

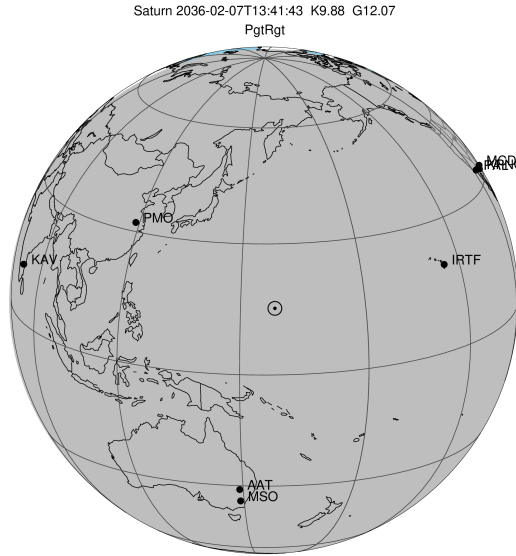
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:41:43.470
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513

Saturn 2036-02-07T13:41:43 K9.88 G12.07 PgtRgt

ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s

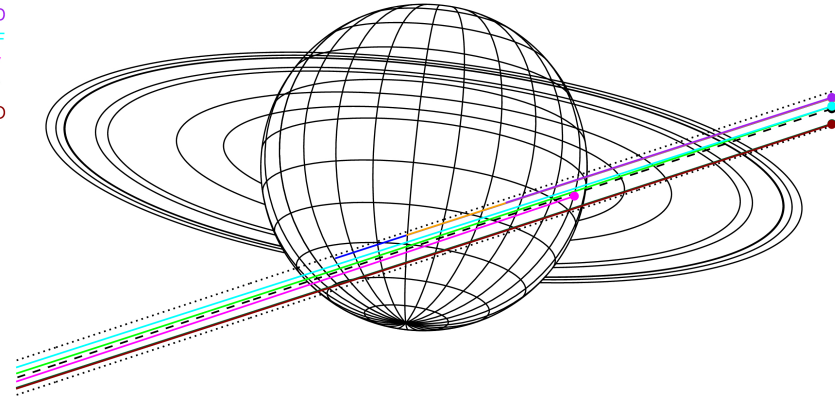
RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 57.98
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72

#	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



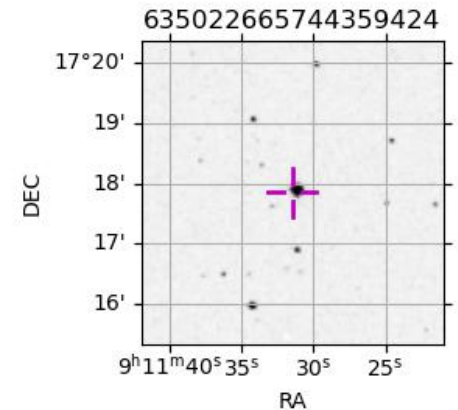
2036-02-07T13:41:43.4700 α: 09 11 31.4627 s; +17 17 50.334 C/A 4.492° PA 18.25 deg v_sky -20.12 km/s D 08.16 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 AAT
 MSO

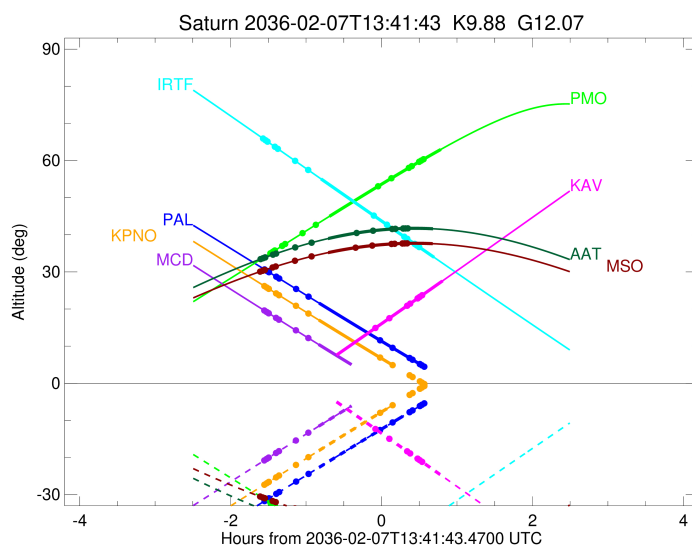
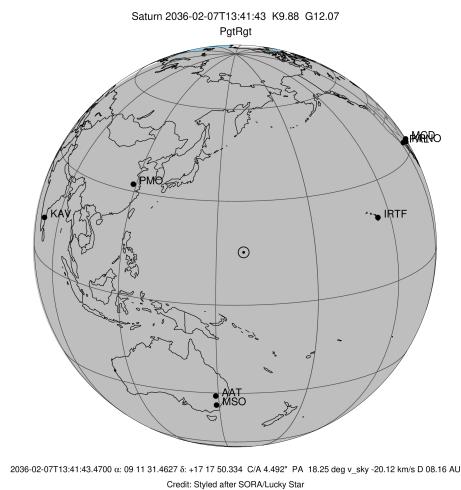


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1	+	+		FEB 07 12:08 - FEB 07 12:52	PinRin
PMO	Purple Mtn Obs	32.1	118.8	+	+		FEB 07 12:13 - FEB 07 14:28	PieRin
KPNO	Kitt Peak Natl	32.0	248.4	+	+		FEB 07 12:08 - FEB 07 12:51	PinRin
MCD	McDonald Obs.	30.7	256.0	+	+		FEB 07 12:08 - FEB 07 12:51	PinRin
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	+		FEB 07 12:07 - FEB 07 14:23	PieRin
KAV	Kavalur Observ	12.6	78.8		+		FEB 07 14:30 - FEB 07 14:30	PneRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1	+	+		FEB 07 12:05 - FEB 07 14:22	PieRin
SAAO	So. Afr. Astro	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Ob	-35.3	149.0	+	+		FEB 07 12:05 - FEB 07 14:22	PieRin



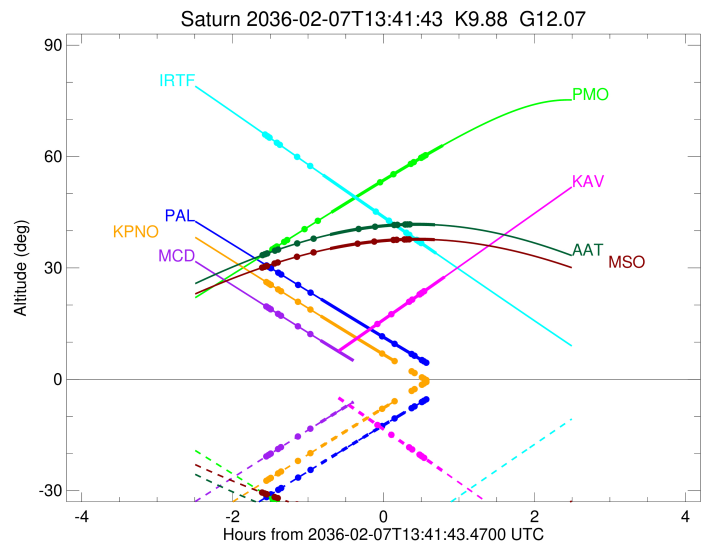
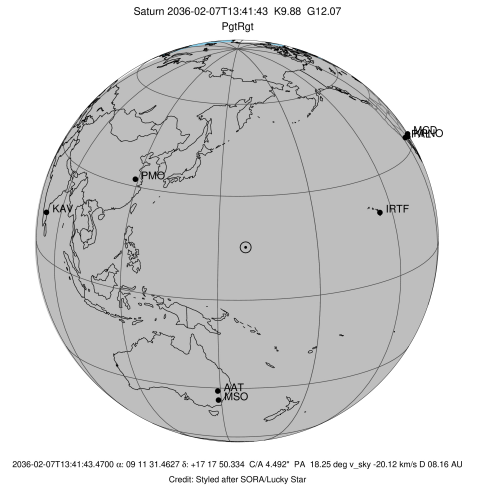
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:38:29.420
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 58.52
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.688
 C/A sky separation (km) : 21825.6
 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_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	2036-02-07T12:08:50.708		30.64	-31.72	140461.00	-33.28		
A (OER)	I	2036-02-07T12:10:41.642		30.25	-31.33	136774.40	-33.18		
Encke (OEG)	I	2036-02-07T12:12:13.078		29.93	-31.01	133744.89	-33.09		
Encke (IEG)	I	2036-02-07T12:12:22.799		29.90	-30.98	133423.31	-33.07		
A (IER)	I	2036-02-07T12:18:08.752		28.69	-29.77	122050.38	-32.66		
B (OER)	I	2036-02-07T12:20:26.333		28.21	-29.29	117571.16	-32.45		
B (IER)	I	2036-02-07T12:33:54.459		25.39	-26.47	91984.69	-30.65		
C (IER)	I	2036-02-07T12:43:47.765		23.32	-24.40	74490.58	-28.05		
Saturn	I	2036-02-07T12:52:01.877		21.60	-22.68	60266.46		3.21	3.94
Saturn	E	2036-02-07T14:24:55.110		2.63x	-3.56x	60035.52		-43.61	-49.20
C (IER)	E	2036-02-07T13:40:26.212	b	11.60	-12.63	74490.58	27.90		
B (IER)	E	2036-02-07T13:50:23.423	b	9.57	-10.58	91984.69	30.42		
B (OER)	E	2036-02-07T14:03:58.116	b	6.82	-7.81	117571.16	32.19		
A (IER)	E	2036-02-07T14:06:16.806	b	6.36	-7.34	122050.38	32.40		
Encke (IEG)	E	2036-02-07T14:12:05.508	b	5.19	-6.16	133423.31	32.82		
Encke (OEG)	E	2036-02-07T14:12:15.306	b	5.16	-6.12	133744.89	32.83		
A (OER)	E	2036-02-07T14:13:47.464	b	4.85x	-5.81	136774.40	32.92		
F ring	E	2036-02-07T14:15:39.273	b	4.48x	-5.43	140461.00	33.02		

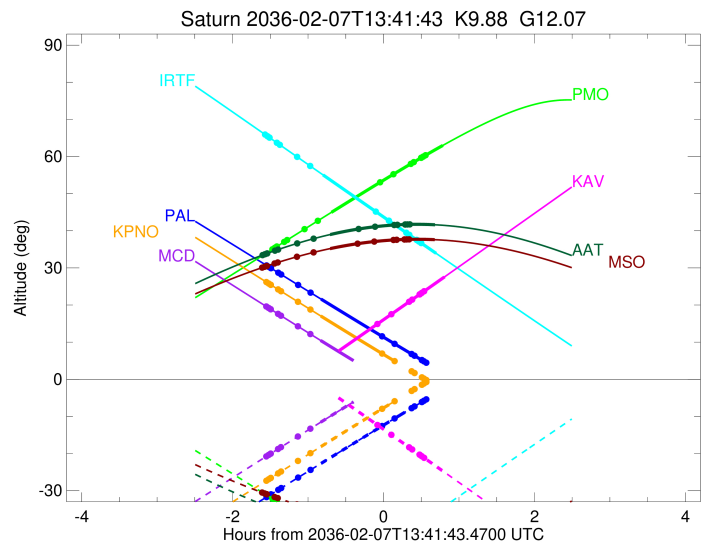
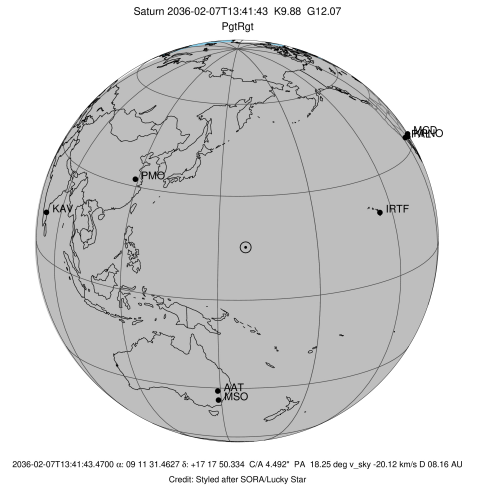
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:44:46.180
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 58.37
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 4.352
 C/A sky separation (km) : 25756.8
 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	2036-02-07T12:13:29.087		35.03	-32.20	140461.00	-33.14		
A (OER)	I	2036-02-07T12:15:20.570		35.42	-32.59	136774.40	-32.99		
Encke (OEG)	I	2036-02-07T12:16:52.566		35.75	-32.92	133744.89	-32.87		
Encke (IEG)	I	2036-02-07T12:17:02.352		35.78	-32.95	133423.31	-32.85		
A (IER)	I	2036-02-07T12:22:51.512		37.02	-34.19	122050.38	-32.27		
B (OER)	I	2036-02-07T12:25:10.928		37.52	-34.68	117571.16	-31.98		
B (IER)	I	2036-02-07T12:39:00.521		40.46	-37.60	91984.69	-29.38		
C (IER)	I	2036-02-07T12:49:34.043		42.69	-39.83	74490.58	-25.43		
Saturn	I	2036-02-07T13:00:17.954		44.96	-42.09	60267.98		-0.40	-0.49
Saturn	E	2036-02-07T14:28:55.316		63.00	-60.02	60002.55		-47.50	-52.97
C (IER)	E	2036-02-07T13:38:55.595	b	53.04	-50.12	74490.58	25.50		
B (IER)	E	2036-02-07T13:49:29.130	b	55.20	-52.27	91984.69	29.32		
B (OER)	E	2036-02-07T14:03:21.217	b	58.01	-55.05	117571.17	31.88		
A (IER)	E	2036-02-07T14:05:41.091	b	58.47	-55.52	122050.38	32.16		
Encke (IEG)	E	2036-02-07T14:11:31.304	b	59.63	-56.67	133423.31	32.76		
Encke (OEG)	E	2036-02-07T14:11:41.117	b	59.66	-56.70	133744.89	32.78		
A (OER)	E	2036-02-07T14:13:13.362	b	59.96	-57.00	136774.40	32.91		
F ring	E	2036-02-07T14:15:05.130	b	60.33	-57.36	140461.00	33.06		

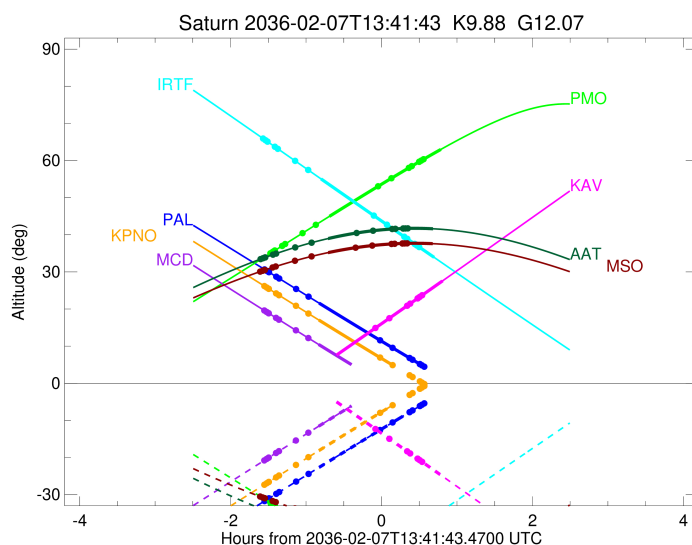
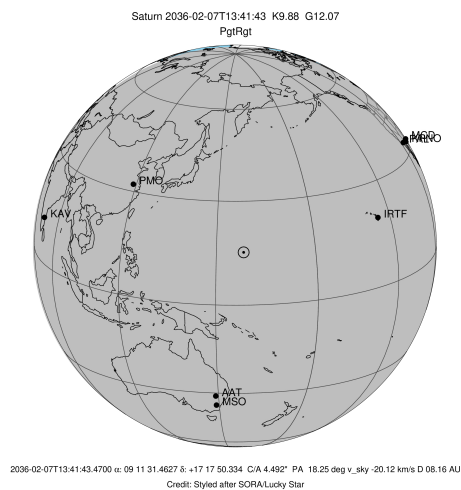
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:38:25.000
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 58.46
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.680
 C/A sky separation (km) : 21777.7
 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



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	2036-02-07T12:08:42.362		26.16	-27.31	140461.00	-33.26		
A (OER)	I	2036-02-07T12:10:33.394		25.77	-26.91	136774.40	-33.15		
Encke (OEG)	I	2036-02-07T12:12:04.908		25.45	-26.59	133744.88	-33.06		
Encke (IEG)	I	2036-02-07T12:12:14.637		25.41	-26.55	133423.31	-33.05		
A (IER)	I	2036-02-07T12:18:00.869		24.19	-25.33	122050.38	-32.63		
B (OER)	I	2036-02-07T12:20:18.551		23.70	-24.84	117571.17	-32.43		
B (IER)	I	2036-02-07T12:33:47.113		20.85	-21.98	91984.69	-30.64		
C (IER)	I	2036-02-07T12:43:40.417		18.77	-19.89	74490.58	-28.06		
Saturn	I	2036-02-07T12:51:51.887		17.04	-18.16	60266.40		3.28	4.02
Saturn	E	2036-02-07T14:24:56.395		-2.02x	1.09x	60035.67		-43.59	-49.18
C (IER)	E	2036-02-07T13:40:27.935	b	6.95	-8.00	74490.58	27.92		
B (IER)	E	2036-02-07T13:50:25.061	b	4.92x	-5.94	91984.69	30.42		
B (OER)	E	2036-02-07T14:04:00.016	b	2.17x	-3.15x	117571.16	32.18		
A (IER)	E	2036-02-07T14:06:18.772	b	1.70x	-2.68x	122050.38	32.38		
Encke (IEG)	E	2036-02-07T14:12:07.654	b	0.53x	-1.50x	133423.31	32.80		
Encke (OEG)	E	2036-02-07T14:12:17.458	b	0.50x	-1.47x	133744.89	32.81		
A (OER)	E	2036-02-07T14:13:49.667	b	0.19x	-1.15x	136774.40	32.90		
F ring	E	2036-02-07T14:15:41.540	b	-0.18x	-0.77x	140461.00	33.00		

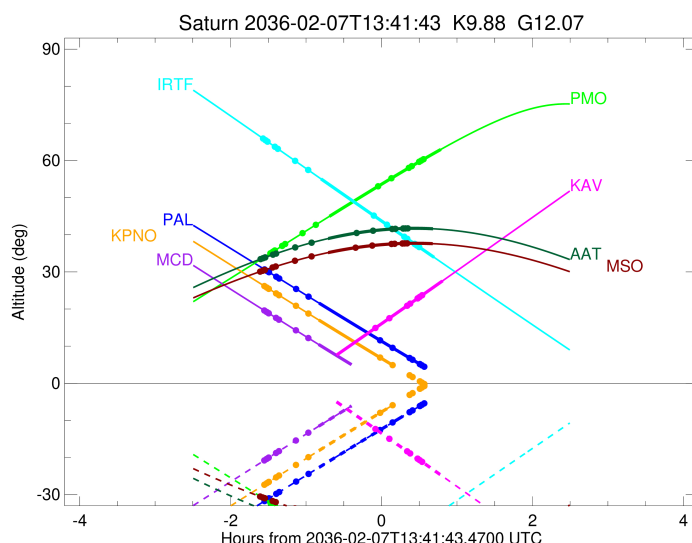
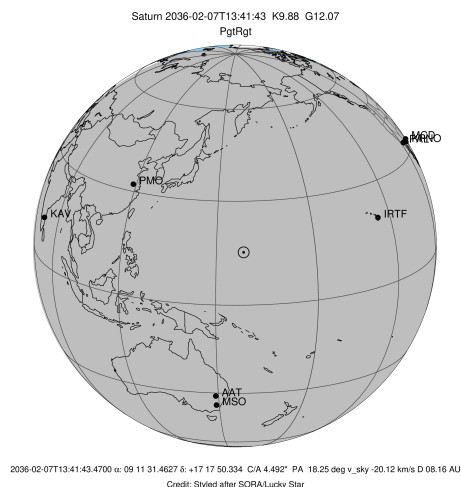
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:38:25.500
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
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 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 58.36
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.664
 C/A sky separation (km) : 21685.0
 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



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	2036-02-07T12:08:39.021		19.58	-20.76	140461.00	-33.22		
A (OER)	I	2036-02-07T12:10:30.168		19.19	-20.36	136774.40	-33.12		
Encke (OEG)	I	2036-02-07T12:12:01.774		18.86	-20.04	133744.89	-33.02		
Encke (IEG)	I	2036-02-07T12:12:11.513		18.83	-20.00	133423.31	-33.01		
A (IER)	I	2036-02-07T12:17:58.056		17.60	-18.77	122050.38	-32.60		
B (OER)	I	2036-02-07T12:20:15.844		17.11	-18.28	117571.16	-32.41		
B (IER)	I	2036-02-07T12:33:44.723		14.25	-15.40	91984.69	-30.64		
C (IER)	I	2036-02-07T12:43:37.644		12.16	-13.30	74490.58	-28.10		
Saturn	I	2036-02-07T12:51:43.700		10.46	-11.58	60266.26		3.41	4.18
Saturn	E	2036-02-07T14:25:05.555		-8.50x	7.64x	60036.01		-43.55	-49.14
C (IER)	E	2036-02-07T13:40:40.141	b	0.34x	-1.36x	74490.58	27.96		
B (IER)	E	2036-02-07T13:50:36.722	b	-1.67x	0.68x	91984.69	30.43		
B (OER)	E	2036-02-07T14:04:11.647	b	-4.39x	3.45x	117571.16	32.17		
A (IER)	E	2036-02-07T14:06:30.438	b	-4.85x	3.92x	122050.38	32.37		
Encke (IEG)	E	2036-02-07T14:12:19.440	b	-6.00x	5.09x	133423.31	32.78		
Encke (OEG)	E	2036-02-07T14:12:29.247	b	-6.03x	5.12x	133744.89	32.79		
A (OER)	E	2036-02-07T14:14:01.494	b	-6.34x	5.43x	136774.40	32.89		
F ring	E	2036-02-07T14:15:53.416	b	-6.70x	5.81x	140461.00	32.99		

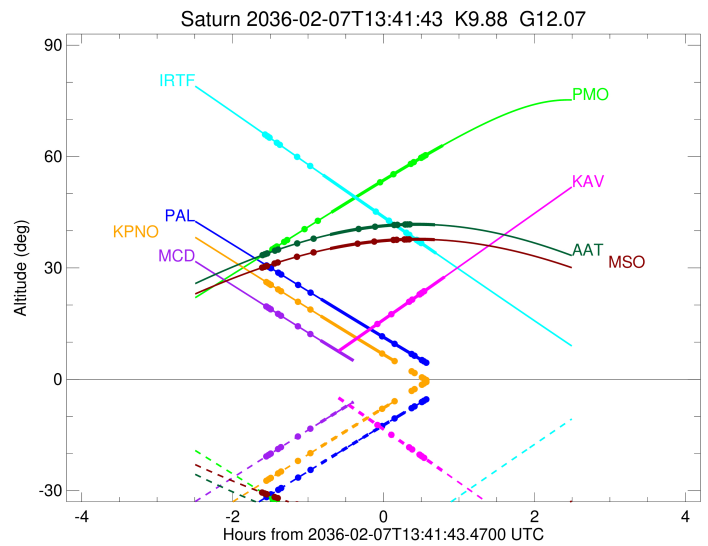
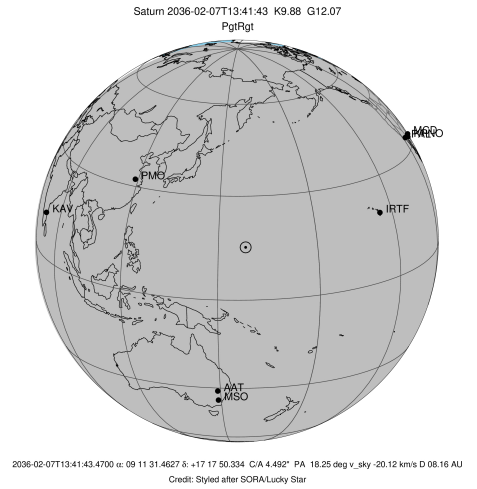
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:38:37.290
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 58.91
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 4.113
 C/A sky separation (km) : 24344.1
 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_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	2036-02-07T12:07:40.286		65.90	-67.71	140461.00	-33.11		
A (OER)	I	2036-02-07T12:09:31.851		65.46	-67.28	136774.40	-32.98		
Encke (OEG)	I	2036-02-07T12:11:03.888		65.10	-66.92	133744.89	-32.86		
Encke (IEG)	I	2036-02-07T12:11:13.677		65.06	-66.88	133423.31	-32.84		
A (IER)	I	2036-02-07T12:17:02.705		63.69	-65.52	122050.38	-32.30		
B (OER)	I	2036-02-07T12:19:21.913		63.14	-64.98	117571.16	-32.04		
B (IER)	I	2036-02-07T12:33:07.020		59.90	-61.76	91984.69	-29.69		
C (IER)	I	2036-02-07T12:43:28.944		57.45	-59.32	74490.58	-26.20		
Saturn	I	2036-02-07T12:53:35.323		55.07	-56.94	60267.96		0.57	0.70
Saturn	E	2036-02-07T14:23:34.523		33.91	-35.78	60016.85		-45.81	-51.34
C (IER)	E	2036-02-07T13:35:28.601	b	45.20	-47.09	74490.58	26.15		
B (IER)	E	2036-02-07T13:45:53.877	b	42.75	-44.63	91984.69	29.47		
B (OER)	E	2036-02-07T13:59:46.412	b	39.49	-41.37	117571.16	31.73		
A (IER)	E	2036-02-07T14:02:06.995	b	38.94	-40.82	122050.38	31.99		
Encke (IEG)	E	2036-02-07T14:07:59.506	b	37.56	-39.44	133423.31	32.52		
Encke (OEG)	E	2036-02-07T14:08:09.394	b	37.52	-39.40	133744.89	32.53		
A (OER)	E	2036-02-07T14:09:42.358	b	37.16	-39.04	136774.40	32.65		
F ring	E	2036-02-07T14:11:35.054	b	36.72	-38.60	140461.00	32.78		

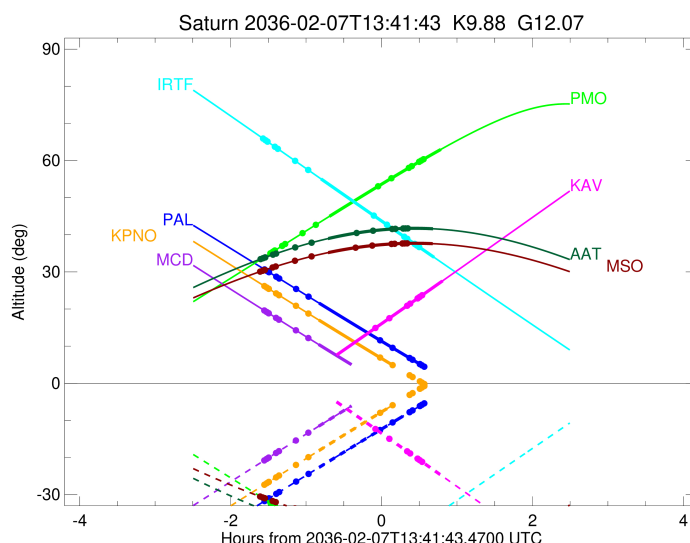
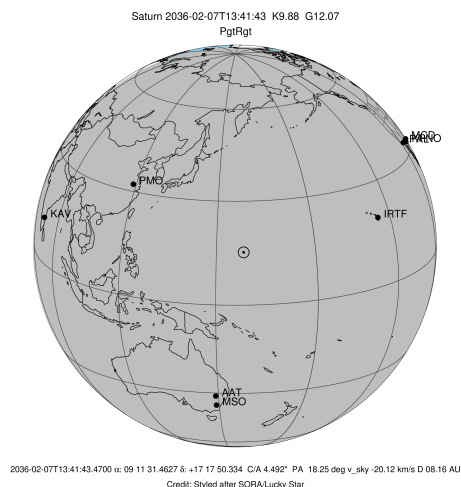
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:46:35.470
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 57.70
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 4.674
 C/A sky separation (km) : 27665.9
 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	2036-02-07T12:13:28.841	-4.68x	7.31x	140461.00	-32.66			
A (OER)	I	2036-02-07T12:15:22.008	-4.24x	6.87x	136774.40	-32.49			
Encke (OEG)	I	2036-02-07T12:16:55.449	-3.88x	6.51x	133744.89	-32.35			
Encke (IEG)	I	2036-02-07T12:17:05.393	-3.84x	6.47x	133423.31	-32.33			
A (IER)	I	2036-02-07T12:23:00.622	-2.46x	5.09x	122050.38	-31.67			
B (OER)	I	2036-02-07T12:25:22.765	-1.91x	4.54x	117571.17	-31.35			
B (IER)	I	2036-02-07T12:39:34.672	1.40x	1.21x	91984.69	-28.35			
C (IER)	I	2036-02-07T12:50:40.940	4.00x	-1.39x	74490.58	-23.67			
Saturn	I	2036-02-07T13:02:28.064	6.77	-4.17x	60267.39			-2.01	-2.47
Saturn	E	2036-02-07T14:30:17.217	27.59	-25.06	59984.42			-49.66	-55.02
C (IER)	E	2036-02-07T13:36:48.051	b	14.87	-12.30	74490.58	23.79		
B (IER)	E	2036-02-07T13:47:51.693	b	17.49	-14.93	91984.69	28.41		
B (OER)	E	2036-02-07T14:02:02.458	b	20.86	-18.31	117571.16	31.38		
A (IER)	E	2036-02-07T14:04:24.428	b	21.42	-18.87	122050.38	31.71		
Encke (IEG)	E	2036-02-07T14:10:19.080	b	22.83	-20.28	133423.31	32.40		
Encke (OEG)	E	2036-02-07T14:10:29.004	b	22.87	-20.32	133744.89	32.41		
A (OER)	E	2036-02-07T14:12:02.246	b	23.24	-20.70	136774.40	32.57		
F ring	E	2036-02-07T14:13:55.145	b	23.69	-21.14	140461.00	32.74		

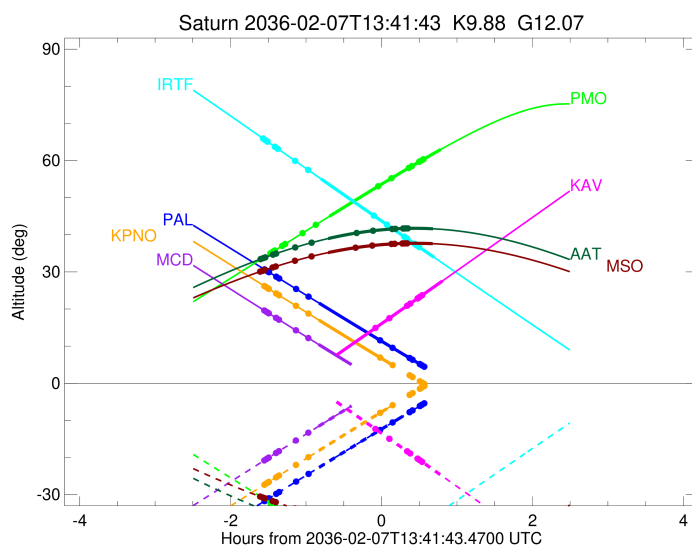
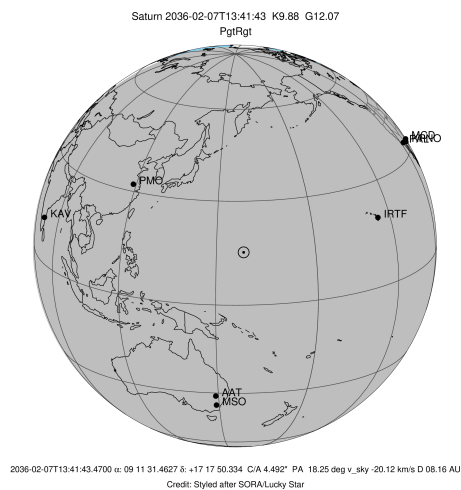
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:41:07.800
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 58.56
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.286
 C/A sky separation (km) : 31285.7
 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



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	2036-02-07T12:05:39.812		33.45	-33.75	140461.00	-31.80		
A (OER)	I	2036-02-07T12:07:36.141		33.70	-34.02	136774.40	-31.58		
Encke (OEG)	I	2036-02-07T12:09:12.392		33.89	-34.23	133744.89	-31.37		
Encke (IEG)	I	2036-02-07T12:09:22.646		33.92	-34.25	133423.31	-31.35		
A (IER)	I	2036-02-07T12:15:30.612		34.65	-35.05	122050.38	-30.42		
B (OER)	I	2036-02-07T12:17:58.913		34.94	-35.37	117571.16	-29.97		
B (IER)	I	2036-02-07T12:33:09.776		36.61	-37.20	91984.69	-25.68		
C (IER)	I	2036-02-07T12:46:10.603		37.87	-38.62	74490.58	-18.36		
Saturn	I	2036-02-07T12:59:14.650		38.98	-39.88	60261.99		-6.35	-7.78
Saturn	E	2036-02-07T14:22:43.460		41.61	-43.57	59959.03		-52.74	-57.90
C (IER)	E	2036-02-07T13:21:55.798	b	40.48	-41.67	74490.58	18.39		
B (IER)	E	2036-02-07T13:34:55.642	b	41.09	-42.45	91984.69	25.69		
B (OER)	E	2036-02-07T13:50:08.645	b	41.55	-43.10	117571.17	29.84		
A (IER)	E	2036-02-07T13:52:37.633	b	41.60	-43.18	122050.38	30.28		
Encke (IEG)	E	2036-02-07T13:58:47.512	b	41.69	-43.35	133423.31	31.18		
Encke (OEG)	E	2036-02-07T13:58:57.822	b	41.70	-43.36	133744.89	31.20		
A (OER)	E	2036-02-07T14:00:34.607	b	41.71	-43.39	136774.40	31.40		
F ring	E	2036-02-07T14:02:31.592	b	41.73	-43.43	140461.00	31.62		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2036-02-07T13:41:01.980
 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 : 635022665744359424
 2Mass ID (if available) : 09113136+1717513
 ICRS Star Coord at Epoch: 09h 11m 31.46270s +17:17:50.33429s
 RUWE (>1.4 is poor) : 6.71
 K magnitude : 9.876
 G magnitude : 12.072
 RP magnitude : 11.376
 BP magnitude : 12.616
 DUPflag : 0
 Distance (au) : 8.161
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.12
 Sun-Target sep (deg) : 177.05
 Sun-Moon sep (deg) : 58.52
 B (ring opening deg) : -16.36
 PA of pole (deg) : -6.72
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.331
 C/A sky separation (km) : 31549.8
 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	2036-02-07T12:05:19.593		30.09	-30.52	140461.00	-31.72		
A (OER)	I	2036-02-07T12:07:16.244		30.31	-30.77	136774.40	-31.49		
Encke (OEG)	I	2036-02-07T12:08:52.776		30.50	-30.97	133744.89	-31.28		
Encke (IEG)	I	2036-02-07T12:09:03.060		30.51	-30.99	133423.31	-31.26		
A (IER)	I	2036-02-07T12:15:12.239		31.20	-31.73	122050.38	-30.31		
B (OER)	I	2036-02-07T12:17:41.105		31.47	-32.02	117571.17	-29.86		
B (IER)	I	2036-02-07T12:32:57.134		33.01	-33.71	91984.69	-25.47		
C (IER)	I	2036-02-07T12:46:08.826		34.18	-35.03	74490.58	-17.93		
Saturn	I	2036-02-07T12:59:14.681		35.19	-36.19	60261.47		-6.62	-8.11
Saturn	E	2036-02-07T14:22:31.636		37.60	-39.54	59956.78		-53.01	-58.16
C (IER)	E	2036-02-07T13:21:06.120	b	36.52	-37.76	74490.58	17.95		
B (IER)	E	2036-02-07T13:34:16.766	b	37.09	-38.49	91984.69	25.48		
B (OER)	E	2036-02-07T13:49:34.716	b	37.52	-39.09	117571.16	29.73		
A (IER)	E	2036-02-07T13:52:04.236	b	37.57	-39.17	122050.38	30.18		
Encke (IEG)	E	2036-02-07T13:58:15.256	b	37.66	-39.33	133423.31	31.09		
Encke (OEG)	E	2036-02-07T13:58:25.595	b	37.66	-39.33	133744.89	31.11		
A (OER)	E	2036-02-07T14:00:02.643	b	37.68	-39.37	136774.40	31.32		
F ring	E	2036-02-07T14:01:59.929	b	37.69	-39.40	140461.00	31.55		