

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T09:07:28.030
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 615301245368208128
 2Mass ID (if available) : 09554978+1419440

Saturn 2037-03-30T09:07:28 K7.43 G11.03 PgtRgt

ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s

RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 28.81
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31

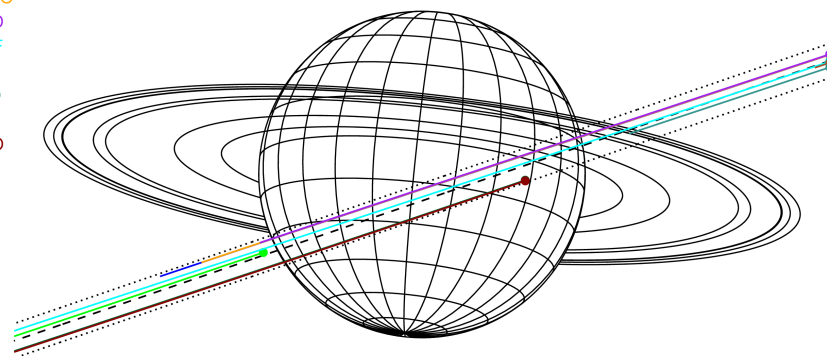
a(km) ring

- 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



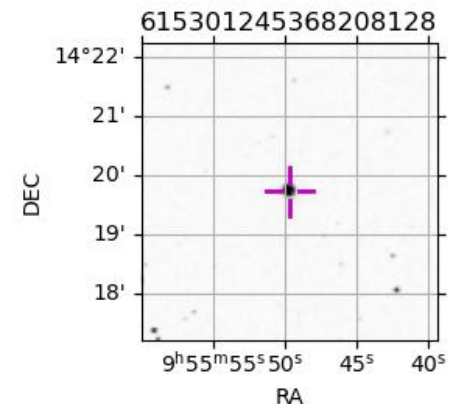
2037-03-30T09:07:28.0300 α: 09 55 49.7858 δ: +14 19 44.144 C/A 1.493° PA 18.96 deg v_sky -12.06 km/s D 08.49 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 RIO
 ESO
 AAT
 MSO

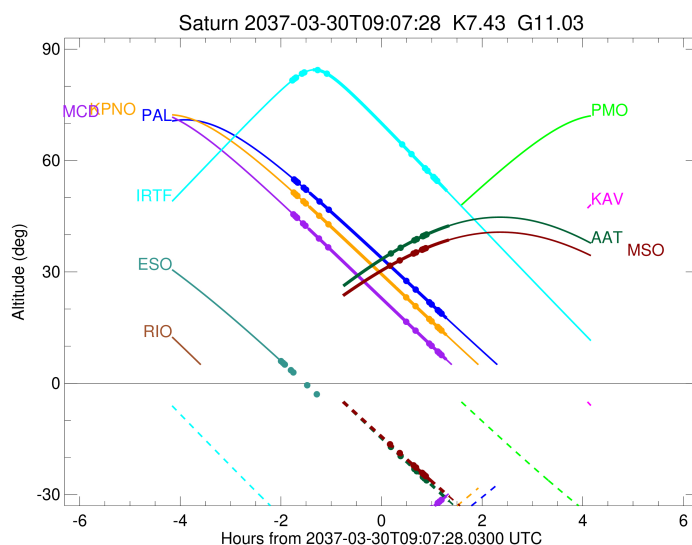
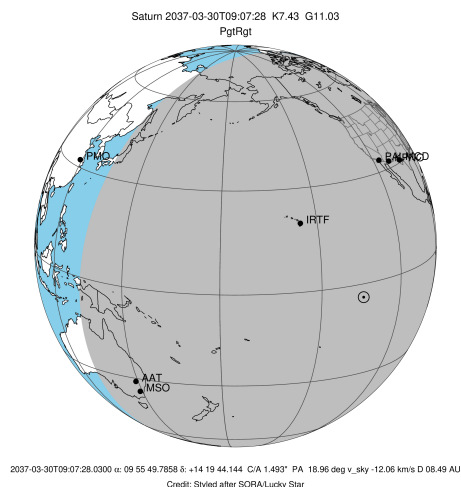


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+ + + + +	+ +		MAR 30 07:23 - MAR 30 10:25	PieRin
PMO	Purple Mtn Obs	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl	32.0	248.4	+ + + + +	+ +		MAR 30 07:22 - MAR 30 10:24	PieRin
MCD	McDonald Obs.	30.7	256.0	+ + + + +	+ +		MAR 30 07:22 - MAR 30 10:24	PieRin
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ + + + +	+ +		MAR 30 07:21 - MAR 30 10:25	PieRin
KAV	Kavalur Observ	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3	+ + +			MAR 30 07:07 - MAR 30 07:12	PnnRin
AAT	Siding Spring	-31.3	149.1		+		MAR 30 10:28 - MAR 30 10:28	PneRnn
SAAO	So. Afr. Astro	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Ob	-35.3	149.0		+		MAR 30 10:27 - MAR 30 10:27	PneRnn



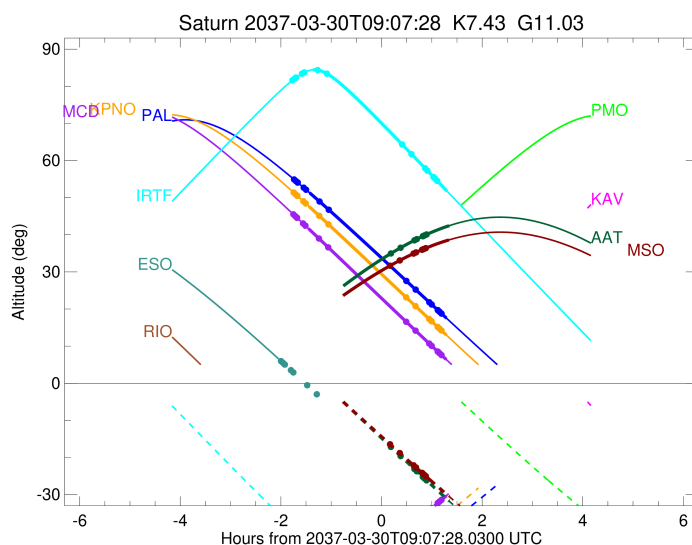
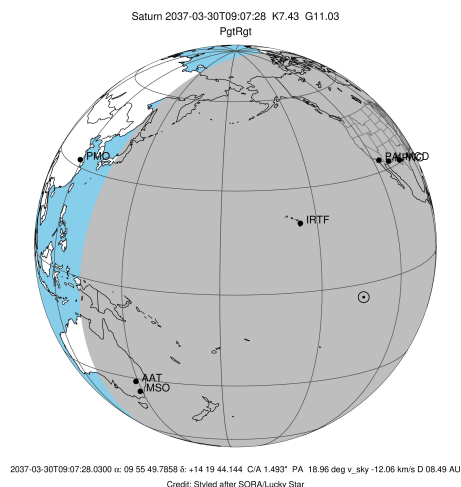
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T09:02:53.220
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 615301245368208128
 2Mass ID (if available) : 09554978+1419440
 ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s
 RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 28.57
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.843
 C/A sky separation (km) : 5190.7
 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_itr93_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

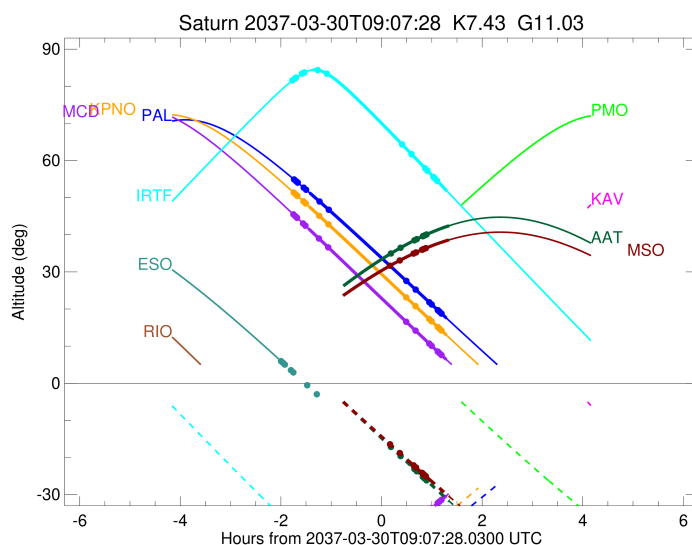
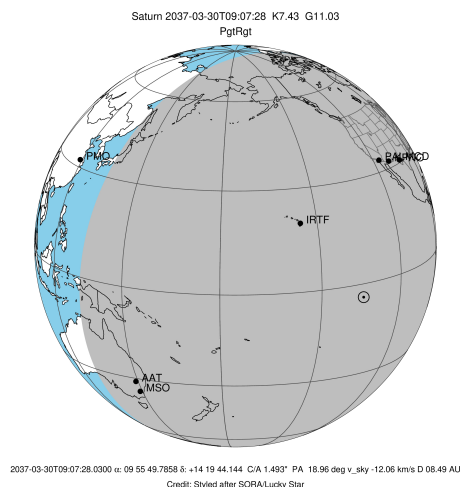
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2037-03-30T07:23:25.690		54.85	-52.28	140461.00	-26.74		
A (OER)	I	2037-03-30T07:25:43.598		54.42	-52.38	136774.40	-26.73		
Encke (OEG)	I	2037-03-30T07:27:36.972		54.05	-52.45	133744.89	-26.72		
Encke (IEG)	I	2037-03-30T07:27:49.009		54.02	-52.45	133423.31	-26.72		
A (IER)	I	2037-03-30T07:34:55.033		52.64	-52.67	122050.38	-26.67		
B (OER)	I	2037-03-30T07:37:43.007		52.10	-52.73	117571.16	-26.66		
B (IER)	I	2037-03-30T07:53:45.007	b	48.93	-52.88	91984.69	-26.53		
C (IER)	I	2037-03-30T08:04:46.144	b	46.71	-52.75	74490.58	-26.38		
Saturn	I	2037-03-30T07:41:34.895		51.34	-52.80	60239.55		19.12	23.03
Saturn	E	2037-03-30T10:25:03.080		17.52	-38.10	60206.44		-28.83	-33.93
C (IER)	E	2037-03-30T09:36:51.162	b	27.62	-45.30	74490.58	25.96		
B (IER)	E	2037-03-30T09:48:02.379	b	25.27	-43.78	91984.69	26.14		
B (OER)	E	2037-03-30T10:04:19.418	b	21.85	-41.39	117571.16	26.22		
A (IER)	E	2037-03-30T10:07:10.220	b	21.26	-40.96	122050.38	26.23		
Encke (IEG)	E	2037-03-30T10:14:23.758	b	19.75	-39.83	133423.31	26.24		
Encke (OEG)	E	2037-03-30T10:14:36.015	b	19.70	-39.79	133744.89	26.24		
A (OER)	E	2037-03-30T10:16:31.479	b	19.30	-39.49	136774.40	26.24		
F ring	E	2037-03-30T10:18:51.981	b	18.81	-39.11	140461.00	26.24		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T09:02:27.550
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 615301245368208128
 2Mass ID (if available) : 09554978+1419440
 ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s
 RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 28.49
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.831
 C/A sky separation (km) : 5120.0
 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	2037-03-30T07:22:58.839		51.32	-54.23	140461.00	-26.69		
A (OER)	I	2037-03-30T07:25:16.973		50.86	-54.25	136774.40	-26.68		
Encke (OEG)	I	2037-03-30T07:27:10.532		50.47	-54.26	133744.89	-26.67		
Encke (IEG)	I	2037-03-30T07:27:22.588		50.43	-54.27	133423.31	-26.67		
A (IER)	I	2037-03-30T07:34:29.308		48.98	-54.26	122050.38	-26.63		
B (OER)	I	2037-03-30T07:37:17.556		48.40	-54.24	117571.17	-26.61		
B (IER)	I	2037-03-30T07:53:21.101	b	45.08	-53.87	91984.69	-26.49		
C (IER)	I	2037-03-30T08:04:23.252	b	42.78	-53.38	74490.58	-26.34		
Saturn	I	2037-03-30T07:40:59.441		47.64	-54.19	60239.35		19.19	23.11
Saturn	E	2037-03-30T10:24:50.383		12.98	-35.32	60206.59		-28.79	-33.88
C (IER)	E	2037-03-30T09:36:40.084	b	23.19	-43.36	74490.58	25.93		
B (IER)	E	2037-03-30T09:47:52.241	b	20.81	-41.61	91984.69	26.10		
B (OER)	E	2037-03-30T10:04:10.747	b	17.35	-38.93	117571.17	26.18		
A (IER)	E	2037-03-30T10:07:01.810	b	16.74	-38.44	122050.38	26.19		
Encke (IEG)	E	2037-03-30T10:14:16.010	b	15.21	-37.19	133423.31	26.20		
Encke (OEG)	E	2037-03-30T10:14:28.286	b	15.17	-37.16	133744.89	26.20		
A (OER)	E	2037-03-30T10:16:23.926	b	14.76	-36.82	136774.40	26.20		
F ring	E	2037-03-30T10:18:44.642	b	14.27	-36.41	140461.00	26.20		

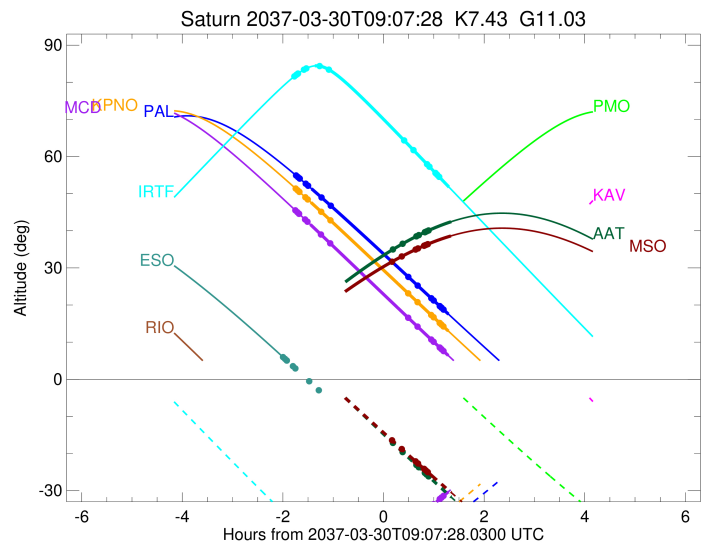
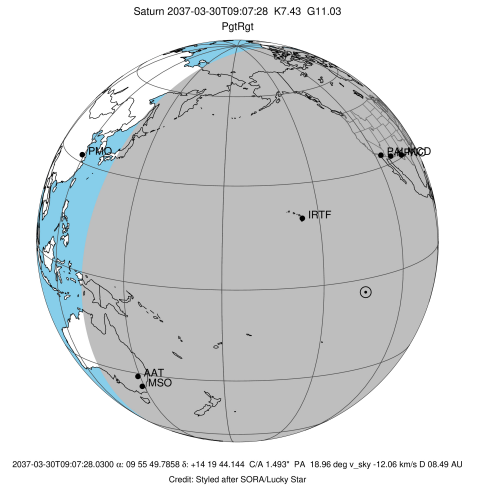
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T09:02:00.420
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 615301245368208128
 2Mass ID (if available) : 09554978+1419440
 ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s
 RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 28.40
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.807
 C/A sky separation (km) : 4973.7
 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_itr93_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	2037-03-30T07:22:35.881		45.45	-55.16	140461.00	-26.63		
A (OER)	I	2037-03-30T07:24:54.350		44.96	-55.07	136774.40	-26.62		
Encke (OEG)	I	2037-03-30T07:26:48.185		44.56	-54.99	133744.89	-26.61		
Encke (IEG)	I	2037-03-30T07:27:00.270		44.52	-54.98	133423.31	-26.61		
A (IER)	I	2037-03-30T07:34:08.015		43.00	-54.63	122050.38	-26.57		
B (OER)	I	2037-03-30T07:36:56.664		42.40	-54.47	117571.16	-26.55		
B (IER)	I	2037-03-30T07:53:02.427	b	38.96	-53.33	91984.69	-26.43		
C (IER)	I	2037-03-30T08:04:05.975	b	36.58	-52.34	74490.58	-26.29		
Saturn	I	2037-03-30T07:40:15.480		41.69	-54.27	60238.90		19.35	23.29
Saturn	E	2037-03-30T10:24:43.791		6.40	-30.31	60206.91		-28.71	-33.79
C (IER)	E	2037-03-30T09:36:40.721	b	16.62	-39.22	74490.58	25.89		
B (IER)	E	2037-03-30T09:47:53.998	b	14.22	-37.22	91984.69	26.05		
B (OER)	E	2037-03-30T10:04:14.330	b	10.73	-34.22	117571.17	26.13		
A (IER)	E	2037-03-30T10:07:05.720	b	10.13	-33.68	122050.38	26.14		
Encke (IEG)	E	2037-03-30T10:14:20.751	b	8.59	-32.31	133423.31	26.15		
Encke (OEG)	E	2037-03-30T10:14:33.050	b	8.55	-32.27	133744.89	26.15		
A (OER)	E	2037-03-30T10:16:28.911	b	8.14	-31.90	136774.40	26.15		
F ring	E	2037-03-30T10:18:49.895	b	7.64	-31.45	140461.00	26.15		

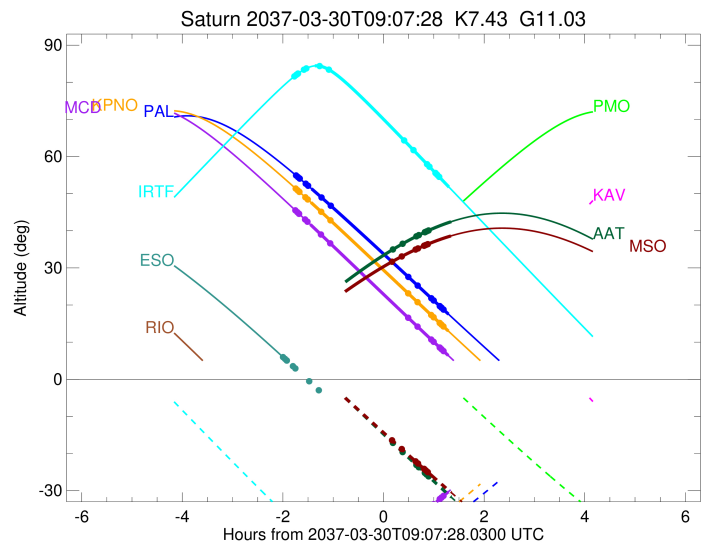
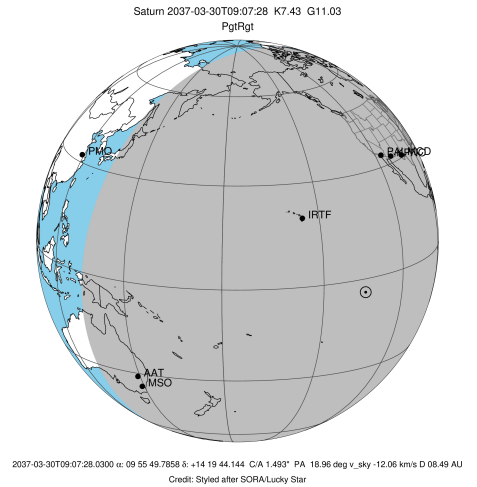
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T09:05:18.740
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 615301245368208128
 2Mass ID (if available) : 09554978+1419440
 ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s
 RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 29.02
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 1.279
 C/A sky separation (km) : 7876.9
 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

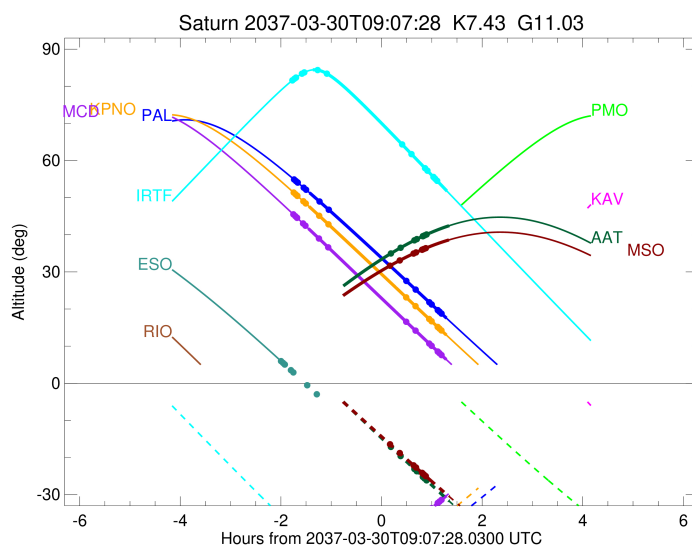
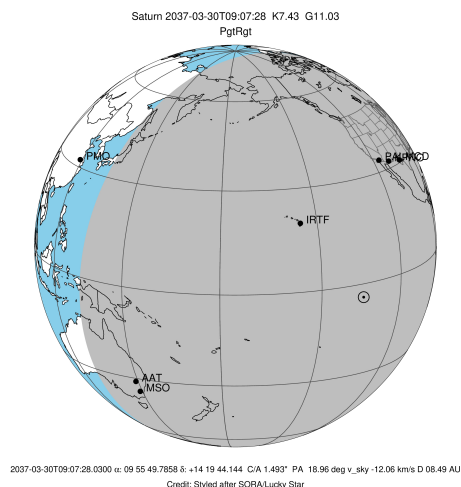
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2037-03-30T07:21:23.341		81.63	-38.81	140461.00	-26.98		
A (OER)	I	2037-03-30T07:23:40.023		82.03	-39.31	136774.40	-26.96		
Encke (OEG)	I	2037-03-30T07:25:32.409		82.35	-39.72	133744.89	-26.95		
Encke (IEG)	I	2037-03-30T07:25:44.342		82.38	-39.76	133423.31	-26.95		
A (IER)	I	2037-03-30T07:32:46.854		83.42	-41.27	122050.38	-26.89		
B (OER)	I	2037-03-30T07:35:33.545		83.75	-41.87	117571.16	-26.86		
B (IER)	I	2037-03-30T07:51:29.914	b	84.36	-45.23	91984.69	-26.63		
C (IER)	I	2037-03-30T08:02:30.125	b	83.38	-47.50	74490.58	-26.34		
Saturn	I	2037-03-30T07:45:30.756		84.43	-43.98	60246.36		16.60	20.09
Saturn	E	2037-03-30T10:25:32.779		51.77	-66.31	60197.20		-31.14	-36.42
C (IER)	E	2037-03-30T09:31:48.207	b	64.40	-62.81	74490.58	25.81		
B (IER)	E	2037-03-30T09:43:00.628	b	61.78	-64.05	91984.69	26.18		
B (OER)	E	2037-03-30T09:59:13.279	b	57.97	-65.41	117571.16	26.40		
A (IER)	E	2037-03-30T10:02:02.913	b	57.31	-65.59	122050.38	26.41		
Encke (IEG)	E	2037-03-30T10:09:13.161	b	55.62	-65.95	133423.31	26.45		
Encke (OEG)	E	2037-03-30T10:09:25.318	b	55.57	-65.96	133744.89	26.45		
A (OER)	E	2037-03-30T10:11:19.840	b	55.12	-66.04	136774.40	26.46		
F ring	E	2037-03-30T10:13:39.164	b	54.58	-66.12	140461.00	26.46		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T08:59:13.410
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : 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 : 615301245368208128
 2Mass ID (if available) : 09554978+1419440
 ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s
 RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 27.82
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 1.620
 C/A sky separation (km) : 9977.6
 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_itr93_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



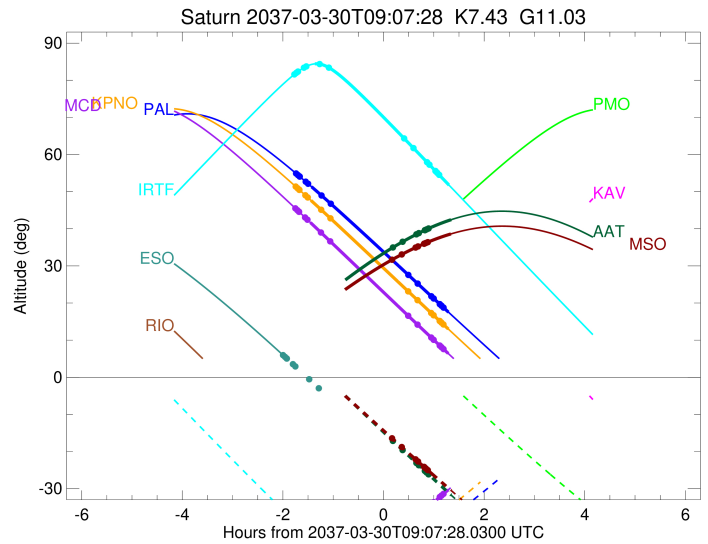
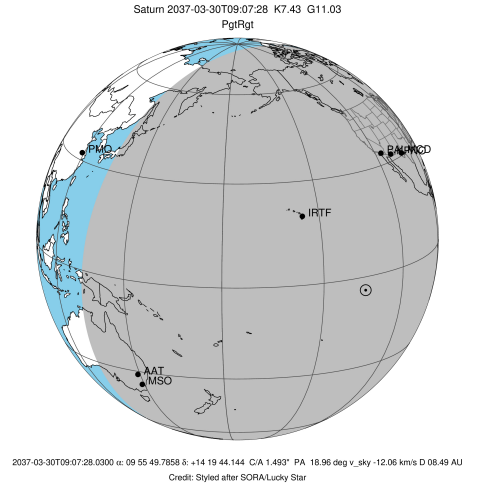
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2037-03-30T07:07:53.440		5.92	-48.26	140461.00	-26.15		
A (OER)	I	2037-03-30T07:10:14.493		5.43	-47.81	136774.40	-26.12		
Encke (OEG)	I	2037-03-30T07:12:10.502		5.03	-47.45	133744.89	-26.10		
Encke (IEG)	I	2037-03-30T07:12:22.822		4.99x	-47.41	133423.31	-26.10		
A (IER)	I	2037-03-30T07:19:39.231		3.48x	-46.01	122050.38	-26.02		
B (OER)	I	2037-03-30T07:22:31.536		2.88x	-45.45	117571.16	-25.98		
B (IER)	I	2037-03-30T07:39:02.147	b	-0.58x	-42.19	91984.69	-25.65		
C (IER)	I	2037-03-30T07:50:29.329	b	-3.00x	-39.88	74490.58	-25.23		
Saturn	I	2037-03-30T07:36:55.432		-0.13x	-42.61	60250.41		14.93	18.12
Saturn	E	2037-03-30T10:22:28.889		-36.00x	-7.34	60186.45		-33.72	-39.16
C (IER)	E	2037-03-30T09:20:36.168	b	-22.45x	-20.82	74490.58	24.79		
B (IER)	E	2037-03-30T09:32:14.876	b	-25.00x	-18.30	91984.69	25.26		
B (OER)	E	2037-03-30T09:48:59.372	b	-28.66x	-14.65	117571.17	25.63		
A (IER)	E	2037-03-30T09:51:53.998	b	-29.30x	-14.02	122050.38	25.67		
Encke (IEG)	E	2037-03-30T09:59:16.347	b	-30.92x	-12.41	133423.31	25.75		
Encke (OEG)	E	2037-03-30T09:59:28.836	b	-30.96x	-12.37	133744.89	25.75		
A (OER)	E	2037-03-30T10:01:26.453	b	-31.39x	-11.94	136774.40	25.77		
F ring	E	2037-03-30T10:03:49.481	b	-31.91x	-11.42	140461.00	25.78		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T09:09:41.450
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : 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 : 615301245368208128
 2Mass ID (if available) : 09554978+1419440
 ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s
 RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 29.36
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.316
 C/A sky separation (km) : 14265.7
 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	2037-03-30T07:13:20.765		13.73	9.59x	140461.00	-26.62		
A (OER)	I	2037-03-30T07:15:39.368		14.17	9.11x	136774.40	-26.58		
Encke (OEG)	I	2037-03-30T07:17:33.414		14.54	8.71x	133744.89	-26.55		
Encke (IEG)	I	2037-03-30T07:17:45.528		14.58	8.66x	133423.31	-26.54		
A (IER)	I	2037-03-30T07:24:55.113		15.94	7.15x	122050.38	-26.40		
B (OER)	I	2037-03-30T07:27:45.013		16.48	6.55x	117571.16	-26.33		
B (IER)	I	2037-03-30T07:44:07.013		19.53	3.07x	91984.69	-25.71		
C (IER)	I	2037-03-30T07:55:37.932	b	21.62	0.62x	74490.58	-24.84		
Saturn	I	2037-03-30T07:50:43.002		20.73	1.67x	60258.09		11.15	13.60
Saturn	E	2037-03-30T10:28:14.968		42.46	-31.77	60169.72		-37.55	-43.13
C (IER)	E	2037-03-30T09:18:20.039	b	34.92	-17.07	74490.58	24.68		
B (IER)	E	2037-03-30T09:29:56.229	b	36.46	-19.54	91984.69	25.45		
B (OER)	E	2037-03-30T09:46:28.173	b	38.48	-23.04	117571.16	26.09		
A (IER)	E	2037-03-30T09:49:19.609	b	38.80	-23.65	122050.38	26.17		
Encke (IEG)	E	2037-03-30T09:56:32.839	b	39.59	-25.17	133423.31	26.33		
Encke (OEG)	E	2037-03-30T09:56:45.052	b	39.61	-25.21	133744.89	26.33		
A (OER)	E	2037-03-30T09:58:40.022	b	39.81	-25.61	136774.40	26.37		
F ring	E	2037-03-30T10:00:59.728	b	40.05	-26.10	140461.00	26.41		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2037-03-30T09:09:22.590
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : 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 : 615301245368208128
 2Mass ID (if available) : 09554978+1419440
 ICRS Star Coord at Epoch: 09h 55m 49.78582s +14:19:44.14418s
 RUWE (>1.4 is poor) : 1.10
 K magnitude : 7.435
 G magnitude : 11.026
 RP magnitude : 9.996
 BP magnitude : 12.106
 DUPflag : 0
 Distance (au) : 8.494
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.06
 Sun-Target sep (deg) : 136.63
 Sun-Moon sep (deg) : 29.31
 B (ring opening deg) : -12.20
 PA of pole (deg) : -6.31
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.357
 C/A sky separation (km) : 14517.9
 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_itr93_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	2037-03-30T07:12:25.749		11.71	9.06x	140461.00	-26.57		
A (OER)	I	2037-03-30T07:14:44.595		12.14	8.60x	136774.40	-26.53		
Encke (OEG)	I	2037-03-30T07:16:38.847		12.48	8.21x	133744.89	-26.50		
Encke (IEG)	I	2037-03-30T07:16:50.984		12.52	8.17x	133423.31	-26.50		
A (IER)	I	2037-03-30T07:24:01.400		13.82	6.73x	122050.38	-26.34		
B (OER)	I	2037-03-30T07:26:51.655		14.33	6.16x	117571.16	-26.27		
B (IER)	I	2037-03-30T07:43:16.149		17.22	2.83x	91984.69	-25.63		
C (IER)	I	2037-03-30T07:54:49.606	b	19.20	0.48x	74490.58	-24.73		
Saturn	I	2037-03-30T07:50:24.022		18.45	1.38x	60258.49		10.92	13.32
Saturn	E	2037-03-30T10:27:57.094		38.62	-30.46	60168.59		-37.81	-43.40
C (IER)	E	2037-03-30T09:17:17.963	b	31.62	-16.37	74490.58	24.56		
B (IER)	E	2037-03-30T09:28:56.571	b	33.05	-18.73	91984.69	25.38		
B (OER)	E	2037-03-30T09:45:30.886	b	34.92	-22.07	117571.16	26.03		
A (IER)	E	2037-03-30T09:48:22.675	b	35.22	-22.64	122050.38	26.11		
Encke (IEG)	E	2037-03-30T09:55:36.728	b	35.94	-24.09	133423.31	26.28		
Encke (OEG)	E	2037-03-30T09:55:48.963	b	35.96	-24.13	133744.89	26.29		
A (OER)	E	2037-03-30T09:57:44.134	b	36.15	-24.51	136774.40	26.32		
F ring	E	2037-03-30T10:00:04.078	b	36.37	-24.98	140461.00	26.36		