

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:13:33.220
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500

Saturn 2026-11-17T10:13:33 K9.01 G10.17 PgtRgt

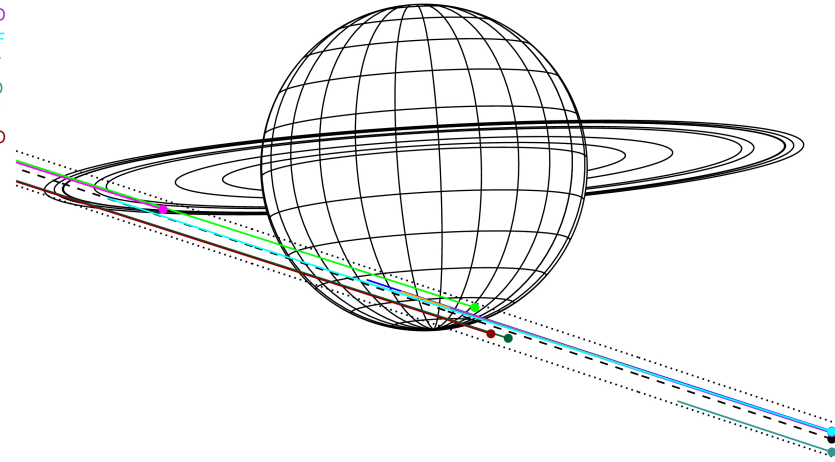
ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s

RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 44.13
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48

Saturn 2026-11-17T10:13:33 K9.01 G10.17
 PgtRgt



Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 ESO
 AAT
 MSO

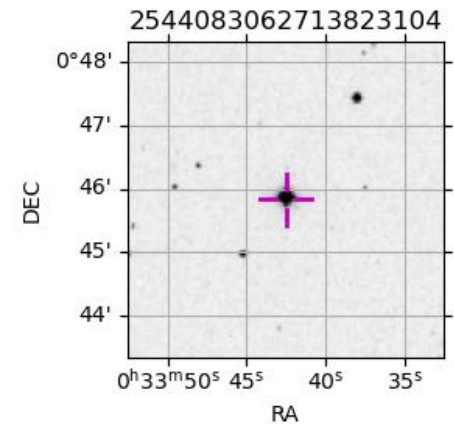


2026-11-17T10:13:33.2200 α: 00 33 42.5096 δ: +00 45 49.646 C/A 7.538° PA 341.63 deg v_sky -10.75 km/s D 08.71 AU
 Credit: Styled after SORA/Lucky Star

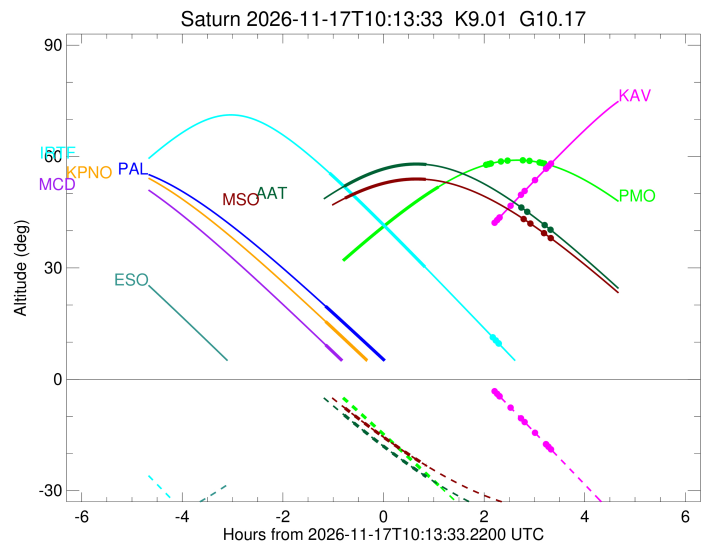
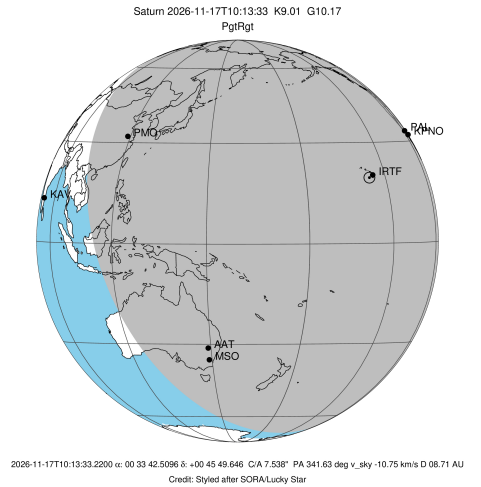
#	a(km)	ring
1	74490.6	C (IER)
2	91984.7	B (IER)
3	117571.2	B (OER)
4	122050.4	A (IER)
5	133423.3	Encke (IEG)
6	133744.9	Encke (OEG)
7	136774.4	A (OER)
8	140461.0	F ring

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	OEncode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1		+		NOV 17 09:04 - NOV 17 09:04	PinRnn
PMO	Purple Mtn Obs	32.1	118.8	+	+	+	NOV 17 11:19 - NOV 17 13:25	PneRie
KPNO	Kitt Peak Natl	32.0	248.4		+		NOV 17 09:04 - NOV 17 09:04	PinRnn
MCD	McDonald Obs.	30.7	256.0		+		NOV 17 09:04 - NOV 17 09:04	PinRnn
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	+		NOV 17 09:09 - NOV 17 12:30	PieRin
KAV	Kavalur Observ	12.6	78.8			+	NOV 17 12:44 - NOV 17 13:33	PnnRie
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1	+	+		NOV 17 09:26 - NOV 17 13:32	PieRie
SAAO	So. Afr. Astro	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Ob	-35.3	149.0	+	+		NOV 17 09:27 - NOV 17 13:33	PieRie



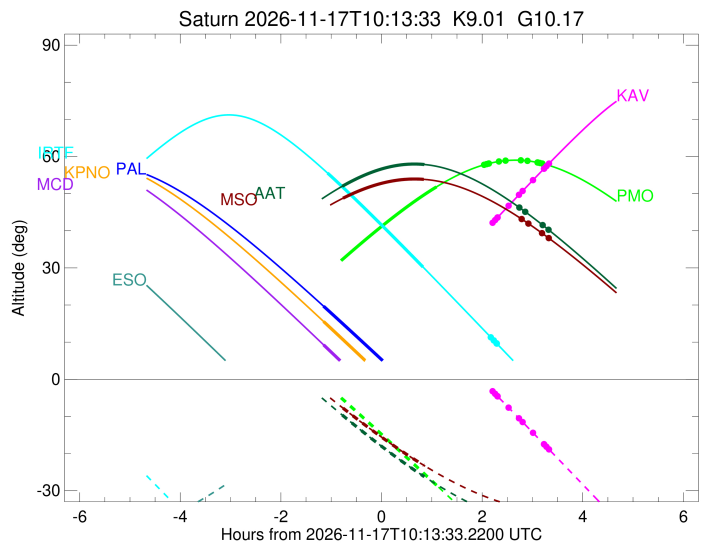
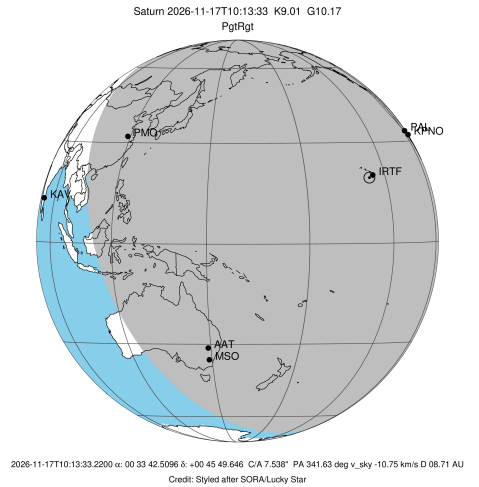
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:04:00.910
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 44.83
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.279
 C/A sky separation (km) : 46007.9
 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	2026-11-17T12:15:11.722	-19.97x	-26.12	140461.00	-20.23			
A (OER)	I	2026-11-17T12:18:20.497	-20.60x	-25.47	136774.40	-18.81			
Encke (OEG)	I	2026-11-17T12:21:07.546	-21.17x	-24.89	133744.89	-17.45			
Encke (IEG)	I	2026-11-17T12:21:26.057	-21.23x	-24.83	133423.31	-17.29			
A (IER)	I	2026-11-17T12:35:42.009	-24.09x	-21.88	122050.38	-8.91			
Saturn	I	2026-11-17T09:04:19.880		19.71	-65.07	60208.42		-70.53	-73.69
Saturn	E	2026-11-17T11:04:25.735		-5.35x	-40.90	60253.45		-27.76	-32.76
A (IER)	E	2026-11-17T13:01:13.853	-29.11x	-16.63	122050.38	8.90			
Encke (IEG)	E	2026-11-17T13:15:32.129	-31.85x	-13.72	133423.31	17.23			
Encke (OEG)	E	2026-11-17T13:15:50.709	-31.91x	-13.65	133744.89	17.38			
A (OER)	E	2026-11-17T13:18:38.415	-32.44x	-13.09	136774.40	18.73			
F ring	E	2026-11-17T13:21:48.009	-33.03x	-12.45	140461.00	20.14			

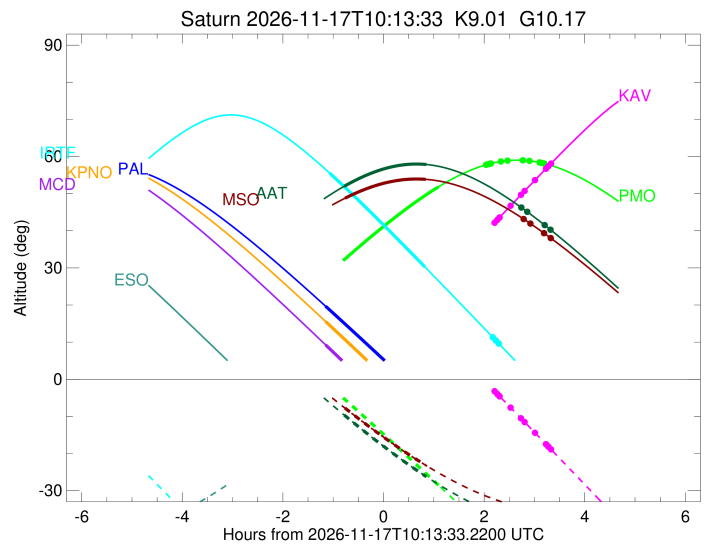
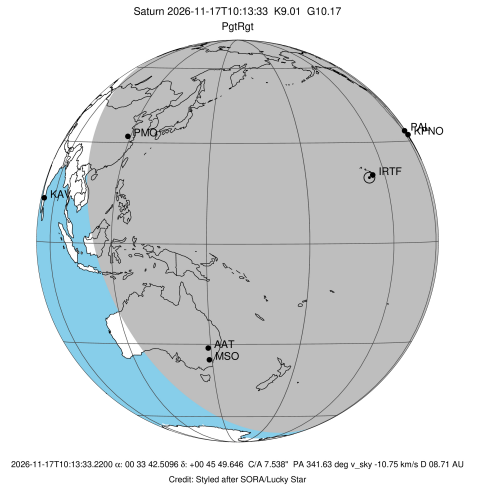
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:16:23.020
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 44.34
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.872
 C/A sky separation (km) : 43434.0
 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_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	2026-11-17T12:15:27.527		57.75	-40.48	140461.00	-21.72		
A (OER)	I	2026-11-17T12:18:22.332		57.93	-41.10	136774.40	-20.44		
Encke (OEG)	I	2026-11-17T12:20:54.972		58.08	-41.64	133744.89	-19.24		
Encke (IEG)	I	2026-11-17T12:21:11.745		58.10	-41.70	133423.31	-19.10		
A (IER)	I	2026-11-17T12:33:08.751		58.65	-44.23	122050.38	-12.32		
B (OER)	I	2026-11-17T12:40:47.625		58.88	-45.85	117571.18	-7.11		
Saturn	I	2026-11-17T09:13:20.230		29.56	-2.61x	60211.43		-66.73	-70.42
Saturn	E	2026-11-17T11:19:15.794		51.85	-28.57	60256.27		-24.71	-29.39
B (OER)	E	2026-11-17T12:59:56.123		58.98	-49.89	117571.16	7.10		
A (IER)	E	2026-11-17T13:07:35.392		58.84	-51.49	122050.38	12.31		
Encke (IEG)	E	2026-11-17T13:19:33.475		58.41	-53.99	133423.31	19.07		
Encke (OEG)	E	2026-11-17T13:19:50.280		58.39	-54.05	133744.89	19.20		
A (OER)	E	2026-11-17T13:22:23.225		58.27	-54.58	136774.40	20.40		
F ring	E	2026-11-17T13:25:18.413		58.11	-55.18	140461.00	21.67		

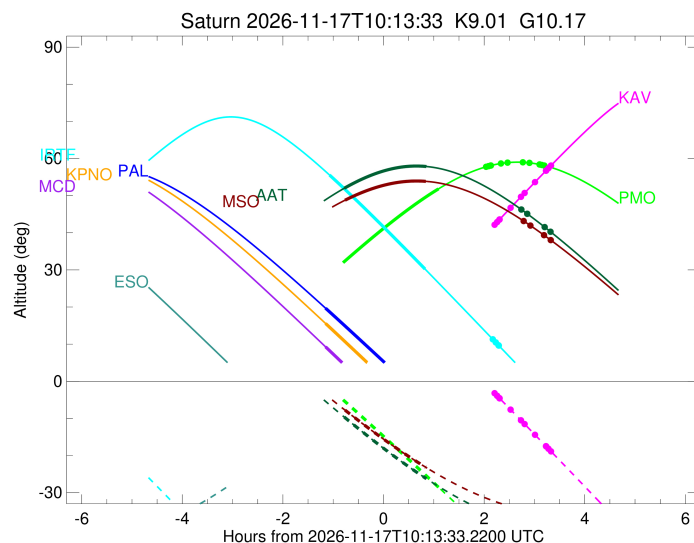
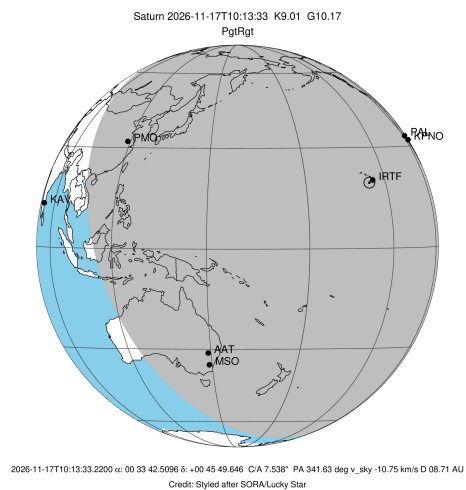
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:03:57.390
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 44.78
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.304
 C/A sky separation (km) : 46164.9
 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	2026-11-17T12:15:50.670	-24.75x	-21.40	140461.00	-20.17			
A (OER)	I	2026-11-17T12:19:00.100	-25.39x	-20.74	136774.40	-18.74			
Encke (OEG)	I	2026-11-17T12:21:47.827	-25.95x	-20.15	133744.89	-17.37			
Encke (IEG)	I	2026-11-17T12:22:06.421	-26.02x	-20.09	133423.31	-17.22			
A (IER)	I	2026-11-17T12:36:29.791	-28.90x	-17.09	122050.38	-8.76			
Saturn	I	2026-11-17T09:04:22.883	15.59	-61.59	60208.21			-70.80	-73.92
Saturn	E	2026-11-17T11:04:16.431	-9.88x	-36.51	60253.29			-27.93	-32.94
A (IER)	E	2026-11-17T13:01:37.341	-33.80x	-11.91	122050.38	8.74			
Encke (IEG)	E	2026-11-17T13:16:02.996	-36.53x	-8.96	133423.31	17.15			
Encke (OEG)	E	2026-11-17T13:16:21.658	-36.59x	-8.90	133744.89	17.31			
A (OER)	E	2026-11-17T13:19:10.029	-37.11x	-8.33	136774.40	18.66			
F ring	E	2026-11-17T13:22:20.265	-37.70x	-7.69	140461.00	20.08			

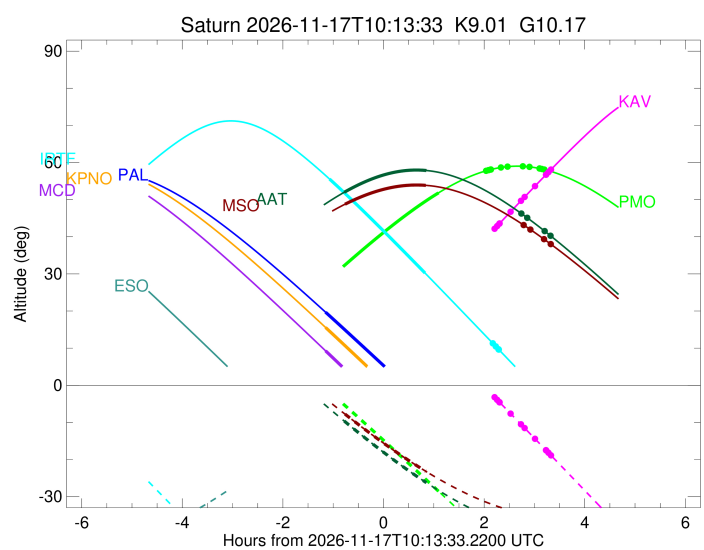
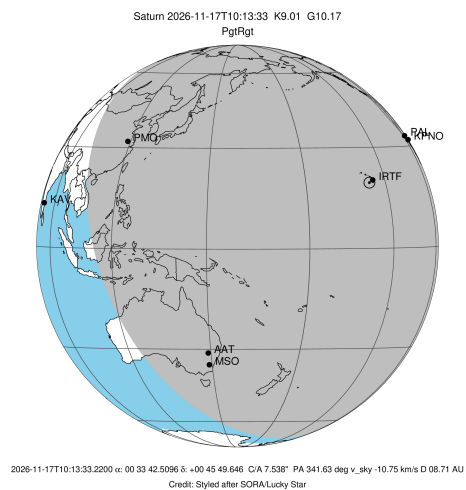
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:04:01.780
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 44.71
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.324
 C/A sky separation (km) : 46290.0
 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

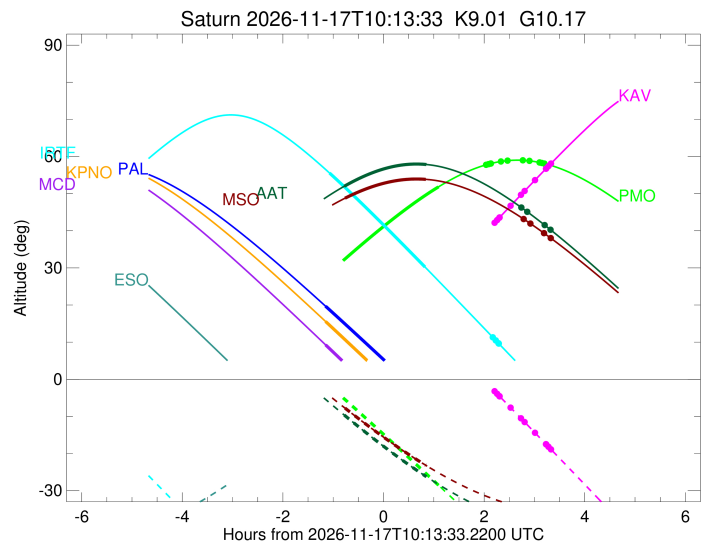
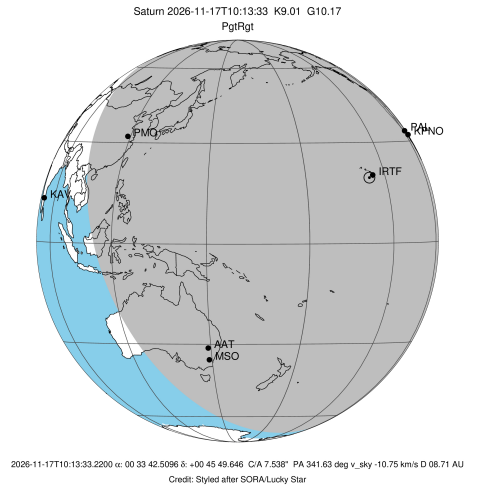
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2026-11-17T12:16:23.770		-31.39x	-14.67	140461.00	-20.18		
A (OER)	I	2026-11-17T12:19:33.041		-32.02x	-14.01	136774.40	-18.76		
Encke (OEG)	I	2026-11-17T12:22:20.557		-32.58x	-13.43	133744.89	-17.40		
Encke (IEG)	I	2026-11-17T12:22:39.122		-32.64x	-13.36	133423.31	-17.24		
A (IER)	I	2026-11-17T12:36:58.607		-35.44x	-10.39	122050.38	-8.85		
Saturn	I	2026-11-17T09:04:24.795		9.29	-55.67	60208.01		-71.06	-74.14
Saturn	E	2026-11-17T11:04:23.826		-16.51x	-29.94	60253.18		-28.02	-33.05
A (IER)	E	2026-11-17T13:02:25.544		-40.26x	-5.17	122050.38	8.84		
Encke (IEG)	E	2026-11-17T13:16:47.231		-42.85x	-2.26x	133423.31	17.18		
Encke (OEG)	E	2026-11-17T13:17:05.861		-42.91x	-2.20x	133744.89	17.34		
A (OER)	E	2026-11-17T13:19:53.999		-43.40x	-1.64x	136774.40	18.68		
F ring	E	2026-11-17T13:23:04.046		-43.96x	-1.00x	140461.00	20.10		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:05:48.550
 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 : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 45.05
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.432
 C/A sky separation (km) : 46976.5
 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



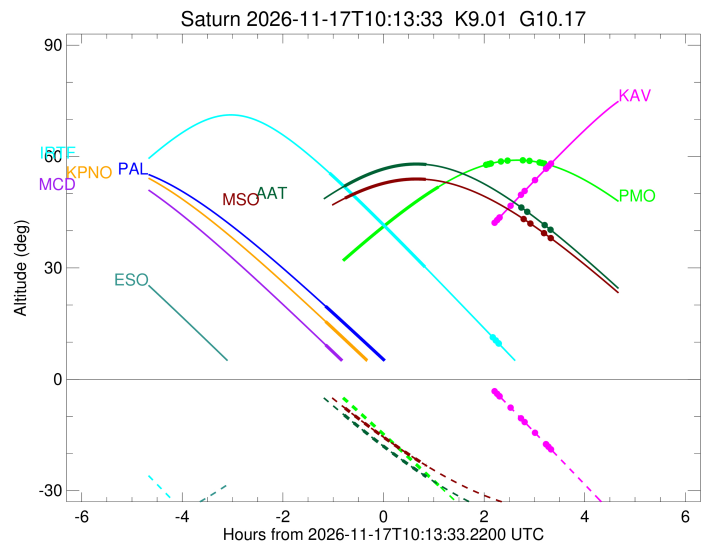
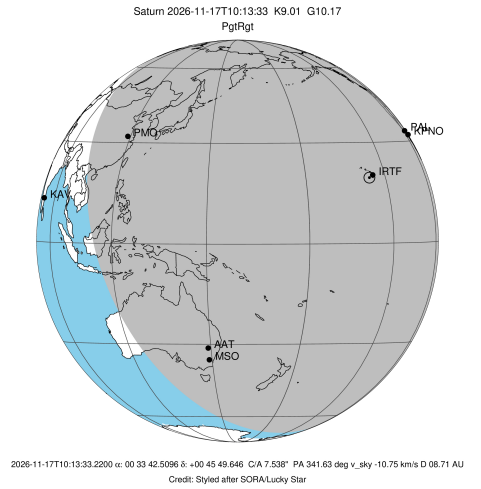
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2026-11-17T12:23:25.943		11.42	-57.84	140461.00	-18.20		
A (OER)	I	2026-11-17T12:26:58.632		10.58	-57.01	136774.40	-16.44		
Encke (OEG)	I	2026-11-17T12:30:12.904		9.82	-56.25	133744.89	-14.72		
Encke (IEG)	I	2026-11-17T12:30:34.896		9.73	-56.17	133423.31	-14.52		
Saturn	I	2026-11-17T09:09:10.608		55.56	-76.39	60207.71		-71.51	-74.53
Saturn	E	2026-11-17T11:03:00.207		30.25	-76.75	60251.59		-29.64	-34.81
Encke (IEG)	E	2026-11-17T13:15:33.455	-0.88x	-45.65	133423.31	14.47			
Encke (OEG)	E	2026-11-17T13:15:55.522	-0.97x	-45.56	133744.89	14.67			
A (OER)	E	2026-11-17T13:19:10.516	-1.74x	-44.81	136774.40	16.38			
F ring	E	2026-11-17T13:22:44.103	-2.58x	-43.98	140461.00	18.12			

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:21:37.320
 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 : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 43.70
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.030
 C/A sky separation (km) : 44437.4
 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



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2026-11-17T12:25:35.335		42.05	-3.11x	140461.00	-20.96		
A (OER)	I	2026-11-17T12:28:37.071		42.77	-3.81x	136774.40	-19.59		
Encke (OEG)	I	2026-11-17T12:31:16.880		43.42	-4.43x	133744.89	-18.30		
Encke (IEG)	I	2026-11-17T12:31:34.519		43.49	-4.50x	133423.31	-18.16		
A (IER)	I	2026-11-17T12:44:37.964		46.62	-7.52	122050.38	-10.54		
B (OER)	I	2026-11-17T12:55:49.697		49.29	-10.13	117580.78	-2.70		
Saturn	I	2026-11-17T09:18:58.282		-3.46x	37.72x	60210.02		-68.42	-71.88
Saturn	E	2026-11-17T11:23:49.045		27.07	11.00x	60255.28		-25.82	-30.63
B (OER)	E	2026-11-17T13:02:59.687		50.99	-11.80	117572.59	2.66		
A (IER)	E	2026-11-17T13:14:11.531		53.64	-14.41	122050.38	10.54		
Encke (IEG)	E	2026-11-17T13:27:15.205		56.70	-17.47	133423.31	18.15		
Encke (OEG)	E	2026-11-17T13:27:32.851		56.77	-17.54	133744.89	18.30		
A (OER)	E	2026-11-17T13:30:12.726		57.39	-18.16	136774.40	19.59		
F ring	E	2026-11-17T13:33:14.546		58.09	-18.87	140461.00	20.95		

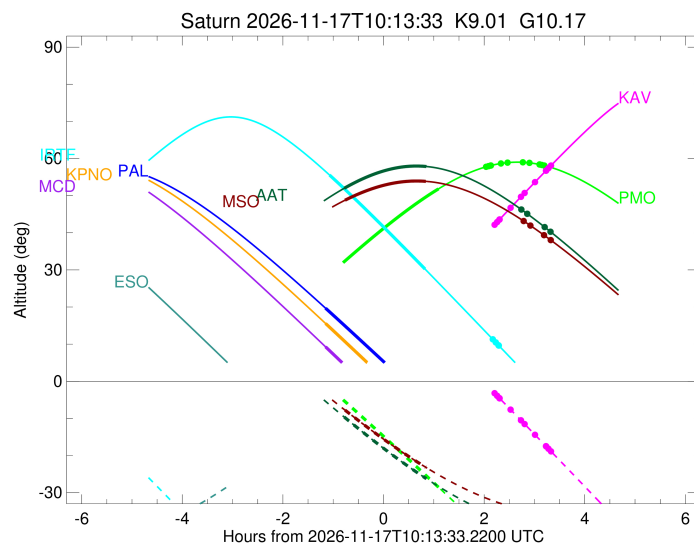
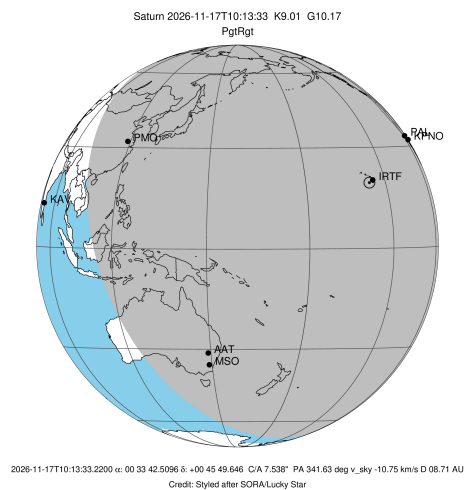
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:15:37.370
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 44.46
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 8.002
 C/A sky separation (km) : 50576.2
 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	2026-11-17T12:57:23.323		46.36	-38.34	140461.00	-10.94		
A (OER)	I	2026-11-17T13:04:16.362		45.23	-38.71	136774.41	-6.85		
Saturn	I	2026-11-17T09:26:41.862		51.99	-9.63	60204.47		-76.80	-79.01
Saturn	E	2026-11-17T11:04:40.205		57.85	-26.24	60245.20		-35.67	-41.19
A (OER)	E	2026-11-17T13:25:50.335		41.52	-39.53	136774.40	6.85		
F ring	E	2026-11-17T13:32:44.002		40.28	-39.68	140461.00	10.92		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-11-17T10:15:46.780
 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 : 2544083062713823104
 2Mass ID (if available) : 00334253+0045500
 ICRS Star Coord at Epoch: 00h 33m 42.50964s +00:45:49.64573s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 9.013
 G magnitude : 10.167
 RP magnitude : 9.746
 BP magnitude : 10.421
 DUPflag : 1
 Distance (au) : 8.715
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.75
 Sun-Target sep (deg) : 133.28
 Sun-Moon sep (deg) : 44.43
 B (ring opening deg) : -6.26
 PA of pole (deg) : 3.48
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 8.059
 C/A sky separation (km) : 50939.8
 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



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2026-11-17T13:00:07.290		43.25	-34.58	140461.00	-10.17		
A (OER)	I	2026-11-17T13:07:56.952		42.07	-34.93	136774.43	-5.47		
Saturn	I	2026-11-17T09:27:38.261		48.77	-7.77	60204.17		-77.39	-79.50
Saturn	E	2026-11-17T11:04:02.811		53.85	-23.18	60244.52		-36.28	-41.82
A (OER)	E	2026-11-17T13:25:09.802		39.33	-35.50	136774.40	5.46		
F ring	E	2026-11-17T13:33:00.085		38.03	-35.66	140461.00	10.15		