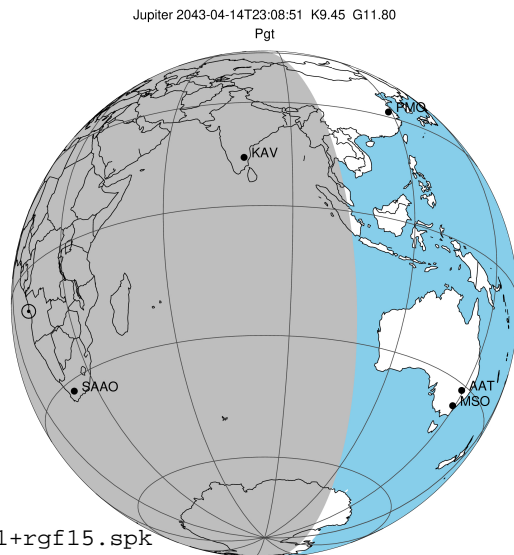


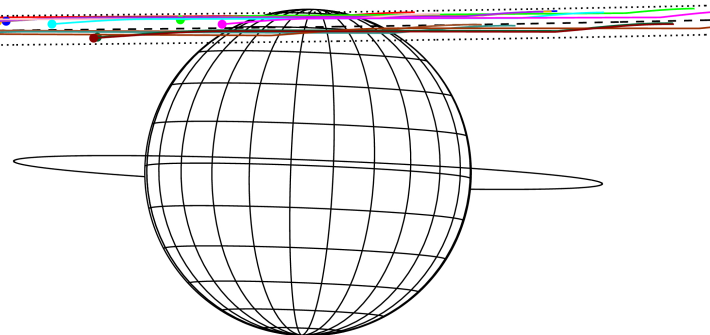
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-04-14T23:08:51.360  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4066457379353660800  
 2Mass ID (if available) : 18124686-2257583

Jupiter 2043-04-14T23:08:51 K9.45 G11.80 Pgt

ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43256s  
 RUWE (>1.4 is poor) : 0.76  
 K magnitude : 9.445  
 G magnitude : 11.796  
 RP magnitude : 11.065  
 BP magnitude : 12.383  
 DUPflag : 0  
 Distance (au) : 4.841  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 2.37  
 Sun-Target sep (deg) : 111.36  
 Sun-Moon sep (deg) : 173.68  
 B (ring opening deg) : -2.45  
 PA of pole (deg) : -2.21  
 Pole direction: RA (deg): 268.05665  
 Dec (deg): 64.49732  
 C/A sky separation (") : 18.149  
 C/A sky separation (km) : 63716.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



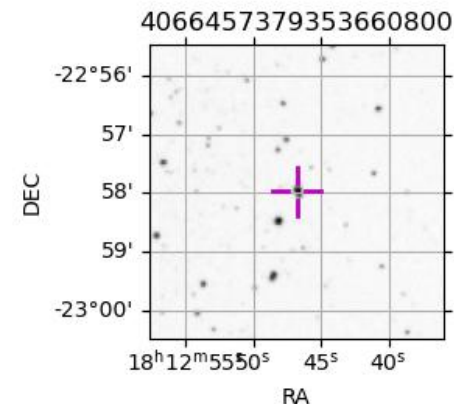
Earth  
 PIC  
 PAL  
 PMO  
 KPNO  
 MCD  
 TEN  
 IRTF  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



2043-04-14T23:08:51.3600 α: 18 12 46.8644 δ: -22 57 58.433 C/A \*\*\*\*\* PA 180.75 deg v\_sky + 2.37 km/s D 04.84 AU  
 Credit: Styled after SORA/Lucky Star

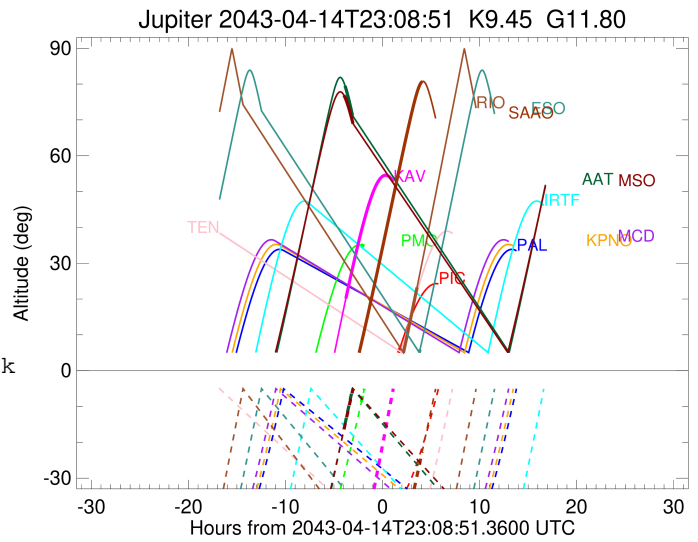
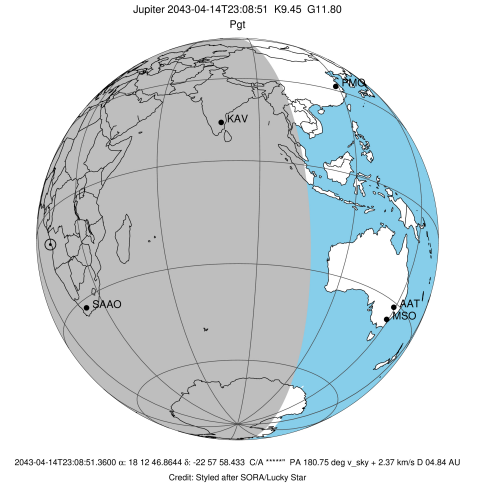
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	APR 15 01:01 - APR 15 01:01	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	APR 14 20:57 - APR 14 20:57	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 15 01:22 - APR 15 01:22	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	APR 14 19:22 - APR 14 19:22	Pin
RIO	Rio de Janeiro	-22.9	316.8	+	APR 15 02:42 - APR 15 02:42	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	APR 15 03:00 - APR 15 03:00	Pne
AAT	Siding Spring (AAT)	-31.3	149.1	+	APR 14 19:17 - APR 14 19:17	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	APR 15 03:13 - APR 15 03:13	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	APR 14 19:10 - APR 14 19:10	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-04-14T22:10:43.310
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        : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43256s
RUWE (>1.4 is poor) : 0.76
K magnitude           : 9.445
G magnitude           : 11.796
RP magnitude          : 11.065
BP magnitude          : 12.383
DUPflag              : 0
Distance (au)         : 4.841
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg)  : 111.36
Sun-Moon sep (deg)    : 174.55
B (ring opening deg) : -2.45
PA of pole (deg)      : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation (") : 19.225
C/A sky separation (km) : 67502.3
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
    
```

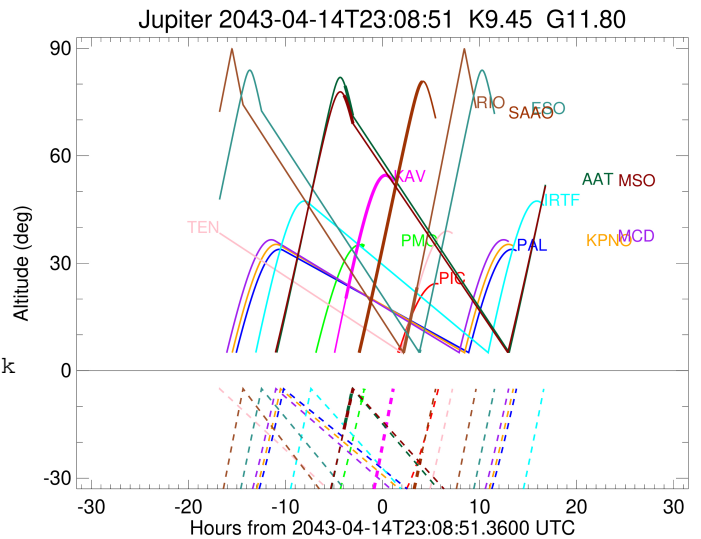
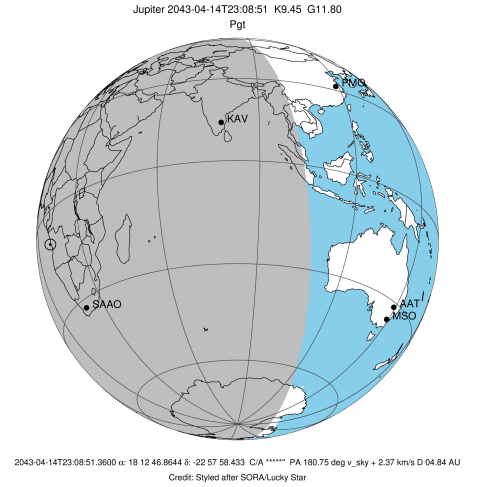


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T19:41:42.515	-48.25x	-11.48	71485.3	65.15	67.81
Jupiter	E	2043-04-15T01:01:18.158	6.92	-35.72	71484.3	76.73	78.26

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-04-15T00:03:35.450
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        : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43257s
RUWE (>1.4 is poor) : 0.76
K magnitude           : 9.445
G magnitude           : 11.796
RP magnitude          : 11.065
BP magnitude          : 12.383
DUPflag              : 0
Distance (au)         : 4.840
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg)  : 111.36
Sun-Moon sep (deg)    : 174.11
B (ring opening deg) : -2.45
PA of pole (deg)      : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation (") : 19.468
C/A sky separation (km) : 68339.2
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
    
```

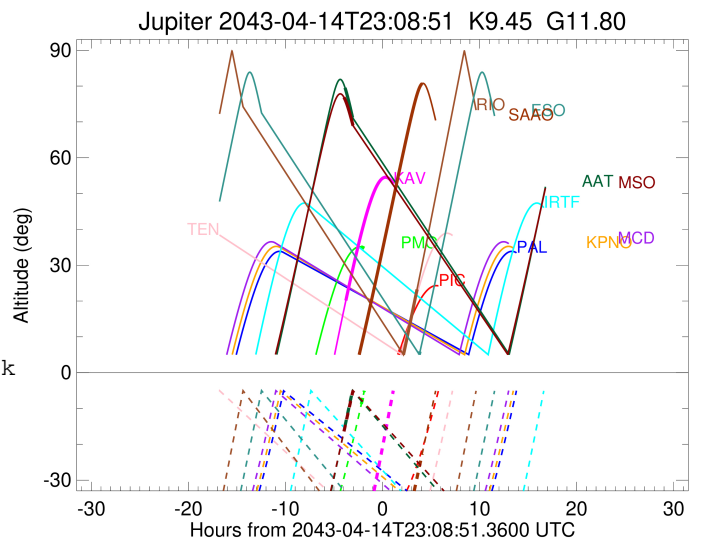
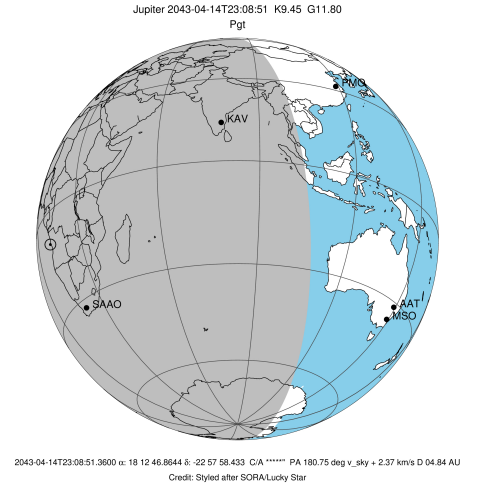


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T20:57:58.027	35.10	-8.79	71484.7	71.52	73.60
Jupiter	E	2043-04-15T02:48:04.113	-12.03x	61.57x	71484.6	72.12	74.13

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-04-14T22:07:38.140
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        : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43256s
RUWE (>1.4 is poor) : 0.76
K magnitude           : 9.445
G magnitude           : 11.796
RP magnitude          : 11.065
BP magnitude          : 12.383
DUPflag              : 0
Distance (au)         : 4.841
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg)  : 111.36
Sun-Moon sep (deg)    : 174.33
B (ring opening deg) : -2.45
PA of pole (deg)      : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation (") : 18.684
C/A sky separation (km) : 65601.3
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
    
```

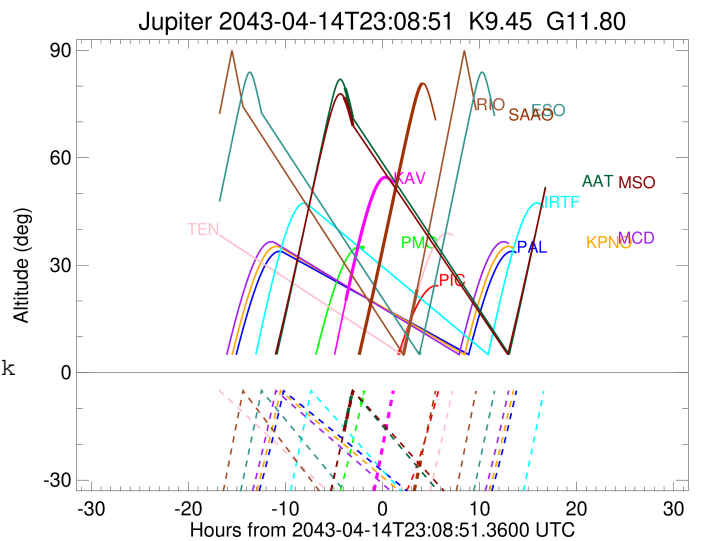
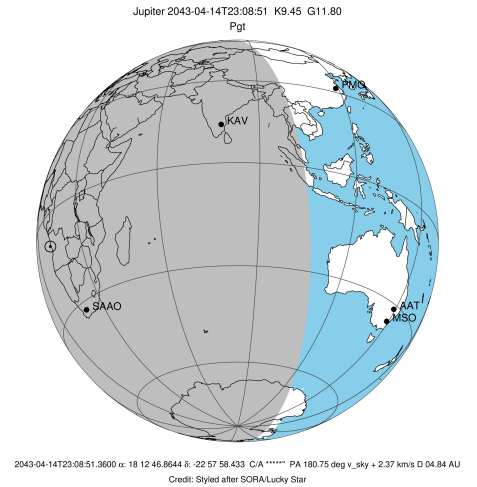


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T19:19:33.891	-69.15x	1.59x	71485.7	61.32	64.29
Jupiter	E	2043-04-15T01:22:55.644	8.05	-51.98	71484.5	73.15	75.05

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-04-14T22:55:16.090
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        : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43256s
RUWE (>1.4 is poor) : 0.76
K magnitude           : 9.445
G magnitude           : 11.796
RP magnitude          : 11.065
BP magnitude          : 12.383
DUPflag              : 0
Distance (au)         : 4.841
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg) : 111.36
Sun-Moon sep (deg)   : 174.29
B (ring opening deg) : -2.45
PA of pole (deg)     : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation (") : 19.195
C/A sky separation (km) : 67391.1
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
    
```

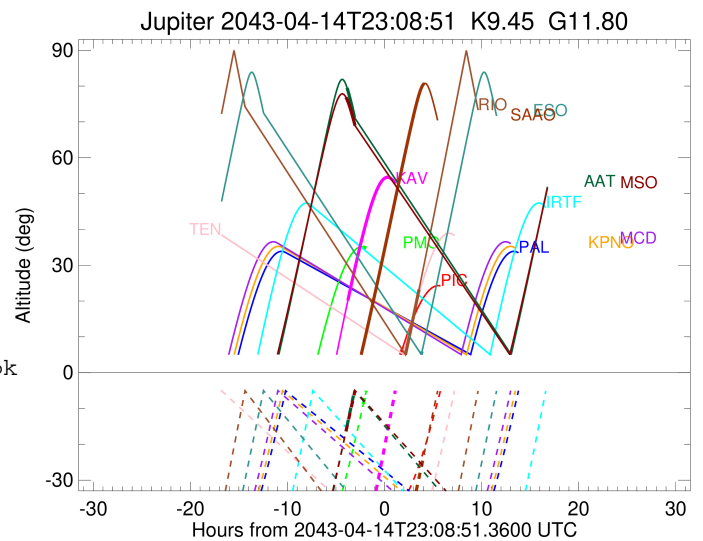
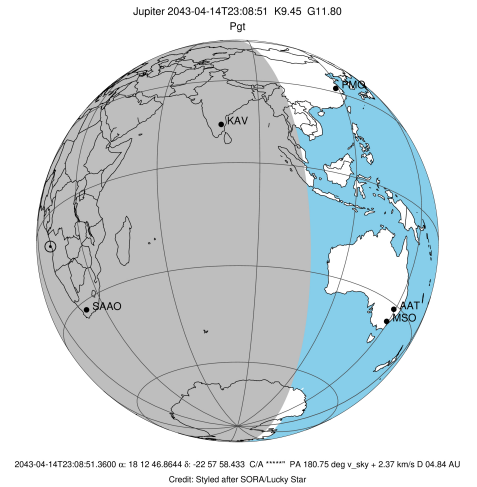


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T19:22:06.907	20.07	-66.06	71485.4	64.57	67.28
Jupiter	E	2043-04-15T02:48:57.270	29.24	32.19x	71484.7	71.50	73.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-04-14T22:24:32.030
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      : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43256s
RUWE (>1.4 is poor) : 0.76
K magnitude          : 9.445
G magnitude          : 11.796
RP magnitude         : 11.065
BP magnitude         : 12.383
DUPflag             : 0
Distance (au)       : 4.841
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg) : 111.36
Sun-Moon sep (deg)  : 173.41
B (ring opening deg) : -2.45
PA of pole (deg)    : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation ("): 17.021
C/A sky separation (km): 59759.6
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
    
```

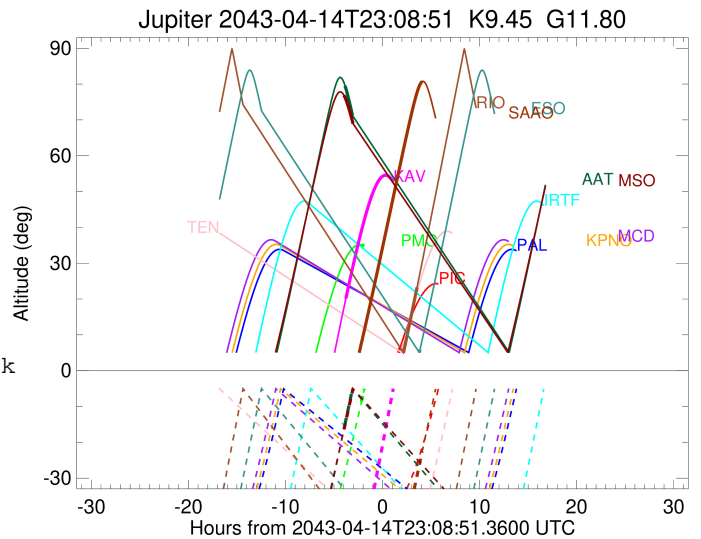
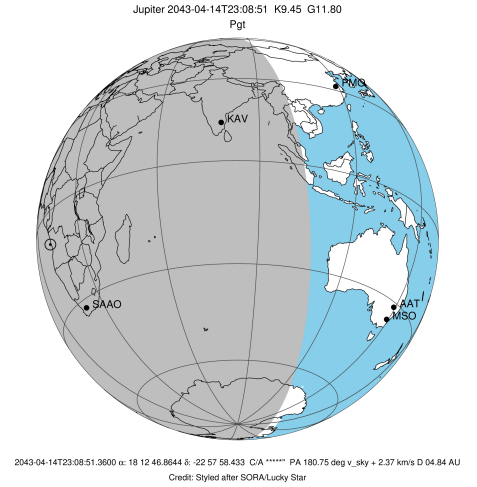


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T18:42:06.295	-42.38x	25.30x	71486.8	52.95	56.42
Jupiter	E	2043-04-15T02:42:16.269	23.24	-76.69	71485.5	63.13	65.96

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-04-14T22:47:44.780
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : ESO
Location            : European Southern Obs. (3.6m)
Latitude (deg)      : -29.26097
E. Longitude (deg)  : 289.26831
Altitude (km)       : 2.400
Gaia source ID      : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43256s
RUWE (>1.4 is poor) : 0.76
K magnitude          : 9.445
G magnitude          : 11.796
RP magnitude         : 11.065
BP magnitude         : 12.383
DUPflag             : 0
Distance (au)       : 4.841
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg) : 111.36
Sun-Moon sep (deg)  : 173.10
B (ring opening deg) : -2.45
PA of pole (deg)    : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation ("): 16.754
C/A sky separation (km): 58819.4
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
    
```

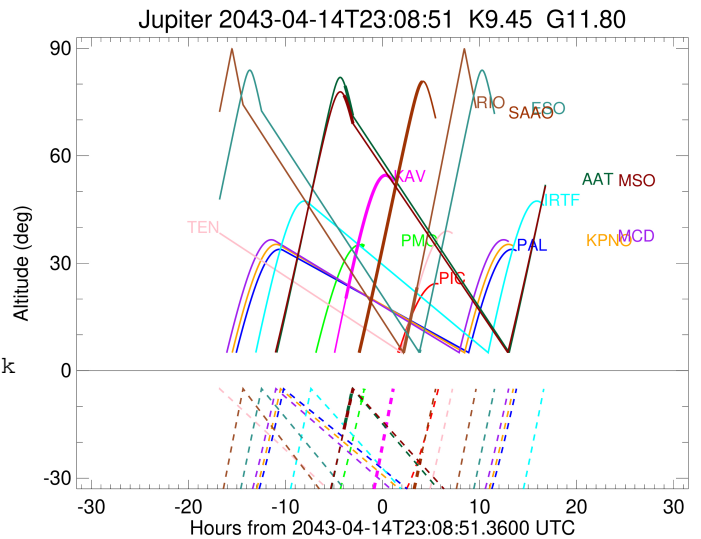
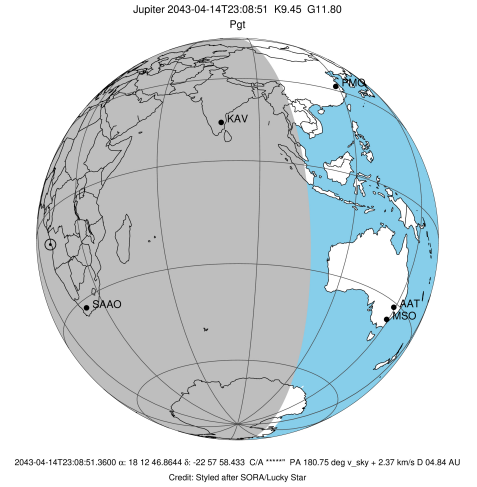


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T18:55:20.482	-26.45x	39.88x	71486.8	52.87	56.35
Jupiter	E	2043-04-15T03:00:55.416	5.94	-59.22	71485.8	60.84	63.84

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-04-15T00:16:05.220
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        : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43257s
RUWE (>1.4 is poor)  : 0.76
K magnitude           : 9.445
G magnitude           : 11.796
RP magnitude          : 11.065
BP magnitude          : 12.383
DUPflag              : 0
Distance (au)         : 4.840
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : 2.37
Sun-Target sep (deg)  : 111.36
Sun-Moon sep (deg)    : 173.08
B (ring opening deg)  : -2.45
PA of pole (deg)      : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation (") : 17.422
C/A sky separation (km) : 61152.8
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
    
```



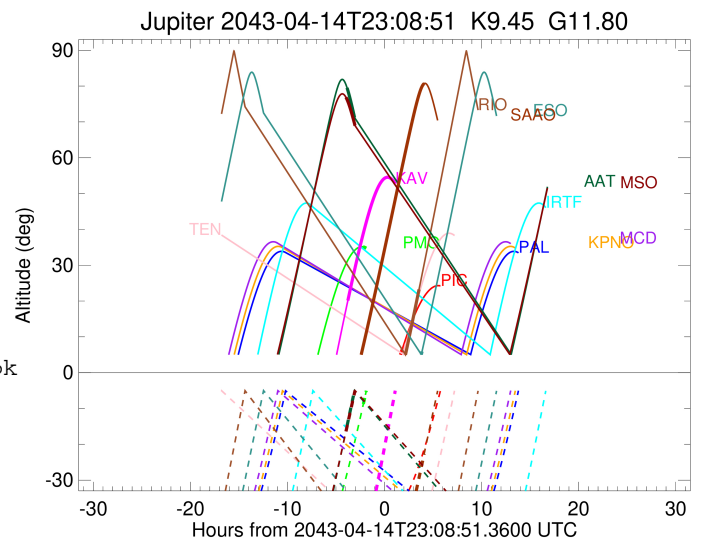
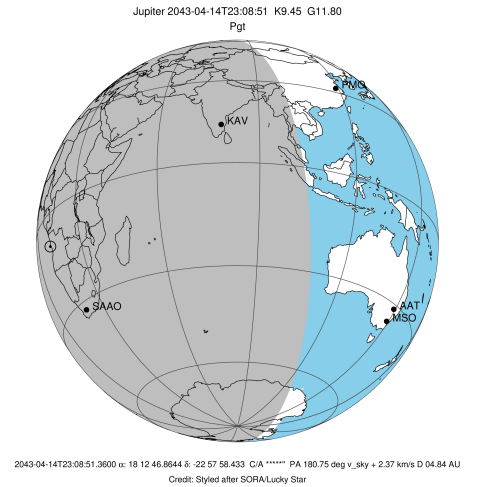
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T19:17:12.379	79.53	-14.89	71486.1	58.45	61.61
Jupiter	E	2043-04-15T04:22:39.938	-25.94x	37.33x	71486.1	58.54	61.70



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-04-14T22:04:04.890
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      : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43256s
RUWE (>1.4 is poor) : 0.76
K magnitude         : 9.445
G magnitude         : 11.796
RP magnitude        : 11.065
BP magnitude        : 12.383
DUPflag            : 0
Distance (au)       : 4.841
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg) : 111.36
Sun-Moon sep (deg)  : 173.73
B (ring opening deg) : -2.45
PA of pole (deg)    : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation (") : 17.394
C/A sky separation (km) : 61074.1
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
    
```

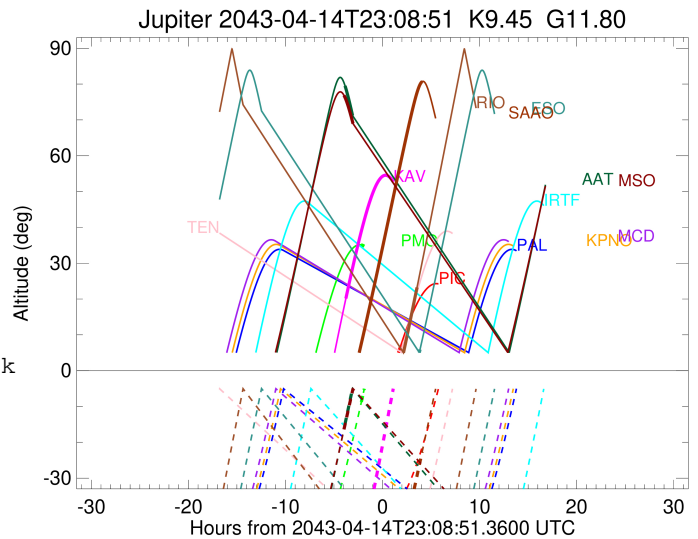
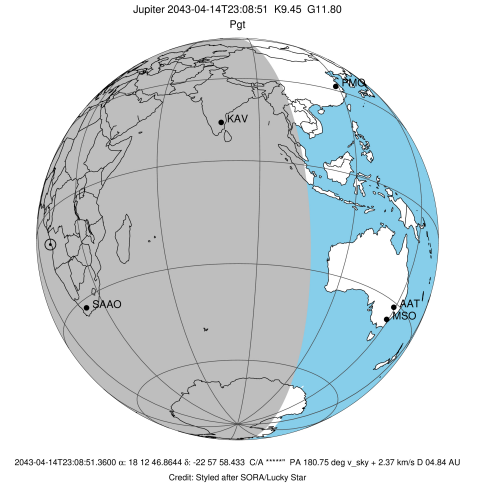


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-04-14T18:06:06.463	-22.16x	-23.90	71486.9	52.60	56.09
Jupiter	E	2043-04-15T03:13:57.472	80.68	-22.64	71485.4	64.18	66.92

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-04-15T00:12:47.420
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      : 4066457379353660800
2Mass ID (if available) : 18124686-2257583
ICRS Star Coord at Epoch: 18h 12m 46.86443s -22:57:58.43257s
RUWE (>1.4 is poor) : 0.76
K magnitude          : 9.445
G magnitude          : 11.796
RP magnitude         : 11.065
BP magnitude         : 12.383
DUPflag             : 0
Distance (au)       : 4.840
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 2.37
Sun-Target sep (deg) : 111.36
Sun-Moon sep (deg)  : 173.05
B (ring opening deg) : -2.45
PA of pole (deg)    : -2.21
Pole direction: RA (deg): 268.05665
Dec (deg): 64.49732
C/A sky separation ("): 17.324
C/A sky separation (km): 60810.8
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	2043-04-14T19:10:35.111	76.85	-16.42	71486.2	57.73	60.94
Jupiter	E	2043-04-15T04:24:22.206	-22.86x	34.22x	71486.1	58.15	61.34