

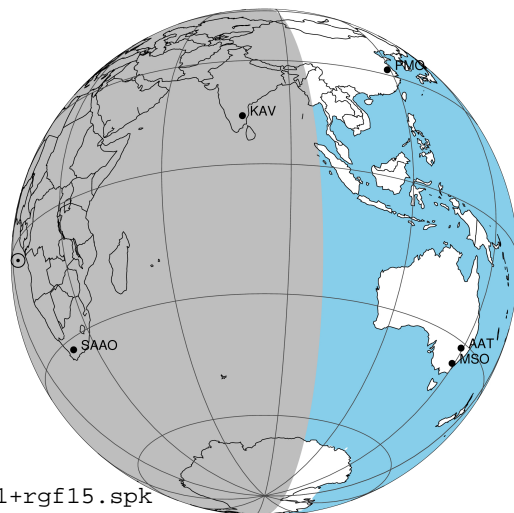
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-04-01T23:37:49.480
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068701963634270848
 2Mass ID (if available) : 17522661-2253340

Jupiter 2031-04-01T23:37:49 K8.99 G14.22 Pgt

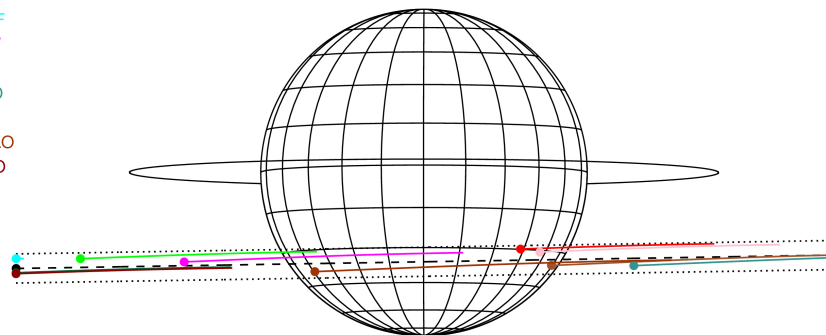
ICRS Star Coord at Epoch: 17h 52m 26.63013s -22:53:34.15431s

RUWE (>1.4 is poor) : 0.94
 K magnitude : 8.991
 G magnitude : 14.219
 RP magnitude : 12.922
 BP magnitude : 16.141
 DUPflag : 0
 Distance (au) : 4.985
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 6.27
 Sun-Target sep (deg) : 103.35
 Sun-Moon sep (deg) : 144.97
 B (ring opening deg) : -2.61
 PA of pole (deg) : -0.02
 Pole direction: RA (deg): 268.05698
 Dec (deg): 64.49651
 C/A sky separation (") : 10.818
 C/A sky separation (km) : 39108.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-04-01T23:37:49 K8.99 G14.22
 Pgt



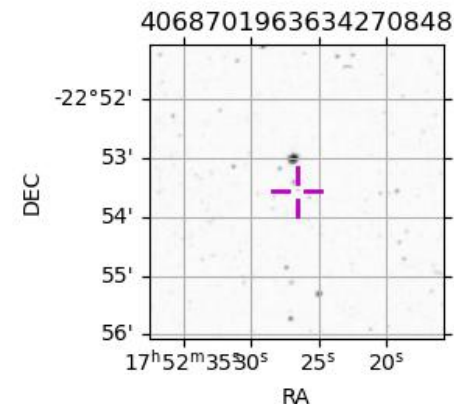
Earth
 PIC
 PMO
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2031-04-01T23:37:49.4800 α: 17 52 26.6301 δ: -22 53 34.154 C/A ***** PA 0.94 deg v_sky + 6.27 km/s D 04.98 AU
 Credit: Styled after SORA/Lucky Star

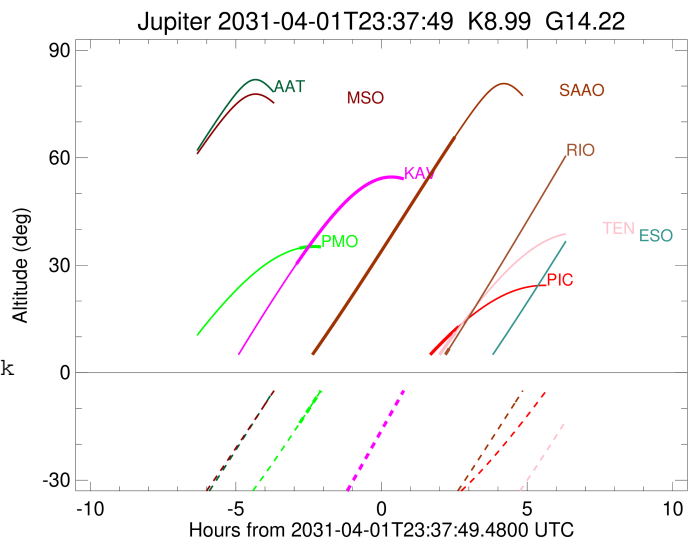
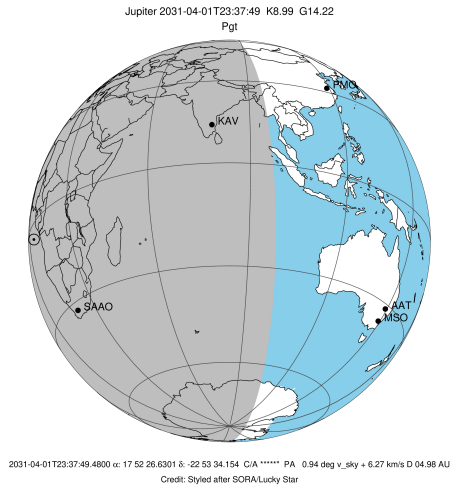
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	APR 02 02:16 - APR 02 02:16	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	APR 01 20:49 - APR 01 20:49	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	+	APR 02 02:10 - APR 02 02:10	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	APR 01 20:42 - APR 01 20:42	Pin
RIO	Rio de Janeiro	-22.9	316.8	+	APR 02 01:57 - APR 02 01:57	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	APR 02 02:09 - APR 02 02:09	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-01T23:27:15.370
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       : 4068701963634270848
2Mass ID (if available) : 17522661-2253340
ICRS Star Coord at Epoch: 17h 52m 26.63013s -22:53:34.15431s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 8.991
G magnitude           : 14.219
RP magnitude          : 12.922
BP magnitude          : 16.141
DUPflag              : 0
Distance (au)        : 4.985
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 6.27
Sun-Target sep (deg) : 103.35
Sun-Moon sep (deg)   : 145.36
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.02
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation ("): 9.704
C/A sky separation (km): 35082.9
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
    
```

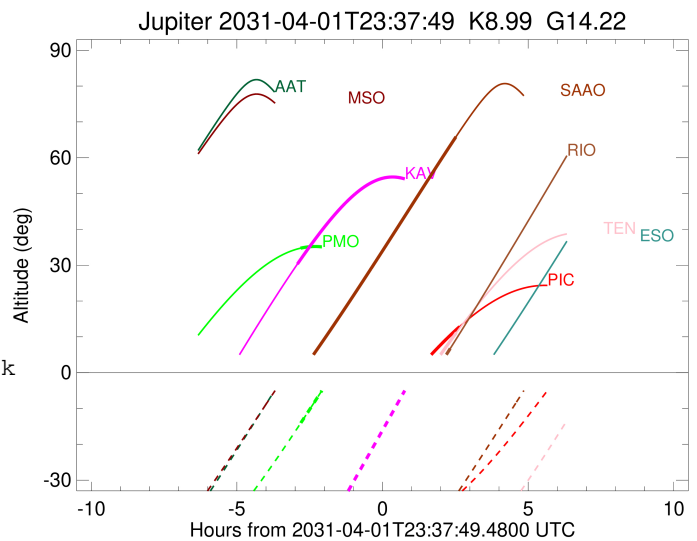
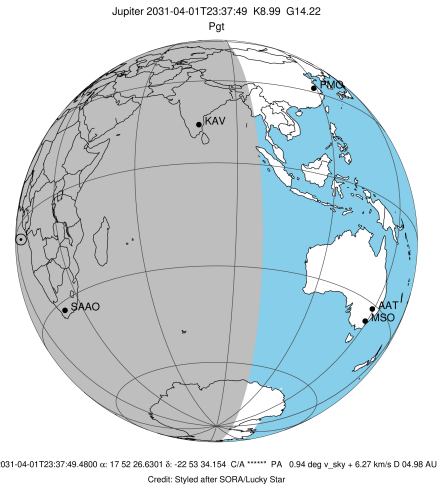


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-01T20:44:59.085	-42.29x	-24.77	71489.5	-31.42	-34.86
Jupiter	E	2031-04-02T02:16:59.160	12.88	-33.62	71490.0	-27.27	-30.47

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-01T23:44:53.540
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        : 4068701963634270848
2Mass ID (if available) : 17522661-2253340
ICRS Star Coord at Epoch: 17h 52m 26.63013s -22:53:34.15431s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 8.991
G magnitude           : 14.219
RP magnitude          : 12.922
BP magnitude          : 16.141
DUPflag              : 0
Distance (au)         : 4.985
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 6.27
Sun-Target sep (deg) : 103.35
Sun-Moon sep (deg)   : 144.77
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.02
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 9.482
C/A sky separation (km) : 34278.6
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
    
```

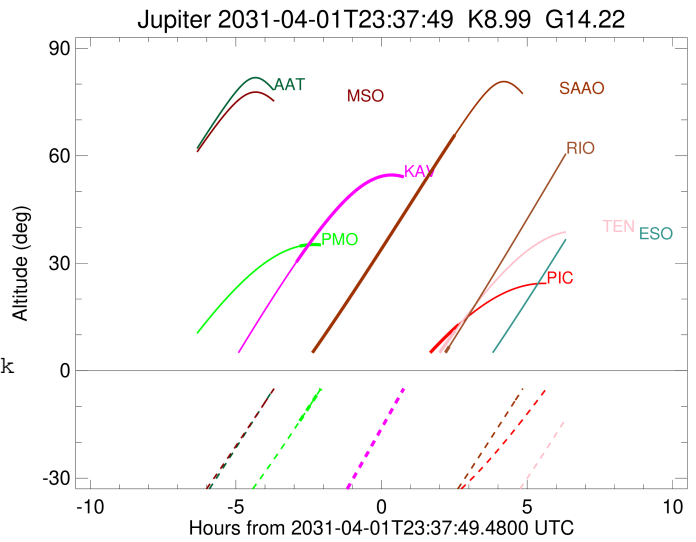
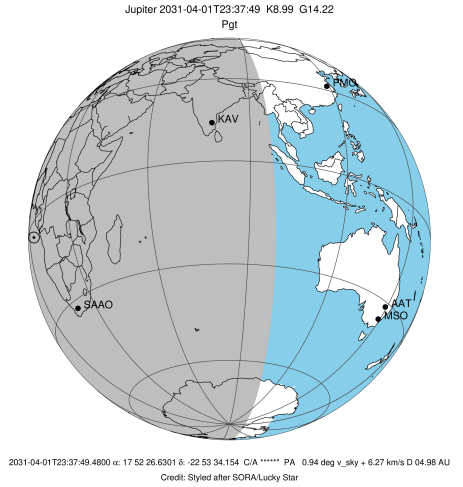


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-01T20:49:24.191	34.76	-14.06	71489.8	-29.26	-32.59
Jupiter	E	2031-04-02T02:37:29.513	-3.89x	55.55x	71489.8	-28.84	-32.14

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-01T23:25:35.800
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      : 4068701963634270848
2Mass ID (if available) : 17522661-2253340
ICRS Star Coord at Epoch: 17h 52m 26.63013s -22:53:34.15431s
RUWE (>1.4 is poor) : 0.94
K magnitude          : 8.991
G magnitude          : 14.219
RP magnitude         : 12.922
BP magnitude         : 16.141
DUPflag             : 0
Distance (au)       : 4.985
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 6.27
Sun-Target sep (deg) : 103.35
Sun-Moon sep (deg)  : 145.41
B (ring opening deg) : -2.61
PA of pole (deg)    : -0.02
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation ("): 10.216
C/A sky separation (km): 36934.2
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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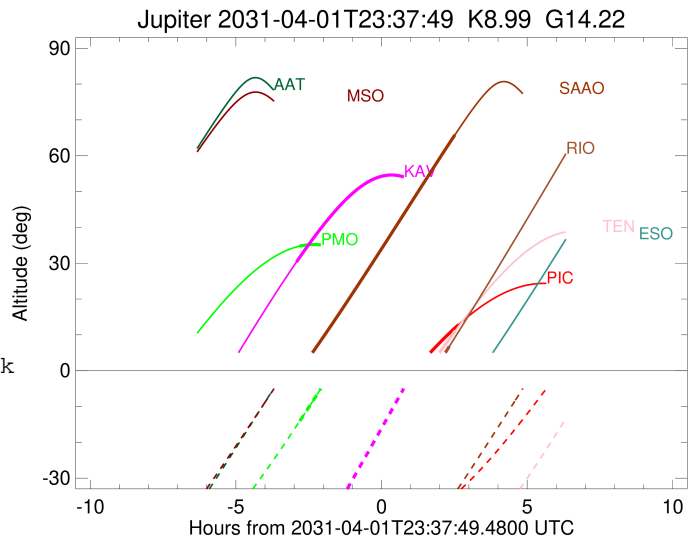
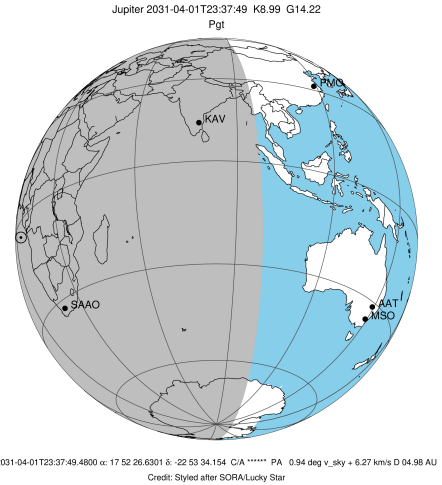


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-01T20:48:53.656	-56.18x	-19.24	71489.2	-33.16	-36.68
Jupiter	E	2031-04-02T02:10:07.716	11.19	-53.99	71489.8	-28.67	-31.96

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-01T23:36:28.830
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       : 4068701963634270848
2Mass ID (if available) : 17522661-2253340
ICRS Star Coord at Epoch: 17h 52m 26.63013s -22:53:34.15431s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 8.991
G magnitude           : 14.219
RP magnitude          : 12.922
BP magnitude          : 16.141
DUPflag              : 0
Distance (au)        : 4.985
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 6.27
Sun-Target sep (deg) : 103.35
Sun-Moon sep (deg)   : 145.41
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.02
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 9.801
C/A sky separation (km) : 35434.1
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
    
```

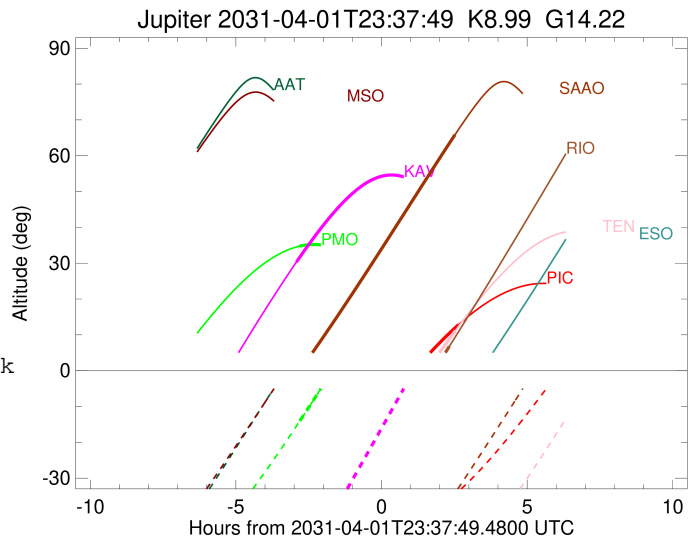
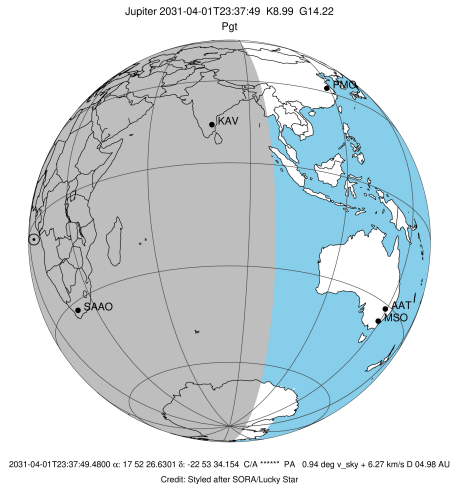


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-01T20:42:28.063	30.30	-56.86	71489.5	-31.45	-34.90
Jupiter	E	2031-04-02T02:33:10.034	38.09	26.58x	71489.8	-29.14	-32.46

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-04-01T23:28:06.280
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       : 4068701963634270848
2Mass ID (if available) : 17522661-2253340
ICRS Star Coord at Epoch: 17h 52m 26.63013s -22:53:34.15431s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 8.991
G magnitude           : 14.219
RP magnitude          : 12.922
BP magnitude          : 16.141
DUPflag              : 0
Distance (au)        : 4.985
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 6.27
Sun-Target sep (deg) : 103.35
Sun-Moon sep (deg)   : 145.38
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.02
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 11.868
C/A sky separation (km) : 42906.2
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
    
```

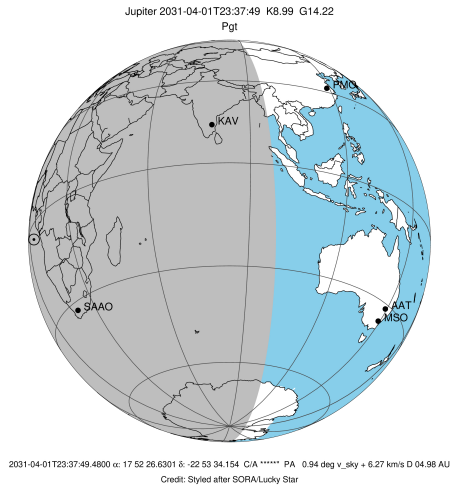


x: target alt < 5.0 deg or sun > -5.0 deg

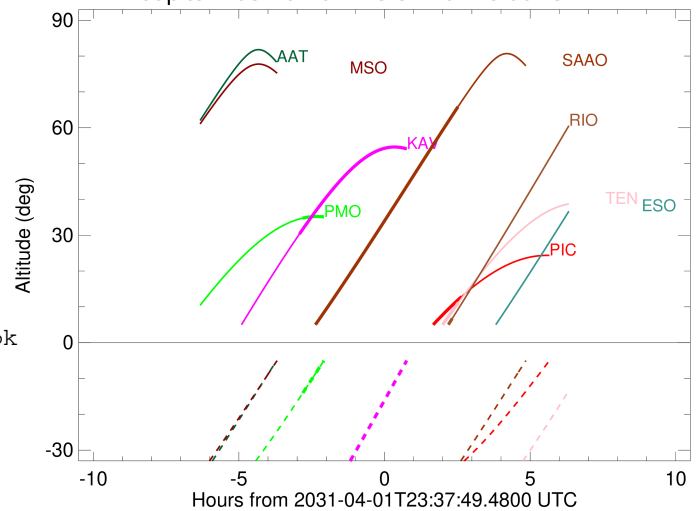
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-04-01T21:04:17.667	-42.28x	-3.57x	71488.4	-38.51	-42.20
Jupiter	E	2031-04-02T01:57:23.766	6.74	-67.04	71489.0	-34.53	-38.11

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-04-01T23:27:23.280
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       : 4068701963634270848
2Mass ID (if available) : 17522661-2253340
ICRS Star Coord at Epoch: 17h 52m 26.63013s -22:53:34.15431s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 8.991
G magnitude           : 14.219
RP magnitude         : 12.922
BP magnitude         : 16.141
DUPflag              : 0
Distance (au)        : 4.985
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 6.27
Sun-Target sep (deg) : 103.35
Sun-Moon sep (deg)   : 145.86
B (ring opening deg) : -2.61
PA of pole (deg)     : -0.02
Pole direction: RA (deg): 268.05698
Dec (deg): 64.49651
C/A sky separation (") : 11.466
C/A sky separation (km) : 41452.7
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
    
```



Jupiter 2031-04-01T23:37:49 K8.99 G14.22



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	2031-04-01T20:52:46.684	0.66x	-52.71	71488.5	-37.73	-41.40
Jupiter	E	2031-04-02T02:09:07.635	65.83	-34.19	71489.2	-33.38	-36.91