

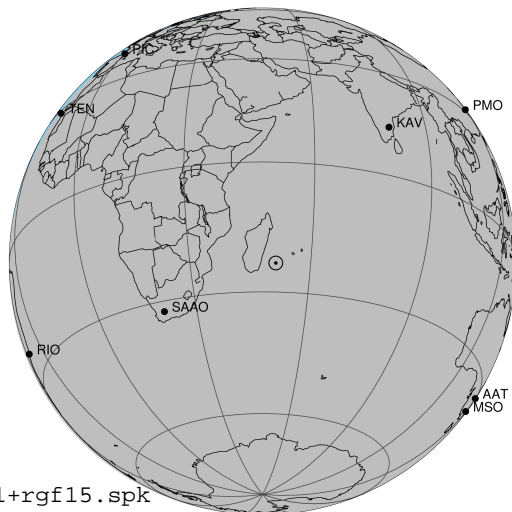
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-06-22T20:36:39.330  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068684302724337152  
 2Mass ID (if available) : 17501293-2304506

Jupiter 2043-06-22T20:36:39 K9.79 G14.58 Pgt

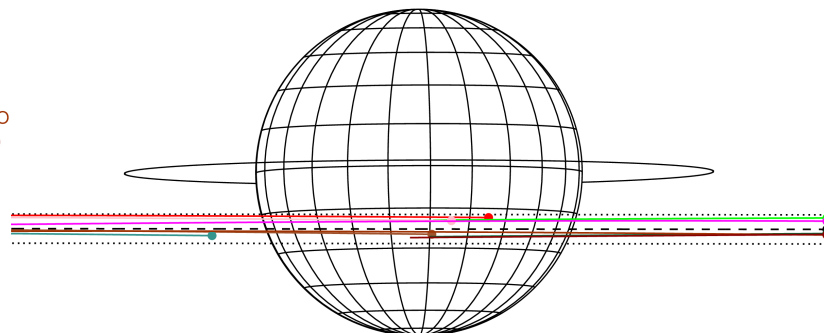
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23°04'50.70966s

RUWE (>1.4 is poor) : 0.92  
 K magnitude : 9.793  
 G magnitude : 14.580  
 RP magnitude : 13.361  
 BP magnitude : 16.230  
 DUPflag : 0  
 Distance (au) : 4.250  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -16.38  
 Sun-Target sep (deg) : 177.00  
 Sun-Moon sep (deg) : 7.96  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : 0.22  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 8.033  
 C/A sky separation (km) : 24762.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-06-22T20:36:39 K9.79 G14.58  
 Pgt



Earth  
 PIC  
 PMO  
 TEN  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO

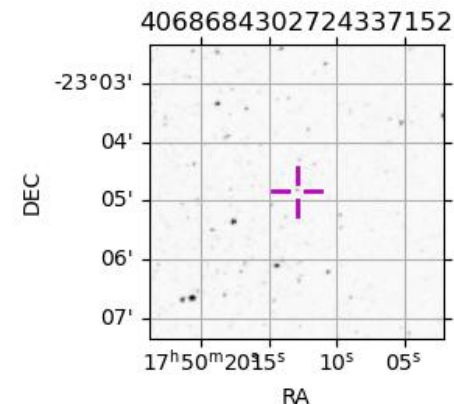


2043-06-22T20:36:39.3300 at: 17 50 12.9220 6: -23 04 50.710 C/A 8.044" PA 359.95 deg v\_sky -16.38 km/s D 04.25 AU

Credit: Styled after SORA/Lucky Star

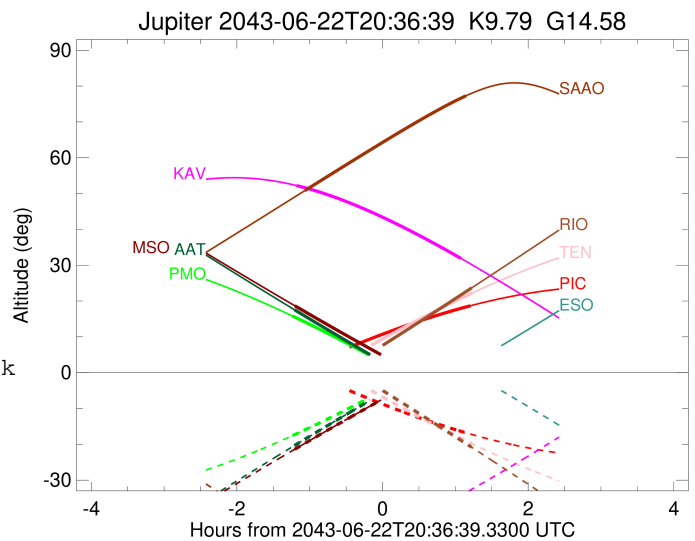
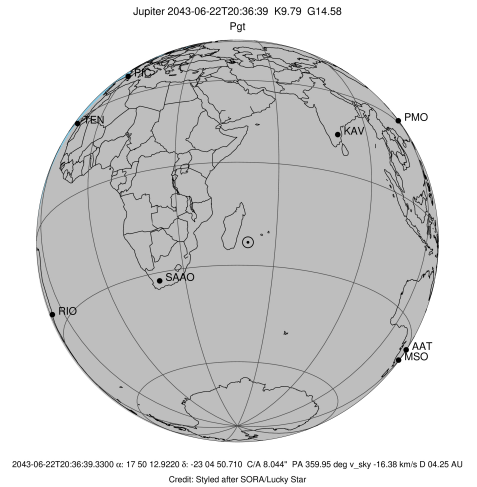
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUN 22 21:49 - JUN 22 21:49	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUN 22 19:22 - JUN 22 19:22	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	+	JUN 22 21:50 - JUN 22 21:50	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUN 22 19:25 - JUN 22 21:41	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUN 22 21:50 - JUN 22 21:50	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUN 22 19:24 - JUN 22 19:24	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 22 19:32 - JUN 22 21:45	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUN 22 19:24 - JUN 22 19:24	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T20:40:13.700
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      : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor) : 0.92
K magnitude          : 9.793
G magnitude          : 14.580
RP magnitude         : 13.361
BP magnitude         : 16.230
DUPflag             : 0
Distance (au)       : 4.250
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.38
Sun-Target sep (deg) : 177.00
Sun-Moon sep (deg)  : 8.85
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 6.331
C/A sky separation (km) : 19516.4
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
    
```

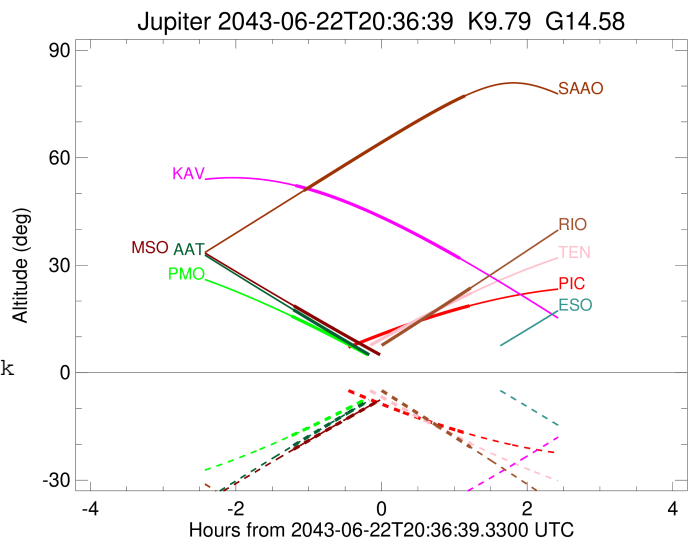
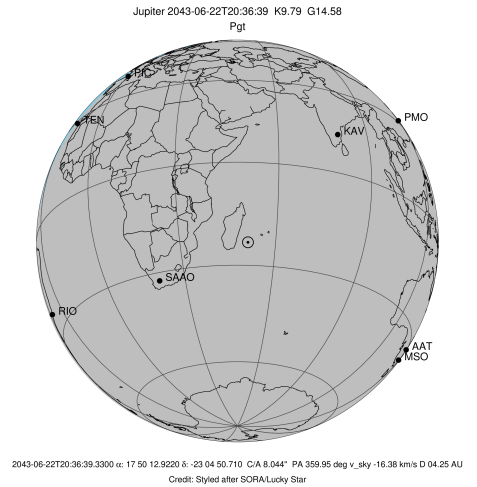


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T19:31:03.529	1.47x	0.75x	71491.4	-16.48	-18.67
Jupiter	E	2043-06-22T21:49:05.391	18.67	-17.14	71491.4	-15.28	-17.34

```

target           : Jupiter
target radius (km) : 71492.00
C/A epoch       : 2043-06-22T20:31:17.540
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  : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor) : 0.92
K magnitude     : 9.793
G magnitude     : 14.580
RP magnitude    : 13.361
BP magnitude    : 16.230
DUPflag        : 0
Distance (au)   : 4.250
f0 (km)        : 0.00
g0 (km)        : 0.00
skyplane vel. (km/s) : -16.38
Sun-Target sep (deg) : 177.00
Sun-Moon sep (deg) : 7.85
B (ring opening deg) : -2.42
PA of pole (deg) : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 6.795
C/A sky separation (km) : 20946.9
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
    
```

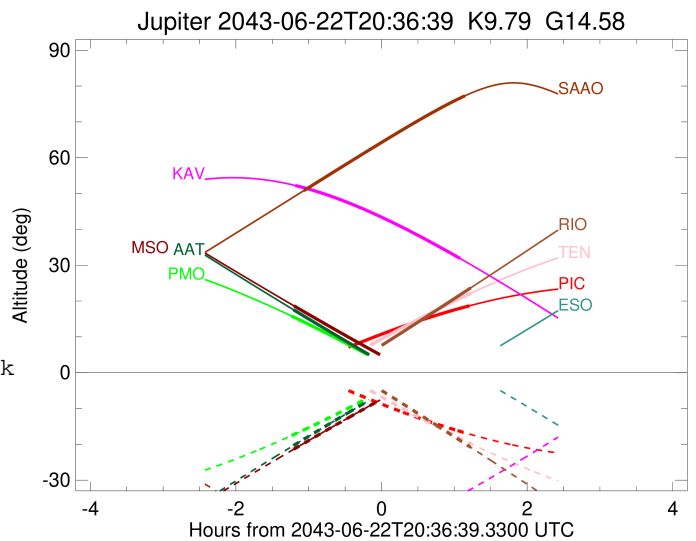
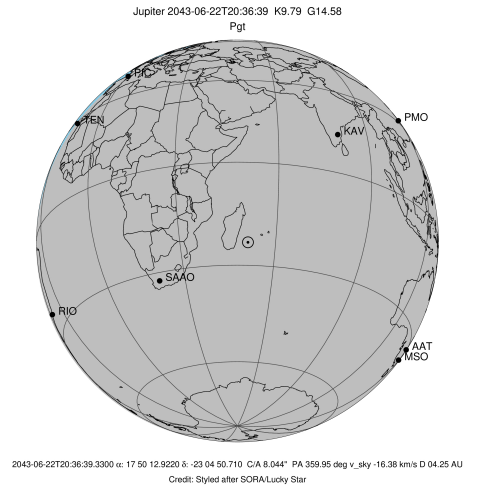


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T19:22:32.673	15.80	-17.56	71491.3	-16.82	-19.06
Jupiter	E	2043-06-22T21:40:30.765	-9.36x	6.94x	71491.3	-17.28	-19.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T20:41:55.780
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : TEN
Location            : Teide Obs./Tenerife
Latitude (deg)      : 28.30050
E. Longitude (deg)  : 343.48909
Altitude (km)       : 2.395
Gaia source ID      : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor) : 0.92
K magnitude          : 9.793
G magnitude          : 14.580
RP magnitude         : 13.361
BP magnitude         : 16.230
DUPflag             : 0
Distance (au)       : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.38
Sun-Target sep (deg) : 177.00
Sun-Moon sep (deg)  : 8.87
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 6.805
C/A sky separation (km) : 20978.9
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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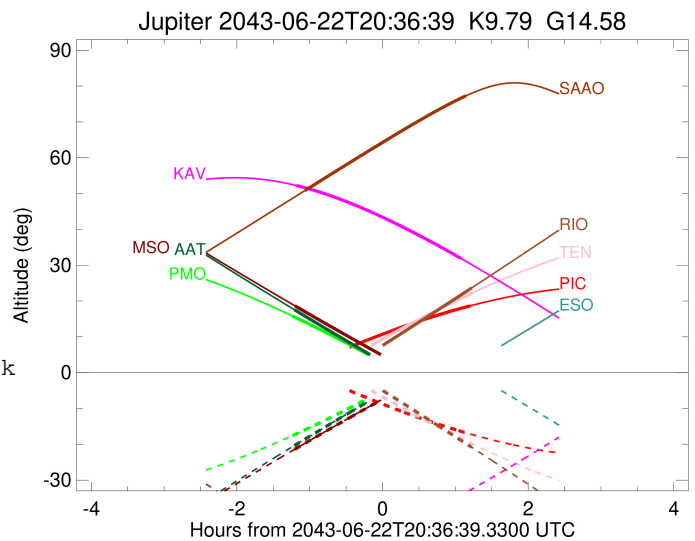
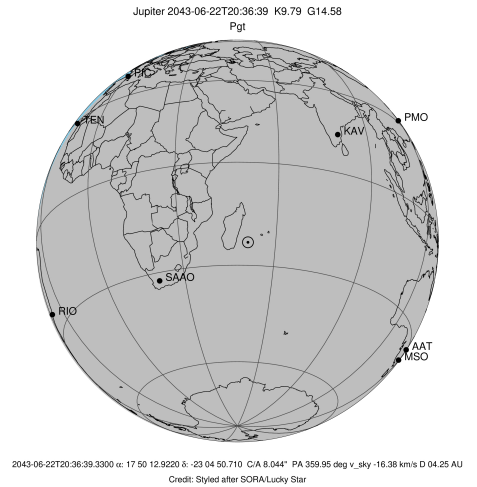


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T19:32:55.497	-2.99x	5.73x	71491.2	-17.85	-20.19
Jupiter	E	2043-06-22T21:50:28.886	22.19	-19.83	71491.4	-16.33	-18.51

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-22T20:33:21.550
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        : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor)  : 0.92
K magnitude           : 9.793
G magnitude           : 14.580
RP magnitude          : 13.361
BP magnitude          : 16.230
DUPflag              : 0
Distance (au)         : 4.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -16.38
Sun-Target sep (deg)  : 177.00
Sun-Moon sep (deg)    : 8.07
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 6.940
C/A sky separation (km) : 21393.9
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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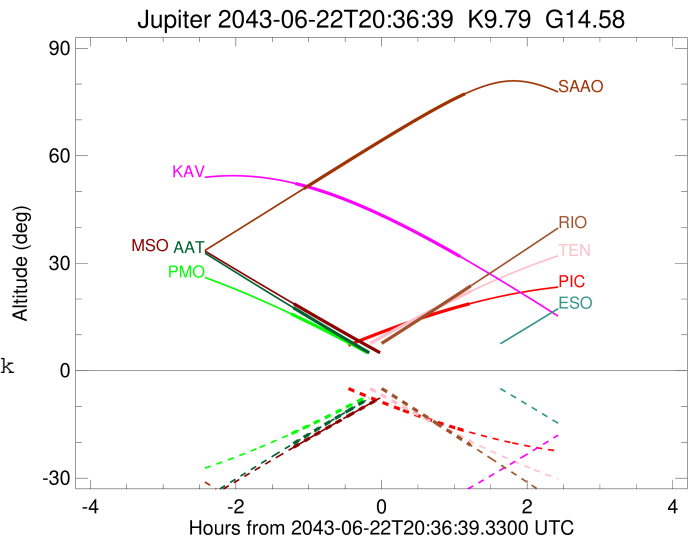
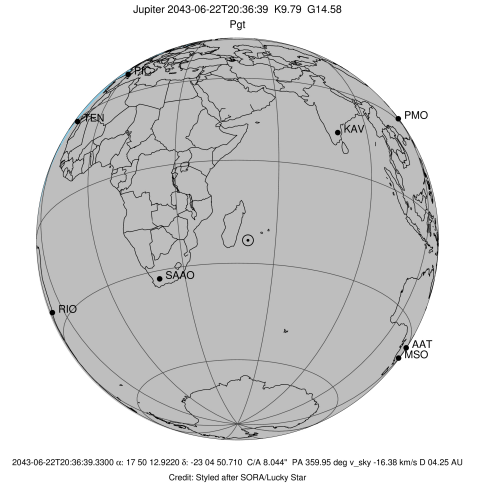


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T19:25:42.213	52.23	-52.83	71491.3	-17.44	-19.74
Jupiter	E	2043-06-22T21:41:17.556	31.90	-34.22	71491.3	-17.51	-19.82

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-22T20:42:56.000
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : RIO
Location              : Rio de Janeiro
Latitude (deg)        : -22.89506
E. Longitude (deg)    : 316.77708
Altitude (km)         : 0.033
Gaia source ID        : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.793
G magnitude           : 14.580
RP magnitude          : 13.361
BP magnitude          : 16.230
DUPflag              : 0
Distance (au)         : 4.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.38
Sun-Target sep (deg) : 177.00
Sun-Moon sep (deg)   : 8.41
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.755
C/A sky separation (km): 26990.1
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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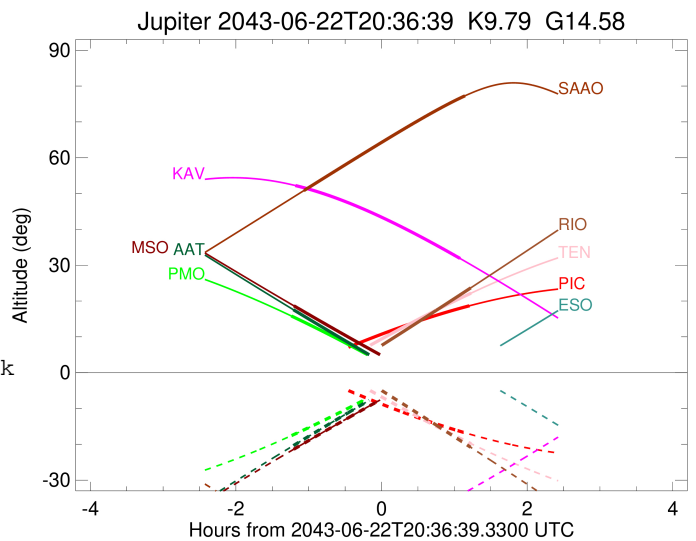
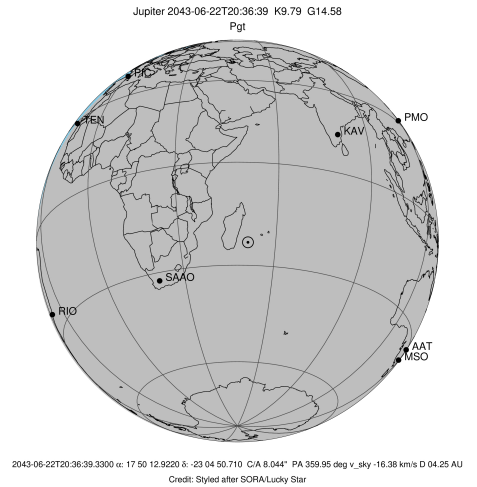


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T19:35:18.616	-5.29x	7.72x	71490.8	-23.01	-25.87
Jupiter	E	2043-06-22T21:50:02.271	23.63	-20.81	71490.9	-21.32	-24.02

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-22T20:30:55.620
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        : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.793
G magnitude           : 14.580
RP magnitude          : 13.361
BP magnitude          : 16.230
DUPflag              : 0
Distance (au)         : 4.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.38
Sun-Target sep (deg) : 177.00
Sun-Moon sep (deg)   : 7.08
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 9.140
C/A sky separation (km): 28176.8
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
    
```



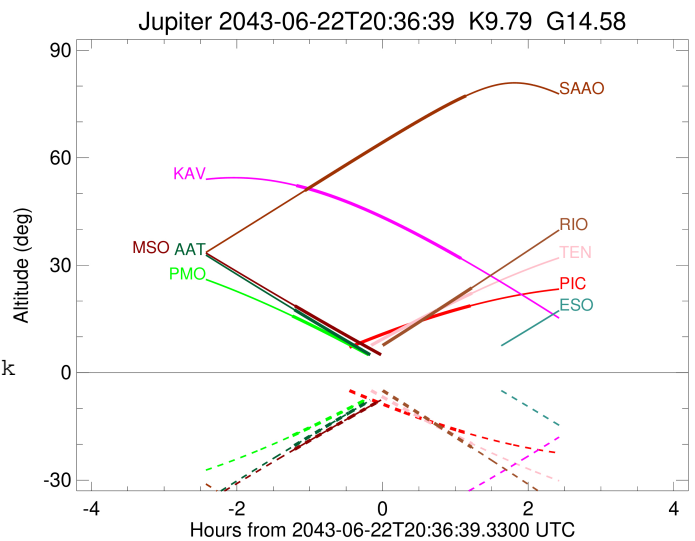
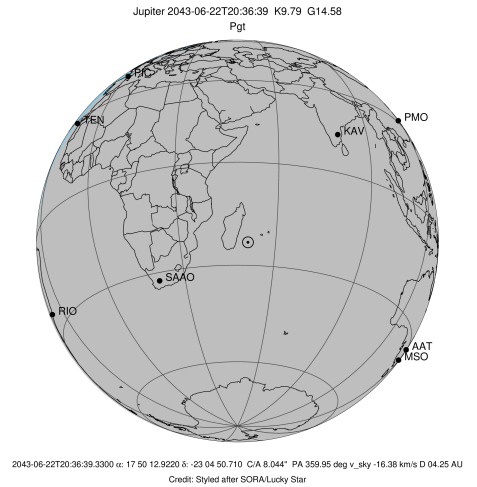
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T19:24:01.341	17.58	-20.36	71490.8	-22.92	-25.77
Jupiter	E	2043-06-22T21:38:18.950	-8.51x	5.92x	71490.7	-23.44	-26.34



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T20:39:13.840
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       : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor) : 0.92
K magnitude          : 9.793
G magnitude          : 14.580
RP magnitude         : 13.361
BP magnitude         : 16.230
DUPflag             : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.38
Sun-Target sep (deg) : 177.00
Sun-Moon sep (deg)   : 8.23
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 8.429
C/A sky separation (km): 25983.8
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
    
```



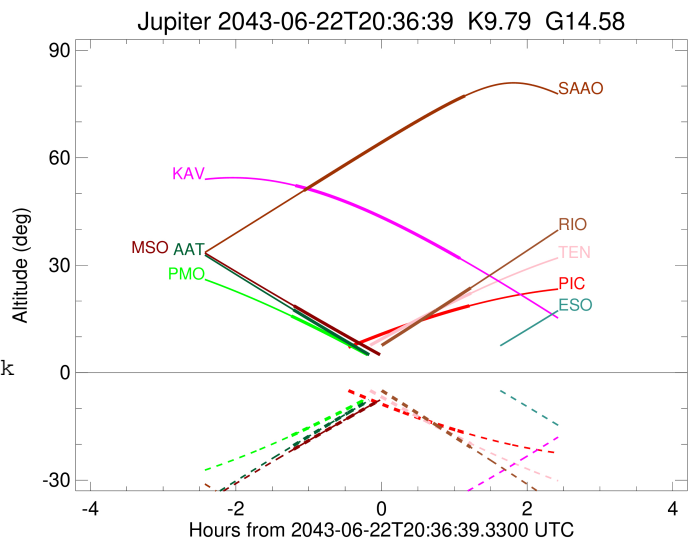
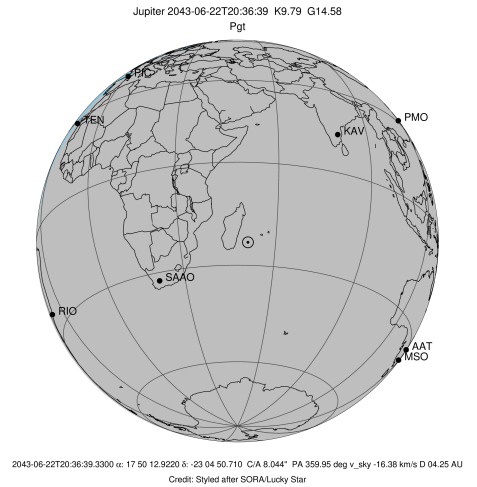
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-22T19:32:46.975	50.84	-48.27	71490.9	-21.86	-24.61
Jupiter	E	2043-06-22T21:45:28.832	77.28	-75.32	71491.0	-20.87	-23.53



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-22T20:31:11.140
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       : 4068684302724337152
2Mass ID (if available) : 17501293-2304506
ICRS Star Coord at Epoch: 17h 50m 12.92204s -23:04:50.70966s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 9.793
G magnitude           : 14.580
RP magnitude         : 13.361
BP magnitude         : 16.230
DUPflag              : 0
Distance (au)        : 4.250
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.38
Sun-Target sep (deg) : 177.00
Sun-Moon sep (deg)   : 7.08
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.22
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 9.246
C/A sky separation (km): 28504.2
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	2043-06-22T19:24:25.537	18.67	-21.37	71490.8	-23.23	-26.11
Jupiter	E	2043-06-22T21:38:24.362	-6.24x	3.75x	71490.7	-23.70	-26.62