

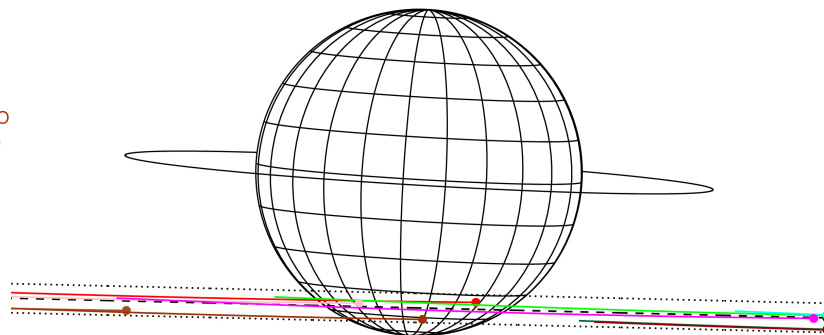
target : Jupiter  
target radius (km) : 71492.00  
C/A epoch : 2049-01-23T18:06:33.040  
Event type : Pgt  
: Jupiter occs: geocentric, topocentric  
: Not a ringed target  
Gaia source ID : 3414821883078432896  
2Mass ID (if available) : 05210126+2248367

Jupiter 2049-01-23T18:06:33 K8.85 G13.78 Pgt

ICRS Star Coord at Epoch: 05h 21m 01.26972s +22:48:36.72382s  
RUWE (>1.4 is poor) : 1.00  
K magnitude : 8.845  
G magnitude : 13.775  
RP magnitude : 12.539  
BP magnitude : 15.491  
DUPflag : 0  
Distance (au) : 4.349  
f0 (km) : 0.00  
g0 (km) : 0.00  
skyplane vel. (km/s) : -9.22  
Sun-Target sep (deg) : 137.54  
Sun-Moon sep (deg) : 94.61  
B (ring opening deg) : 2.48  
PA of pole (deg) : -3.35  
Pole direction: RA (deg): 268.05739  
Dec (deg): 64.49721  
C/A sky separation (") : 18.807  
C/A sky separation (km) : 59323.5  
NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



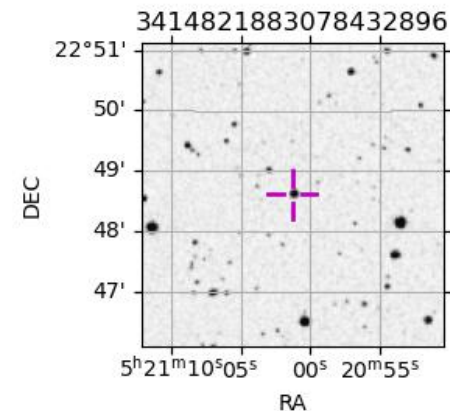
Earth  
PIC  
PMO  
TEN  
IRTF  
KAV  
RIO  
AAT  
SAAO  
MSO



2049-01-23T18:06:33.0400 a: 05 21 01.2697 s: +22 48 36.724 C/A \*\*\*\*\* PA 358.62 deg v\_sky - 9.22 km/s D 04.35 AU  
Credit: Styled after SORA/Lucky Star

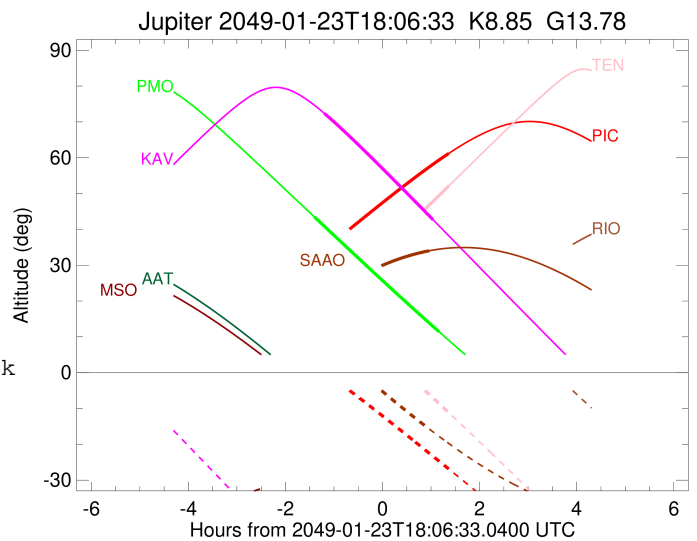
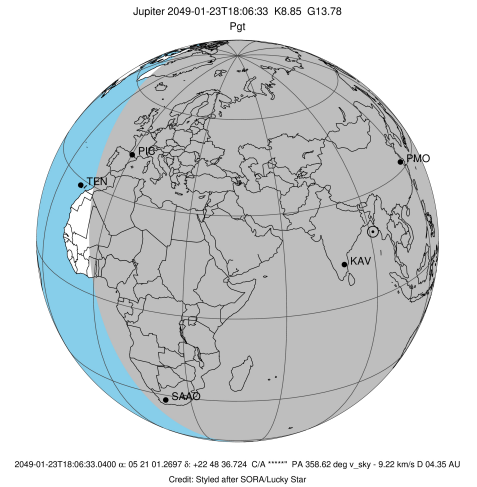
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JAN 23 19:28 - JAN 23 19:28	Pne
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JAN 23 16:42 - JAN 23 19:16	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	+	JAN 23 19:28 - JAN 23 19:28	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JAN 23 16:54 - JAN 23 19:09	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	+	JAN 23 19:04 - JAN 23 19:04	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2049-01-23T18:11:19.740
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      : 3414821883078432896
2Mass ID (if available) : 05210126+2248367
ICRS Star Coord at Epoch: 05h 21m 01.26972s +22:48:36.72382s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.845
G magnitude          : 13.775
RP magnitude         : 12.539
BP magnitude         : 15.491
DUPflag             : 0
Distance (au)       : 4.349
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.22
Sun-Target sep (deg) : 137.54
Sun-Moon sep (deg)  : 95.24
B (ring opening deg) : 2.48
PA of pole (deg)    : -3.35
Pole direction: RA (deg): 268.05739
Dec (deg): 64.49721
C/A sky separation ("): 17.936
C/A sky separation (km): 56576.8
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
    
```

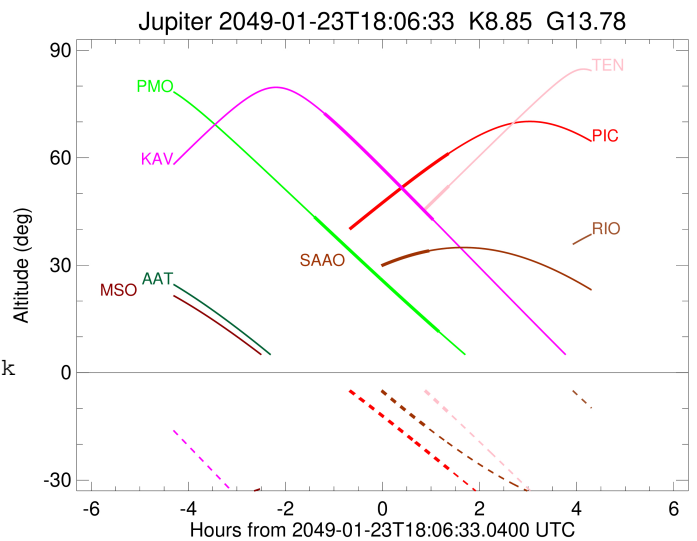
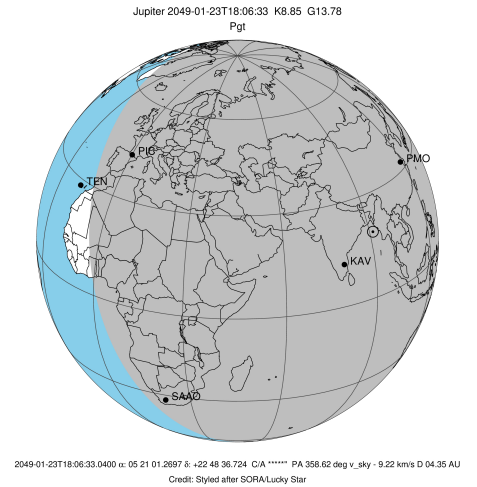


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-01-23T16:53:55.966	34.17	0.34x	71487.1	-49.61	-53.21
Jupiter	E	2049-01-23T19:28:15.551	61.17	-26.86	71486.4	-54.71	-58.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2049-01-23T17:58:47.480
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      : 3414821883078432896
2Mass ID (if available) : 05210126+2248367
ICRS Star Coord at Epoch: 05h 21m 01.26972s +22:48:36.72382s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.845
G magnitude          : 13.775
RP magnitude         : 12.539
BP magnitude         : 15.491
DUPflag             : 0
Distance (au)       : 4.349
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.22
Sun-Target sep (deg) : 137.54
Sun-Moon sep (deg)  : 95.08
B (ring opening deg) : 2.48
PA of pole (deg)    : -3.35
Pole direction: RA (deg): 268.05739
Dec (deg): 64.49721
C/A sky separation (" ) : 18.073
C/A sky separation (km) : 57006.9
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
    
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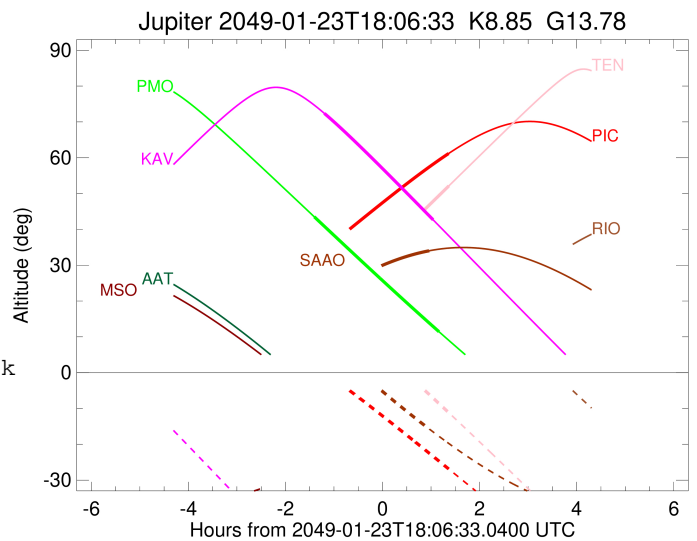
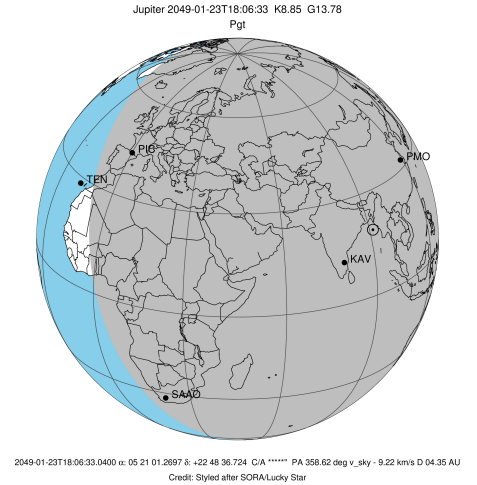


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-01-23T16:42:22.010	43.47	-76.06	71486.8	-51.64	-55.17
Jupiter	E	2049-01-23T19:16:20.215	11.44	-47.84	71486.5	-53.87	-57.30

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2049-01-23T18:13:45.820
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        : 3414821883078432896
2Mass ID (if available) : 05210126+2248367
ICRS Star Coord at Epoch: 05h 21m 01.26972s +22:48:36.72382s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 8.845
G magnitude           : 13.775
RP magnitude          : 12.539
BP magnitude          : 15.491
DUPflag              : 0
Distance (au)         : 4.349
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.22
Sun-Target sep (deg) : 137.54
Sun-Moon sep (deg)   : 95.06
B (ring opening deg) : 2.48
PA of pole (deg)     : -3.35
Pole direction: RA (deg): 268.05739
Dec (deg): 64.49721
C/A sky separation (" ) : 18.242
C/A sky separation (km) : 57542.9
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
    
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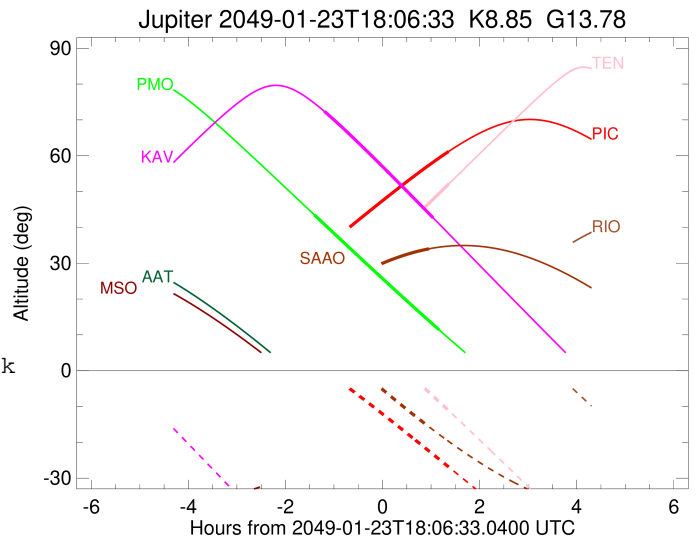
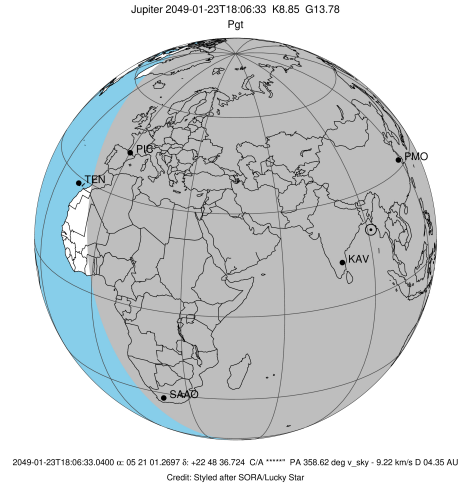


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-01-23T16:58:11.169	19.38	18.73x	71487.0	-50.64	-54.20
Jupiter	E	2049-01-23T19:28:36.429	52.14	-11.20	71486.2	-56.28	-59.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2049-01-23T18:01:37.240
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      : 3414821883078432896
2Mass ID (if available) : 05210126+2248367
ICRS Star Coord at Epoch: 05h 21m 01.26972s +22:48:36.72382s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 8.845
G magnitude          : 13.775
RP magnitude         : 12.539
BP magnitude         : 15.491
DUPflag             : 0
Distance (au)       : 4.349
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.22
Sun-Target sep (deg) : 137.54
Sun-Moon sep (deg)  : 95.43
B (ring opening deg) : 2.48
PA of pole (deg)    : -3.35
Pole direction: RA (deg): 268.05739
Dec (deg): 64.49721
C/A sky separation ("): 19.076
C/A sky separation (km): 60172.2
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
    
```

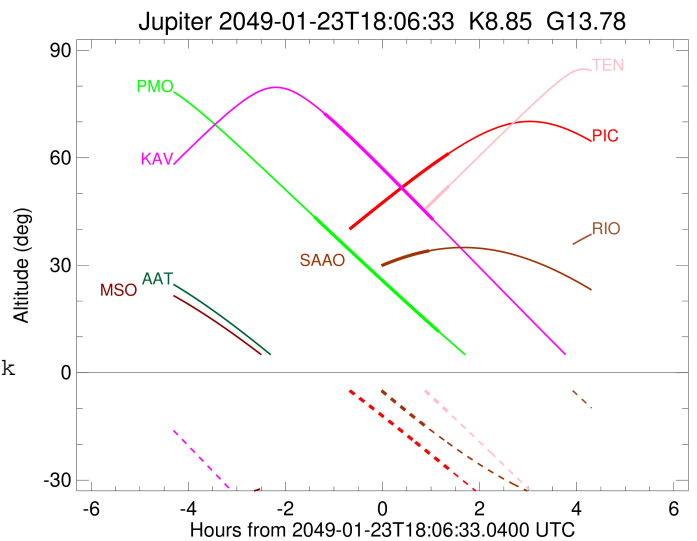
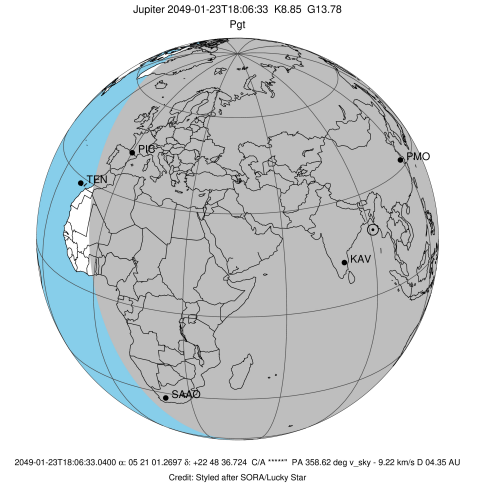


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2049-01-23T16:54:41.364	72.37	-60.00	71486.3	-55.64	-58.97
Jupiter	E	2049-01-23T19:09:07.534	42.67	-82.64	71485.9	-58.57	-61.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2049-01-23T18:09:52.300
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       : 3414821883078432896
2Mass ID (if available) : 05210126+2248367
ICRS Star Coord at Epoch: 05h 21m 01.26972s +22:48:36.72382s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 8.845
G magnitude           : 13.775
RP magnitude          : 12.539
BP magnitude          : 15.491
DUPflag              : 0
Distance (au)        : 4.349
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.22
Sun-Target sep (deg) : 137.54
Sun-Moon sep (deg)   : 95.04
B (ring opening deg) : 2.48
PA of pole (deg)     : -3.35
Pole direction: RA (deg): 268.05739
Dec (deg): 64.49721
C/A sky separation ("): 20.392
C/A sky separation (km): 64323.8
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	2049-01-23T17:15:20.041	24.12	4.72x	71485.5	-61.55	-64.50
Jupiter	E	2049-01-23T19:04:16.688	34.02	-15.71	71485.0	-66.30	-68.87