

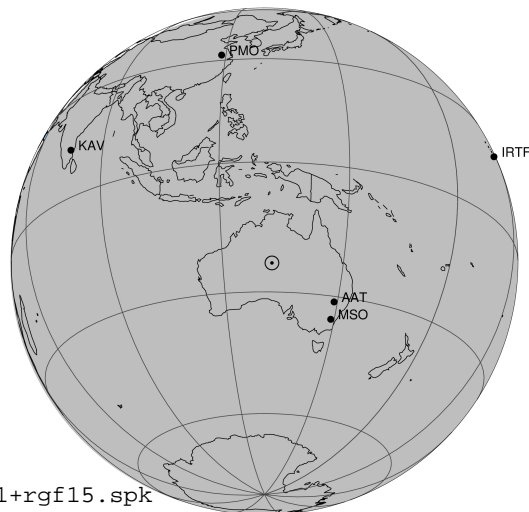
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-06-21T15:13:06.640
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068704093939058048
 2Mass ID (if available) : 17505369-2304395

Jupiter 2043-06-21T15:13:06 K8.20 G12.31 Pgt

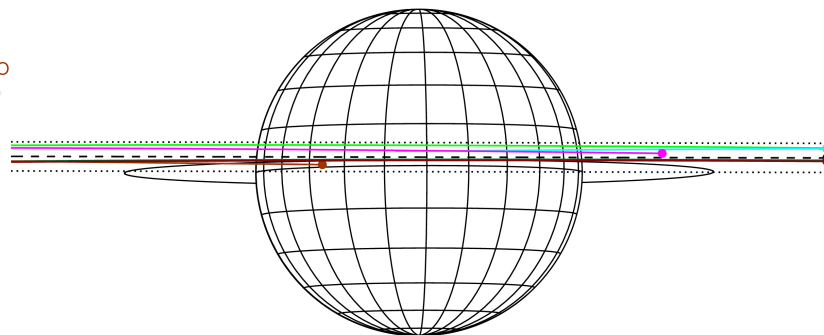
ICRS Star Coord at Epoch: 17h 50m 53.69186s -23°04'39.70442s

RUWE (>1.4 is poor) : 0.93
 K magnitude : 8.199
 G magnitude : 12.311
 RP magnitude : 11.219
 BP magnitude : 13.553
 DUPflag : 0
 Distance (au) : 4.250
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.40
 Sun-Target sep (deg) : 178.30
 Sun-Moon sep (deg) : 10.49
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.14
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 2.183
 C/A sky separation (km) : 6730.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-06-21T15:13:06 K8.20 G12.31
 Pgt



Earth
 PAL
 PMO
 IRTF
 KAV
 AAT
 SAAO
 MSO

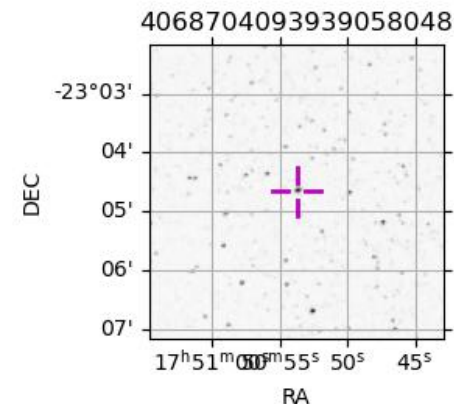


2043-06-21T15:13:06.6400 at: 17 50 53.69186 s: -23 04 39.704 C/A 2.172" PA 179.90 deg v_sky -16.40 km/s D 04.25 AU

Credit: Styled after SORA/Lucky Star

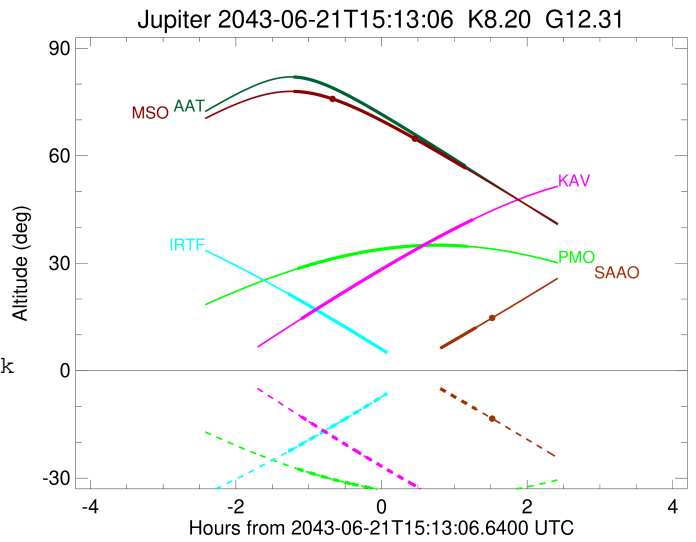
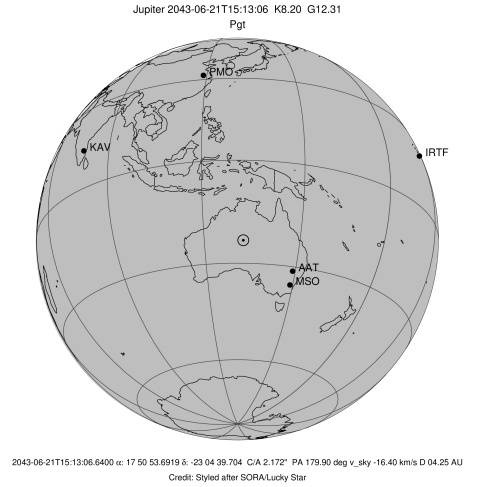
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JUN 21 14:04 - JUN 21 16:24	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 21 13:56 - JUN 21 13:56	Pin
KAV	Kavalur Observatory	12.6	78.8	+ +	JUN 21 14:06 - JUN 21 16:28	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 21 14:00 - JUN 21 16:22	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUN 21 16:31 - JUN 21 16:31	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUN 21 14:00 - JUN 21 16:22	Pie



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-21T15:14:07.990
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      : 4068704093939058048
2Mass ID (if available) : 17505369-2304395
ICRS Star Coord at Epoch: 17h 50m 53.69186s -23:04:39.70442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.199
G magnitude          : 12.311
RP magnitude         : 11.219
BP magnitude         : 13.553
DUPflag             : 0
Distance (au)       : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.40
Sun-Target sep (deg) : 178.30
Sun-Moon sep (deg)  : 10.82
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.14
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 3.865
C/A sky separation (km) : 11914.7
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
    
```

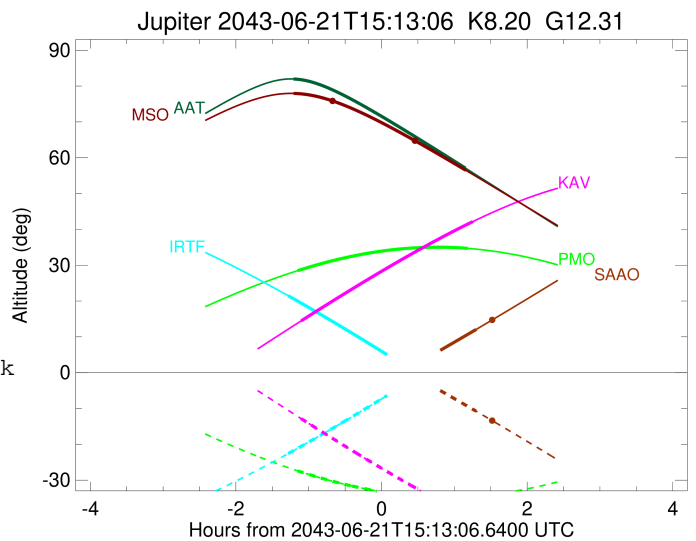
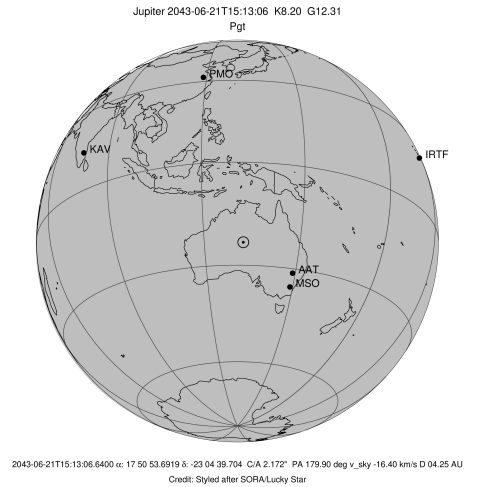


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-21T14:04:04.015	28.48	-27.41	71491.8	9.16	10.45
Jupiter	E	2043-06-21T16:24:06.337	34.69	-34.51	71491.8	9.85	11.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-21T15:07:21.630
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       : 4068704093939058048
2Mass ID (if available) : 17505369-2304395
ICRS Star Coord at Epoch: 17h 50m 53.69186s -23:04:39.70442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.199
G magnitude          : 12.311
RP magnitude         : 11.219
BP magnitude         : 13.553
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.40
Sun-Target sep (deg) : 178.30
Sun-Moon sep (deg)   : 11.39
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 3.040
C/A sky separation (km) : 9371.9
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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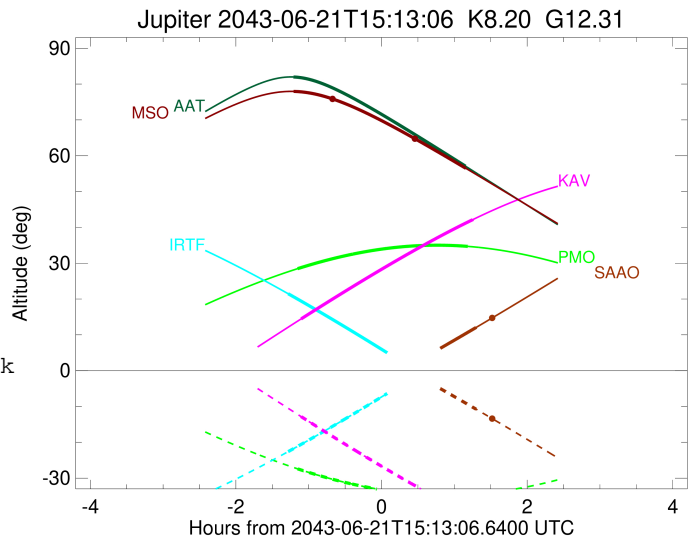
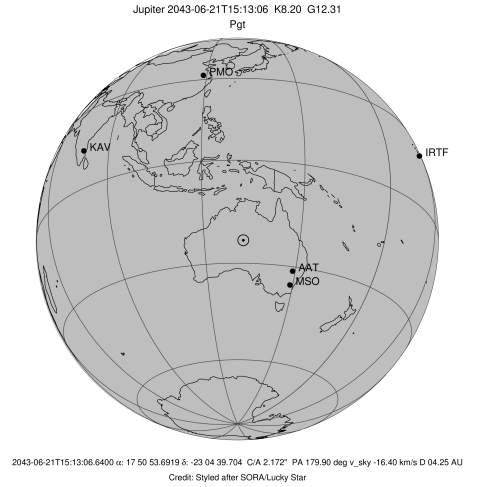


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-21T13:56:10.326	21.48	-22.60	71491.9	7.81	8.91
Jupiter	E	2043-06-21T16:19:06.551	-8.22x	6.70x	71491.9	7.19	8.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-21T15:17:53.050
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       : 4068704093939058048
2Mass ID (if available) : 17505369-2304395
ICRS Star Coord at Epoch: 17h 50m 53.69186s -23:04:39.70442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.199
G magnitude          : 12.311
RP magnitude         : 11.219
BP magnitude         : 13.553
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.40
Sun-Target sep (deg) : 178.30
Sun-Moon sep (deg)   : 10.18
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 3.111
C/A sky separation (km) : 9589.1
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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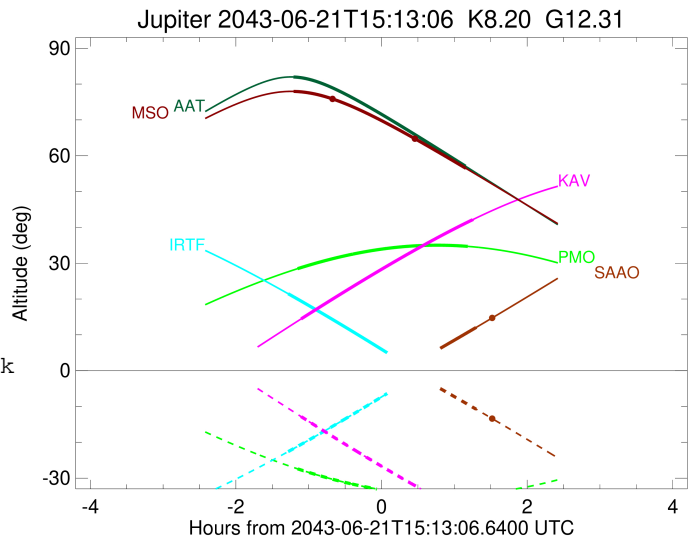
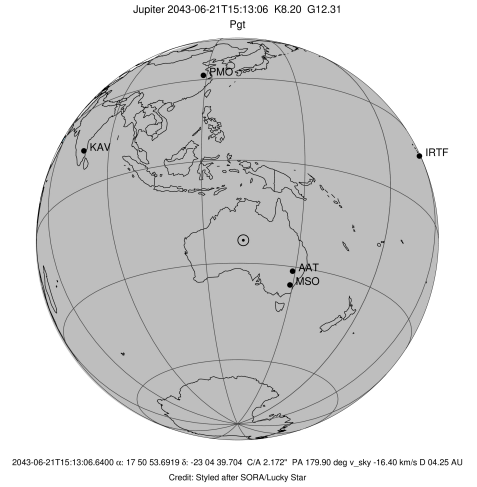


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-21T14:06:53.703	14.45	-12.82	71491.9	6.93	7.91
Jupiter	E	2043-06-21T16:28:25.475	42.17	-40.70	71491.8	8.34	9.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-21T15:11:23.820
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      : 4068704093939058048
2Mass ID (if available) : 17505369-2304395
ICRS Star Coord at Epoch: 17h 50m 53.69186s -23:04:39.70442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.199
G magnitude          : 12.311
RP magnitude         : 11.219
BP magnitude         : 13.553
DUPflag             : 0
Distance (au)       : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.40
Sun-Target sep (deg) : 178.30
Sun-Moon sep (deg)  : 10.80
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.14
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.856
C/A sky separation (km) : 5722.2
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
    
```

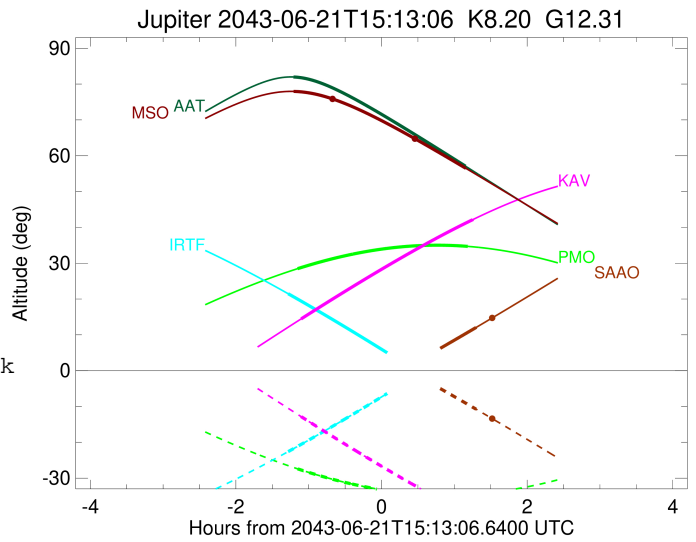
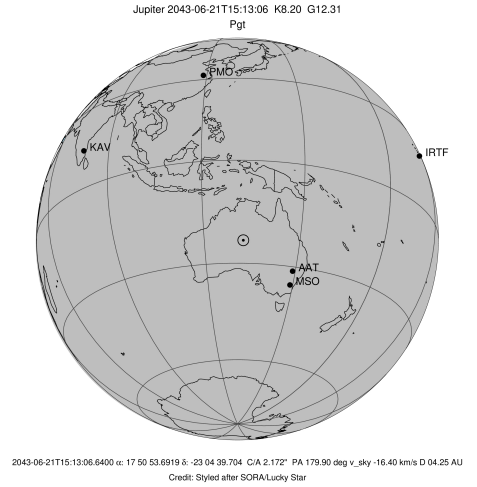


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-21T14:00:39.801	81.97	-82.25	71492.0	4.43	5.06
Jupiter	E	2043-06-21T16:22:17.702	57.08	-58.80	71491.9	4.59	5.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-21T15:18:18.750
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       : 4068704093939058048
2Mass ID (if available) : 17505369-2304395
ICRS Star Coord at Epoch: 17h 50m 53.69186s -23:04:39.70442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.199
G magnitude          : 12.311
RP magnitude         : 11.219
BP magnitude         : 13.553
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.40
Sun-Target sep (deg) : 178.30
Sun-Moon sep (deg)   : 9.60
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 0.965
C/A sky separation (km): 2976.2
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
    
```

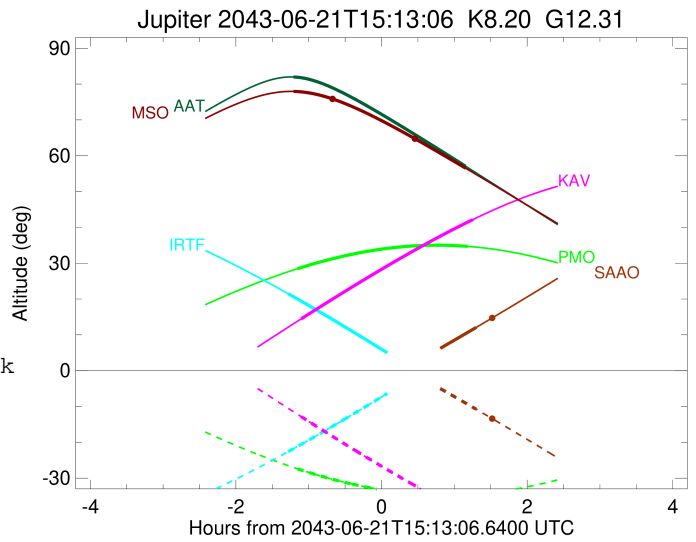
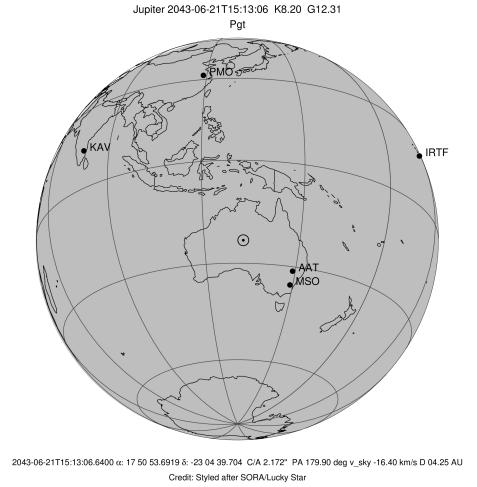


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-21T14:04:55.911	-14.81x	15.68x	71492.0	1.65	1.88
Jupiter	E	2043-06-21T16:31:09.837	12.08	-10.77	71492.0	3.17	3.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-21T15:11:28.770
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       : 4068704093939058048
2Mass ID (if available) : 17505369-2304395
ICRS Star Coord at Epoch: 17h 50m 53.69186s -23:04:39.70442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 8.199
G magnitude          : 12.311
RP magnitude         : 11.219
BP magnitude         : 13.553
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.40
Sun-Target sep (deg) : 178.30
Sun-Moon sep (deg)   : 10.76
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.715
C/A sky separation (km) : 5286.8
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	2043-06-21T14:00:38.348	77.94	-78.24	71492.0	4.08	4.66
Jupiter	E	2043-06-21T16:22:28.639	56.51	-58.18	71492.0	4.25	4.85