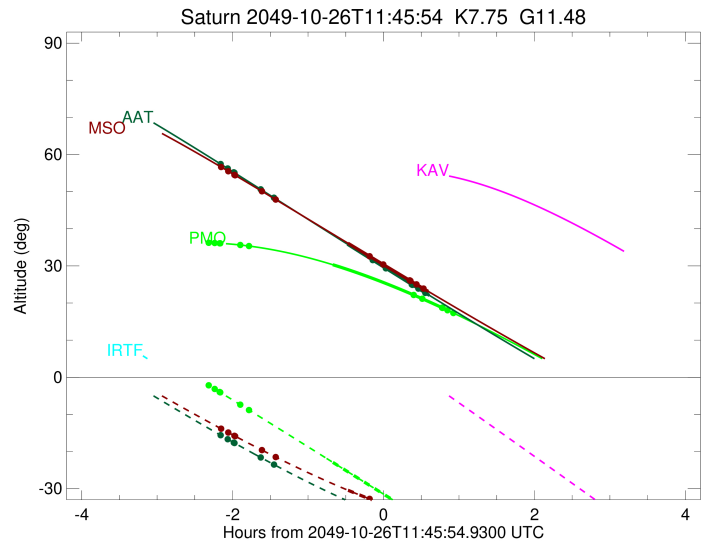
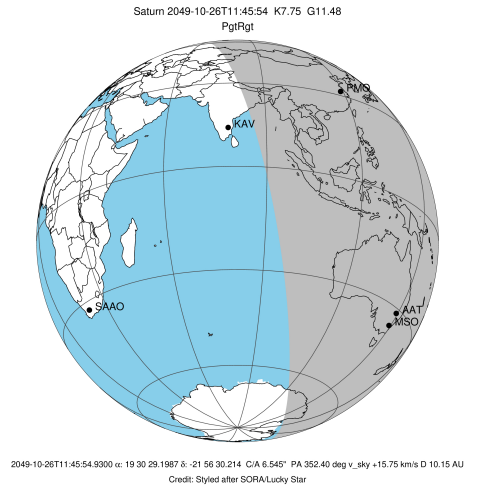


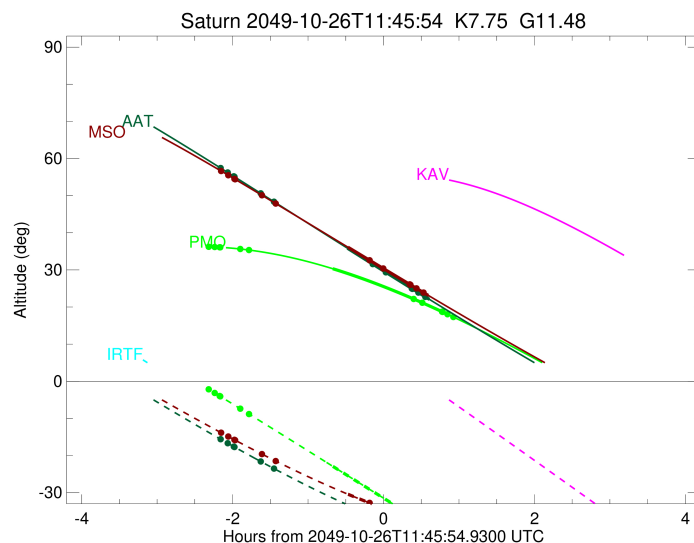
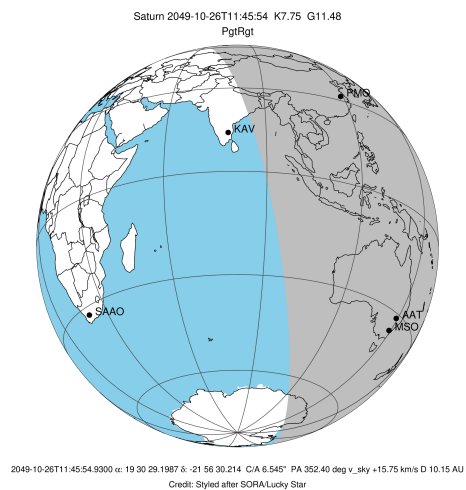


target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2049-10-26T11:49:42.410  
 Event type : PgtRgt  
 : Saturn occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PMO  
 Location : Purple Mtn Obs. Nanking  
 Latitude (deg) : 32.06667  
 E. Longitude (deg) : 118.82089  
 Altitude (km) : 0.364  
 Gaia source ID : 6772102435731904640  
 2Mass ID (if available) : 19302920-2156304  
 ICRS Star Coord at Epoch: 19h 30m 29.19872s -21:56:30.21377s  
 RUWE (>1.4 is poor) : 1.13  
 K magnitude : 7.748  
 G magnitude : 11.483  
 RP magnitude : 10.427  
 BP magnitude : 12.663  
 DUPflag : 0  
 Distance (au) : 10.151  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 15.75  
 Sun-Target sep (deg) : 78.09  
 Sun-Moon sep (deg) : 80.89  
 B (ring opening deg) : 23.81  
 PA of pole (deg) : 6.76  
 Pole direction: RA (deg): 40.60000  
 Dec (deg): 83.50000  
 C/A sky separation (") : 5.975  
 C/A sky separation (km) : 43987.8  
 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	2049-10-26T09:26:55.225		36.23	-2.16x	140461.00	-13.10		
A (OER)	I	2049-10-26T09:31:39.746		36.16	-3.14x	136774.40	-12.81		
Encke (OEG)	I	2049-10-26T09:35:38.721		36.09	-3.97x	133744.89	-12.54		
Encke (IEG)	I	2049-10-26T09:36:04.389		36.09	-4.06x	133423.31	-12.51		
A (IER)	I	2049-10-26T09:51:59.671		35.63	-7.37	122050.38	-11.24		
B (OER)	I	2049-10-26T09:58:50.054		35.36	-8.80	117571.16	-10.58		
Saturn	I	2049-10-26T11:05:38.872		30.31	-22.92	59999.62		-29.33	-34.48
Saturn	E	2049-10-26T12:32:51.481		18.68	-41.34	59540.36		-54.23	-59.28
B (OER)	E	2049-10-26T12:09:50.647	b	22.18	-36.52	117571.16	10.68		
A (IER)	E	2049-10-26T12:16:36.798	b	21.18	-37.94	122050.38	11.36		
Encke (IEG)	E	2049-10-26T12:32:19.863	b	18.76	-41.23	133423.31	12.70		
Encke (OEG)	E	2049-10-26T12:32:45.156	b	18.70	-41.31	133744.89	12.73		
A (OER)	E	2049-10-26T12:36:40.509		18.08	-42.13	136774.40	13.01		
F ring	E	2049-10-26T12:41:20.439		17.33	-43.09	140461.00	13.32		

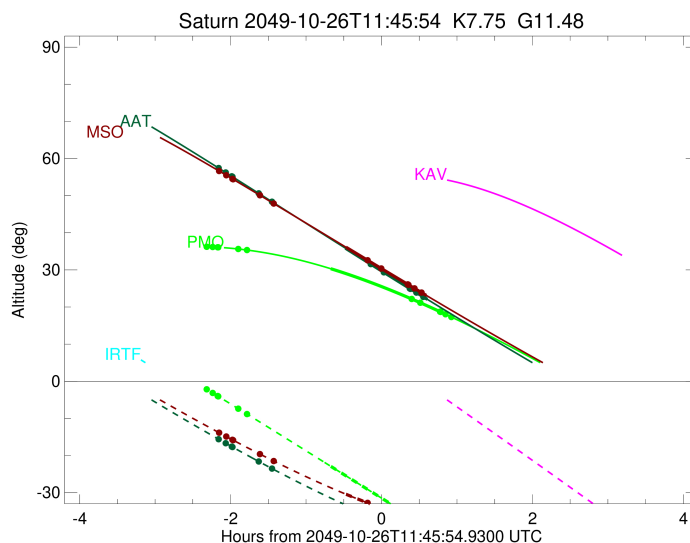
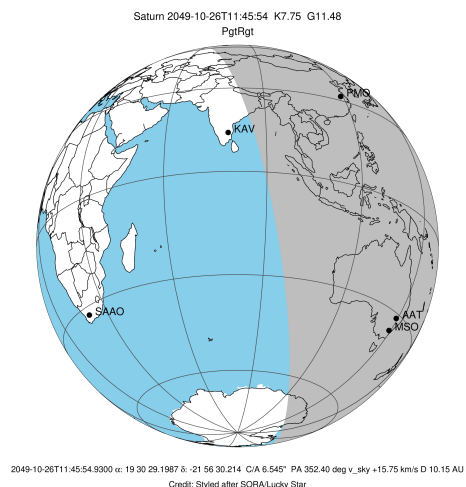
target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2049-10-26T11:50:21.840  
 Event type : PgtRgt  
 : Saturn occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : AAT  
 Location : Siding Spring (AAT)  
 Latitude (deg) : -31.27703  
 E. Longitude (deg) : 149.06608  
 Altitude (km) : 1.164  
 Gaia source ID : 6772102435731904640  
 2Mass ID (if available) : 19302920-2156304  
 ICRS Star Coord at Epoch: 19h 30m 29.19872s -21:56:30.21377s  
 RUWE (>1.4 is poor) : 1.13  
 K magnitude : 7.748  
 G magnitude : 11.483  
 RP magnitude : 10.427  
 BP magnitude : 12.663  
 DUPflag : 0  
 Distance (au) : 10.151  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 15.75  
 Sun-Target sep (deg) : 78.09  
 Sun-Moon sep (deg) : 80.95  
 B (ring opening deg) : 23.81  
 PA of pole (deg) : 6.76  
 Pole direction: RA (deg): 40.60000  
 Dec (deg): 83.50000  
 C/A sky separation (") : 6.952  
 C/A sky separation (km) : 51183.4  
 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	2049-10-26T09:36:21.479		57.45	-15.59	140461.00	-11.16		
A (OER)	I	2049-10-26T09:41:58.976		56.25	-16.67	136774.40	-10.68		
Encke (OEG)	I	2049-10-26T09:46:48.537		55.22	-17.59	133744.89	-10.24		
Encke (IEG)	I	2049-10-26T09:47:20.022		55.11	-17.69	133423.31	-10.19		
A (IER)	I	2049-10-26T10:08:11.302		50.65	-21.59	122050.38	-7.88		
B (OER)	I	2049-10-26T10:18:33.184		48.43	-23.47	117571.16	-6.50		
Saturn	I	2049-10-26T11:17:16.631		35.84	-33.29	59819.26		-39.41	-45.03
Saturn	E	2049-10-26T12:22:28.380		22.05	-41.68	59412.46		-61.79	-66.09
B (OER)	E	2049-10-26T11:37:22.912	b	31.56	-36.22	117571.16	6.55		
A (IER)	E	2049-10-26T11:47:38.993	b	29.38	-37.61	122050.38	7.96		
Encke (IEG)	E	2049-10-26T12:08:15.517	b	25.03	-40.15	133423.31	10.33		
Encke (OEG)	E	2049-10-26T12:08:46.570	b	24.92	-40.20	133744.89	10.38		
A (OER)	E	2049-10-26T12:13:31.997	b	23.92	-40.74	136774.40	10.84		
F ring	E	2049-10-26T12:19:04.296	b	22.76	-41.33	140461.00	11.34		

target : Saturn  
 target radius (km) : 60268.00  
 C/A epoch : 2049-10-26T11:50:05.130  
 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 : 6772102435731904640  
 2Mass ID (if available) : 19302920-2156304  
 ICRS Star Coord at Epoch: 19h 30m 29.19872s -21:56:30.21377s  
 RUWE (>1.4 is poor) : 1.13  
 K magnitude : 7.748  
 G magnitude : 11.483  
 RP magnitude : 10.427  
 BP magnitude : 12.663  
 DUPflag : 0  
 Distance (au) : 10.151  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 15.75  
 Sun-Target sep (deg) : 78.09  
 Sun-Moon sep (deg) : 80.95  
 B (ring opening deg) : 23.81  
 PA of pole (deg) : 6.76  
 Pole direction: RA (deg): 40.60000  
 Dec (deg): 83.50000  
 C/A sky separation (") : 6.998  
 C/A sky separation (km) : 51524.7  
 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	2049-10-26T09:36:43.445		56.65	-13.84	140461.00	-11.04		
A (OER)	I	2049-10-26T09:42:24.860		55.52	-14.87	136774.40	-10.55		
Encke (OEG)	I	2049-10-26T09:47:18.309		54.54	-15.75	133744.89	-10.09		
Encke (IEG)	I	2049-10-26T09:47:50.250		54.43	-15.85	133423.31	-10.04		
A (IER)	I	2049-10-26T10:09:07.996		50.13	-19.60	122050.38	-7.65		
B (OER)	I	2049-10-26T10:19:54.242		47.94	-21.44	117571.16	-6.18		
Saturn	I	2049-10-26T11:17:38.755		36.11	-30.43	59808.30		-39.99	-45.61
Saturn	E	2049-10-26T12:21:33.194		23.13	-38.00	59407.35		-62.11	-66.38
B (OER)	E	2049-10-26T11:34:55.148	b	32.58	-32.77	117571.16	6.23		
A (IER)	E	2049-10-26T11:45:35.753	b	30.41	-34.11	122050.38	7.72		
Encke (IEG)	E	2049-10-26T12:06:39.296	b	26.13	-36.52	133423.31	10.17		
Encke (OEG)	E	2049-10-26T12:07:10.823	b	26.02	-36.57	133744.89	10.23		
A (OER)	E	2049-10-26T12:12:00.314	b	25.05	-37.07	136774.40	10.70		
F ring	E	2049-10-26T12:17:36.756	b	23.92	-37.62	140461.00	11.21		