

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-16T12:59:48.160  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116722785962298496  
 2Mass ID (if available) : 17381068-2303257

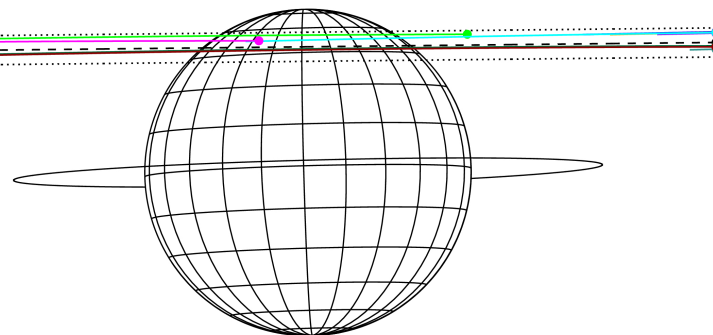
Jupiter 2043-07-16T12:59:48 K7.99 G12.37 Pgt

ICRS Star Coord at Epoch: 17h 38m 10.71154s -23°03:25.80591s  
 RUWE (>1.4 is poor) : 0.70  
 K magnitude : 7.992  
 G magnitude : 12.368  
 RP magnitude : 11.225  
 BP magnitude : 13.746  
 DUPflag : 0  
 Distance (au) : 4.341  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -12.94  
 Sun-Target sep (deg) : 151.66  
 Sun-Moon sep (deg) : 34.93  
 B (ring opening deg) : -2.40  
 PA of pole (deg) : 1.51  
 Pole direction: RA (deg): 268.05670  
 Dec (deg): 64.49732  
 C/A sky separation (") : 17.492  
 C/A sky separation (km) : 55065.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp



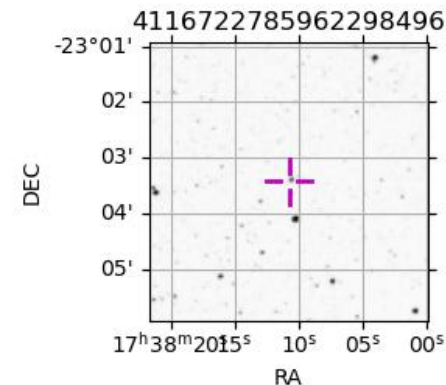
2043-07-16T12:59:48.1600 a: 17 38 10.71154 s -23 03 25.806 C/A \*\*\*\*\* PA 180.61 deg v\_sky -12.94 km/s D 04.34 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 KAV  
 ESO  
 AAT  
 SAAO  
 MSO



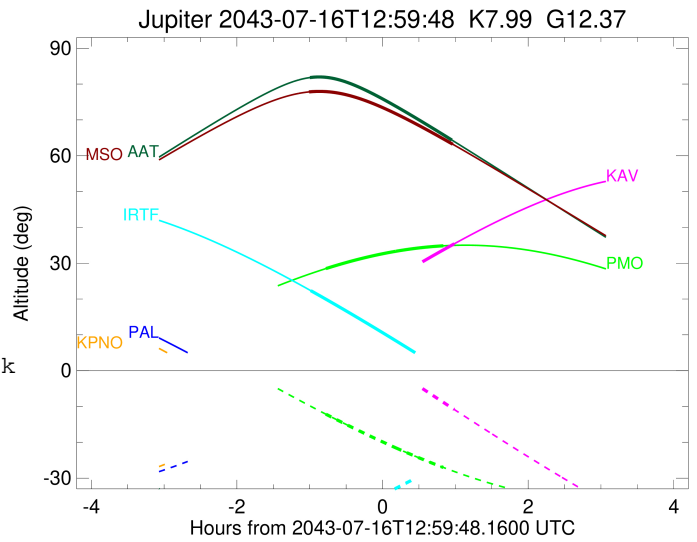
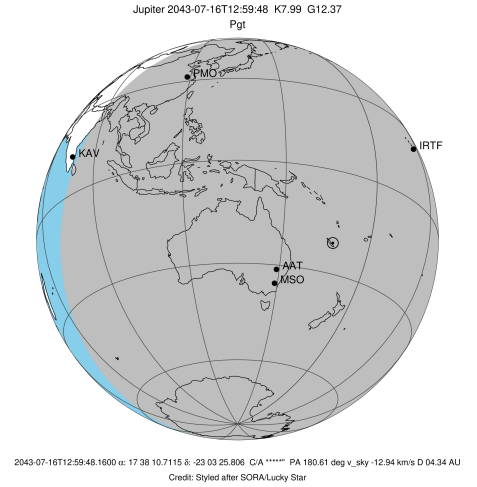
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JUL 16 12:13 - JUL 16 13:49	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	+	JUL 16 12:00 - JUL 16 12:00	Pin
KAV	Kavalur Observatory	12.6	78.8	+	JUL 16 13:58 - JUL 16 13:58	Pne
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 16 11:59 - JUL 16 13:56	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUL 16 11:59 - JUL 16 13:57	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-16T13:01:34.390
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      : 4116722785962298496
2Mass ID (if available) : 17381068-2303257
ICRS Star Coord at Epoch: 17h 38m 10.71154s -23:03:25.80591s
RUWE (>1.4 is poor) : 0.70
K magnitude          : 7.992
G magnitude          : 12.368
RP magnitude         : 11.225
BP magnitude         : 13.746
DUPflag             : 0
Distance (au)       : 4.341
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)  : 35.09
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 19.118
C/A sky separation (km) : 60185.4
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
    
```

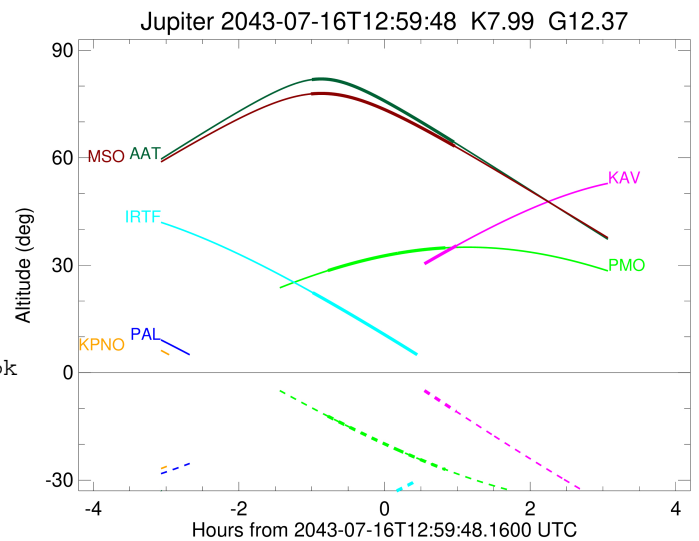
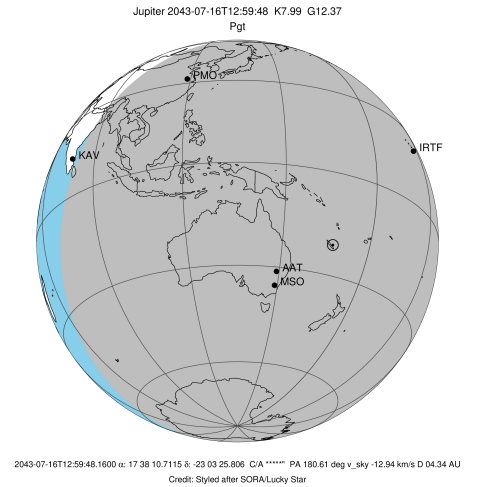


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T12:13:10.370	28.49	-12.15	71486.6	56.10	59.41
Jupiter	E	2043-07-16T13:49:55.066	34.85	-27.01	71486.3	58.30	61.47

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-16T12:53:35.950
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       : 4116722785962298496
2Mass ID (if available) : 17381068-2303257
ICRS Star Coord at Epoch: 17h 38m 10.71154s -23:03:25.80591s
RUWE (>1.4 is poor) : 0.70
K magnitude           : 7.992
G magnitude           : 12.368
RP magnitude          : 11.225
BP magnitude          : 13.746
DUPflag              : 0
Distance (au)        : 4.341
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)   : 35.70
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 18.424
C/A sky separation (km): 58001.8
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
    
```

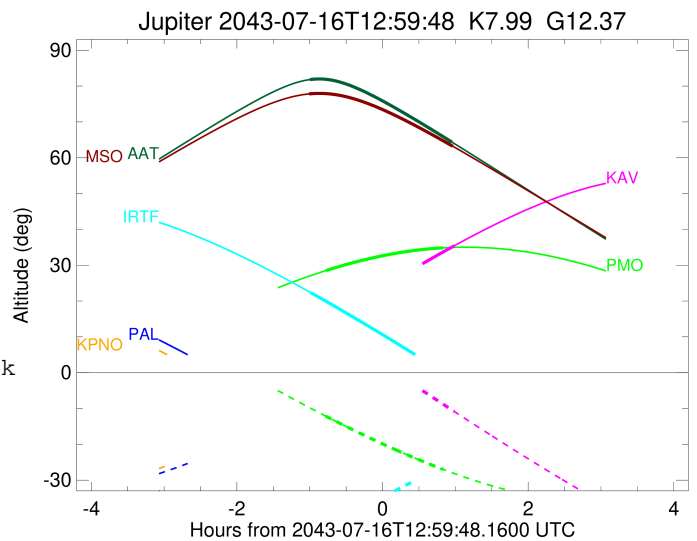
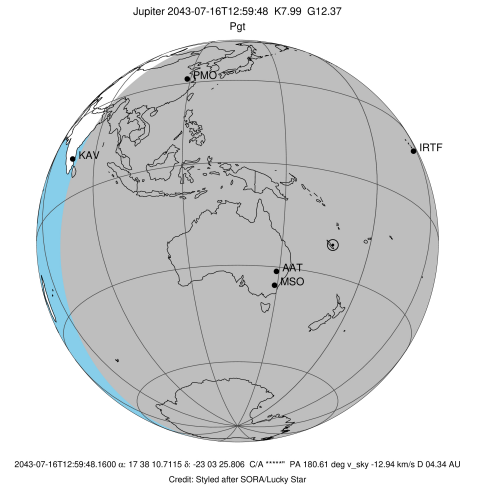


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T12:00:38.178	22.34	-43.13	71486.9	53.90	57.32
Jupiter	E	2043-07-16T13:46:57.556	0.71x	-26.37	71486.8	54.34	57.75

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-16T13:05:36.610
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       : 4116722785962298496
2Mass ID (if available) : 17381068-2303257
ICRS Star Coord at Epoch: 17h 38m 10.71154s -23:03:25.80591s
RUWE (>1.4 is poor) : 0.70
K magnitude          : 7.992
G magnitude          : 12.368
RP magnitude         : 11.225
BP magnitude         : 13.746
DUPflag             : 0
Distance (au)        : 4.341
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)   : 34.56
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 18.323
C/A sky separation (km): 57683.8
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
    
```

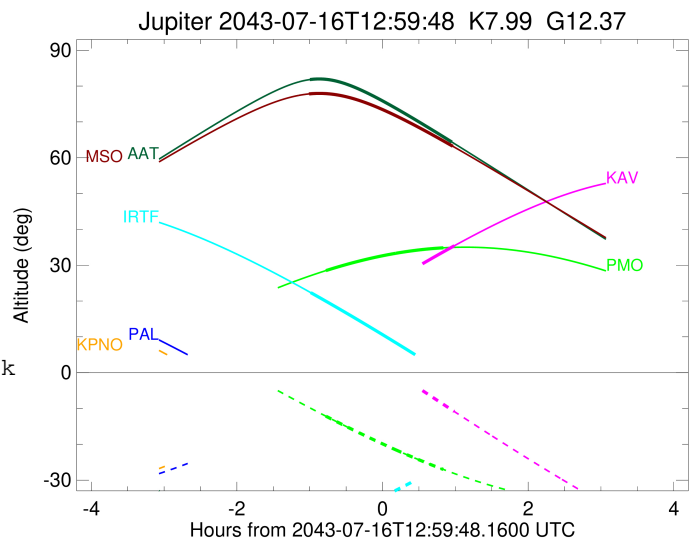
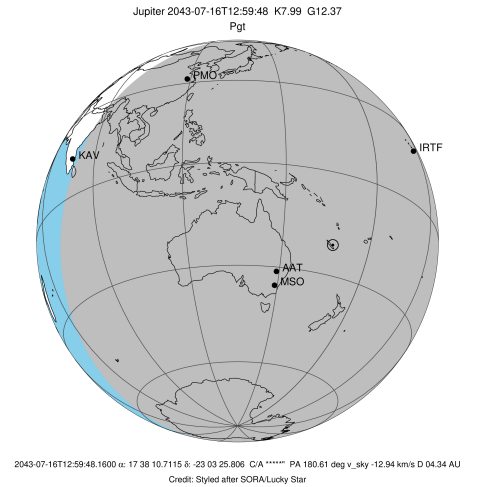


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T12:12:02.997	13.62	13.38x	71487.1	52.14	55.64
Jupiter	E	2043-07-16T13:58:51.936	35.40	-10.82	71486.7	55.21	58.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-16T12:58:24.730
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        : 4116722785962298496
2Mass ID (if available) : 17381068-2303257
ICRS Star Coord at Epoch: 17h 38m 10.71154s -23:03:25.80591s
RUWE (>1.4 is poor) : 0.70
K magnitude           : 7.992
G magnitude           : 12.368
RP magnitude          : 11.225
BP magnitude          : 13.746
DUPflag              : 0
Distance (au)         : 4.341
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg)  : 151.66
Sun-Moon sep (deg)    : 35.57
B (ring opening deg) : -2.40
PA of pole (deg)      : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 17.195
C/A sky separation (km) : 54130.5
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
    
```

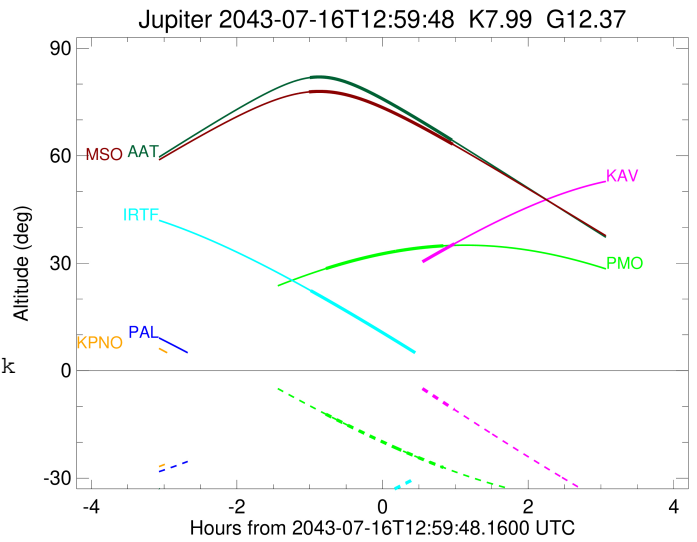
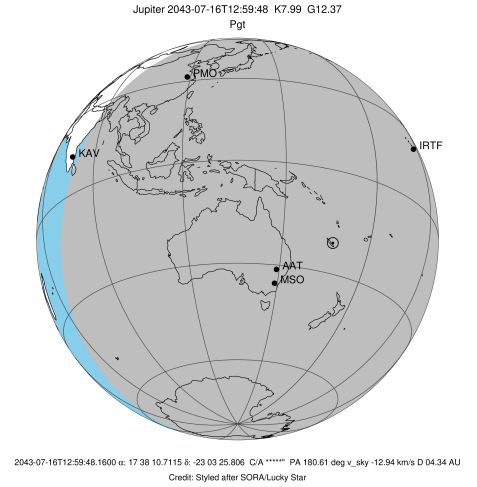


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-16T11:59:58.556	81.80	-59.41	71487.6	48.31	51.95
Jupiter	E	2043-07-16T13:56:58.987	64.37	-79.79	71487.4	49.84	53.43

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-16T12:58:28.460
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      : 4116722785962298496
2Mass ID (if available) : 17381068-2303257
ICRS Star Coord at Epoch: 17h 38m 10.71154s -23:03:25.80591s
RUWE (>1.4 is poor) : 0.70
K magnitude          : 7.992
G magnitude          : 12.368
RP magnitude         : 11.225
BP magnitude         : 13.746
DUPflag             : 0
Distance (au)       : 4.341
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.94
Sun-Target sep (deg) : 151.66
Sun-Moon sep (deg)  : 35.55
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.51
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 17.055
C/A sky separation (km) : 53691.6
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	2043-07-16T11:59:20.028	77.81	-58.27	71487.7	47.77	51.42
Jupiter	E	2043-07-16T13:57:44.913	63.19	-75.91	71487.5	49.32	52.92