

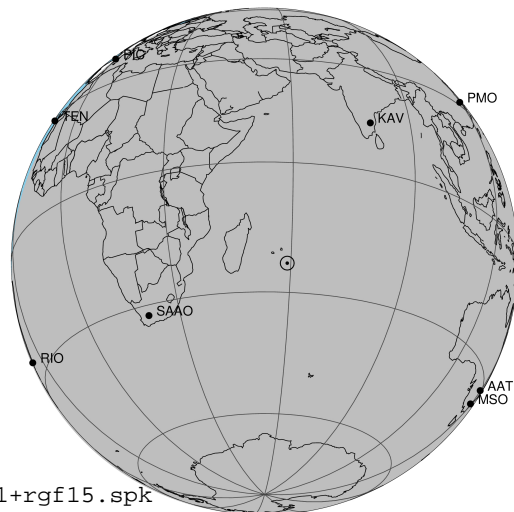
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-06-24T20:06:04.050
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068871769395409536
 2Mass ID (if available) : 17490727-2304434

Jupiter 2043-06-24T20:06:04 K8.29 G13.82 Pgt

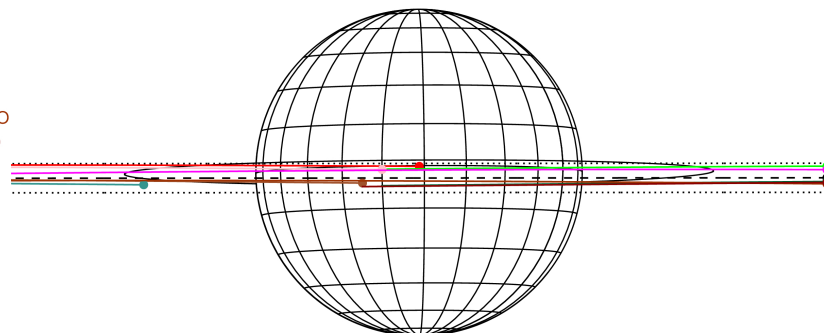
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23°04'43.63364s

RUWE (>1.4 is poor) : 0.86
 K magnitude : 8.293
 G magnitude : 13.815
 RP magnitude : 12.465
 BP magnitude : 16.032
 DUPflag : 0
 Distance (au) : 4.252
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.30
 Sun-Target sep (deg) : 174.86
 Sun-Moon sep (deg) : 31.11
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.33
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 0.782
 C/A sky separation (km) : 2411.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-06-24T20:06:04 K8.29 G13.82
 Pgt



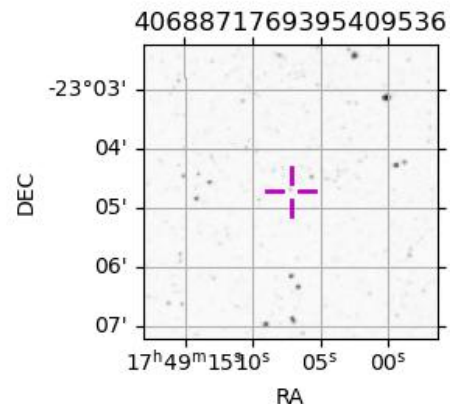
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-06-24T20:06:04.0500 a: 17 49 07.2537 δ: -23 04 43.634 C/A 0.794" PA 0.03 deg v_sky -16.30 km/s D 04.25 AU
 Credit: Styled after SORA/Lucky Star

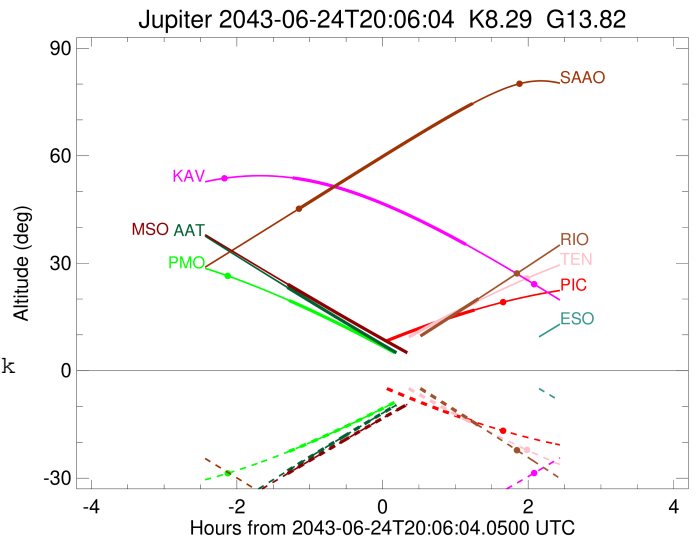
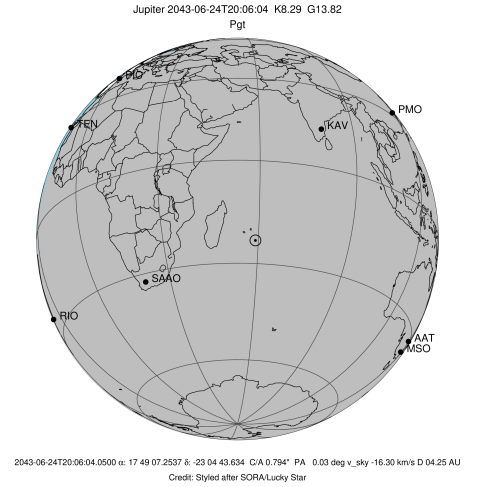
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUN 24 21:21 - JUN 24 21:21	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUN 24 18:49 - JUN 24 18:49	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 24 21:23 - JUN 24 21:23	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUN 24 18:52 - JUN 24 21:14	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUN 24 21:24 - JUN 24 21:24	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUN 24 18:47 - JUN 24 18:47	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 24 18:57 - JUN 24 21:20	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUN 24 18:48 - JUN 24 18:48	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T20:09:49.260
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        : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.293
G magnitude           : 13.815
RP magnitude          : 12.465
BP magnitude          : 16.032
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.30
Sun-Target sep (deg)  : 174.86
Sun-Moon sep (deg)    : 31.75
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 0.875
C/A sky separation (km) : 2699.6
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
    
```

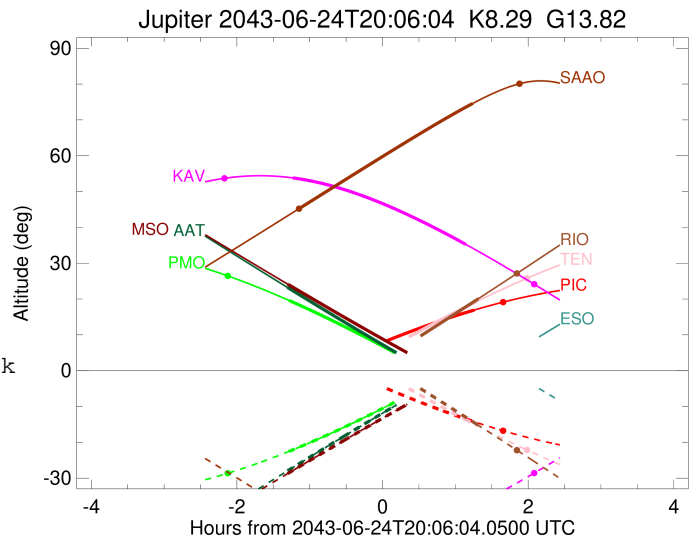
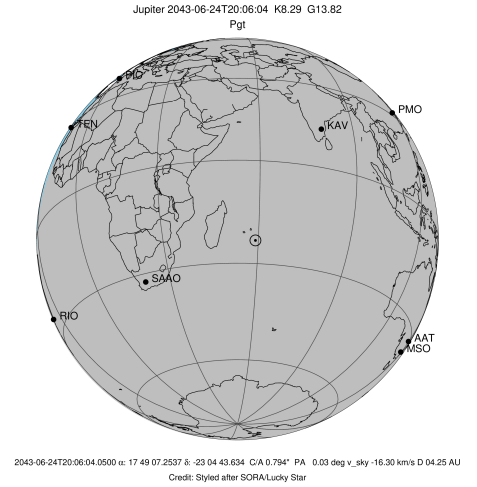


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T18:57:30.335	-2.38x	6.18x	71492.0	1.45	1.66
Jupiter	E	2043-06-24T21:21:46.615	16.93	-14.27	71492.0	2.78	3.18

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T20:01:05.460
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        : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.293
G magnitude           : 13.815
RP magnitude          : 12.465
BP magnitude          : 16.032
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.30
Sun-Target sep (deg) : 174.86
Sun-Moon sep (deg)   : 30.66
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 0.517
C/A sky separation (km): 1594.4
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
    
```

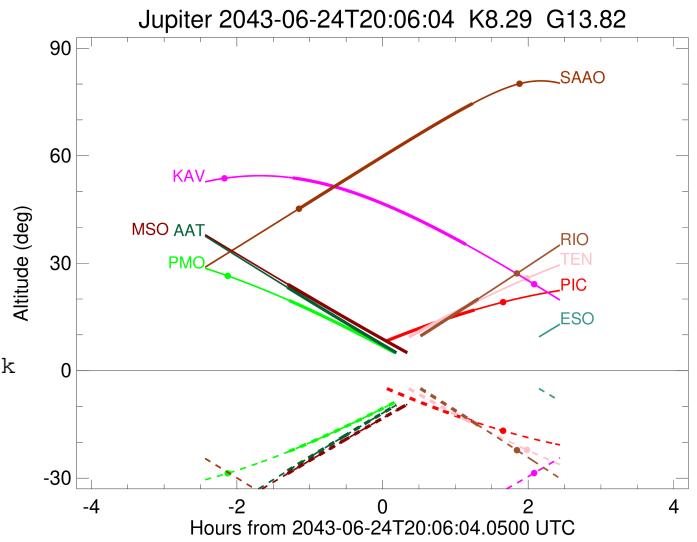
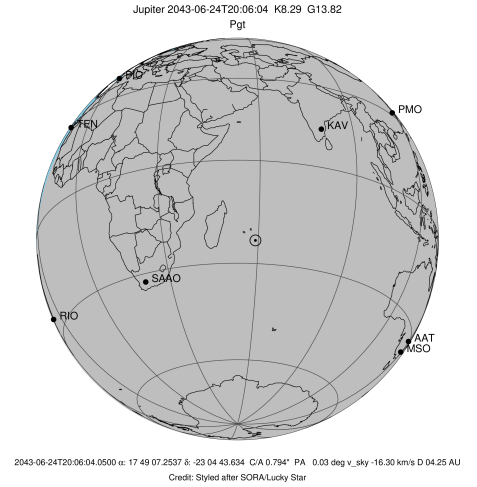


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T18:49:00.986	19.61	-22.53	71492.0	1.41	1.62
Jupiter	E	2043-06-24T21:13:39.756	-5.85x	1.68x	71492.0	1.06	1.22

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T20:11:23.830
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        : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor)  : 0.86
K magnitude            : 8.293
G magnitude           : 13.815
RP magnitude          : 12.465
BP magnitude          : 16.032
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -16.30
Sun-Target sep (deg)  : 174.86
Sun-Moon sep (deg)    : 31.87
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 0.381
C/A sky separation (km) : 1176.4
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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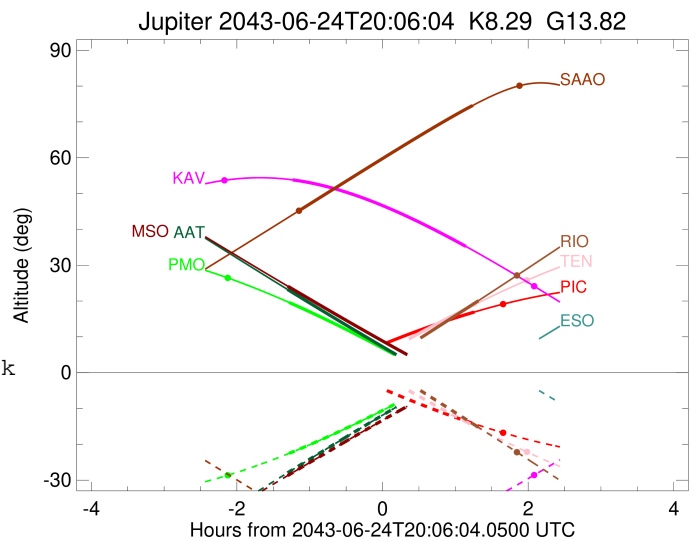
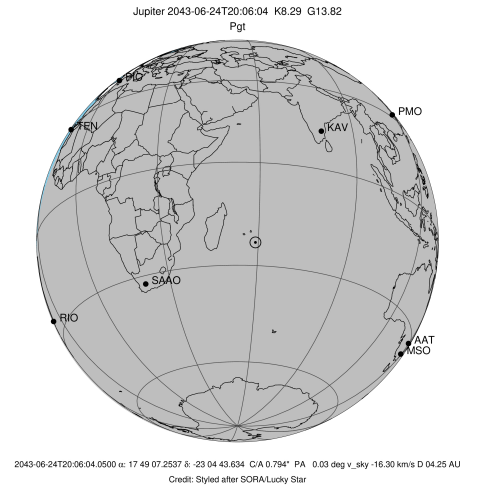


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T18:58:42.520	-8.12x	12.81x	71492.0	0.09	0.11
Jupiter	E	2043-06-24T21:23:34.039	19.28	-15.23	71492.0	1.72	1.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-24T20:03:24.260
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       : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 8.293
G magnitude          : 13.815
RP magnitude         : 12.465
BP magnitude         : 16.032
DUPflag             : 0
Distance (au)        : 4.252
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.30
Sun-Target sep (deg) : 174.86
Sun-Moon sep (deg)   : 31.21
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 0.346
C/A sky separation (km): 1066.7
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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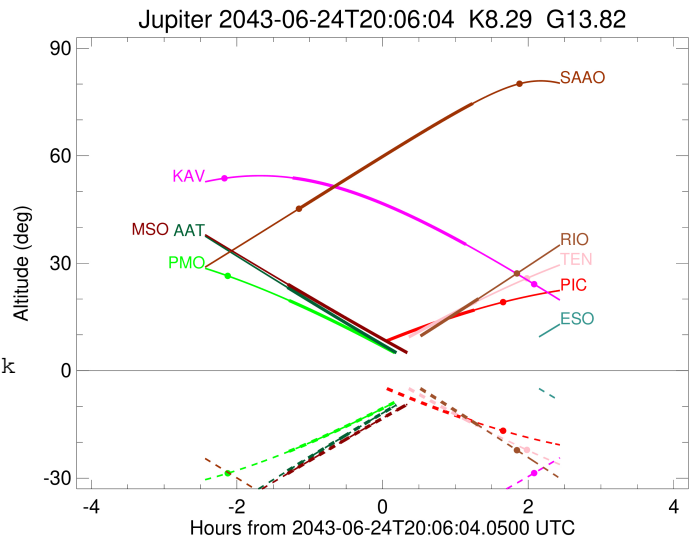
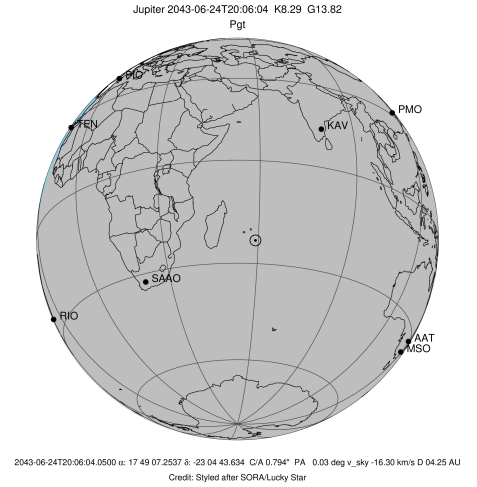


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T18:52:13.389	53.80	-54.09	71492.0	0.72	0.82
Jupiter	E	2043-06-24T21:14:50.633	35.22	-39.09	71492.0	0.81	0.93

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T20:12:06.850
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        : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor)  : 0.86
K magnitude           : 8.293
G magnitude           : 13.815
RP magnitude          : 12.465
BP magnitude          : 16.032
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.30
Sun-Target sep (deg)  : 174.86
Sun-Moon sep (deg)    : 31.79
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 1.578
C/A sky separation (km) : 4867.2
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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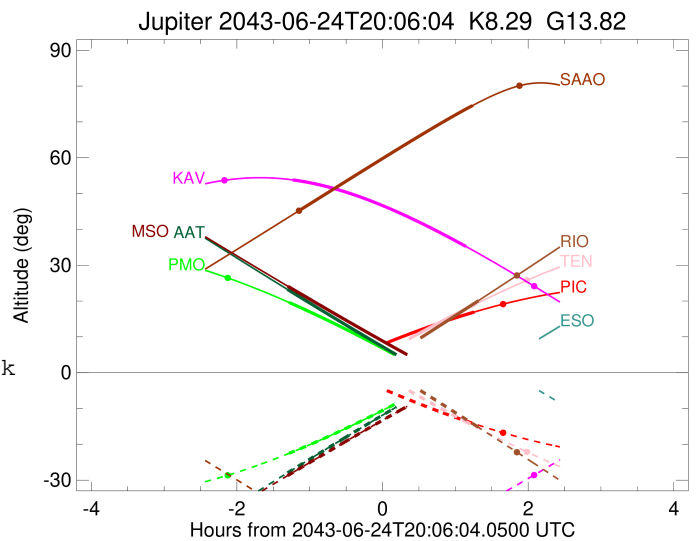
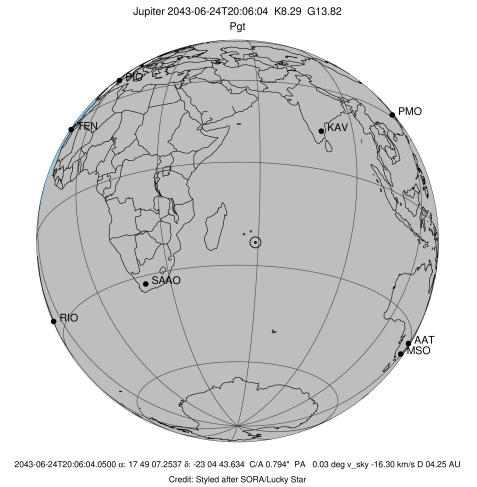


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T18:58:43.292	-10.86x	15.00x	71492.0	-4.78	-5.46
Jupiter	E	2043-06-24T21:24:54.352	20.05	-15.21	71492.0	-3.01	-3.45

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-24T20:00:27.660
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      : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 8.293
G magnitude          : 13.815
RP magnitude         : 12.465
BP magnitude         : 16.032
DUPflag             : 0
Distance (au)       : 4.252
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.30
Sun-Target sep (deg) : 174.86
Sun-Moon sep (deg)  : 30.43
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 1.822
C/A sky separation (km): 5617.3
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
    
```

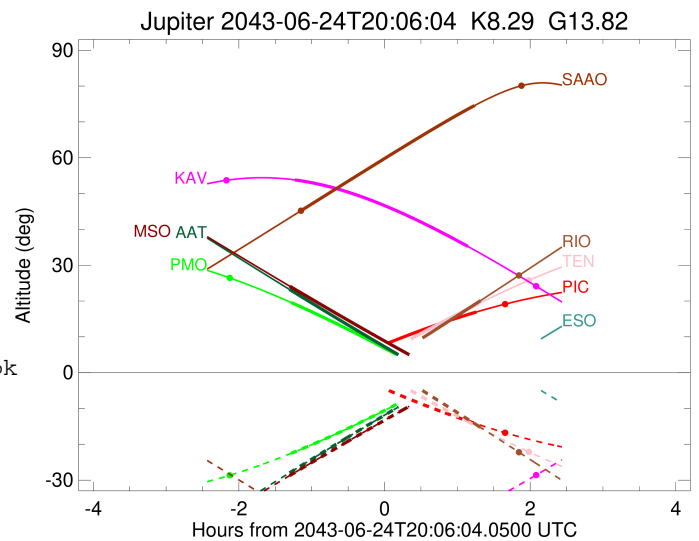
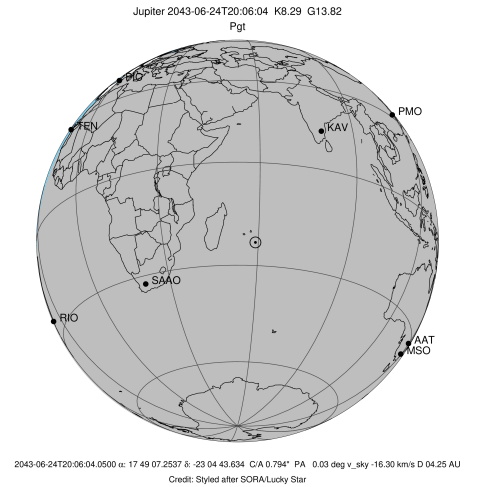


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T18:47:45.254	23.23	-27.97	71492.0	-4.26	-4.87
Jupiter	E	2043-06-24T21:13:44.561	-5.68x	1.32x	71491.9	-4.73	-5.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T20:09:00.700
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        : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.293
G magnitude           : 13.815
RP magnitude          : 12.465
BP magnitude          : 16.032
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.30
Sun-Target sep (deg) : 174.86
Sun-Moon sep (deg)   : 31.86
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 1.210
C/A sky separation (km): 3731.0
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
    
```

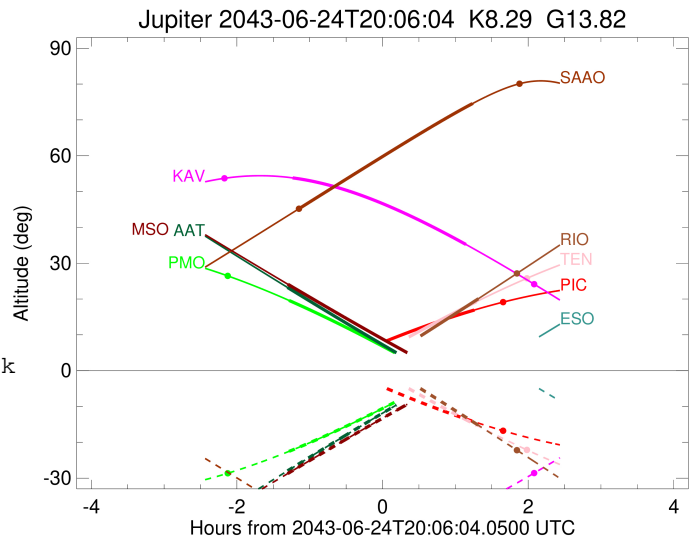
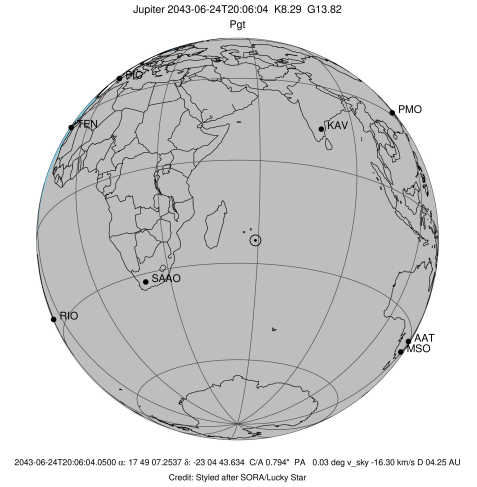


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-24T18:57:19.853	45.22	-40.68	71492.0	-3.64	-4.16
Jupiter	E	2043-06-24T21:20:25.422	74.59	-70.51	71492.0	-2.49	-2.84


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-24T20:00:42.790
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       : 4068871769395409536
2Mass ID (if available) : 17490727-2304434
ICRS Star Coord at Epoch: 17h 49m 07.25366s -23:04:43.63364s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.293
G magnitude           : 13.815
RP magnitude          : 12.465
BP magnitude          : 16.032
DUPflag              : 0
Distance (au)         : 4.252
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.30
Sun-Target sep (deg) : 174.86
Sun-Moon sep (deg)   : 30.47
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.33
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 1.931
C/A sky separation (km): 5954.1
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
    
```



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	2043-06-24T18:48:01.615	24.13	-28.71	71491.9	-4.56	-5.21
Jupiter	E	2043-06-24T21:13:56.896	-3.57x	-0.62x	71491.9	-4.98	-5.69