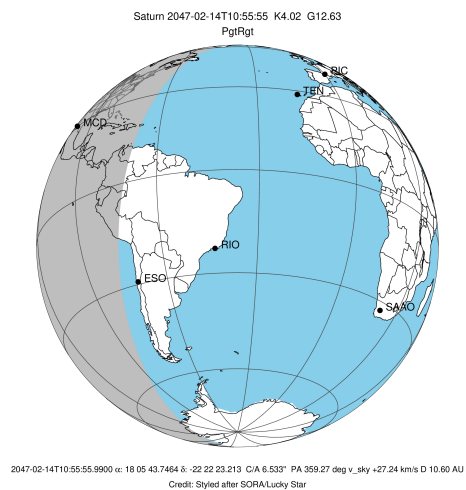
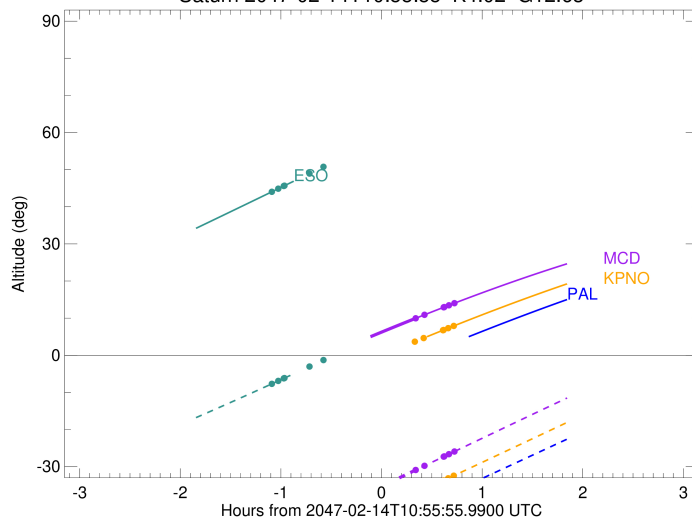


target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-02-14T10:52:54.360
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 4069679257568121856
 2Mass ID (if available) : 18054374-2222228
 ICRS Star Coord at Epoch: 18h 05m 43.74640s -22:22:23.21345s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 4.023
 G magnitude : 12.631
 RP magnitude : 10.947
 BP magnitude : 17.834
 DUPflag : 0
 Distance (au) : 10.598
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.24
 Sun-Target sep (deg) : 53.68
 Sun-Moon sep (deg) : 73.87
 B (ring opening deg) : 26.38
 PA of pole (deg) : 5.63
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.052
 C/A sky separation (km) : 46520.0
 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

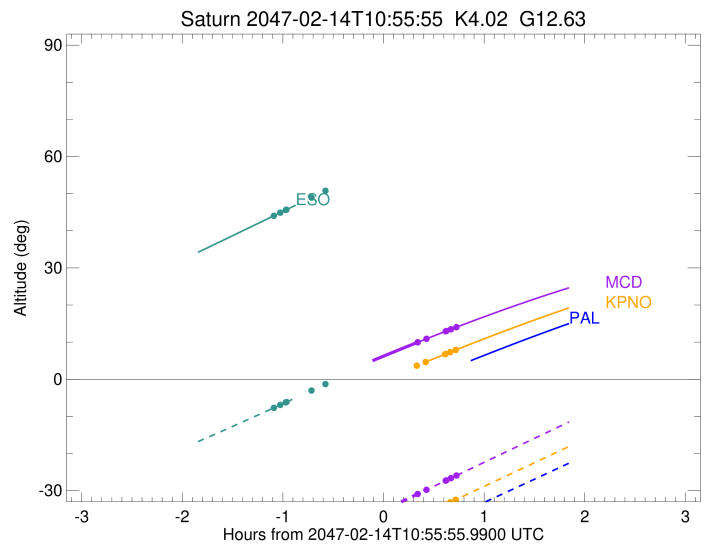
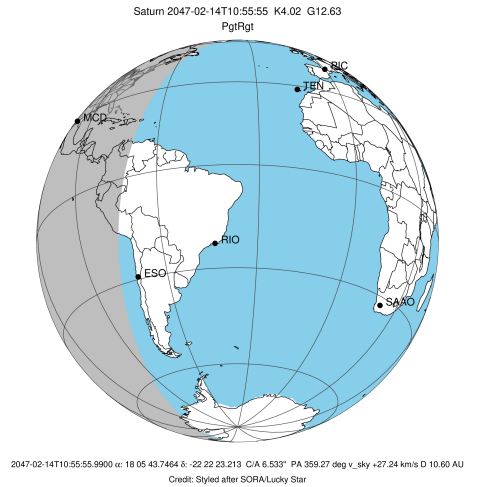


Saturn 2047-02-14T10:55:55 K4.02 G12.63



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-02-14T09:43:44.806	-14.33x	-56.04	140461.00	-19.07			
A (OER)	I	2047-02-14T09:47:01.193	-13.66x	-55.42	136774.40	-18.46			
Encke (OEG)	I	2047-02-14T09:49:47.736	-13.10x	-54.89	133744.89	-17.91			
Encke (IEG)	I	2047-02-14T09:50:05.722	-13.04x	-54.83	133423.31	-17.85			
A (IER)	I	2047-02-14T10:01:33.133	-10.74x	-52.59	122050.38	-15.12			
B (OER)	I	2047-02-14T10:06:44.369	-9.70x	-51.57	117571.16	-13.64			
Saturn	I	2047-02-14T10:29:57.224	-5.11x	-46.88	59698.25	-39.47		-45.08	
Saturn	E	2047-02-14T11:15:40.124	3.63x	-37.38	59467.42	-49.08		-54.48	
B (OER)	E	2047-02-14T11:15:48.970	3.66x	-37.35	117571.16	13.53			
A (IER)	E	2047-02-14T11:21:02.540	4.63x	-36.25	122050.38	15.01			
Encke (IEG)	E	2047-02-14T11:32:35.213	6.74	-33.81	133423.31	17.71			
Encke (OEG)	E	2047-02-14T11:32:53.342	6.79	-33.75	133744.89	17.77			
A (OER)	E	2047-02-14T11:35:41.225	7.30	-33.15	136774.40	18.32			
F ring	E	2047-02-14T11:38:59.237	7.90	-32.45	140461.00	18.91			

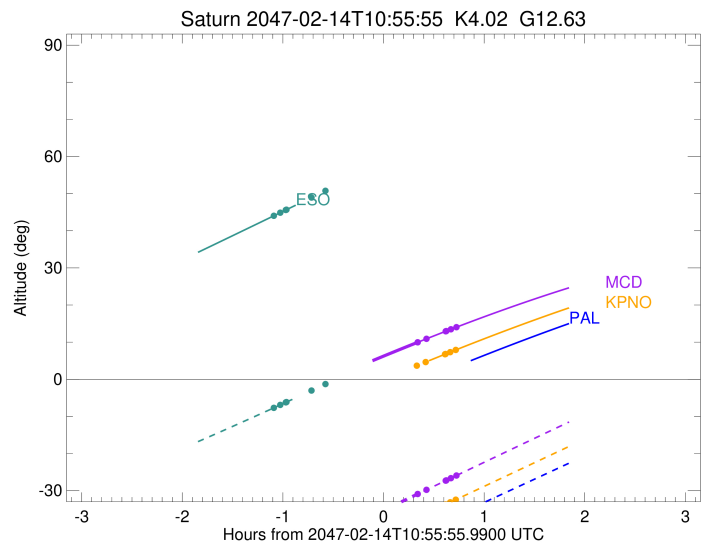
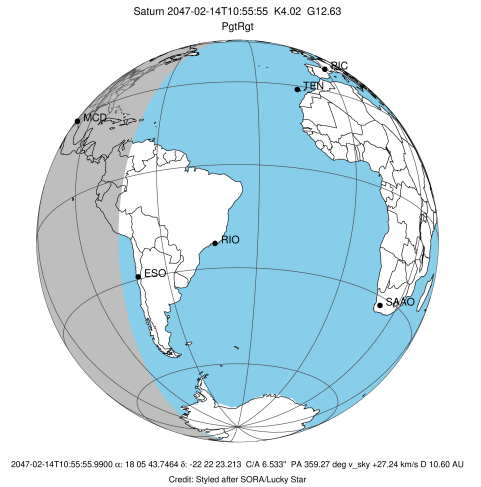
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-02-14T10:52:59.600
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 4069679257568121856
 2Mass ID (if available) : 18054374-2222228
 ICRS Star Coord at Epoch: 18h 05m 43.74640s -22:22:23.21345s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 4.023
 G magnitude : 12.631
 RP magnitude : 10.947
 BP magnitude : 17.834
 DUPflag : 0
 Distance (au) : 10.598
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.24
 Sun-Target sep (deg) : 53.68
 Sun-Moon sep (deg) : 73.98
 B (ring opening deg) : 26.38
 PA of pole (deg) : 5.63
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.032
 C/A sky separation (km) : 46365.1
 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	2047-02-14T09:43:31.109	-7.83x	-50.56	140461.00	-19.11			
A (OER)	I	2047-02-14T09:46:47.035	-7.18x	-49.89	136774.40	-18.51			
Encke (OEG)	I	2047-02-14T09:49:33.107	-6.62x	-49.32	133744.89	-17.97			
Encke (IEG)	I	2047-02-14T09:49:51.036	-6.56x	-49.26	133423.31	-17.90			
A (IER)	I	2047-02-14T10:01:15.335	-4.29x	-46.89	122050.38	-15.22			
B (OER)	I	2047-02-14T10:06:24.230	-3.28x	-45.81	117571.16	-13.76			
Saturn	I	2047-02-14T10:29:52.524	1.30x	-40.86	59703.15	-39.26		-44.87	
Saturn	E	2047-02-14T11:15:55.293	9.89	-30.99	59471.47	-48.91		-54.32	
B (OER)	E	2047-02-14T11:16:20.055	9.96	-30.91	117571.16	13.66			
A (IER)	E	2047-02-14T11:21:31.212	10.89	-29.79	122050.38	15.11			
Encke (IEG)	E	2047-02-14T11:33:00.609	12.92	-27.31	133423.31	17.77			
Encke (OEG)	E	2047-02-14T11:33:18.677	12.97	-27.25	133744.89	17.83			
A (OER)	E	2047-02-14T11:36:06.046	13.46	-26.65	136774.40	18.37			
F ring	E	2047-02-14T11:39:23.545	14.03	-25.94	140461.00	18.96			

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2047-02-14T10:54:03.930
 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 : 4069679257568121856
 2Mass ID (if available) : 18054374-2222228
 ICRS Star Coord at Epoch: 18h 05m 43.74640s -22:22:23.21345s
 RUWE (>1.4 is poor) : 1.09
 K magnitude : 4.023
 G magnitude : 12.631
 RP magnitude : 10.947
 BP magnitude : 17.834
 DUPflag : 0
 Distance (au) : 10.598
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.24
 Sun-Target sep (deg) : 53.68
 Sun-Moon sep (deg) : 74.76
 B (ring opening deg) : 26.38
 PA of pole (deg) : 5.63
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.672
 C/A sky separation (km) : 51285.6
 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



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2047-02-14T09:50:26.760		44.02	-7.72	140461.00	-16.45		
A (OER)	I	2047-02-14T09:54:16.642		44.85	-6.93	136774.40	-15.61		
Encke (OEG)	I	2047-02-14T09:57:35.698		45.58	-6.24	133744.89	-14.82		
Encke (IEG)	I	2047-02-14T09:57:57.460		45.66	-6.17	133423.31	-14.73		
A (IER)	I	2047-02-14T10:12:52.670		48.92	-3.06x	122050.38	-10.49		
B (OER)	I	2047-02-14T10:21:04.037		50.72	-1.35x	117571.16	-7.69		
Saturn	I	2047-02-14T10:35:20.495		53.84	1.67x	59542.31		-45.95	-51.48
Saturn	E	2047-02-14T11:12:32.911		61.97	9.62x	59332.17		-54.93	-59.92
B (OER)	E	2047-02-14T11:00:38.271	b	59.37	7.06x	117571.16	7.65		
A (IER)	E	2047-02-14T11:08:52.498	b	61.17	8.83x	122050.38	10.43		
Encke (IEG)	E	2047-02-14T11:23:52.739		64.43	12.06x	133423.31	14.65		
Encke (OEG)	E	2047-02-14T11:24:14.618		64.50	12.14x	133744.89	14.74		
A (OER)	E	2047-02-14T11:27:34.737		65.23	12.86x	136774.40	15.53		
F ring	E	2047-02-14T11:31:25.844		66.06	13.70x	140461.00	16.37		