

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:20:36.550
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404

Saturn 2047-05-06T03:20:36 K7.80 G12.90 PgtRgt

ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s

RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 99.90
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80

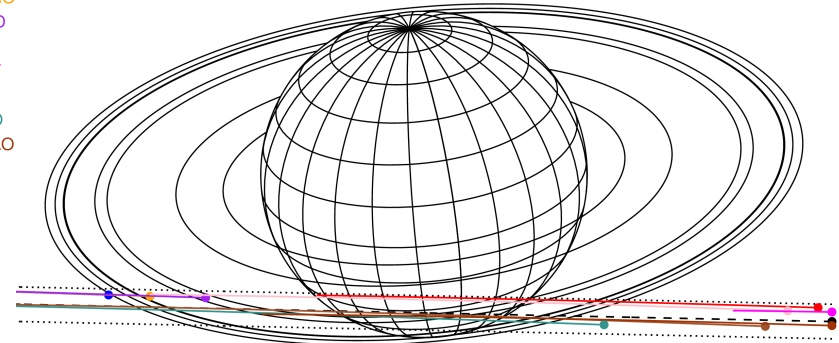
a(km) ring

- 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



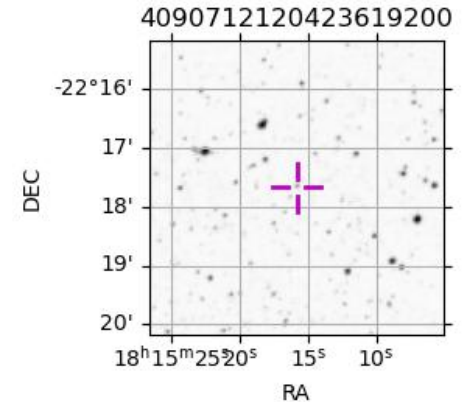
2047-05-06T03:20:36.5500 at: 18 15 15.9592 s: -22 17 40.442 C/A 7.533° PA 358.78 deg v_sky -10.09 km/s D 09.35 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO

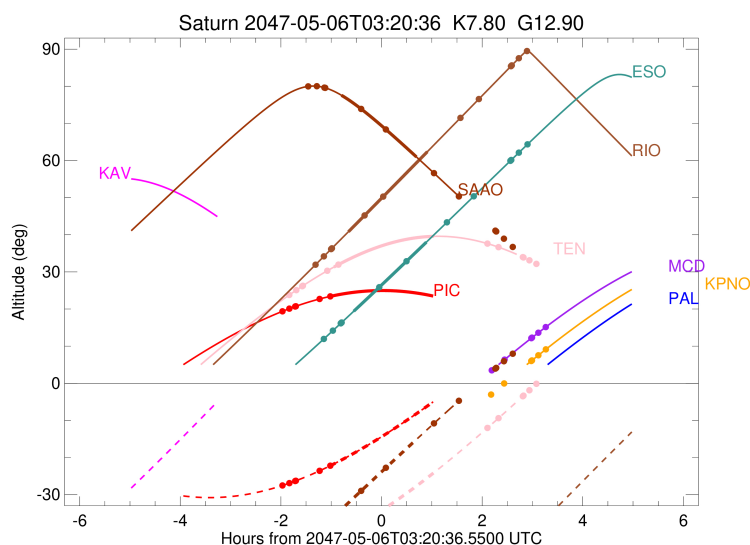
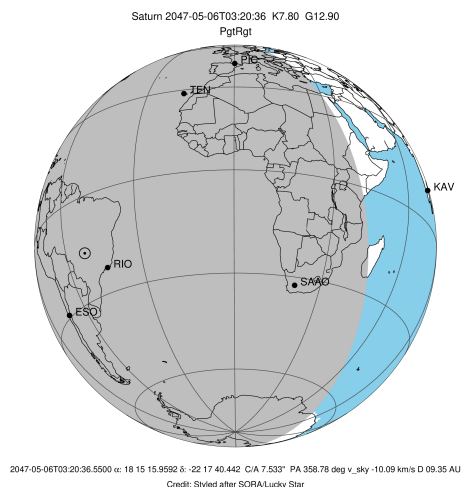


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1	+	+		MAY 06 01:22 - MAY 06 02:18	PinRin
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			+	MAY 06 06:19 - MAY 06 06:36	PnnRne
MCD	McDonald Obs.	30.7	256.0			+	MAY 06 05:47 - MAY 06 06:36	PnnRne
TEN	Teide Obs./Ten	28.3	343.5	+	+	+	MAY 06 01:30 - MAY 06 05:40	PieRie
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	+	+	+	MAY 06 02:01 - MAY 06 06:14	PieRie
ESO	European South	-29.3	289.3	+	+	+	MAY 06 02:11 - MAY 06 06:15	PieRie
AAT	Siding Spring	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro	-32.4	20.8	+	+	+	MAY 06 01:53 - MAY 06 04:24	PieRie
MSO	Mt. Stromlo Ob	-35.3	149.0					PnnRnn

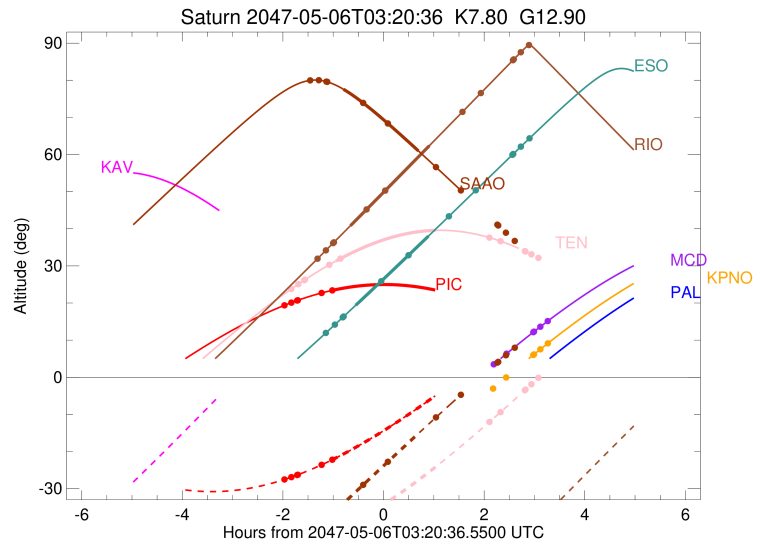
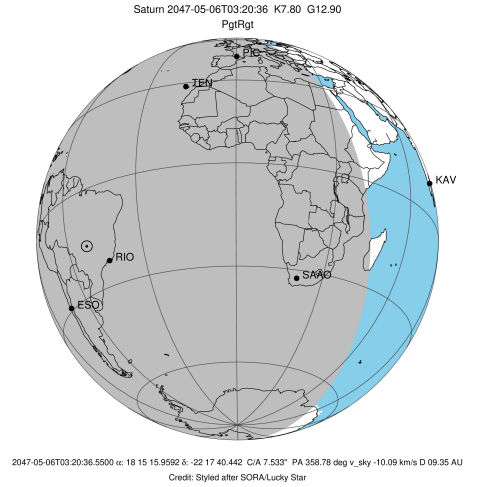


target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:20:20.900
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404
 ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 100.30
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.682
 C/A sky separation (km) : 45315.3
 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



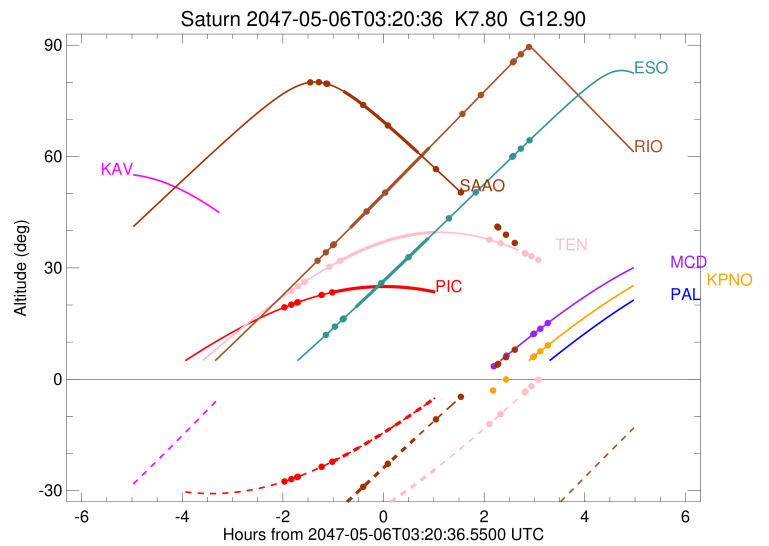
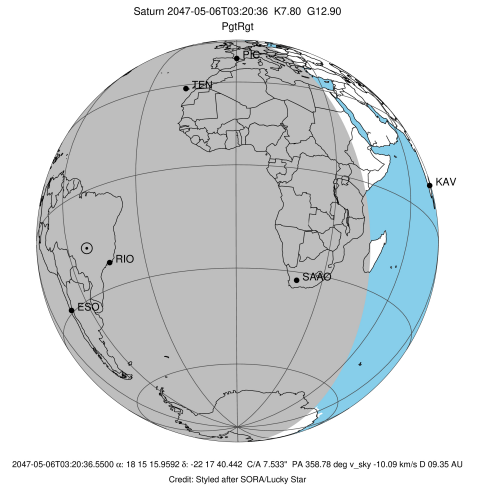
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-05-06T01:22:34.378		19.39	-27.53	140461.00	-7.56		
A (OER)	I	2047-05-06T01:30:48.584		20.11	-26.90	136774.40	-7.35		
Encke (OEG)	I	2047-05-06T01:37:46.158		20.68	-26.33	133744.89	-7.16		
Encke (IEG)	I	2047-05-06T01:38:31.163		20.74	-26.26	133423.31	-7.13		
A (IER)	I	2047-05-06T02:06:54.506		22.72	-23.57	122050.38	-6.17		
B (OER)	I	2047-05-06T02:19:31.007	b	23.41	-22.21	117571.16	-5.66		
Saturn	I	2047-05-06T02:18:48.563		23.37	-22.29	59499.05		-48.62	-54.04
Saturn	E	2047-05-06T04:22:26.471		23.48	-4.98x	59762.13		-37.34	-42.92
B (OER)	E	2047-05-06T05:28:58.329		18.65	6.32x	117571.16	5.65		
A (IER)	E	2047-05-06T05:41:36.875		17.40	8.56x	122050.38	6.15		
Encke (IEG)	E	2047-05-06T06:10:07.653		14.24	13.68x	133423.31	7.10		
Encke (OEG)	E	2047-05-06T06:10:52.899		14.16	13.81x	133744.89	7.12		
A (OER)	E	2047-05-06T06:17:52.808		13.31	15.08x	136774.40	7.31		
F ring	E	2047-05-06T06:26:09.983		12.29	16.59x	140461.00	7.52		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:30:05.300
 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 : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404
 ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 99.53
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.158
 C/A sky separation (km) : 48544.5
 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



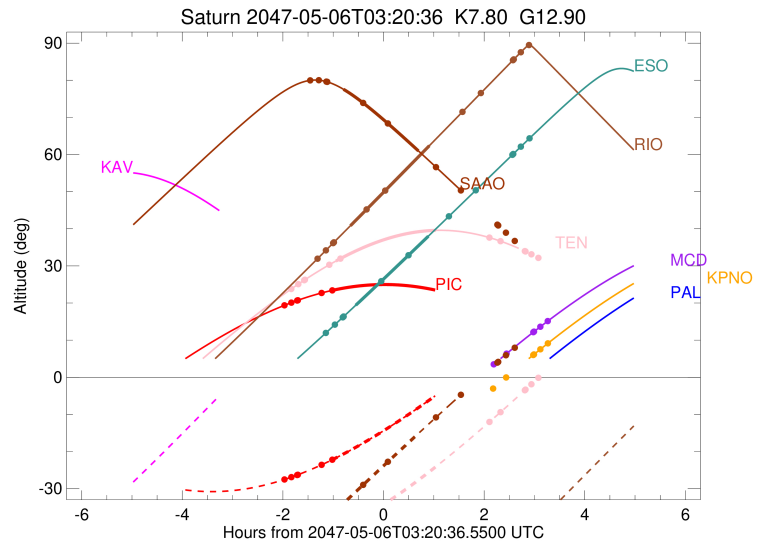
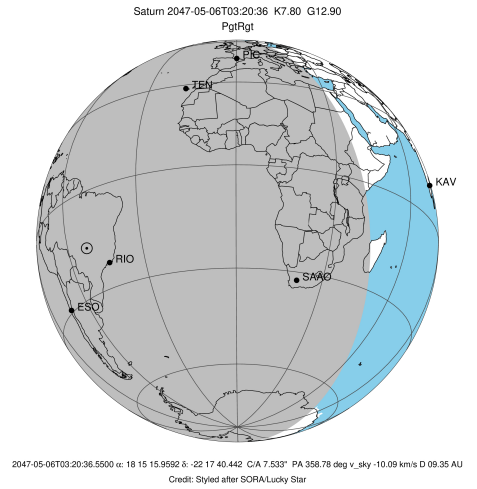
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-05-06T01:43:35.144		-50.25x	4.37x	140461.00	-6.57		
A (OER)	I	2047-05-06T01:53:05.938		-48.22x	2.44x	136774.40	-6.34		
Encke (OEG)	I	2047-05-06T02:01:12.087		-46.50x	0.81x	133744.89	-6.12		
Encke (IEG)	I	2047-05-06T02:02:04.725		-46.31x	0.64x	133423.31	-6.10		
A (IER)	I	2047-05-06T02:36:08.235	b	-39.06x	-6.10	122050.38	-4.98		
B (OER)	I	2047-05-06T02:52:08.746	b	-35.66x	-9.18	117571.16	-4.33		
Saturn	I	2047-05-06T02:32:29.419		-39.84x	-5.39	59401.50		-52.89	-58.04
Saturn	E	2047-05-06T04:27:50.696		-15.70x	-26.02	59683.42		-40.75	-46.36
B (OER)	E	2047-05-06T05:31:47.156		-2.95x	-34.82	117571.16	4.51		
A (IER)	E	2047-05-06T05:47:07.117		-0.00x	-36.50	122050.38	5.21		
Encke (IEG)	E	2047-05-06T06:19:25.918		6.04	-39.33	133423.31	6.47		
Encke (OEG)	E	2047-05-06T06:20:15.538		6.19	-39.39	133744.89	6.49		
A (OER)	E	2047-05-06T06:27:53.061		7.57	-39.90	136774.40	6.75		
F ring	E	2047-05-06T06:36:48.540		9.17	-40.42	140461.00	7.02		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:30:34.130
 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 : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404
 ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 99.64
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.136
 C/A sky separation (km) : 48391.5
 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



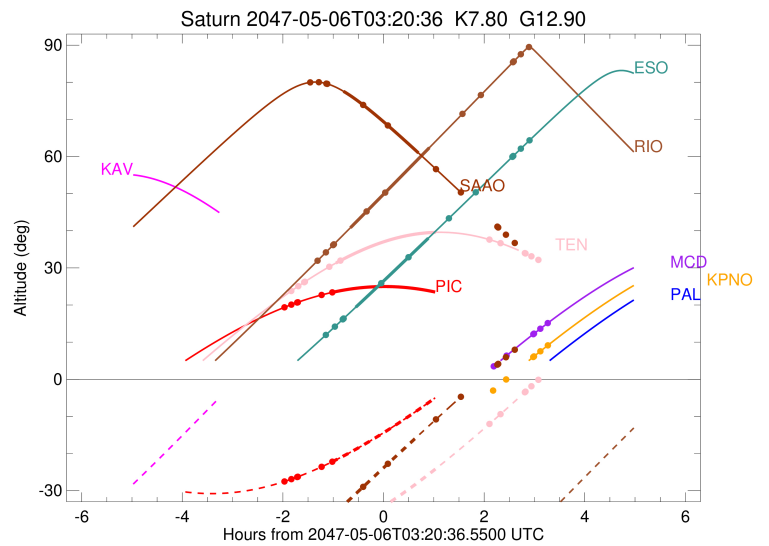
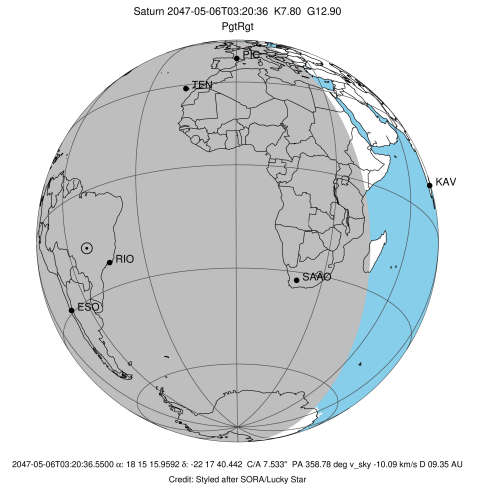
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-05-06T01:44:02.740		-43.67x	-2.27x	140461.00	-6.64		
A (OER)	I	2047-05-06T01:53:27.402		-41.64x	-4.16x	136774.40	-6.41		
Encke (OEG)	I	2047-05-06T02:01:27.978		-39.91x	-5.76	133744.89	-6.19		
Encke (IEG)	I	2047-05-06T02:02:19.992		-39.73x	-5.93	133423.31	-6.17		
A (IER)	I	2047-05-06T02:35:54.826	b	-32.52x	-12.45	122050.38	-5.06		
B (OER)	I	2047-05-06T02:51:37.269	b	-29.17x	-15.41	117571.16	-4.43		
Saturn	I	2047-05-06T02:32:53.655		-33.17x	-11.88	59404.79		-52.74	-57.91
Saturn	E	2047-05-06T04:28:22.348		-9.04x	-31.56	59688.65		-40.52	-46.14
B (OER)	E	2047-05-06T05:32:34.432		3.58x	-39.18	117571.16	4.61		
A (IER)	E	2047-05-06T05:47:37.258		6.40	-40.44	122050.38	5.30		
Encke (IEG)	E	2047-05-06T06:19:29.633		12.18	-42.29	133423.31	6.54		
Encke (OEG)	E	2047-05-06T06:20:18.690		12.33	-42.33	133744.89	6.57		
A (OER)	E	2047-05-06T06:27:51.215		13.65	-42.59	136774.40	6.82		
F ring	E	2047-05-06T06:36:41.252		15.16	-42.81	140461.00	7.09		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:23:14.490
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : 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 : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404
 ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 100.52
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.816
 C/A sky separation (km) : 46221.9
 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



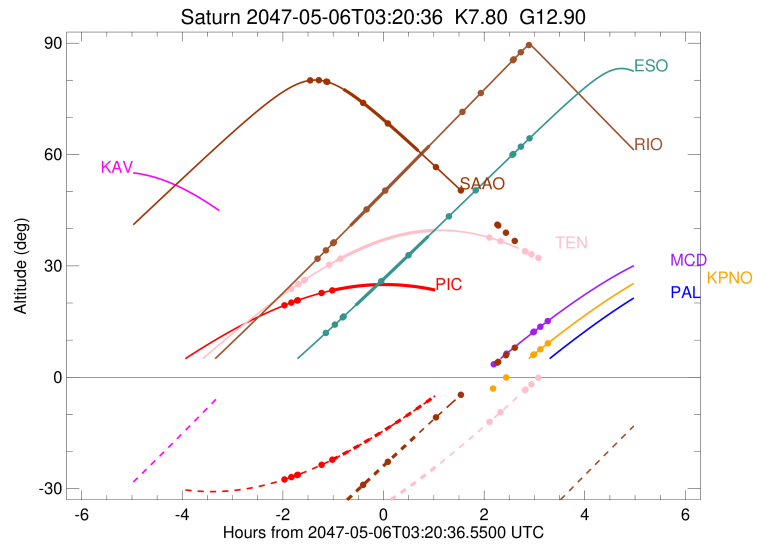
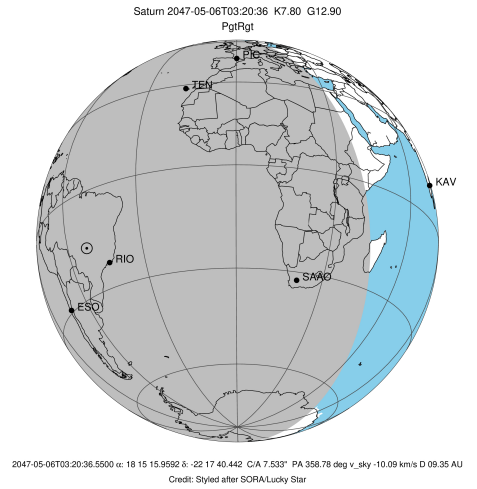
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-05-06T01:30:41.465		23.80	-44.88	140461.00	-7.44		
A (OER)	I	2047-05-06T01:39:04.255		25.09	-44.53	136774.40	-7.22		
Encke (OEG)	I	2047-05-06T01:46:09.896		26.16	-44.16	133744.89	-7.01		
Encke (IEG)	I	2047-05-06T01:46:55.821		26.27	-44.12	133423.31	-6.99		
A (IER)	I	2047-05-06T02:16:04.464		30.32	-41.97	122050.38	-5.97		
B (OER)	I	2047-05-06T02:29:11.159	b	31.96	-40.70	117571.16	-5.41		
Saturn	I	2047-05-06T02:23:45.769		31.30	-41.25	59471.06		-49.83	-55.18
Saturn	E	2047-05-06T04:23:08.418		39.58	-24.07	59739.87		-38.31	-43.91
B (OER)	E	2047-05-06T05:27:21.246		37.60	-11.96	117571.16	5.44		
A (IER)	E	2047-05-06T05:40:23.489		36.65	-9.36	122050.38	6.00		
Encke (IEG)	E	2047-05-06T06:09:22.470		33.96	-3.46x	133423.31	7.03		
Encke (OEG)	E	2047-05-06T06:10:08.138		33.87	-3.30x	133744.89	7.05		
A (OER)	E	2047-05-06T06:17:11.379		33.10	-1.84x	136774.40	7.26		
F ring	E	2047-05-06T06:25:31.273		32.14	-0.11x	140461.00	7.49		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:27:55.440
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : 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 : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404
 ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 100.77
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.610
 C/A sky separation (km) : 51609.7
 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



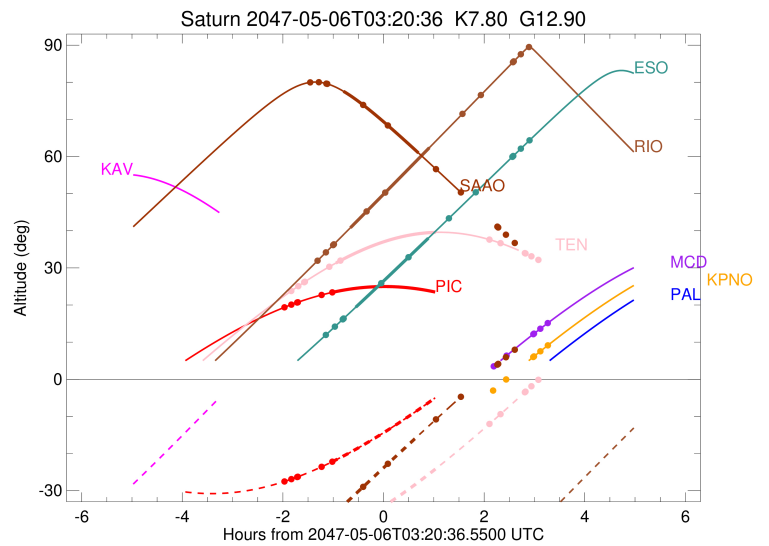
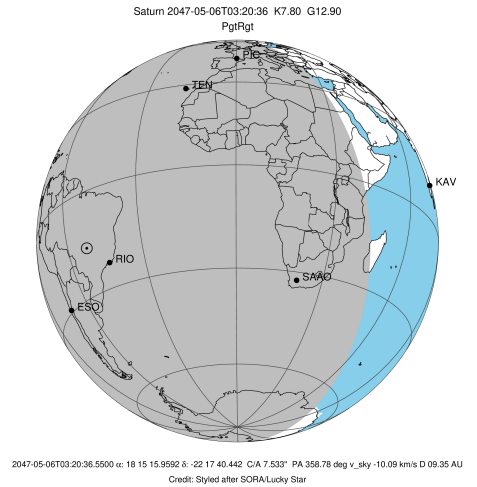
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-05-06T02:01:59.490		31.95	-77.19	140461.00	-6.32		
A (OER)	I	2047-05-06T02:11:57.654		34.20	-79.17	136774.40	-6.00		
Encke (OEG)	I	2047-05-06T02:20:35.693		36.15	-80.75	133744.89	-5.69		
Encke (IEG)	I	2047-05-06T02:21:32.345		36.37	-80.91	133423.31	-5.66		
A (IER)	I	2047-05-06T03:00:33.345	b	45.24	-83.22	122050.38	-3.98		
B (OER)	I	2047-05-06T03:22:25.983	b	50.24	-80.04	117571.16	-2.83		
Saturn	I	2047-05-06T02:41:03.449		40.80	-83.43	59323.82		-56.44	-61.30
Saturn	E	2047-05-06T04:15:15.664		62.38	-68.88	59571.36		-45.52	-51.07
B (OER)	E	2047-05-06T04:55:29.366		71.66	-59.74	117571.16	2.86		
A (IER)	E	2047-05-06T05:17:02.654		76.64	-54.79	122050.38	4.04		
Encke (IEG)	E	2047-05-06T05:55:16.855		85.47	-45.98	133423.31	5.79		
Encke (OEG)	E	2047-05-06T05:56:12.200		85.68	-45.77	133744.89	5.83		
A (OER)	E	2047-05-06T06:04:37.916		87.61	-43.83	136774.40	6.15		
F ring	E	2047-05-06T06:14:20.999		89.51	-41.59	140461.00	6.49		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:30:27.610
 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 : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404
 ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 100.49
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.824
 C/A sky separation (km) : 53058.7
 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	2047-05-06T02:11:53.635		11.95	-53.90	140461.00	-5.88		
A (OER)	I	2047-05-06T02:22:39.977		14.19	-56.19	136774.40	-5.53		
Encke (OEG)	I	2047-05-06T02:32:05.181		16.16	-58.18	133744.89	-5.19		
Encke (IEG)	I	2047-05-06T02:33:07.362		16.38	-58.39	133423.31	-5.15		
A (IER)	I	2047-05-06T03:18:02.256	b	25.90	-67.45	122050.38	-3.19		
B (OER)	I	2047-05-06T03:49:44.033	b	32.72	-72.99	117571.16	-1.48		
Saturn	I	2047-05-06T02:47:19.358		19.37	-61.34	59284.33		-58.31	-62.99
Saturn	E	2047-05-06T04:14:05.630		38.01	-76.12	59521.90		-47.63	-53.10
B (OER)	E	2047-05-06T04:39:52.064		43.63	-77.42	117571.17	1.50		
A (IER)	E	2047-05-06T05:11:02.074		50.45	-75.49	122050.38	3.26		
Encke (IEG)	E	2047-05-06T05:54:37.155		59.99	-68.66	133423.31	5.35		
Encke (OEG)	E	2047-05-06T05:55:37.075		60.20	-68.48	133744.89	5.39		
A (OER)	E	2047-05-06T06:04:40.900		62.18	-66.76	136774.40	5.75		
F ring	E	2047-05-06T06:15:00.996		64.42	-64.74	140461.00	6.14		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-05-06T03:17:11.680
 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 : 4090712120423619200
 2Mass ID (if available) : 18151596-2217404
 ICRS Star Coord at Epoch: 18h 15m 15.95919s -22:17:40.44249s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 7.802
 G magnitude : 12.901
 RP magnitude : 11.562
 BP magnitude : 15.031
 DUPflag : 0
 Distance (au) : 9.351
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.09
 Sun-Target sep (deg) : 131.36
 Sun-Moon sep (deg) : 100.77
 B (ring opening deg) : 26.08
 PA of pole (deg) : 5.80
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.720
 C/A sky separation (km) : 52353.6
 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	2047-05-06T01:53:14.368		79.98	-42.30	140461.00	-6.14		
A (OER)	I	2047-05-06T02:03:33.075		80.02	-40.14	136774.40	-5.77		
Encke (OEG)	I	2047-05-06T02:12:34.501		79.64	-38.23	133744.89	-5.42		
Encke (IEG)	I	2047-05-06T02:13:34.079		79.57	-38.02	133423.31	-5.38		
A (IER)	I	2047-05-06T02:56:27.899	b	73.87	-28.96	122050.38	-3.37		
B (OER)	I	2047-05-06T03:25:22.104	b	68.46	-22.86	117571.16	-1.76		
Saturn	I	2047-05-06T02:32:54.151		77.57	-33.94	59315.68		-56.82	-61.64
Saturn	E	2047-05-06T04:02:16.073		60.97	-15.14	59527.87		-47.38	-52.86
B (OER)	E	2047-05-06T04:24:13.737		56.39	-10.59	117571.16	1.76		
A (IER)	E	2047-05-06T04:53:17.002		50.25	-4.65x	122050.38	3.35		
Encke (IEG)	E	2047-05-06T05:36:42.240		41.05	4.00x	133423.31	5.29		
Encke (OEG)	E	2047-05-06T05:37:42.830		40.83	4.20x	133744.89	5.33		
A (OER)	E	2047-05-06T05:46:54.031		38.89	5.99x	136774.40	5.66		
F ring	E	2047-05-06T05:57:25.162		36.66	8.01x	140461.00	6.02		