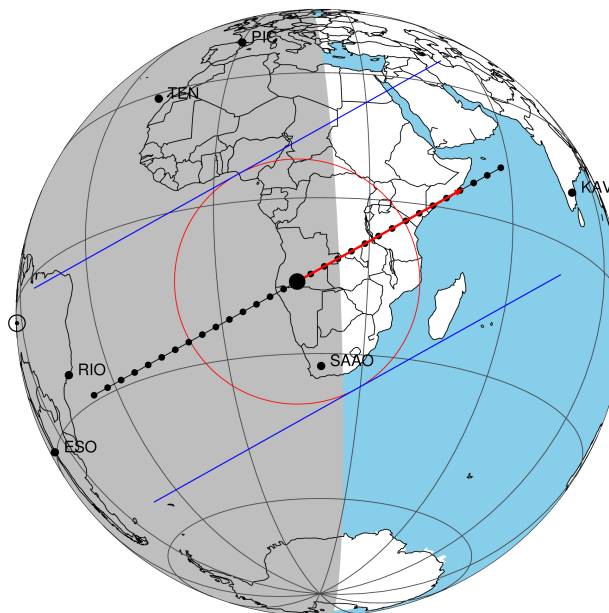


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-03-29T04:30:42.540
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4090524451868878720
 2Mass ID (if available) : 18160381-2218400

ICRS Star Coord at Epoch: 18h 16m 03.76598s -22:18:39.70907s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 13.412
 G magnitude : 18.822
 RP magnitude : 0.000
 BP magnitude : 0.000
 DUPflag : 0
 Distance (au) : 9.922
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 5.44
 Sun-Target sep (deg) : 94.04
 Sun-Moon sep (deg) : 123.20
 B (ring opening deg) : 26.01
 PA of pole (deg) : 5.95
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.105
 C/A sky separation (km) : 755.9
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

Titan 2047-03-29T04:30:42 K13.41 G18.82 dots 60.0 sec
 Pgt

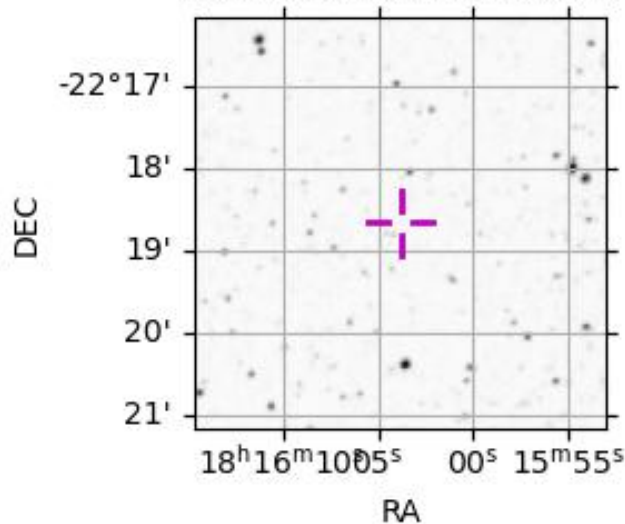


2047-03-29T04:30:42.5400 ex: 18 16 03.7660 s: -22 18 39.709 C/A 0.112" PA 330.77 deg v_sky + 5.44 km/s D 09.92 AU
 Credit: Styled after SORA/Lucky Star

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	+ +	MAR 29 04:06 - MAR 29 04:21	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	MAR 29 04:18 - MAR 29 04:18	Pne
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAR 29 04:22 - MAR 29 04:22	Pin
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

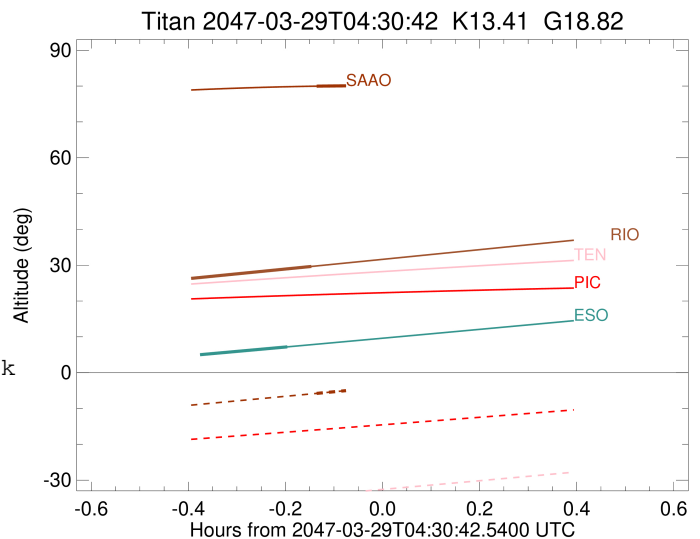
4090524451868878720



target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-03-29T04:13:57.190
 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 : 4090524451868878720
 2Mass ID (if available) : 18160381-2218400
 ICRS Star Coord at Epoch: 18h 16m 03.76598s -22:18:39.70907s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 13.412
 G magnitude : 18.822
 RP magnitude : 0.000
 BP magnitude : 0.000
 DUPflag : 0
 Distance (au) : 9.922
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 5.44
 Sun-Target sep (deg) : 94.04
 Sun-Moon sep (deg) : 123.18
 B (ring opening deg) : 26.01
 PA of pole (deg) : 5.95
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.094
 C/A sky separation (km) : 674.5
 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	2047-03-29T04:06:00.100	26.08	-64.48	2575.1	43.36	43.37
Titan	E	2047-03-29T04:21:54.670	29.65	-61.83	2575.1	-17.48	-17.49



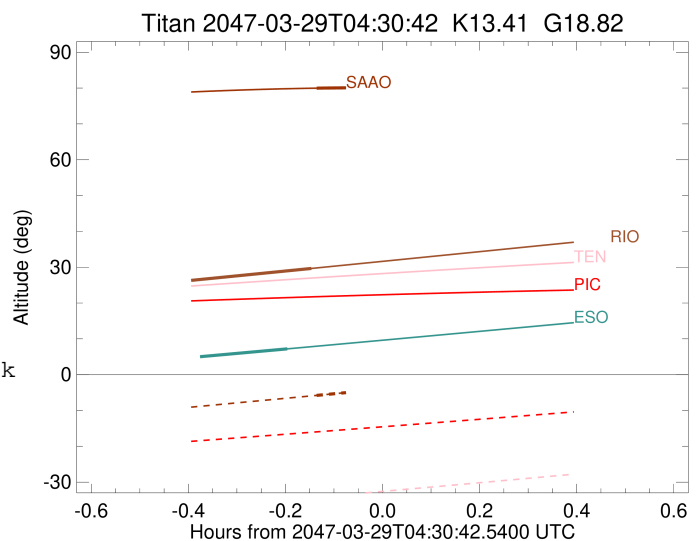
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-03-29T04:11:17.410
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       : 4090524451868878720
2Mass ID (if available) : 18160381-2218400
ICRS Star Coord at Epoch: 18h 16m 03.76598s -22:18:39.70907s
RUWE (>1.4 is poor) : 0.00
K magnitude           : 13.412
G magnitude           : 18.822
RP magnitude          : 0.000
BP magnitude          : 0.000
DUPflag              : 0
Distance (au)         : 9.922
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg) : 94.04
Sun-Moon sep (deg)   : 122.87
B (ring opening deg) : 26.01
PA of pole (deg)     : 5.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.099
C/A sky separation (km): 715.8
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	2047-03-29T04:03:38.232	4.10x	-62.19	2575.1	15.63	15.64
Titan	E	2047-03-29T04:18:57.046	7.20	-63.35	2575.1	-43.31	-43.33

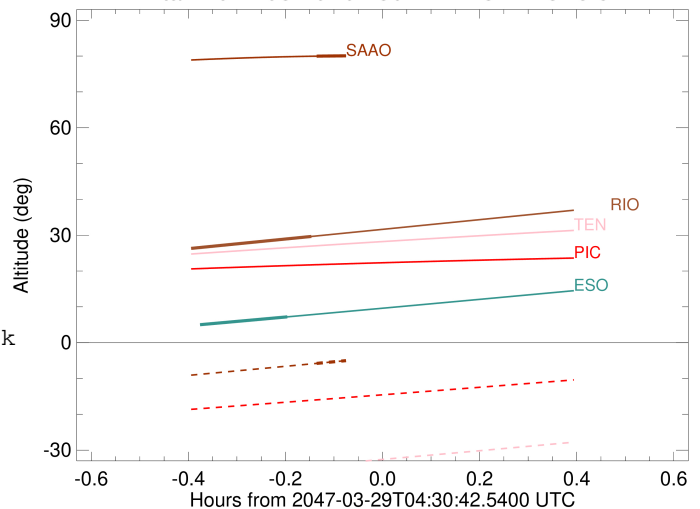


```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-03-29T04:28:48.480
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       : 4090524451868878720
2Mass ID (if available) : 18160381-2218400
ICRS Star Coord at Epoch: 18h 16m 03.76598s -22:18:39.70907s
RUWE (>1.4 is poor) : 0.00
K magnitude           : 13.412
G magnitude           : 18.822
RP magnitude          : 0.000
BP magnitude          : 0.000
DUPflag              : 0
Distance (au)         : 9.922
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 5.44
Sun-Target sep (deg) : 94.04
Sun-Moon sep (deg)   : 123.93
B (ring opening deg) : 26.01
PA of pole (deg)     : 5.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.237
C/A sky separation (km): 1703.9
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

```

Titan 2047-03-29T04:30:42 K13.41 G18.82



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	2047-03-29T04:22:29.378	79.96	-5.80	2575.2	-3.65	-3.66
Titan	E	2047-03-29T04:35:06.994	80.01	-3.13x	2575.0	-61.84	-61.85