

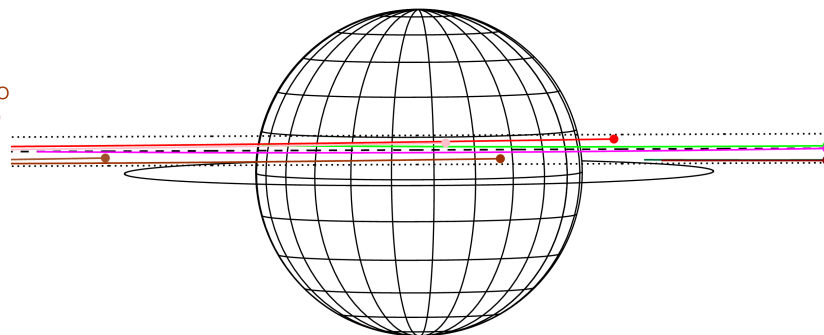
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2048-11-18T20:50:02.750
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3424403675941741824
 2Mass ID (if available) : 05543358+2257224

Jupiter 2048-11-18T20:50:02 K8.09 G9.16 Pgt

ICRS Star Coord at Epoch: 05h 54m 33.57194s +22:57:22.67252s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 8.087
 G magnitude : 9.162
 RP magnitude : 8.788
 BP magnitude : 9.355
 DUPflag : 0
 Distance (au) : 4.233
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -12.49
 Sun-Target sep (deg) : 147.76
 Sun-Moon sep (deg) : 50.29
 B (ring opening deg) : 2.55
 PA of pole (deg) : 0.25
 Pole direction: RA (deg): 268.05736
 Dec (deg): 64.49721
 C/A sky separation (") : 3.216
 C/A sky separation (km) : 9872.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



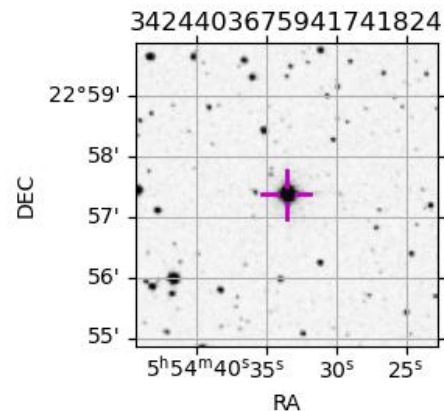
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 AAT
 SAAO
 MSO



2048-11-18T20:50:02.7500 ex: 05 54 33.5719 s: +22 57 22.673 C/A 3.227" PA 180.24 deg v_sky -12.49 km/s D 04.23 AU
 Credit: Styled after SORA/Lucky Star

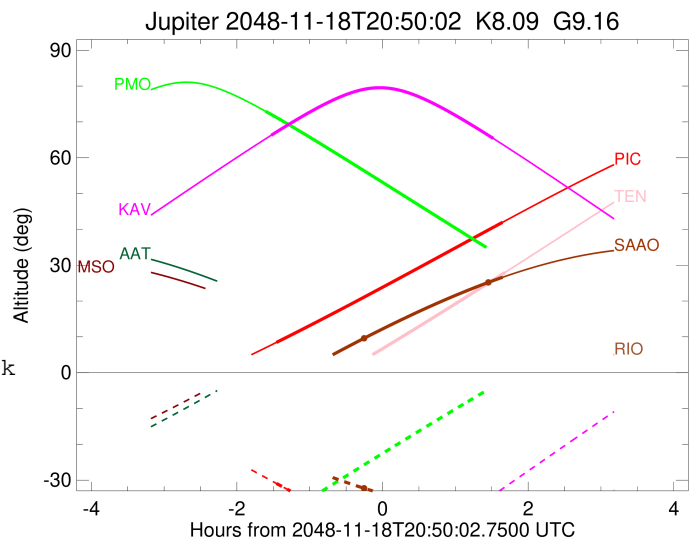
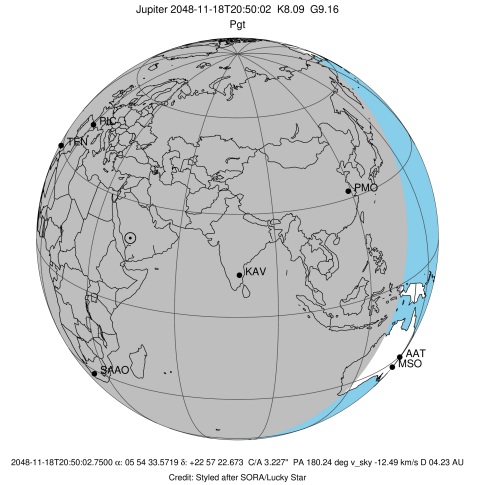
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+ +	NOV 18 19:22 - NOV 18 22:28	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	NOV 18 19:13 - NOV 18 19:13	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	+	NOV 18 22:31 - NOV 18 22:31	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	NOV 18 19:18 - NOV 18 22:21	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			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	NOV 18 22:28 - NOV 18 22:28	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-18T20:56:20.800
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       : 3424403675941741824
2Mass ID (if available) : 05543358+2257224
ICRS Star Coord at Epoch: 05h 54m 33.57194s +22:57:22.67252s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 8.087
G magnitude           : 9.162
RP magnitude          : 8.788
BP magnitude          : 9.355
DUPflag              : 0
Distance (au)         : 4.233
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg) : 147.76
Sun-Moon sep (deg)   : 50.13
B (ring opening deg) : 2.55
PA of pole (deg)     : 0.25
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation ("): 4.361
C/A sky separation (km): 13387.1
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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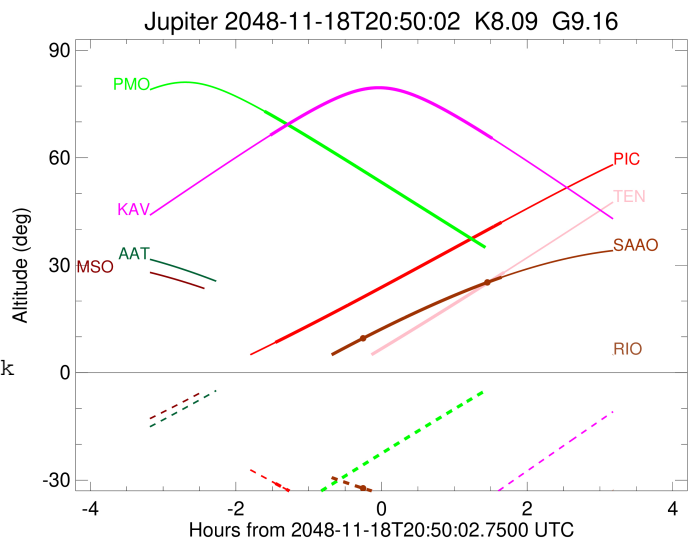
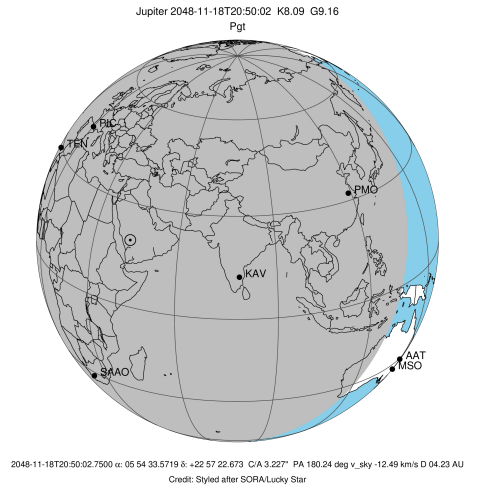


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-18T19:22:38.925	8.45	-30.92	71491.7	11.38	12.95
Jupiter	E	2048-11-18T22:28:54.924	41.96	-61.84	71491.7	10.26	11.69

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-18T20:45:21.800
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       : 3424403675941741824
2Mass ID (if available) : 05543358+2257224
ICRS Star Coord at Epoch: 05h 54m 33.57194s +22:57:22.67252s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 8.087
G magnitude           : 9.162
RP magnitude          : 8.788
BP magnitude          : 9.355
DUPflag              : 0
Distance (au)         : 4.233
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg) : 147.76
Sun-Moon sep (deg)   : 51.17
B (ring opening deg) : 2.55
PA of pole (deg)     : 0.25
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation ("): 3.705
C/A sky separation (km): 11373.5
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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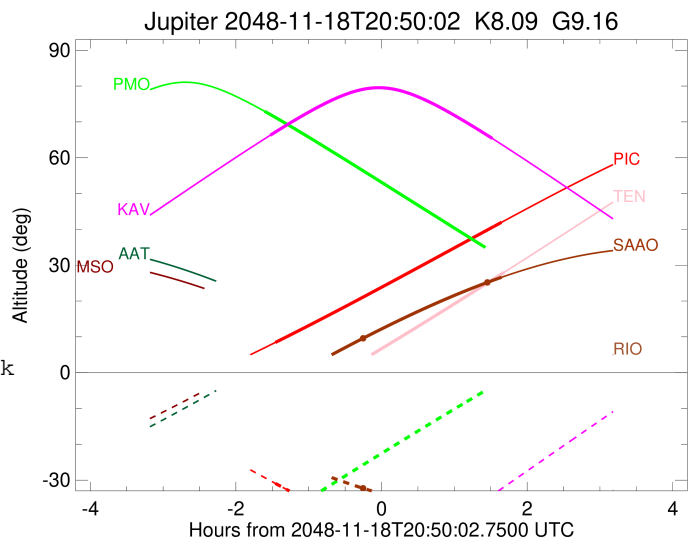
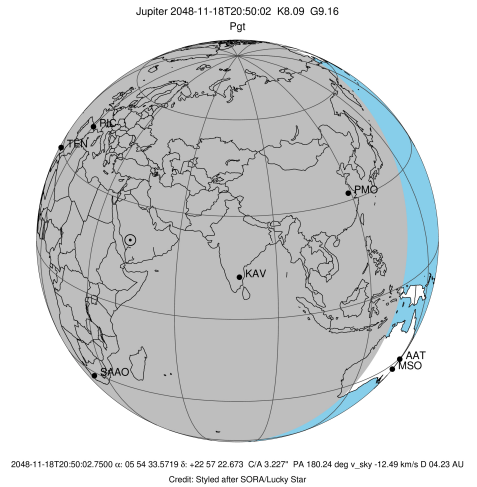


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-18T19:13:39.290	72.96	-42.91	71491.8	8.80	10.04
Jupiter	E	2048-11-18T22:17:40.012	34.52	-4.61x	71491.7	9.70	11.06

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-18T20:57:47.650
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       : 3424403675941741824
2Mass ID (if available) : 05543358+2257224
ICRS Star Coord at Epoch: 05h 54m 33.57194s +22:57:22.67252s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 8.087
G magnitude           : 9.162
RP magnitude         : 8.788
BP magnitude         : 9.355
DUPflag              : 0
Distance (au)        : 4.233
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg) : 147.76
Sun-Moon sep (deg)   : 49.84
B (ring opening deg) : 2.55
PA of pole (deg)     : 0.25
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation ("): 4.136
C/A sky separation (km): 12696.3
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
    
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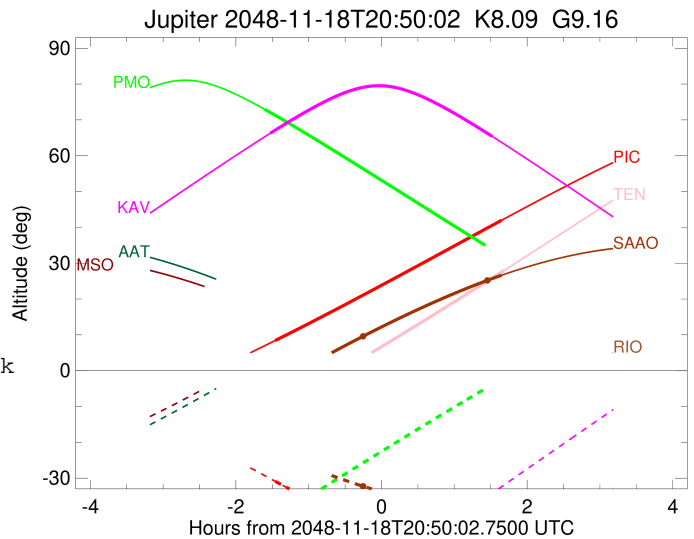
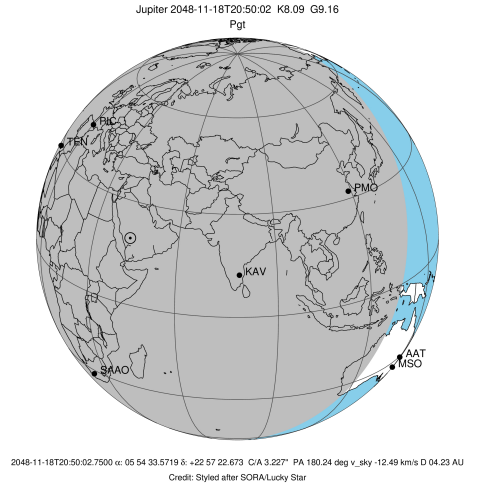


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-18T19:23:03.516	-10.33x	-15.82	71491.7	10.92	12.44
Jupiter	E	2048-11-18T22:31:07.703	28.00	-56.96	71491.8	9.52	10.85

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-11-18T20:49:56.880
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        : 3424403675941741824
2Mass ID (if available) : 05543358+2257224
ICRS Star Coord at Epoch: 05h 54m 33.57194s +22:57:22.67252s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 8.087
G magnitude           : 9.162
RP magnitude          : 8.788
BP magnitude          : 9.355
DUPflag              : 0
Distance (au)         : 4.233
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg)  : 147.76
Sun-Moon sep (deg)    : 51.01
B (ring opening deg) : 2.55
PA of pole (deg)      : 0.25
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation (") : 2.839
C/A sky separation (km) : 8714.3
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
    
```

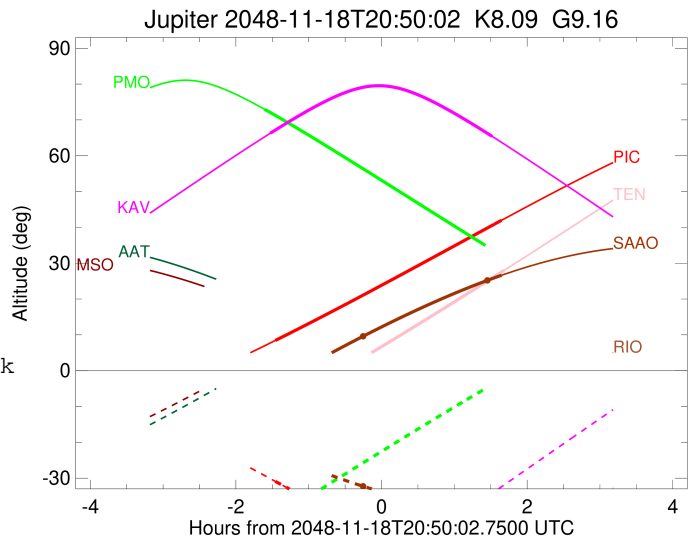
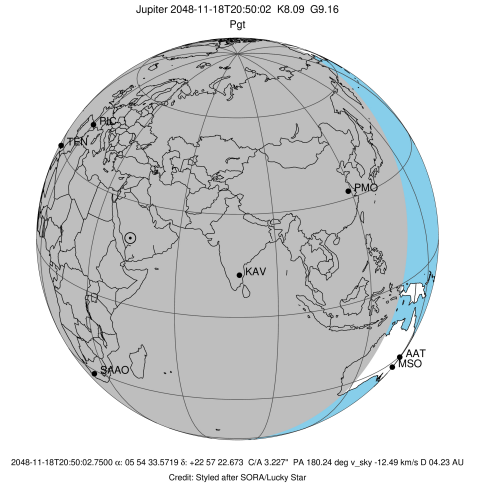


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-11-18T19:18:26.996	66.28	-76.39	71491.9	7.11	8.12
Jupiter	E	2048-11-18T22:21:20.265	65.38	-34.19	71491.9	7.19	8.20

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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-11-18T20:56:01.730
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       : 3424403675941741824
2Mass ID (if available) : 05543358+2257224
ICRS Star Coord at Epoch: 05h 54m 33.57194s +22:57:22.67252s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 8.087
G magnitude           : 9.162
RP magnitude          : 8.788
BP magnitude          : 9.355
DUPflag              : 0
Distance (au)         : 4.233
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg) : 147.76
Sun-Moon sep (deg)   : 50.06
B (ring opening deg) : 2.55
PA of pole (deg)     : 0.25
Pole direction: RA (deg): 268.05736
Dec (deg): 64.49721
C/A sky separation ("): 1.800
C/A sky separation (km): 5525.1
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	2048-11-18T19:21:58.148	-3.81x	-22.70	71491.9	5.05	5.77
Jupiter	E	2048-11-18T22:28:59.303	26.62	-38.23	71492.0	3.98	4.54