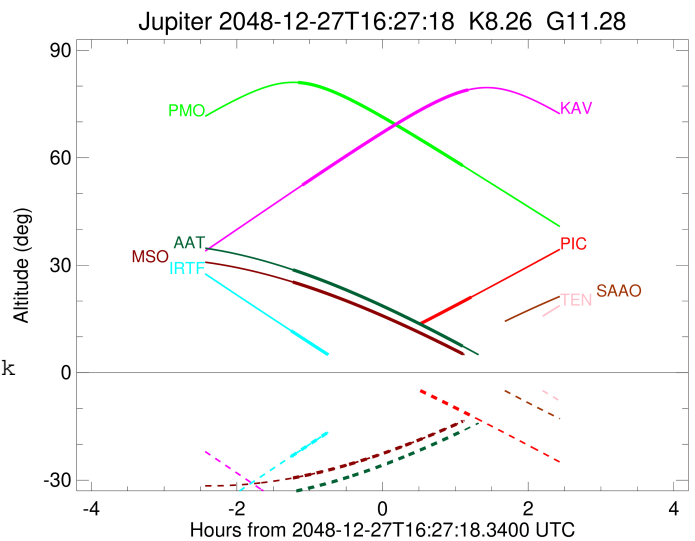
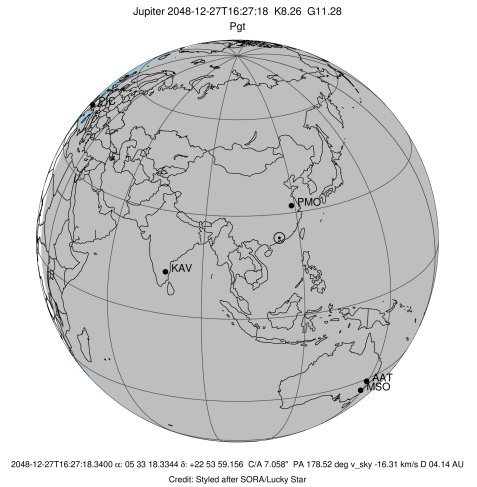


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-27T15:11:56.193	11.72	-23.43	71491.1	19.17	21.66
Jupiter	E	2048-12-27T17:30:40.342	-17.62x	6.77x	71491.1	19.23	21.72

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-27T16:29:41.430
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      : 3404086320265038336
2Mass ID (if available) : 05331832+2253596
ICRS Star Coord at Epoch: 05h 33m 18.33441s +22:53:59.15564s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.257
G magnitude          : 11.279
RP magnitude         : 10.406
BP magnitude         : 12.084
DUPflag             : 0
Distance (au)       : 4.143
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.31
Sun-Target sep (deg) : 167.94
Sun-Moon sep (deg)  : 94.86
B (ring opening deg) : 2.53
PA of pole (deg)    : -2.04
Pole direction: RA (deg): 268.05738
Dec (deg): 64.49721
C/A sky separation (" ) : 6.731
C/A sky separation (km) : 20228.2
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
    
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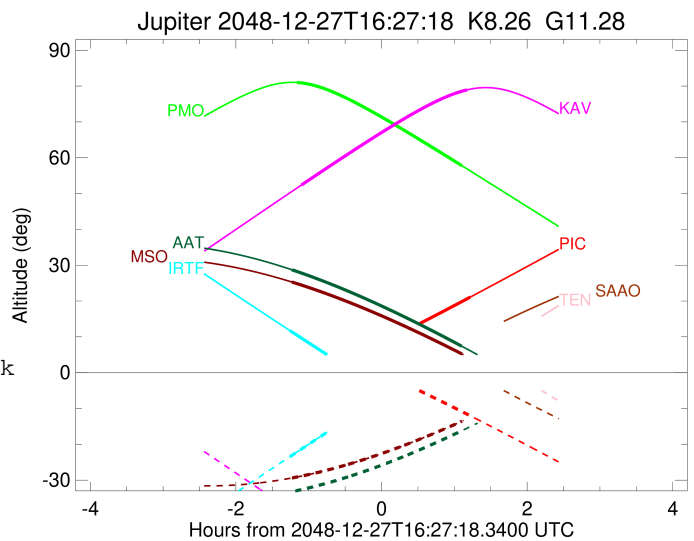
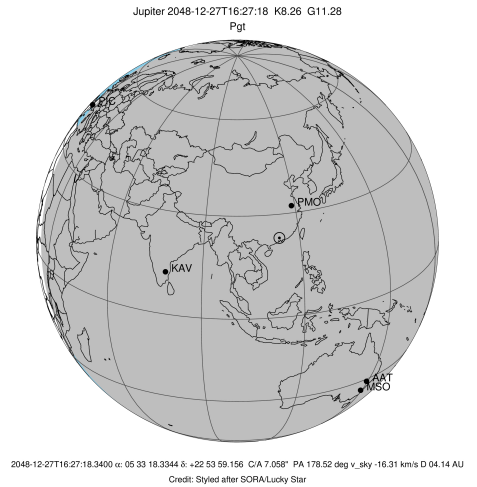


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-27T15:21:18.023	52.36	-40.39	71491.2	17.30	19.59
Jupiter	E	2048-12-27T17:37:53.920	78.95	-70.58	71491.4	15.70	17.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-27T16:23:10.050
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       : 3404086320265038336
2Mass ID (if available) : 05331832+2253596
ICRS Star Coord at Epoch: 05h 33m 18.33441s +22:53:59.15564s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 8.257
G magnitude           : 11.279
RP magnitude         : 10.406
BP magnitude         : 12.084
DUPflag              : 0
Distance (au)        : 4.143
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.31
Sun-Target sep (deg) : 167.94
Sun-Moon sep (deg)   : 94.37
B (ring opening deg) : 2.53
PA of pole (deg)     : -2.04
Pole direction: RA (deg): 268.05738
Dec (deg): 64.49721
C/A sky separation ("): 5.534
C/A sky separation (km): 16630.0
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
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neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

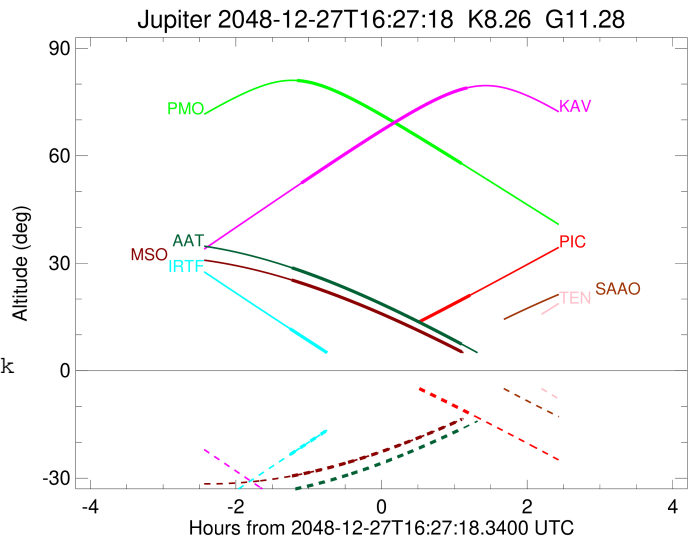
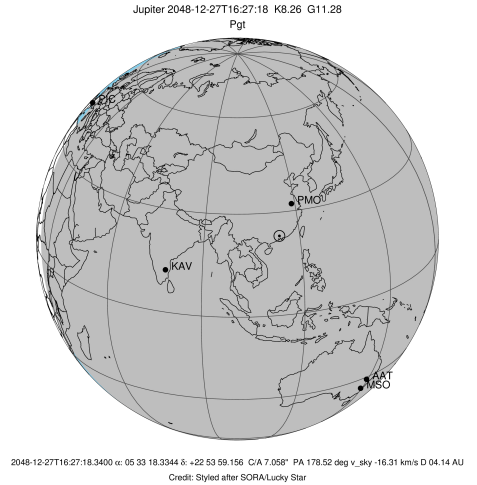


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-12-27T15:13:28.329	28.72	-33.20	71491.5	13.69	15.55
Jupiter	E	2048-12-27T17:33:15.620	7.42	-16.24	71491.5	13.31	15.13

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-12-27T16:23:22.010
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      : 3404086320265038336
2Mass ID (if available) : 05331832+2253596
ICRS Star Coord at Epoch: 05h 33m 18.33441s +22:53:59.15564s
RUWE (>1.4 is poor) : 1.00
K magnitude         : 8.257
G magnitude         : 11.279
RP magnitude        : 10.406
BP magnitude        : 12.084
DUPflag            : 0
Distance (au)       : 4.143
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.31
Sun-Target sep (deg) : 167.94
Sun-Moon sep (deg)  : 94.33
B (ring opening deg) : 2.53
PA of pole (deg)    : -2.04
Pole direction: RA (deg): 268.05738
Dec (deg): 64.49721
C/A sky separation (") : 5.442
C/A sky separation (km) : 16353.4
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	2048-12-27T15:13:32.754	25.29	-29.39	71491.5	13.47	15.31
Jupiter	E	2048-12-27T17:33:34.179	5.23	-13.56	71491.5	13.06	14.85