

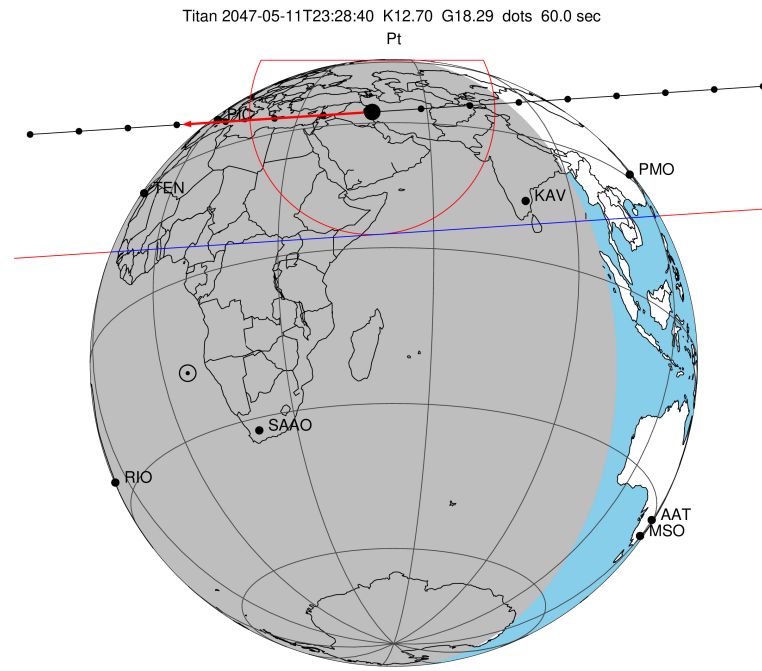
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-05-11T23:28:40.170  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4090690753034256128  
 2Mass ID (if available) : 18142198-2219087

ICRS Star Coord at Epoch: 18h 14m 21.93439s -22:19:08.00367s  
 RUWE (>1.4 is poor) : 1.12  
 K magnitude : 12.700  
 G magnitude : 18.290  
 RP magnitude : 0.000  
 BP magnitude : 0.000  
 DUPflag : 0  
 Distance (au) : 9.275  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -17.13  
 Sun-Target sep (deg) : 137.21  
 Sun-Moon sep (deg) : 12.30  
 B (ring opening deg) : 26.06  
 PA of pole (deg) : 5.92  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.785  
 C/A sky separation (km) : 5283.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

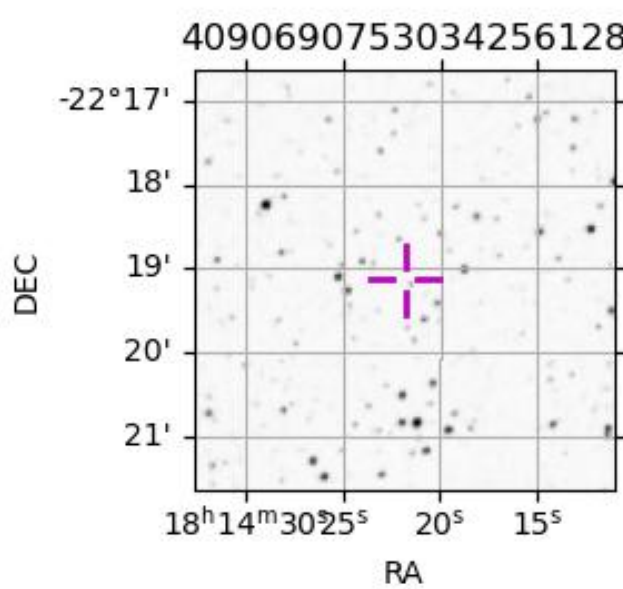
URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

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

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	MAY 11 23:29 - MAY 11 23:34	Pie
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	+ +	MAY 11 23:31 - MAY 11 23:35	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	MAY 11 23:24 - MAY 11 23:27	Pie
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

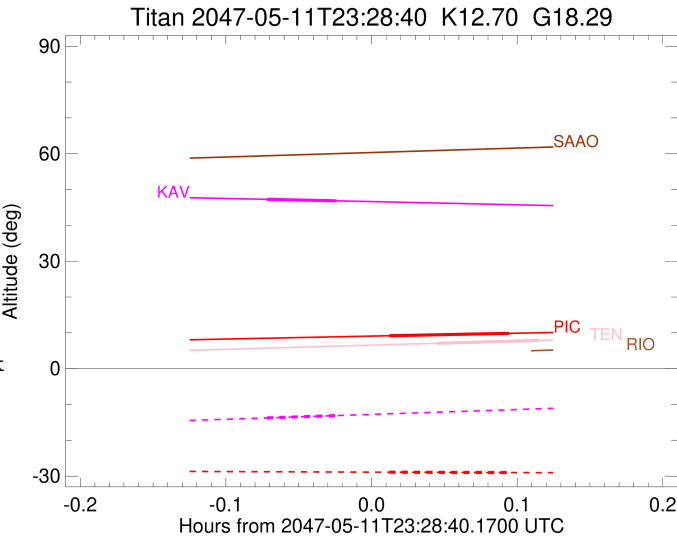


2047-05-11T23:28:40.1700 cc: 18 14 21.9344 & -22 19 08.004 C/A 0.786" PA 356.23 deg v\_sky -17.14 km/s D 09.27 AU  
 Credit: Styled after SORA/Lucky Star



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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-05-11T23:31:52.180
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PIC
Location              : Pic du Midi
Latitude (deg)        : 42.93656
E. Longitude (deg)    : 0.14231
Altitude (km)         : 2.890
Gaia source ID        : 4090690753034256128
2Mass ID (if available) : 18142198-2219087
ICRS Star Coord at Epoch: 18h 14m 21.93439s -22:19:08.00367s
RUWE (>1.4 is poor)  : 1.12
K magnitude           : 12.700
G magnitude           : 18.290
RP magnitude          : 0.000
BP magnitude          : 0.000
DUPflag              : 0
Distance (au)         : 9.275
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -17.13
Sun-Target sep (deg)  : 137.21
Sun-Moon sep (deg)    : 12.06
B (ring opening deg)  : 26.06
PA of pole (deg)      : 5.92
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.010
C/A sky separation (km) : 70.6
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
    
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x: target alt < 5.0 deg or sun > -5.0 deg

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Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-05-11T23:29:23.875	9.19	-28.90	2575.1	-7.58	-7.58
Titan	E	2047-05-11T23:34:20.448	9.86	-29.00	2575.1	10.31	10.31

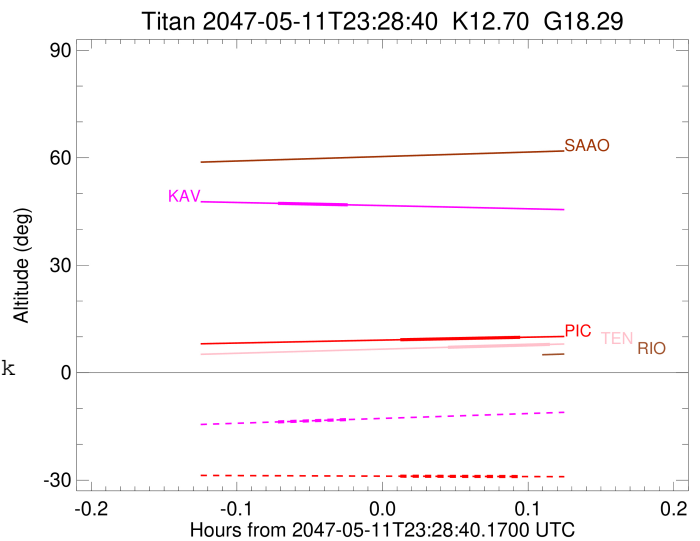
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-05-11T23:33:28.760
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : TEN
Location             : Teide Obs./Tenerife
Latitude (deg)       : 28.30050
E. Longitude (deg)  : 343.48909
Altitude (km)        : 2.395
Gaia source ID       : 4090690753034256128
2Mass ID (if available) : 18142198-2219087
ICRS Star Coord at Epoch: 18h 14m 21.93439s -22:19:08.00367s
RUWE (>1.4 is poor) : 1.12
K magnitude           : 12.700
G magnitude           : 18.290
RP magnitude         : 0.000
BP magnitude         : 0.000
DUPflag              : 0
Distance (au)        : 9.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -17.13
Sun-Target sep (deg) : 137.21
Sun-Moon sep (deg)  : 11.74
B (ring opening deg) : 26.06
PA of pole (deg)    : 5.92
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.199
C/A sky separation (km) : 1335.3
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	2047-05-11T23:31:21.521	7.08	-38.84	2575.1	-36.41	-36.42
Titan	E	2047-05-11T23:35:35.953	7.89	-39.27	2575.1	-18.88	-18.89



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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-05-11T23:25:48.360
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : KAV
Location             : Kavalur Observatory
Latitude (deg)       : 12.57556
E. Longitude (deg)  : 78.83167
Altitude (km)        : 0.722
Gaia source ID       : 4090690753034256128
2Mass ID (if available) : 18142198-2219087
ICRS Star Coord at Epoch: 18h 14m 21.93439s -22:19:08.00367s
RUWE (>1.4 is poor) : 1.12
K magnitude           : 12.700
G magnitude           : 18.290
RP magnitude         : 0.000
BP magnitude         : 0.000
DUPflag              : 0
Distance (au)        : 9.275
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -17.13
Sun-Target sep (deg) : 137.21
Sun-Moon sep (deg)  : 13.03
B (ring opening deg) : 26.06
PA of pole (deg)    : 5.92
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.309
C/A sky separation (km) : 2076.5
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	2047-05-11T23:24:21.539	47.26	-13.74	2575.0	-53.24	-53.26
Titan	E	2047-05-11T23:27:15.188	46.84	-13.09	2575.1	-38.93	-38.95

