

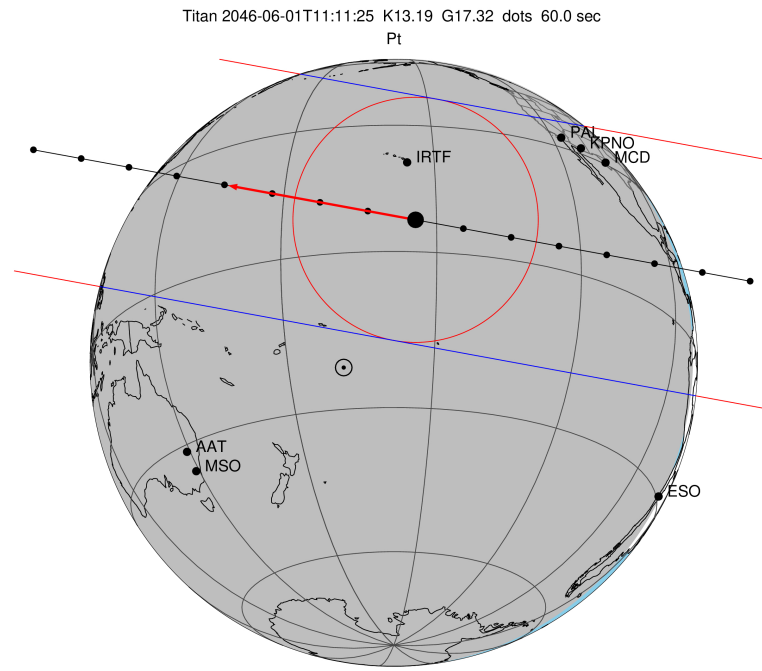
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-06-01T11:11:25.770
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4115769479352202624
 2Mass ID (if available) : 17163643-2128554

ICRS Star Coord at Epoch: 17h 16m 36.43500s -21:28:55.68037s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 13.191
 G magnitude : 17.316
 RP magnitude : 16.215
 BP magnitude : 18.615
 DUPflag : 0
 Distance (au) : 9.036
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -17.00
 Sun-Target sep (deg) : 170.47
 Sun-Moon sep (deg) : 132.61
 B (ring opening deg) : 26.47
 PA of pole (deg) : 4.68
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.465
 C/A sky separation (km) : 3047.7
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

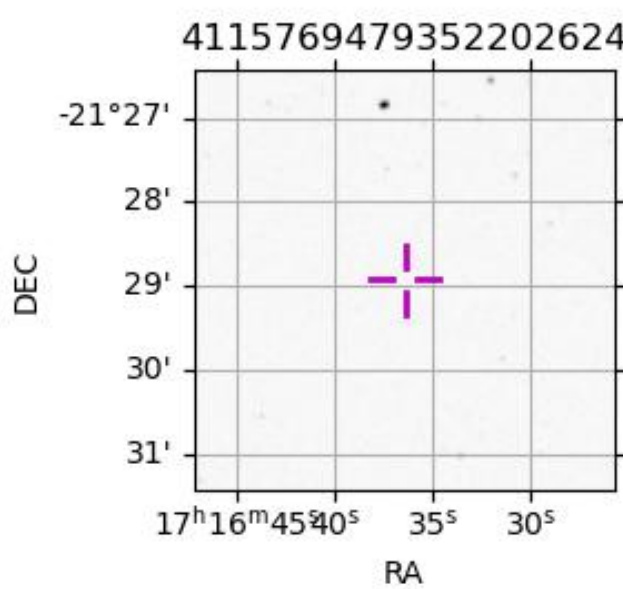
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

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	+ +	JUN 01 11:07 - JUN 01 11:10	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUN 01 11:07 - JUN 01 11:09	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUN 01 11:06 - JUN 01 11:09	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUN 01 11:09 - JUN 01 11:14	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

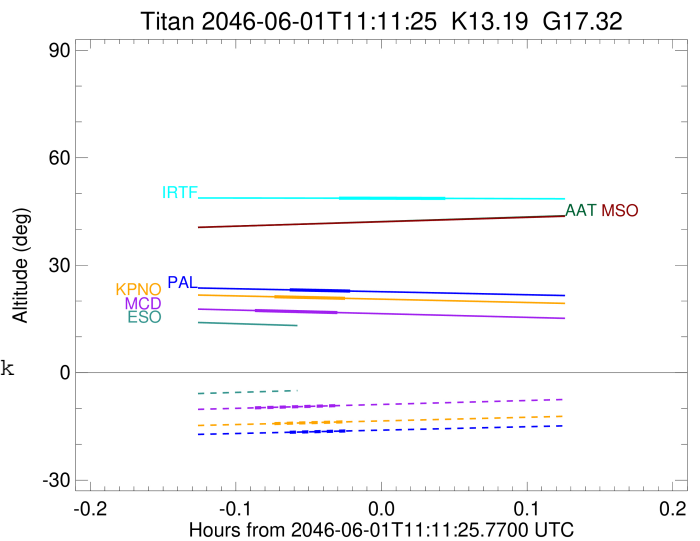


2046-06-01T11:11:25.7700 α: 17 16 36.4350 δ: -21 28 55.680 C/A 0.464" PA 10.40 deg v_sky -17.00 km/s D 09.04 AU
 Credit: Styled after SORA/Lucky Star



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-06-01T11:08:53.770
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       : 4115769479352202624
2Mass ID (if available) : 17163643-2128554
ICRS Star Coord at Epoch: 17h 16m 36.43500s -21:28:55.68037s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.191
G magnitude           : 17.316
RP magnitude          : 16.215
BP magnitude          : 18.615
DUPflag              : 0
Distance (au)         : 9.036
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -17.00
Sun-Target sep (deg) : 170.47
Sun-Moon sep (deg)   : 133.25
B (ring opening deg) : 26.47
PA of pole (deg)     : 4.68
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.339
C/A sky separation (km): 2219.4
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	2046-06-01T11:07:38.335	23.12	-16.64	2575.1	54.46	54.48
Titan	E	2046-06-01T11:10:09.227	22.77	-16.25	2575.1	46.15	46.17

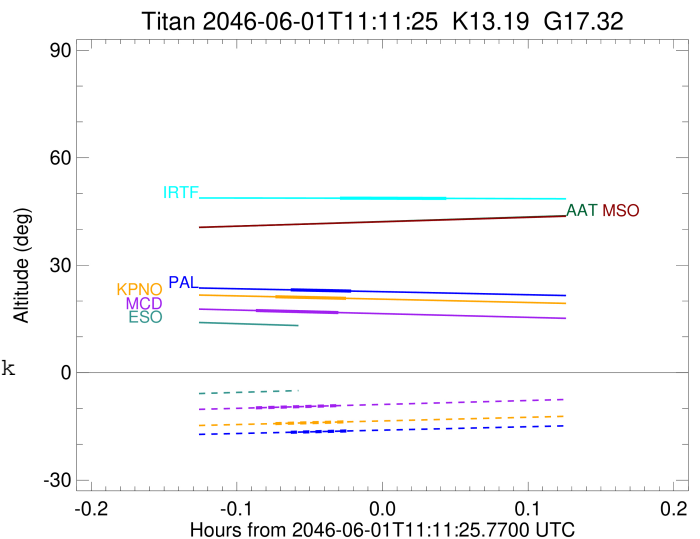
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-06-01T11:08:27.860
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        : 4115769479352202624
2Mass ID (if available) : 17163643-2128554
ICRS Star Coord at Epoch: 17h 16m 36.43500s -21:28:55.68037s
RUWE (>1.4 is poor)  : 1.01
K magnitude           : 13.191
G magnitude           : 17.316
RP magnitude          : 16.215
BP magnitude          : 18.615
DUPflag              : 0
Distance (au)         : 9.036
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -17.00
Sun-Target sep (deg)  : 170.47
Sun-Moon sep (deg)    : 133.27
B (ring opening deg) : 26.47
PA of pole (deg)     : 4.68
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.317
C/A sky separation (km) : 2074.8
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	2046-06-01T11:06:59.671	21.19	-14.22	2575.1	50.52	50.54
Titan	E	2046-06-01T11:09:56.070	20.74	-13.72	2575.1	41.53	41.54



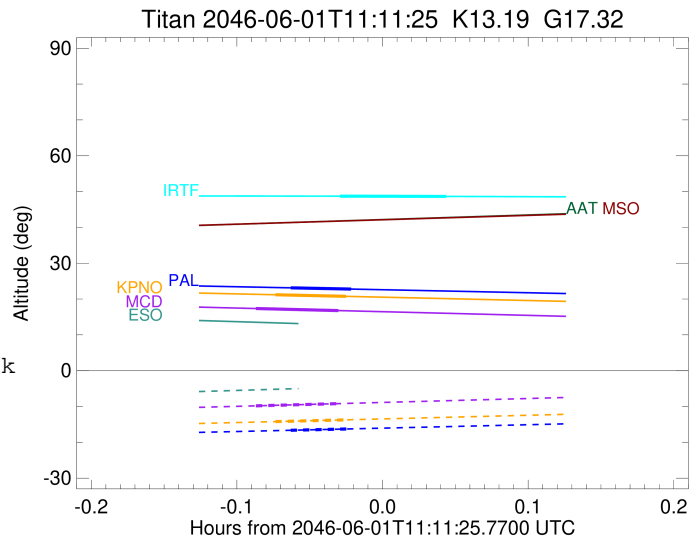
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-06-01T11:07:55.030
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)        : 30.67158
E. Longitude (deg)    : 255.97844
Altitude (km)         : 2.075
Gaia source ID        : 4115769479352202624
2Mass ID (if available) : 17163643-2128554
ICRS Star Coord at Epoch: 17h 16m 36.43500s -21:28:55.68037s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.191
G magnitude           : 17.316
RP magnitude          : 16.215
BP magnitude          : 18.615
DUPflag              : 0
Distance (au)         : 9.036
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -17.00
Sun-Target sep (deg)  : 170.47
Sun-Moon sep (deg)   : 133.27
B (ring opening deg) : 26.47
PA of pole (deg)     : 4.68
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.286
C/A sky separation (km) : 1876.3
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

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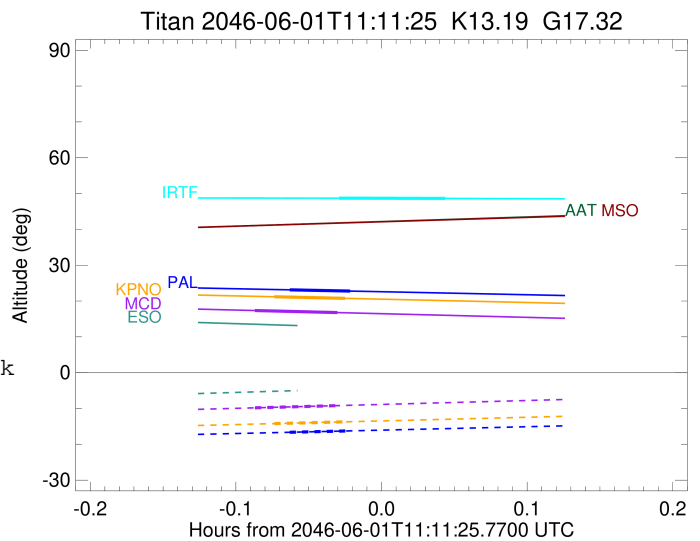
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-06-01T11:06:12.870	17.34	-9.82	2575.0	45.43	45.44
Titan	E	2046-06-01T11:09:37.231	16.77	-9.20	2575.1	35.80	35.82



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-06-01T11:11:52.070
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        : 4115769479352202624
2Mass ID (if available) : 17163643-2128554
ICRS Star Coord at Epoch: 17h 16m 36.43500s -21:28:55.68037s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.191
G magnitude           : 17.316
RP magnitude          : 16.215
BP magnitude          : 18.615
DUPflag              : 0
Distance (au)         : 9.036
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -17.00
Sun-Target sep (deg)  : 170.47
Sun-Moon sep (deg)   : 133.17
B (ring opening deg) : 26.47
PA of pole (deg)     : 4.68
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.174
C/A sky separation (km) : 1140.9
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	2046-06-01T11:09:39.633	48.71	-46.44	2575.1	28.13	28.14
Titan	E	2046-06-01T11:14:04.525	48.64	-46.13	2575.1	18.54	18.55