

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-05-23T22:30:32.580
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4115097505955028864
 2Mass ID (if available) : 17192277-2132074

Saturn 2046-05-23T22:30:32 K9.11 G14.60 PgtRgt

ICRS Star Coord at Epoch: 17h 19m 22.77329s -21:32:07.92111s

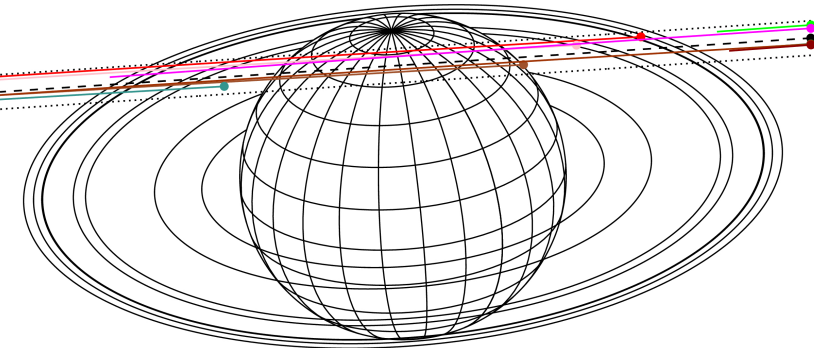
RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.114
 G magnitude : 14.596
 RP magnitude : 13.281
 BP magnitude : 16.610
 DUPflag : 0
 Distance (au) : 9.066
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.68
 Sun-Target sep (deg) : 161.70
 Sun-Moon sep (deg) : 29.45
 B (ring opening deg) : 26.51
 PA of pole (deg) : 4.59

Saturn 2046-05-23T22:30:32 K9.11 G14.60
 PgtRgt



2046-05-23T22:30:32.580 at: 17 19 22.7733 s: -21 32 07.921 C/A 6.239° PA 183.80 deg v_sky -18.68 km/s D 09.07 AU
 Credit: Styled after SORA/Lucky Star

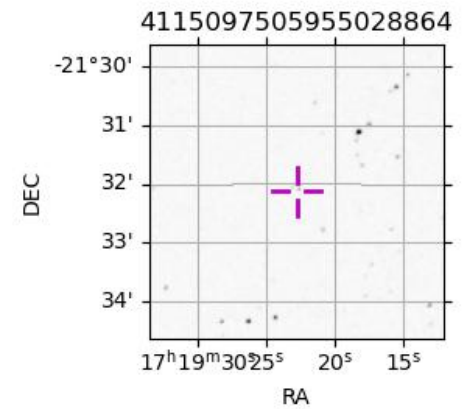
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



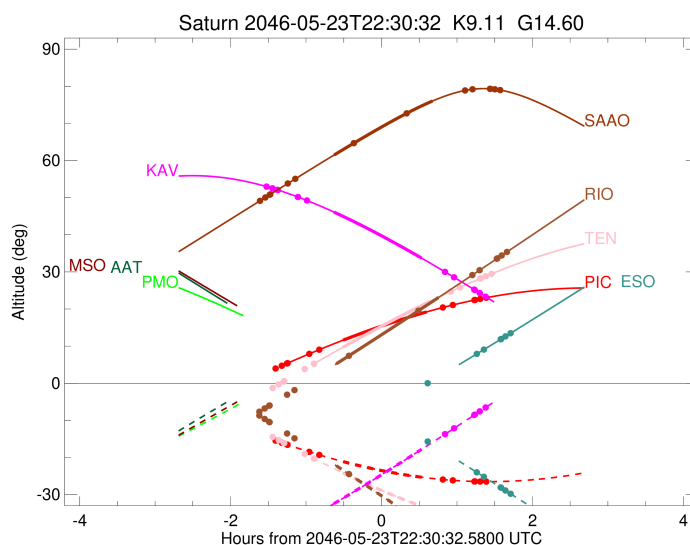
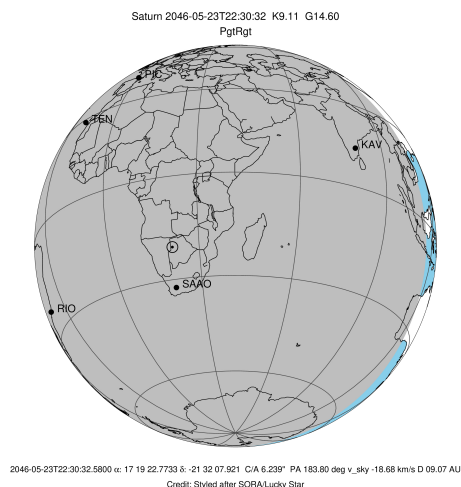
#	a(km)	ring
1	74490.6	C (IER)
2	91984.7	B (IER)
3	117571.2	B (OER)
4	122050.4	A (IER)
5	133423.3	Encke (IEG)
6	133744.9	Encke (OEG)
7	136774.4	A (OER)
8	140461.0	F ring

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	+	+	+	MAY 23 21:15 - MAY 23 23:53	PieRie
PAL	Palomar Mt (20	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl	32.0	248.4					PnnRnn
MCD	McDonald Obs.	30.7	256.0					PnnRnn
TEN	Teide Obs./Ten	28.3	343.5	+	+	+	MAY 23 21:36 - MAY 23 23:58	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observ	12.6	78.8	+	+	+	MAY 23 20:59 - MAY 23 23:53	PieRie
RIO	Rio de Janeiro	-22.9	316.8		+	+	MAY 23 21:54 - MAY 24 00:10	PieRne
ESO	European South	-29.3	289.3				MAY 23 23:46 - MAY 24 00:13	PnnRne
AAT	Siding Spring	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro	-32.4	20.8	+	+	+	MAY 23 20:53 - MAY 24 00:04	PieRie
MSO	Mt. Stromlo Ob	-35.3	149.0					PnnRnn



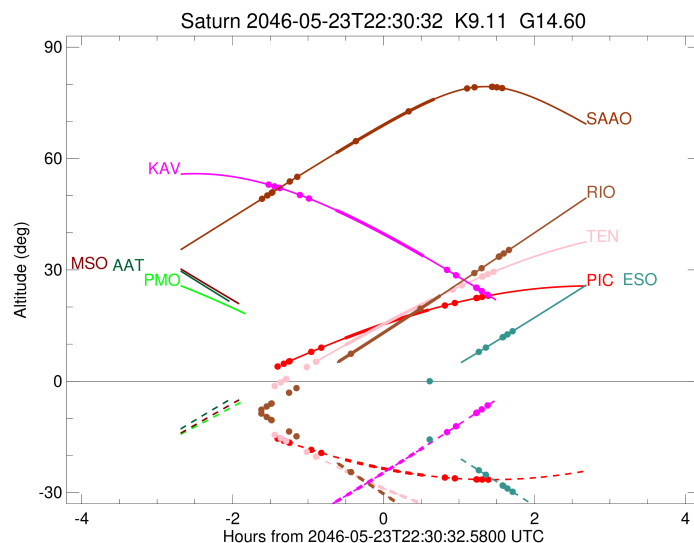
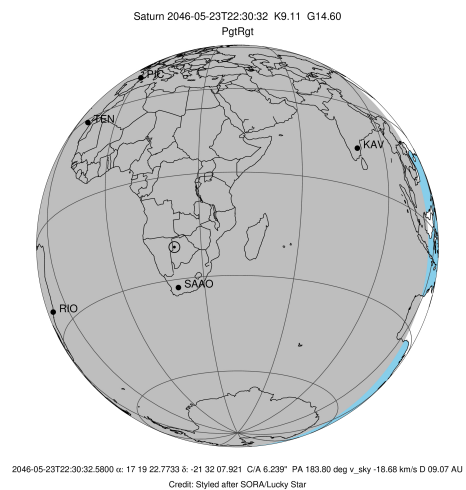
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-05-23T22:33:19.300
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 4115097505955028864
 2Mass ID (if available) : 17192277-2132074
 ICRS Star Coord at Epoch: 17h 19m 22.77329s -21:32:07.92111s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.114
 G magnitude : 14.596
 RP magnitude : 13.281
 BP magnitude : 16.610
 DUPflag : 0
 Distance (au) : 9.066
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.68
 Sun-Target sep (deg) : 161.70
 Sun-Moon sep (deg) : 30.08
 B (ring opening deg) : 26.51
 PA of pole (deg) : 4.59
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.021
 C/A sky separation (km) : 46165.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 Saturn_ring_plane.tf
 sat378.bsp
 sat286.bsp
 vgr1.sat286.bsp
 vgr2.sat286.bsp
 HST1081HSPephemUTC.bsp
 pfb10000r.bsp
 cassini.bsp
 earthstns_itrf93_040916.bsp
 earth_200101_990628_predict.bpc
 earth_720101_070426.bpc
 cpck28Mar2008.tpc
 pck.sat440.tpc
 IAU_SATURN_for_RINGFIT.tpc
 naif0012.tls
 earth_flat_IAU.spk



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

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-05-23T21:06:12.349		3.96x	-15.43	140461.00	-12.73		
A (OER)	I	2046-05-23T21:11:06.712		4.70x	-16.02	136774.40	-12.31		
Encke (OEG)	I	2046-05-23T21:15:16.552		5.32	-16.50	133744.89	-11.93		
Encke (IEG)	I	2046-05-23T21:15:43.547		5.39	-16.55	133423.31	-11.89		
A (IER)	I	2046-05-23T21:32:58.503		7.90	-18.46	122050.38	-10.00		
B (OER)	I	2046-05-23T21:40:50.559		9.01	-19.28	117571.16	-8.96		
Saturn	I	2046-05-23T22:00:05.078		11.61	-21.11	59605.29		43.04	48.64
Saturn	E	2046-05-23T23:06:26.309		19.22	-25.48	59563.70		44.74	50.31
B (OER)	E	2046-05-23T23:19:26.286		20.42	-25.94	117571.16	9.00		
A (IER)	E	2046-05-23T23:27:16.028		21.09	-26.15	122050.38	10.05		
Encke (IEG)	E	2046-05-23T23:44:24.440		22.41	-26.44	133423.31	11.98		
Encke (OEG)	E	2046-05-23T23:44:51.239		22.44	-26.45	133744.89	12.02		
A (OER)	E	2046-05-23T23:48:59.203		22.72	-26.48	136774.40	12.41		
F ring	E	2046-05-23T23:53:51.221		23.05	-26.50	140461.00	12.83		

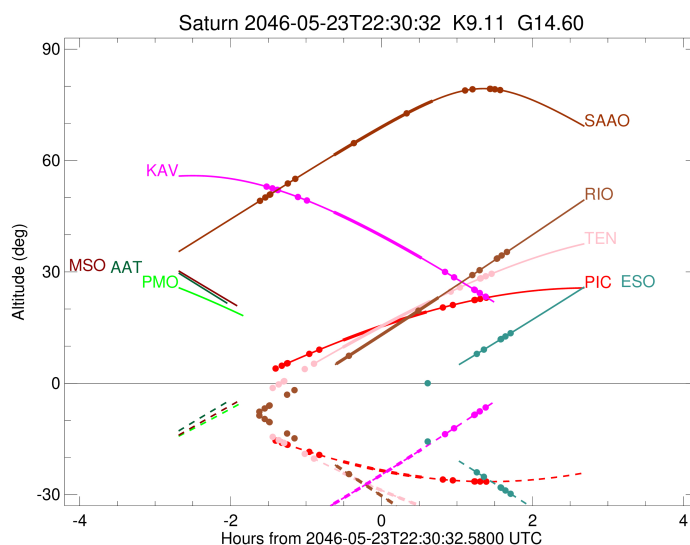
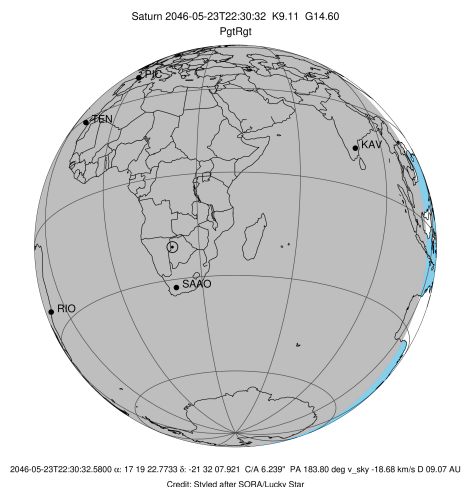
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-05-23T22:34:38.820
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 4115097505955028864
 2Mass ID (if available) : 17192277-2132074
 ICRS Star Coord at Epoch: 17h 19m 22.77329s -21:32:07.92111s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.114
 G magnitude : 14.596
 RP magnitude : 13.281
 BP magnitude : 16.610
 DUPflag : 0
 Distance (au) : 9.066
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.68
 Sun-Target sep (deg) : 161.70
 Sun-Moon sep (deg) : 30.26
 B (ring opening deg) : 26.51
 PA of pole (deg) : 4.59
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.793
 C/A sky separation (km) : 44665.6
 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	2046-05-23T21:03:54.946		-1.29x	-14.42	140461.00	-13.16		
A (OER)	I	2046-05-23T21:08:39.126		-0.33x	-15.29	136774.40	-12.78		
Encke (OEG)	I	2046-05-23T21:12:39.219		0.47x	-16.02	133744.89	-12.45		
Encke (IEG)	I	2046-05-23T21:13:05.093		0.56x	-16.09	133423.31	-12.41		
A (IER)	I	2046-05-23T21:29:23.817		3.80x	-19.00	122050.38	-10.75		
B (OER)	I	2046-05-23T21:36:37.899		5.22	-20.25	117571.16	-9.87		
Saturn	I	2046-05-23T21:59:42.526		9.67	-24.10	59652.01		41.12	46.73
Saturn	E	2046-05-23T23:09:25.215		22.09	-33.97	59604.72		43.06	48.66
B (OER)	E	2046-05-23T23:25:40.837		24.71	-35.78	117571.16	9.94		
A (IER)	E	2046-05-23T23:32:51.286		25.82	-36.51	122050.38	10.85		
Encke (IEG)	E	2046-05-23T23:48:59.988		28.21	-37.97	133423.31	12.55		
Encke (OEG)	E	2046-05-23T23:49:25.565		28.28	-38.00	133744.89	12.59		
A (OER)	E	2046-05-23T23:53:22.812		28.84	-38.32	136774.40	12.94		
F ring	E	2046-05-23T23:58:03.442		29.49	-38.67	140461.00	13.33		

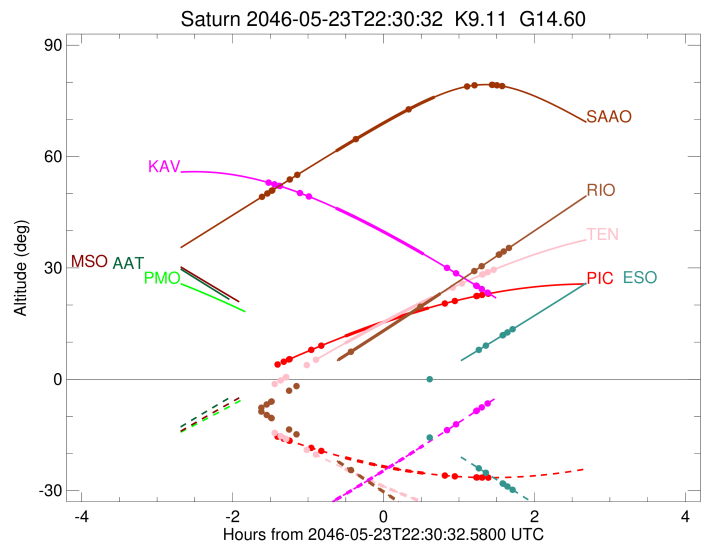
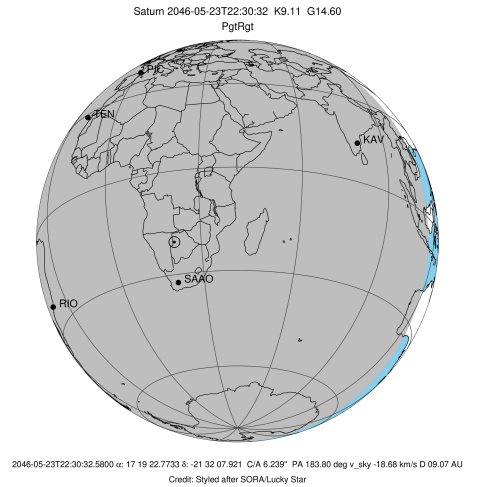
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-05-23T22:27:32.720
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 4115097505955028864
 2Mass ID (if available) : 17192277-2132074
 ICRS Star Coord at Epoch: 17h 19m 22.77329s -21:32:07.92111s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.114
 G magnitude : 14.596
 RP magnitude : 13.281
 BP magnitude : 16.610
 DUPflag : 0
 Distance (au) : 9.066
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.68
 Sun-Target sep (deg) : 161.70
 Sun-Moon sep (deg) : 29.34
 B (ring opening deg) : 26.51
 PA of pole (deg) : 4.59
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.747
 C/A sky separation (km) : 44366.6
 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	2046-05-23T20:59:04.225		52.99	-42.59	140461.00	-13.45		
A (OER)	I	2046-05-23T21:03:42.168		52.53	-41.77	136774.40	-13.07		
Encke (OEG)	I	2046-05-23T21:07:36.938		52.11	-41.07	133744.89	-12.73		
Encke (IEG)	I	2046-05-23T21:08:02.234		52.07	-40.99	133423.31	-12.69		
A (IER)	I	2046-05-23T21:23:58.090		50.19	-38.05	122050.38	-11.03		
B (OER)	I	2046-05-23T21:31:00.885		49.27	-36.71	117571.16	-10.14		
Saturn	I	2046-05-23T21:52:39.824		46.12	-32.45	59647.93		41.28	46.90
Saturn	E	2046-05-23T23:02:27.870		33.71	-17.79	59626.63		42.16	47.77
B (OER)	E	2046-05-23T23:21:08.864		29.99	-13.69	117571.16	10.08		
A (IER)	E	2046-05-23T23:28:14.242		28.54	-12.13	122050.38	10.96		
Encke (IEG)	E	2046-05-23T23:44:16.950		25.22	-8.55	133423.31	12.59		
Encke (OEG)	E	2046-05-23T23:44:42.447		25.14	-8.46	133744.89	12.63		
A (OER)	E	2046-05-23T23:48:39.127		24.31	-7.57	136774.40	12.97		
F ring	E	2046-05-23T23:53:19.443		23.33	-6.53	140461.00	13.33		

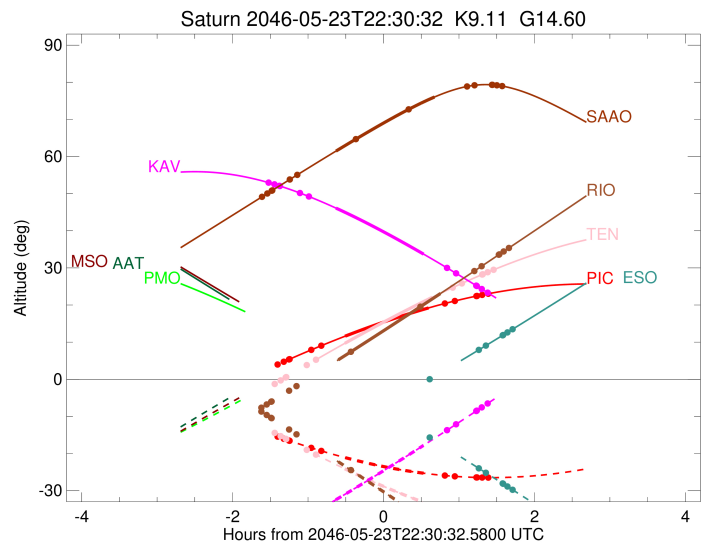
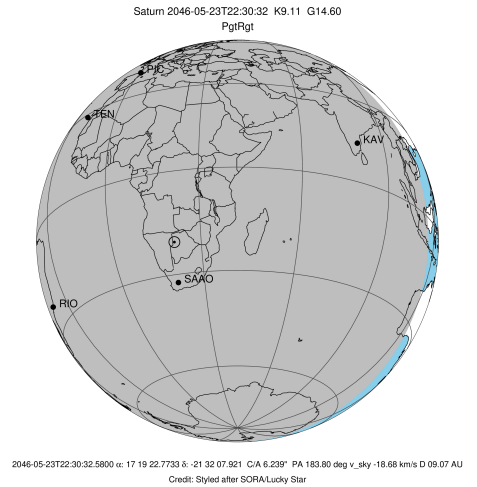
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-05-23T22:35:20.200
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 4115097505955028864
 2Mass ID (if available) : 17192277-2132074
 ICRS Star Coord at Epoch: 17h 19m 22.77329s -21:32:07.92111s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.114
 G magnitude : 14.596
 RP magnitude : 13.281
 BP magnitude : 16.610
 DUPflag : 0
 Distance (au) : 9.066
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.68
 Sun-Target sep (deg) : 161.70
 Sun-Moon sep (deg) : 30.25
 B (ring opening deg) : 26.51
 PA of pole (deg) : 4.59
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.876
 C/A sky separation (km) : 38637.4
 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	2046-05-23T20:53:20.416		-7.68x	-8.68	140461.00	-14.62		
A (OER)	I	2046-05-23T20:57:34.694		-6.81x	-9.60	136774.40	-14.38		
Encke (OEG)	I	2046-05-23T21:01:07.010		-6.08x	-10.38	133744.89	-14.16		
Encke (IEG)	I	2046-05-23T21:01:29.741		-6.00x	-10.46	133423.31	-14.13		
A (IER)	I	2046-05-23T21:15:23.121		-3.10x	-13.51	122050.38	-13.11		
B (OER)	I	2046-05-23T21:21:11.515		-1.88x	-14.79	117571.16	-12.59		
B (IER)	I	2046-05-23T22:04:32.548	b	7.39	-24.45	91984.69	-6.29		
Saturn	I	2046-05-23T21:54:35.861		5.24	-22.22	59814.45		34.27	39.74
Saturn	E	2046-05-23T23:15:50.845		23.11	-40.59	59764.83		36.41	41.96
B (IER)	E	2046-05-23T22:59:50.401	b	19.54	-36.94	91984.69	6.31		
B (OER)	E	2046-05-23T23:42:48.971		29.16	-46.75	117571.16	12.76		
A (IER)	E	2046-05-23T23:48:32.596		30.45	-48.06	122050.38	13.30		
Encke (IEG)	E	2046-05-24T00:02:13.060		33.55	-51.20	133423.31	14.38		
Encke (OEG)	E	2046-05-24T00:02:35.410		33.63	-51.28	133744.89	14.40		
A (OER)	E	2046-05-24T00:06:04.089		34.42	-52.08	136774.40	14.63		
F ring	E	2046-05-24T00:10:13.839		35.36	-53.04	140461.00	14.89		

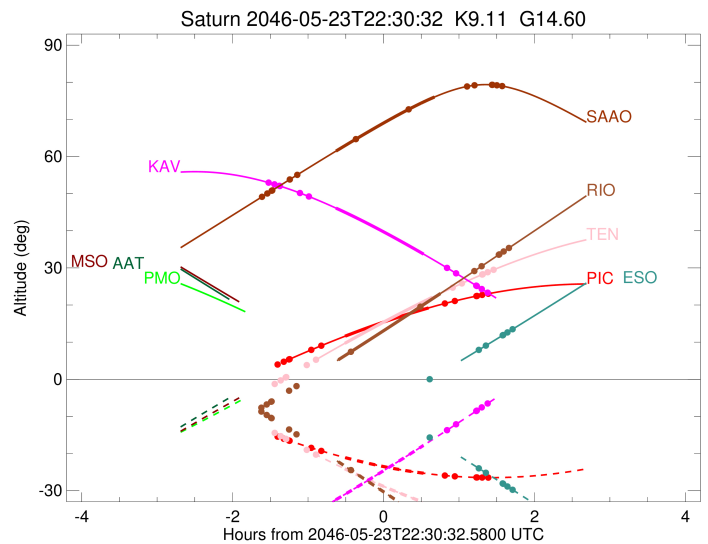
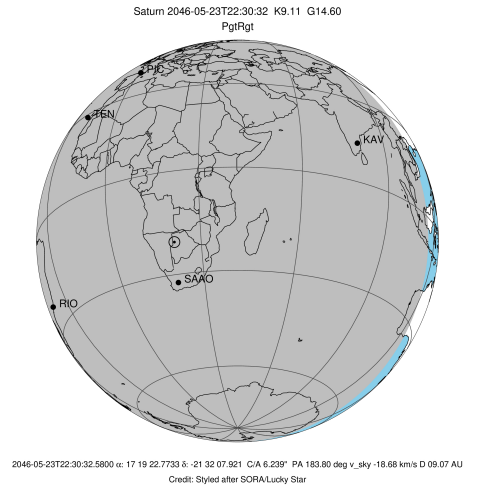
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-05-23T22:34:44.900
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 4115097505955028864
 2Mass ID (if available) : 17192277-2132074
 ICRS Star Coord at Epoch: 17h 19m 22.77329s -21:32:07.92111s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.114
 G magnitude : 14.596
 RP magnitude : 13.281
 BP magnitude : 16.610
 DUPflag : 0
 Distance (au) : 9.066
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.68
 Sun-Target sep (deg) : 161.70
 Sun-Moon sep (deg) : 29.98
 B (ring opening deg) : 26.51
 PA of pole (deg) : 4.59
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.643
 C/A sky separation (km) : 37103.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 Saturn_ring_plane.tf
 sat378.bsp
 sat286.bsp
 vgr1.sat286.bsp
 vgr2.sat286.bsp
 HST1081HSPephemUTC.bsp
 pfb10000r.bsp
 cassini.bsp
 earthstns_itrf93_040916.bsp
 earth_200101_990628_predict.bpc
 earth_720101_070426.bpc
 cpck28Mar2008.tpc
 pck.sat440.tpc
 IAU_SATURN_for_RINGFIT.tpc
 naif0012.tls
 earth_flat_IAU.spk



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

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-05-23T20:49:51.681		-24.63x	11.81x	140461.00	-14.85		
A (OER)	I	2046-05-23T20:54:01.797		-23.99x	11.03x	136774.40	-14.63		
Encke (OEG)	I	2046-05-23T20:57:30.241		-23.45x	10.38x	133744.89	-14.44		
Encke (IEG)	I	2046-05-23T20:57:52.534		-23.40x	10.31x	133423.31	-14.41		
A (IER)	I	2046-05-23T21:11:26.039		-21.23x	7.74x	122050.38	-13.50		
B (OER)	I	2046-05-23T21:17:03.311		-20.30x	6.66x	117571.16	-13.05		
B (IER)	I	2046-05-23T21:56:33.415	b	-13.45x	-1.11x	91984.69	-7.90		
Saturn	I	2046-05-23T21:52:25.819		-14.19x	-0.28x	59849.44		32.73	38.12
Saturn	E	2046-05-23T23:16:50.912		1.93x	-17.71	59803.74		34.74	40.22
B (IER)	E	2046-05-23T23:07:13.010	b	0.01x	-15.68	91984.69	7.94		
B (OER)	E	2046-05-23T23:46:21.711		7.92	-24.00	117571.16	13.22		
A (IER)	E	2046-05-23T23:51:54.551		9.06	-25.19	122050.38	13.69		
Encke (IEG)	E	2046-05-24T00:05:16.072		11.83	-28.06	133423.31	14.65		
Encke (OEG)	E	2046-05-24T00:05:38.012		11.91	-28.14	133744.89	14.67		
A (OER)	E	2046-05-24T00:09:03.086		12.62	-28.88	136774.40	14.87		
F ring	E	2046-05-24T00:13:09.007		13.48	-29.76	140461.00	15.10		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-05-23T22:31:58.890
 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 : 4115097505955028864
 2Mass ID (if available) : 17192277-2132074
 ICRS Star Coord at Epoch: 17h 19m 22.77329s -21:32:07.92111s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 9.114
 G magnitude : 14.596
 RP magnitude : 13.281
 BP magnitude : 16.610
 DUPflag : 0
 Distance (au) : 9.066
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.68
 Sun-Target sep (deg) : 161.70
 Sun-Moon sep (deg) : 30.10
 B (ring opening deg) : 26.51
 PA of pole (deg) : 4.59
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.026
 C/A sky separation (km) : 39622.4
 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	2046-05-23T20:53:50.671		49.13	-65.01	140461.00	-14.66		
A (OER)	I	2046-05-23T20:58:04.415		50.02	-65.84	136774.40	-14.39		
Encke (OEG)	I	2046-05-23T21:01:36.624		50.77	-66.53	133744.89	-14.15		
Encke (IEG)	I	2046-05-23T21:01:59.364		50.85	-66.60	133423.31	-14.13		
A (IER)	I	2046-05-23T21:15:56.334		53.80	-69.25	122050.38	-13.00		
B (OER)	I	2046-05-23T21:21:48.658		55.03	-70.33	117571.16	-12.42		
B (IER)	I	2046-05-23T22:08:30.952	b	64.68	-77.25	91984.69	-4.91		
Saturn	I	2046-05-23T21:52:44.804		61.47	-75.37	59785.15		35.54	41.06
Saturn	E	2046-05-23T23:11:06.762		76.04	-75.81	59745.96		37.21	42.78
B (IER)	E	2046-05-23T22:50:27.025	b	72.69	-77.94	91984.69	4.91		
B (OER)	E	2046-05-23T23:37:03.115		78.88	-71.79	117571.16	12.47		
A (IER)	E	2046-05-23T23:42:53.870		79.19	-70.76	122050.38	13.06		
Encke (IEG)	E	2046-05-23T23:56:46.540		79.32	-68.20	133423.31	14.21		
Encke (OEG)	E	2046-05-23T23:57:09.152		79.31	-68.13	133744.89	14.24		
A (OER)	E	2046-05-24T00:00:40.142		79.19	-67.46	136774.40	14.48		
F ring	E	2046-05-24T00:04:52.365		78.98	-66.65	140461.00	14.75		