

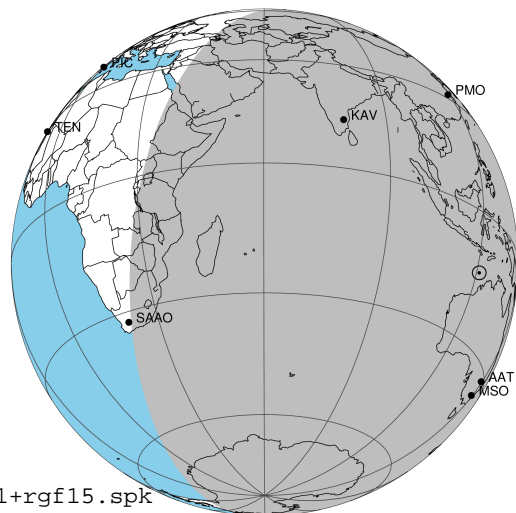
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-08-14T16:00:16.800
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4111434135036685056
 2Mass ID (if available) : 17302476-2303387

Jupiter 2043-08-14T16:00:16 K8.54 G13.89 Pgt

ICRS Star Coord at Epoch: 17h 30m 24.75773s -23°03'38.91972s

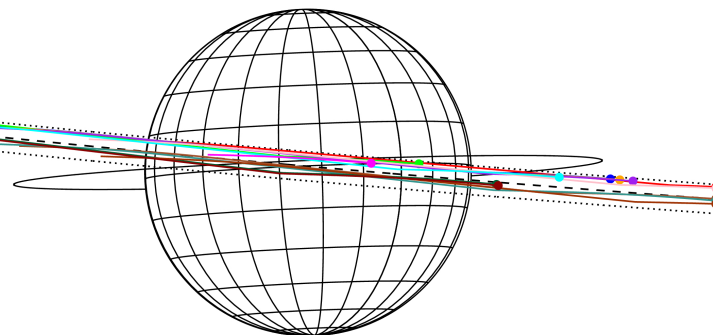
RUWE (>1.4 is poor) : 1.03
 K magnitude : 8.537
 G magnitude : 13.885
 RP magnitude : 12.536
 BP magnitude : 16.082
 DUPflag : 0
 Distance (au) : 4.639
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -2.68
 Sun-Target sep (deg) : 122.02
 Sun-Moon sep (deg) : 12.59
 B (ring opening deg) : -2.34
 PA of pole (deg) : 2.35
 Pole direction: RA (deg): 268.05672
 Dec (deg): 64.49731
 C/A sky separation (") : 0.798
 C/A sky separation (km) : 2683.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-08-14T16:00:16 K8.54 G13.89
 Pgt



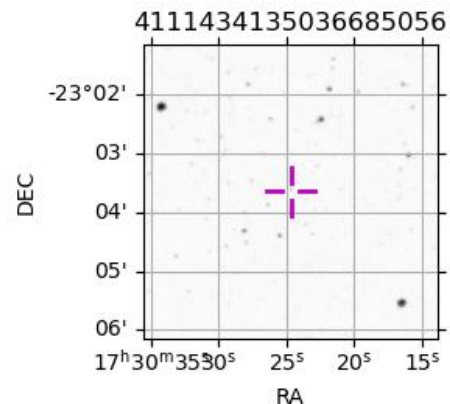
2043-08-14T16:00:16.8000 at: 17 30 24.7577 s -23 03 38.920 C/A 0.789° PA 174.98 deg v_sky - 2.68 km/s D 04.64 AU
 Credit: Styled after SORA/Lucky Star

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



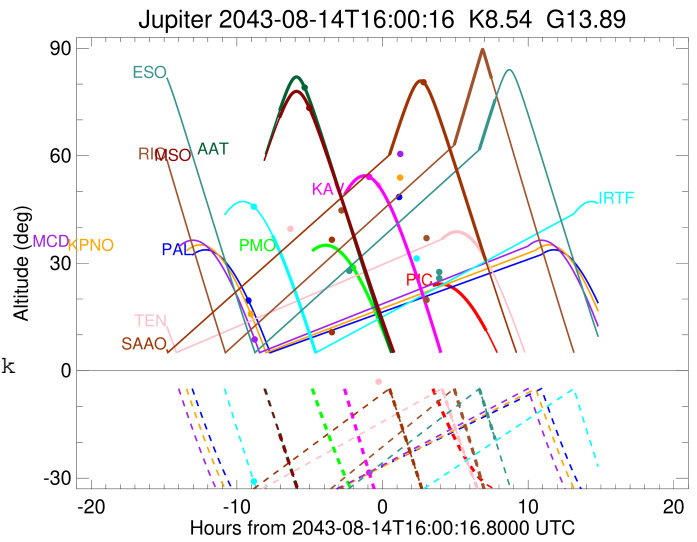
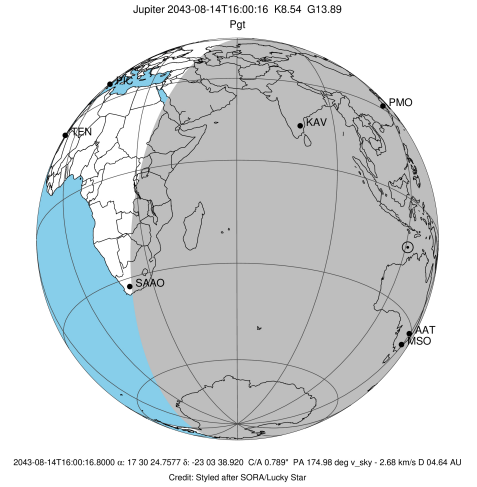
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	AUG 14 23:07 - AUG 14 23:07	Pne
PAL	Palomar Mt (200")	33.4	243.1	+	AUG 14 08:16 - AUG 14 08:16	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
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	+	AUG 14 23:11 - AUG 14 23:11	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5	+	AUG 14 08:27 - AUG 14 08:27	Pin
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	AUG 14 23:29 - AUG 14 23:29	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	AUG 14 23:45 - AUG 14 23:45	Pne
AAT	Siding Spring (AAT)	-31.3	149.1	+	AUG 14 08:56 - AUG 14 08:56	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	AUG 14 23:05 - AUG 14 23:05	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	AUG 14 08:56 - AUG 14 08:56	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-08-14T16:19:36.790
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        : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.537
G magnitude           : 13.885
RP magnitude          : 12.536
BP magnitude          : 16.082
DUPflag              : 0
Distance (au)         : 4.639
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg)  : 122.02
Sun-Moon sep (deg)   : 12.36
B (ring opening deg) : -2.34
PA of pole (deg)     : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation (" ) : 2.391
C/A sky separation (km) : 8045.5
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
    
```

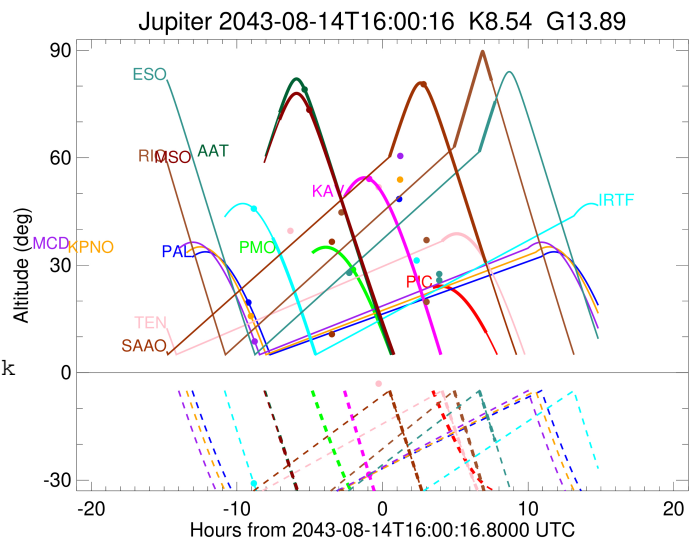
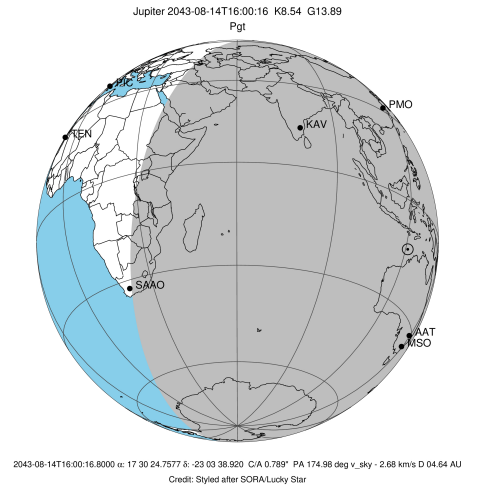


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T08:51:54.069	-67.76x	40.06x	71492.0	-3.21	-3.67
Jupiter	E	2043-08-14T23:07:51.360	11.14	-31.66	71491.6	13.61	15.47

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-14T16:00:58.530
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg) : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.537
G magnitude          : 13.885
RP magnitude         : 12.536
BP magnitude         : 16.082
DUPflag             : 0
Distance (au)       : 4.639
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg) : 122.02
Sun-Moon sep (deg)  : 12.42
B (ring opening deg) : -2.34
PA of pole (deg)    : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation (") : 1.137
C/A sky separation (km) : 3825.5
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
    
```

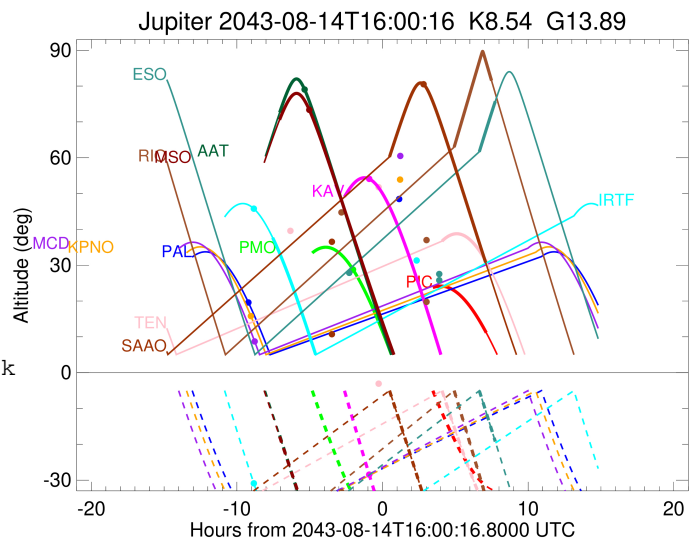
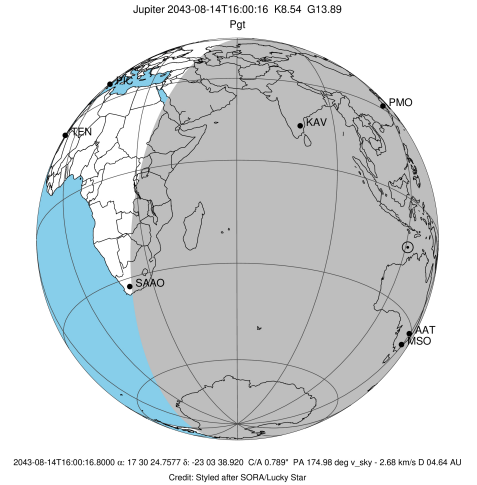


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T08:16:35.959	5.16	-42.12	71492.0	-2.13	-2.44
Jupiter	E	2043-08-14T23:59:51.043	11.92	31.01x	71491.6	13.54	15.39

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-08-14T16:28:53.100
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        : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.537
G magnitude           : 13.885
RP magnitude          : 12.536
BP magnitude          : 16.082
DUPflag              : 0
Distance (au)         : 4.640
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg)  : 122.02
Sun-Moon sep (deg)    : 12.07
B (ring opening deg) : -2.34
PA of pole (deg)      : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation (" ) : 1.991
C/A sky separation (km) : 6699.1
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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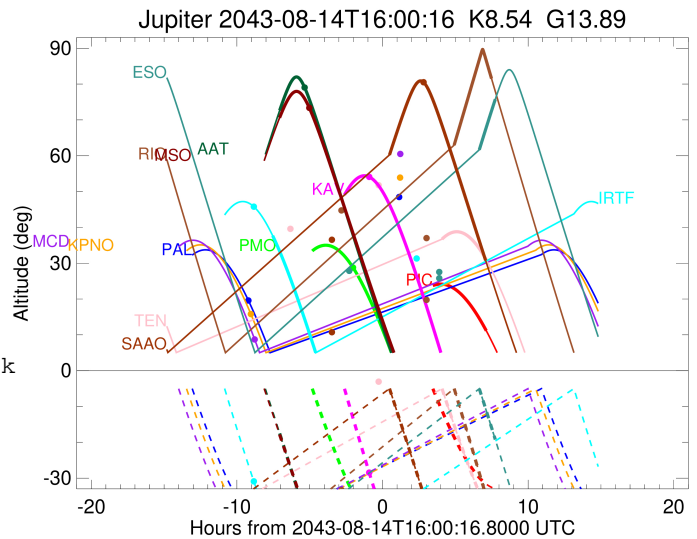
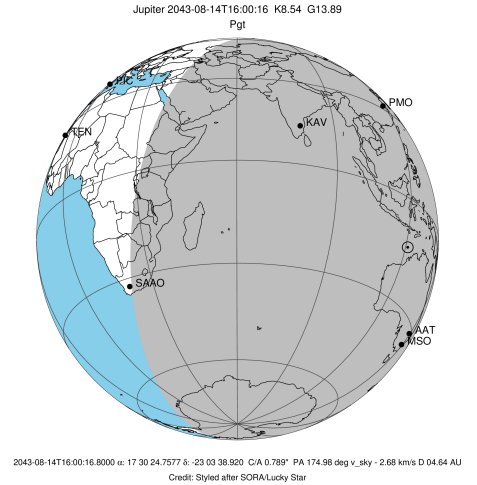


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T08:42:23.783	-82.29x	26.72x	71491.9	-4.61	-5.27
Jupiter	E	2043-08-14T23:11:46.482	30.45	-38.87	71491.6	13.19	14.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-14T15:35:59.100
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.537
G magnitude          : 13.885
RP magnitude         : 12.536
BP magnitude         : 16.082
DUPflag             : 0
Distance (au)       : 4.639
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg) : 122.02
Sun-Moon sep (deg)  : 12.88
B (ring opening deg) : -2.34
PA of pole (deg)    : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation ("): 0.754
C/A sky separation (km) : 2538.4
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
    
```

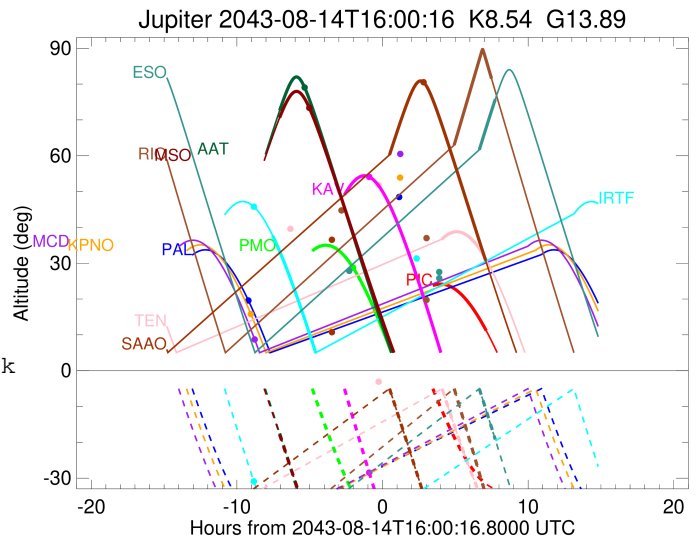
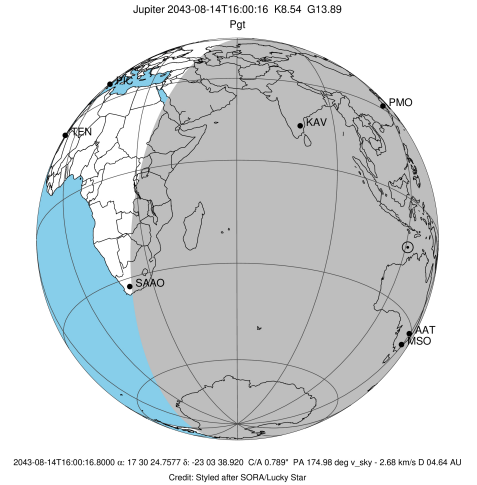


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T08:27:26.279	37.70	-45.08	71492.0	-2.04	-2.33
Jupiter	E	2043-08-15T00:12:46.218	-9.53x	64.00x	71491.7	11.70	13.31

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-14T16:37:43.980
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       : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.537
G magnitude           : 13.885
RP magnitude         : 12.536
BP magnitude         : 16.082
DUPflag              : 0
Distance (au)        : 4.640
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg) : 122.02
Sun-Moon sep (deg)   : 11.70
B (ring opening deg) : -2.34
PA of pole (deg)     : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation ("): 0.240
C/A sky separation (km): 806.5
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
    
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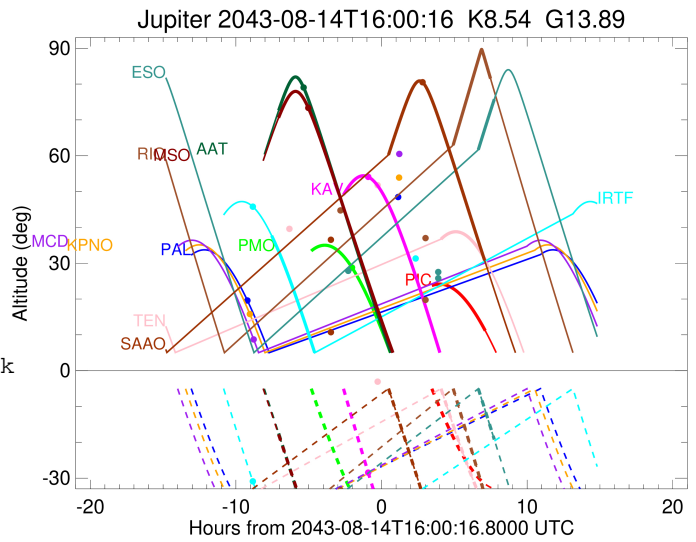
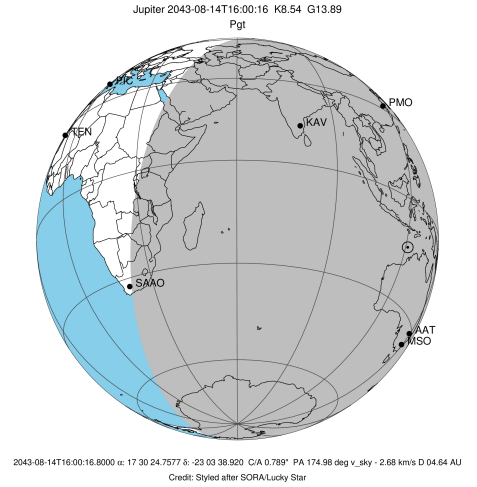


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T08:27:25.637	-31.75x	-12.30	71491.8	-8.55	-9.75
Jupiter	E	2043-08-14T23:29:34.737	81.50	-40.20	71491.8	9.64	10.99


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-14T16:31:55.930
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      : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.537
G magnitude          : 13.885
RP magnitude         : 12.536
BP magnitude         : 16.082
DUPflag             : 0
Distance (au)       : 4.640
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg) : 122.02
Sun-Moon sep (deg)  : 11.77
B (ring opening deg) : -2.34
PA of pole (deg)    : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation ("): 0.271
C/A sky separation (km): 912.0
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
    
```

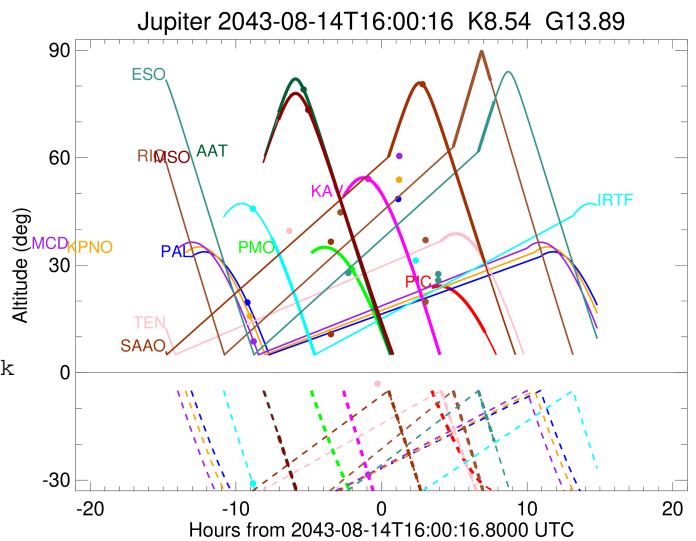
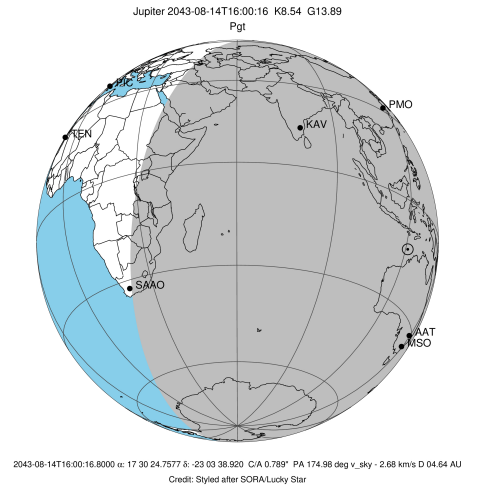


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T08:17:48.146	-7.18x	-39.44	71491.8	-8.34	-9.51
Jupiter	E	2043-08-14T23:45:16.725	75.79	-19.28	71491.8	9.24	10.53

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-14T15:28:20.190
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      : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.537
G magnitude          : 13.885
RP magnitude         : 12.536
BP magnitude         : 16.082
DUPflag             : 0
Distance (au)       : 4.639
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg) : 122.02
Sun-Moon sep (deg)   : 13.21
B (ring opening deg) : -2.34
PA of pole (deg)     : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation ("): 0.146
C/A sky separation (km): 489.7
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
    
```

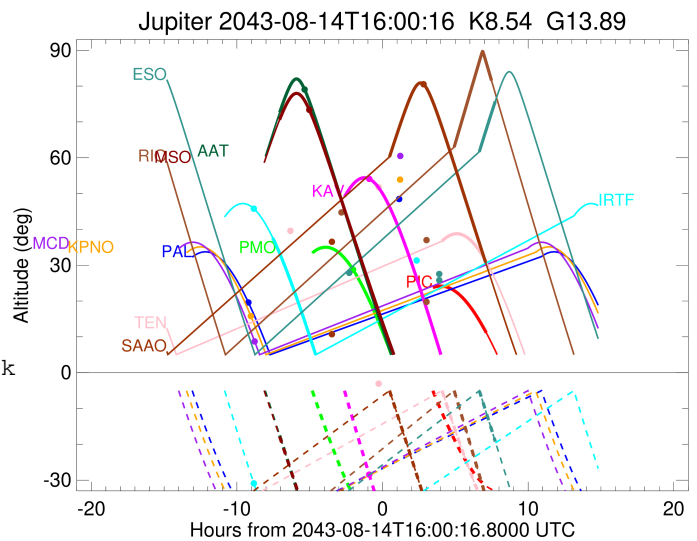
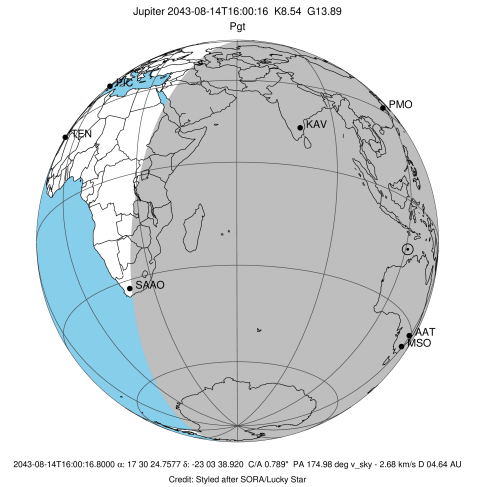


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T08:56:20.547	72.58	-17.46	71491.9	-5.70	-6.51
Jupiter	E	2043-08-14T23:55:38.125	-29.51x	34.66x	71491.9	6.00	6.85


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-08-14T16:19:48.670
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      : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.537
G magnitude          : 13.885
RP magnitude        : 12.536
BP magnitude        : 16.082
DUPflag             : 0
Distance (au)       : 4.639
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg) : 122.02
Sun-Moon sep (deg)  : 12.23
B (ring opening deg) : -2.34
PA of pole (deg)    : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation ("): 0.473
C/A sky separation (km): 1590.1
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
    
```

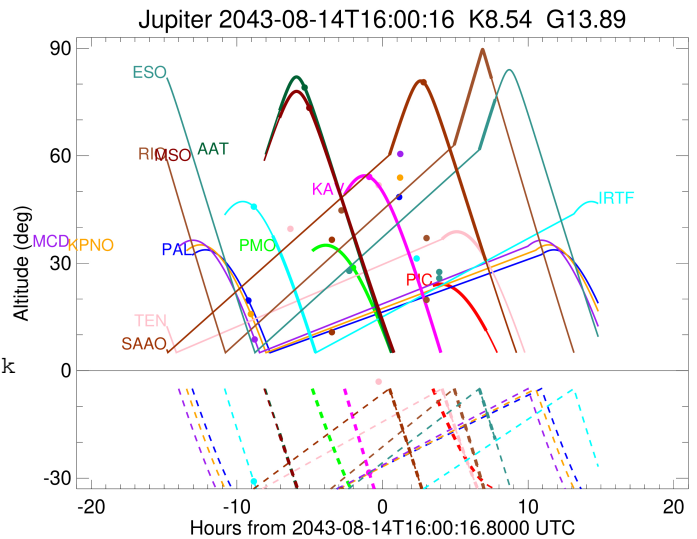
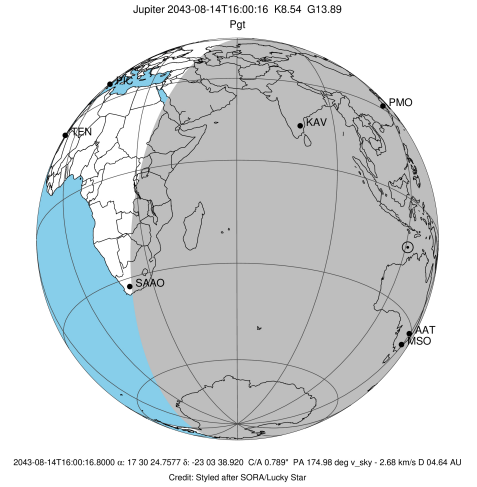


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-08-14T09:08:02.151	-24.23x	38.37x	71491.8	-8.64	-9.85
Jupiter	E	2043-08-14T23:05:09.458	30.77	-71.14	71491.9	7.48	8.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-08-14T15:29:54.460
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        : 4111434135036685056
2Mass ID (if available) : 17302476-2303387
ICRS Star Coord at Epoch: 17h 30m 24.75773s -23:03:38.91972s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.537
G magnitude           : 13.885
RP magnitude          : 12.536
BP magnitude          : 16.082
DUPflag              : 0
Distance (au)         : 4.639
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -2.68
Sun-Target sep (deg)  : 122.02
Sun-Moon sep (deg)    : 13.16
B (ring opening deg) : -2.34
PA of pole (deg)      : 2.35
Pole direction: RA (deg): 268.05672
Dec (deg): 64.49731
C/A sky separation (") : 0.249
C/A sky separation (km) : 838.1
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	2043-08-14T08:56:08.044	70.57	-17.79	71491.9	-6.05	-6.91
Jupiter	E	2043-08-14T23:54:51.564	-26.09x	31.41x	71491.9	5.78	6.60