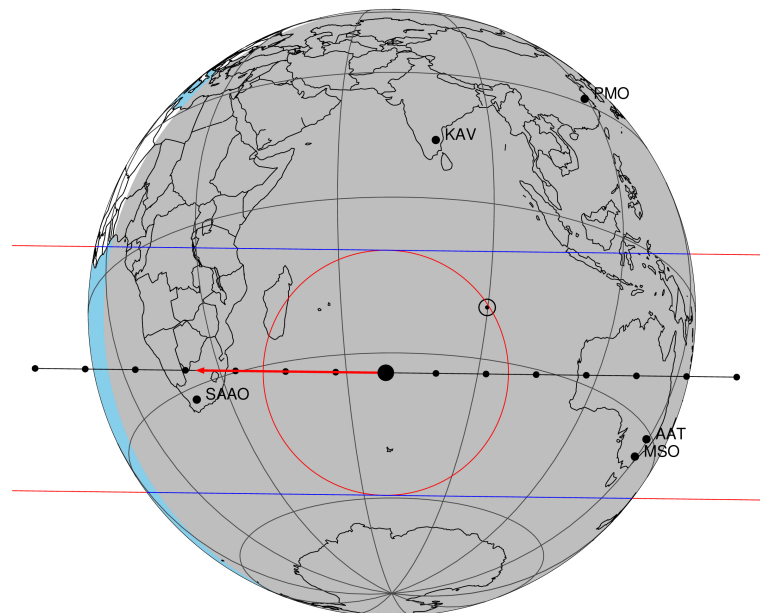


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2048-07-21T18:07:04.190
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4078499466817668992
 2Mass ID (if available) : 18461145-2228321

ICRS Star Coord at Epoch: 18h 46m 11.45325s -22:28:32.78395s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 13.478
 G magnitude : 15.963
 RP magnitude : 14.991
 BP magnitude : 16.289
 DUPflag : 0
 Distance (au) : 9.067
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -17.54
 Sun-Target sep (deg) : 161.68
 Sun-Moon sep (deg) : 32.21
 B (ring opening deg) : 25.42
 PA of pole (deg) : 6.43
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.190
 C/A sky separation (km) : 1251.2
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

Titan 2048-07-21T18:07:04 K13.48 G15.96 dots 60.0 sec
 Pgt

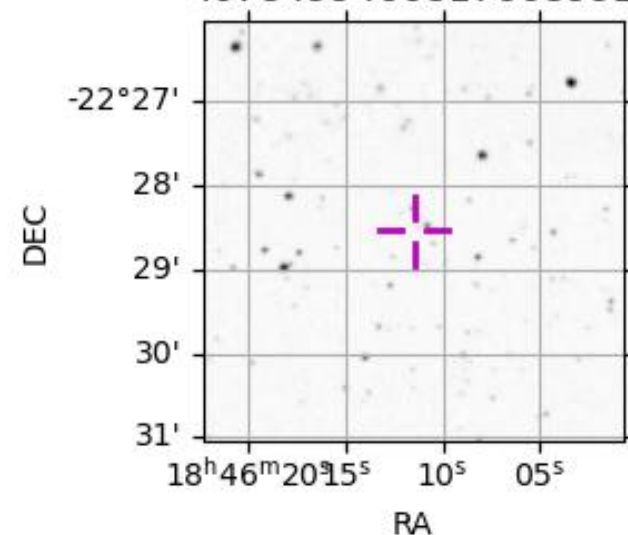


2048-07-21T18:07:04.1900 cc: 18 46 11.45325 s: -22 28 32.784 C/A 0.192" PA 180.71 deg v_sky -17.54 km/s D 09.07 AU
 Credit: Styled after SORA/Lucky Star

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

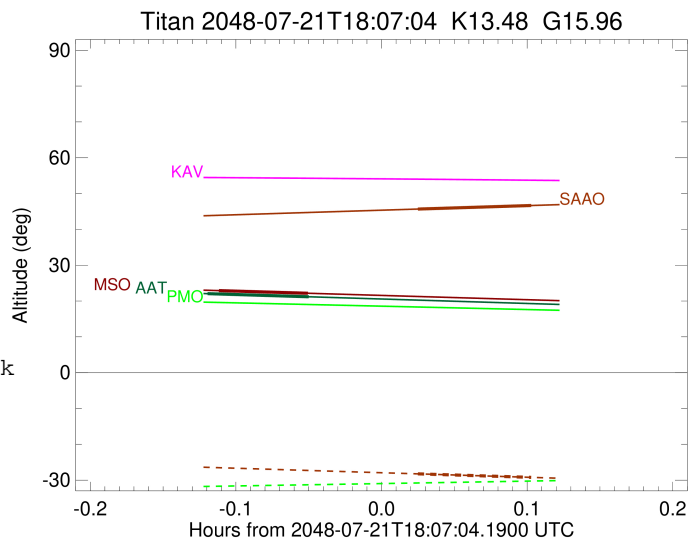
Obs	Location	lat	Elon	Target	Observed Events	Interval	OEcode
PIC	Pic du Midi	42.9	0.1				Pnn
PAL	Palomar Mt (200")	33.4	243.1				Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4				Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0				Pnn
TEN	Teide Obs./Tenerife	28.3	343.5				Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5				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	+ +	JUL 21 17:59 - JUL 21 18:04		Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 21 18:08 - JUL 21 18:13		Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUL 21 18:00 - JUL 21 18:04		Pie

4078499466817668992



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-07-21T18:01:58.770
Event type           : Pgt
: Titan 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       : 4078499466817668992
2Mass ID (if available) : 18461145-2228321
ICRS Star Coord at Epoch: 18h 46m 11.45325s -22:28:32.78395s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 13.478
G magnitude           : 15.963
RP magnitude          : 14.991
BP magnitude          : 16.289
DUPflag              : 0
Distance (au)         : 9.067
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -17.54
Sun-Target sep (deg) : 161.68
Sun-Moon sep (deg)   : 33.05
B (ring opening deg) : 25.42
PA of pole (deg)     : 6.43
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.198
C/A sky separation (km): 1302.5
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
    
```

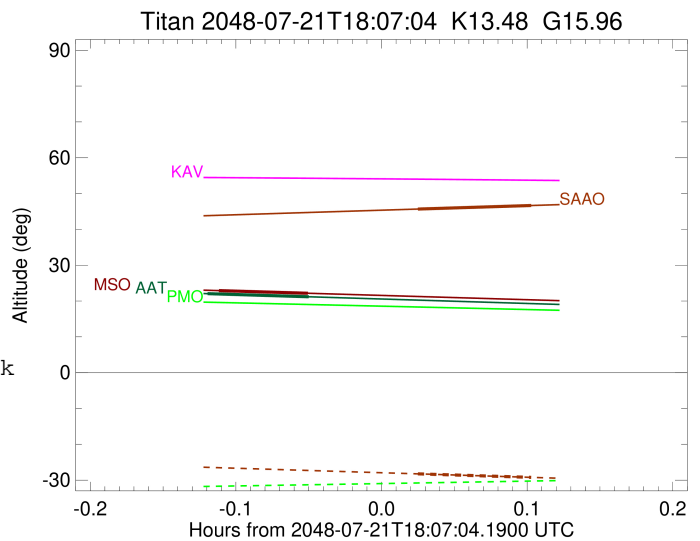


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2048-07-21T17:59:52.822	22.06	-37.67	2575.1	-31.73	-31.75
Titan	E	2048-07-21T18:04:04.778	21.18	-36.77	2575.1	-22.57	-22.58

```

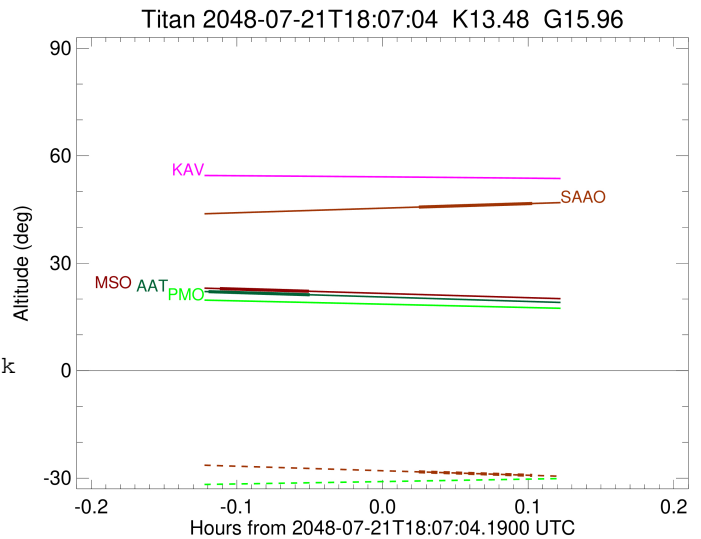
target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-07-21T18:10:54.090
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : SAAO
Location             : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)       : -32.37953
E. Longitude (deg)   : 20.81070
Altitude (km)        : 1.768
Gaia source ID       : 4078499466817668992
2Mass ID (if available) : 18461145-2228321
ICRS Star Coord at Epoch: 18h 46m 11.45325s -22:28:32.78395s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 13.478
G magnitude           : 15.963
RP magnitude          : 14.991
BP magnitude          : 16.289
DUPflag              : 0
Distance (au)         : 9.067
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -17.54
Sun-Target sep (deg) : 161.68
Sun-Moon sep (deg)   : 32.01
B (ring opening deg) : 25.42
PA of pole (deg)     : 6.43
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.085
C/A sky separation (km): 556.6
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	2048-07-21T18:08:32.781	45.66	-28.24	2575.1	-16.72	-16.72
Titan	E	2048-07-21T18:13:15.409	46.66	-29.23	2575.2	-5.77	-5.78

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2048-07-21T18:02:12.200
 Event type : Pgt
 : Titan 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 : 4078499466817668992
 2Mass ID (if available) : 18461145-2228321
 ICRS Star Coord at Epoch: 18h 46m 11.45325s -22:28:32.78395s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 13.478
 G magnitude : 15.963
 RP magnitude : 14.991
 BP magnitude : 16.289
 DUPflag : 0
 Distance (au) : 9.067
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -17.54
 Sun-Target sep (deg) : 161.68
 Sun-Moon sep (deg) : 33.02
 B (ring opening deg) : 25.42
 PA of pole (deg) : 6.43
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.254
 C/A sky separation (km) : 1670.8
 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	2048-07-21T18:00:21.067	22.91	-37.69	2575.1	-40.28	-40.29
Titan	E	2048-07-21T18:04:03.366	22.16	-36.93	2575.1	-31.37	-31.38