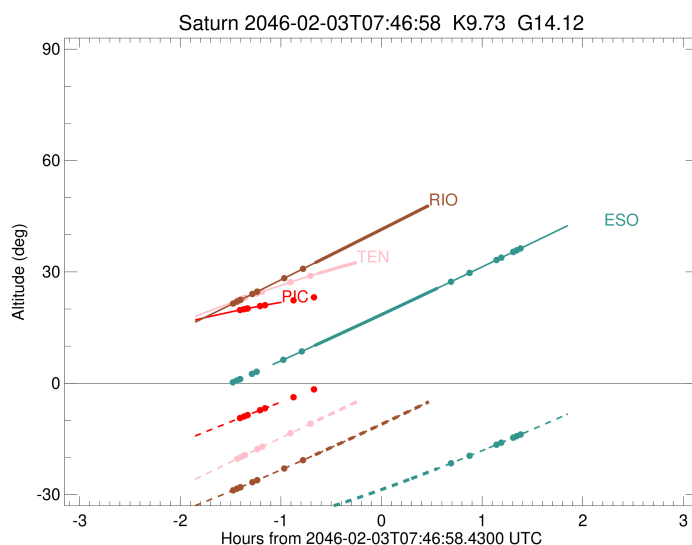
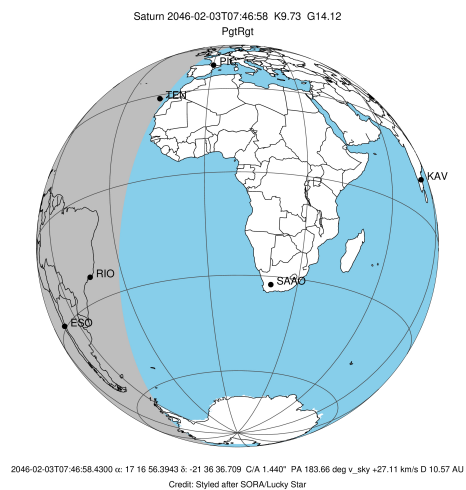


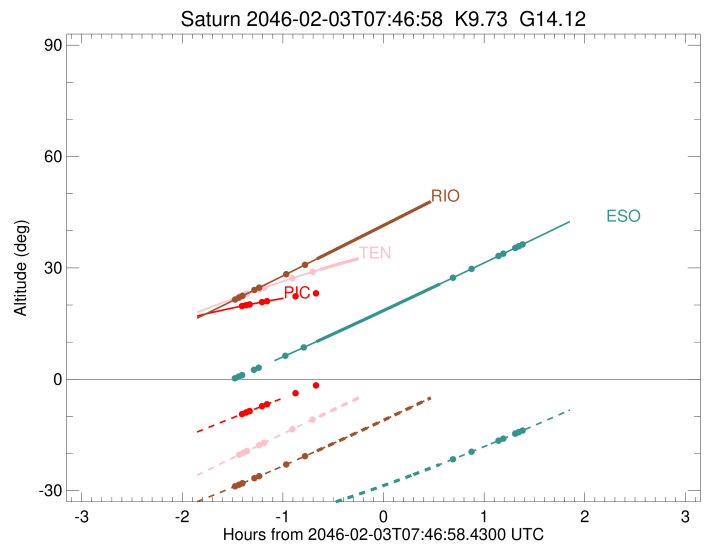
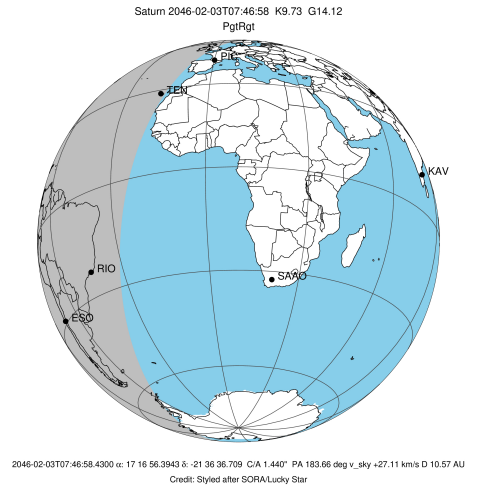
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-02-03T07:46:16.500
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 4115013943085406720
 2Mass ID (if available) : 17165639-2136362
 ICRS Star Coord at Epoch: 17h 16m 56.39433s -21:36:36.70867s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 9.727
 G magnitude : 14.118
 RP magnitude : 12.934
 BP magnitude : 15.616
 DUPflag : 0
 Distance (au) : 10.572
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.11
 Sun-Target sep (deg) : 54.01
 Sun-Moon sep (deg) : 25.61
 B (ring opening deg) : 26.63
 PA of pole (deg) : 4.54
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.179
 C/A sky separation (km) : 16706.2
 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

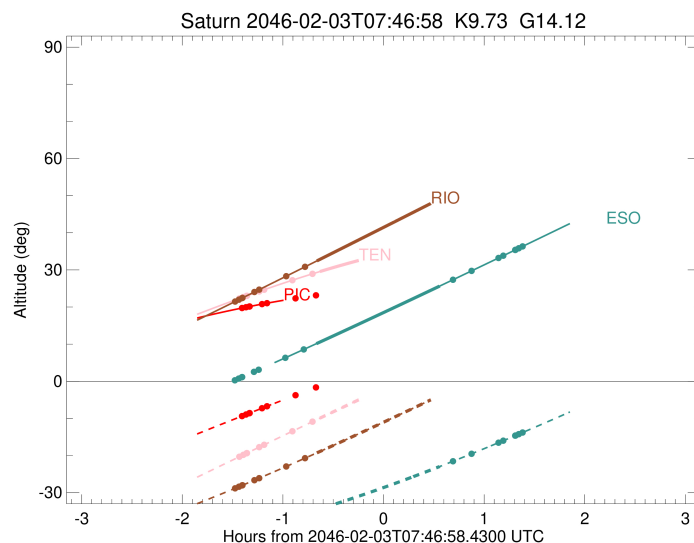
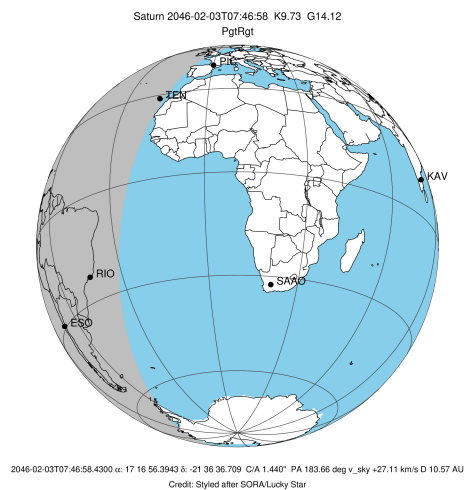
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-02-03T06:22:37.779		19.73	-9.38	140461.00	-25.87		
A (OER)	I	2046-02-03T06:25:00.435		19.95	-8.95	136774.40	-25.81		
Encke (OEG)	I	2046-02-03T06:26:57.905		20.13	-8.60	133744.89	-25.76		
Encke (IEG)	I	2046-02-03T06:27:10.388		20.15	-8.57	133423.31	-25.76		
A (IER)	I	2046-02-03T06:34:33.730		20.79	-7.26	122050.38	-25.54		
B (OER)	I	2046-02-03T06:37:29.487		21.03	-6.74	117571.16	-25.43		
B (IER)	I	2046-02-03T06:54:32.184		22.34	-3.75x	91984.69	-24.49		
C (IER)	I	2046-02-03T07:06:44.071		23.15	-1.65x	74490.58	-23.17		
Saturn	I	2046-02-03T07:10:18.000		23.37	-1.04x	60169.86		15.03	18.24
Saturn	E	2046-02-03T08:22:17.321		25.59	10.63x	60186.46		13.67	16.62
C (IER)	E	2046-02-03T08:26:59.463		25.59	11.34x	74490.58	23.14		
B (IER)	E	2046-02-03T08:39:12.706		25.50	13.14x	91984.69	24.44		
B (OER)	E	2046-02-03T08:56:17.953		25.17	15.57x	117571.16	25.36		
A (IER)	E	2046-02-03T08:59:14.223		25.09	15.97x	122050.38	25.46		
Encke (IEG)	E	2046-02-03T09:06:38.950		24.86	16.98x	133423.31	25.67		
Encke (OEG)	E	2046-02-03T09:06:51.474		24.85	17.01x	133744.89	25.68		
A (OER)	E	2046-02-03T09:08:49.335		24.78	17.27x	136774.40	25.73		
F ring	E	2046-02-03T09:11:12.477		24.69	17.58x	140461.00	25.78		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-02-03T07:45:14.220
 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 : 4115013943085406720
 2Mass ID (if available) : 17165639-2136362
 ICRS Star Coord at Epoch: 17h 16m 56.39433s -21:36:36.70867s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 9.727
 G magnitude : 14.118
 RP magnitude : 12.934
 BP magnitude : 15.616
 DUPflag : 0
 Distance (au) : 10.572
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.11
 Sun-Target sep (deg) : 54.01
 Sun-Moon sep (deg) : 25.85
 B (ring opening deg) : 26.63
 PA of pole (deg) : 4.54
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.026
 C/A sky separation (km) : 15536.2
 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_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



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2046-02-03T06:21:02.290		22.30	-20.33	140461.00	-26.02		
A (OER)	I	2046-02-03T06:23:24.096		22.68	-19.81	136774.40	-25.97		
Encke (OEG)	I	2046-02-03T06:25:20.839		23.00	-19.39	133744.89	-25.93		
Encke (IEG)	I	2046-02-03T06:25:33.243		23.03	-19.34	133423.31	-25.92		
A (IER)	I	2046-02-03T06:32:53.560		24.20	-17.75	122050.38	-25.73		
B (OER)	I	2046-02-03T06:35:47.976		24.66	-17.12	117571.17	-25.63		
B (IER)	I	2046-02-03T06:52:40.321		27.23	-13.46	91984.69	-24.82		
C (IER)	I	2046-02-03T07:04:39.872		28.95	-10.88	74490.58	-23.69		
Saturn	I	2046-02-03T07:09:01.660		29.55	-9.94	60183.63		13.91	16.91
Saturn	E	2046-02-03T08:21:30.652		37.47	5.29x	60197.07		12.74	15.50
C (IER)	E	2046-02-03T08:26:48.188		37.86	6.37x	74490.58	23.61		
B (IER)	E	2046-02-03T08:38:50.555		38.65	8.81x	91984.69	24.71		
B (OER)	E	2046-02-03T08:55:48.105		39.50	12.20x	117571.17	25.49		
A (IER)	E	2046-02-03T08:58:43.561		39.61	12.77x	122050.38	25.57		
Encke (IEG)	E	2046-02-03T09:06:06.688		39.86	14.22x	133423.31	25.75		
Encke (OEG)	E	2046-02-03T09:06:19.175		39.86	14.26x	133744.89	25.76		
A (OER)	E	2046-02-03T09:08:16.710		39.91	14.65x	136774.40	25.80		
F ring	E	2046-02-03T09:10:39.502		39.97	15.11x	140461.00	25.84		

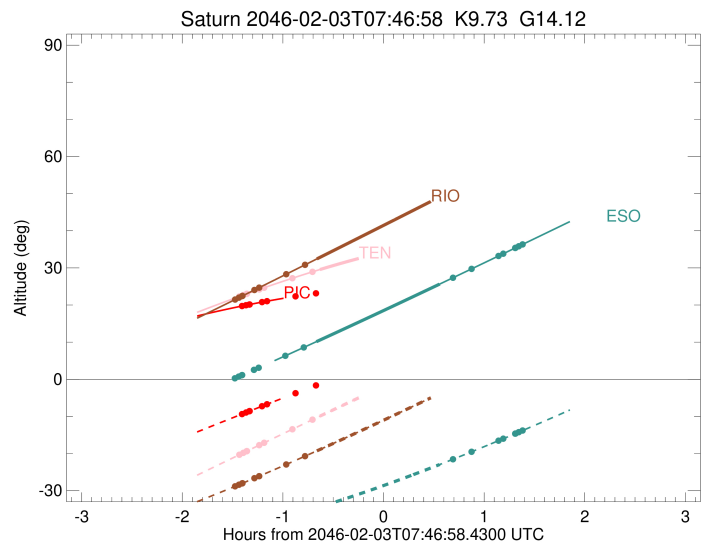
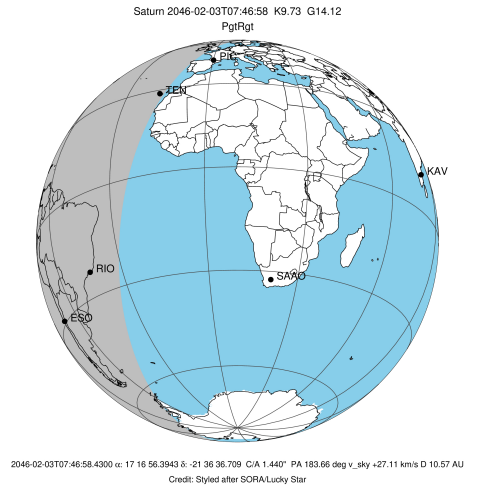
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-02-03T07:44:04.790
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 4115013943085406720
 2Mass ID (if available) : 17165639-2136362
 ICRS Star Coord at Epoch: 17h 16m 56.39433s -21:36:36.70867s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 9.727
 G magnitude : 14.118
 RP magnitude : 12.934
 BP magnitude : 15.616
 DUPflag : 0
 Distance (au) : 10.572
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.11
 Sun-Target sep (deg) : 54.01
 Sun-Moon sep (deg) : 26.00
 B (ring opening deg) : 26.63
 PA of pole (deg) : 4.54
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 1.273
 C/A sky separation (km) : 9763.1
 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	2046-02-03T06:18:29.809		21.48	-28.83	140461.00	-26.70		
A (OER)	I	2046-02-03T06:20:47.937		21.99	-28.40	136774.40	-26.68		
Encke (OEG)	I	2046-02-03T06:22:41.538		22.42	-28.04	133744.89	-26.66		
Encke (IEG)	I	2046-02-03T06:22:53.602		22.46	-28.01	133423.31	-26.66		
A (IER)	I	2046-02-03T06:30:00.934		24.05	-26.65	122050.38	-26.57		
B (OER)	I	2046-02-03T06:32:49.650		24.68	-26.11	117571.16	-26.53		
B (IER)	I	2046-02-03T06:48:59.641		28.31	-22.95	91984.69	-26.19		
C (IER)	I	2046-02-03T07:00:12.685		30.84	-20.71	74490.58	-25.75		
Saturn	I	2046-02-03T07:07:14.648		32.43	-19.29	60233.71		8.81	10.78
Saturn	E	2046-02-03T08:21:00.771		49.23	-3.73x	60240.88		7.83	9.59
C (IER)	E	2046-02-03T08:28:33.817		50.96	-2.09x	74490.58	25.60		
B (IER)	E	2046-02-03T08:39:51.425		53.56	0.38x	91984.69	25.99		
B (OER)	E	2046-02-03T08:56:09.793		57.31	3.98x	117571.16	26.27		
A (IER)	E	2046-02-03T08:59:00.181		57.96	4.61x	122050.38	26.30		
Encke (IEG)	E	2046-02-03T09:06:12.029		59.62	6.20x	133423.31	26.36		
Encke (OEG)	E	2046-02-03T09:06:24.226		59.67	6.25x	133744.89	26.37		
A (OER)	E	2046-02-03T09:08:19.098		60.11	6.67x	136774.40	26.38		
F ring	E	2046-02-03T09:10:38.809		60.64	7.19x	140461.00	26.39		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2046-02-03T07:43:39.660
 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 : 4115013943085406720
 2Mass ID (if available) : 17165639-2136362
 ICRS Star Coord at Epoch: 17h 16m 56.39433s -21:36:36.70867s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 9.727
 G magnitude : 14.118
 RP magnitude : 12.934
 BP magnitude : 15.616
 DUPflag : 0
 Distance (au) : 10.572
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.11
 Sun-Target sep (deg) : 54.01
 Sun-Moon sep (deg) : 25.92
 B (ring opening deg) : 26.63
 PA of pole (deg) : 4.54
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 1.064
 C/A sky separation (km) : 8157.5
 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	2046-02-03T06:18:21.366	0.26x	-40.35	140461.00	-27.00			
A (OER)	I	2046-02-03T06:20:37.939	0.72x	-40.13	136774.40	-26.98			
Encke (OEG)	I	2046-02-03T06:22:30.238	1.09x	-39.94	133744.89	-26.97			
Encke (IEG)	I	2046-02-03T06:22:42.162	1.13x	-39.92	133423.31	-26.97			
A (IER)	I	2046-02-03T06:29:44.376	2.54x	-39.19	122050.38	-26.90			
B (OER)	I	2046-02-03T06:32:30.963	3.10x	-38.89	117571.16	-26.87			
B (IER)	I	2046-02-03T06:48:27.014	6.33	-37.04	91984.69	-26.63			
C (IER)	I	2046-02-03T06:59:27.559	8.58	-35.64	74490.58	-26.31			
Saturn	I	2046-02-03T07:06:56.336	10.13	-34.64	60243.57			7.43	9.10
Saturn	E	2046-02-03T08:20:29.362	25.64	-22.96	60249.39			6.48	7.94
C (IER)	E	2046-02-03T08:28:24.027	27.34	-21.55	74490.58	26.13			
B (IER)	E	2046-02-03T08:39:29.623	29.73	-19.54	91984.69	26.40			
B (OER)	E	2046-02-03T08:55:34.944	33.22	-16.54	117571.16	26.58			
A (IER)	E	2046-02-03T08:58:23.382	33.82	-16.01	122050.38	26.60			
Encke (IEG)	E	2046-02-03T09:05:30.593	35.37	-14.65	133423.31	26.64			
Encke (OEG)	E	2046-02-03T09:05:42.665	35.41	-14.62	133744.89	26.64			
A (OER)	E	2046-02-03T09:07:36.371	35.83	-14.25	136774.40	26.65			
F ring	E	2046-02-03T09:09:54.697	36.33	-13.81	140461.00	26.66			