

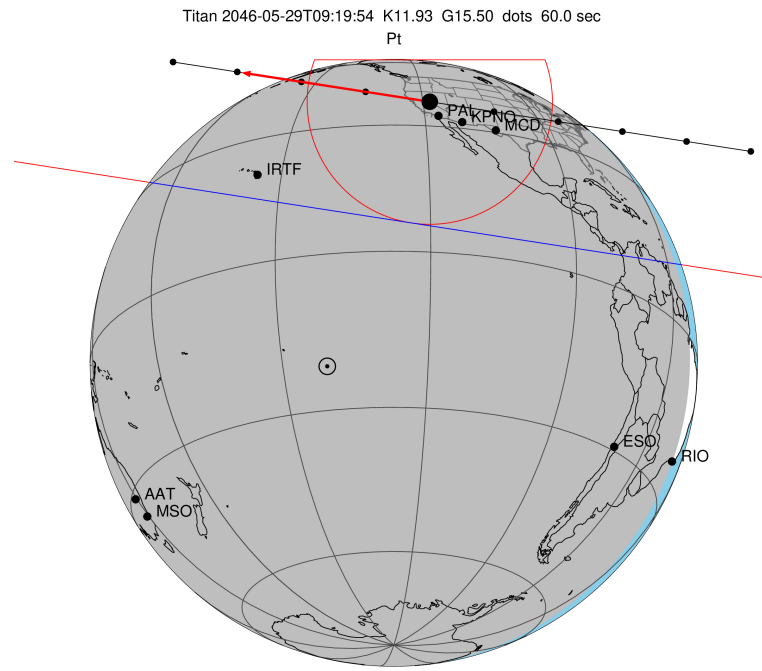
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-05-29T09:19:54.780
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4115020059118818176
 2Mass ID (if available) : 17173341-2131188

ICRS Star Coord at Epoch: 17h 17m 33.38140s -21:31:19.59379s
 RUWE (>1.4 is poor) : 1.20
 K magnitude : 11.925
 G magnitude : 15.497
 RP magnitude : 14.470
 BP magnitude : 16.564
 DUPflag : 0
 Distance (au) : 9.038
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -22.73
 Sun-Target sep (deg) : 167.33
 Sun-Moon sep (deg) : 95.53
 B (ring opening deg) : 26.50
 PA of pole (deg) : 4.71
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.846
 C/A sky separation (km) : 5544.2
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

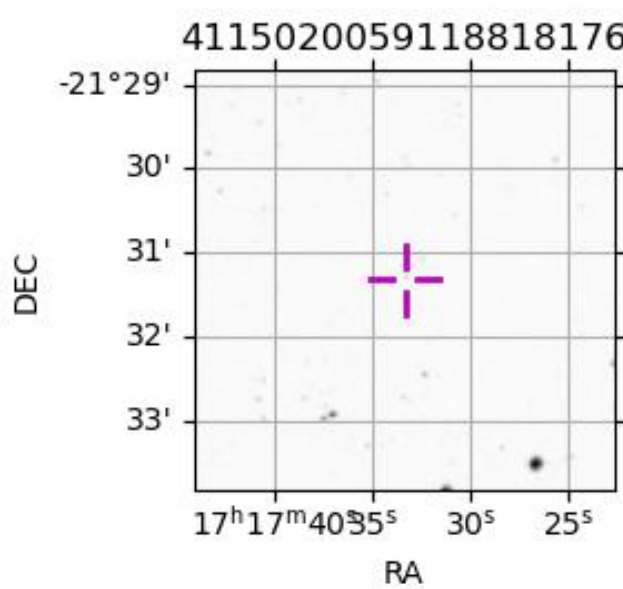
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

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	+ +	MAY 29 09:17 - MAY 29 09:21	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAY 29 09:17 - MAY 29 09:21	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAY 29 09:17 - MAY 29 09:20	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	MAY 29 09:21 - MAY 29 09:23	Pie
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



2046-05-29T09:19:54.7800 α: 17 17 33.3814 δ: -21 31 19.594 C/A 0.845" PA 8.80 deg v_sky -22.73 km/s D 09.04 AU
 Credit: Styled after SORA/Lucky Star



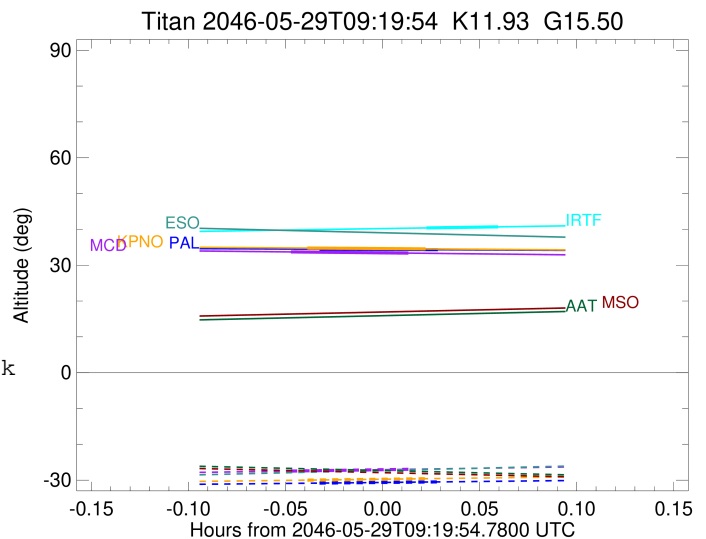
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-29T09:19:47.850
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)   : 243.13601
Altitude (km)        : 1.706
Gaia source ID       : 4115020059118818176
2Mass ID (if available) : 17173341-2131188
ICRS Star Coord at Epoch: 17h 17m 33.38140s -21:31:19.59379s
RUWE (>1.4 is poor) : 1.20
K magnitude           : 11.925
G magnitude           : 15.497
RP magnitude          : 14.470
BP magnitude          : 16.564
DUPflag              : 0
Distance (au)        : 9.038
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -22.73
Sun-Target sep (deg) : 167.33
Sun-Moon sep (deg)   : 96.05
B (ring opening deg) : 26.50
PA of pole (deg)     : 4.71
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.044
C/A sky separation (km): 288.5
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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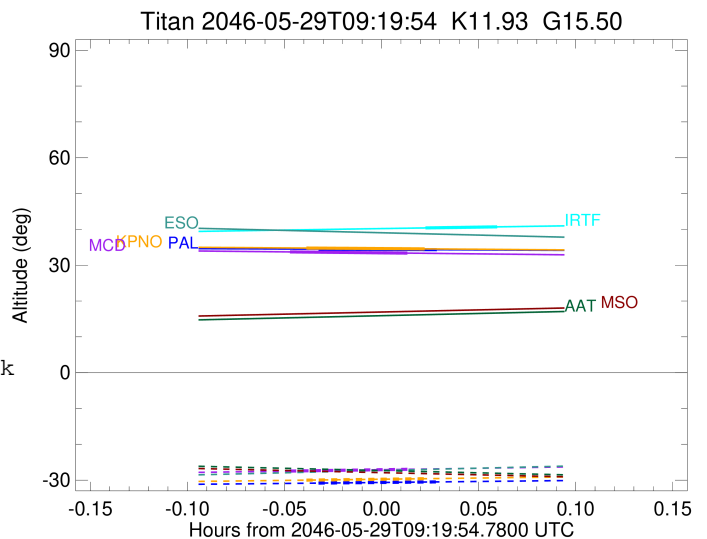
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-05-29T09:17:57.146	34.48	-30.83	2575.2	-2.16	-2.16
Titan	E	2046-05-29T09:21:38.571	34.33	-30.49	2575.1	-9.34	-9.35



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-05-29T09:19:25.610
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       : 4115020059118818176
2Mass ID (if available) : 17173341-2131188
ICRS Star Coord at Epoch: 17h 17m 33.38140s -21:31:19.59379s
RUWE (>1.4 is poor) : 1.20
K magnitude           : 11.925
G magnitude           : 15.497
RP magnitude          : 14.470
BP magnitude          : 16.564
DUPflag              : 0
Distance (au)         : 9.038
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -22.73
Sun-Target sep (deg) : 167.33
Sun-Moon sep (deg)   : 96.06
B (ring opening deg) : 26.50
PA of pole (deg)     : 4.71
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.052
C/A sky separation (km) : 344.0
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	2046-05-29T09:17:35.208	34.79	-30.00	2575.1	-3.24	-3.25
Titan	E	2046-05-29T09:21:16.032	34.55	-29.59	2575.1	-10.48	-10.49

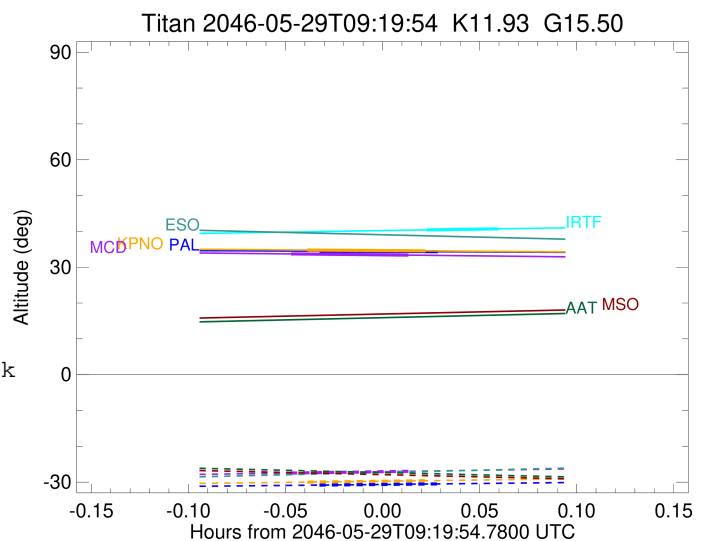
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-05-29T09:18:54.270
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       : 4115020059118818176
2Mass ID (if available) : 17173341-2131188
ICRS Star Coord at Epoch: 17h 17m 33.38140s -21:31:19.59379s
RUWE (>1.4 is poor) : 1.20
K magnitude           : 11.925
G magnitude           : 15.497
RP magnitude         : 14.470
BP magnitude         : 16.564
DUPflag              : 0
Distance (au)        : 9.038
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -22.73
Sun-Target sep (deg) : 167.33
Sun-Moon sep (deg)   : 96.06
B (ring opening deg) : 26.50
PA of pole (deg)     : 4.71
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.063
C/A sky separation (km) : 411.9
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

```

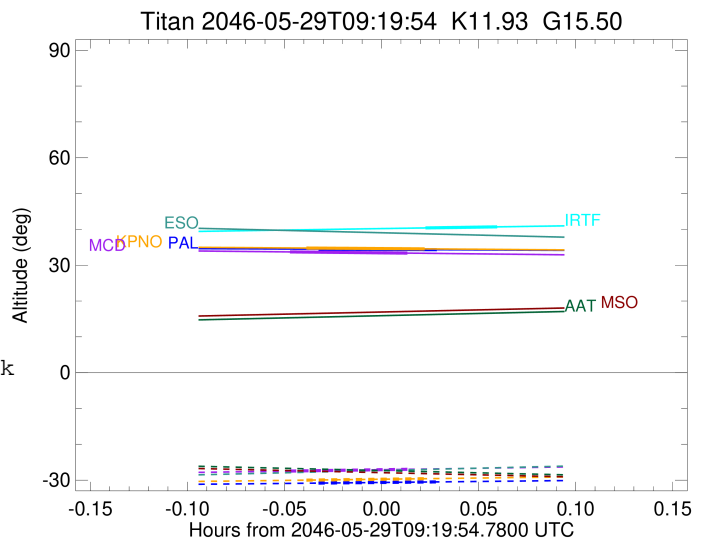
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-05-29T09:17:04.265	33.71	-27.46	2575.2	-4.57	-4.57
Titan	E	2046-05-29T09:20:44.295	33.36	-26.98	2575.1	-11.89	-11.89



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-29T09:22:23.190
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)        : 19.82622
E. Longitude (deg)    : 204.52800
Altitude (km)         : 4.168
Gaia source ID        : 4115020059118818176
2Mass ID (if available) : 17173341-2131188
ICRS Star Coord at Epoch: 17h 17m 33.38140s -21:31:19.59379s
RUWE (>1.4 is poor) : 1.20
K magnitude           : 11.925
G magnitude           : 15.497
RP magnitude          : 14.470
BP magnitude          : 16.564
DUPflag              : 0
Distance (au)         : 9.038
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -22.73
Sun-Target sep (deg)  : 167.33
Sun-Moon sep (deg)    : 96.07
B (ring opening deg) : 26.50
PA of pole (deg)     : 4.71
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.313
C/A sky separation (km) : 2051.6
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

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Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-05-29T09:21:15.826	40.40	-46.26	2575.1	-42.52	-42.54
Titan	E	2046-05-29T09:23:30.560	40.70	-46.44	2575.1	-48.34	-48.35