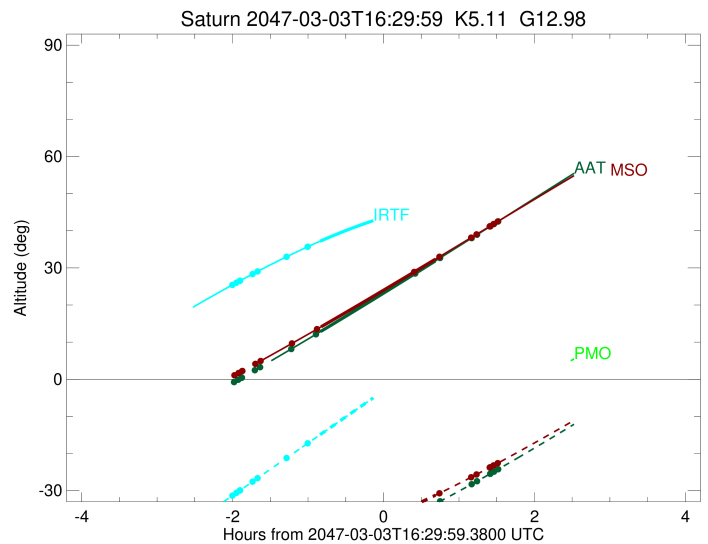
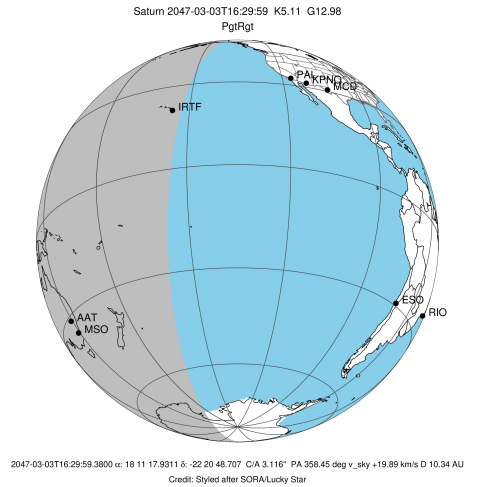


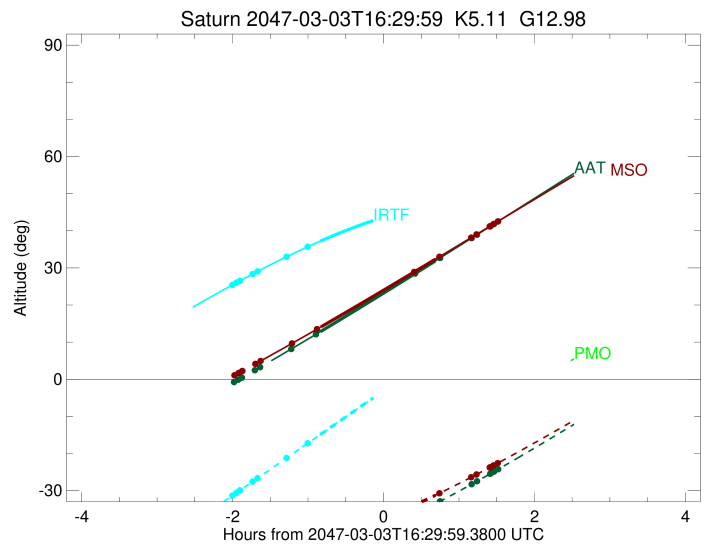
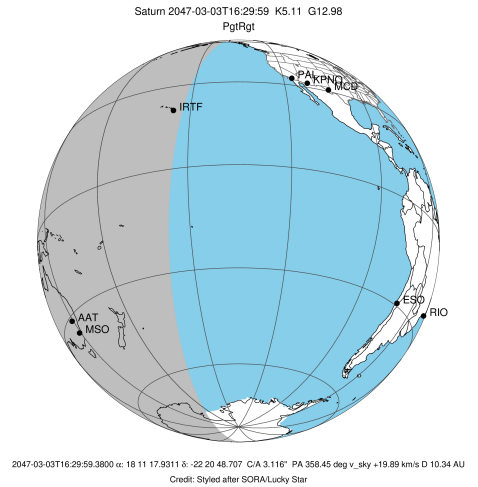
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-03-03T16:28:22.480
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 4066729920765244160
 2Mass ID (if available) : 18111793-2220485
 ICRS Star Coord at Epoch: 18h 11m 17.93111s -22:20:48.70692s
 RUWE (>1.4 is poor) : 1.30
 K magnitude : 5.114
 G magnitude : 12.975
 RP magnitude : 10.976
 BP magnitude : 17.228
 DUPflag : 0
 Distance (au) : 10.345
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 19.89
 Sun-Target sep (deg) : 69.75
 Sun-Moon sep (deg) : 145.49
 B (ring opening deg) : 26.23
 PA of pole (deg) : 5.73
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.557
 C/A sky separation (km) : 19182.6
 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	2047-03-03T14:29:51.282		25.41	-31.35	140461.00	-19.31		
A (OER)	I	2047-03-03T14:33:02.461		26.00	-30.60	136774.40	-19.25		
Encke (OEG)	I	2047-03-03T14:35:40.004		26.49	-29.98	133744.89	-19.20		
Encke (IEG)	I	2047-03-03T14:35:56.751		26.54	-29.92	133423.31	-19.20		
A (IER)	I	2047-03-03T14:45:52.444		28.34	-27.58	122050.38	-18.98		
B (OER)	I	2047-03-03T14:49:49.137		29.04	-26.65	117571.16	-18.87		
B (IER)	I	2047-03-03T15:12:55.306		33.00	-21.21	91984.69	-17.94		
C (IER)	I	2047-03-03T15:29:43.894		35.69	-17.26	74490.58	-16.62		
Saturn	I	2047-03-03T15:39:36.240		37.19	-14.93	60222.79		-10.32	-12.60
Saturn	E	2047-03-03T17:17:06.797		47.19	7.89x	60054.16		-22.98	-27.43
C (IER)	E	2047-03-03T17:11:24.385	b	46.90	6.57x	74490.58	16.53		
B (IER)	E	2047-03-03T17:28:18.079		47.62	10.48x	91984.69	17.84		
B (OER)	E	2047-03-03T17:51:32.430		47.96	15.83x	117571.16	18.75		
A (IER)	E	2047-03-03T17:55:30.706		47.94	16.74x	122050.38	18.85		
Encke (IEG)	E	2047-03-03T18:05:30.640		47.80	19.02x	133423.31	19.06		
Encke (OEG)	E	2047-03-03T18:05:47.511		47.79	19.09x	133744.89	19.06		
A (OER)	E	2047-03-03T18:08:26.241		47.73	19.69x	136774.40	19.11		
F ring	E	2047-03-03T18:11:38.895		47.64	20.42x	140461.00	19.16		

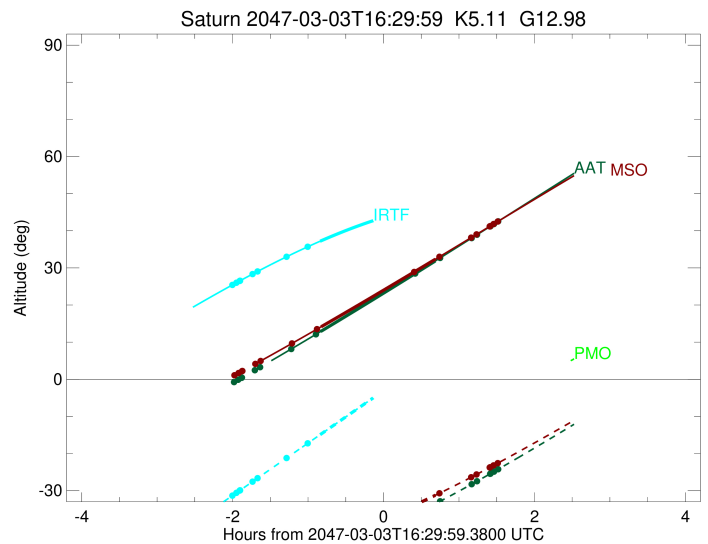
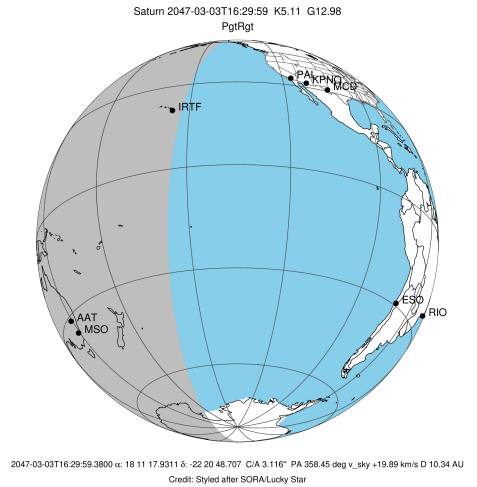
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-03-03T16:25:37.830
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 4066729920765244160
 2Mass ID (if available) : 18111793-2220485
 ICRS Star Coord at Epoch: 18h 11m 17.93111s -22:20:48.70692s
 RUWE (>1.4 is poor) : 1.30
 K magnitude : 5.114
 G magnitude : 12.975
 RP magnitude : 10.976
 BP magnitude : 17.228
 DUPflag : 0
 Distance (au) : 10.345
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 19.89
 Sun-Target sep (deg) : 69.75
 Sun-Moon sep (deg) : 144.84
 B (ring opening deg) : 26.23
 PA of pole (deg) : 5.73
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.435
 C/A sky separation (km) : 25772.0
 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	2047-03-03T14:31:09.018	-0.77x	-52.01	140461.00	-18.85			
A (OER)	I	2047-03-03T14:34:25.164	-0.14x	-51.92	136774.40	-18.74			
Encke (OEG)	I	2047-03-03T14:37:07.219	0.38x	-51.84	133744.89	-18.65			
Encke (IEG)	I	2047-03-03T14:37:24.470	0.44x	-51.83	133423.31	-18.64			
A (IER)	I	2047-03-03T14:47:41.469	2.43x	-51.42	122050.38	-18.21			
B (OER)	I	2047-03-03T14:51:48.786	3.24x	-51.21	117571.16	-18.01			
B (IER)	I	2047-03-03T15:16:37.788	8.15	-49.48	91984.69	-16.14			
C (IER)	I	2047-03-03T15:36:16.518	12.11	-47.56	74490.58	-13.24			
Saturn	I	2047-03-03T15:39:58.374		12.86	-47.15	60153.31		-16.59	-20.07
Saturn	E	2047-03-03T17:11:18.363		31.90	-33.52	59946.22		-28.65	-33.74
C (IER)	E	2047-03-03T16:55:02.093	b	28.45	-36.34	74490.58	13.09		
B (IER)	E	2047-03-03T17:14:54.440		32.66	-32.88	91984.69	15.94		
B (OER)	E	2047-03-03T17:40:04.415		38.02	-28.27	117571.16	17.72		
A (IER)	E	2047-03-03T17:44:15.792		38.92	-27.48	122050.38	17.91		
Encke (IEG)	E	2047-03-03T17:54:43.680		41.16	-25.48	133423.31	18.30		
Encke (OEG)	E	2047-03-03T17:55:01.250		41.22	-25.43	133744.89	18.31		
A (OER)	E	2047-03-03T17:57:46.354		41.81	-24.90	136774.40	18.39		
F ring	E	2047-03-03T18:01:06.290		42.53	-24.25	140461.00	18.49		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-03-03T16:25:48.980
 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 : 4066729920765244160
 2Mass ID (if available) : 18111793-2220485
 ICRS Star Coord at Epoch: 18h 11m 17.93111s -22:20:48.70692s
 RUWE (>1.4 is poor) : 1.30
 K magnitude : 5.114
 G magnitude : 12.975
 RP magnitude : 10.976
 BP magnitude : 17.228
 DUPflag : 0
 Distance (au) : 10.345
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 19.89
 Sun-Target sep (deg) : 69.75
 Sun-Moon sep (deg) : 144.87
 B (ring opening deg) : 26.23
 PA of pole (deg) : 5.73
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.485
 C/A sky separation (km) : 26147.9
 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	2047-03-03T14:31:28.627		1.07x	-48.00	140461.00	-18.79		
A (OER)	I	2047-03-03T14:34:45.364		1.68x	-47.92	136774.40	-18.68		
Encke (OEG)	I	2047-03-03T14:37:27.935		2.17x	-47.85	133744.89	-18.59		
Encke (IEG)	I	2047-03-03T14:37:45.242		2.23x	-47.84	133423.31	-18.58		
A (IER)	I	2047-03-03T14:48:04.491		4.14x	-47.48	122050.38	-18.14		
B (OER)	I	2047-03-03T14:52:12.859		4.91x	-47.29	117571.16	-17.93		
B (IER)	I	2047-03-03T15:17:11.255		9.65	-45.74	91984.69	-15.99		
C (IER)	I	2047-03-03T15:37:06.037		13.50	-43.99	74490.58	-12.98		
Saturn	I	2047-03-03T15:40:19.168		14.13	-43.67	60148.76		-16.93	-20.47
Saturn	E	2047-03-03T17:11:19.108		32.36	-31.23	59938.79		-29.01	-34.13
C (IER)	E	2047-03-03T16:54:13.714	b	28.88	-33.97	74490.58	12.83		
B (IER)	E	2047-03-03T17:14:21.906		32.98	-30.73	91984.69	15.81		
B (OER)	E	2047-03-03T17:39:40.563		38.15	-26.40	117571.17	17.66		
A (IER)	E	2047-03-03T17:43:52.843		39.02	-25.65	122050.38	17.85		
Encke (IEG)	E	2047-03-03T17:54:22.578		41.17	-23.77	133423.31	18.25		
Encke (OEG)	E	2047-03-03T17:54:40.193		41.23	-23.72	133744.89	18.26		
A (OER)	E	2047-03-03T17:57:25.699		41.79	-23.22	136774.40	18.35		
F ring	E	2047-03-03T18:00:46.085		42.48	-22.61	140461.00	18.45		