

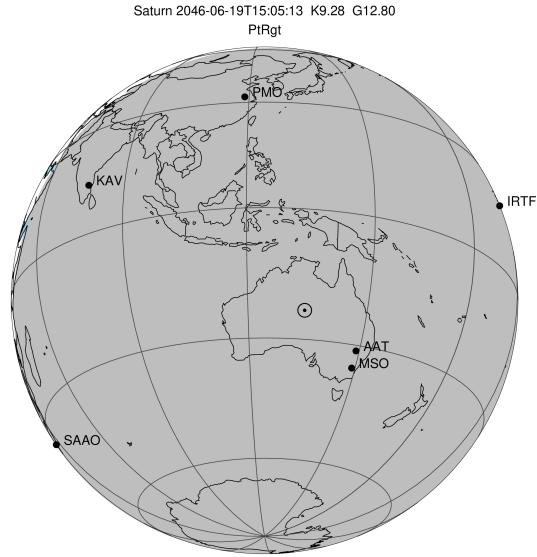
target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2046-06-19T15:05:13.580  
 Event type : PtrGt  
 : Saturn occs: topocentric, not geocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 4115635128445230336  
 2Mass ID (if available) : 17110413-2124380

ICRS Star Coord at Epoch: 17h 11m 04.13645s -21:24:38.23767s

RUWE (>1.4 is poor) : 0.92  
 K magnitude : 9.278  
 G magnitude : 12.797  
 RP magnitude : 11.822  
 BP magnitude : 13.781  
 DUPflag : 0  
 Distance (au) : 9.031  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -19.79  
 Sun-Target sep (deg) : 170.62  
 Sun-Moon sep (deg) : 22.74  
 B (ring opening deg) : 26.53  
 PA of pole (deg) : 4.39

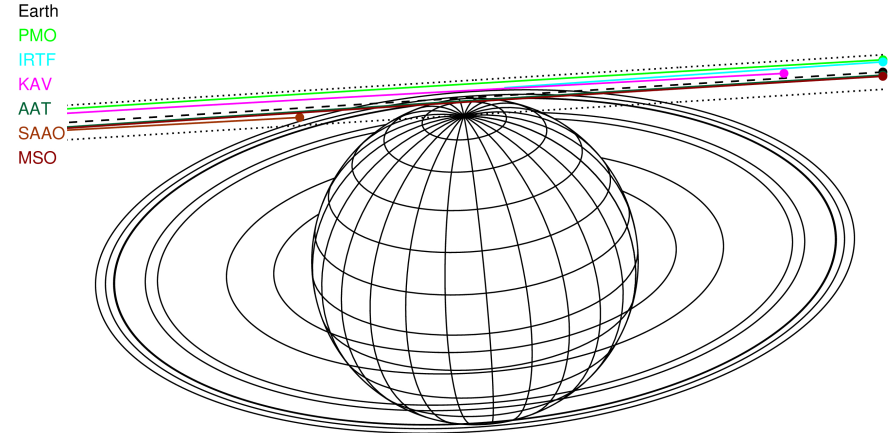
# a(km) ring

- 1 74490.6 C (IER)
- 2 91984.7 B (IER)
- 3 117571.2 B (OER)
- 4 122050.4 A (IER)
- 5 133423.3 Encke (IEG)
- 6 133744.9 Encke (OEG)
- 7 136774.4 A (OER)
- 8 140461.0 F ring



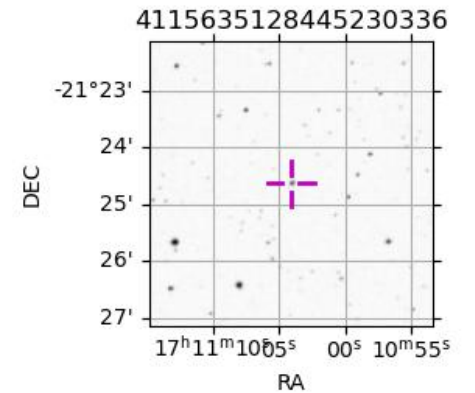
2046-06-19T15:05:13.5800 at: 17 11 04.1365 s: -21 24 38.238 C/A 9.240° PA 183.54 deg v\_sky -19.79 km/s D 09.03 AU  
 Credit: Styled after SORA/Lucky Star

Saturn 2046-06-19T15:05:13 K9.28 G12.80 PtrGt

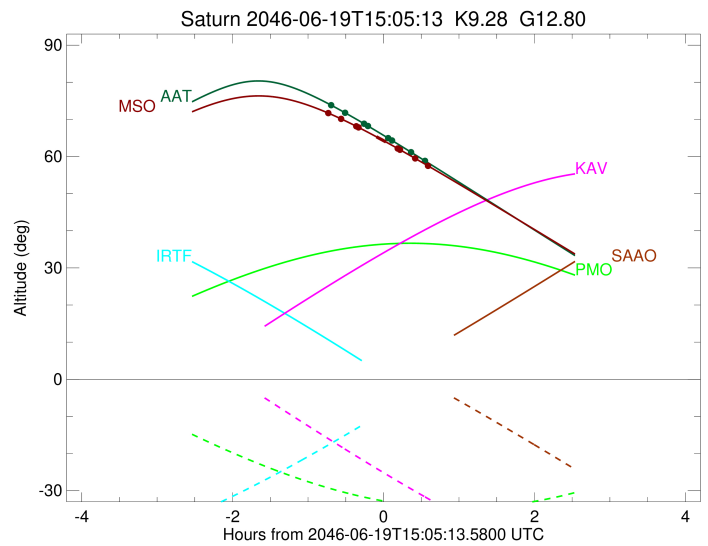
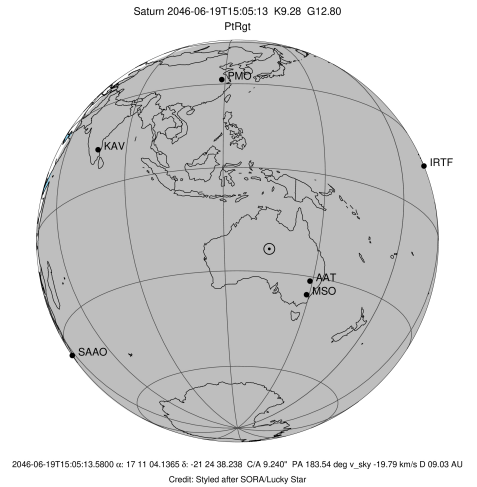


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl	32.0	248.4					PnnRnn
MCD	McDonald Obs.	30.7	256.0					PnnRnn
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observ	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1	+		+	JUN 19 14:23 - JUN 19 15:38	PnnRie
SAAO	So. Afr. Astro	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Ob	-35.3	149.0	+	+	+	JUN 19 14:21 - JUN 19 15:40	PieRie



target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2046-06-19T15:03:21.830  
 Event type : PtRgt  
 : Saturn occs: topocentric, not geocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : AAT  
 Location : Siding Spring (AAT)  
 Latitude (deg) : -31.27703  
 E. Longitude (deg) : 149.06608  
 Altitude (km) : 1.164  
 Gaia source ID : 4115635128445230336  
 2Mass ID (if available) : 17110413-2124380  
 ICRS Star Coord at Epoch: 17h 11m 04.13645s -21:24:38.23767s  
 RUWE (>1.4 is poor) : 0.92  
 K magnitude : 9.278  
 G magnitude : 12.797  
 RP magnitude : 11.822  
 BP magnitude : 13.781  
 DUPflag : 0  
 Distance (au) : 9.031  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -19.79  
 Sun-Target sep (deg) : 170.62  
 Sun-Moon sep (deg) : 22.72  
 B (ring opening deg) : 26.53  
 PA of pole (deg) : 4.39  
 Pole direction: RA (deg): 40.60000  
 Dec (deg): 83.50000  
 C/A sky separation (") : 9.070  
 C/A sky separation (km) : 59404.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 Saturn\_ring\_plane.tf  
 sat378.bsp  
 sat286.bsp  
 vgr1.sat286.bsp  
 vgr2.sat286.bsp  
 HST1081HSPephemUTC.bsp  
 pfb10000r.bsp  
 cassini.bsp  
 earthstns\_itrf93\_040916.bsp  
 earth\_200101\_990628\_predict.bpc  
 earth\_720101\_070426.bpc  
 cpck28Mar2008.tpc  
 pck.sat440.tpc  
 IAU\_SATURN\_for\_RINGFIT.tpc  
 naif0012.tls  
 earth\_flat\_IAU.spk



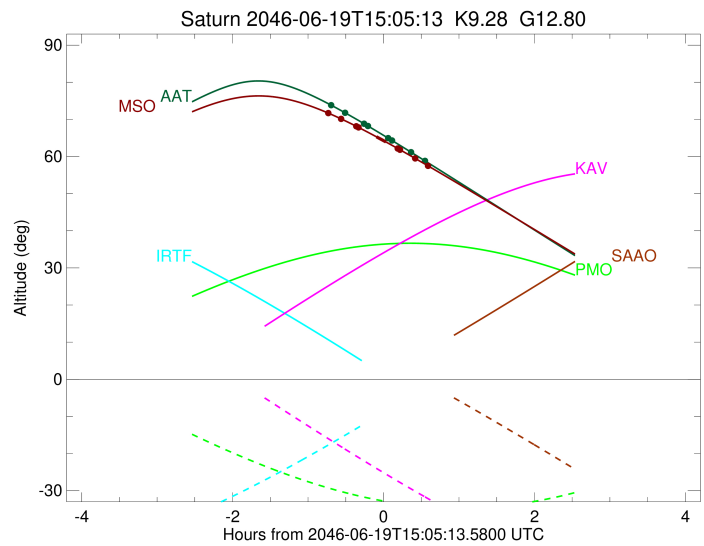
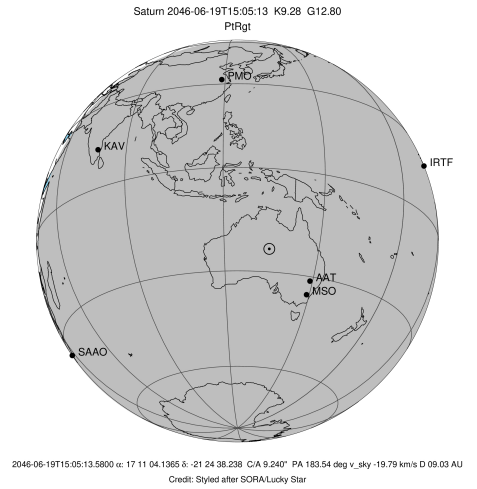
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-06-19T14:23:19.435		73.88	-81.33	140461.00	-6.46		
A (OER)	I	2046-06-19T14:34:19.701		71.85	-79.96	136774.40	-4.68		
Encke (OEG)	I	2046-06-19T14:49:09.325		68.97	-77.58	133744.89	-2.10		
Encke (IEG)	I	2046-06-19T14:52:03.970		68.38	-77.07	133423.32	-1.58		

No planet occultations

Encke (IEG)	E	2046-06-19T15:09:32.786		64.83	-73.79	133423.31	1.58		
Encke (OEG)	E	2046-06-19T15:12:27.617		64.23	-73.22	133744.89	2.10		
A (OER)	E	2046-06-19T15:27:18.878		61.13	-70.24	136774.40	4.67		
F ring	E	2046-06-19T15:38:20.955		58.80	-67.97	140461.00	6.44		

target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2046-06-19T15:03:25.600  
 Event type : PtRgt  
 : Saturn occs: topocentric, not geocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : MSO  
 Location : Mt. Stromlo Observatory  
 Latitude (deg) : -35.32000  
 E. Longitude (deg) : 149.00833  
 Altitude (km) : 0.770  
 Gaia source ID : 4115635128445230336  
 2Mass ID (if available) : 17110413-2124380  
 ICRS Star Coord at Epoch: 17h 11m 04.13645s -21:24:38.23767s  
 RUWE (>1.4 is poor) : 0.92  
 K magnitude : 9.278  
 G magnitude : 12.797  
 RP magnitude : 11.822  
 BP magnitude : 13.781  
 DUPflag : 0  
 Distance (au) : 9.031  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -19.79  
 Sun-Target sep (deg) : 170.62  
 Sun-Moon sep (deg) : 22.72  
 B (ring opening deg) : 26.53  
 PA of pole (deg) : 4.39  
 Pole direction: RA (deg): 40.60000  
 Dec (deg): 83.50000  
 C/A sky separation (") : 9.003  
 C/A sky separation (km) : 58968.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 Saturn\_ring\_plane.tf  
 sat378.bsp  
 sat286.bsp  
 vgr1.sat286.bsp  
 vgr2.sat286.bsp  
 HST1081HSPephemUTC.bsp  
 pfb10000r.bsp  
 cassini.bsp  
 earthstns\_itrf93\_040916.bsp  
 earth\_200101\_990628\_predict.bpc  
 earth\_720101\_070426.bpc  
 cpck28Mar2008.tpc  
 pck.sat440.tpc  
 IAU\_SATURN\_for\_RINGFIT.tpc  
 naif0012.tls  
 earth\_flat\_IAU.spk



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-06-19T14:21:03.597		71.74	-77.80	140461.00	-6.86		
A (OER)	I	2046-06-19T14:31:12.041		70.20	-77.01	136774.40	-5.24		
Encke (OEG)	I	2046-06-19T14:43:08.154		68.23	-75.70	133744.89	-3.20		
Encke (IEG)	I	2046-06-19T14:44:53.848		67.93	-75.48	133423.31	-2.89		
Saturn	I	2046-06-19T14:59:36.972		65.32	-73.39	59148.15		63.03	67.19
Saturn	E	2046-06-19T15:07:11.442		63.92	-72.19	59143.77		63.26	67.39
Encke (IEG)	E	2046-06-19T15:16:50.900		62.10	-70.56	133423.31	2.88		
Encke (OEG)	E	2046-06-19T15:18:36.768		61.77	-70.26	133744.89	3.19		
A (OER)	E	2046-06-19T15:30:34.412		59.46	-68.12	136774.40	5.23		
F ring	E	2046-06-19T15:40:44.569		57.47	-66.23	140461.00	6.83		