

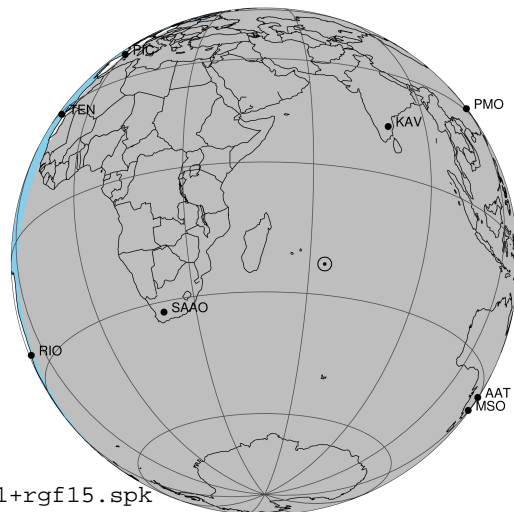
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-02T19:48:56.340
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068824834036838400
 2Mass ID (if available) : 17444796-2304455

Jupiter 2043-07-02T19:48:56 K9.02 G14.81 Pgt

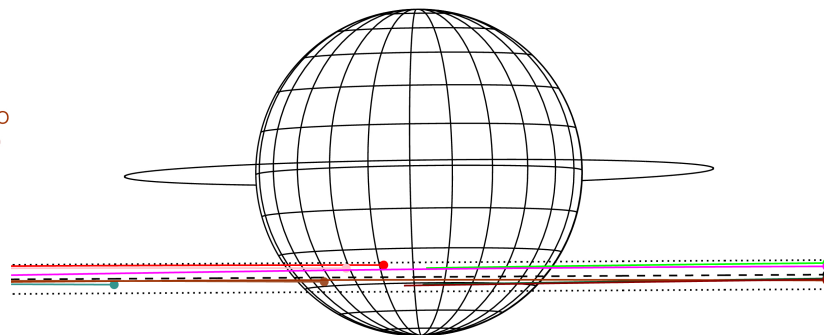
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s

RUWE (>1.4 is poor) : 1.49
 K magnitude : 9.015
 G magnitude : 14.806
 RP magnitude : 13.273
 BP magnitude : 17.192
 DUPflag : 0
 Distance (au) : 4.269
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.62
 Sun-Target sep (deg) : 166.26
 Sun-Moon sep (deg) : 139.43
 B (ring opening deg) : -2.41
 PA of pole (deg) : 0.80
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 14.784
 C/A sky separation (km) : 45773.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-02T19:48:56 K9.02 G14.81
 Pgt



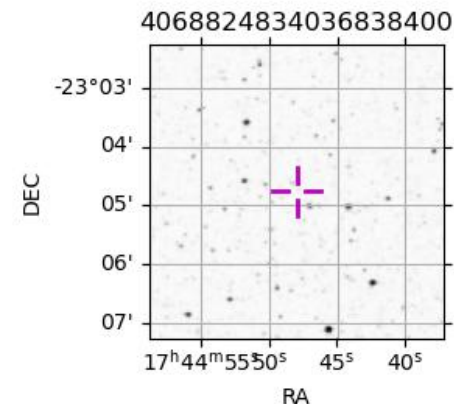
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2043-07-02T19:48:56.3400 α: 17 44 47.9709 δ: -23 04 45.896 C/A ***** PA 0.34 deg v_sky -15.62 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

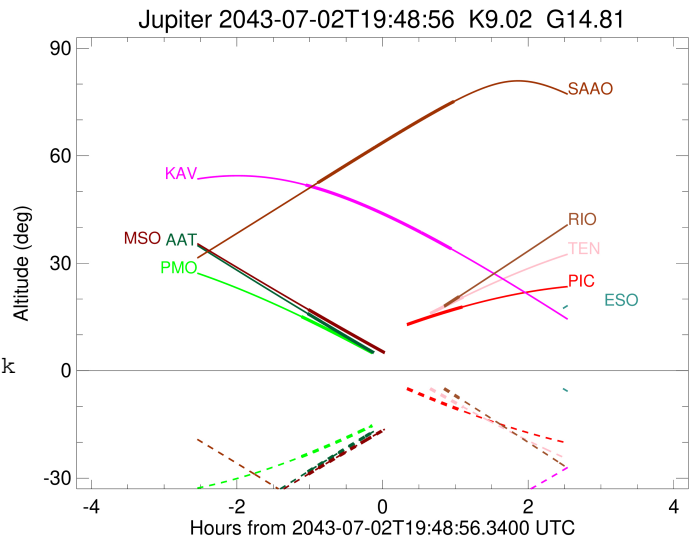
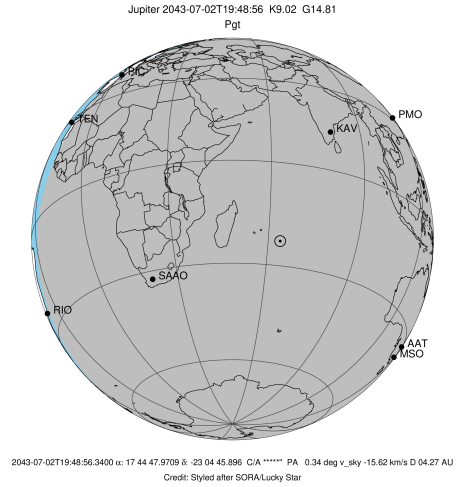
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 02 20:54 - JUL 02 20:54	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 02 18:42 - JUL 02 18:42	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	+	JUL 02 20:55 - JUL 02 20:55	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 02 18:45 - JUL 02 20:45	Pie
RIO	Rio de Janeiro	-22.9	316.8	+	JUL 02 20:52 - JUL 02 20:52	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 02 18:47 - JUL 02 18:47	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 02 18:55 - JUL 02 20:47	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 02 18:47 - JUL 02 18:47	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T19:52:54.730
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        : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor)  : 1.49
K magnitude           : 9.015
G magnitude           : 14.806
RP magnitude          : 13.273
BP magnitude          : 17.192
DUPflag              : 0
Distance (au)         : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -15.62
Sun-Target sep (deg)  : 166.26
Sun-Moon sep (deg)    : 139.17
B (ring opening deg)  : -2.41
PA of pole (deg)      : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 13.102
C/A sky separation (km) : 40565.9
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
    
```

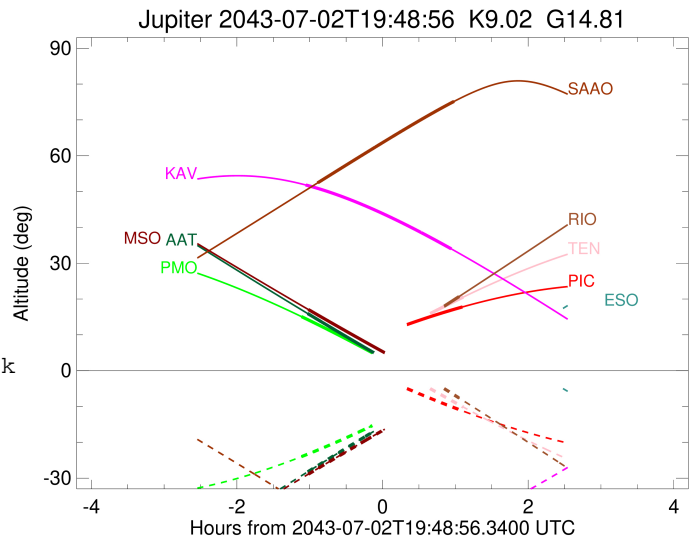
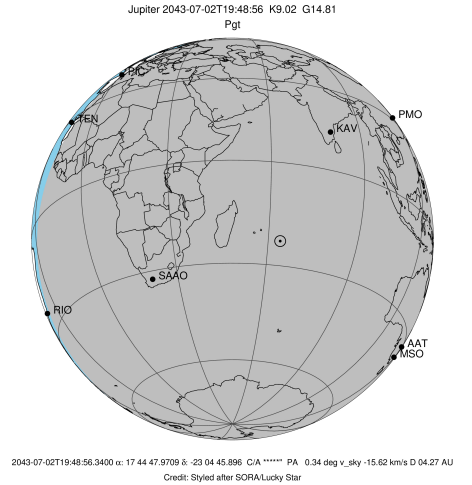


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T18:50:53.364	2.16x	7.26x	71489.3	-35.40	-39.01
Jupiter	E	2043-07-02T20:54:41.011	17.77	-11.20	71489.5	-33.76	-37.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T19:43:09.770
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       : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor) : 1.49
K magnitude           : 9.015
G magnitude           : 14.806
RP magnitude          : 13.273
BP magnitude          : 17.192
DUPflag              : 0
Distance (au)        : 4.269
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.26
Sun-Moon sep (deg)   : 140.11
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 13.531
C/A sky separation (km) : 41894.3
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
    
```

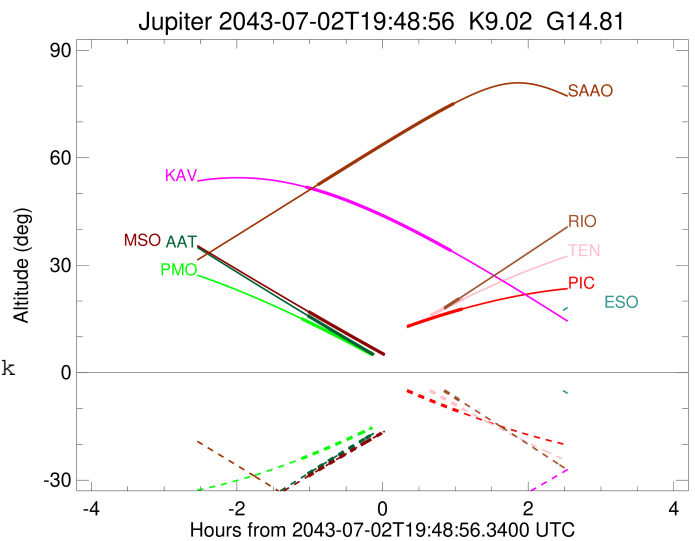
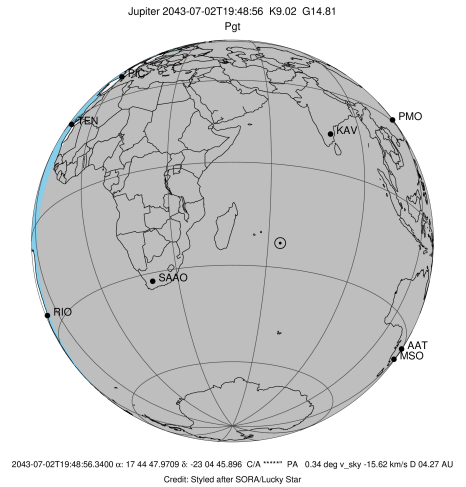


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T18:42:07.566	15.10	-24.00	71489.3	-35.82	-39.44
Jupiter	E	2043-07-02T20:44:36.427	-7.16x	-4.27x	71489.3	-35.92	-39.55

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T19:54:44.660
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      : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor) : 1.49
K magnitude          : 9.015
G magnitude          : 14.806
RP magnitude         : 13.273
BP magnitude         : 17.192
DUPflag             : 0
Distance (au)       : 4.269
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.26
Sun-Moon sep (deg)  : 138.96
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 13.580
C/A sky separation (km) : 42045.8
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
    
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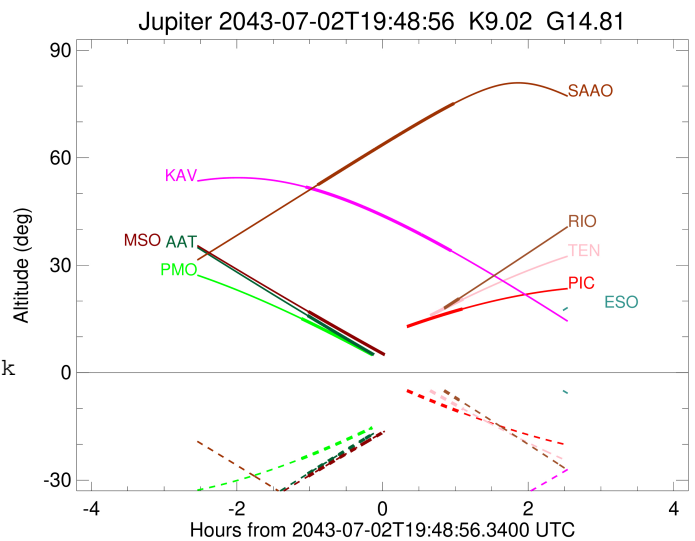
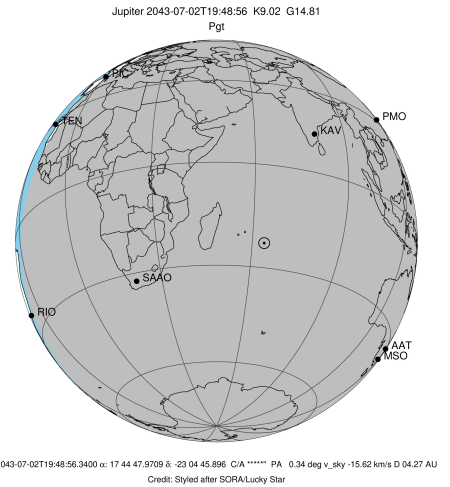


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T18:53:34.443	-1.92x	14.04x	71489.1	-37.01	-40.66
Jupiter	E	2043-07-02T20:55:32.880	20.55	-10.16	71489.4	-35.04	-38.64

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T19:45:28.060
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        : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor) : 1.49
K magnitude           : 9.015
G magnitude           : 14.806
RP magnitude          : 13.273
BP magnitude          : 17.192
DUPflag              : 0
Distance (au)         : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg)  : 166.26
Sun-Moon sep (deg)    : 140.28
B (ring opening deg) : -2.41
PA of pole (deg)      : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 13.684
C/A sky separation (km) : 42366.7
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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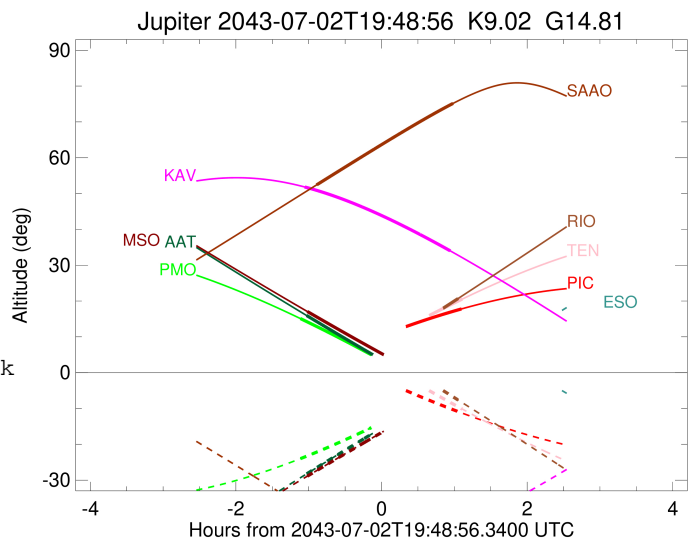
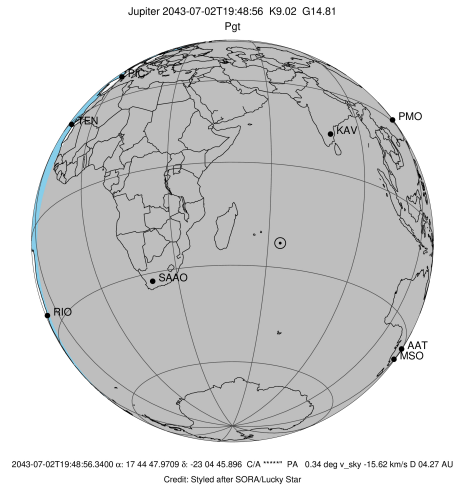


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T18:45:41.478	51.82	-54.50	71489.2	-36.54	-40.18
Jupiter	E	2043-07-02T20:45:28.886	34.02	-44.45	71489.2	-36.22	-39.86

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T19:55:45.780
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        : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor) : 1.49
K magnitude           : 9.015
G magnitude           : 14.806
RP magnitude          : 13.273
BP magnitude          : 17.192
DUPflag              : 0
Distance (au)         : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.26
Sun-Moon sep (deg)   : 138.79
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 15.524
C/A sky separation (km) : 48066.7
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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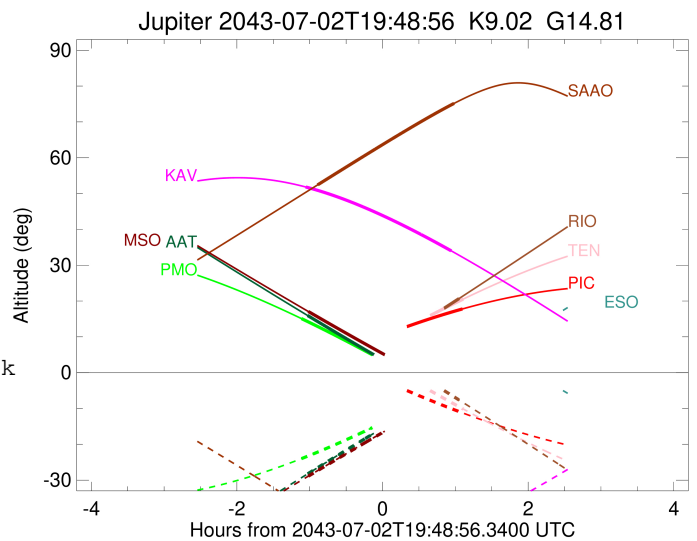
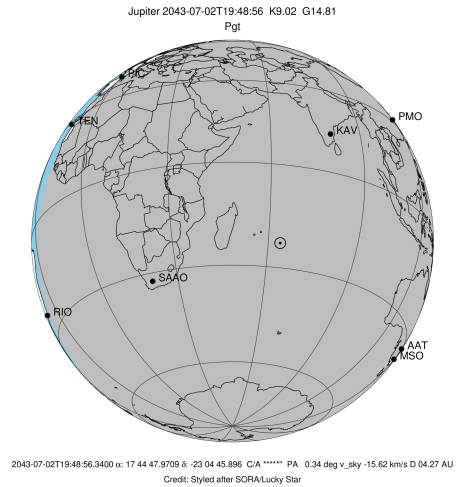


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T18:59:05.193	-3.54x	15.46x	71488.2	-43.28	-47.00
Jupiter	E	2043-07-02T20:52:03.827	20.69	-7.63	71488.5	-41.13	-44.85

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T19:42:39.340
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        : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor) : 1.49
K magnitude           : 9.015
G magnitude           : 14.806
RP magnitude          : 13.273
BP magnitude          : 17.192
DUPflag              : 0
Distance (au)         : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg)  : 166.26
Sun-Moon sep (deg)   : 140.08
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 15.864
C/A sky separation (km) : 49119.1
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
    
```

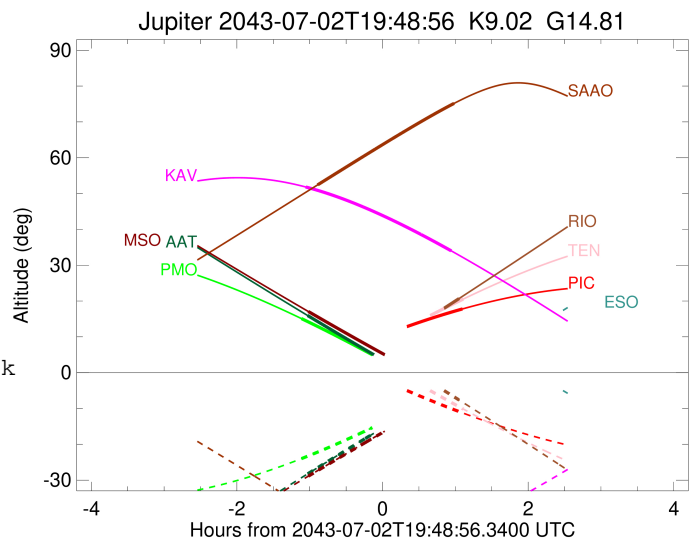
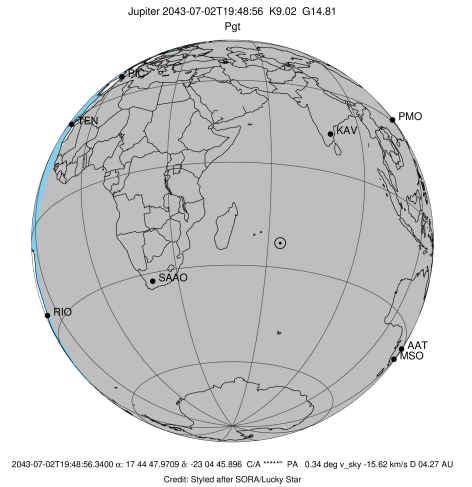


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T18:47:11.229	15.96	-28.26	71488.2	-43.25	-46.96
Jupiter	E	2043-07-02T20:38:29.504	-5.77x	-5.55	71488.2	-43.44	-47.16


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T19:51:48.240
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      : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor) : 1.49
K magnitude          : 9.015
G magnitude          : 14.806
RP magnitude         : 13.273
BP magnitude         : 17.192
DUPflag             : 0
Distance (au)       : 4.269
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.26
Sun-Moon sep (deg)  : 139.70
B (ring opening deg) : -2.41
PA of pole (deg)    : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 15.187
C/A sky separation (km): 47022.1
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
    
```

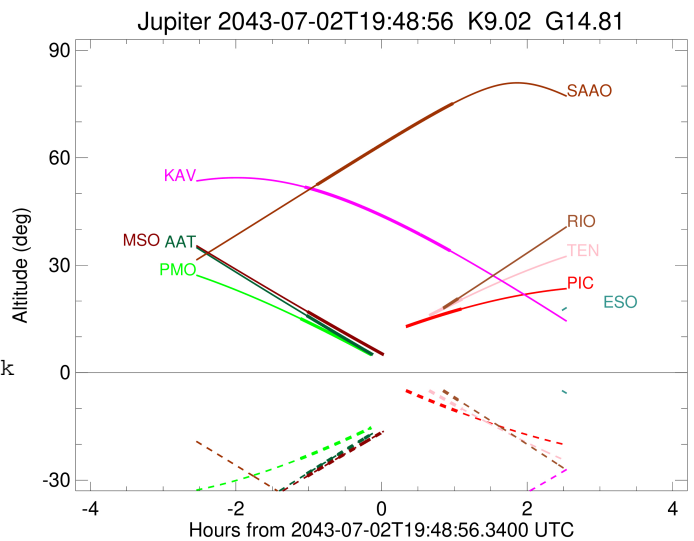
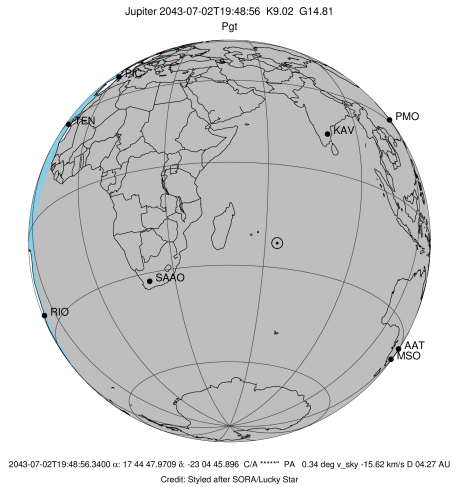


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T18:55:33.401	52.43	-39.80	71488.4	-41.86	-45.58
Jupiter	E	2043-07-02T20:47:54.508	75.16	-63.43	71488.6	-40.43	-44.14


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T19:42:56.140
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       : 4068824834036838400
2Mass ID (if available) : 17444796-2304455
ICRS Star Coord at Epoch: 17h 44m 47.97085s -23:04:45.89574s
RUWE (>1.4 is poor) : 1.49
K magnitude           : 9.015
G magnitude           : 14.806
RP magnitude          : 13.273
BP magnitude          : 17.192
DUPflag              : 0
Distance (au)        : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.26
Sun-Moon sep (deg)   : 140.07
B (ring opening deg) : -2.41
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 15.971
C/A sky separation (km) : 49449.7
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	2043-07-02T18:47:48.207	17.07	-28.89	71488.2	-43.64	-47.35
Jupiter	E	2043-07-02T20:38:24.923	-3.61x	-7.21	71488.2	-43.78	-47.50