

target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2049-10-13T07:56:09.100  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 675621548484222464  
 2Mass ID (if available) : 08144390+2004046

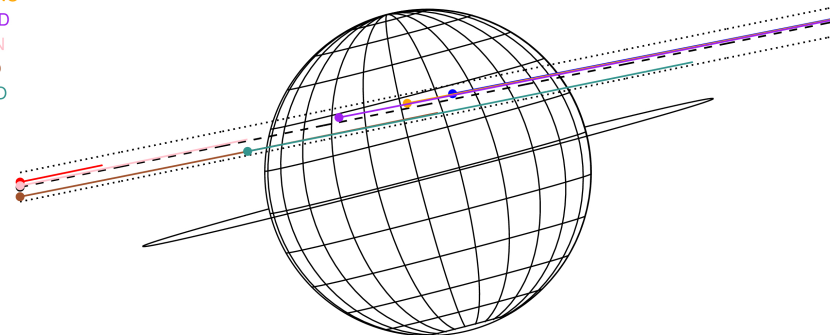
Jupiter 2049-10-13T07:56:09 K7.60 G9.82 Pgt

ICRS Star Coord at Epoch: 08h 14m 43.87406s +20°04:04.03719s  
 RUWE (>1.4 is poor) : 1.02  
 K magnitude : 7.599  
 G magnitude : 9.816  
 RP magnitude : 9.119  
 BP magnitude : 10.364  
 DUPflag : 0  
 Distance (au) : 5.322  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 18.23  
 Sun-Target sep (deg) : 78.34  
 Sun-Moon sep (deg) : 73.59  
 B (ring opening deg) : 1.09  
 PA of pole (deg) : 14.53  
 Pole direction: RA (deg): 268.05751  
 Dec (deg): 64.49716  
 C/A sky separation (") : 7.594  
 C/A sky separation (km) : 29313.5  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp



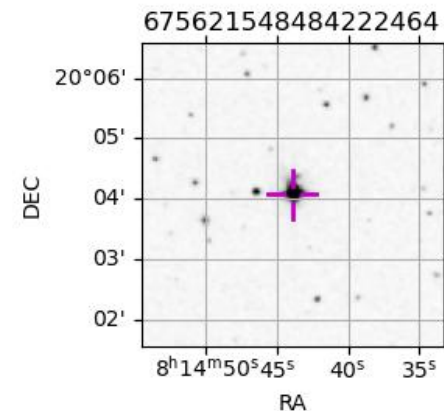
2049-10-13T07:56:09.1000 cc: 08 14 43.8741 s: +20 04 04.037 C/A 7.601" PA 191.49 deg v\_sky +18.23 km/s D 05.32 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 RIO  
 ESO



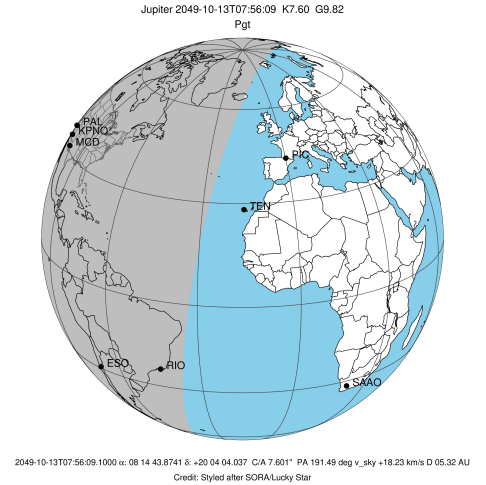
Observable events with sun below -5 deg and altitude above 5 deg

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	+	OCT 13 08:49 - OCT 13 08:49	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	OCT 13 08:49 - OCT 13 08:49	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	OCT 13 08:50 - OCT 13 08:50	Pne
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			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	OCT 13 06:52 - OCT 13 06:52	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	OCT 13 06:50 - OCT 13 08:55	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

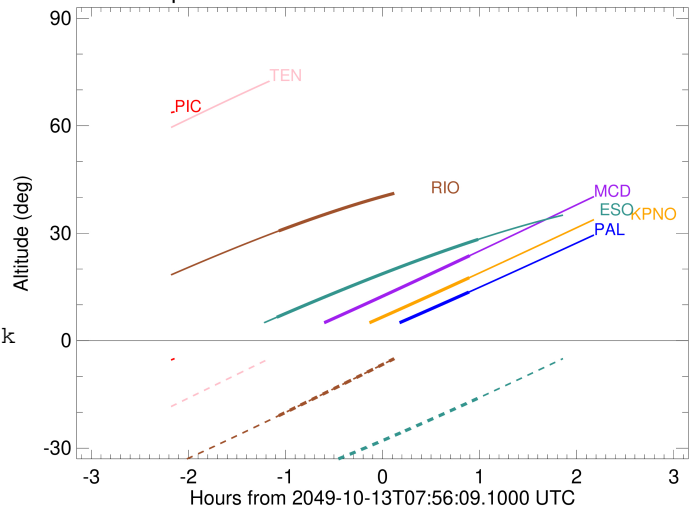


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2049-10-13T07:51:01.180
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 675621548484222464
2Mass ID (if available) : 08144390+2004046
ICRS Star Coord at Epoch: 08h 14m 43.87406s +20:04:04.03719s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.599
G magnitude           : 9.816
RP magnitude          : 9.119
BP magnitude          : 10.364
DUPflag              : 0
Distance (au)         : 5.322
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 18.23
Sun-Target sep (deg)  : 78.34
Sun-Moon sep (deg)    : 73.38
B (ring opening deg) : 1.09
PA of pole (deg)      : 14.53
Pole direction: RA (deg): 268.05751
Dec (deg): 64.49716
C/A sky separation (") : 8.240
C/A sky separation (km) : 31805.2
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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Jupiter 2049-10-13T07:56:09 K7.60 G9.82

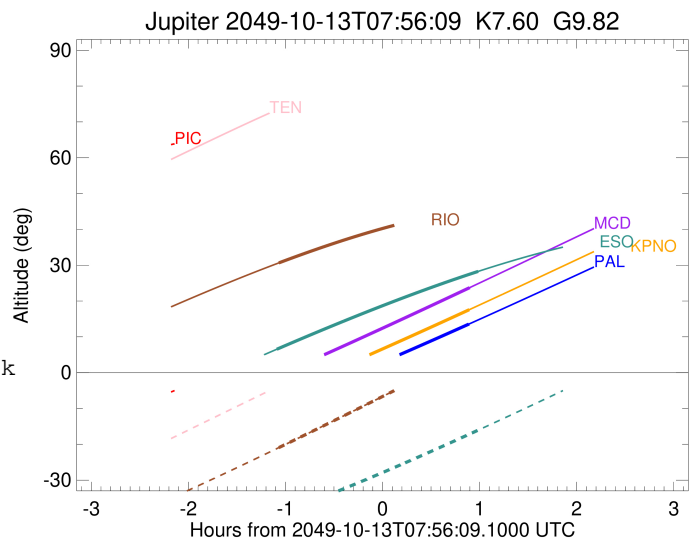
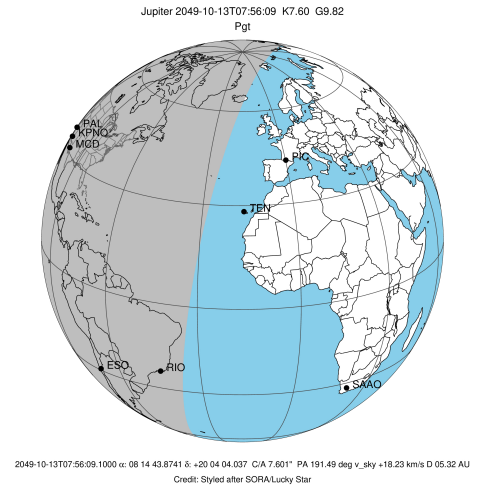


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-10-13T06:52:50.529	-8.94x	-63.09	71491.6	29.91	33.27
Jupiter	E	2049-10-13T08:49:33.830	13.56	-59.28	71491.8	22.95	25.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2049-10-13T07:50:55.560
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 675621548484222464
2Mass ID (if available) : 08144390+2004046
ICRS Star Coord at Epoch: 08h 14m 43.87406s +20:04:04.03719s
RUWE (>1.4 is poor) : 1.02
K magnitude         : 7.599
G magnitude         : 9.816
RP magnitude        : 9.119
BP magnitude        : 10.364
DUPflag            : 0
Distance (au)       : 5.322
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 18.23
Sun-Target sep (deg) : 78.34
Sun-Moon sep (deg)  : 73.44
B (ring opening deg) : 1.09
PA of pole (deg)    : 14.53
Pole direction: RA (deg): 268.05751
Dec (deg): 64.49716
C/A sky separation (") : 8.160
C/A sky separation (km) : 31496.0
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
    
```

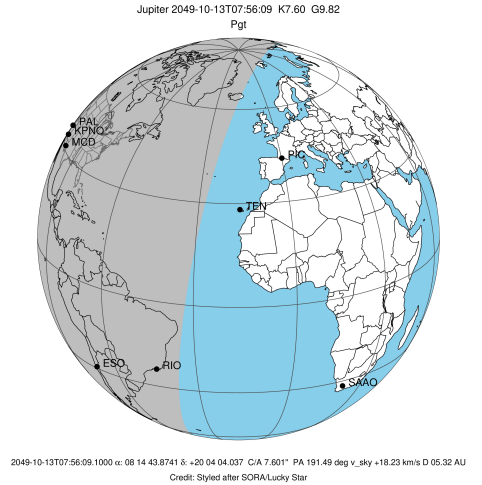


x: target alt < 5.0 deg or sun > -5.0 deg

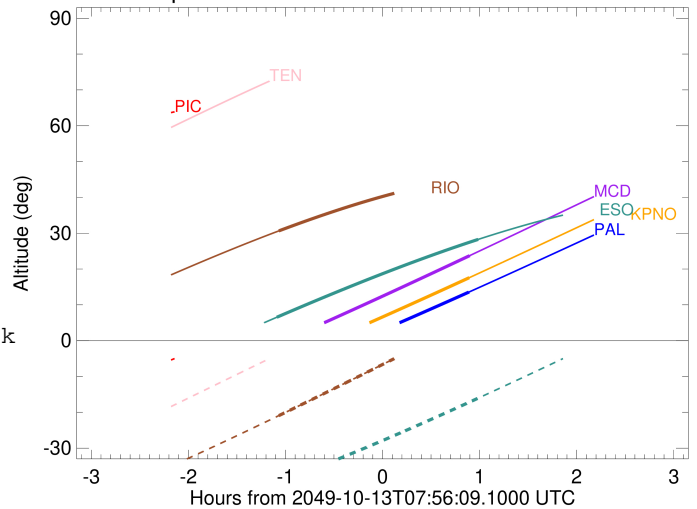
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-10-13T06:52:30.473	-5.81x	-65.73	71491.6	29.63	32.98
Jupiter	E	2049-10-13T08:49:43.321	17.57	-57.17	71491.8	22.69	25.52

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2049-10-13T07:50:53.250
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : MCD
Location             : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 675621548484222464
2Mass ID (if available) : 08144390+2004046
ICRS Star Coord at Epoch: 08h 14m 43.87406s +20:04:04.03719s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 7.599
G magnitude          : 9.816
RP magnitude         : 9.119
BP magnitude         : 10.364
DUPflag             : 0
Distance (au)        : 5.322
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 18.23
Sun-Target sep (deg) : 78.34
Sun-Moon sep (deg)  : 73.53
B (ring opening deg) : 1.09
PA of pole (deg)    : 14.53
Pole direction: RA (deg): 268.05751
Dec (deg): 64.49716
C/A sky separation (") : 8.063
C/A sky separation (km) : 31123.6
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
    
```



Jupiter 2049-10-13T07:56:09 K7.60 G9.82

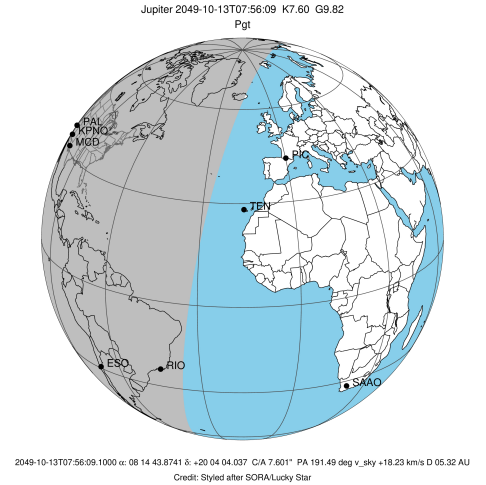


x: target alt < 5.0 deg or sun > -5.0 deg

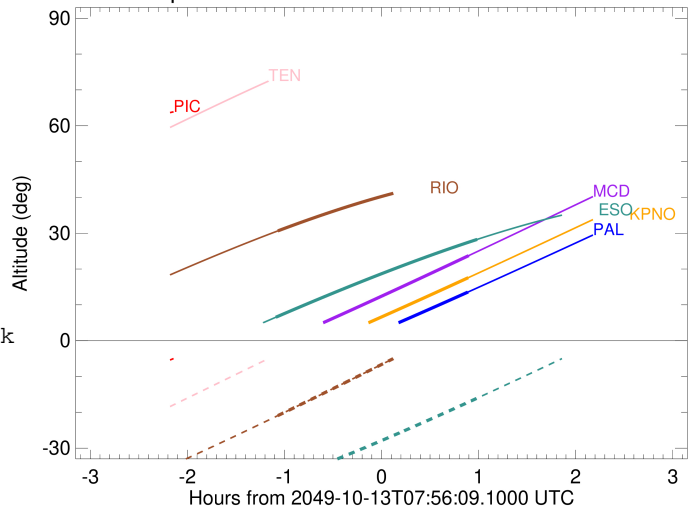
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-10-13T06:52:08.791	-0.60x	-67.34	71491.6	29.28	32.61
Jupiter	E	2049-10-13T08:50:00.904	23.73	-52.60	71491.8	22.39	25.20

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2049-10-13T07:54:32.320
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        : 675621548484222464
2Mass ID (if available) : 08144390+2004046
ICRS Star Coord at Epoch: 08h 14m 43.87406s +20:04:04.03719s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.599
G magnitude           : 9.816
RP magnitude          : 9.119
BP magnitude          : 10.364
DUPflag              : 0
Distance (au)         : 5.322
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 18.23
Sun-Target sep (deg) : 78.34
Sun-Moon sep (deg)   : 74.12
B (ring opening deg) : 1.09
PA of pole (deg)     : 14.53
Pole direction: RA (deg): 268.05751
Dec (deg): 64.49716
C/A sky separation (") : 6.413
C/A sky separation (km) : 24755.1
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
    
```



Jupiter 2049-10-13T07:56:09 K7.60 G9.82

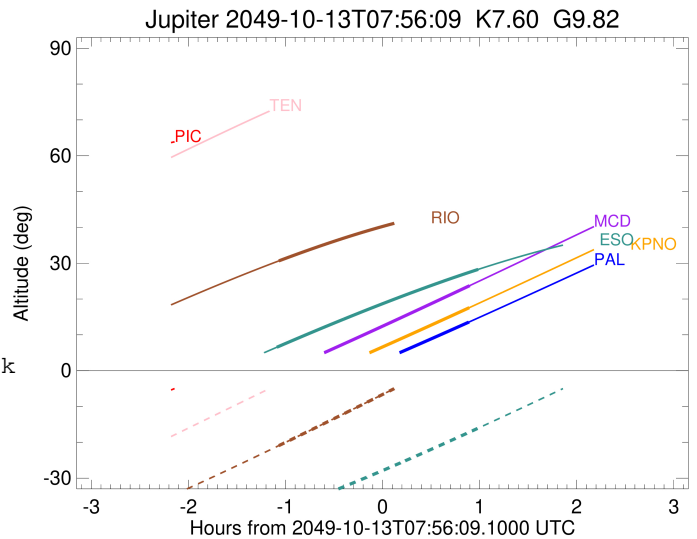
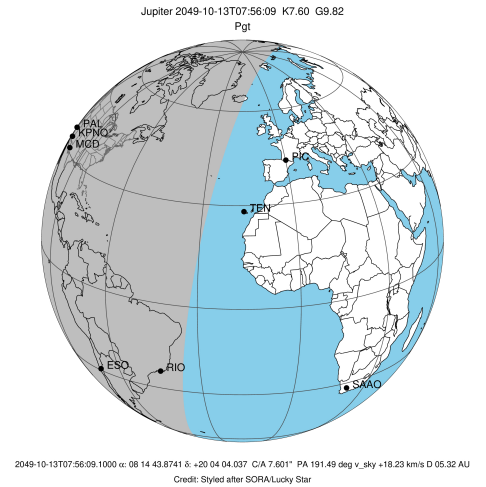


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-10-13T06:52:03.581	30.64	-20.92	71491.7	23.32	26.21
Jupiter	E	2049-10-13T08:57:14.858	46.02	7.28x	71491.9	17.34	19.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2049-10-13T07:52:54.840
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : ESO
Location             : European Southern Obs. (3.6m)
Latitude (deg)       : -29.26097
E. Longitude (deg)   : 289.26831
Altitude (km)        : 2.400
Gaia source ID       : 675621548484222464
2Mass ID (if available) : 08144390+2004046
ICRS Star Coord at Epoch: 08h 14m 43.87406s +20:04:04.03719s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 7.599
G magnitude          : 9.816
RP magnitude         : 9.119
BP magnitude         : 10.364
DUPflag             : 0
Distance (au)        : 5.322
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 18.23
Sun-Target sep (deg) : 78.34
Sun-Moon sep (deg)  : 73.74
B (ring opening deg) : 1.09
PA of pole (deg)    : 14.53
Pole direction: RA (deg): 268.05751
Dec (deg): 64.49716
C/A sky separation (") : 6.337
C/A sky separation (km) : 24459.2
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
    
```



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	2049-10-13T06:50:51.621	6.54	-39.60	71491.7	23.30	26.18
Jupiter	E	2049-10-13T08:55:19.682	28.27	-16.03	71491.9	16.83	19.07