

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-08-15T15:13:48.120
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 4079192335306795520
 2Mass ID (if available) : 18401885-2238057

ICRS Star Coord at Epoch: 18h 40m 18.85272s -22:38:05.79620s

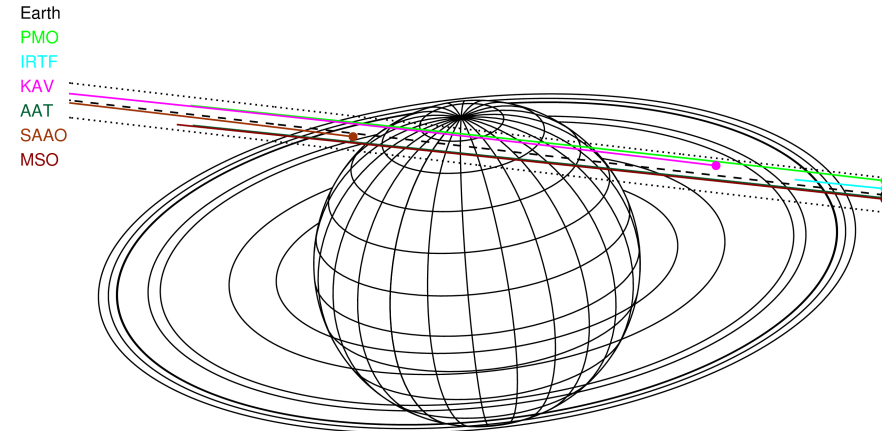
RUWE (>1.4 is poor) : 0.94
 K magnitude : 9.693
 G magnitude : 13.405
 RP magnitude : 12.374
 BP magnitude : 14.506
 DUPflag : 0
 Distance (au) : 9.275
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.01
 Sun-Target sep (deg) : 136.50
 Sun-Moon sep (deg) : 64.57
 B (ring opening deg) : 25.81
 PA of pole (deg) : 6.22

#	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



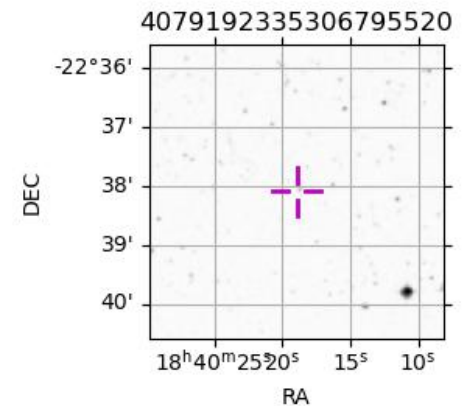
2048-08-15T15:13:48.1200 at: 18 40 18.85272 s: -22 38 05.796 C/A 6.314° PA 173.37 deg v_sky -12.01 km/s D 09.28 AU
 Credit: Styled after SORA/Lucky Star

Saturn 2048-08-15T15:13:48 K9.69 G13.40 PgtRgt

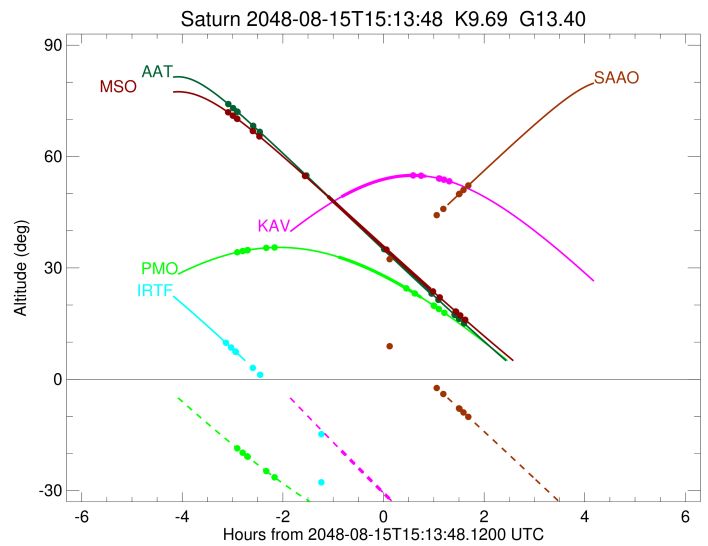
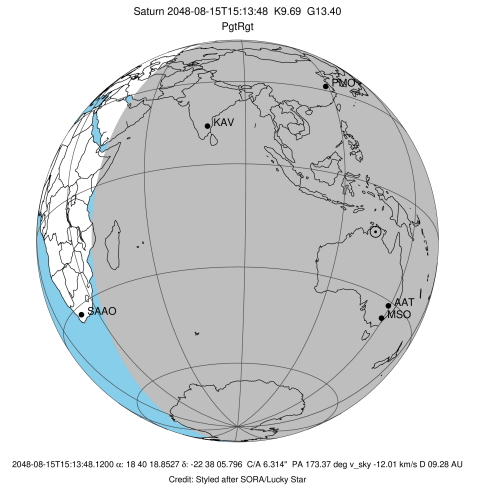


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (20	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs	32.1	118.8	+	+	+	AUG 15 12:19 - AUG 15 16:26	PieRie
KPNO	Kitt Peak Natl	32.0	248.4					PnnRnn
MCD	McDonald Obs.	30.7	256.0					PnnRnn
TEN	Teide Obs./Ten	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	+	+	AUG 15 12:05 - AUG 15 12:17	PnnRin
KAV	Kavalur Observ	12.6	78.8		+	+	AUG 15 14:23 - AUG 15 16:32	PieRne
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European South	-29.3	289.3					PnnRnn
AAT	Siding Spring	-31.3	149.1	+	+	+	AUG 15 12:08 - AUG 15 16:49	PieRie
SAAO	So. Afr. Astro	-32.4	20.8				AUG 15 16:43 - AUG 15 16:54	PnnRne
MSO	Mt. Stromlo Ob	-35.3	149.0	+	+	+	AUG 15 12:08 - AUG 15 16:51	PieRie



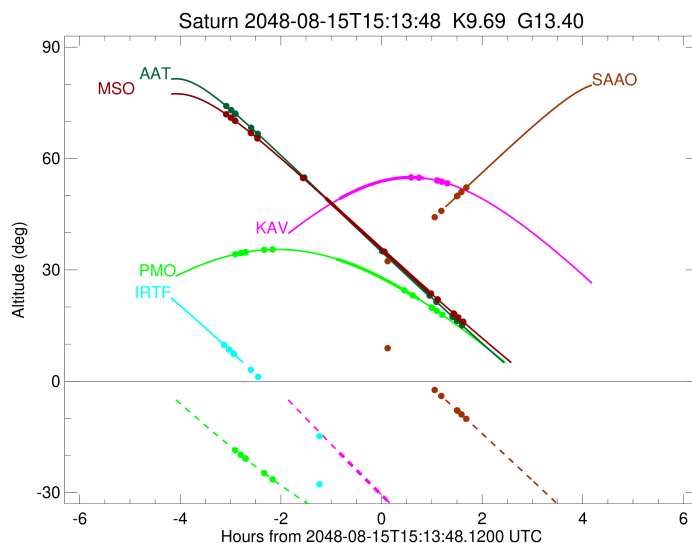
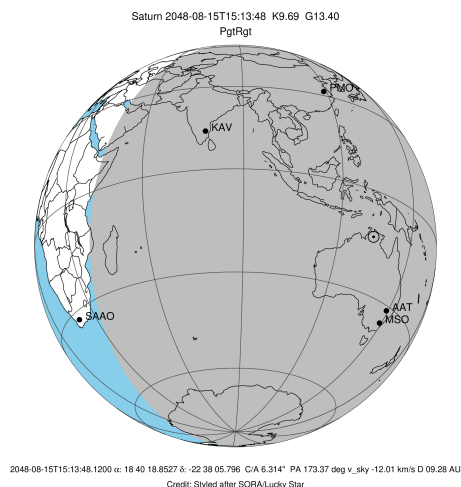
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-08-15T15:09:51.000
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 4079192335306795520
 2Mass ID (if available) : 18401885-2238057
 ICRS Star Coord at Epoch: 18h 40m 18.85272s -22:38:05.79620s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 9.693
 G magnitude : 13.405
 RP magnitude : 12.374
 BP magnitude : 14.506
 DUPflag : 0
 Distance (au) : 9.275
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.01
 Sun-Target sep (deg) : 136.50
 Sun-Moon sep (deg) : 65.21
 B (ring opening deg) : 25.81
 PA of pole (deg) : 6.22
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.990
 C/A sky separation (km) : 47023.1
 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



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2048-08-15T12:19:20.672		34.21	-18.59	140461.00	-9.67		
A (OER)	I	2048-08-15T12:25:47.271		34.53	-19.77	136774.40	-9.40		
Encke (OEG)	I	2048-08-15T12:31:13.599		34.76	-20.75	133744.89	-9.16		
Encke (IEG)	I	2048-08-15T12:31:48.747		34.78	-20.86	133423.31	-9.14		
A (IER)	I	2048-08-15T12:53:54.226		35.39	-24.73	122050.38	-7.97		
B (OER)	I	2048-08-15T13:03:38.097		35.50	-26.37	117571.16	-7.36		
Saturn	I	2048-08-15T14:19:56.508		32.95	-37.46	59827.35		34.92	40.41
Saturn	E	2048-08-15T15:59:00.919		22.01	-44.37	59388.55		54.41	59.44
B (OER)	E	2048-08-15T15:41:08.029	b	24.48	-43.94	117571.16	7.23		
A (IER)	E	2048-08-15T15:51:02.440	b	23.13	-44.22	122050.38	7.83		
Encke (IEG)	E	2048-08-15T16:13:34.835		19.87	-44.42	133423.31	8.94		
Encke (OEG)	E	2048-08-15T16:14:10.753		19.77	-44.41	133744.89	8.97		
A (OER)	E	2048-08-15T16:19:44.356		18.93	-44.36	136774.40	9.19		
F ring	E	2048-08-15T16:26:19.897		17.90	-44.25	140461.00	9.44		

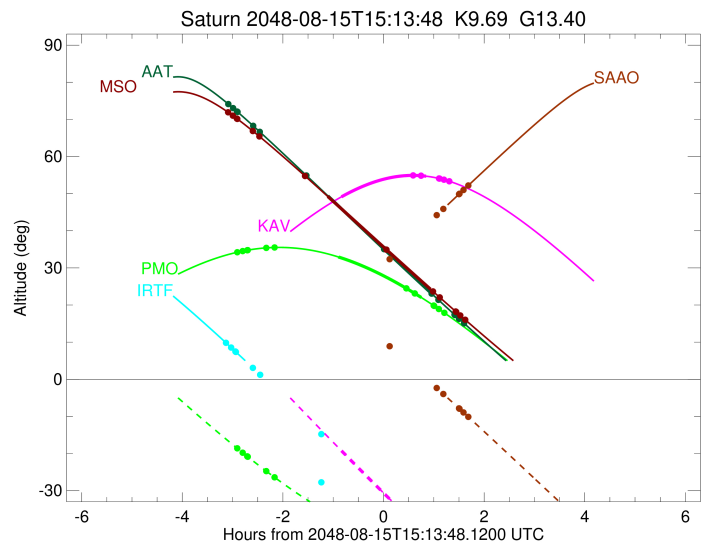
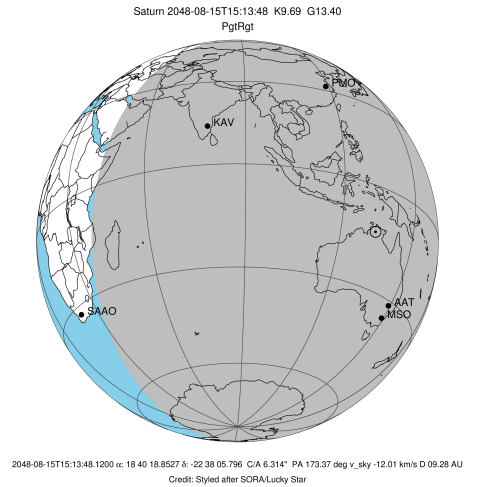
```

target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2048-08-15T15:06:47.550
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       : 4079192335306795520
2Mass ID (if available) : 18401885-2238057
ICRS Star Coord at Epoch: 18h 40m 18.85272s -22:38:05.79620s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 9.693
G magnitude           : 13.405
RP magnitude          : 12.374
BP magnitude          : 14.506
DUPflag              : 0
Distance (au)         : 9.275
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -12.01
Sun-Target sep (deg) : 136.50
Sun-Moon sep (deg)   : 64.46
B (ring opening deg) : 25.81
PA of pole (deg)     : 6.22
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 6.366
C/A sky separation (km) : 42826.1
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
    
```



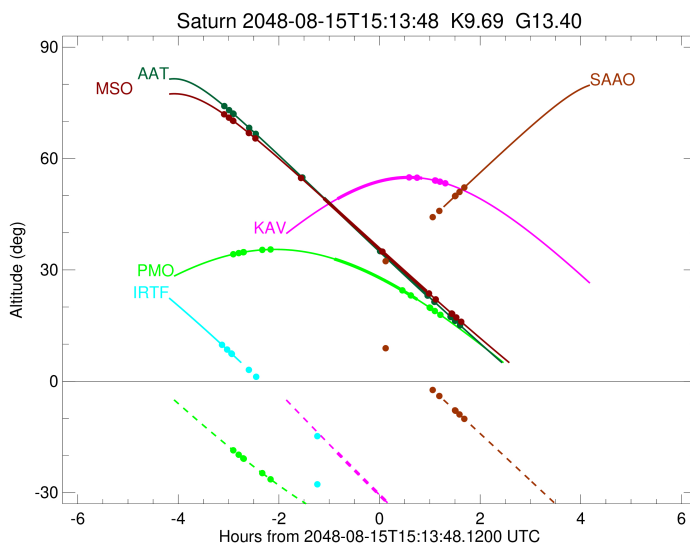
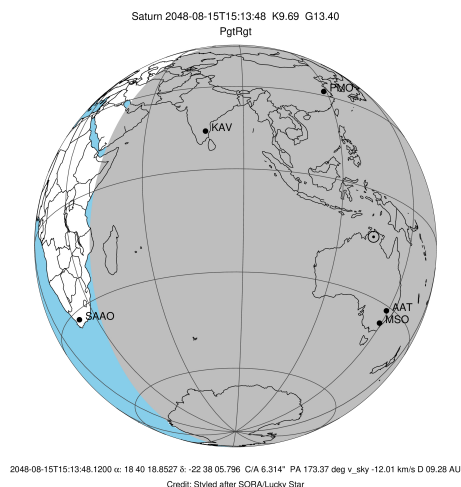
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2048-08-15T12:05:55.559		9.83	-48.53	140461.00	-10.18		
A (OER)	I	2048-08-15T12:12:01.255		8.56	-47.62	136774.40	-9.98		
Encke (OEG)	I	2048-08-15T12:17:07.727		7.49	-46.84	133744.89	-9.79		
Encke (IEG)	I	2048-08-15T12:17:40.604		7.37	-46.76	133423.31	-9.77		
A (IER)	I	2048-08-15T12:37:56.117		3.09x	-43.44	122050.38	-8.91		
B (OER)	I	2048-08-15T12:46:31.496		1.25x	-41.94	117571.16	-8.47		
B (IER)	I	2048-08-15T13:59:23.975		-14.73x	-27.82	91984.69	-2.55		
Saturn	I	2048-08-15T14:07:58.776		-16.64x	-26.03	59935.39		29.78	34.96
Saturn	E	2048-08-15T16:05:14.313		-43.31x	-0.21x	59485.31		50.01	55.36
B (IER)	E	2048-08-15T14:45:13.134	b	-25.03x	-18.07	91984.69	2.53		
B (OER)	E	2048-08-15T15:59:26.169	b	-41.97x	-1.53x	117571.16	8.24		
A (IER)	E	2048-08-15T16:08:16.021		-44.00x	0.48x	122050.38	8.66		
Encke (IEG)	E	2048-08-15T16:29:09.172		-48.82x	5.26x	133423.31	9.46		
Encke (OEG)	E	2048-08-15T16:29:43.135		-48.95x	5.39x	133744.89	9.48		
A (OER)	E	2048-08-15T16:34:59.918		-50.17x	6.61x	136774.40	9.65		
F ring	E	2048-08-15T16:41:18.335		-51.62x	8.06x	140461.00	9.83		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-08-15T15:14:37.200
 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 : 4079192335306795520
 2Mass ID (if available) : 18401885-2238057
 ICRS Star Coord at Epoch: 18h 40m 18.85272s -22:38:05.79620s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 9.693
 G magnitude : 13.405
 RP magnitude : 12.374
 BP magnitude : 14.506
 DUPflag : 0
 Distance (au) : 9.275
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.01
 Sun-Target sep (deg) : 136.50
 Sun-Moon sep (deg) : 65.26
 B (ring opening deg) : 25.81
 PA of pole (deg) : 6.22
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 6.868
 C/A sky separation (km) : 46204.5
 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	2048-08-15T12:22:01.110		28.27	9.35x	140461.00	-9.88		
A (OER)	I	2048-08-15T12:28:18.980		29.53	7.85x	136774.40	-9.63		
Encke (OEG)	I	2048-08-15T12:33:37.011		30.59	6.59x	133744.89	-9.42		
Encke (IEG)	I	2048-08-15T12:34:11.211		30.70	6.45x	133423.31	-9.39		
A (IER)	I	2048-08-15T12:55:31.117		34.83	1.38x	122050.38	-8.33		
B (OER)	I	2048-08-15T13:04:46.865		36.57	-0.81x	117571.16	-7.78		
Saturn	I	2048-08-15T14:23:36.173		49.14	-19.24	59859.20		33.45	38.87
Saturn	E	2048-08-15T16:04:40.304		54.70	-41.62	59401.82		53.79	58.88
B (OER)	E	2048-08-15T15:49:11.621	b	54.92	-38.35	117571.16	7.73		
A (IER)	E	2048-08-15T15:58:30.769	b	54.84	-40.32	122050.38	8.28		
Encke (IEG)	E	2048-08-15T16:19:58.560		54.10	-44.76	133423.31	9.33		
Encke (OEG)	E	2048-08-15T16:20:32.972		54.07	-44.88	133744.89	9.36		
A (OER)	E	2048-08-15T16:25:52.982		53.76	-45.95	136774.40	9.57		
F ring	E	2048-08-15T16:32:13.226		53.34	-47.20	140461.00	9.81		

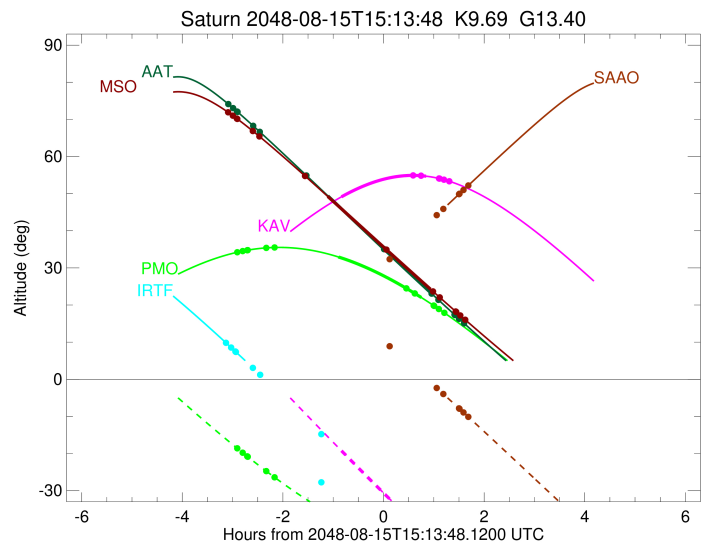
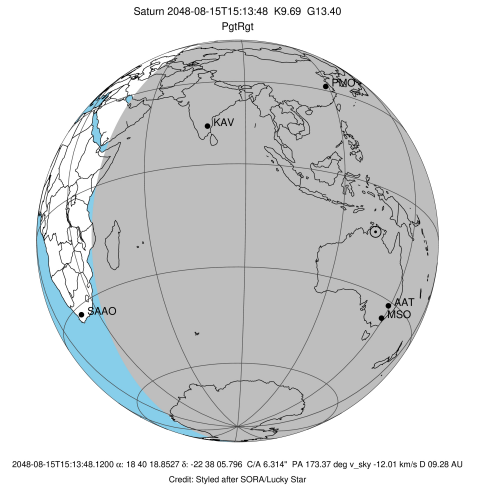
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-08-15T15:08:19.670
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 4079192335306795520
 2Mass ID (if available) : 18401885-2238057
 ICRS Star Coord at Epoch: 18h 40m 18.85272s -22:38:05.79620s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 9.693
 G magnitude : 13.405
 RP magnitude : 12.374
 BP magnitude : 14.506
 DUPflag : 0
 Distance (au) : 9.275
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.01
 Sun-Target sep (deg) : 136.50
 Sun-Moon sep (deg) : 65.36
 B (ring opening deg) : 25.81
 PA of pole (deg) : 6.22
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.936
 C/A sky separation (km) : 39933.6
 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	2048-08-15T12:08:42.784		74.13	-57.59	140461.00	-10.86		
A (OER)	I	2048-08-15T12:14:25.058		73.05	-58.68	136774.40	-10.68		
Encke (OEG)	I	2048-08-15T12:19:10.671		72.12	-59.58	133744.89	-10.53		
Encke (IEG)	I	2048-08-15T12:19:41.238		72.02	-59.67	133423.31	-10.51		
A (IER)	I	2048-08-15T12:38:19.705		68.28	-63.06	122050.38	-9.79		
B (OER)	I	2048-08-15T12:46:05.405		66.68	-64.39	117571.16	-9.44		
B (IER)	I	2048-08-15T13:41:43.553		54.92	-71.59	91984.69	-5.42		
Saturn	I	2048-08-15T14:07:21.009		49.43	-72.60	60000.78		26.41	31.28
Saturn	E	2048-08-15T16:09:00.537		23.53	-57.22	59556.15		46.89	52.39
B (IER)	E	2048-08-15T15:14:17.807	b	35.09	-66.87	91984.69	5.33		
B (OER)	E	2048-08-15T16:11:13.092		23.07	-56.79	117571.16	9.17		
A (IER)	E	2048-08-15T16:19:12.649		21.40	-55.22	122050.38	9.50		
Encke (IEG)	E	2048-08-15T16:38:27.531		17.42	-51.36	133423.31	10.16		
Encke (OEG)	E	2048-08-15T16:38:59.157		17.31	-51.25	133744.89	10.18		
A (OER)	E	2048-08-15T16:43:54.827		16.30	-50.25	136774.40	10.31		
F ring	E	2048-08-15T16:49:49.545		15.08	-49.03	140461.00	10.47		

```

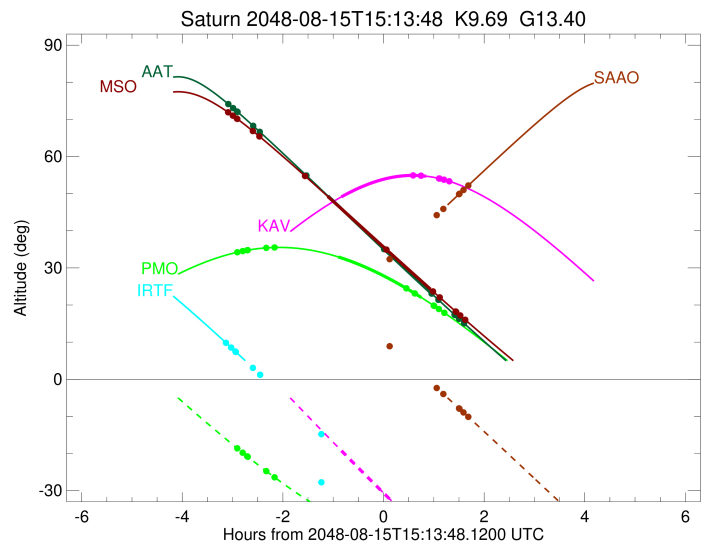
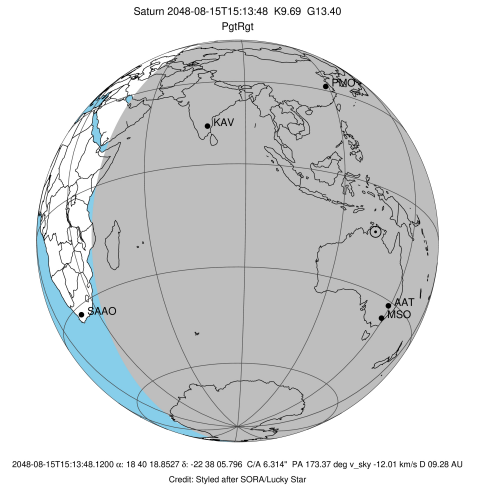
target                : Saturn
target radius (km)   : 60268.00
C/A epoch             : 2048-08-15T15:20:23.000
Event type            : PgtRgt
: Saturn occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : SAAO
Location               : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)        : -32.37953
E. Longitude (deg)    : 20.81070
Altitude (km)         : 1.768
Gaia source ID        : 4079192335306795520
2Mass ID (if available) : 18401885-2238057
ICRS Star Coord at Epoch: 18h 40m 18.85272s -22:38:05.79620s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 9.693
G magnitude           : 13.405
RP magnitude          : 12.374
BP magnitude          : 14.506
DUPflag               : 0
Distance (au)         : 9.275
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -12.01
Sun-Target sep (deg) : 136.50
Sun-Moon sep (deg)   : 64.67
B (ring opening deg) : 25.81
PA of pole (deg)     : 6.22
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 6.068
C/A sky separation (km) : 40821.9
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	2048-08-15T12:16:09.618		-4.57x	38.73x	140461.00	-10.58		
A (OER)	I	2048-08-15T12:22:00.511		-3.50x	38.10x	136774.40	-10.43		
Encke (OEG)	I	2048-08-15T12:26:53.085		-2.60x	37.54x	133744.89	-10.28		
Encke (IEG)	I	2048-08-15T12:27:24.384		-2.50x	37.48x	133423.31	-10.27		
A (IER)	I	2048-08-15T12:46:28.111		1.09x	35.13x	122050.38	-9.59		
B (OER)	I	2048-08-15T12:54:23.516		2.60x	34.08x	117571.16	-9.25		
B (IER)	I	2048-08-15T13:51:10.462		13.79	25.38x	91984.69	-5.27		
Saturn	I	2048-08-15T14:19:59.987		19.65	20.38x	60003.39		26.27	31.12
Saturn	E	2048-08-15T16:19:29.456		44.69	-2.81x	59514.17		48.74	54.15
B (IER)	E	2048-08-15T15:20:56.947	b	32.32	8.93x	91984.69	5.29		
B (OER)	E	2048-08-15T16:17:16.278	b	44.22	-2.35x	117571.16	9.37		
A (IER)	E	2048-08-15T16:25:05.106		45.88	-3.95x	122050.38	9.73		
Encke (IEG)	E	2048-08-15T16:43:50.409		49.85	-7.83	133423.31	10.45		
Encke (OEG)	E	2048-08-15T16:44:21.156		49.96	-7.93	133744.89	10.47		
A (OER)	E	2048-08-15T16:49:08.449		50.98	-8.93	136774.40	10.62		
F ring	E	2048-08-15T16:54:52.737		52.19	-10.12	140461.00	10.79		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-08-15T15:08:38.930
 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 : 4079192335306795520
 2Mass ID (if available) : 18401885-2238057
 ICRS Star Coord at Epoch: 18h 40m 18.85272s -22:38:05.79620s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 9.693
 G magnitude : 13.405
 RP magnitude : 12.374
 BP magnitude : 14.506
 DUPflag : 0
 Distance (au) : 9.275
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.01
 Sun-Target sep (deg) : 136.50
 Sun-Moon sep (deg) : 65.35
 B (ring opening deg) : 25.81
 PA of pole (deg) : 6.22
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 5.882
 C/A sky separation (km) : 39568.0
 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	2048-08-15T12:08:28.757		71.92	-55.59	140461.00	-10.90		
A (OER)	I	2048-08-15T12:14:09.448		71.01	-56.57	136774.40	-10.74		
Encke (OEG)	I	2048-08-15T12:18:53.608		70.23	-57.38	133744.89	-10.59		
Encke (IEG)	I	2048-08-15T12:19:24.012		70.14	-57.47	133423.31	-10.57		
A (IER)	I	2048-08-15T12:37:55.253		66.87	-60.47	122050.38	-9.87		
B (OER)	I	2048-08-15T12:45:37.046		65.45	-61.63	117571.16	-9.52		
B (IER)	I	2048-08-15T13:40:06.148		54.78	-67.65	91984.69	-5.68		
Saturn	I	2048-08-15T14:07:10.035		49.28	-68.56	60008.95		25.97	30.79
Saturn	E	2048-08-15T16:09:49.652		24.27	-55.23	59564.02		46.55	52.06
B (IER)	E	2048-08-15T15:17:08.545	b	34.96	-63.52	91984.69	5.58		
B (OER)	E	2048-08-15T16:12:52.070		23.66	-54.69	117571.16	9.26		
A (IER)	E	2048-08-15T16:20:47.214		22.07	-53.26	122050.38	9.59		
Encke (IEG)	E	2048-08-15T16:39:53.544		18.27	-49.72	133423.31	10.23		
Encke (OEG)	E	2048-08-15T16:40:24.968		18.17	-49.62	133744.89	10.24		
A (OER)	E	2048-08-15T16:45:18.818		17.20	-48.69	136774.40	10.38		
F ring	E	2048-08-15T16:51:11.502		16.04	-47.56	140461.00	10.53		