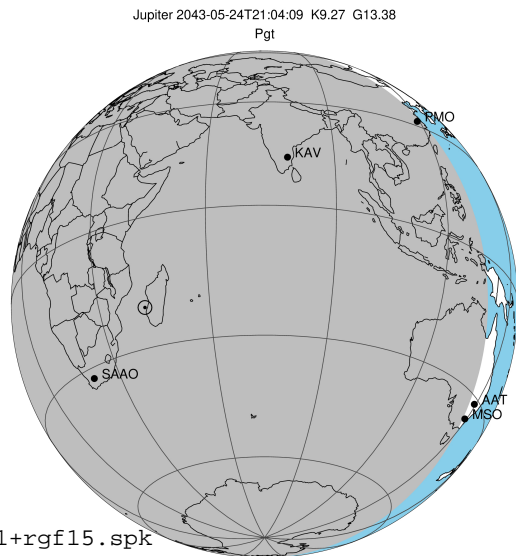


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-05-24T21:04:09.860
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4069585348091252608
 2Mass ID (if available) : 18050863-2302033

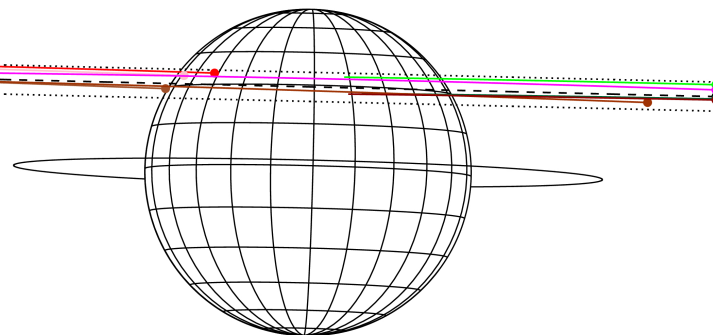
Jupiter 2043-05-24T21:04:09 K9.27 G13.38 Pgt

ICRS Star Coord at Epoch: 18h 05m 08.63215s -23°02'03.37936s
 RUWE (>1.4 is poor) : 1.31
 K magnitude : 9.265
 G magnitude : 13.382
 RP magnitude : 12.304
 BP magnitude : 14.578
 DUPflag : 0
 Distance (au) : 4.361
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -12.90
 Sun-Target sep (deg) : 151.82
 Sun-Moon sep (deg) : 19.05
 B (ring opening deg) : -2.43
 PA of pole (deg) : -1.39
 Pole direction: RA (deg): 268.05667
 Dec (deg): 64.49732
 C/A sky separation (") : 11.862
 C/A sky separation (km) : 37519.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



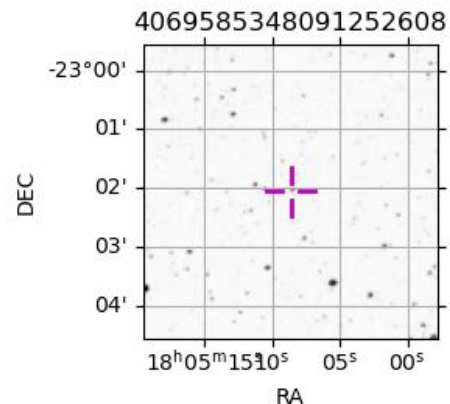
2043-05-24T21:04:09.8600 a: 18 05 08.6322 d: -23 02 03.379 C/A ***** PA 178.63 deg v_sky -12.90 km/s D 04.36 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



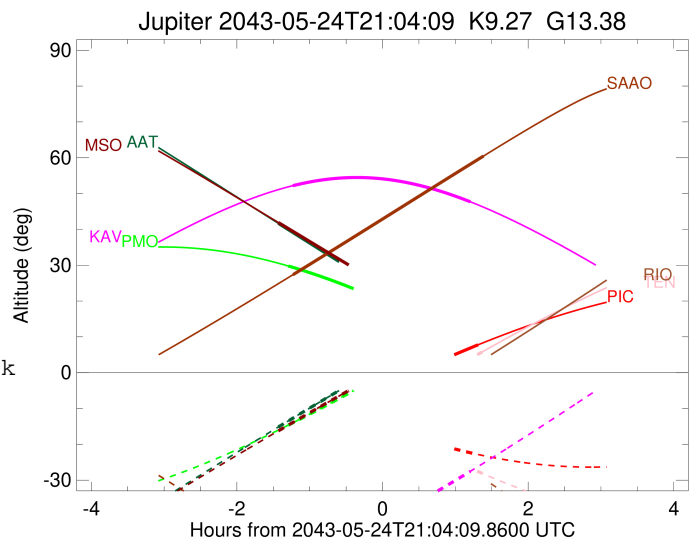
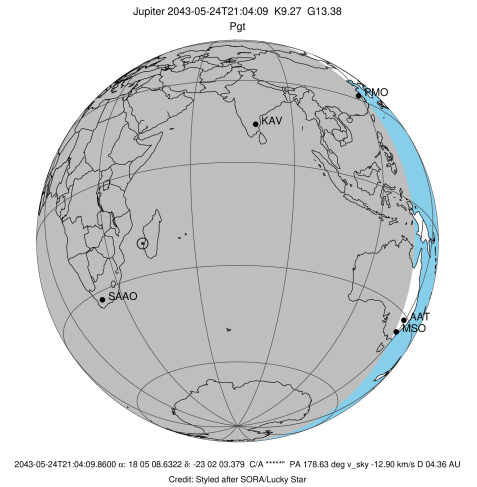
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	MAY 24 22:22 - MAY 24 22:22	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	MAY 24 19:46 - MAY 24 19:46	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	+	MAY 24 22:26 - MAY 24 22:26	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	MAY 24 19:50 - MAY 24 22:16	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	+	MAY 24 19:38 - MAY 24 19:38	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	MAY 24 19:50 - MAY 24 22:27	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 24 19:38 - MAY 24 19:38	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-24T21:09:13.770
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      : 4069585348091252608
2Mass ID (if available) : 18050863-2302033
ICRS Star Coord at Epoch: 18h 05m 08.63215s -23:02:03.37936s
RUWE (>1.4 is poor) : 1.31
K magnitude          : 9.265
G magnitude          : 13.382
RP magnitude         : 12.304
BP magnitude         : 14.578
DUPflag             : 0
Distance (au)       : 4.361
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.90
Sun-Target sep (deg) : 151.82
Sun-Moon sep (deg)  : 18.63
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.39
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (" ) : 13.338
C/A sky separation (km) : 42188.6
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
    
```

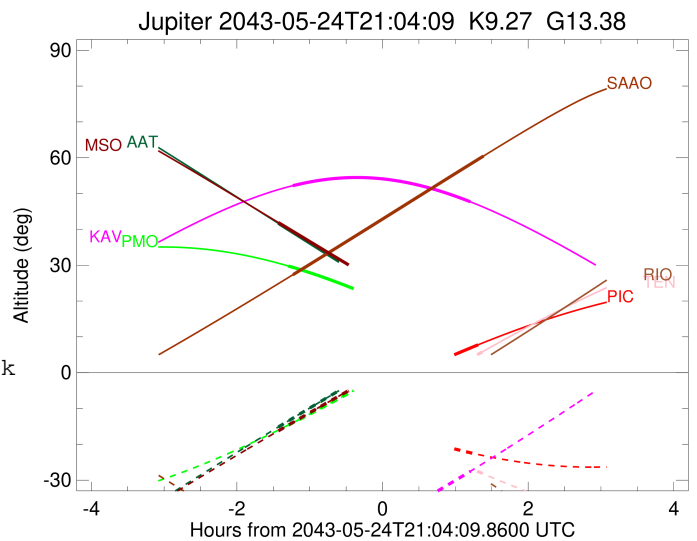
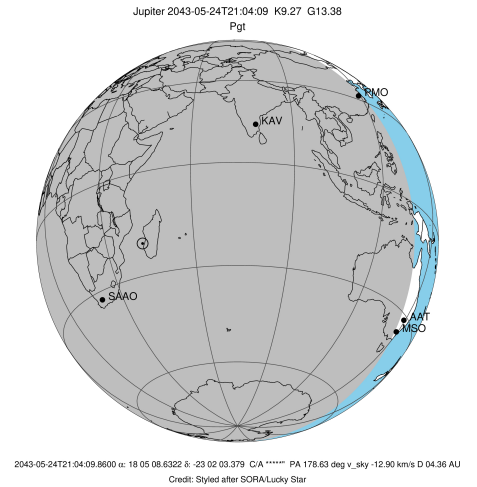


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-24T19:54:53.720	-15.93x	-5.62	71489.3	35.57	39.19
Jupiter	E	2043-05-24T22:22:55.372	7.77	-22.84	71489.1	36.61	40.25

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-24T20:59:36.080
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        : 4069585348091252608
2Mass ID (if available) : 18050863-2302033
ICRS Star Coord at Epoch: 18h 05m 08.63215s -23:02:03.37936s
RUWE (>1.4 is poor) : 1.31
K magnitude           : 9.265
G magnitude           : 13.382
RP magnitude          : 12.304
BP magnitude          : 14.578
DUPflag              : 0
Distance (au)         : 4.361
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.90
Sun-Target sep (deg)  : 151.82
Sun-Moon sep (deg)    : 19.82
B (ring opening deg) : -2.43
PA of pole (deg)      : -1.39
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 13.287
C/A sky separation (km) : 42029.1
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
    
```

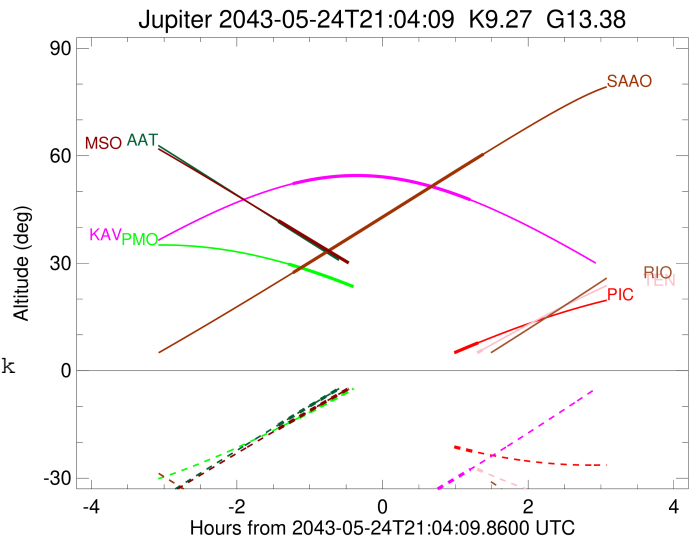
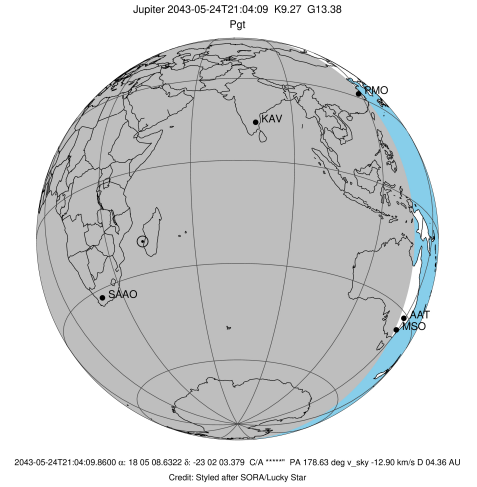


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-24T19:46:33.204	29.77	-14.64	71489.2	36.41	40.05
Jupiter	E	2043-05-24T22:13:03.544	8.81	13.18x	71489.3	35.38	38.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-24T21:10:40.350
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        : 4069585348091252608
2Mass ID (if available) : 18050863-2302033
ICRS Star Coord at Epoch: 18h 05m 08.63215s -23:02:03.37936s
RUWE (>1.4 is poor)  : 1.31
K magnitude           : 9.265
G magnitude           : 13.382
RP magnitude          : 12.304
BP magnitude          : 14.578
DUPflag              : 0
Distance (au)         : 4.361
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.90
Sun-Target sep (deg)  : 151.82
Sun-Moon sep (deg)    : 18.38
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.39
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 12.807
C/A sky separation (km) : 40510.3
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
    
```

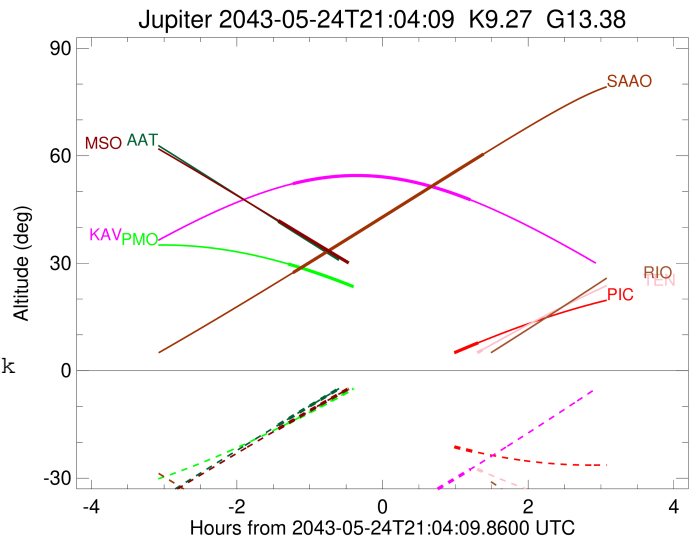
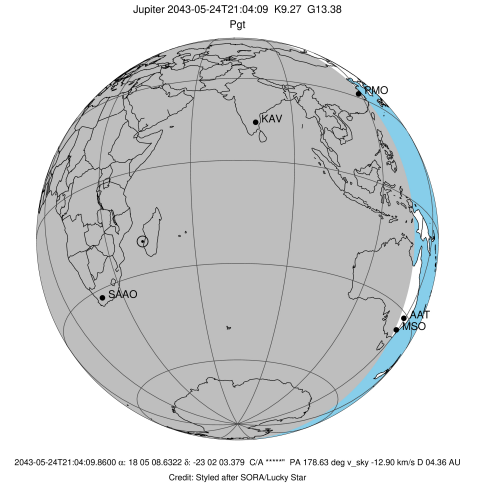


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-24T19:54:12.237	-25.43x	-0.88x	71489.5	33.79	37.34
Jupiter	E	2043-05-24T22:26:17.857	5.78	-28.10	71489.3	35.14	38.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-24T21:03:25.470
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        : 4069585348091252608
2Mass ID (if available) : 18050863-2302033
ICRS Star Coord at Epoch: 18h 05m 08.63215s -23:02:03.37936s
RUWE (>1.4 is poor)  : 1.31
K magnitude           : 9.265
G magnitude           : 13.382
RP magnitude          : 12.304
BP magnitude          : 14.578
DUPflag               : 0
Distance (au)         : 4.361
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.90
Sun-Target sep (deg)  : 151.82
Sun-Moon sep (deg)    : 19.51
B (ring opening deg)  : -2.43
PA of pole (deg)      : -1.39
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 13.025
C/A sky separation (km) : 41198.5
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
    
```

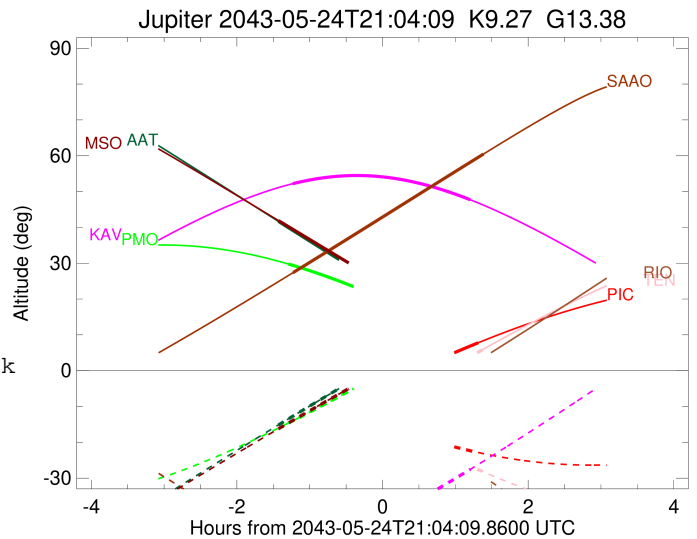
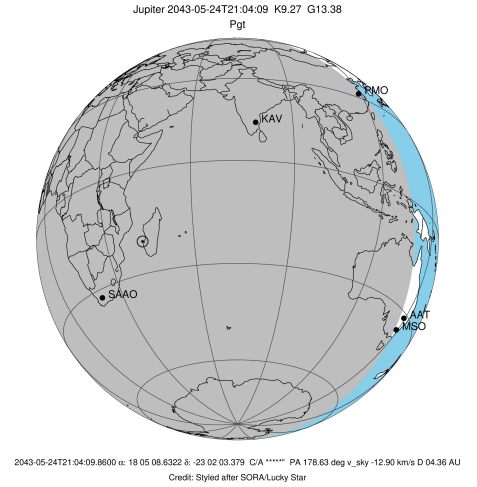


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-24T19:50:19.323	52.19	-52.61	71489.3	35.17	38.78
Jupiter	E	2043-05-24T22:16:32.268	47.70	-27.53	71489.4	34.89	38.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-24T20:58:00.440
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      : 4069585348091252608
2Mass ID (if available) : 18050863-2302033
ICRS Star Coord at Epoch: 18h 05m 08.63215s -23:02:03.37936s
RUWE (>1.4 is poor) : 1.31
K magnitude          : 9.265
G magnitude          : 13.382
RP magnitude         : 12.304
BP magnitude         : 14.578
DUPflag             : 0
Distance (au)       : 4.361
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.90
Sun-Target sep (deg) : 151.82
Sun-Moon sep (deg)  : 19.76
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.39
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation ("): 11.043
C/A sky separation (km): 34931.6
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
    
```

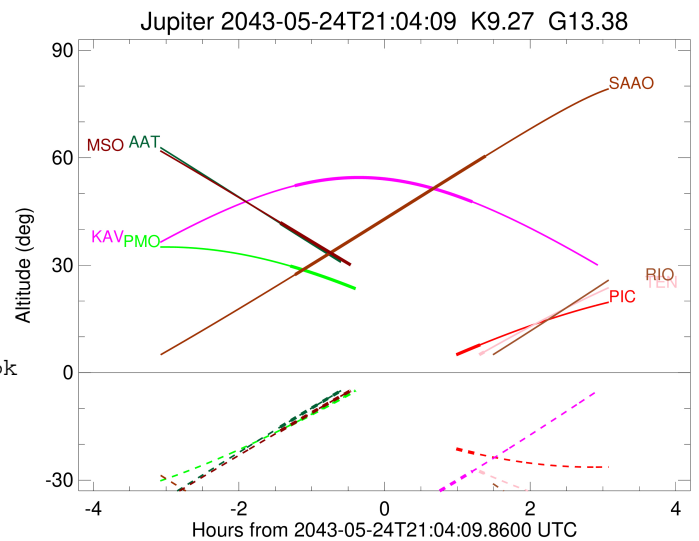
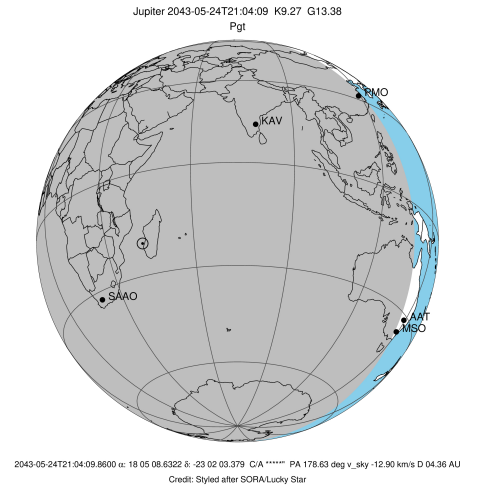


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-24T19:38:21.737	41.68	-15.16	71490.0	29.87	33.23
Jupiter	E	2043-05-24T22:18:22.213	8.34	15.56x	71490.2	28.51	31.79

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-05-24T21:09:16.780
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       : 4069585348091252608
2Mass ID (if available) : 18050863-2302033
ICRS Star Coord at Epoch: 18h 05m 08.63215s -23:02:03.37936s
RUWE (>1.4 is poor) : 1.31
K magnitude           : 9.265
G magnitude           : 13.382
RP magnitude         : 12.304
BP magnitude         : 14.578
DUPflag              : 0
Distance (au)        : 4.361
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.90
Sun-Target sep (deg) : 151.82
Sun-Moon sep (deg)   : 18.62
B (ring opening deg) : -2.43
PA of pole (deg)     : -1.39
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (") : 11.328
C/A sky separation (km) : 35831.1
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
    
```

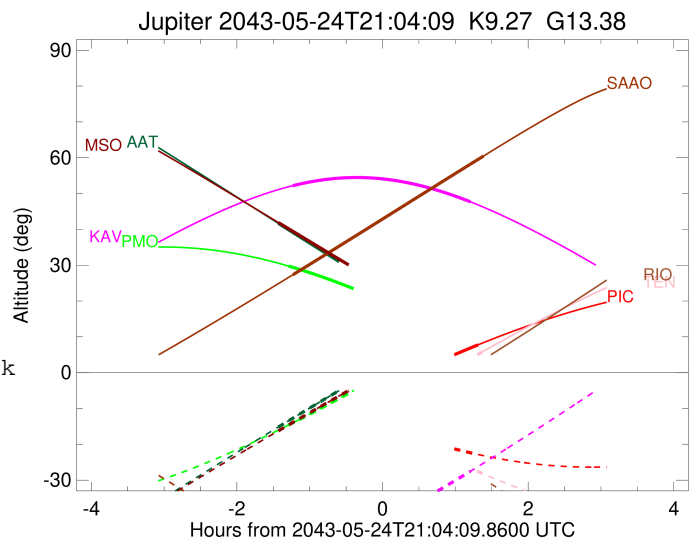
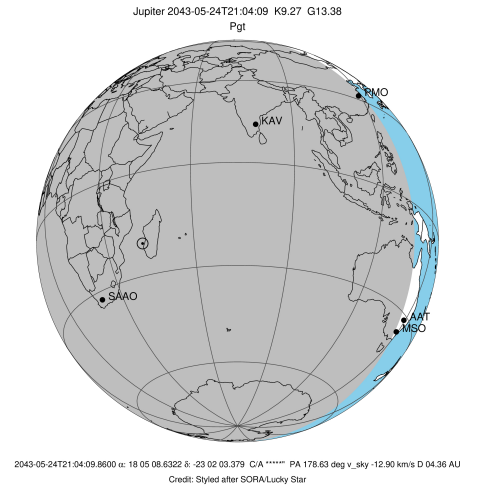


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-05-24T19:50:24.463	27.35	-52.03	71490.0	29.50	32.85
Jupiter	E	2043-05-24T22:27:28.323	60.48	-78.59	71489.9	30.43	33.83


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-05-24T20:58:17.860
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      : 4069585348091252608
2Mass ID (if available) : 18050863-2302033
ICRS Star Coord at Epoch: 18h 05m 08.63215s -23:02:03.37936s
RUWE (>1.4 is poor) : 1.31
K magnitude          : 9.265
G magnitude          : 13.382
RP magnitude         : 12.304
BP magnitude         : 14.578
DUPflag             : 0
Distance (au)       : 4.361
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -12.90
Sun-Target sep (deg) : 151.82
Sun-Moon sep (deg)  : 19.72
B (ring opening deg) : -2.43
PA of pole (deg)    : -1.39
Pole direction: RA (deg): 268.05667
Dec (deg): 64.49732
C/A sky separation (" ) : 10.928
C/A sky separation (km) : 34566.4
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	2043-05-24T19:38:20.923	41.90	-16.25	71490.0	29.51	32.85
Jupiter	E	2043-05-24T22:18:56.030	9.76	13.17x	71490.2	28.21	31.47