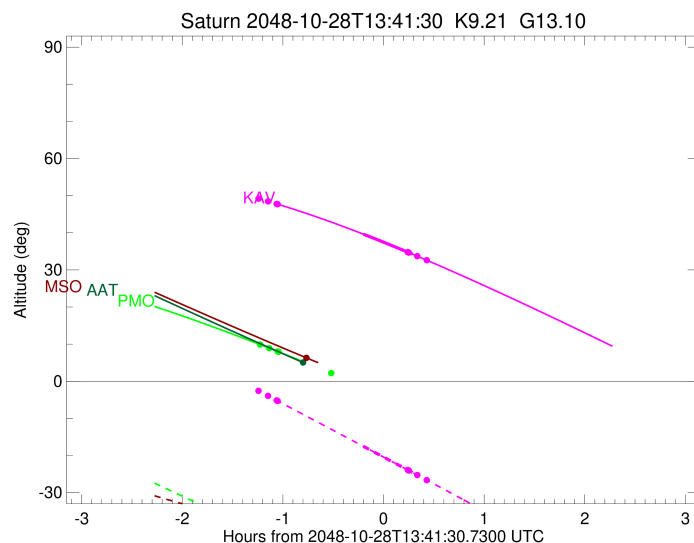
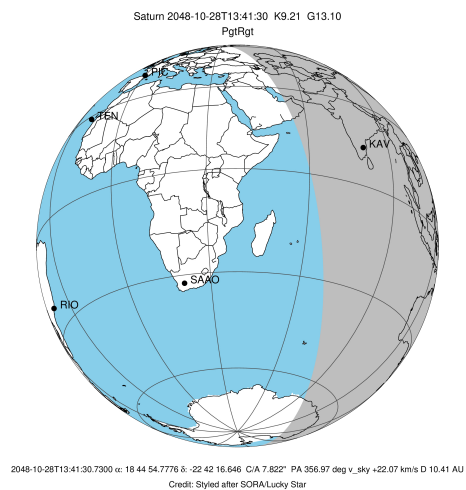


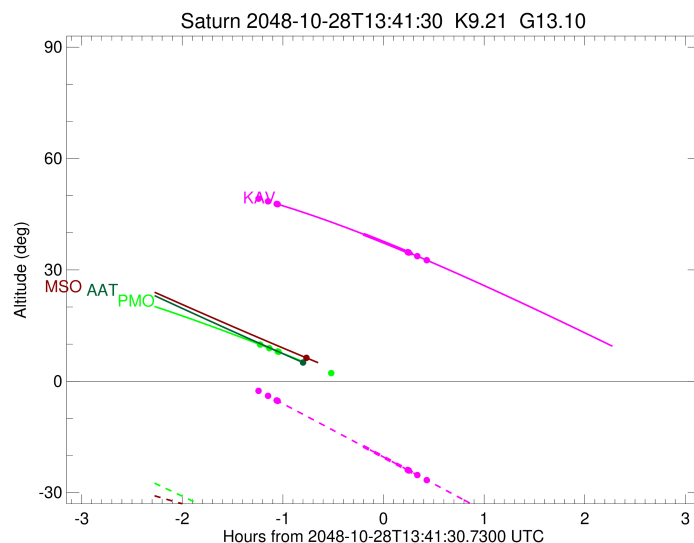
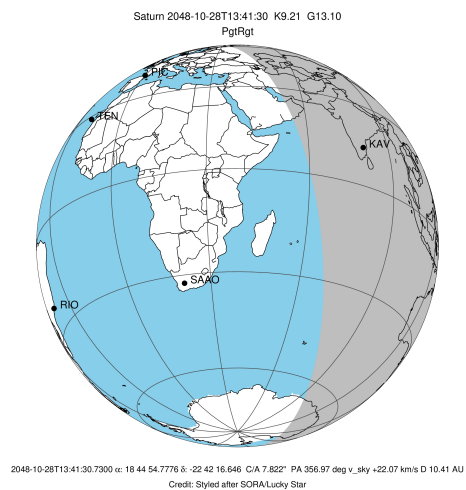
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-10-28T13:45:23.690
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 4078466691959936512
 2Mass ID (if available) : 18445478-2242164
 ICRS Star Coord at Epoch: 18h 44m 54.77758s -22:42:16.64618s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 9.213
 G magnitude : 13.097
 RP magnitude : 12.047
 BP magnitude : 14.247
 DUPflag : 0
 Distance (au) : 10.405
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.07
 Sun-Target sep (deg) : 65.22
 Sun-Moon sep (deg) : 168.93
 B (ring opening deg) : 25.77
 PA of pole (deg) : 6.29
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.409
 C/A sky separation (km) : 55908.4
 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	2048-10-28T12:27:46.545		9.91	-40.71	140461.00	-11.64		
A (OER)	I	2048-10-28T12:33:16.831		8.94	-41.86	136774.40	-10.67		
Encke (OEG)	I	2048-10-28T12:38:13.969		8.06	-42.89	133744.89	-9.71		
Encke (IEG)	I	2048-10-28T12:38:47.259		7.96	-43.00	133423.31	-9.60		
A (IER)	I	2048-10-28T13:09:50.394		2.29x	-49.38	122050.38	-2.26		
Saturn	I	2048-10-28T13:30:04.558		-1.54x	-53.42	59454.17		-51.57	-56.82
Saturn	E	2048-10-28T14:00:10.937		-7.39x	-59.15	59227.92		-62.64	-66.85
A (IER)	E	2048-10-28T13:26:49.882		-0.92x	-52.78	122050.38	2.27		
Encke (IEG)	E	2048-10-28T13:57:49.445	b	-6.93x	-58.72	133423.31	9.64		
Encke (OEG)	E	2048-10-28T13:58:22.608	b	-7.04x	-58.82	133744.89	9.75		
A (OER)	E	2048-10-28T14:03:18.466		-8.01x	-59.72	136774.40	10.72		
F ring	E	2048-10-28T14:08:46.979		-9.10x	-60.70	140461.00	11.71		

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-10-28T13:44:26.460
 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 : 4078466691959936512
 2Mass ID (if available) : 18445478-2242164
 ICRS Star Coord at Epoch: 18h 44m 54.77758s -22:42:16.64618s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 9.213
 G magnitude : 13.097
 RP magnitude : 12.047
 BP magnitude : 14.247
 DUPflag : 0
 Distance (au) : 10.405
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.07
 Sun-Target sep (deg) : 65.22
 Sun-Moon sep (deg) : 169.24
 B (ring opening deg) : 25.77
 PA of pole (deg) : 6.29
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 7.444
 C/A sky separation (km) : 56178.2
 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

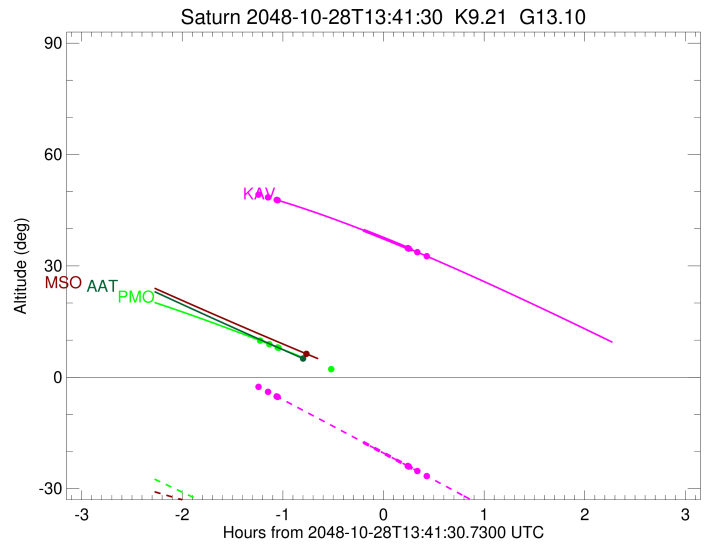
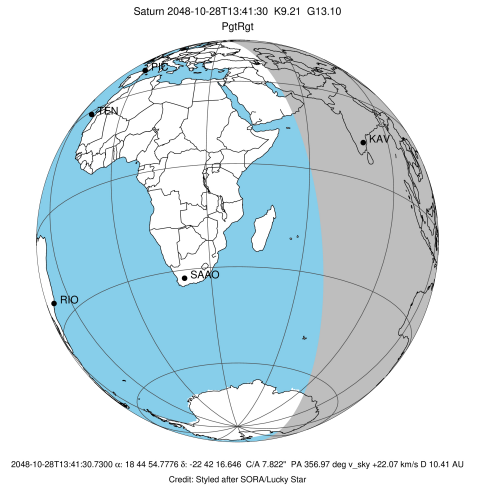


b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
F ring	I	2048-10-28T12:26:50.475		49.21	-2.55x	140461.00	-11.33		
A (OER)	I	2048-10-28T12:32:30.652		48.48	-3.90x	136774.40	-10.33		
Encke (OEG)	I	2048-10-28T12:37:38.258		47.80	-5.12	133744.89	-9.36		
Encke (IEG)	I	2048-10-28T12:38:12.840		47.72	-5.25	133423.31	-9.24		
Saturn	I	2048-10-28T13:29:32.900		39.62	-17.54	59440.50		-52.19	-57.40
Saturn	E	2048-10-28T13:58:48.028		34.25	-24.57	59223.44		-62.89	-67.06
Encke (IEG)	E	2048-10-28T13:55:57.680	b	34.79	-23.89	133423.31	9.27		
Encke (OEG)	E	2048-10-28T13:56:32.154	b	34.68	-24.03	133744.89	9.39		
A (OER)	E	2048-10-28T14:01:38.659		33.70	-25.26	136774.40	10.37		
F ring	E	2048-10-28T14:07:17.283		32.62	-26.62	140461.00	11.39		

```

target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2048-10-28T13:44:53.980
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       : 4078466691959936512
2Mass ID (if available) : 18445478-2242164
ICRS Star Coord at Epoch: 18h 44m 54.77758s -22:42:16.64618s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 9.213
G magnitude           : 13.097
RP magnitude          : 12.047
BP magnitude          : 14.247
DUPflag              : 0
Distance (au)        : 10.405
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 22.07
Sun-Target sep (deg) : 65.22
Sun-Moon sep (deg)   : 169.25
B (ring opening deg) : 25.77
PA of pole (deg)     : 6.29
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 8.363
C/A sky separation (km) : 63111.4
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
  
```



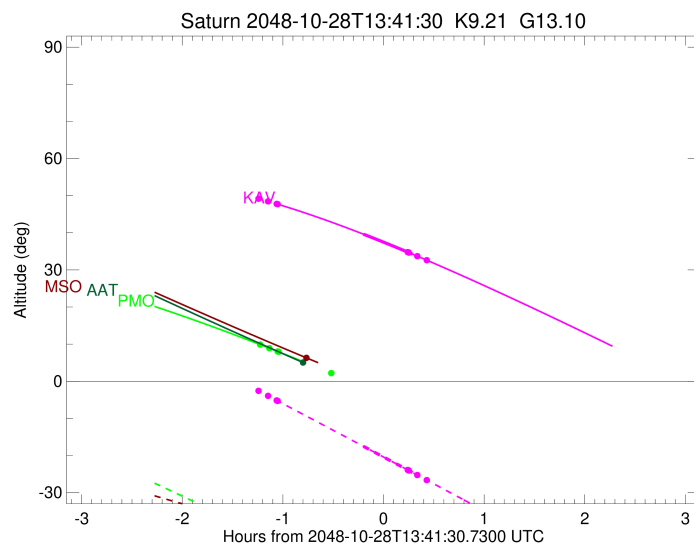
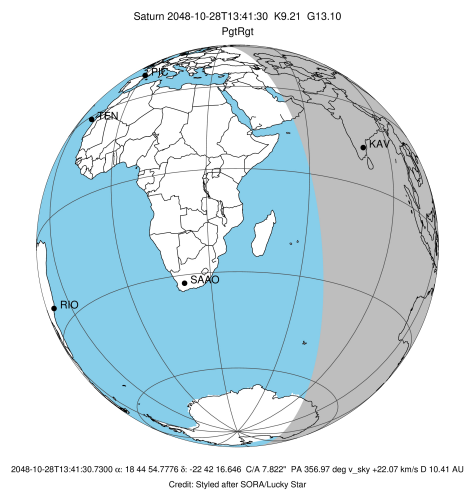
```

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 2048-10-28T12:53:10.714  5.12 -43.59 140461.00 -5.05

No planet occultations

F ring    E 2048-10-28T13:36:10.981  -3.16x -45.36 140461.00 5.06
  
```

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2048-10-28T13:44:43.590
 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 : 4078466691959936512
 2Mass ID (if available) : 18445478-2242164
 ICRS Star Coord at Epoch: 18h 44m 54.77758s -22:42:16.64618s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 9.213
 G magnitude : 13.097
 RP magnitude : 12.047
 BP magnitude : 14.247
 DUPflag : 0
 Distance (au) : 10.405
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.07
 Sun-Target sep (deg) : 65.22
 Sun-Moon sep (deg) : 169.30
 B (ring opening deg) : 25.77
 PA of pole (deg) : 6.29
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 8.402
 C/A sky separation (km) : 63406.1
 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	2048-10-28T12:55:09.225		6.38	-39.85	140461.00	-4.52		
No planet occultations									
F ring	E	2048-10-28T13:33:38.769		-0.71x	-41.30	140461.00	4.52		