

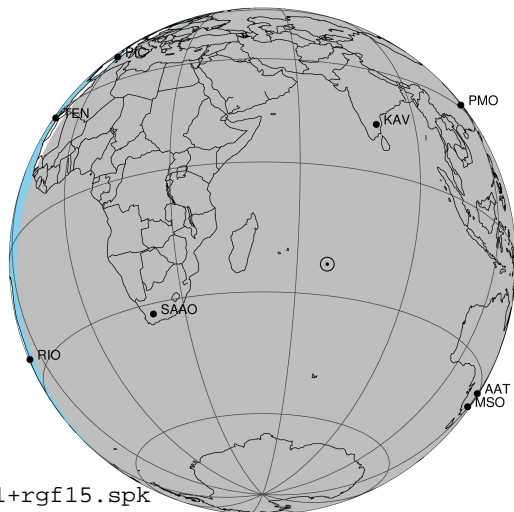
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-03T19:34:01.580  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068825624259848576  
 2Mass ID (if available) : 17441689-2304109

Jupiter 2043-07-03T19:34:01 K6.93 G13.82 Pgt

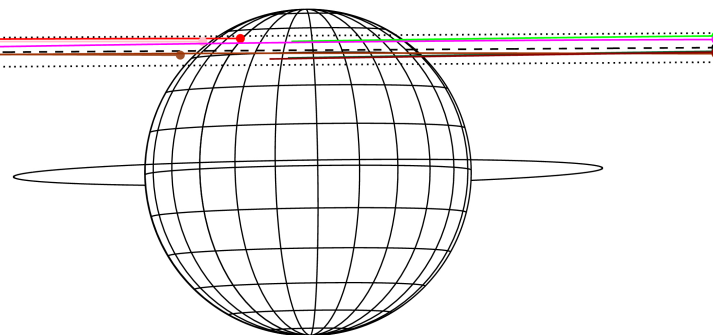
ICRS Star Coord at Epoch: 17h 44m 16.87897s -23:04:11.19957s

RUWE (>1.4 is poor) : 0.91  
 K magnitude : 6.933  
 G magnitude : 13.820  
 RP magnitude : 12.233  
 BP magnitude : 17.785  
 DUPflag : 0  
 Distance (au) : 4.272  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -15.48  
 Sun-Target sep (deg) : 165.20  
 Sun-Moon sep (deg) : 153.86  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : 0.86  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 17.289  
 C/A sky separation (km) : 53572.4  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-07-03T19:34:01 K6.93 G13.82  
 Pgt



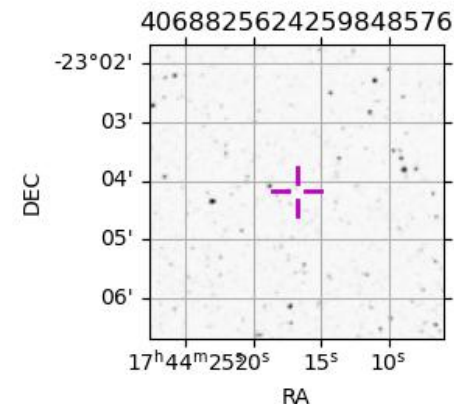
Earth  
 PIC  
 PMO  
 TEN  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



2043-07-03T19:34:01.5800 a: 17 44 16.8790 d: -23 04 11.200 C/A \*\*\*\*\* PA 180.36 deg v\_sky -15.48 km/s D 04.27 AU  
 Credit: Styled after SORA/Lucky Star

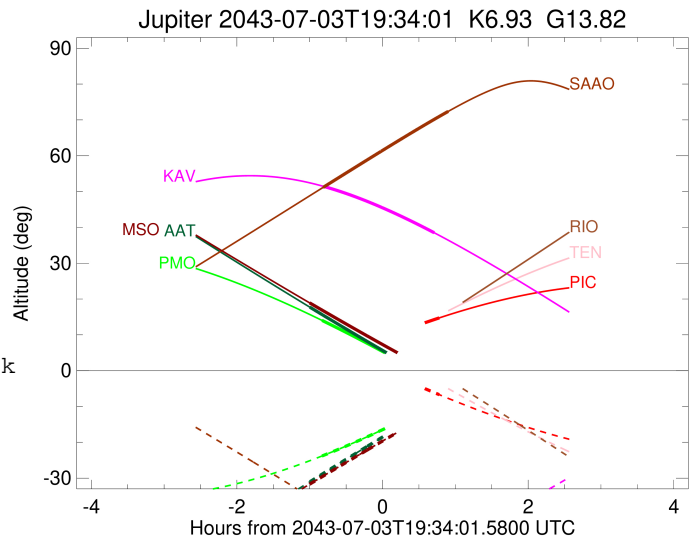
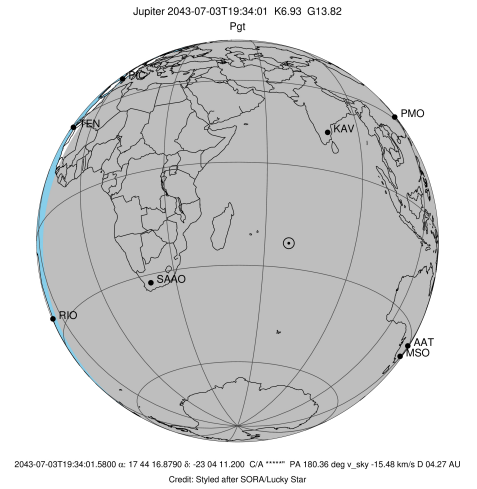
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+	JUL 03 20:20 - JUL 03 20:20	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 03 18:44 - JUL 03 18:44	Pin
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	+ +	JUL 03 18:46 - JUL 03 20:16	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 03 18:34 - JUL 03 18:34	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 03 18:45 - JUL 03 20:28	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 03 18:33 - JUL 03 18:33	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T19:37:30.200
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        : 4068825624259848576
2Mass ID (if available) : 17441689-2304109
ICRS Star Coord at Epoch: 17h 44m 16.87897s -23:04:11.19957s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 6.933
G magnitude           : 13.820
RP magnitude          : 12.233
BP magnitude          : 17.785
DUPflag              : 0
Distance (au)         : 4.272
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.20
Sun-Moon sep (deg)   : 153.52
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 18.948
C/A sky separation (km): 58713.2
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
    
```

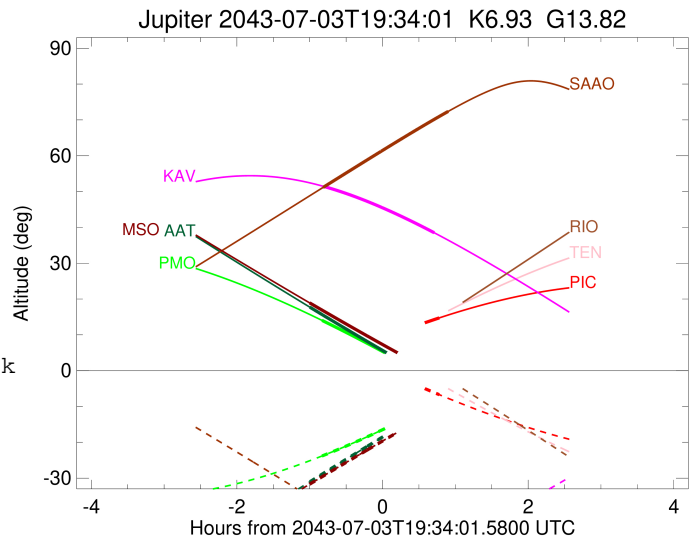
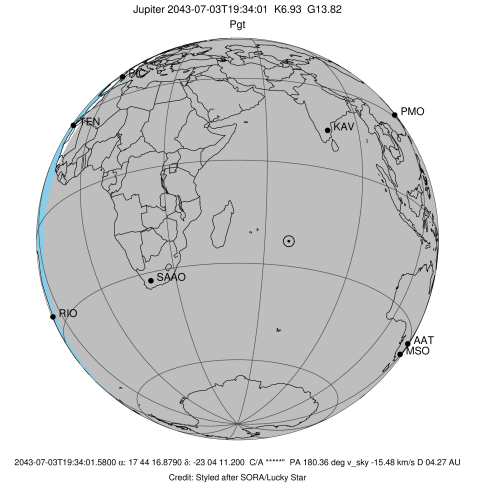


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T18:54:07.005	3.31x	6.70x	71486.7	54.25	57.66
Jupiter	E	2043-07-03T20:20:46.038	14.73	-6.70	71486.5	55.98	59.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:29:16.010
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      : 4068825624259848576
2Mass ID (if available) : 17441689-2304109
ICRS Star Coord at Epoch: 17h 44m 16.87897s -23:04:11.19957s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 6.933
G magnitude          : 13.820
RP magnitude         : 12.233
BP magnitude         : 17.785
DUPflag             : 0
Distance (au)       : 4.272
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.20
Sun-Moon sep (deg)  : 154.68
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 18.569
C/A sky separation (km) : 57538.6
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
    
```

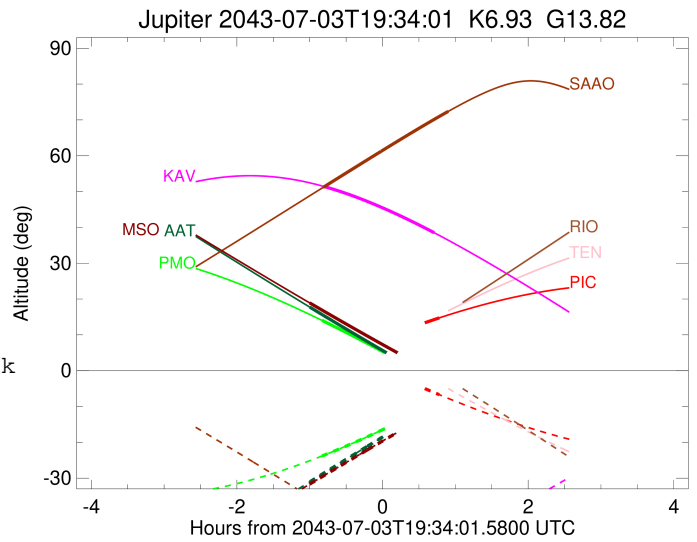
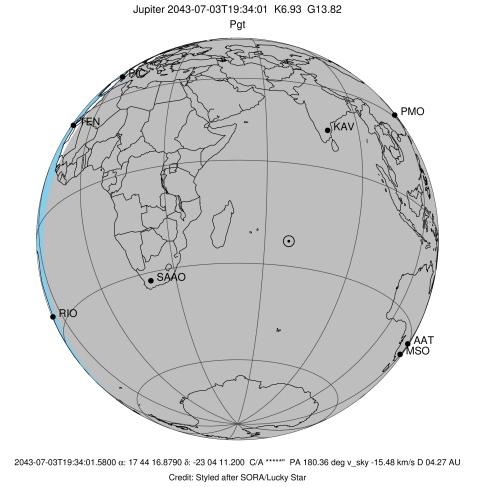


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T18:44:08.939	14.04	-23.82	71486.8	53.53	56.97
Jupiter	E	2043-07-03T20:14:35.651	-2.20x	-9.72	71486.9	53.48	56.93

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T19:31:19.810
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        : 4068825624259848576
2Mass ID (if available) : 17441689-2304109
ICRS Star Coord at Epoch: 17h 44m 16.87897s -23:04:11.19957s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 6.933
G magnitude           : 13.820
RP magnitude          : 12.233
BP magnitude          : 17.785
DUPflag              : 0
Distance (au)         : 4.272
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg)  : 165.20
Sun-Moon sep (deg)   : 154.64
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 18.404
C/A sky separation (km) : 57029.2
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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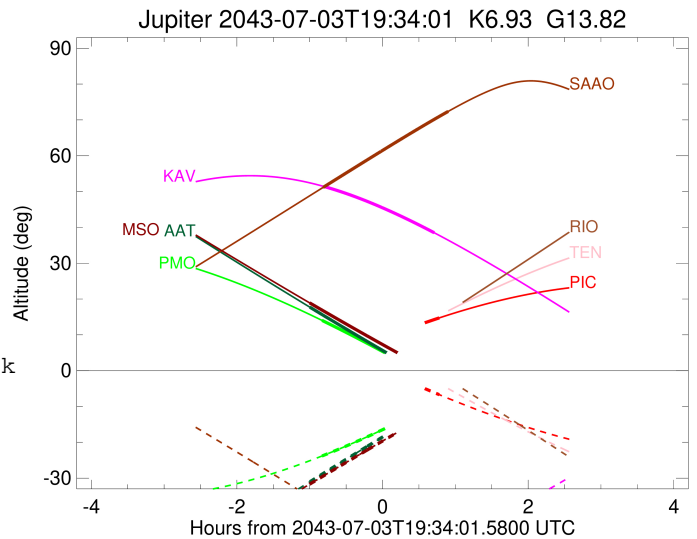
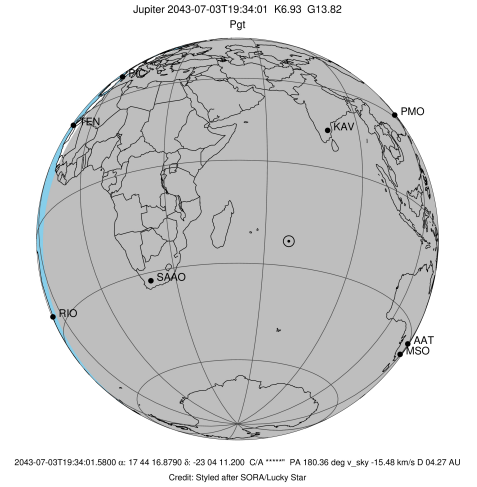


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T18:46:06.734	51.38	-54.58	71487.0	52.58	56.07
Jupiter	E	2043-07-03T20:16:40.168	38.49	-48.59	71486.9	53.00	56.47

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:28:43.550
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      : 4068825624259848576
2Mass ID (if available) : 17441689-2304109
ICRS Star Coord at Epoch: 17h 44m 16.87897s -23:04:11.19957s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 6.933
G magnitude          : 13.820
RP magnitude         : 12.233
BP magnitude         : 17.785
DUPflag             : 0
Distance (au)       : 4.272
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.20
Sun-Moon sep (deg)  : 154.58
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 16.240
C/A sky separation (km) : 50322.2
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
    
```

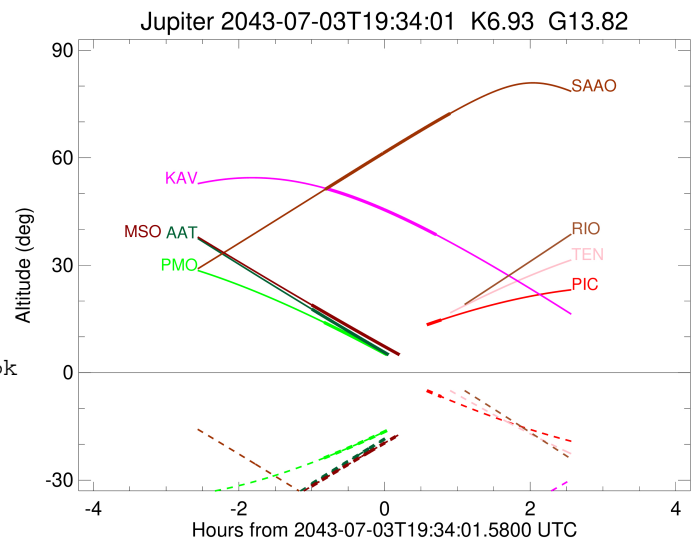
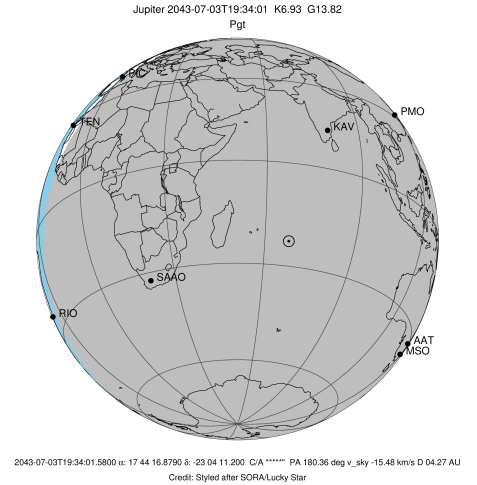


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T18:34:05.961	17.73	-31.02	71488.0	44.78	48.48
Jupiter	E	2043-07-03T20:23:41.603	-3.86x	-8.47	71488.1	44.62	48.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-03T19:36:39.060
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       : 4068825624259848576
2Mass ID (if available) : 17441689-2304109
ICRS Star Coord at Epoch: 17h 44m 16.87897s -23:04:11.19957s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 6.933
G magnitude           : 13.820
RP magnitude          : 12.233
BP magnitude          : 17.785
DUPflag              : 0
Distance (au)        : 4.272
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.20
Sun-Moon sep (deg)   : 153.83
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 16.870
C/A sky separation (km): 52274.7
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
    
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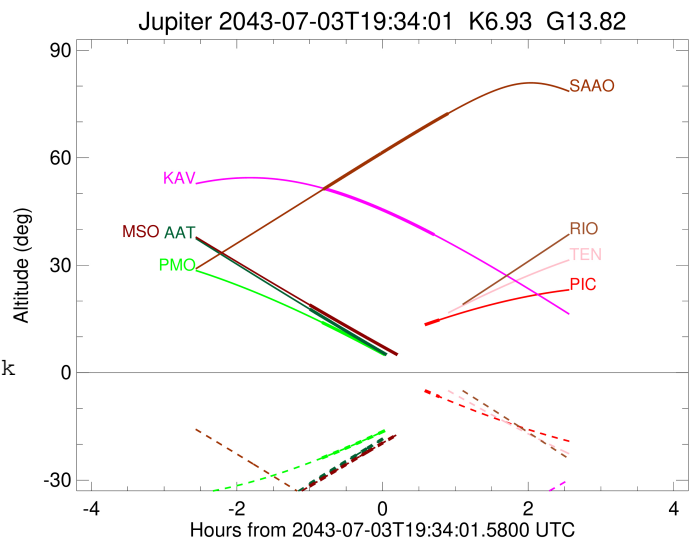
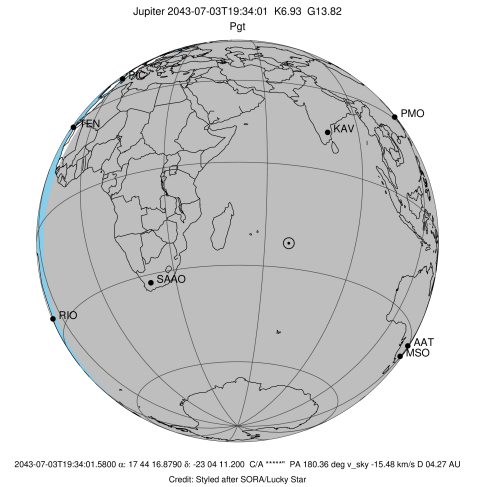


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-03T18:45:10.087	51.17	-37.54	71487.9	46.11	49.80
Jupiter	E	2043-07-03T20:28:00.541	72.34	-59.23	71487.6	47.65	51.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-03T19:28:57.660
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      : 4068825624259848576
2Mass ID (if available) : 17441689-2304109
ICRS Star Coord at Epoch: 17h 44m 16.87897s -23:04:11.19957s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 6.933
G magnitude          : 13.820
RP magnitude         : 12.233
BP magnitude         : 17.785
DUPflag             : 0
Distance (au)        : 4.272
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.48
Sun-Target sep (deg) : 165.20
Sun-Moon sep (deg)  : 154.55
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.86
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 16.132
C/A sky separation (km) : 49987.5
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	2043-07-03T18:33:58.789	18.92	-31.69	71488.1	44.37	48.08
Jupiter	E	2043-07-03T20:24:16.346	-1.90x	-9.88	71488.1	44.27	47.98