

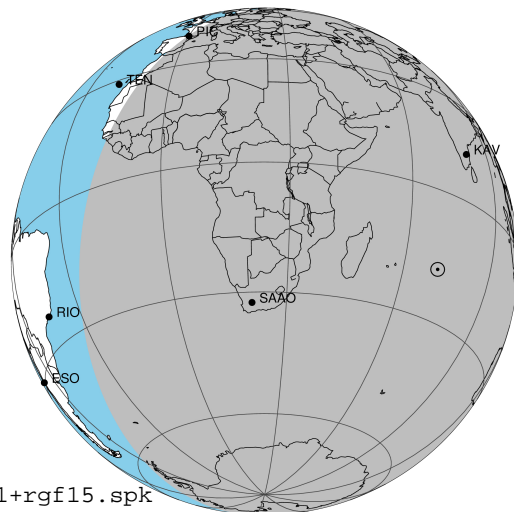
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-30T19:25:35.090
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116676473368782976
 2Mass ID (if available) : 17330615-2303136

Jupiter 2043-07-30T19:25:35 K8.85 G14.95 Pgt

ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s

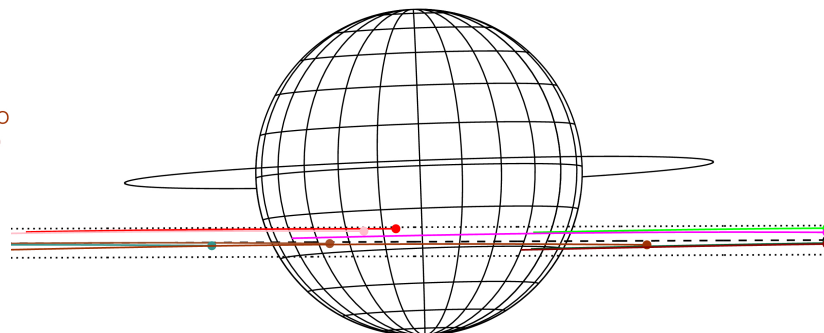
RUWE (>1.4 is poor) : 1.23
 K magnitude : 8.854
 G magnitude : 14.945
 RP magnitude : 13.478
 BP magnitude : 17.863
 DUPflag : 0
 Distance (au) : 4.465
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -8.56
 Sun-Target sep (deg) : 136.87
 Sun-Moon sep (deg) : 152.14
 B (ring opening deg) : -2.37
 PA of pole (deg) : 2.06
 Pole direction: RA (deg): 268.05671
 Dec (deg): 64.49731
 C/A sky separation (") : 9.366
 C/A sky separation (km) : 30331.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-30T19:25:35 K8.85 G14.95
 Pgt



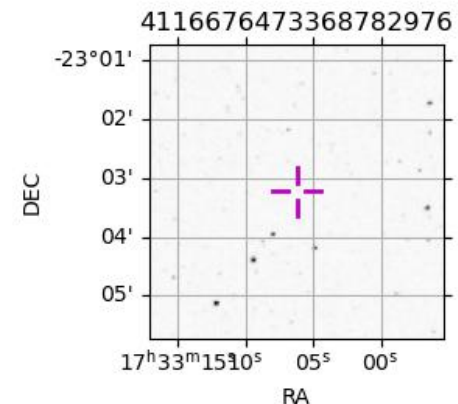
2043-07-30T19:25:35.0900 α: 17 33 06.1442 δ: -23 03 13.924 C/A 9.376" PA 0.23 deg v_sky - 8.56 km/s D 04.47 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



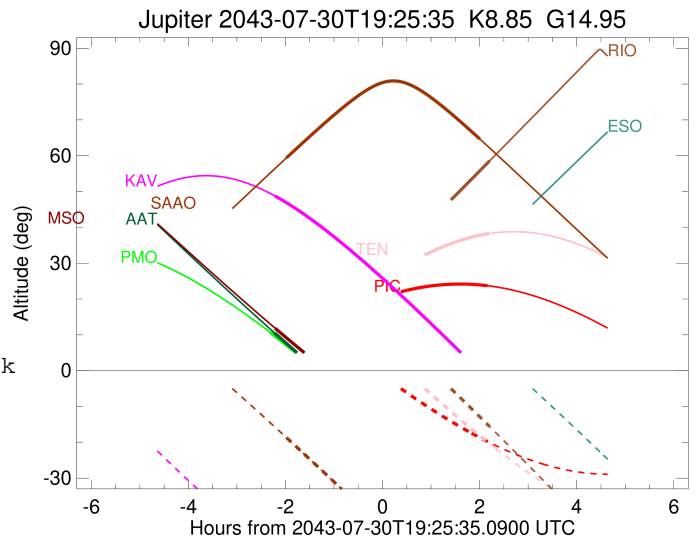
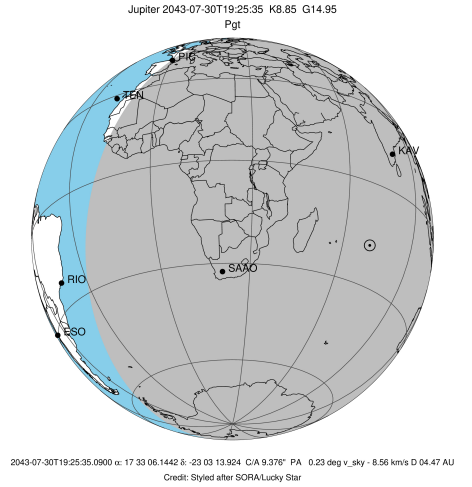
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 30 21:35 - JUL 30 21:35	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 30 17:07 - JUL 30 17:07	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 30 21:37 - JUL 30 21:37	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	JUL 30 17:12 - JUL 30 17:12	Pin
RIO	Rio de Janeiro	-22.9	316.8	+	JUL 30 21:37 - JUL 30 21:37	Pne
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 30 17:12 - JUL 30 17:12	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUL 30 17:26 - JUL 30 21:25	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 30 17:13 - JUL 30 17:13	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-30T19:29:25.880
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        : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor) : 1.23
K magnitude           : 8.854
G magnitude           : 14.945
RP magnitude          : 13.478
BP magnitude          : 17.863
DUPflag              : 0
Distance (au)         : 4.465
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg)  : 136.87
Sun-Moon sep (deg)   : 152.13
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (") : 7.616
C/A sky separation (km) : 24664.8
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
    
```

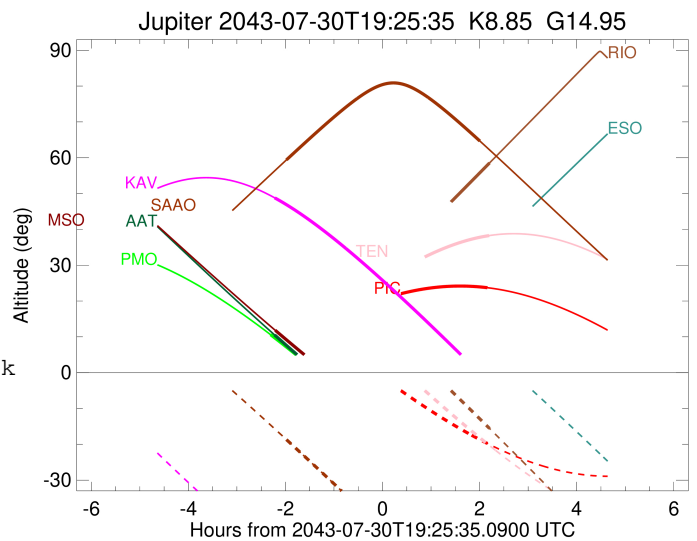
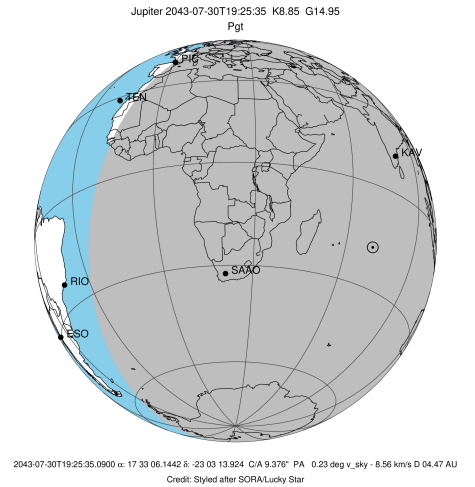


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-30T17:23:03.394	7.10	20.09x	71490.9	-22.53	-25.34
Jupiter	E	2043-07-30T21:35:10.738	23.71	-19.76	71491.2	-18.22	-20.61

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-30T19:14:05.660
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       : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor) : 1.23
K magnitude           : 8.854
G magnitude           : 14.945
RP magnitude          : 13.478
BP magnitude          : 17.863
DUPflag              : 0
Distance (au)        : 4.465
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg) : 136.87
Sun-Moon sep (deg)   : 152.81
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 8.432
C/A sky separation (km): 27306.7
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
    
```

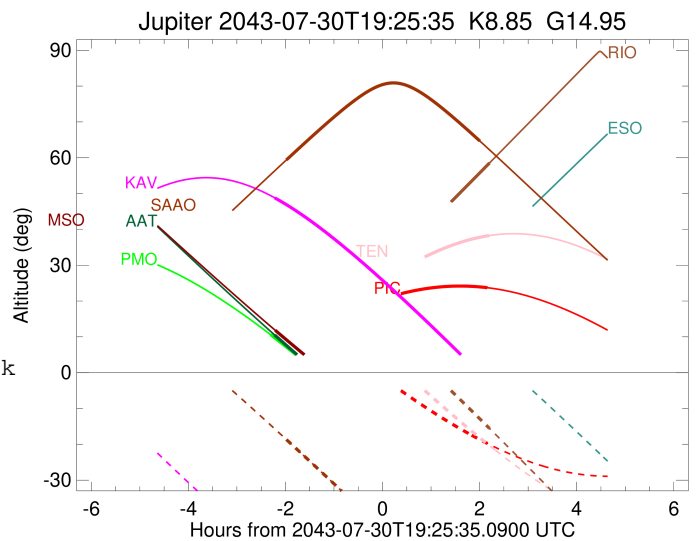
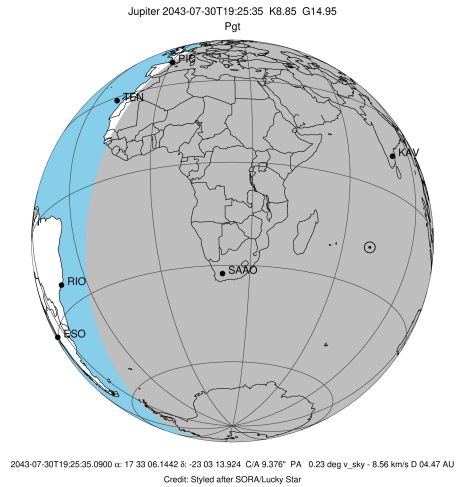


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-30T17:07:13.227	10.61	-37.94	71490.8	-23.28	-26.17
Jupiter	E	2043-07-30T21:24:46.603	-40.52x	0.26x	71491.0	-21.59	-24.31

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-30T19:33:00.700
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        : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor) : 1.23
K magnitude           : 8.854
G magnitude           : 14.945
RP magnitude          : 13.478
BP magnitude          : 17.863
DUPflag              : 0
Distance (au)         : 4.465
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg) : 136.87
Sun-Moon sep (deg)   : 151.91
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 7.981
C/A sky separation (km): 25847.7
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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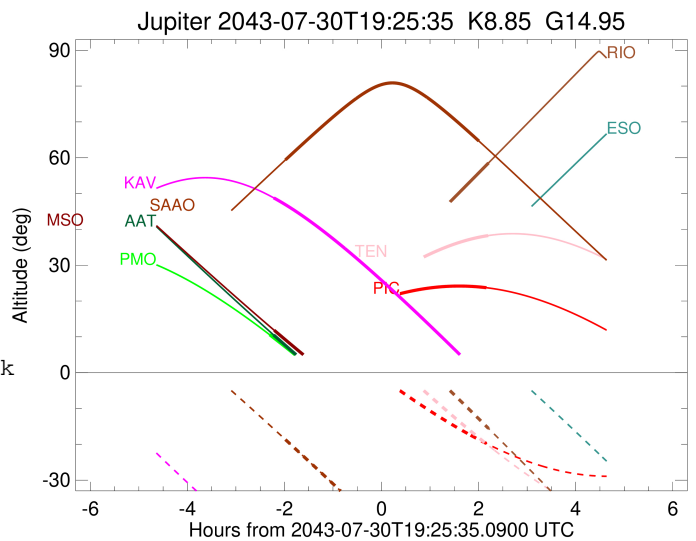
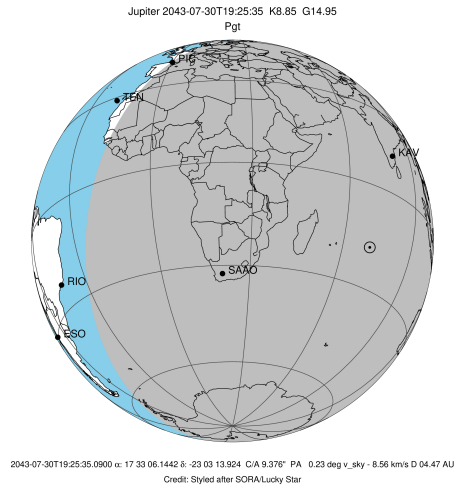


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-30T17:27:04.973	5.01	31.33x	71490.7	-23.84	-26.78
Jupiter	E	2043-07-30T21:37:22.280	38.26	-20.27	71491.2	-18.94	-21.41

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-30T19:15:10.440
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      : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor) : 1.23
K magnitude          : 8.854
G magnitude          : 14.945
RP magnitude        : 13.478
BP magnitude        : 17.863
DUPflag             : 0
Distance (au)       : 4.465
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg) : 136.87
Sun-Moon sep (deg)  : 153.08
B (ring opening deg) : -2.37
PA of pole (deg)    : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 8.512
C/A sky separation (km) : 27566.6
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
    
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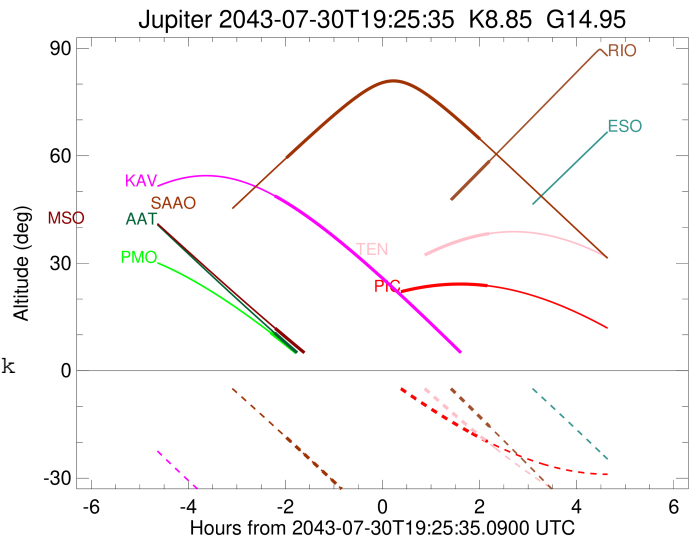
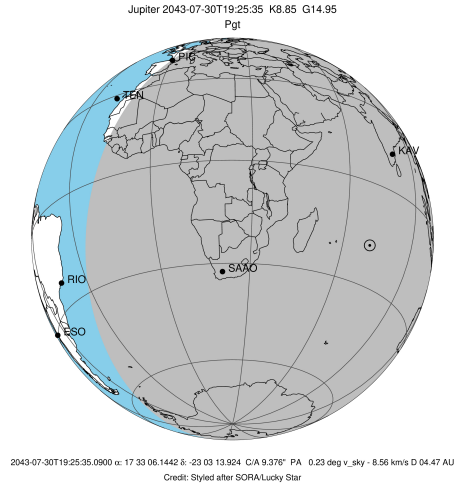


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-30T17:12:24.037	48.79	-50.67	71490.7	-23.81	-26.74
Jupiter	E	2043-07-30T21:21:05.780	0.87x	-41.83	71490.9	-21.90	-24.65

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-30T19:36:59.340
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      : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor) : 1.23
K magnitude          : 8.854
G magnitude          : 14.945
RP magnitude         : 13.478
BP magnitude         : 17.863
DUPflag             : 0
Distance (au)       : 4.465
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg) : 136.87
Sun-Moon sep (deg)  : 151.61
B (ring opening deg) : -2.37
PA of pole (deg)    : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 9.760
C/A sky separation (km) : 31610.8
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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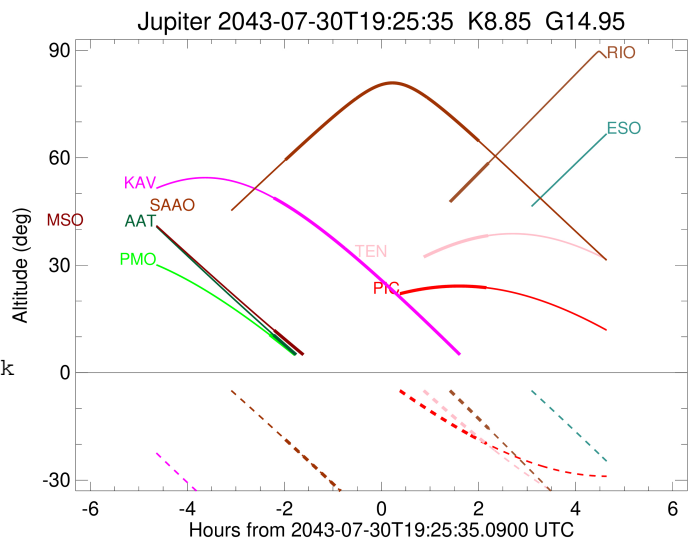
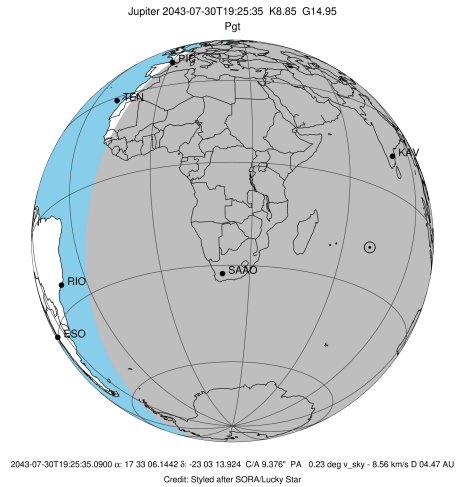


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-30T17:33:30.833	4.02x	34.21x	71490.2	-29.13	-32.45
Jupiter	E	2043-07-30T21:37:56.903	58.55	-15.59	71490.8	-23.57	-26.47

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-30T19:15:33.540
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       : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor) : 1.23
K magnitude           : 8.854
G magnitude           : 14.945
RP magnitude          : 13.478
BP magnitude          : 17.863
DUPflag              : 0
Distance (au)        : 4.465
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg) : 136.87
Sun-Moon sep (deg)   : 152.56
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 10.657
C/A sky separation (km): 34512.9
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
    
```

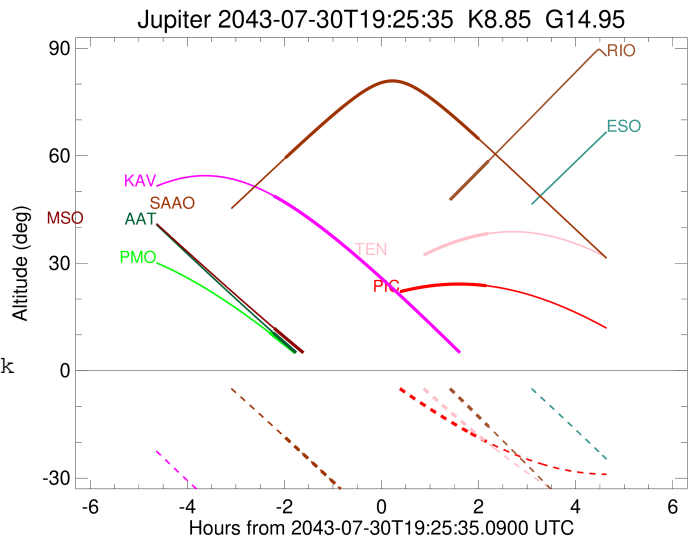
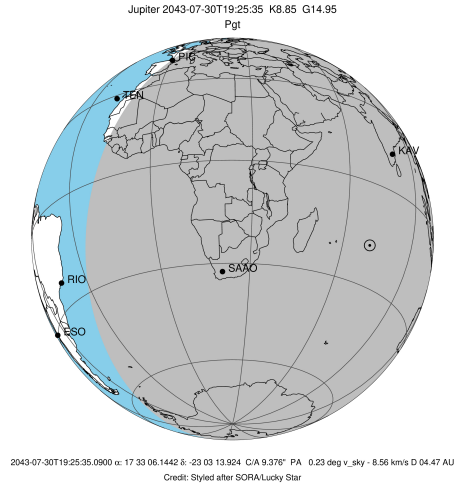


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-30T17:12:11.092	10.54	-47.09	71490.1	-29.67	-33.02
Jupiter	E	2043-07-30T21:22:09.995	-30.40x	5.07x	71490.3	-27.71	-30.94


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-30T19:26:13.940
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        : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor) : 1.23
K magnitude           : 8.854
G magnitude           : 14.945
RP magnitude          : 13.478
BP magnitude          : 17.863
DUPflag              : 0
Distance (au)         : 4.465
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg) : 136.87
Sun-Moon sep (deg)   : 152.53
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 9.679
C/A sky separation (km): 31344.9
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
    
```

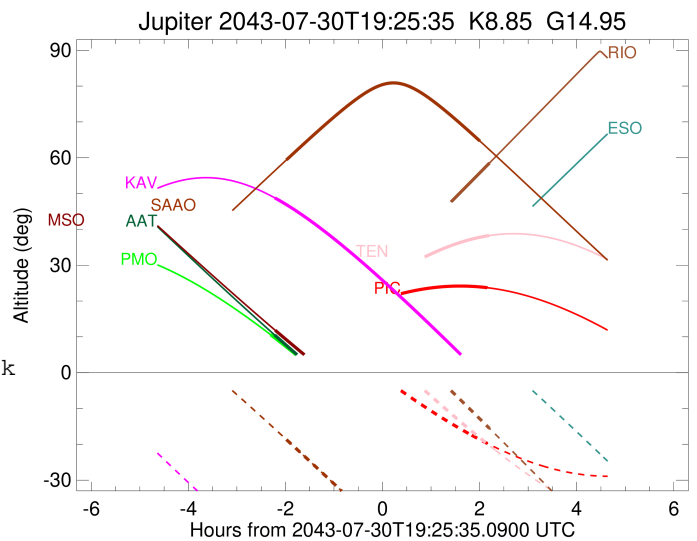
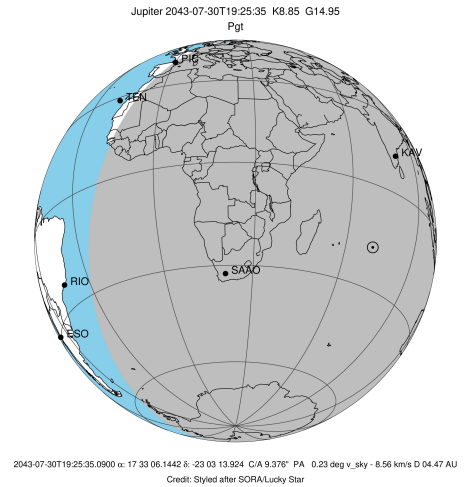


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-30T17:26:46.234	59.38	-18.67	71490.3	-28.11	-31.37
Jupiter	E	2043-07-30T21:25:54.734	64.66	-67.78	71490.7	-24.35	-27.32


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-30T19:16:00.640
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        : 4116676473368782976
2Mass ID (if available) : 17330615-2303136
ICRS Star Coord at Epoch: 17h 33m 06.14424s -23:03:13.92414s
RUWE (>1.4 is poor)  : 1.23
K magnitude           : 8.854
G magnitude           : 14.945
RP magnitude          : 13.478
BP magnitude          : 17.863
DUPflag              : 0
Distance (au)         : 4.465
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.56
Sun-Target sep (deg)  : 136.87
Sun-Moon sep (deg)   : 152.55
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.06
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 10.748
C/A sky separation (km) : 34806.9
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	2043-07-30T17:13:01.363	11.82	-46.39	71490.1	-29.98	-33.35
Jupiter	E	2043-07-30T21:22:04.738	-26.79x	3.30x	71490.3	-27.95	-31.19