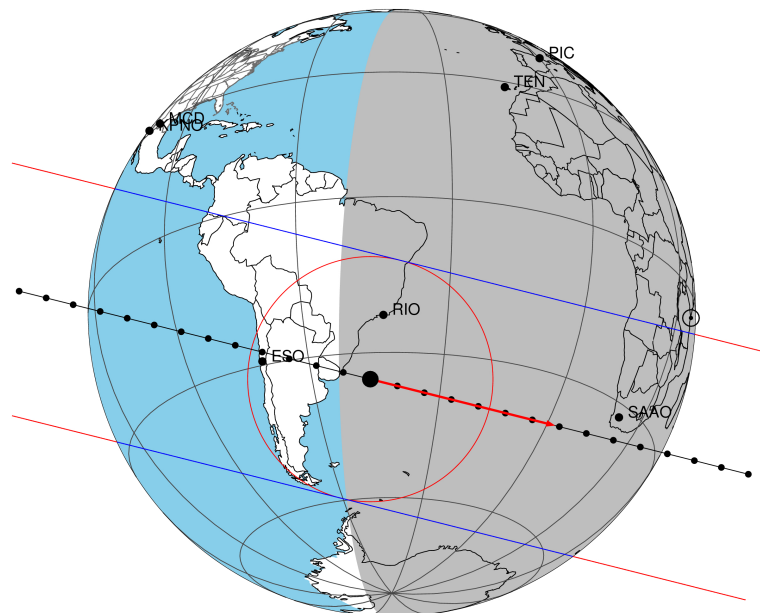


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-09-10T21:18:11.480  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068970721101319424  
 2Mass ID (if available) : 17484590-2230214

ICRS Star Coord at Epoch: 17h 48m 45.91403s -22:30:21.67742s  
 RUWE (>1.4 is poor) : 1.04  
 K magnitude : 12.924  
 G magnitude : 17.383  
 RP magnitude : 16.105  
 BP magnitude : 18.756  
 DUPflag : 0  
 Distance (au) : 9.830  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 9.74  
 Sun-Target sep (deg) : 99.97  
 Sun-Moon sep (deg) : 152.35  
 B (ring opening deg) : 26.83  
 PA of pole (deg) : 5.44  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.202  
 C/A sky separation (km) : 1439.5  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

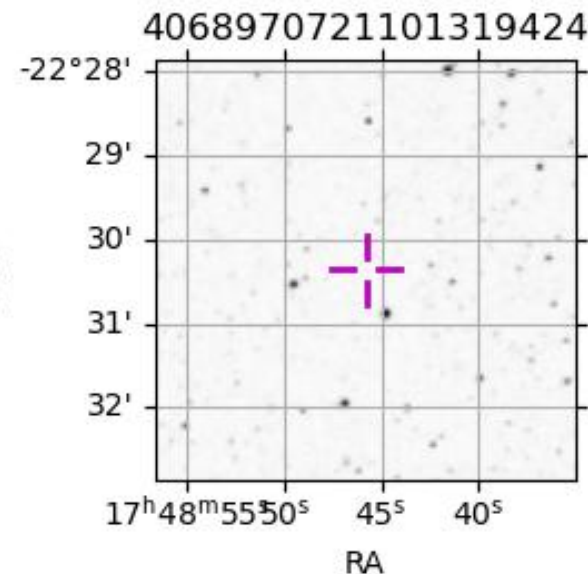
Titan 2047-09-10T21:18:11 K12.92 G17.38 dots 60.0 sec  
 Pgt



2047-09-10T21:18:11.4800 α: 17 48 45.9140 δ: -22 30 21.677 C/A 0.205" PA 194.10 deg v\_sky + 9.74 km/s D 09.83 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   |        |                             | 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 | + +    | SEP 10 21:13 - SEP 10 21:21 | Pie   |
| 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  | + +    | SEP 10 21:22 - SEP 10 21:31 | Pie   |
| MSO  | Mt. Stromlo Observatory           | -35.3 | 149.0 |        |                             | Pnn   |



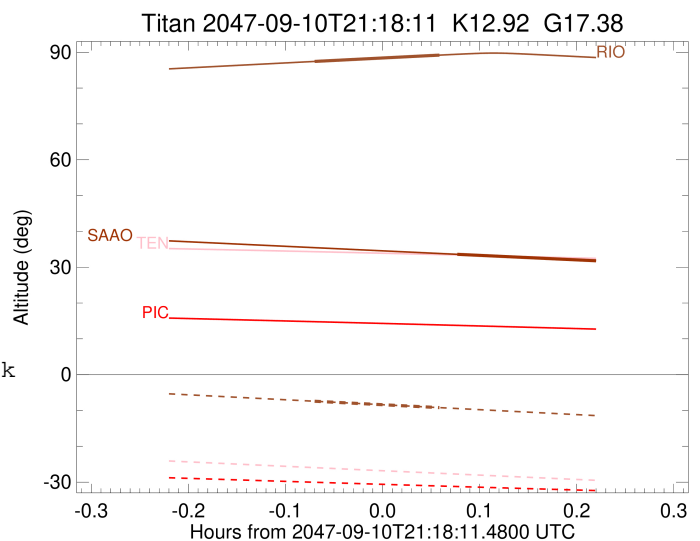
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-09-10T21:17:52.080
Event type            : Pgt
: Titan 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        : 4068970721101319424
2Mass ID (if available) : 17484590-2230214
ICRS Star Coord at Epoch: 17h 48m 45.91403s -22:30:21.67742s
RUWE (>1.4 is poor) : 1.04
K magnitude           : 12.924
G magnitude           : 17.383
RP magnitude          : 16.105
BP magnitude          : 18.756
DUPflag              : 0
Distance (au)         : 9.830
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 9.74
Sun-Target sep (deg)  : 99.97
Sun-Moon sep (deg)    : 152.75
B (ring opening deg) : 26.83
PA of pole (deg)      : 5.44
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.192
C/A sky separation (km) : 1368.5
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

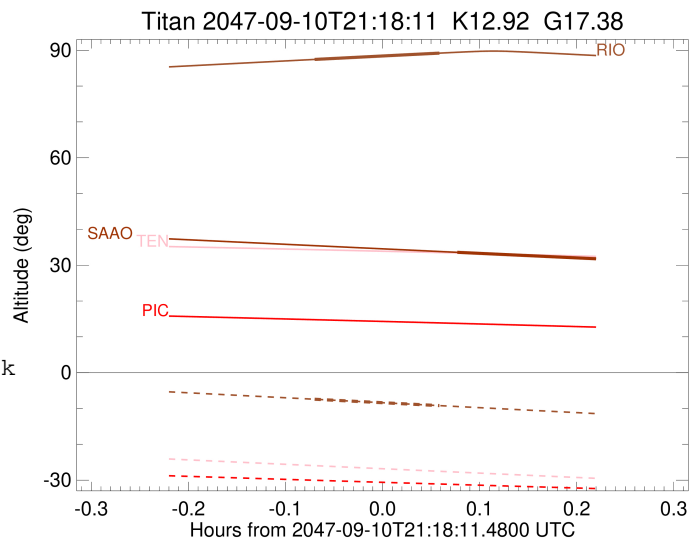
| Target | I/E | UTC                     | alt   | alt-sun | radius | lat-geo | lat-geodetic |
|--------|-----|-------------------------|-------|---------|--------|---------|--------------|
| Titan  | I   | 2047-09-10T21:13:58.297 | 87.42 | -7.41   | 2575.1 | 20.22   | 20.23        |
| Titan  | E   | 2047-09-10T21:21:45.894 | 89.20 | -9.21   | 2575.1 | 36.18   | 36.19        |



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-09-10T21:27:12.410
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        : 4068970721101319424
2Mass ID (if available) : 17484590-2230214
ICRS Star Coord at Epoch: 17h 48m 45.91403s -22:30:21.67742s
RUWE (>1.4 is poor)  : 1.04
K magnitude           : 12.924
G magnitude           : 17.383
RP magnitude          : 16.105
BP magnitude          : 18.756
DUPflag              : 0
Distance (au)         : 9.830
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 9.74
Sun-Target sep (deg)  : 99.97
Sun-Moon sep (deg)    : 153.14
B (ring opening deg) : 26.83
PA of pole (deg)      : 5.44
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.059
C/A sky separation (km) : 417.8
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   | 2047-09-10T21:22:46.181 | 33.60 | -57.90  | 2575.2 | 1.07    | 1.07         |
| Titan  | E   | 2047-09-10T21:31:38.486 | 31.73 | -58.91  | 2575.1 | 15.54   | 15.55        |