

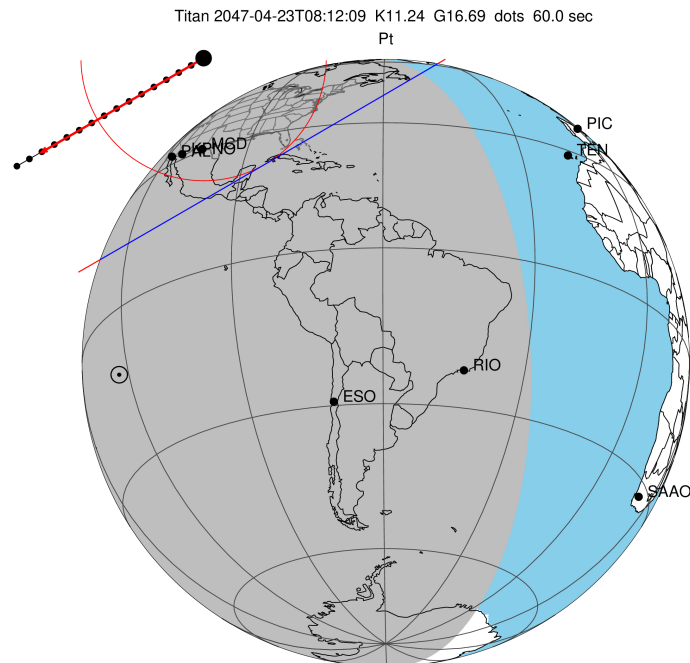
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-04-23T08:12:09.730
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4090526749759251968
 2Mass ID (if available) : 18165517-2217243

ICRS Star Coord at Epoch: 18h 16m 55.14377s -22:17:25.43640s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 11.241
 G magnitude : 16.693
 RP magnitude : 0.000
 BP magnitude : 0.000
 DUPflag : 0
 Distance (au) : 9.526
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -5.02
 Sun-Target sep (deg) : 118.54
 Sun-Moon sep (deg) : 98.24
 B (ring opening deg) : 25.97
 PA of pole (deg) : 5.97
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 1.072
 C/A sky separation (km) : 7405.5
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

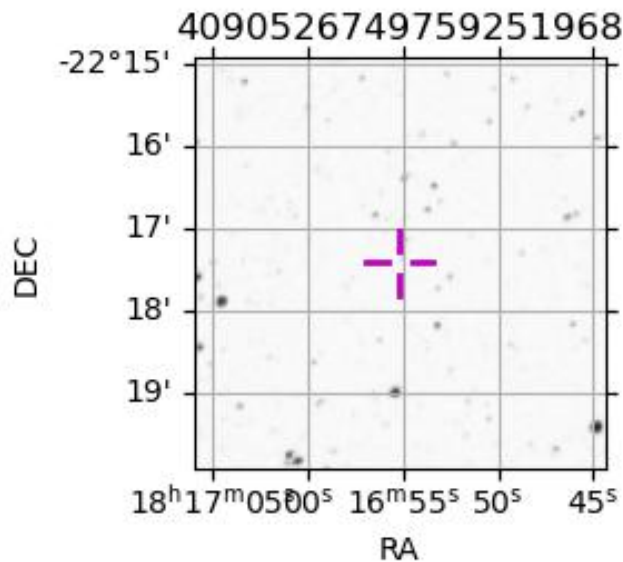
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	APR 23 08:10 - APR 23 08:24	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	APR 23 08:10 - APR 23 08:23	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	APR 23 08:09 - APR 23 08:21	Pie
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			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			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



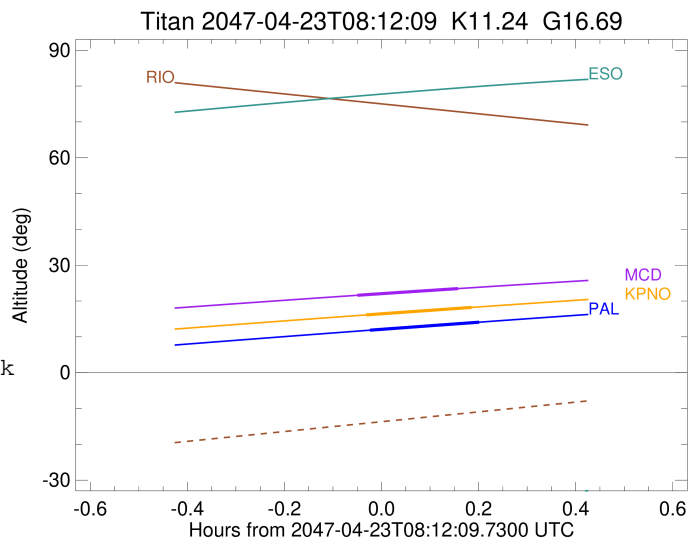
2047-04-23T08:12:09.7300 α: 18 16 55.1438 δ: -22 17 25.436 C/A 1.079" PA 329.84 deg v_sky - 5.02 km/s D 09.53 AU

Credit: Styled after SORA/Lucky Star



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-04-23T08:17:29.820
Event type            : Pt
: Titan occs: topocentric, not geocentric
: 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        : 4090526749759251968
2Mass ID (if available) : 18165517-2217243
ICRS Star Coord at Epoch: 18h 16m 55.14377s -22:17:25.43640s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 11.241
G magnitude           : 16.693
RP magnitude          : 0.000
BP magnitude          : 0.000
DUPflag              : 0
Distance (au)         : 9.526
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -5.02
Sun-Target sep (deg)  : 118.54
Sun-Moon sep (deg)    : 98.35
B (ring opening deg) : 25.97
PA of pole (deg)     : 5.97
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.204
C/A sky separation (km) : 1408.4
NAIF SPICE kernels   : RAJobs_U111+rgf16.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
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
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

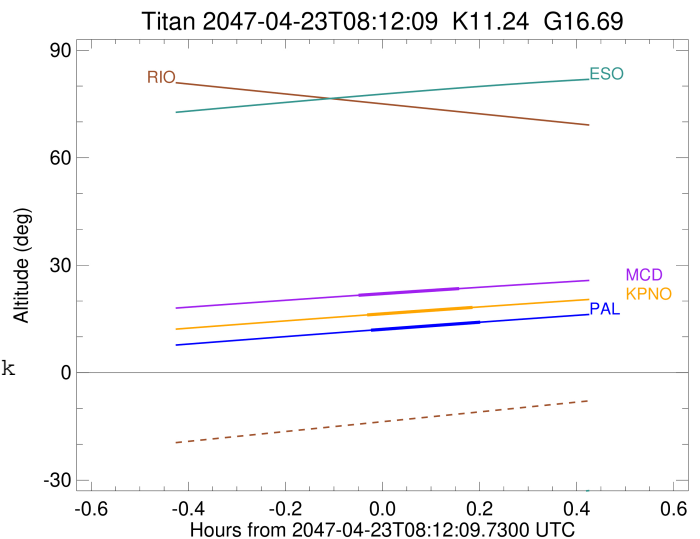
```

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-04-23T08:10:41.007	11.85	-43.88	2575.1	-57.21	-57.22
Titan	E	2047-04-23T08:24:17.261	14.10	-43.35	2575.2	2.50	2.50

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-04-23T08:16:47.160
Event type           : Pt
: Titan occs: topocentric, not geocentric
: 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       : 4090526749759251968
2Mass ID (if available) : 18165517-2217243
ICRS Star Coord at Epoch: 18h 16m 55.14377s -22:17:25.43640s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 11.241
G magnitude          : 16.693
RP magnitude         : 0.000
BP magnitude         : 0.000
DUPflag             : 0
Distance (au)        : 9.526
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.02
Sun-Target sep (deg) : 118.54
Sun-Moon sep (deg)  : 98.42
B (ring opening deg) : 25.97
PA of pole (deg)    : 5.97
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.214
C/A sky separation (km) : 1479.6
NAIF SPICE kernels  : RAJobs_U111+rgf16.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
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk

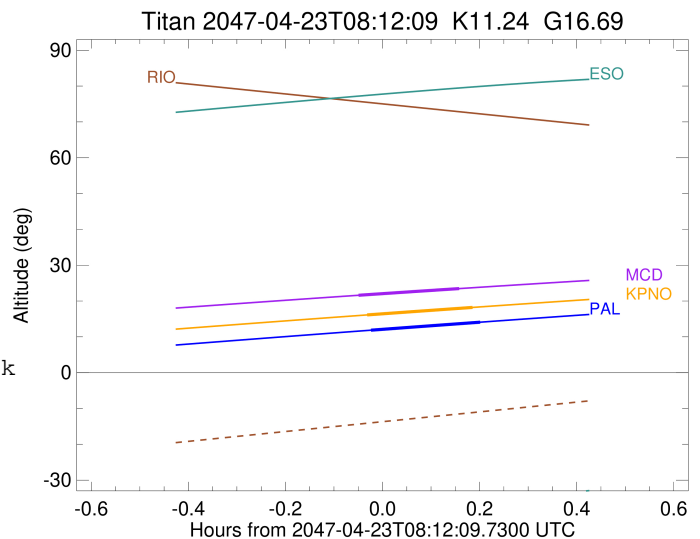
```



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

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-04-23T08:10:09.305	16.10	-44.34	2575.0	-58.18	-58.19
Titan	E	2047-04-23T08:23:23.765	18.22	-43.48	2575.2	0.58	0.58

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-04-23T08:15:24.890
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : 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 : 4090526749759251968
 2Mass ID (if available) : 18165517-2217243
 ICRS Star Coord at Epoch: 18h 16m 55.14377s -22:17:25.43640s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 11.241
 G magnitude : 16.693
 RP magnitude : 0.000
 BP magnitude : 0.000
 DUPflag : 0
 Distance (au) : 9.526
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -5.02
 Sun-Target sep (deg) : 118.54
 Sun-Moon sep (deg) : 98.51
 B (ring opening deg) : 25.97
 PA of pole (deg) : 5.97
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.232
 C/A sky separation (km) : 1603.5
 NAIF SPICE kernels : RAJobs_U111+rgf16.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
 IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
 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
Titan	I	2047-04-23T08:09:06.541	21.59	-43.35	2575.0	-59.82	-59.83
Titan	E	2047-04-23T08:21:42.168	23.47	-42.09	2575.2	-2.79	-2.79