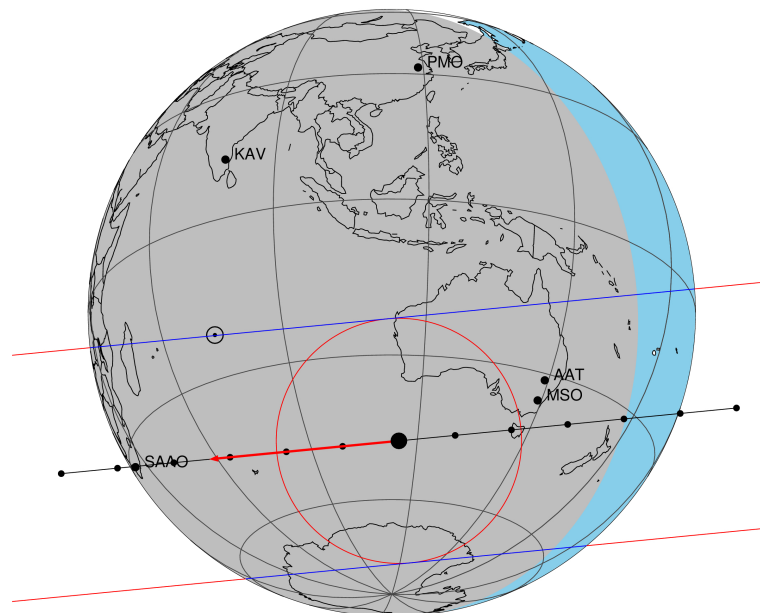


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2048-05-29T19:01:01.340  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4081526559763737728  
 2Mass ID (if available) : 19020153-2206083

ICRS Star Coord at Epoch: 19h 02m 01.51310s -22:06:08.81140s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 13.466  
 G magnitude : 16.137  
 RP magnitude : 15.326  
 BP magnitude : 16.833  
 DUPflag : 0  
 Distance (au) : 9.193  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -19.78  
 Sun-Target sep (deg) : 144.06  
 Sun-Moon sep (deg) : 7.57  
 B (ring opening deg) : 24.64  
 PA of pole (deg) : 6.61  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.404  
 C/A sky separation (km) : 2691.1  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

Titan 2048-05-29T19:01:01 K13.47 G16.14 dots 60.0 sec  
 Pt

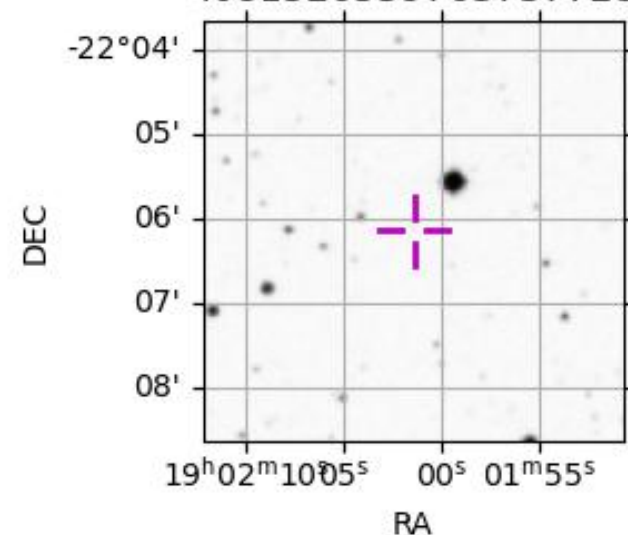


2048-05-29T19:01:01.340000 cr: 19 02 01.5131 & -22 06 08.811 C/A 0.404" PA 174.43 deg v\_sky -19.78 km/s D 09.19 AU  
 Credit: Styled after SORA/Lucky Star

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

Obs	Location	lat	Elon	Target	Observed Events Interval	OEncode
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			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+ +	MAY 29 18:56 - MAY 29 19:00	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAY 29 19:03 - MAY 29 19:07	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	MAY 29 18:56 - MAY 29 19:00	Pie

4081526559763737728



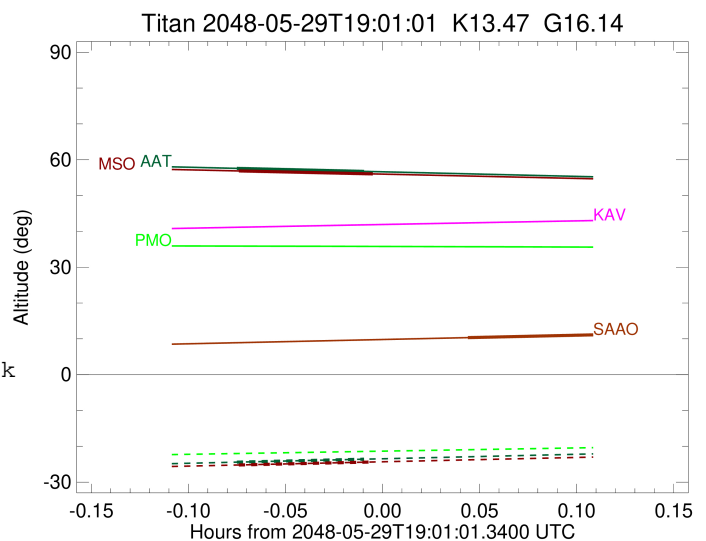
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2048-05-29T18:58:29.530
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : AAT
Location              : Siding Spring (AAT)
Latitude (deg)        : -31.27703
E. Longitude (deg)    : 149.06608
Altitude (km)         : 1.164
Gaia source ID        : 4081526559763737728
2Mass ID (if available) : 19020153-2206083
ICRS Star Coord at Epoch: 19h 02m 01.51310s -22:06:08.81140s
RUWE (>1.4 is poor)  : 1.07
K magnitude           : 13.466
G magnitude           : 16.137
RP magnitude          : 15.326
BP magnitude          : 16.833
DUPflag              : 0
Distance (au)         : 9.193
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -19.78
Sun-Target sep (deg)  : 144.06
Sun-Moon sep (deg)    : 8.19
B (ring opening deg)  : 24.64
PA of pole (deg)      : 6.61
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.149
C/A sky separation (km) : 990.7
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	2048-05-29T18:56:31.255	57.58	-24.42	2575.1	9.80	9.80
Titan	E	2048-05-29T19:00:27.819	56.74	-23.59	2575.1	30.94	30.96



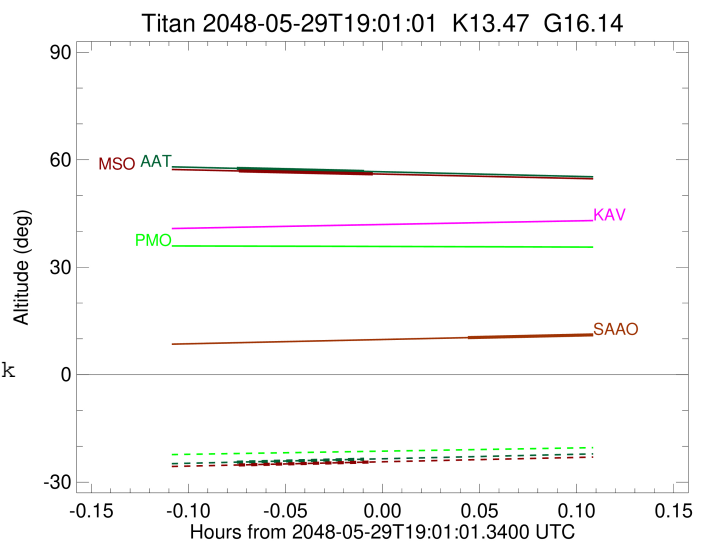
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-05-29T19:05:48.820
Event type           : Pt
: Titan occs: topocentric, not geocentric
: 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       : 4081526559763737728
2Mass ID (if available) : 19020153-2206083
ICRS Star Coord at Epoch: 19h 02m 01.51310s -22:06:08.81140s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 13.466
G magnitude           : 16.137
RP magnitude          : 15.326
BP magnitude          : 16.833
DUPflag              : 0
Distance (au)         : 9.193
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -19.78
Sun-Target sep (deg) : 144.06
Sun-Moon sep (deg)   : 6.73
B (ring opening deg) : 24.64
PA of pole (deg)     : 6.61
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.011
C/A sky separation (km) : 73.8
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	2048-05-29T19:03:38.764	10.34	-42.42	2575.1	-9.95	-9.96
Titan	E	2048-05-29T19:07:58.840	11.20	-43.34	2575.1	12.89	12.89



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-05-29T18:58:38.840
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : MSO
Location             : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 4081526559763737728
2Mass ID (if available) : 19020153-2206083
ICRS Star Coord at Epoch: 19h 02m 01.51310s -22:06:08.81140s
RUWE (>1.4 is poor) : 1.07
K magnitude          : 13.466
G magnitude          : 16.137
RP magnitude         : 15.326
BP magnitude         : 16.833
DUPflag             : 0
Distance (au)        : 9.193
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -19.78
Sun-Target sep (deg) : 144.06
Sun-Moon sep (deg)   : 8.16
B (ring opening deg) : 24.64
PA of pole (deg)     : 6.61
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.088
C/A sky separation (km): 585.4
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	2048-05-29T18:56:33.968	56.87	-25.21	2575.2	1.17	1.18
Titan	E	2048-05-29T19:00:43.718	56.04	-24.37	2575.1	22.57	22.58

