

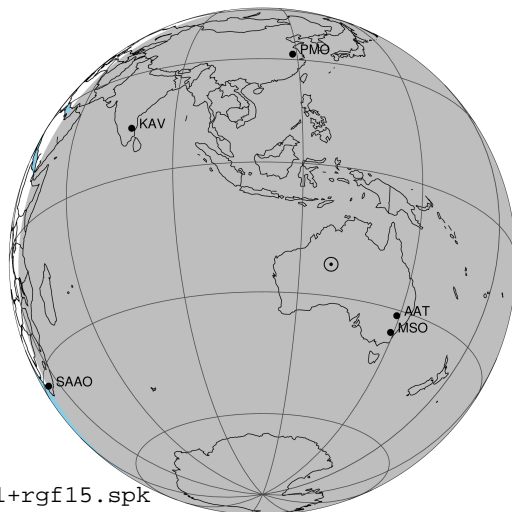
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-04T15:33:03.430
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116862698817175808
 2Mass ID (if available) : 17435094-2304344

Jupiter 2043-07-04T15:33:03 K8.92 G14.53 Pgt

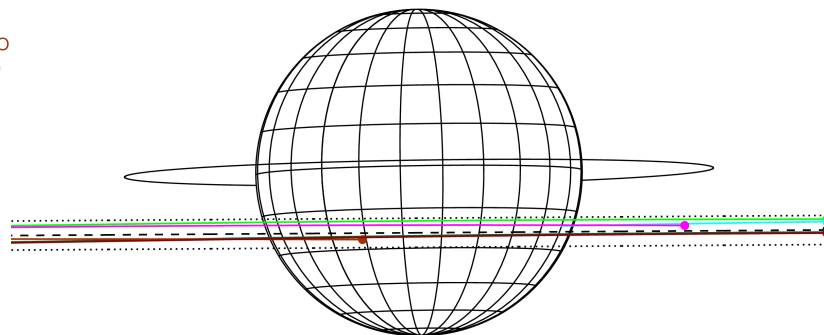
ICRS Star Coord at Epoch: 17h 43m 50.92262s -23:04:34.63449s

RUWE (>1.4 is poor) : 0.98
 K magnitude : 8.924
 G magnitude : 14.534
 RP magnitude : 13.154
 BP magnitude : 16.863
 DUPflag : 0
 Distance (au) : 4.276
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.37
 Sun-Target sep (deg) : 164.31
 Sun-Moon sep (deg) : 165.77
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.90
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 8.513
 C/A sky separation (km) : 26398.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-04T15:33:03 K8.92 G14.53
 Pgt



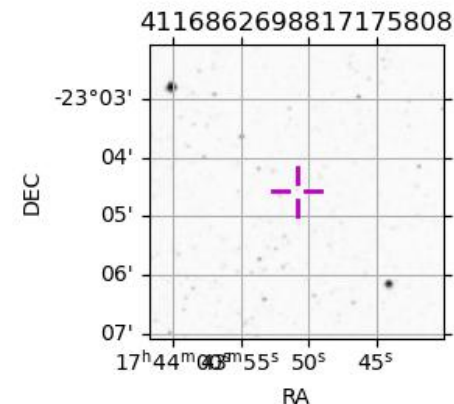
Earth
 PMO
 IRTF
 KAV
 AAT
 SAAO
 MSO



2043-07-04T15:33:03.4300 a: 17 43 50.92262 s -23 04 34.634 C/A 8.524" PA 0.39 deg v_sky -15.37 km/s D 04.28 AU
 Credit: Styled after SORA/Lucky Star

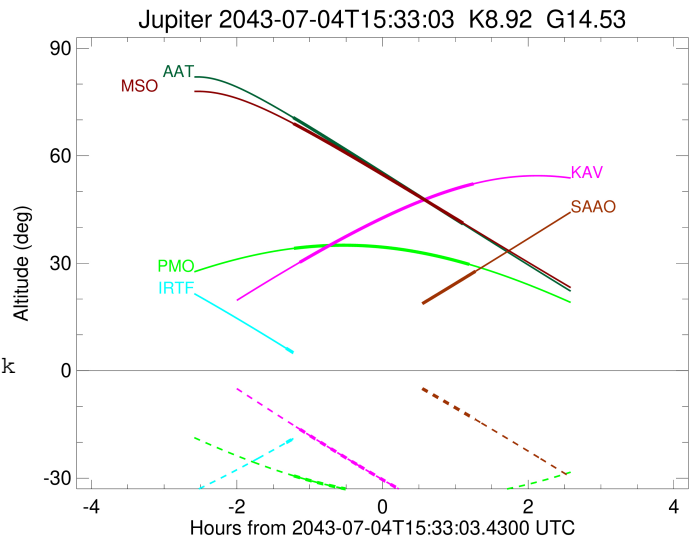
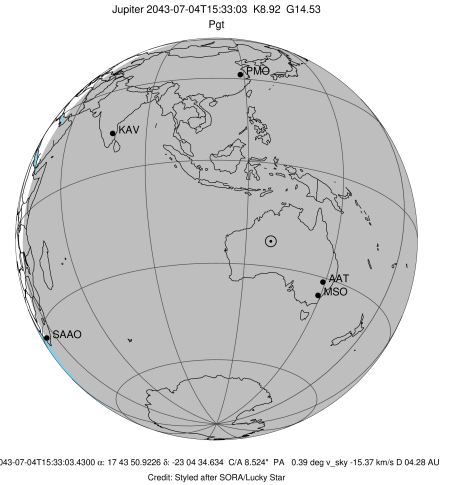
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JUL 04 14:20 - JUL 04 16:44	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	+	JUL 04 14:13 - JUL 04 14:13	Pin
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 04 14:24 - JUL 04 16:48	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	+ +	JUL 04 14:19 - JUL 04 16:39	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUL 04 16:49 - JUL 04 16:49	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUL 04 14:19 - JUL 04 16:39	Pie



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-04T15:32:14.500
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       : 4116862698817175808
2Mass ID (if available) : 17435094-2304344
ICRS Star Coord at Epoch: 17h 43m 50.92262s -23:04:34.63449s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.924
G magnitude           : 14.534
RP magnitude          : 13.154
BP magnitude          : 16.863
DUPflag              : 0
Distance (au)        : 4.276
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.37
Sun-Target sep (deg) : 164.31
Sun-Moon sep (deg)   : 166.27
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.90
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 6.836
C/A sky separation (km) : 21197.3
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
    
```

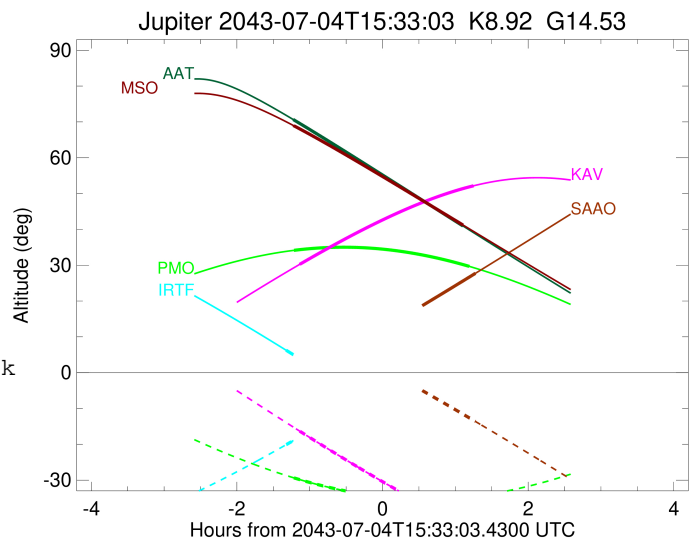
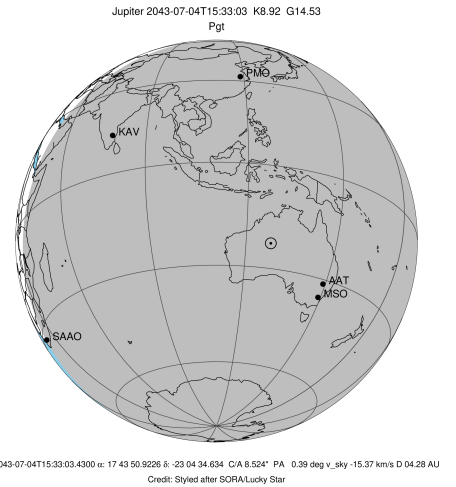


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T14:20:05.311	34.14	-29.37	71491.3	-17.76	-20.10
Jupiter	E	2043-07-04T16:44:30.184	29.67	-34.62	71491.3	-16.88	-19.12

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T15:26:15.280
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       : 4116862698817175808
2Mass ID (if available) : 17435094-2304344
ICRS Star Coord at Epoch: 17h 43m 50.92262s -23:04:34.63449s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.924
G magnitude           : 14.534
RP magnitude         : 13.154
BP magnitude         : 16.863
DUPflag              : 0
Distance (au)        : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.37
Sun-Target sep (deg) : 164.31
Sun-Moon sep (deg)   : 166.69
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.90
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 7.898
C/A sky separation (km): 24491.3
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
    
```

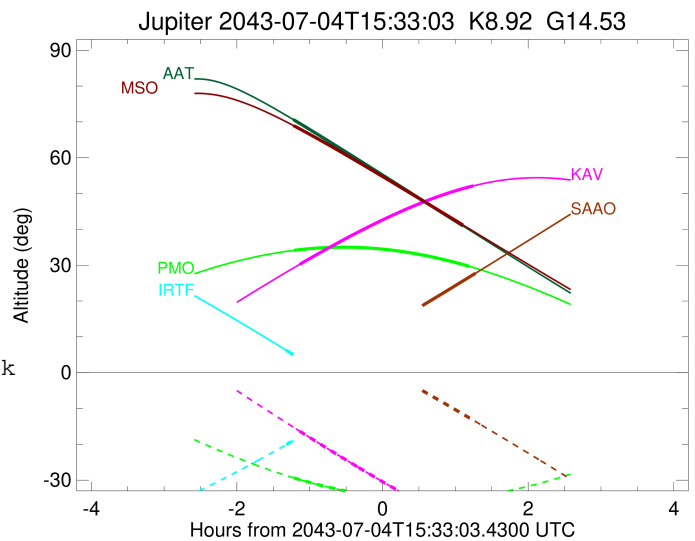
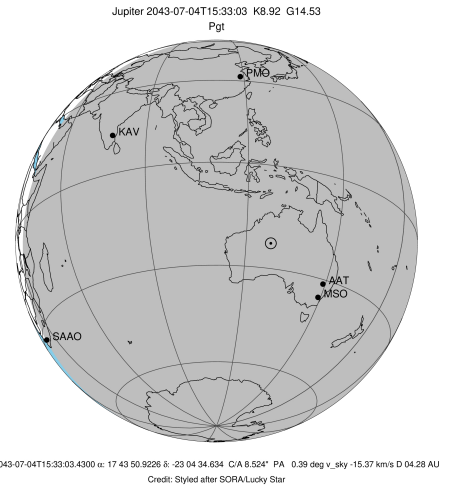


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T14:13:41.660	6.25	-20.10	71491.1	-19.90	-22.46
Jupiter	E	2043-07-04T16:39:30.889	-25.73x	10.41x	71491.1	-20.14	-22.72

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T15:36:41.750
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      : 4116862698817175808
2Mass ID (if available) : 17435094-2304344
ICRS Star Coord at Epoch: 17h 43m 50.92262s -23:04:34.63449s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 8.924
G magnitude          : 14.534
RP magnitude         : 13.154
BP magnitude         : 16.863
DUPflag             : 0
Distance (au)       : 4.276
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.37
Sun-Target sep (deg) : 164.31
Sun-Moon sep (deg)  : 165.62
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.90
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 7.432
C/A sky separation (km) : 23044.4
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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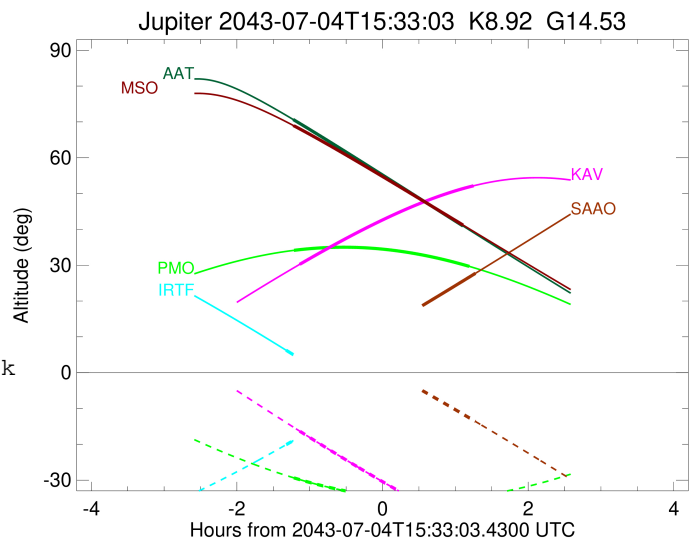
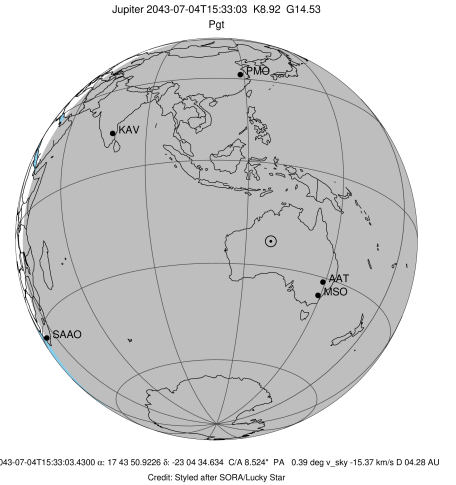


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T14:24:57.906	30.26	-16.35	71491.1	-19.72	-22.26
Jupiter	E	2043-07-04T16:48:07.354	52.16	-43.90	71491.2	-18.03	-20.40

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-04T15:29:17.110
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       : 4116862698817175808
2Mass ID (if available) : 17435094-2304344
ICRS Star Coord at Epoch: 17h 43m 50.92262s -23:04:34.63449s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.924
G magnitude           : 14.534
RP magnitude         : 13.154
BP magnitude         : 16.863
DUPflag              : 0
Distance (au)        : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.37
Sun-Target sep (deg) : 164.31
Sun-Moon sep (deg)   : 166.38
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.90
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.939
C/A sky separation (km): 27718.3
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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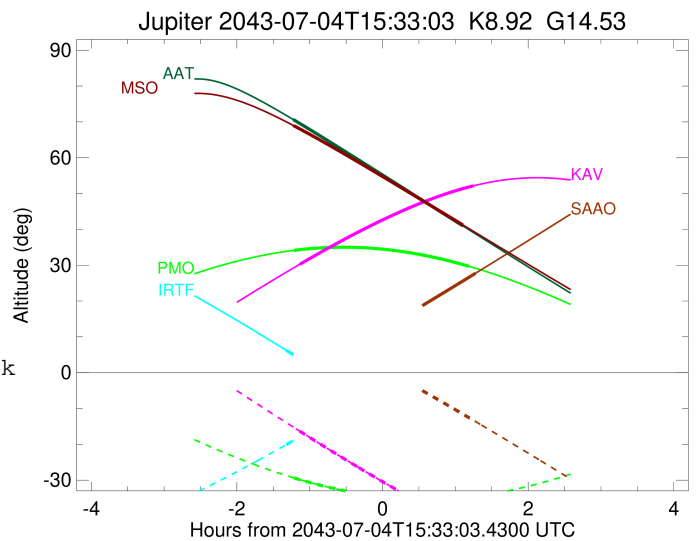
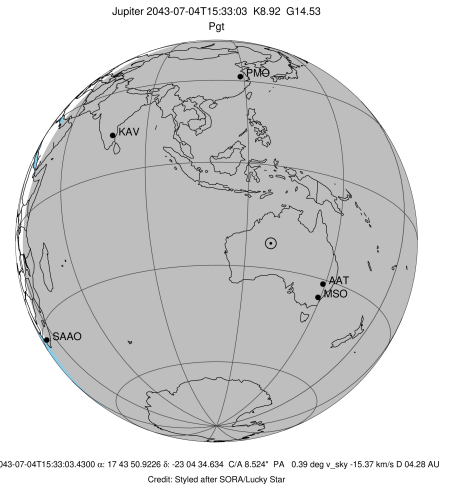


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T14:19:27.245	70.66	-81.37	71490.8	-23.03	-25.90
Jupiter	E	2043-07-04T16:39:28.602	40.93	-55.47	71490.8	-22.69	-25.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-04T15:39:13.050
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       : 4116862698817175808
2Mass ID (if available) : 17435094-2304344
ICRS Star Coord at Epoch: 17h 43m 50.92262s -23:04:34.63449s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.924
G magnitude           : 14.534
RP magnitude          : 13.154
BP magnitude          : 16.863
DUPflag              : 0
Distance (au)        : 4.276
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.37
Sun-Target sep (deg) : 164.31
Sun-Moon sep (deg)   : 164.89
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.90
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 9.507
C/A sky separation (km) : 29479.2
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
    
```

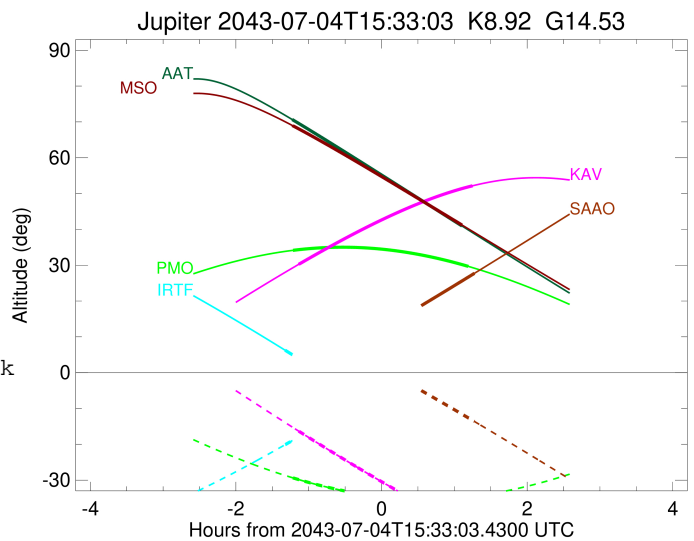
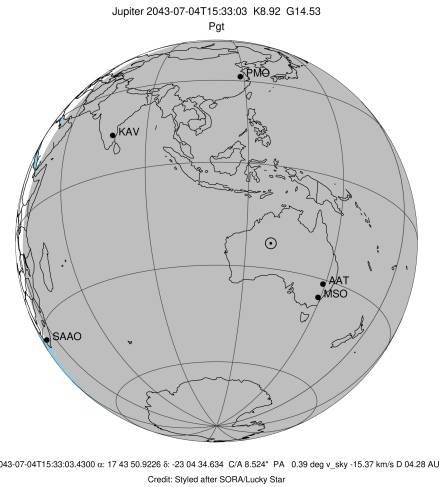


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-04T14:28:21.766	-0.47x	12.71x	71490.5	-25.41	-28.47
Jupiter	E	2043-07-04T16:49:32.377	27.71	-13.61	71490.8	-23.26	-26.14

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-04T15:29:27.180
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       : 4116862698817175808
2Mass ID (if available) : 17435094-2304344
ICRS Star Coord at Epoch: 17h 43m 50.92262s -23:04:34.63449s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.924
G magnitude           : 14.534
RP magnitude         : 13.154
BP magnitude         : 16.863
DUPflag              : 0
Distance (au)        : 4.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.37
Sun-Target sep (deg) : 164.31
Sun-Moon sep (deg)  : 166.34
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.90
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 9.075
C/A sky separation (km): 28139.7
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	2043-07-04T14:19:44.421	68.97	-77.46	71490.7	-23.41	-26.31
Jupiter	E	2043-07-04T16:39:30.601	41.18	-54.99	71490.8	-23.04	-25.90