

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-09-08T10:06:38.660
 Event type : XRgt
 : No Saturn occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4079225659884311424
 2Mass ID (if available) : 18374220-2243201

ICRS Star Coord at Epoch: 18h 37m 42.19987s -22:43:20.58566s

RUWE (>1.4 is poor) : 0.85
 K magnitude : 9.527
 G magnitude : 13.360
 RP magnitude : 12.299
 BP magnitude : 14.518
 DUPflag : 0
 Distance (au) : 9.597
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.11
 Sun-Target sep (deg) : 112.93
 Sun-Moon sep (deg) : 110.98
 B (ring opening deg) : 25.97
 PA of pole (deg) : 6.19

a(km) ring

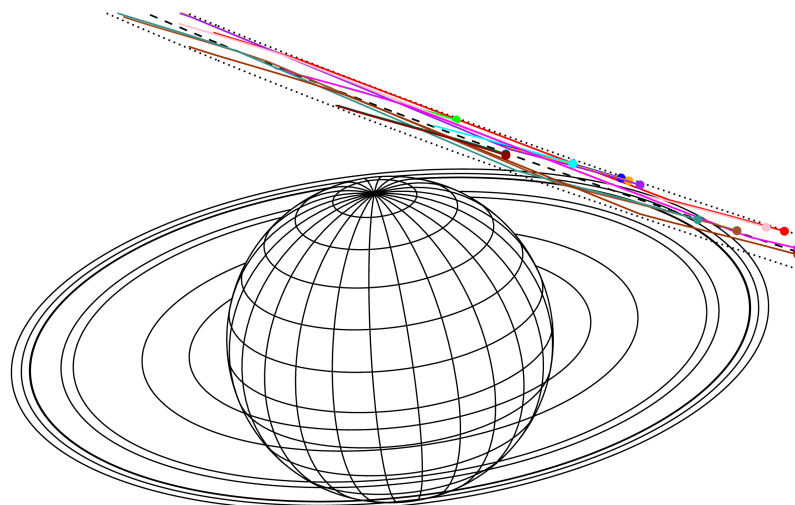
- 1 74490.6 C (IER)
- 2 91984.7 B (IER)
- 3 117571.2 B (OER)
- 4 122050.4 A (IER)
- 5 133423.3 Encke (IEG)
- 6 133744.9 Encke (OEG)
- 7 136774.4 A (OER)
- 8 140461.0 F ring



2048-09-08T10:06:38.6600 α: 18 37 42.1999 δ: -22 43 20.586 C/A ***** PA 160.02 deg v_sky - 2.11 km/s D 09.60 AU
 Credit: Styled after SORA/Lucky Star

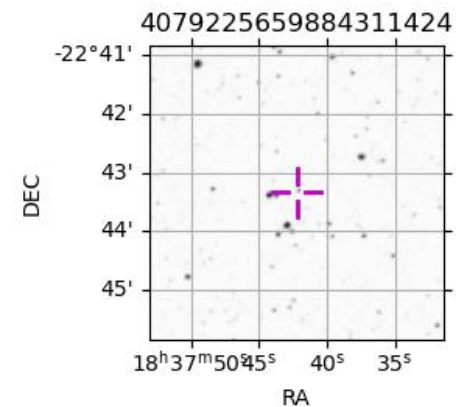
Saturn 2048-09-08T10:06:38 K9.53 G13.36 XRgt

- Earth
- PIC
- PAL
- PMO
- KPNO
- MCD
- TEN
- IRTF
- KAV
- RIO
- ESO
- AAT
- SAAO
- MSO

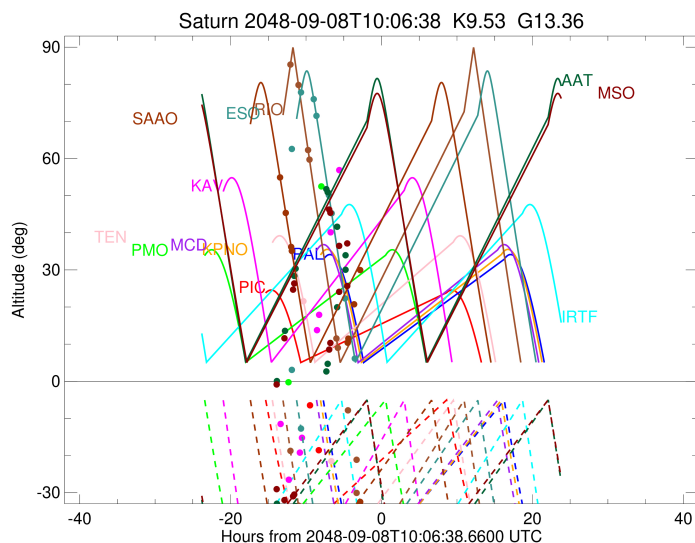
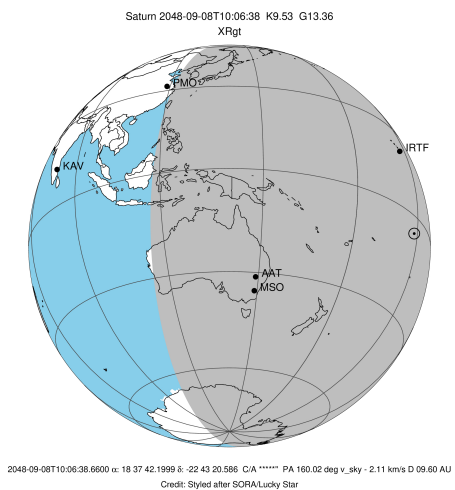


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
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	+			SEP 07 23:42 - SEP 07 23:42	PnnRin
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	+	+	+	SEP 07 22:01 - SEP 08 04:22	PnnRie
ESO	European South	-29.3	289.3	+	+	+	SEP 07 23:24 - SEP 08 06:35	PnnRie
AAT	Siding Spring	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro	-32.4	20.8	+	+	+	SEP 07 20:39 - SEP 07 22:12	PnnRin
MSO	Mt. Stromlo Ob	-35.3	149.0					PnnRnn



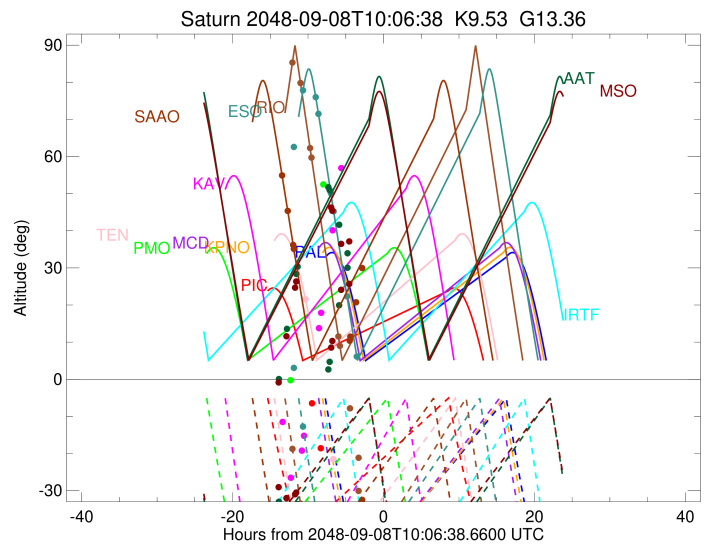
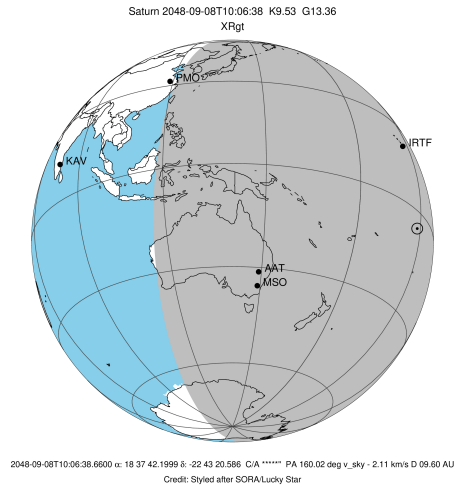
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-09-08T09:14:11.890
 Event type : XRgt
 : No Saturn occs
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 4079225659884311424
 2Mass ID (if available) : 18374220-2243201
 ICRS Star Coord at Epoch: 18h 37m 42.19987s -22:43:20.58566s
 RUWE (>1.4 is poor) : 0.85
 K magnitude : 9.527
 G magnitude : 13.360
 RP magnitude : 12.299
 BP magnitude : 14.518
 DUPflag : 0
 Distance (au) : 9.597
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.11
 Sun-Target sep (deg) : 112.93
 Sun-Moon sep (deg) : 110.26
 B (ring opening deg) : 25.97
 PA of pole (deg) : 6.19
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 11.578
 C/A sky separation (km) : 80582.3
 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	2048-09-07T23:42:36.728		22.07	-51.12	140461.00	-0.48		
No planet occultations									
F ring	E	2048-09-08T03:31:03.408		-22.26x	-41.09	140461.00	0.46		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-09-08T09:32:11.030
 Event type : XRgt
 : No Saturn occs
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 4079225659884311424
 2Mass ID (if available) : 18374220-2243201
 ICRS Star Coord at Epoch: 18h 37m 42.19987s -22:43:20.58566s
 RUWE (>1.4 is poor) : 0.85
 K magnitude : 9.527
 G magnitude : 13.360
 RP magnitude : 12.299
 BP magnitude : 14.518
 DUPflag : 0
 Distance (au) : 9.597
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.11
 Sun-Target sep (deg) : 112.93
 Sun-Moon sep (deg) : 110.38
 B (ring opening deg) : 25.97
 PA of pole (deg) : 6.19
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 10.748
 C/A sky separation (km) : 74811.5
 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

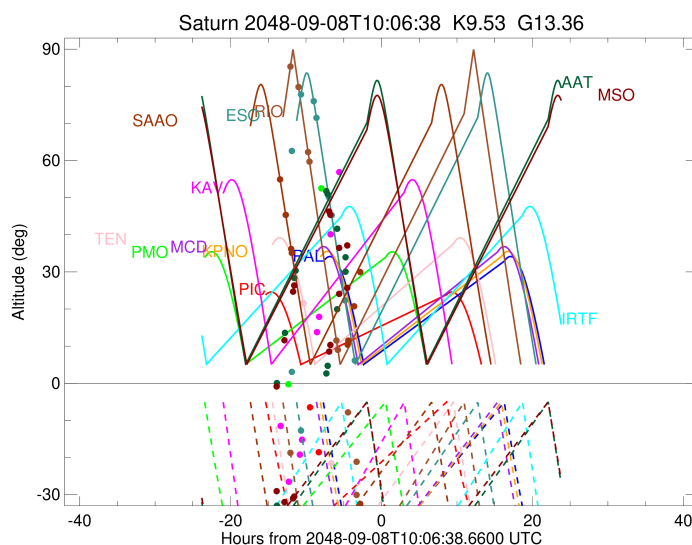
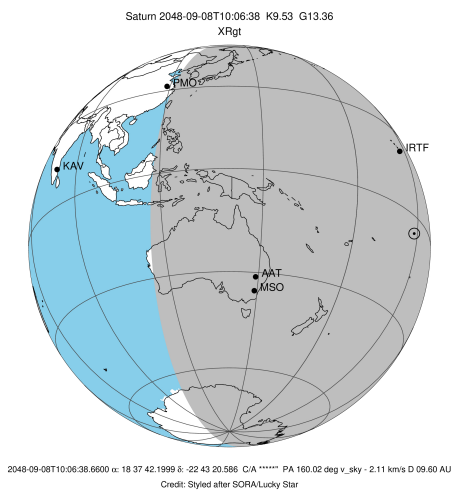


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2048-09-07T22:01:29.174		85.08	-18.51	140461.00	-1.09		
A (OER)	I	2048-09-07T23:05:17.962		80.16	-33.15	136774.40	-0.83		
Encke (OEG)	I	2048-09-08T00:20:05.262		62.91	-49.87	133744.89	-0.51		
Encke (IEG)	I	2048-09-08T00:30:59.619		60.41	-52.22	133423.31	-0.47		

No planet occultations

Encke (IEG)	E	2048-09-08T04:11:21.508		10.83	-63.89	133423.31	0.45		
Encke (OEG)	E	2048-09-08T04:22:44.389		8.37	-61.77	133744.89	0.49		
A (OER)	E	2048-09-08T05:41:42.562		-8.19x	-45.20	136774.40	0.78		
F ring	E	2048-09-08T06:49:54.084		-21.38x	-29.79	140461.00	1.02		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-09-08T09:46:34.620
 Event type : XRgt
 : No Saturn occs
 : Ring occs: geocentric, topocentric
 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 : 4079225659884311424
 2Mass ID (if available) : 18374220-2243201
 ICRS Star Coord at Epoch: 18h 37m 42.19987s -22:43:20.58566s
 RUWE (>1.4 is poor) : 0.85
 K magnitude : 9.527
 G magnitude : 13.360
 RP magnitude : 12.299
 BP magnitude : 14.518
 DUPflag : 0
 Distance (au) : 9.597
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.11
 Sun-Target sep (deg) : 112.93
 Sun-Moon sep (deg) : 110.42
 B (ring opening deg) : 25.97
 PA of pole (deg) : 6.19
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 10.611
 C/A sky separation (km) : 73859.1
 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



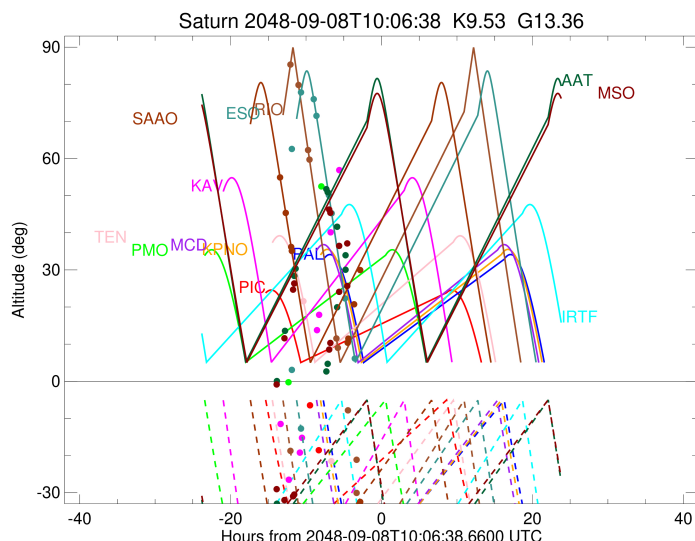
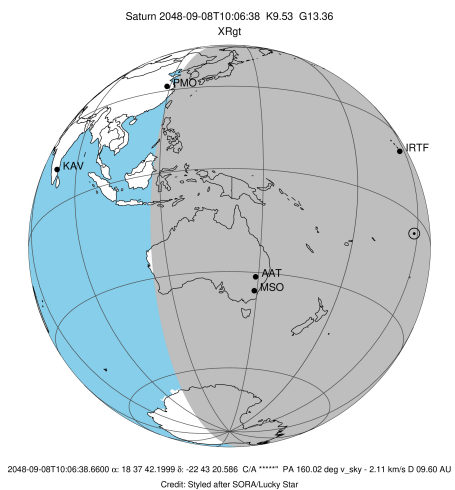
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2048-09-07T22:12:48.803		62.34	3.31x	140461.00	-0.99		
A (OER)	I	2048-09-07T23:24:46.450		77.48	-12.35	136774.40	-0.71		
Encke (OEG)	I	2048-09-08T01:02:56.593		76.95	-33.59	133744.89	-0.31		
Encke (IEG)	I	2048-09-08T01:22:45.692		72.92	-37.76	133423.34	-0.23		

No planet occultations

Encke (IEG)	E	2048-09-08T03:15:05.619		48.57	-58.93	133423.34	0.22		
Encke (OEG)	E	2048-09-08T03:35:27.948		44.12	-61.81	133744.89	0.30		
A (OER)	E	2048-09-08T05:18:35.008		21.87	-64.66	136774.40	0.67		
F ring	E	2048-09-08T06:35:52.884		5.83	-53.85	140461.00	0.92		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-09-08T09:52:04.820
 Event type : XRgt
 : No Saturn occs
 : Ring occs: geocentric, topocentric
 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 : 4079225659884311424
 2Mass ID (if available) : 18374220-2243201
 ICRS Star Coord at Epoch: 18h 37m 42.19987s -22:43:20.58566s
 RUWE (>1.4 is poor) : 0.85
 K magnitude : 9.527
 G magnitude : 13.360
 RP magnitude : 12.299
 BP magnitude : 14.518
 DUPflag : 0
 Distance (au) : 9.597
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.11
 Sun-Target sep (deg) : 112.93
 Sun-Moon sep (deg) : 111.11
 B (ring opening deg) : 25.97
 PA of pole (deg) : 6.19
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 11.095
 C/A sky separation (km) : 77227.3
 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



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2048-09-07T20:39:27.202		55.04	-52.21	140461.00	-1.46		
A (OER)	I	2048-09-07T21:24:27.099		45.51	-58.75	136774.40	-1.27		
Encke (OEG)	I	2048-09-07T22:07:32.224		36.39	-62.61	133744.89	-1.07		
Encke (IEG)	I	2048-09-07T22:12:34.821		35.32	-62.85	133423.31	-1.05		

No planet occultations

Encke (IEG)	E	2048-09-08T05:39:08.118		-34.76x	10.67x	133423.31	1.00		
Encke (OEG)	E	2048-09-08T05:44:27.167		-34.89x	11.77x	133744.89	1.02		
A (OER)	E	2048-09-08T06:30:03.620		-34.80x	20.97x	136774.40	1.19		
F ring	E	2048-09-08T07:17:59.160		-32.42x	30.14x	140461.00	1.37		