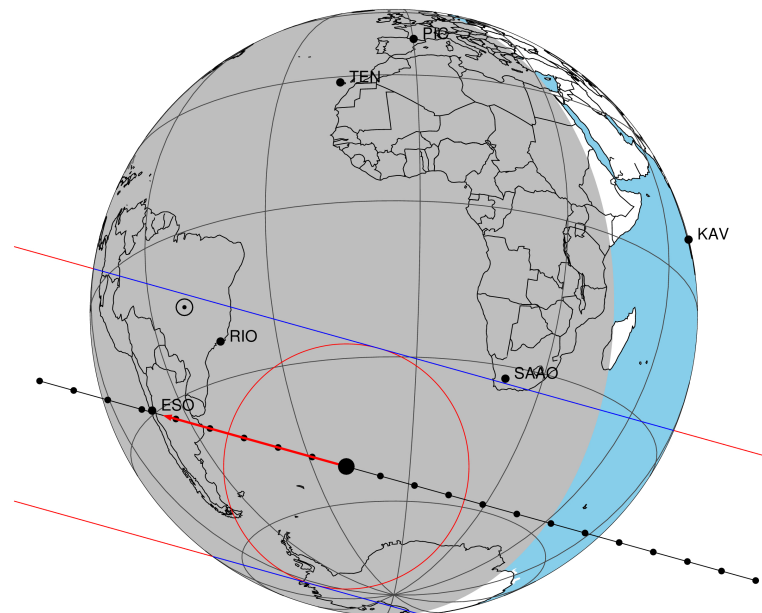


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2046-04-29T03:18:44.060  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4120817813945876352  
 2Mass ID (if available) : 17251287-2137559

ICRS Star Coord at Epoch: 17h 25m 12.85846s -21:37:56.02444s  
 RUWE (>1.4 is poor) : 0.93  
 K magnitude : 14.657  
 G magnitude : 18.276  
 RP magnitude : 17.265  
 BP magnitude : 19.258  
 DUPflag : 0  
 Distance (au) : 9.278  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -12.38  
 Sun-Target sep (deg) : 136.41  
 Sun-Moon sep (deg) : 59.16  
 B (ring opening deg) : 26.46  
 PA of pole (deg) : 4.89  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.499  
 C/A sky separation (km) : 3357.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

Titan 2046-04-29T03:18:44 K14.66 G18.28 dots 60.0 sec  
 Pt



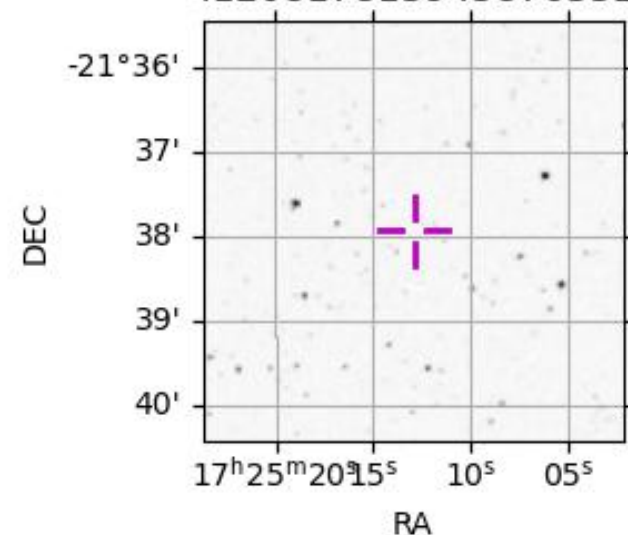
2046-04-29T03:18:44.0600 cc: 17 25 12.85846 s: -21 37 56.024 C/A 0.502" PA 195.58 deg v\_sky -12.39 km/s D 09.28 AU

Credit: Styled after SORA/Lucky Star

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

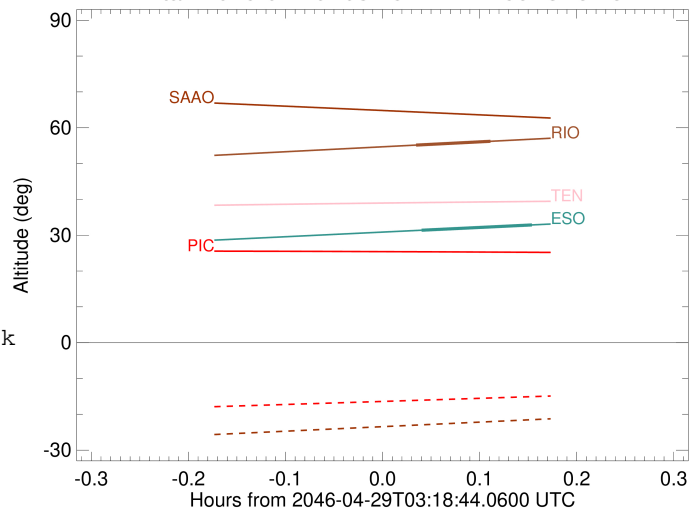
Obs	Location	lat	Elon	Target	Observed Events	Interval	OEcode
PIC	Pic du Midi	42.9	0.1				Pnn
PAL	Palomar Mt (200")	33.4	243.1				Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8				Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4				Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0				Pnn
TEN	Teide Obs./Tenerife	28.3	343.5				Pnn
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	+ +	APR 29 03:20 - APR 29 03:25		Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	APR 29 03:21 - APR 29 03:27		Pie
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

4120817813945876352



target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2046-04-29T03:23:06.490  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : 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 : 4120817813945876352  
 2Mass ID (if available) : 17251287-2137559  
 ICRS Star Coord at Epoch: 17h 25m 12.85846s -21:37:56.02444s  
 RUWE (>1.4 is poor) : 0.93  
 K magnitude : 14.657  
 G magnitude : 18.276  
 RP magnitude : 17.265  
 BP magnitude : 19.258  
 DUPflag : 0  
 Distance (au) : 9.278  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -12.38  
 Sun-Target sep (deg) : 136.41  
 Sun-Moon sep (deg) : 60.06  
 B (ring opening deg) : 26.46  
 PA of pole (deg) : 4.89  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.279  
 C/A sky separation (km) : 1878.7  
 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

Titan 2046-04-29T03:18:44 K14.66 G18.28

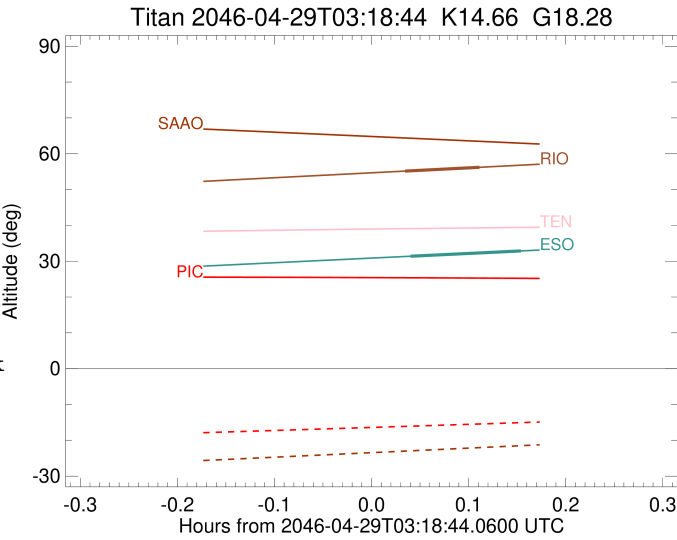


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-04-29T03:20:47.658	55.14	-79.02	2575.1	48.46	48.47
Titan	E	2046-04-29T03:25:25.330	56.21	-78.27	2575.1	32.57	32.59

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-04-29T03:24:32.560
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : ESO
Location             : European Southern Obs. (3.6m)
Latitude (deg)       : -29.26097
E. Longitude (deg)  : 289.26831
Altitude (km)        : 2.400
Gaia source ID       : 4120817813945876352
2Mass ID (if available) : 17251287-2137559
ICRS Star Coord at Epoch: 17h 25m 12.85846s -21:37:56.02444s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 14.657
G magnitude          : 18.276
RP magnitude         : 17.265
BP magnitude         : 19.258
DUPflag             : 0
Distance (au)        : 9.278
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.38
Sun-Target sep (deg) : 136.41
Sun-Moon sep (deg)  : 59.92
B (ring opening deg) : 26.46
PA of pole (deg)    : 4.89
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.017
C/A sky separation (km) : 113.5
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 2046-04-29T03:21:06.964 31.38 -66.61 2575.1 11.10 11.10
Titan E 2046-04-29T03:27:58.124 32.86 -67.82 2575.1 -6.59 -6.60
    
```