

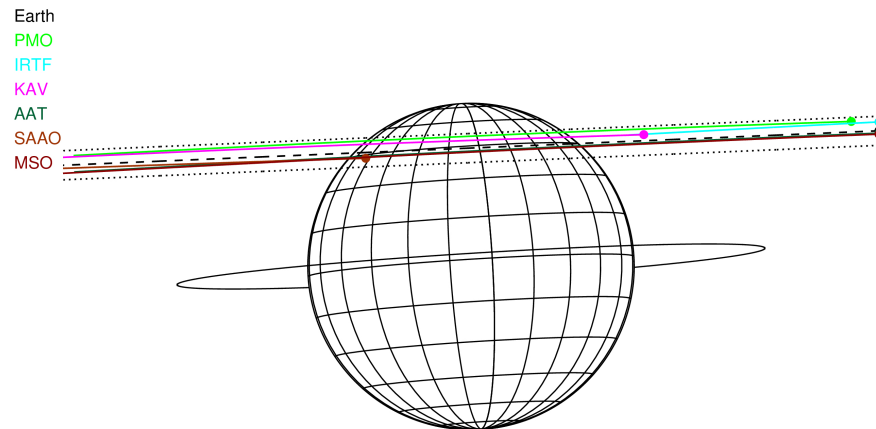
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-07-11T15:06:39.940
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4114691923628728832
 2Mass ID (if available) : 17190332-2241568

Jupiter 2031-07-11T15:06:39 K8.57 G11.88 Pgt

ICRS Star Coord at Epoch: 17h 19m 03.33276s -22:41:56.86916s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 8.573
 G magnitude : 11.878
 RP magnitude : 10.923
 BP magnitude : 12.815
 DUPflag : 0
 Distance (au) : 4.353
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -13.05
 Sun-Target sep (deg) : 151.86
 Sun-Moon sep (deg) : 119.70
 B (ring opening deg) : -2.57
 PA of pole (deg) : 3.56
 Pole direction: RA (deg): 268.05690
 Dec (deg): 64.49651
 C/A sky separation (") : 16.420
 C/A sky separation (km) : 51842.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

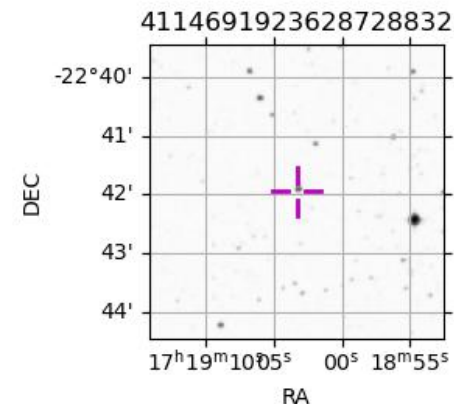


2031-07-11T15:06:39.9400 a: 17 19 03.3328 s -22 41 56.869 C/A ***** PA 182.42 deg v_sky -13.05 km/s D 04.35 AU
 Credit: Styled after SORA/Lucky Star



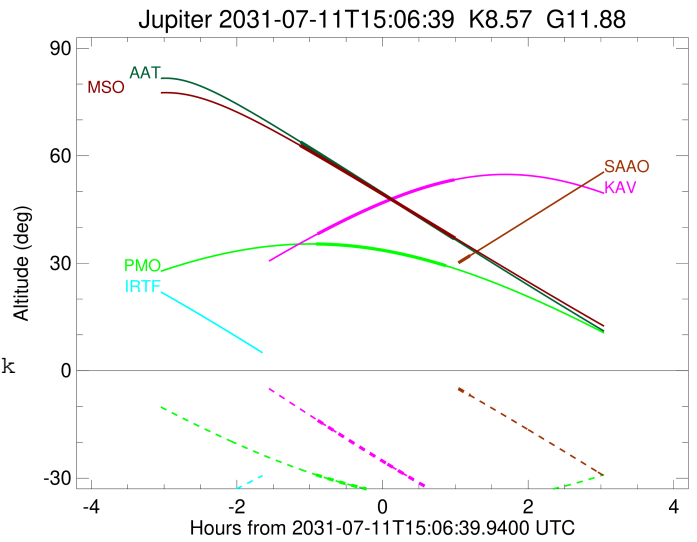
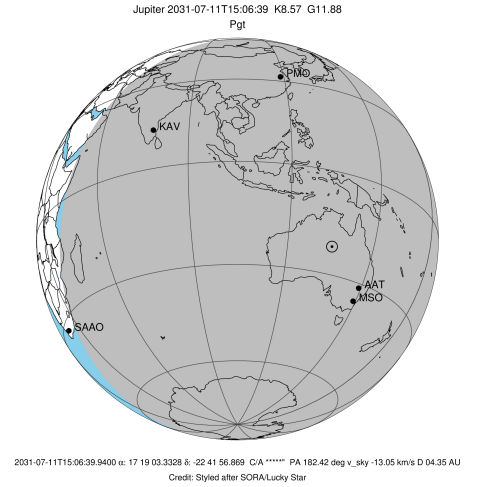
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JUL 11 14:11 - JUL 11 15:59	Pie
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			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 11 14:13 - JUL 11 16:05	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	+ +	JUL 11 13:59 - JUL 11 16:05	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 11 16:18 - JUL 11 16:18	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUL 11 13:58 - JUL 11 16:06	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-07-11T15:05:20.610
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        : 4114691923628728832
2Mass ID (if available) : 17190332-2241568
ICRS Star Coord at Epoch: 17h 19m 03.33276s -22:41:56.86916s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 8.573
G magnitude           : 11.878
RP magnitude          : 10.923
BP magnitude          : 12.815
DUPflag              : 0
Distance (au)         : 4.353
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.05
Sun-Target sep (deg) : 151.86
Sun-Moon sep (deg)   : 120.25
B (ring opening deg) : -2.57
PA of pole (deg)     : 3.56
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 18.061
C/A sky separation (km) : 57022.2
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
    
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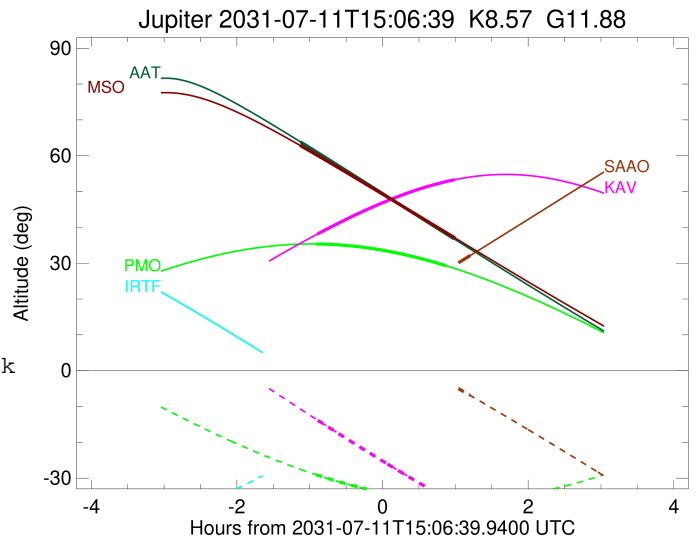
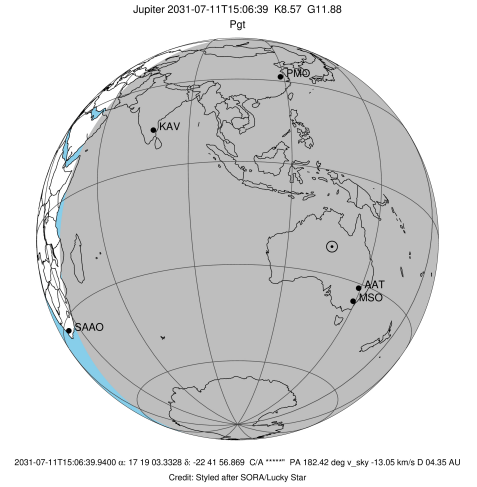


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-11T14:11:48.178	35.37	-29.05	71486.5	51.71	55.23
Jupiter	E	2031-07-11T15:59:00.028	29.28	-35.98	71486.2	53.80	57.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-07-11T15:09:41.090
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       : 4114691923628728832
2Mass ID (if available) : 17190332-2241568
ICRS Star Coord at Epoch: 17h 19m 03.33276s -22:41:56.86916s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 8.573
G magnitude           : 11.878
RP magnitude         : 10.923
BP magnitude         : 12.815
DUPflag              : 0
Distance (au)        : 4.353
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.05
Sun-Target sep (deg) : 151.86
Sun-Moon sep (deg)   : 120.10
B (ring opening deg) : -2.57
PA of pole (deg)     : 3.56
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation ("): 17.483
C/A sky separation (km): 55199.5
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
    
```

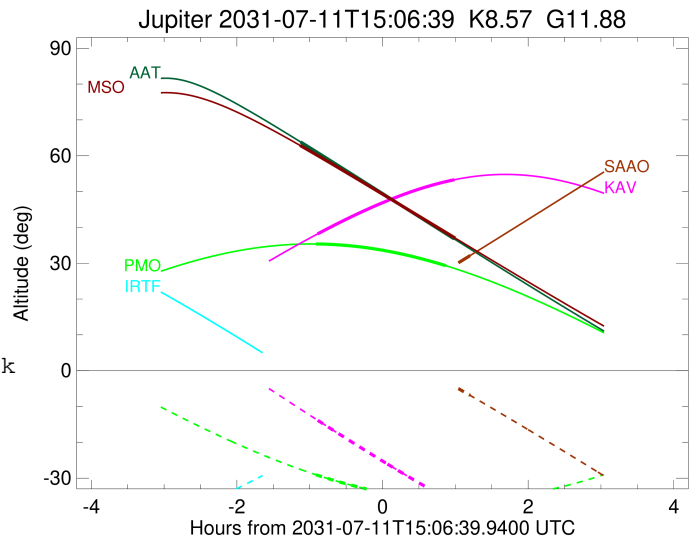
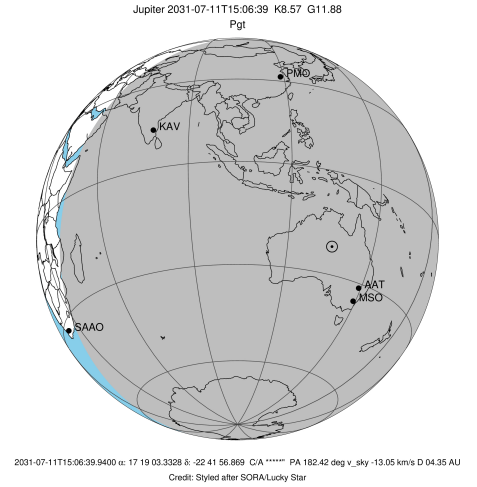


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-11T14:13:14.576	38.18	-13.85	71486.9	48.88	52.50
Jupiter	E	2031-07-11T16:05:58.302	53.29	-36.94	71486.4	51.92	55.43

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-07-11T15:02:14.200
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        : 4114691923628728832
2Mass ID (if available) : 17190332-2241568
ICRS Star Coord at Epoch: 17h 19m 03.33276s -22:41:56.86916s
RUWE (>1.4 is poor) : 1.09
K magnitude           : 8.573
G magnitude           : 11.878
RP magnitude          : 10.923
BP magnitude          : 12.815
DUPflag              : 0
Distance (au)         : 4.353
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.05
Sun-Target sep (deg)  : 151.86
Sun-Moon sep (deg)    : 120.61
B (ring opening deg) : -2.57
PA of pole (deg)      : 3.56
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation (") : 15.988
C/A sky separation (km) : 50478.5
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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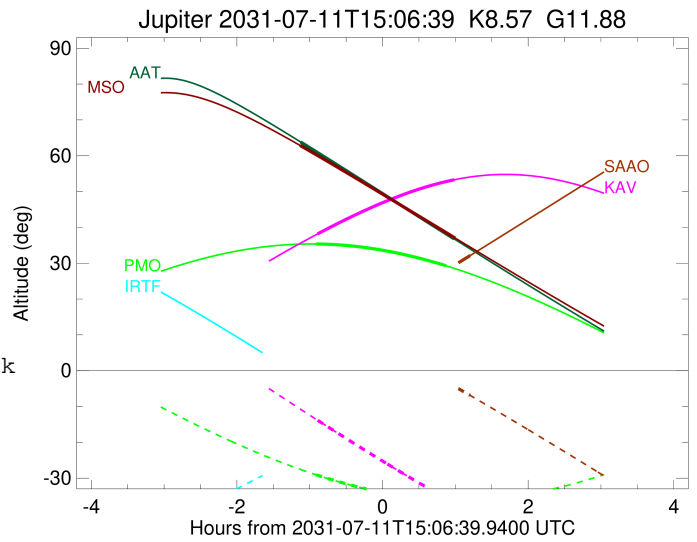
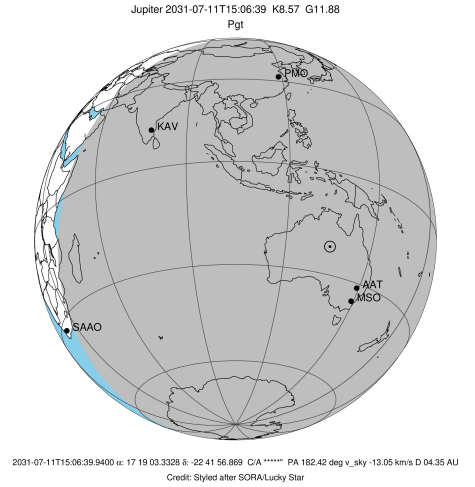


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-11T13:59:05.862	63.85	-80.69	71487.7	44.05	47.76
Jupiter	E	2031-07-11T16:05:45.926	36.77	-62.53	71487.4	45.53	49.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-07-11T15:12:36.840
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      : 4114691923628728832
2Mass ID (if available) : 17190332-2241568
ICRS Star Coord at Epoch: 17h 19m 03.33276s -22:41:56.86916s
RUWE (>1.4 is poor) : 1.09
K magnitude          : 8.573
G magnitude          : 11.878
RP magnitude         : 10.923
BP magnitude         : 12.815
DUPflag             : 0
Distance (au)       : 4.353
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.05
Sun-Target sep (deg) : 151.86
Sun-Moon sep (deg)  : 119.55
B (ring opening deg) : -2.57
PA of pole (deg)    : 3.56
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation ("): 15.456
C/A sky separation (km): 48799.6
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
    
```

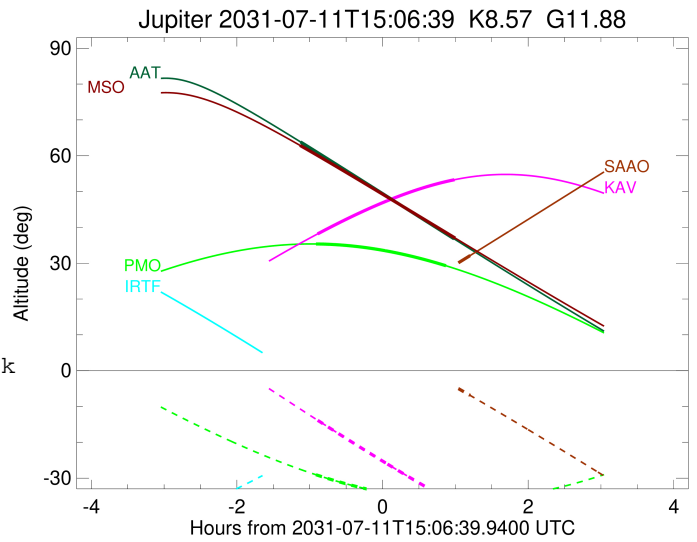
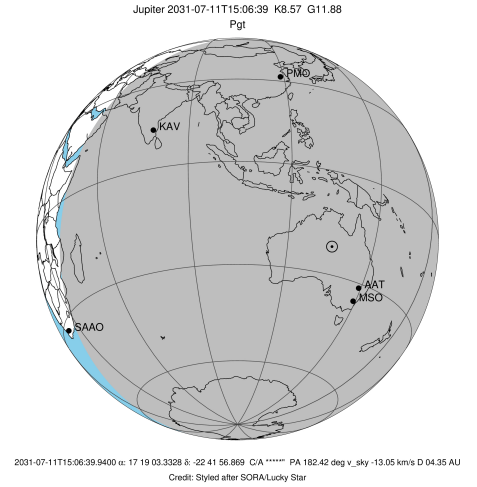


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-07-11T14:05:52.830	5.07	17.11x	71488.1	41.19	44.91
Jupiter	E	2031-07-11T16:18:50.909	32.12	-6.90	71487.5	44.79	48.49

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-07-11T15:02:24.640
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      : 4114691923628728832
2Mass ID (if available) : 17190332-2241568
ICRS Star Coord at Epoch: 17h 19m 03.33276s -22:41:56.86916s
RUWE (>1.4 is poor) : 1.09
K magnitude          : 8.573
G magnitude          : 11.878
RP magnitude         : 10.923
BP magnitude         : 12.815
DUPflag             : 0
Distance (au)       : 4.353
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.05
Sun-Target sep (deg) : 151.86
Sun-Moon sep (deg)  : 120.59
B (ring opening deg) : -2.57
PA of pole (deg)    : 3.56
Pole direction: RA (deg): 268.05690
Dec (deg): 64.49651
C/A sky separation ("): 15.855
C/A sky separation (km): 50058.1
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	2031-07-11T13:58:41.331	62.88	-76.72	71487.7	43.56	47.27
Jupiter	E	2031-07-11T16:06:30.831	37.02	-61.34	71487.5	45.08	48.78