

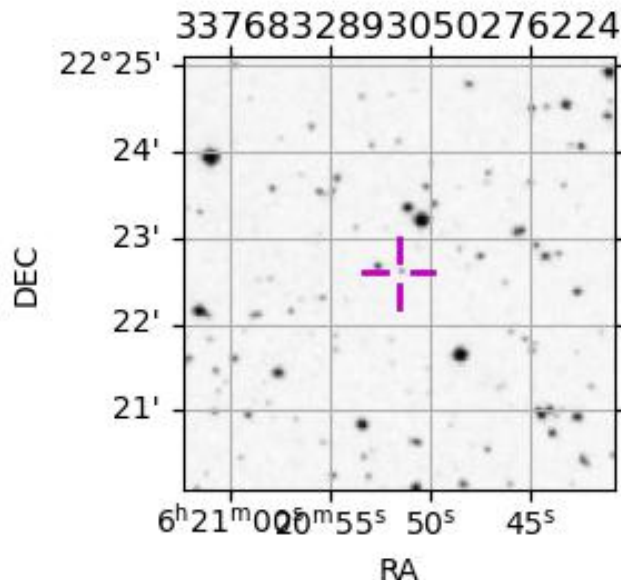
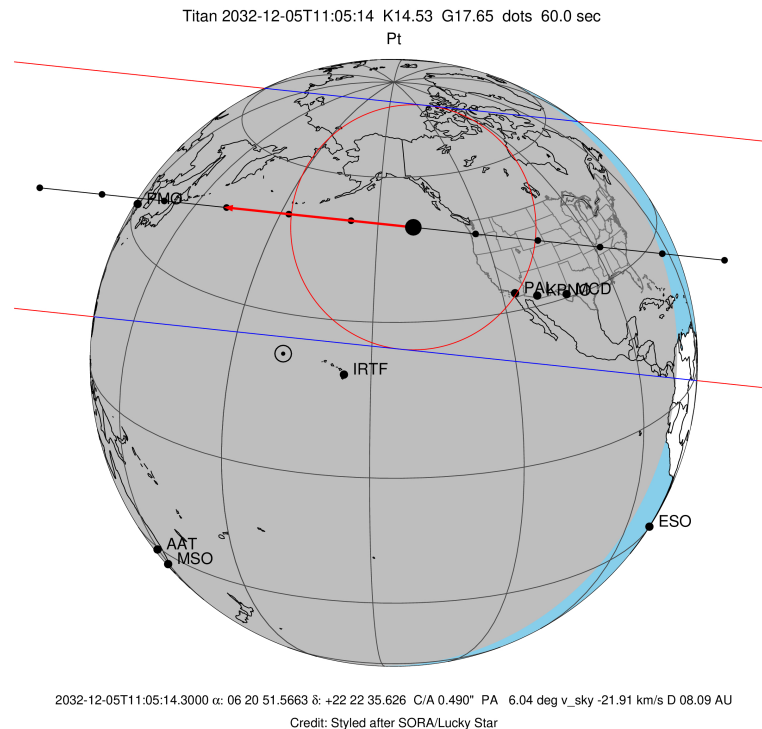
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2032-12-05T11:05:14.300
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 3376832893050276224
 2Mass ID (if available) : 06205156+2222357

ICRS Star Coord at Epoch: 06h 20m 51.56626s +22:22:35.62646s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.532
 G magnitude : 17.646
 RP magnitude : 16.729
 BP magnitude : 18.519
 DUPflag : 0
 Distance (au) : 8.085
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -21.90
 Sun-Target sep (deg) : 158.57
 Sun-Moon sep (deg) : 167.71
 B (ring opening deg) : -25.96
 PA of pole (deg) : -6.04
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.488
 C/A sky separation (km) : 2860.2
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

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

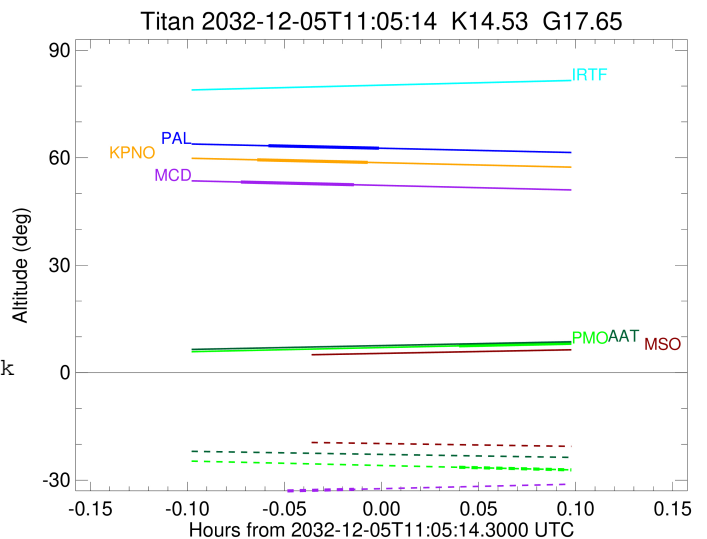
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	DEC 05 11:01 - DEC 05 11:05	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	DEC 05 11:07 - DEC 05 11:11	Pie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	DEC 05 11:01 - DEC 05 11:04	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	DEC 05 11:00 - DEC 05 11:04	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



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2032-12-05T11:03:27.670
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       : 3376832893050276224
2Mass ID (if available) : 06205156+2222357
ICRS Star Coord at Epoch: 06h 20m 51.56626s +22:22:35.62646s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 14.532
G magnitude           : 17.646
RP magnitude         : 16.729
BP magnitude         : 18.519
DUPflag              : 0
Distance (au)        : 8.086
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -21.90
Sun-Target sep (deg) : 158.57
Sun-Moon sep (deg)  : 167.61
B (ring opening deg) : -25.96
PA of pole (deg)    : -6.04
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.198
C/A sky separation (km) : 1159.5
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
    
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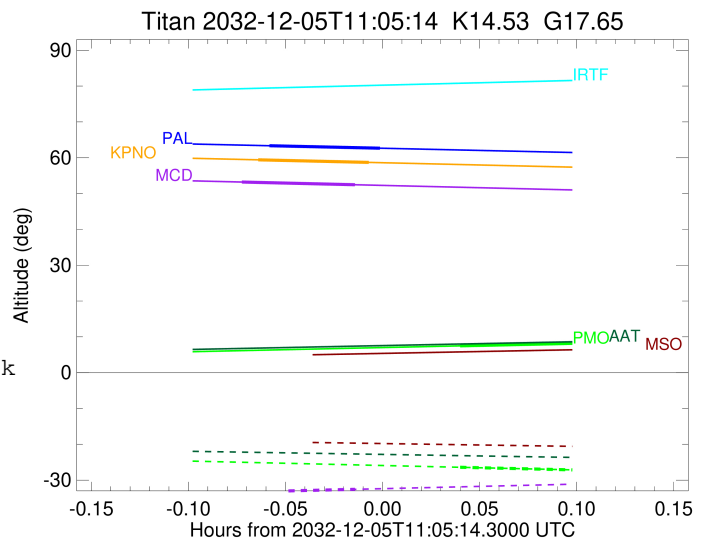
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2032-12-05T11:01:44.260	63.34	-44.20	2575.1	-13.40	-13.41
Titan	E	2032-12-05T11:05:11.070	62.65	-43.48	2575.1	-34.09	-34.11

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2032-12-05T11:09:35.220
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : 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 : 3376832893050276224
 2Mass ID (if available) : 06205156+2222357
 ICRS Star Coord at Epoch: 06h 20m 51.56626s +22:22:35.62646s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.532
 G magnitude : 17.646
 RP magnitude : 16.729
 BP magnitude : 18.519
 DUPflag : 0
 Distance (au) : 8.085
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -21.90
 Sun-Target sep (deg) : 158.57
 Sun-Moon sep (deg) : 168.67
 B (ring opening deg) : -25.96
 PA of pole (deg) : -6.04
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.031
 C/A sky separation (km) : 184.2
 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	2032-12-05T11:07:37.894	7.48	-26.41	2575.1	7.53	7.53
Titan	E	2032-12-05T11:11:32.517	8.26	-27.22	2575.1	-14.86	-14.87



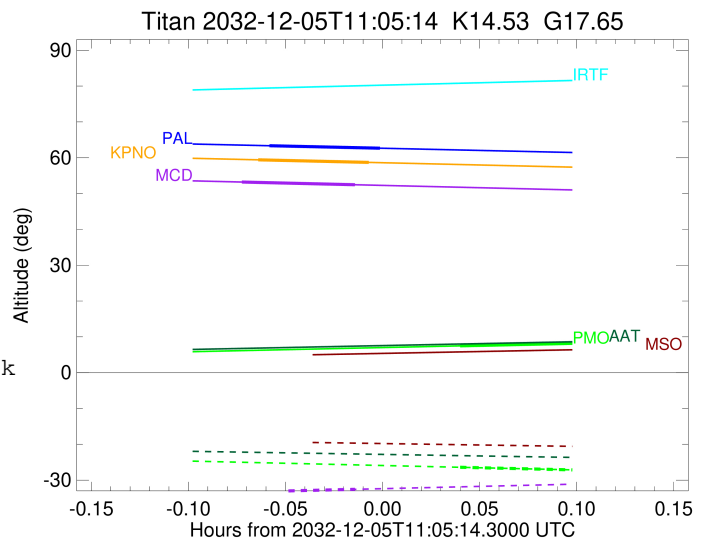
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2032-12-05T11:03:06.540
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 3376832893050276224
2Mass ID (if available) : 06205156+2222357
ICRS Star Coord at Epoch: 06h 20m 51.56626s +22:22:35.62646s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.532
G magnitude          : 17.646
RP magnitude         : 16.729
BP magnitude         : 18.519
DUPflag             : 0
Distance (au)        : 8.086
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -21.90
Sun-Target sep (deg) : 158.57
Sun-Moon sep (deg)  : 167.54
B (ring opening deg) : -25.96
PA of pole (deg)    : -6.04
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.198
C/A sky separation (km) : 1162.2
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

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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
Titan	I	2032-12-05T11:01:23.134	59.41	-39.79	2575.2	-13.49	-13.50
Titan	E	2032-12-05T11:04:49.951	58.68	-39.06	2575.1	-34.13	-34.14



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2032-12-05T11:02:38.920
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      : 3376832893050276224
2Mass ID (if available) : 06205156+2222357
ICRS Star Coord at Epoch: 06h 20m 51.56626s +22:22:35.62646s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.532
G magnitude          : 17.646
RP magnitude         : 16.729
BP magnitude         : 18.519
DUPflag             : 0
Distance (au)       : 8.086
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -21.90
Sun-Target sep (deg) : 158.57
Sun-Moon sep (deg)  : 167.44
B (ring opening deg) : -25.96
PA of pole (deg)    : -6.04
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.182
C/A sky separation (km) : 1069.0
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	2032-12-05T11:00:53.357	53.21	-33.31	2575.1	-11.47	-11.47
Titan	E	2032-12-05T11:04:24.483	52.45	-32.56	2575.1	-32.14	-32.15

