

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T05:22:20.360
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370

Saturn 2046-03-26T05:22:20 K6.88 G14.84 PgtRgt

ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s

RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 25.68
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80

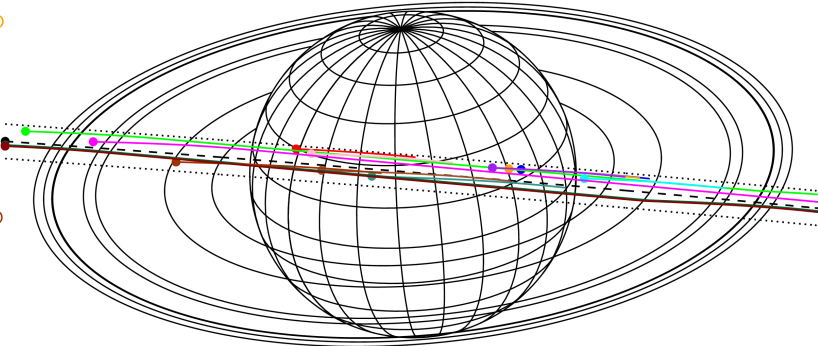
a(km) ring

- 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



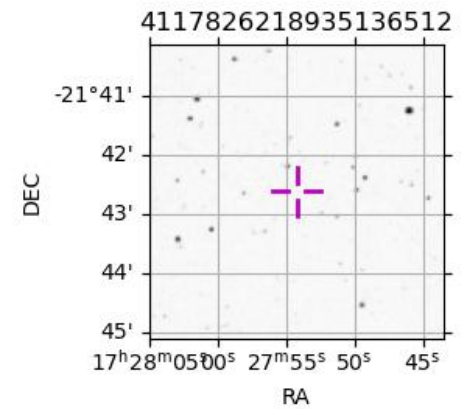
2046-03-26T05:22:20.3600 α: 17 27 54.1248 δ: -21 42 37.094 C/A 0.104° PA 175.33 deg v_sky + 3.15 km/s D 09.76 AU
 Credit: Styled after SORA/Lucky Star

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

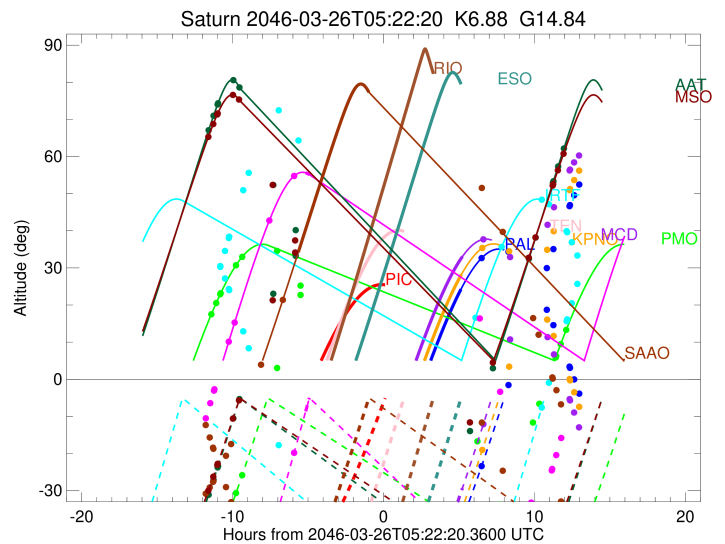
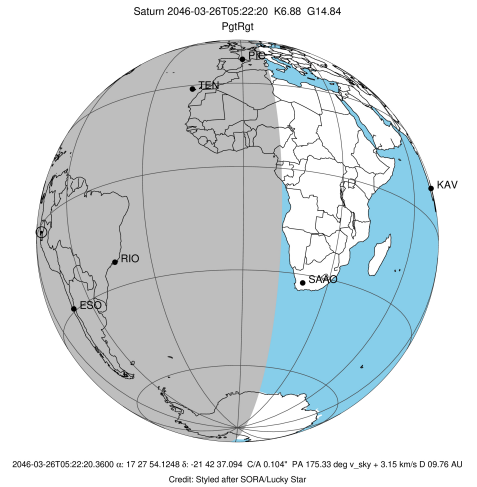


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1		+	+	MAR 26 10:30 - MAR 26 11:52	PneRne
PMO	Purple Mtn Obs	32.1	118.8	+	+	+	MAR 25 17:58 - MAR 26 17:28	PnnRie
KPNO	Kitt Peak Natl	32.0	248.4		+	+	MAR 26 10:32 - MAR 26 11:54	PneRne
MCD	McDonald Obs.	30.7	256.0		+	+	MAR 26 10:36 - MAR 26 11:59	PneRne
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5		+	+	MAR 26 11:27 - MAR 26 15:51	PnnRne
KAV	Kavalur Observ	12.6	78.8	+	+	+	MAR 25 19:07 - MAR 26 00:12	PinRin
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1	+	+	+	MAR 25 17:47 - MAR 26 17:19	PnnRie
SAAO	So. Afr. Astro	-32.4	20.8		+	+	MAR 25 22:42 - MAR 25 23:43	PinRin
MSO	Mt. Stromlo Ob	-35.3	149.0	+	+	+	MAR 25 17:46 - MAR 26 17:17	PnnRie



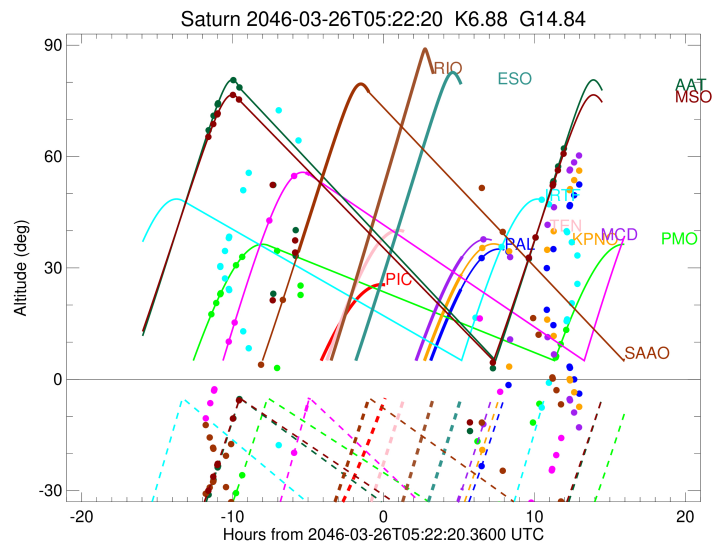
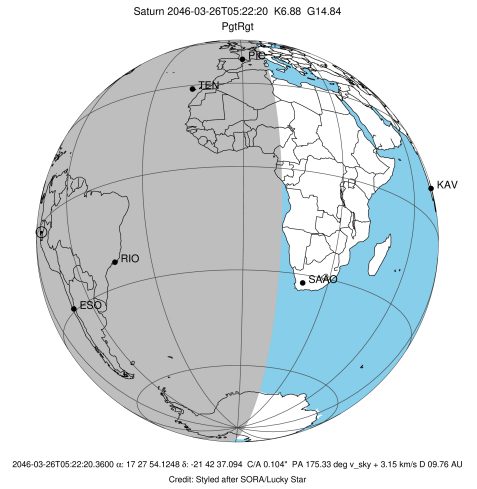
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T04:58:30.790
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 24.88
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.474
 C/A sky separation (km) : 3356.9
 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	2046-03-25T18:38:38.869	-6.63x	54.35x	140461.00	-3.59			
A (OER)	I	2046-03-25T18:55:41.496	-9.98x	56.13x	136774.40	-3.62			
Encke (OEG)	I	2046-03-25T19:09:36.965	-12.74x	57.29x	133744.89	-3.64			
Encke (IEG)	I	2046-03-25T19:11:05.397	-13.04x	57.40x	133423.31	-3.64			
A (IER)	I	2046-03-25T20:02:43.924	-23.52x	58.86x	122050.38	-3.70			
B (OER)	I	2046-03-25T20:22:50.152	-27.67x	58.18x	117571.16	-3.72			
B (IER)	I	2046-03-25T22:15:49.661	-51.30x	44.43x	91984.69	-3.81			
C (IER)	I	2046-03-25T23:32:10.146	-66.79x	30.22x	74490.58	-3.82			
Saturn	I	2046-03-26T00:15:03.465	-74.33x	21.58x	60224.39			10.00	12.22
Saturn	E	2046-03-26T10:30:21.214	24.26	-38.62	60262.24			-3.61	-4.44
C (IER)	E	2046-03-26T11:52:08.373	32.63	-23.45	74490.58	2.74			
B (IER)	E	2046-03-26T13:38:56.668	34.35	-1.61x	91984.69	2.74			
B (OER)	E	2046-03-26T16:11:40.099	18.70	29.95x	117571.16	2.87			
A (IER)	E	2046-03-26T16:37:29.765	14.62	35.01x	122050.38	2.91			
Encke (IEG)	E	2046-03-26T17:41:38.191	3.45x	46.58x	133423.31	3.00			
Encke (OEG)	E	2046-03-26T17:43:25.212	3.12x	46.88x	133744.89	3.01			
A (OER)	E	2046-03-26T18:00:08.689	0.01x	49.53x	136774.40	3.03			
F ring	E	2046-03-26T18:20:18.458	-3.83x	52.43x	140461.00	3.06			

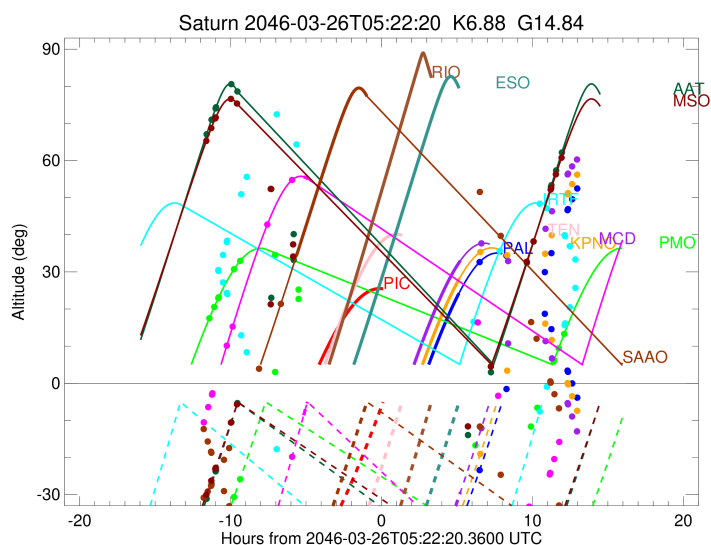
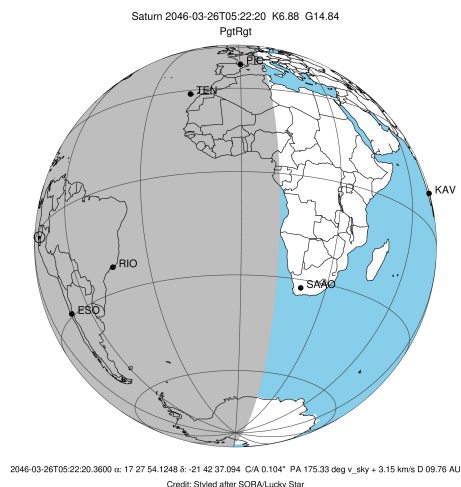
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T05:46:31.220
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 26.11
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.324
 C/A sky separation (km) : 2297.7
 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	2046-03-25T17:58:10.463		17.55	-47.49	140461.00	-3.19		
A (OER)	I	2046-03-25T18:17:32.609		20.58	-44.59	136774.40	-3.16		
Encke (OEG)	I	2046-03-25T18:33:34.426		22.95	-41.99	133744.89	-3.14		
Encke (IEG)	I	2046-03-25T18:35:16.860		23.20	-41.70	133423.31	-3.14		
A (IER)	I	2046-03-25T19:36:15.146		30.73	-30.61	122050.38	-3.08		
B (OER)	I	2046-03-25T20:00:30.739		32.97	-25.85	117571.16	-3.07		
B (IER)	I	2046-03-25T22:19:33.920		34.56	3.09x	91984.69	-3.09		
C (IER)	I	2046-03-25T23:52:49.451		25.20	22.76x	74490.58	-3.17		
Saturn	I	2046-03-26T00:32:10.713		19.47	30.82x	60200.53		12.48	15.20
Saturn	E	2046-03-26T10:37:49.345		-69.77x	-4.60x	60248.01		-6.75	-8.27
C (IER)	E	2046-03-26T11:35:34.337		-58.03x	-16.67	74490.58	3.46		
B (IER)	E	2046-03-26T13:01:46.153		-39.75x	-33.73	91984.69	3.30		
B (OER)	E	2046-03-26T15:16:34.728		-11.65x	-53.39	117571.16	3.02		
A (IER)	E	2046-03-26T15:41:29.524		-6.66x	-55.00	122050.38	2.97		
Encke (IEG)	E	2046-03-26T16:46:41.982		5.83	-54.57	133423.31	2.85		
Encke (OEG)	E	2046-03-26T16:48:35.081		6.17	-54.46	133744.89	2.84		
A (OER)	E	2046-03-26T17:06:27.202		9.41	-53.14	136774.40	2.81		
F ring	E	2046-03-26T17:28:27.844		13.26	-50.93	140461.00	2.77		

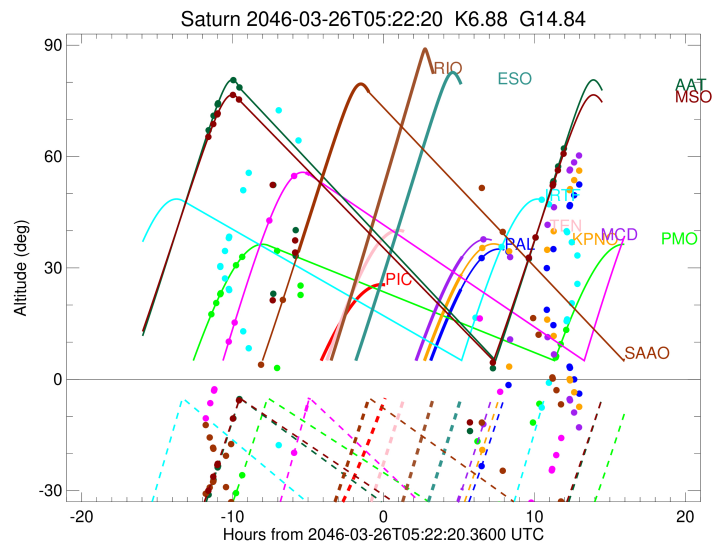
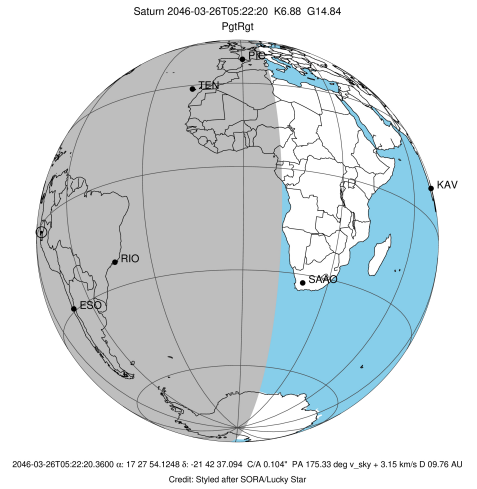
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T04:56:56.100
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 24.87
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.479
 C/A sky separation (km) : 3395.4
 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	2046-03-25T18:38:03.774		-10.19x	57.69x	140461.00	-3.63		
A (OER)	I	2046-03-25T18:54:56.252		-13.60x	59.05x	136774.40	-3.65		
Encke (OEG)	I	2046-03-25T19:08:43.590		-16.41x	59.81x	133744.89	-3.67		
Encke (IEG)	I	2046-03-25T19:10:11.171		-16.71x	59.87x	133423.31	-3.67		
A (IER)	I	2046-03-25T20:01:21.254		-27.35x	59.54x	122050.38	-3.73		
B (OER)	I	2046-03-25T20:21:17.257		-31.54x	58.15x	117571.16	-3.76		
B (IER)	I	2046-03-25T22:13:30.761		-55.39x	41.84x	91984.69	-3.83		
C (IER)	I	2046-03-25T23:29:33.280		-70.89x	26.91x	74490.58	-3.83		
Saturn	I	2046-03-26T00:12:48.355		-77.98x	17.93x	60225.44		9.88	12.07
Saturn	E	2046-03-26T10:32:33.095		28.29	-35.25	60262.20		-3.63	-4.46
C (IER)	E	2046-03-26T11:54:51.863		35.35	-19.09	74490.58	2.73		
B (IER)	E	2046-03-26T13:41:40.400		34.48	3.35x	91984.69	2.75		
B (OER)	E	2046-03-26T16:13:06.428		16.06	34.89x	117571.16	2.91		
A (IER)	E	2046-03-26T16:38:37.304		11.72	39.83x	122050.38	2.94		
Encke (IEG)	E	2046-03-26T17:41:56.493		0.09x	50.91x	133423.31	3.04		
Encke (OEG)	E	2046-03-26T17:43:42.124		-0.25x	51.18x	133744.89	3.05		
A (OER)	E	2046-03-26T18:00:12.601		-3.45x	53.61x	136774.40	3.07		
F ring	E	2046-03-26T18:20:06.821		-7.37x	56.18x	140461.00	3.10		

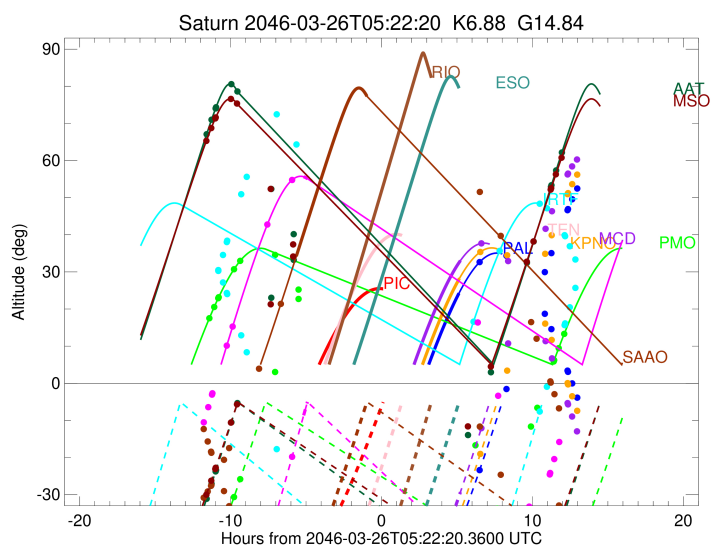
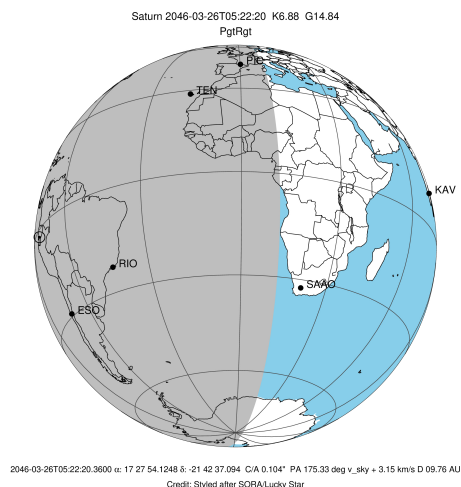
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T04:55:10.540
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 24.88
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.499
 C/A sky separation (km) : 3531.8
 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	2046-03-25T18:36:53.113	-15.73x	60.99x	140461.00	-3.68			
A (OER)	I	2046-03-25T18:53:31.802	-19.19x	61.53x	136774.40	-3.70			
Encke (OEG)	I	2046-03-25T19:07:08.205	-22.05x	61.57x	133744.89	-3.72			
Encke (IEG)	I	2046-03-25T19:08:34.647	-22.35x	61.56x	133423.31	-3.72			
A (IER)	I	2046-03-25T19:59:07.383	-33.09x	58.54x	122050.38	-3.78			
B (OER)	I	2046-03-25T20:18:50.334	-37.32x	56.26x	117571.16	-3.80			
B (IER)	I	2046-03-25T22:10:09.121	-61.28x	37.24x	91984.69	-3.85			
C (IER)	I	2046-03-25T23:25:55.238	-76.41x	21.64x	74490.58	-3.84			
Saturn	I	2046-03-26T00:09:28.603	-81.22x	12.35x	60226.20			9.79	11.96
Saturn	E	2046-03-26T10:36:18.688	33.07	-29.28	60262.17			-3.64	-4.47
C (IER)	E	2046-03-26T11:59:06.991	37.68	-12.16	74490.58	2.72			
B (IER)	E	2046-03-26T13:45:29.283	32.94	10.68x	91984.69	2.77			
B (OER)	E	2046-03-26T16:14:39.994	11.34	41.62x	117571.16	2.96			
A (IER)	E	2046-03-26T16:39:42.446	6.75	46.30x	122050.38	3.00			
Encke (IEG)	E	2046-03-26T17:41:50.398	-5.30x	56.22x	133423.31	3.10			
Encke (OEG)	E	2046-03-26T17:43:34.076	-5.64x	56.45x	133744.89	3.10			
A (OER)	E	2046-03-26T17:59:46.397	-8.91x	58.40x	136774.40	3.13			
F ring	E	2046-03-26T18:19:19.198	-12.90x	60.26x	140461.00	3.16			

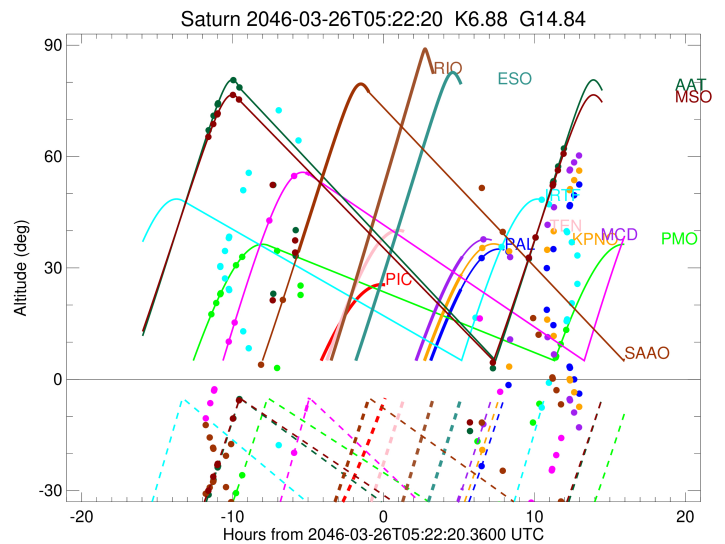
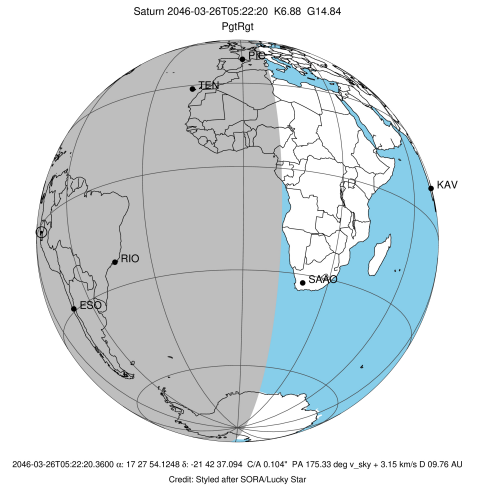
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T05:09:43.940
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 24.94
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.128
 C/A sky separation (km) : 904.8
 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

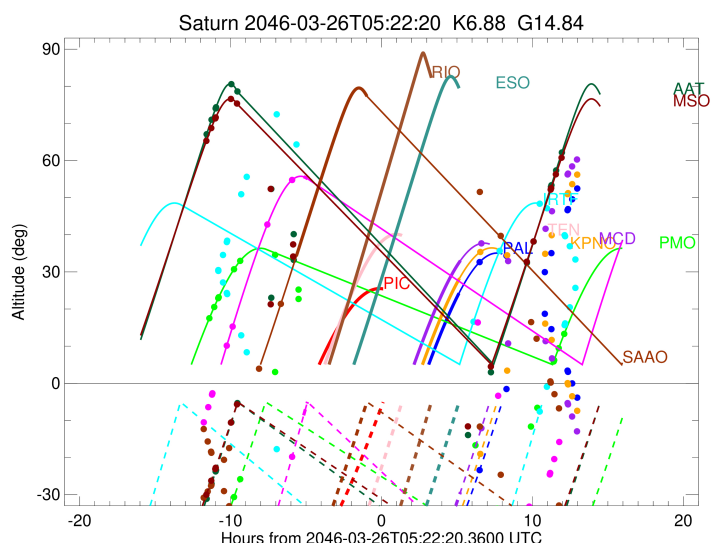
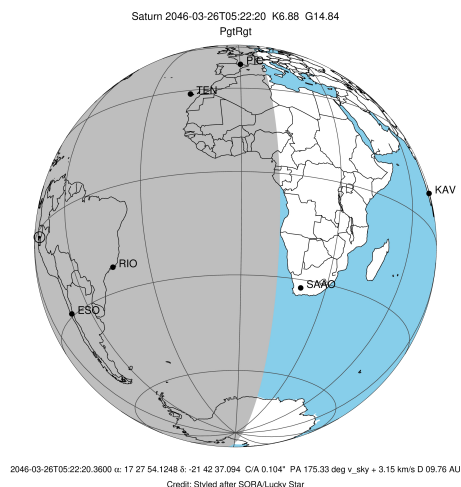
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-03-25T18:33:50.823		30.45	30.31x	140461.00	-3.30		
A (OER)	I	2046-03-25T18:52:23.149		27.12	34.61x	136774.40	-3.33		
Encke (OEG)	I	2046-03-25T19:07:30.509		24.29	38.08x	133744.89	-3.35		
Encke (IEG)	I	2046-03-25T19:09:06.463		23.98	38.45x	133423.31	-3.35		
A (IER)	I	2046-03-25T20:04:55.336		12.87	50.97x	122050.38	-3.44		
B (OER)	I	2046-03-25T20:26:30.625		8.37	55.59x	117571.16	-3.48		
B (IER)	I	2046-03-25T22:25:56.448		-17.79x	72.45x	91984.69	-3.66		
C (IER)	I	2046-03-25T23:44:31.381		-35.69x	64.29x	74490.58	-3.75		
Saturn	I	2046-03-26T00:31:08.654		-46.44x	55.09x	60232.08		9.07	11.09
Saturn	E	2046-03-26T10:15:38.932		1.39x	-67.76	60254.85		-5.47	-6.71
C (IER)	E	2046-03-26T11:27:47.598		16.52	-63.41	74490.58	2.89		
B (IER)	E	2046-03-26T13:11:49.013		35.62	-43.99	91984.69	2.73		
B (OER)	E	2046-03-26T15:51:27.502		48.37	-7.60	117571.16	2.65		
A (IER)	E	2046-03-26T16:19:33.232		47.17	-1.00x	122050.38	2.66		
Encke (IEG)	E	2046-03-26T17:30:05.499		39.93	15.60x	133423.31	2.72		
Encke (OEG)	E	2046-03-26T17:32:03.769		39.66	16.06x	133744.89	2.72		
A (OER)	E	2046-03-26T17:50:33.384		36.96	20.41x	136774.40	2.74		
F ring	E	2046-03-26T18:12:51.761		33.39	25.63x	140461.00	2.77		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T05:56:18.560
 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 : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 26.58
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.215
 C/A sky separation (km) : 1523.6
 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



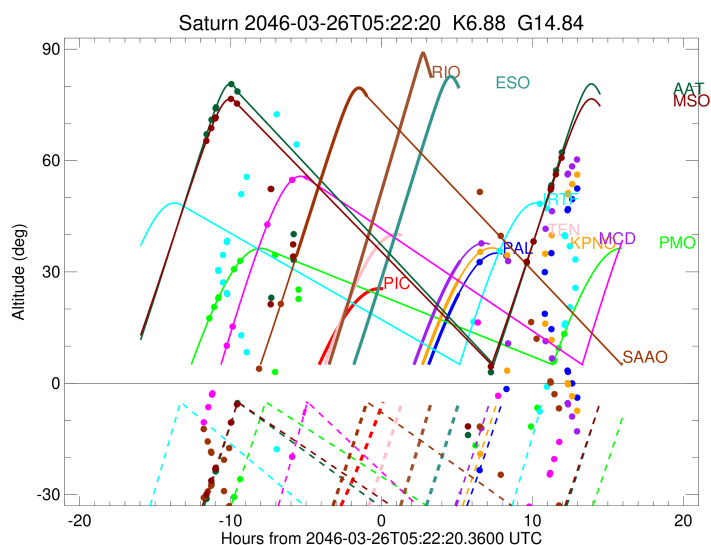
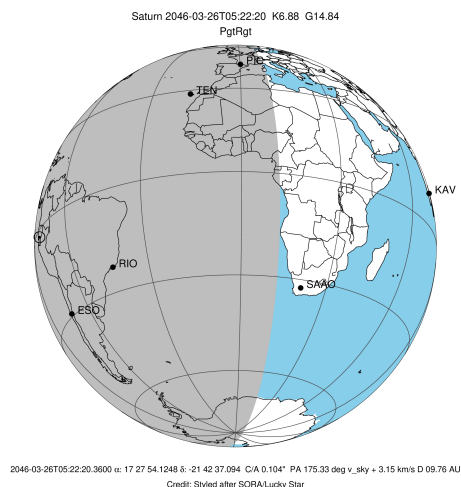
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-03-25T17:36:04.477	-10.48x	-66.49	140461.00	-3.47			
A (OER)	I	2046-03-25T17:53:53.865	-6.39x	-69.77	136774.40	-3.43			
Encke (OEG)	I	2046-03-25T18:08:42.922	-3.01x	-72.12	133744.89	-3.39			
Encke (IEG)	I	2046-03-25T18:10:17.845	-2.65x	-72.34	133423.31	-3.39			
A (IER)	I	2046-03-25T19:07:24.427	10.18	-74.80	122050.38	-3.25			
B (OER)	I	2046-03-25T19:30:31.364	15.26	-72.32	117571.16	-3.21			
B (IER)	I	2046-03-25T21:48:43.631	42.80	-43.37	91984.69	-2.99			
C (IER)	I	2046-03-25T23:27:15.273	54.78	-19.74	74490.58	-2.94			
Saturn	I	2046-03-26T00:12:41.398	55.63	-8.70	60205.68			11.98	14.60
Saturn	E	2046-03-26T10:56:05.777	-72.37x	28.34x	60233.66			-8.86	-10.84
C (IER)	E	2046-03-26T11:44:55.432	-80.17x	16.43x	74490.58	3.64			
B (IER)	E	2046-03-26T13:05:53.935	-71.49x	-3.32x	91984.69	3.55			
B (OER)	E	2046-03-26T15:09:30.582	-43.58x	-33.24	117571.16	3.33			
A (IER)	E	2046-03-26T15:32:04.711	-38.33x	-38.62	122050.38	3.28			
Encke (IEG)	E	2046-03-26T16:31:00.018	-24.62x	-52.37	133423.31	3.15			
Encke (OEG)	E	2046-03-26T16:32:42.194	-24.22x	-52.75	133744.89	3.15			
A (OER)	E	2046-03-26T16:48:51.215	-20.48x	-56.38	136774.40	3.11			
F ring	E	2046-03-26T17:08:46.622	-15.87x	-60.73	140461.00	3.06			

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T05:32:45.820
 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 : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 25.70
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.609
 C/A sky separation (km) : 4311.7
 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	2046-03-25T17:47:20.883		67.13	-31.07	140461.00	-3.14		
A (OER)	I	2046-03-25T18:06:56.622		71.04	-27.05	136774.40	-3.13		
Encke (OEG)	I	2046-03-25T18:23:05.470		74.08	-23.70	133744.89	-3.12		
Encke (IEG)	I	2046-03-25T18:24:48.423		74.39	-23.34	133423.31	-3.12		
A (IER)	I	2046-03-25T19:25:36.049		80.57	-10.47	122050.38	-3.12		
B (OER)	I	2046-03-25T19:49:31.850		78.62	-5.36	117571.16	-3.12		
B (IER)	I	2046-03-25T22:04:21.967		52.29	23.08x	91984.69	-3.22		
C (IER)	I	2046-03-25T23:33:32.326		33.19	40.21x	74490.58	-3.32		
Saturn	I	2046-03-26T00:34:55.384		20.24	49.83x	60250.34		6.34	7.77
Saturn	E	2046-03-26T10:22:59.277		-21.04x	-29.51	60211.48		-11.40	-13.91
C (IER)	E	2046-03-26T11:05:58.731		-14.00x	-38.14	74490.58	3.29		
B (IER)	E	2046-03-26T12:37:05.796		2.92x	-53.98	91984.69	3.11		
B (OER)	E	2046-03-26T15:00:27.565		32.48	-58.88	117571.16	2.85		
A (IER)	E	2046-03-26T15:26:53.411		38.12	-55.97	122050.38	2.80		
Encke (IEG)	E	2046-03-26T16:35:38.448		52.87	-45.13	133423.31	2.71		
Encke (OEG)	E	2046-03-26T16:37:36.944		53.29	-44.78	133744.89	2.71		
A (OER)	E	2046-03-26T16:56:17.645		57.27	-41.31	136774.40	2.69		
F ring	E	2046-03-26T17:19:11.158		62.11	-36.88	140461.00	2.67		

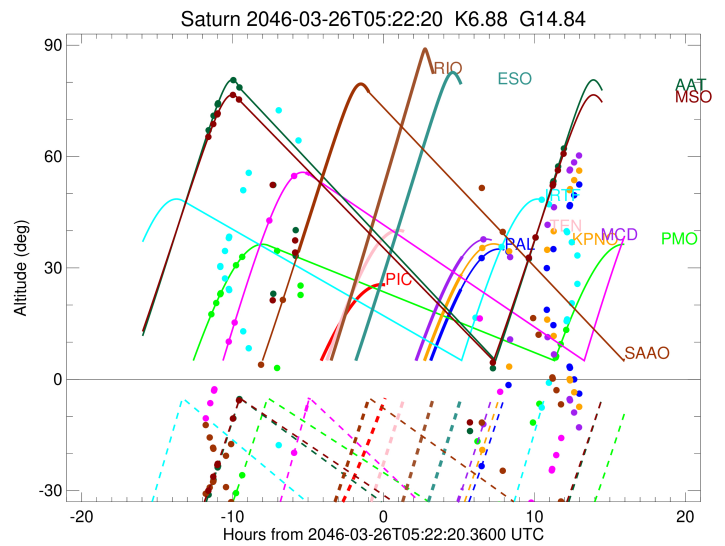
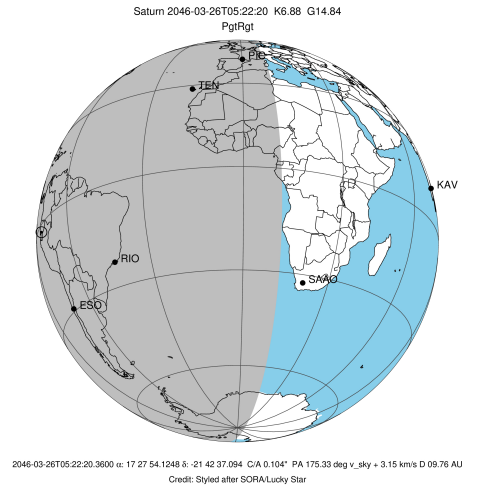
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T05:33:49.590
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : SAAO
 Location : So. Afr. Astro. Obs. (Sutherland)
 Latitude (deg) : -32.37953
 E. Longitude (deg) : 20.81070
 Altitude (km) : 1.768
 Gaia source ID : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 26.32
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.113
 C/A sky separation (km) : 799.2
 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	2046-03-25T17:35:43.900		-30.81x	-12.36	140461.00	-3.87		
A (OER)	I	2046-03-25T17:51:40.058		-29.14x	-15.71	136774.40	-3.84		
Encke (OEG)	I	2046-03-25T18:04:50.259		-27.61x	-18.47	133744.89	-3.82		
Encke (IEG)	I	2046-03-25T18:06:14.386		-27.45x	-18.76	133423.31	-3.82		
A (IER)	I	2046-03-25T18:56:23.556		-20.59x	-29.08	122050.38	-3.74		
B (OER)	I	2046-03-25T19:16:28.720		-17.47x	-33.10	117571.16	-3.70		
B (IER)	I	2046-03-25T21:15:41.657		3.96x	-53.67	91984.69	-3.45		
C (IER)	I	2046-03-25T22:42:26.544		21.43	-59.96	74490.58	-3.27		
Saturn	I	2046-03-25T23:43:13.948		34.15	-56.74	60243.90		7.42	9.08
Saturn	E	2046-03-26T11:12:26.614		-4.35x	54.69x	60209.69		-11.59	-14.13
C (IER)	E	2046-03-26T11:52:56.963		-11.62x	51.57x	74490.58	3.47		
B (IER)	E	2046-03-26T13:16:12.245		-24.61x	39.74x	91984.69	3.52		
B (OER)	E	2046-03-26T15:17:17.835		-35.47x	16.46x	117571.16	3.50		
A (IER)	E	2046-03-26T15:38:39.027		-35.98x	12.05x	122050.38	3.49		
Encke (IEG)	E	2046-03-26T16:33:21.912		-35.07x	0.55x	133423.31	3.44		
Encke (OEG)	E	2046-03-26T16:34:55.510		-35.00x	0.22x	133744.89	3.43		
A (OER)	E	2046-03-26T16:49:39.743		-34.20x	-2.89x	136774.40	3.42		
F ring	E	2046-03-26T17:07:42.215		-32.94x	-6.71	140461.00	3.39		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-03-26T05:32:08.710
 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 : 4117826218935136512
 2Mass ID (if available) : 17275414-2142370
 ICRS Star Coord at Epoch: 17h 27m 54.12477s -21:42:37.09412s
 RUWE (>1.4 is poor) : 1.81
 K magnitude : 6.879
 G magnitude : 14.842
 RP magnitude : 13.079
 BP magnitude : 19.471
 DUPflag : 0
 Distance (au) : 9.765
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 3.15
 Sun-Target sep (deg) : 102.53
 Sun-Moon sep (deg) : 25.70
 B (ring opening deg) : 26.52
 PA of pole (deg) : 4.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 0.645
 C/A sky separation (km) : 4565.7
 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	2046-03-25T17:46:18.405		65.34	-29.97	140461.00	-3.16		
A (OER)	I	2046-03-25T18:05:46.917		68.78	-26.21	136774.40	-3.15		
Encke (OEG)	I	2046-03-25T18:21:49.847		71.38	-23.05	133744.89	-3.14		
Encke (IEG)	I	2046-03-25T18:23:32.176		71.63	-22.72	133423.31	-3.14		
A (IER)	I	2046-03-25T19:23:58.654		76.59	-10.55	122050.38	-3.13		
B (OER)	I	2046-03-25T19:47:46.941		75.36	-5.69	117571.16	-3.14		
B (IER)	I	2046-03-25T22:02:09.154		52.31	21.32x	91984.69	-3.22		
C (IER)	I	2046-03-25T23:31:17.868		34.10	37.44x	74490.58	-3.32		
Saturn	I	2046-03-26T00:33:33.571		21.47	46.42x	60251.87		6.06	7.43
Saturn	E	2046-03-26T10:23:40.506		-18.14x	-28.37	60209.00		-11.65	-14.21
C (IER)	E	2046-03-26T11:05:38.038		-11.67x	-36.28	74490.58	3.28		
B (IER)	E	2046-03-26T12:36:53.037		4.45x	-50.84	91984.69	3.11		
B (OER)	E	2046-03-26T14:59:58.486		32.77	-55.25	117571.16	2.86		
A (IER)	E	2046-03-26T15:26:17.434		38.15	-52.75	122050.38	2.82		
Encke (IEG)	E	2046-03-26T16:34:39.686		52.11	-43.08	133423.31	2.73		
Encke (OEG)	E	2046-03-26T16:36:37.439		52.51	-42.76	133744.89	2.73		
A (OER)	E	2046-03-26T16:55:10.919		56.23	-39.58	136774.40	2.71		
F ring	E	2046-03-26T17:17:55.163		60.70	-35.50	140461.00	2.69		