

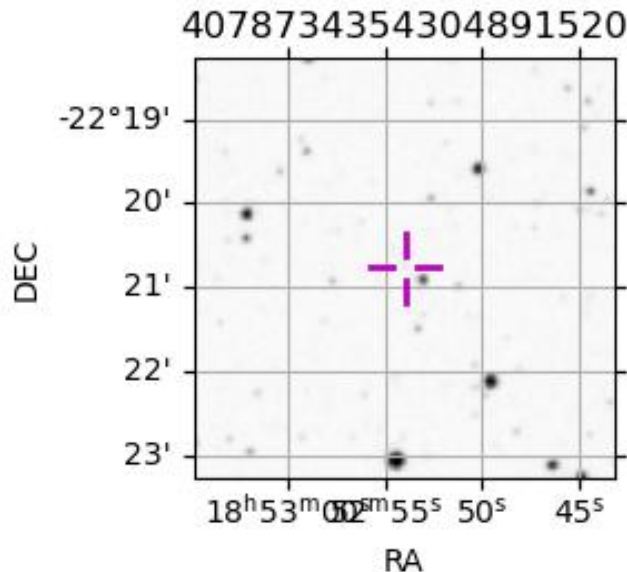
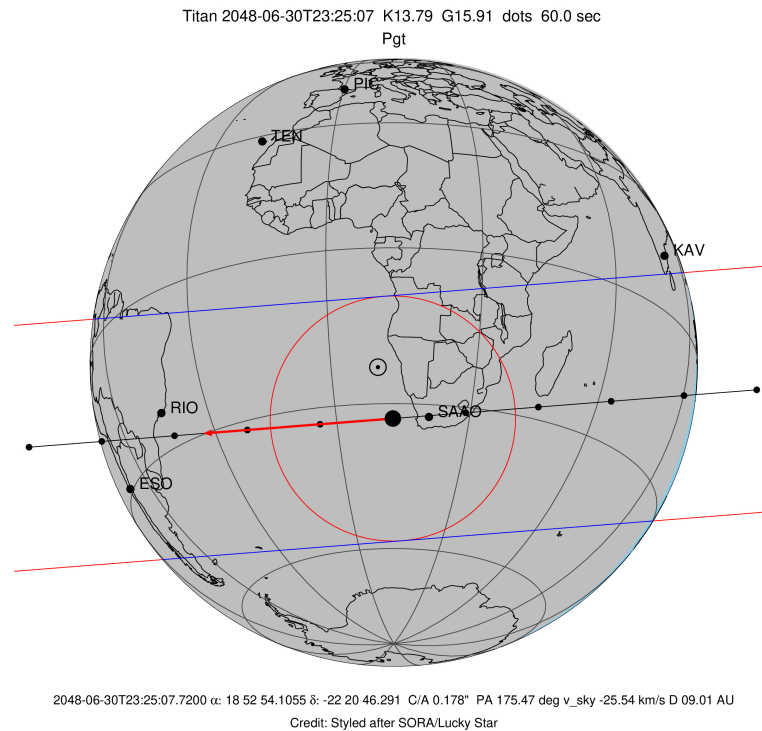
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2048-06-30T23:25:07.720
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4078734354304891520
 2Mass ID (if available) : 18525412-2220458

ICRS Star Coord at Epoch: 18h 52m 54.10547s -22:20:46.29075s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.792
 G magnitude : 15.909
 RP magnitude : 15.219
 BP magnitude : 16.436
 DUPflag : 0
 Distance (au) : 9.014
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -25.54
 Sun-Target sep (deg) : 176.90
 Sun-Moon sep (deg) : 62.69
 B (ring opening deg) : 25.12
 PA of pole (deg) : 6.51
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.178
 C/A sky separation (km) : 1164.4
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

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

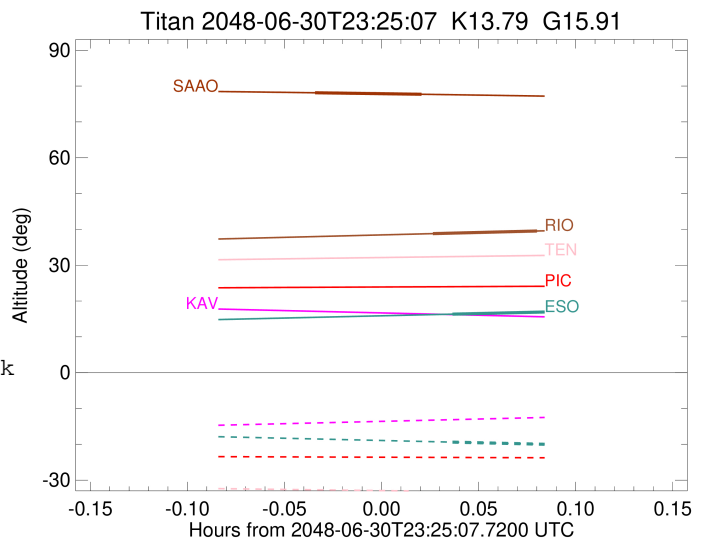
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			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	+ +	JUN 30 23:26 - JUN 30 23:29	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 30 23:27 - JUN 30 23:30	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 30 23:23 - JUN 30 23:26	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-06-30T23:28:19.630
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      : 4078734354304891520
2Mass ID (if available) : 18525412-2220458
ICRS Star Coord at Epoch: 18h 52m 54.10547s -22:20:46.29075s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 13.792
G magnitude          : 15.909
RP magnitude         : 15.219
BP magnitude         : 16.436
DUPflag             : 0
Distance (au)       : 9.014
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -25.54
Sun-Target sep (deg) : 176.90
Sun-Moon sep (deg)  : 63.56
B (ring opening deg) : 25.12
PA of pole (deg)    : 6.51
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.085
C/A sky separation (km) : 557.2
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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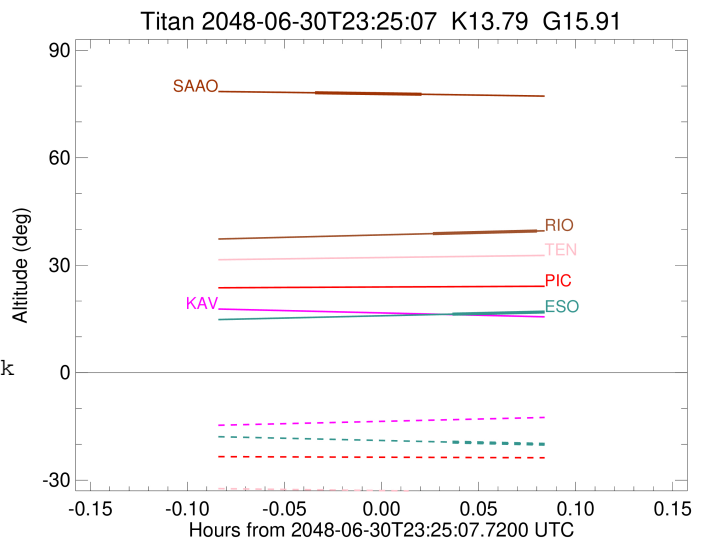
x: target alt < 5.0 deg or sun > -5.0 deg

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Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2048-06-30T23:26:42.174	38.81	-41.91	2575.2	1.11	1.11
Titan	E	2048-06-30T23:29:57.078	39.54	-42.64	2575.1	21.40	21.41

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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-06-30T23:28:52.030
Event type          : Pgt
: Titan occs: geocentric, topocentric
: 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      : 4078734354304891520
2Mass ID (if available) : 18525412-2220458
ICRS Star Coord at Epoch: 18h 52m 54.10547s -22:20:46.29075s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 13.792
G magnitude          : 15.909
RP magnitude         : 15.219
BP magnitude         : 16.436
DUPflag             : 0
Distance (au)       : 9.014
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -25.54
Sun-Target sep (deg) : 176.90
Sun-Moon sep (deg)  : 63.33
B (ring opening deg) : 25.12
PA of pole (deg)    : 6.51
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.148
C/A sky separation (km) : 966.4
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
    
```



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

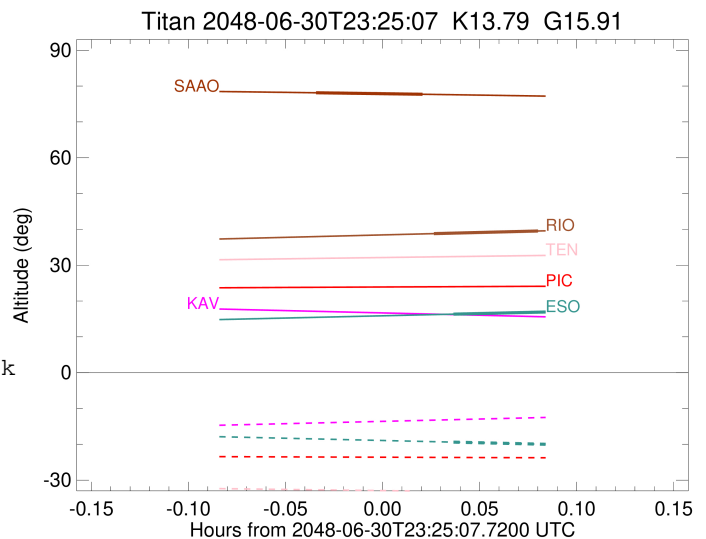
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Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2048-06-30T23:27:18.821	16.33	-19.39	2575.1	-29.89	-29.90
Titan	E	2048-06-30T23:30:25.230	16.98	-20.04	2575.2	-9.68	-9.68

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-06-30T23:24:42.940
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      : 4078734354304891520
2Mass ID (if available) : 18525412-2220458
ICRS Star Coord at Epoch: 18h 52m 54.10547s -22:20:46.29075s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 13.792
G magnitude          : 15.909
RP magnitude         : 15.219
BP magnitude         : 16.436
DUPflag             : 0
Distance (au)       : 9.014
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -25.54
Sun-Target sep (deg) : 176.90
Sun-Moon sep (deg)  : 63.50
B (ring opening deg) : 25.12
PA of pole (deg)    : 6.51
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.002
C/A sky separation (km) : 14.8
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	2048-06-30T23:23:03.637	78.13	-76.91	2575.1	-10.06	-10.07
Titan	E	2048-06-30T23:26:22.253	77.71	-76.37	2575.1	9.66	9.67