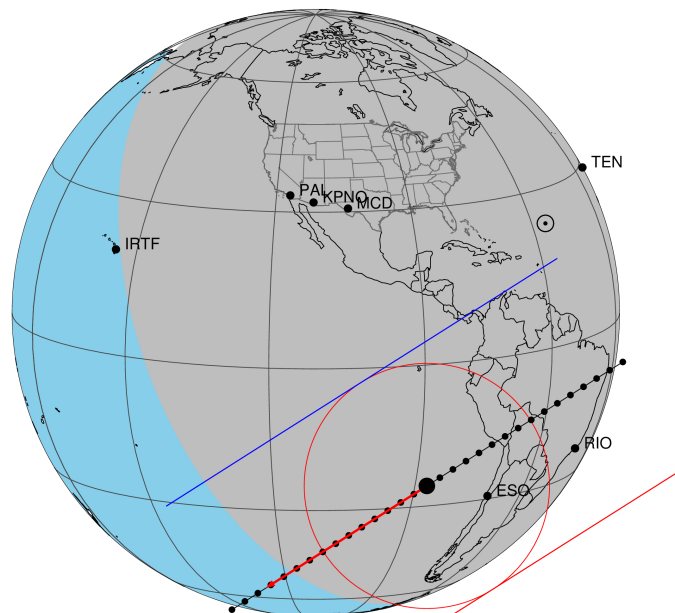


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2028-12-20T03:40:10.520
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 72362025615486848
 2Mass ID (if available) : 021111865+1030420

ICRS Star Coord at Epoch: 02h 11m 18.67607s +10:30:42.28675s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 12.905
 G magnitude : 14.317
 RP magnitude : 13.820
 BP magnitude : 14.642
 DUPflag : 0
 Distance (au) : 8.600
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -5.40
 Sun-Target sep (deg) : 125.78
 Sun-Moon sep (deg) : 77.32
 B (ring opening deg) : -17.04
 PA of pole (deg) : 0.79
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.693
 C/A sky separation (km) : 4319.7
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

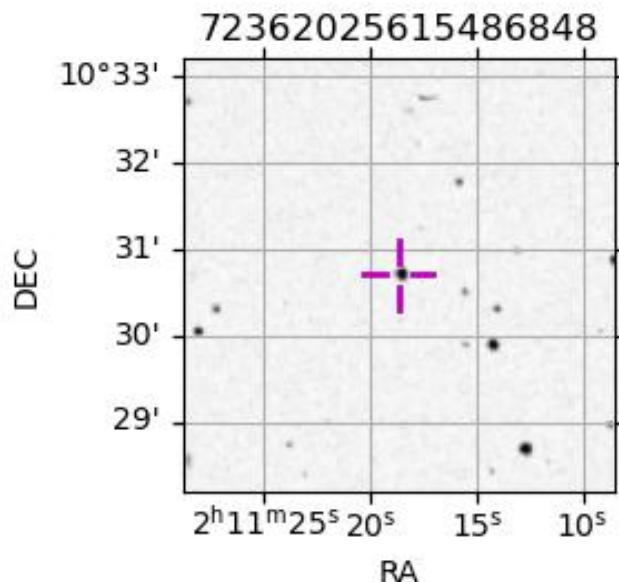
Titan 2028-12-20T03:40:10 K12.90 G14.32 dots 60.0 sec
 Pt



2028-12-20T03:40:10.5200 cc: 02 11 18.6761 d: +10 30 42.287 C/A 0.693" PA 147.61 deg v_sky - 5.40 km/s D 08.60 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	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	+ +	DEC 20 03:23 - DEC 20 03:38	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	DEC 20 03:30 - DEC 20 03:44	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



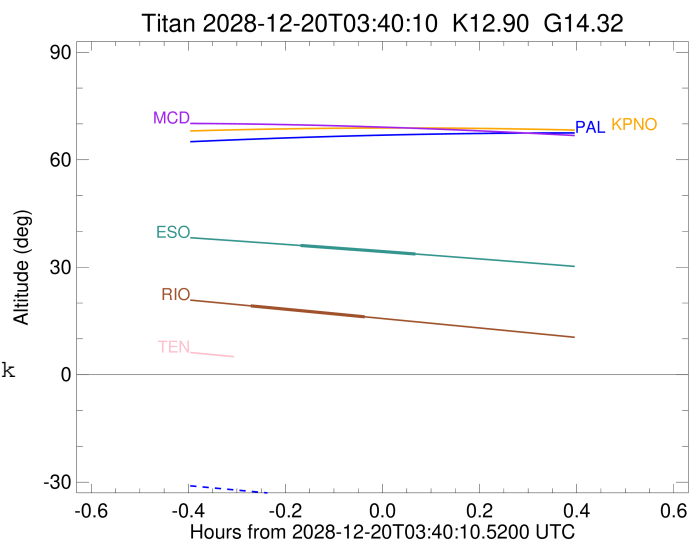
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2028-12-20T03:30:56.400
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       : 72362025615486848
2Mass ID (if available) : 02111865+1030420
ICRS Star Coord at Epoch: 02h 11m 18.67607s +10:30:42.28675s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 12.905
G magnitude           : 14.317
RP magnitude          : 13.820
BP magnitude          : 14.642
DUPflag              : 0
Distance (au)         : 8.600
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -5.40
Sun-Target sep (deg) : 125.78
Sun-Moon sep (deg)   : 77.70
B (ring opening deg) : -17.04
PA of pole (deg)     : 0.79
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.155
C/A sky separation (km) : 966.5
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	2028-12-20T03:23:50.925	19.21	-43.11	2575.1	-51.34	-51.36
Titan	E	2028-12-20T03:38:03.469	16.13	-42.39	2575.2	10.31	10.32



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2028-12-20T03:37:11.100
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       : 72362025615486848
2Mass ID (if available) : 02111865+1030420
ICRS Star Coord at Epoch: 02h 11m 18.67607s +10:30:42.28675s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 12.905
G magnitude           : 14.317
RP magnitude         : 13.820
BP magnitude         : 14.642
DUPflag              : 0
Distance (au)        : 8.600
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.40
Sun-Target sep (deg) : 125.78
Sun-Moon sep (deg)   : 77.91
B (ring opening deg) : -17.04
PA of pole (deg)     : 0.79
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.132
C/A sky separation (km) : 823.7
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

```

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	2028-12-20T03:30:03.199	36.05	-34.80	2575.1	-47.53	-47.55
Titan	E	2028-12-20T03:44:20.307	33.66	-35.76	2575.2	12.69	12.69

