

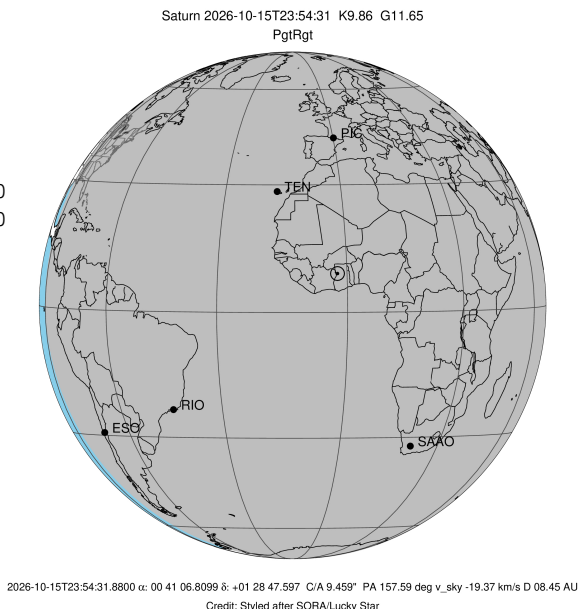
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-10-15T23:54:31.880
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 2549446927108355584
 2Mass ID (if available) : 00410678+0128477

ICRS Star Coord at Epoch: 00h 41m 06.80986s +01:28:47.59685s

RUWE (>1.4 is poor) : 1.37
 K magnitude : 9.863
 G magnitude : 11.655
 RP magnitude : 11.066
 BP magnitude : 12.072
 DUPflag : 1
 Distance (au) : 8.454
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.36
 Sun-Target sep (deg) : 167.46
 Sun-Moon sep (deg) : 106.55
 B (ring opening deg) : -7.09
 PA of pole (deg) : 3.30

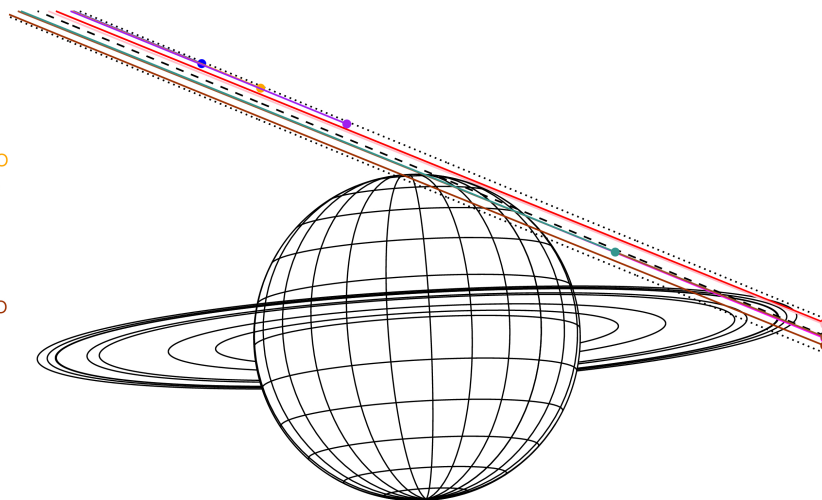
a(km) ring

- 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



Saturn 2026-10-15T23:54:31 K9.86 G11.65 PgtRgt

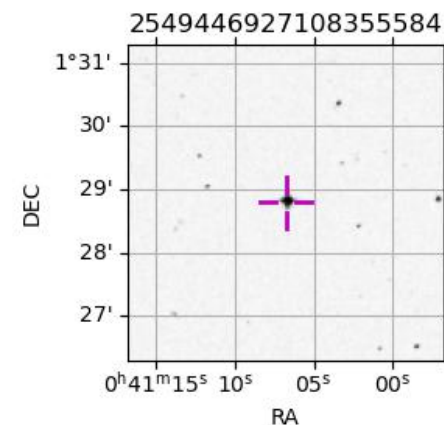
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO



2026-10-15T23:54:31.8800 α: 00 41 06.8099 δ: +01 28 47.597 C/A 9.459° PA 157.59 deg v_sky -19.37 km/s D 08.45 AU
 Credit: Styled after SORA/Lucky Star

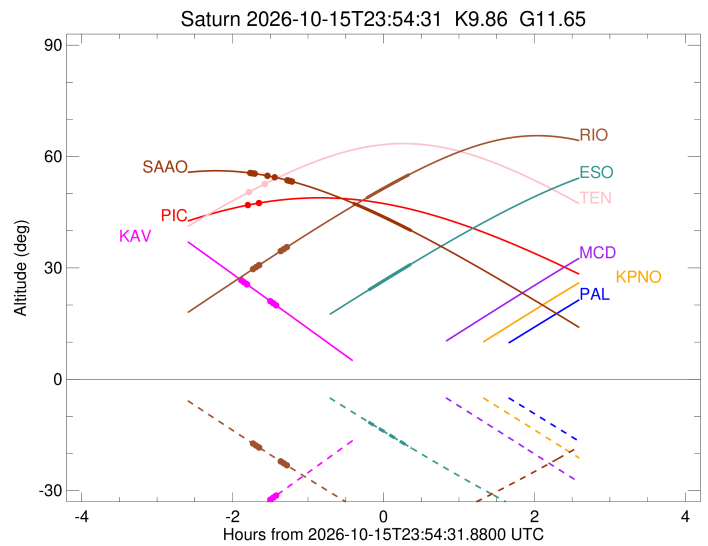
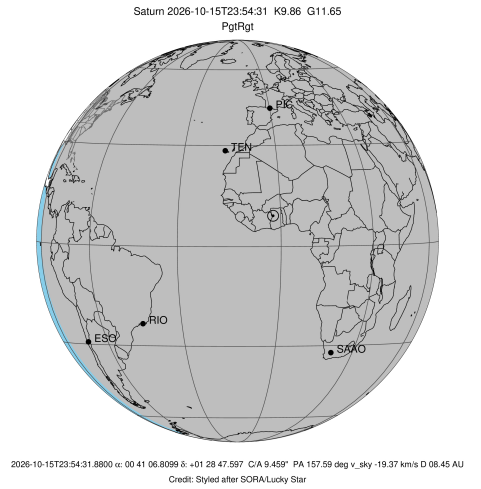
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

| Obs | Location | lat | Elon | Rings I | Planet | Rings E | Observed Events Interval | OEncode |
|------|----------------|-------|-------|---------|--------|---------|-----------------------------|---------|
| PIC | Pic du Midi | 42.9 | 0.1 | + | | + | OCT 15 22:06 - OCT 15 22:15 | PnnRie |
| PAL | Palomar Mt (20 | 33.4 | 243.1 | | | | | PnnRnn |
| PMO | Purple Mtn Obs | 32.1 | 118.8 | | | | | PnnRnn |
| 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 | + | | + | OCT 15 22:07 - OCT 15 22:20 | PnnRie |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | | | | | PnnRnn |
| KAV | Kavalur Observ | 12.6 | 78.8 | + | + | + | OCT 15 22:01 - OCT 15 22:29 | PnnRie |
| RIO | Rio de Janeiro | -22.9 | 316.8 | + | + | + | OCT 15 22:10 - OCT 16 00:15 | PieRie |
| ESO | European South | -29.3 | 289.3 | | + | + | OCT 15 23:42 - OCT 16 00:16 | PieRnn |
| AAT | Siding Spring | -31.3 | 149.1 | | | | | PnnRnn |
| SAAO | So. Afr. Astro | -32.4 | 20.8 | + | + | + | OCT 15 22:08 - OCT 16 00:16 | PieRie |
| MSO | Mt. Stromlo Ob | -35.3 | 149.0 | | | | | PnnRnn |



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target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2026-10-15T23:52:42.330
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       : 2549446927108355584
2Mass ID (if available) : 00410678+0128477
ICRS Star Coord at Epoch: 00h 41m 06.80986s +01:28:47.59685s
RUWE (>1.4 is poor) : 1.37
K magnitude           : 9.863
G magnitude           : 11.655
RP magnitude          : 11.066
BP magnitude          : 12.072
DUPflag              : 1
Distance (au)         : 8.454
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.36
Sun-Target sep (deg) : 167.46
Sun-Moon sep (deg)   : 107.07
B (ring opening deg) : -7.09
PA of pole (deg)     : 3.30
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 10.031
C/A sky separation (km) : 61505.9
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
  
```



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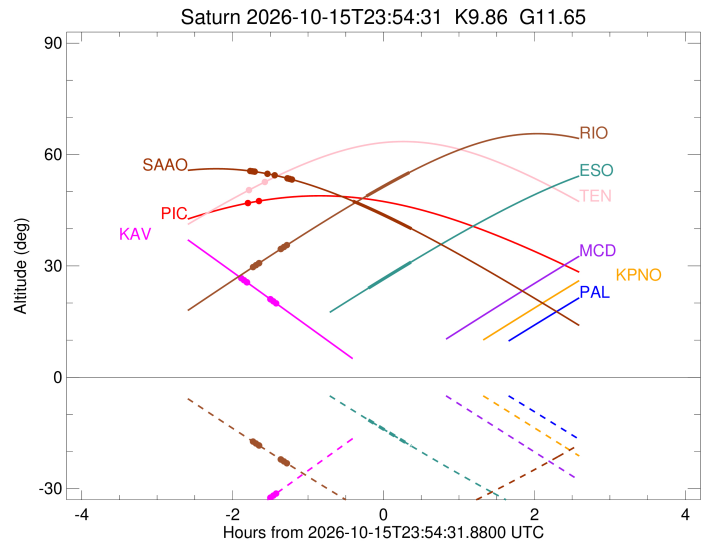
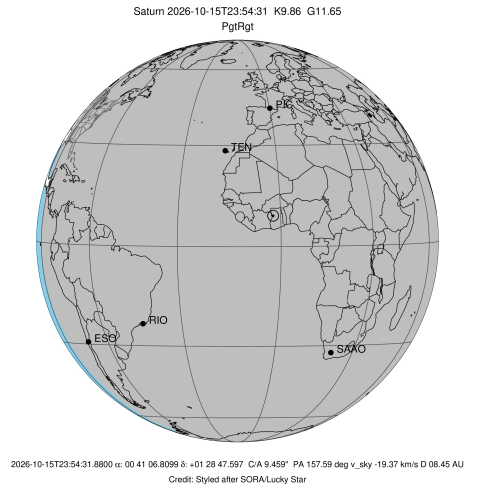
b: ring blocked by planet  x: target alt < 5.0 deg or sun > -5.0 deg
Ring      I/E              UTC          b? alt alt-sun radius r-dot lat-geo lat-geodetic
-----
F ring    I 2026-10-15T22:06:38.935  46.92 -49.77 140461.00 -9.88

No planet occultations

F ring    E 2026-10-15T22:15:56.508  47.49 -50.82 140461.03 9.88
  
```

```

target                : Saturn
target radius (km)   : 60268.00
C/A epoch            : 2026-10-15T23:54:19.600
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       : 2549446927108355584
2Mass ID (if available) : 00410678+0128477
ICRS Star Coord at Epoch: 00h 41m 06.80986s +01:28:47.59685s
RUWE (>1.4 is poor) : 1.37
K magnitude           : 9.863
G magnitude           : 11.655
RP magnitude          : 11.066
BP magnitude          : 12.072
DUPflag              : 1
Distance (au)         : 8.454
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.36
Sun-Target sep (deg) : 167.46
Sun-Moon sep (deg)   : 107.28
B (ring opening deg) : -7.09
PA of pole (deg)     : 3.30
Pole direction: RA (deg): 40.60000
Dec (deg): 83.50000
C/A sky separation (") : 9.914
C/A sky separation (km) : 60788.1
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
  
```



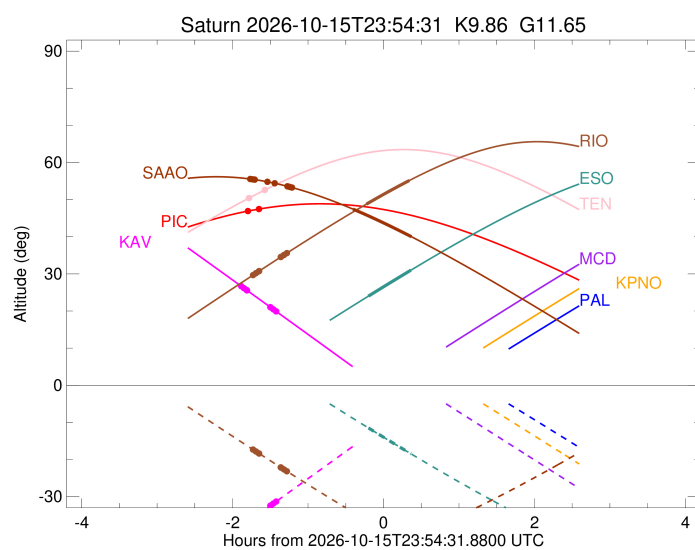
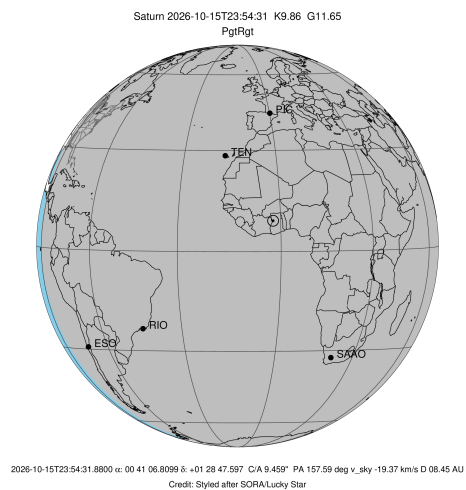
```

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 2026-10-15T22:07:34.111  50.42 -46.84 140461.00 -13.76

No planet occultations

F ring    E 2026-10-15T22:20:31.379  52.66 -49.53 140461.01 13.77
  
```

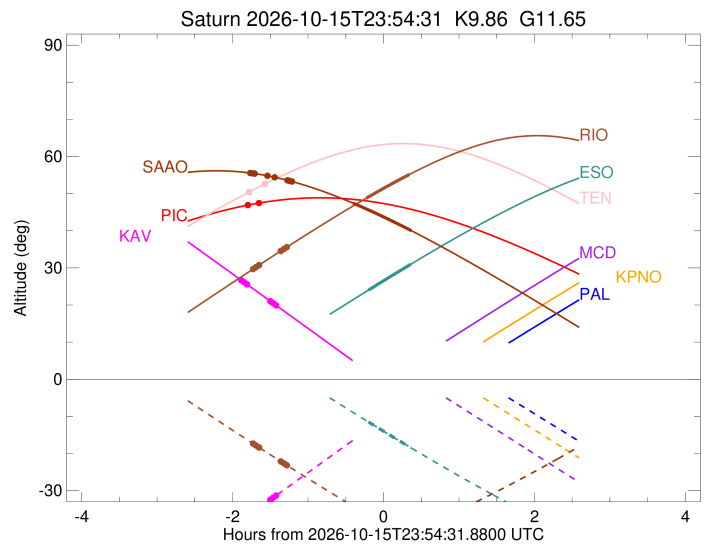
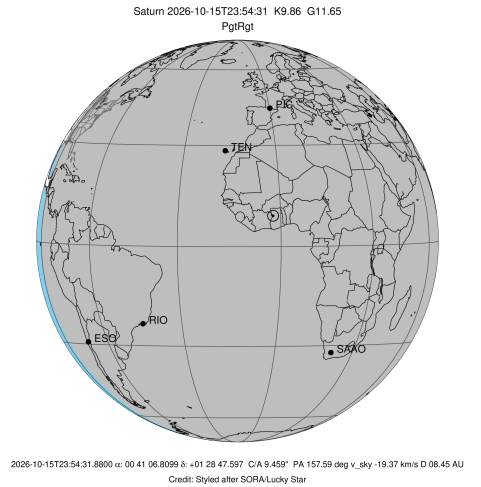
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-10-15T23:49:05.620
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 2549446927108355584
 2Mass ID (if available) : 00410678+0128477
 ICRS Star Coord at Epoch: 00h 41m 06.80986s +01:28:47.59685s
 RUWE (>1.4 is poor) : 1.37
 K magnitude : 9.863
 G magnitude : 11.655
 RP magnitude : 11.066
 BP magnitude : 12.072
 DUPflag : 1
 Distance (au) : 8.454
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.36
 Sun-Target sep (deg) : 167.46
 Sun-Moon sep (deg) : 106.29
 B (ring opening deg) : -7.09
 PA of pole (deg) : 3.30
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 9.281
 C/A sky separation (km) : 56908.9
 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 | 2026-10-15T22:01:26.899 | | 26.68 | -38.09 | 140461.00 | -29.77 | | |
| A (OER) | I | 2026-10-15T22:03:39.579 | | 26.14 | -37.55 | 136774.40 | -25.74 | | |
| Encke (OEG) | I | 2026-10-15T22:05:47.558 | | 25.62 | -37.03 | 133744.89 | -21.55 | | |
| Encke (IEG) | I | 2026-10-15T22:06:02.656 | | 25.56 | -36.97 | 133423.31 | -21.04 | | |
| Saturn | I | 2026-10-15T23:32:09.917 | | 4.49x | -15.99 | 60225.31 | | 44.75 | 50.32 |
| Saturn | E | 2026-10-16T00:05:56.555 | | -3.77x | -7.80 | 60184.48 | | 80.25 | 81.89 |
| Encke (IEG) | E | 2026-10-15T22:24:49.511 | | 20.97 | -32.39 | 133423.31 | 21.04 | | |
| Encke (OEG) | E | 2026-10-15T22:25:04.614 | | 20.91 | -32.32 | 133744.89 | 21.55 | | |
| A (OER) | E | 2026-10-15T22:27:12.636 | | 20.39 | -31.80 | 136774.40 | 25.73 | | |
| F ring | E | 2026-10-15T22:29:25.369 | | 19.85 | -31.26 | 140461.00 | 29.76 | | |

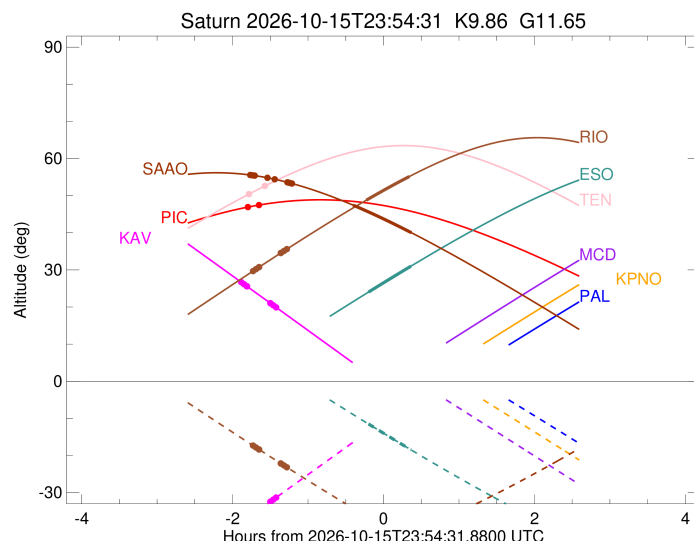
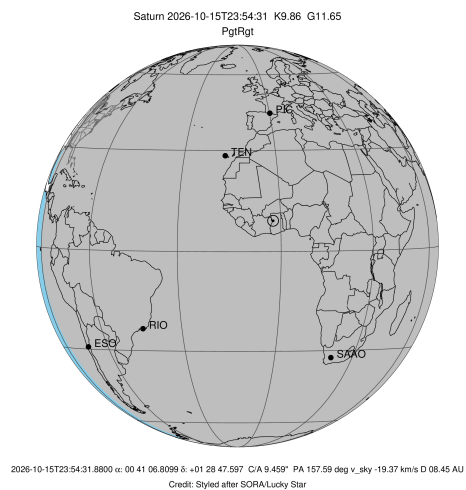
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-10-15T23:58:04.600
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 2549446927108355584
 2Mass ID (if available) : 00410678+0128477
 ICRS Star Coord at Epoch: 00h 41m 06.80986s +01:28:47.59685s
 RUWE (>1.4 is poor) : 1.37
 K magnitude : 9.863
 G magnitude : 11.655
 RP magnitude : 11.066
 BP magnitude : 12.072
 DUPflag : 1
 Distance (au) : 8.454
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.36
 Sun-Target sep (deg) : 167.46
 Sun-Moon sep (deg) : 107.39
 B (ring opening deg) : -7.09
 PA of pole (deg) : 3.30
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 9.248
 C/A sky separation (km) : 56706.1
 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

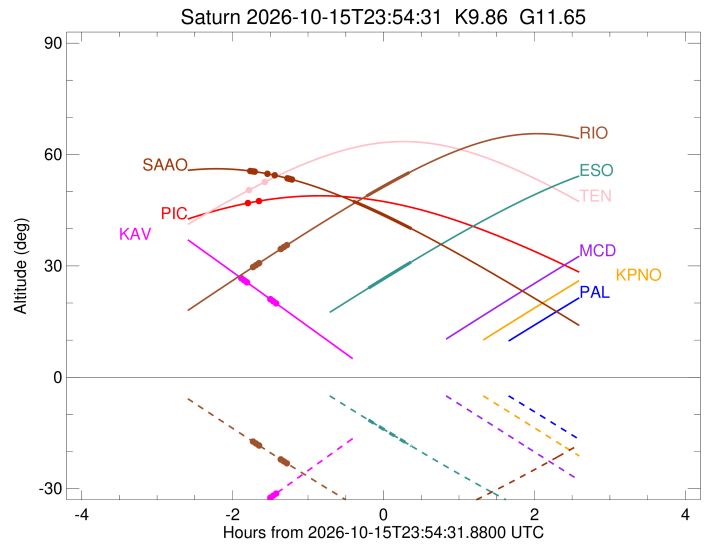
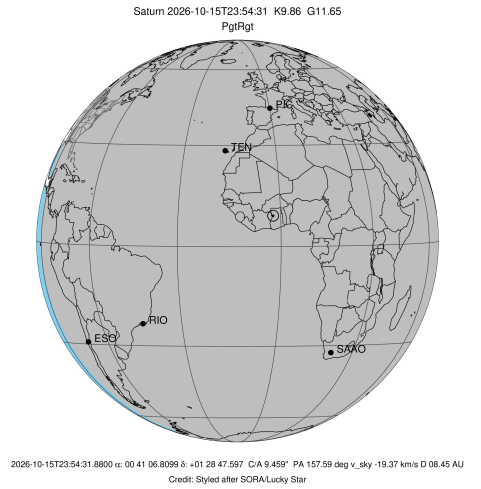
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|-------------|-----|-------------------------|----|-------|---------|-----------|--------|---------|--------------|
| F ring | I | 2026-10-15T22:10:49.818 | | 29.68 | -17.33 | 140461.00 | -28.74 | | |
| A (OER) | I | 2026-10-15T22:13:08.167 | | 30.20 | -17.84 | 136774.40 | -24.50 | | |
| Encke (OEG) | I | 2026-10-15T22:15:24.125 | | 30.70 | -18.33 | 133744.89 | -20.01 | | |
| Encke (IEG) | I | 2026-10-15T22:15:40.417 | | 30.76 | -18.39 | 133423.31 | -19.46 | | |
| Saturn | I | 2026-10-15T23:40:54.410 | | 48.79 | -36.28 | 60225.54 | | 44.61 | 50.18 |
| Saturn | E | 2026-10-16T00:15:07.785 | | 55.17 | -42.78 | 60184.13 | | 80.95 | 82.48 |
| Encke (IEG) | E | 2026-10-15T22:33:07.547 | | 34.60 | -22.19 | 133423.31 | 19.47 | | |
| Encke (OEG) | E | 2026-10-15T22:33:23.834 | | 34.66 | -22.24 | 133744.89 | 20.02 | | |
| A (OER) | E | 2026-10-15T22:35:39.739 | | 35.15 | -22.73 | 136774.40 | 24.51 | | |
| F ring | E | 2026-10-15T22:37:58.023 | | 35.66 | -23.23 | 140461.00 | 28.75 | | |

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-10-15T23:59:31.490
 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 : 2549446927108355584
 2Mass ID (if available) : 00410678+0128477
 ICRS Star Coord at Epoch: 00h 41m 06.80986s +01:28:47.59685s
 RUWE (>1.4 is poor) : 1.37
 K magnitude : 9.863
 G magnitude : 11.655
 RP magnitude : 11.066
 BP magnitude : 12.072
 DUPflag : 1
 Distance (au) : 8.454
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.36
 Sun-Target sep (deg) : 167.46
 Sun-Moon sep (deg) : 107.18
 B (ring opening deg) : -7.09
 PA of pole (deg) : 3.30
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 9.270
 C/A sky separation (km) : 56838.7
 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 | 2026-10-15T22:11:38.665 | 4.45x | 7.94x | 140461.00 | -29.22 | | | |
| A (OER) | I | 2026-10-15T22:13:54.220 | 4.94x | 7.45x | 136774.40 | -25.12 | | | |
| Encke (OEG) | I | 2026-10-15T22:16:05.967 | 5.42 | 6.97x | 133744.88 | -20.82 | | | |
| Encke (IEG) | I | 2026-10-15T22:16:21.608 | 5.48 | 6.92x | 133423.31 | -20.29 | | | |
| Saturn | I | 2026-10-15T23:42:32.579 | 24.01 | -11.50 | 60225.22 | 44.83 | 50.39 | | |
| Saturn | E | 2026-10-16T00:16:22.877 | 31.02 | -18.47 | 60184.28 | 80.61 | 82.20 | | |
| Encke (IEG) | E | 2026-10-15T22:34:38.480 | 9.46 | 2.96x | 133423.31 | 20.30 | | | |
| Encke (OEG) | E | 2026-10-15T22:34:54.115 | 9.52 | 2.90x | 133744.89 | 20.83 | | | |
| A (OER) | E | 2026-10-15T22:37:05.811 | 9.99 | 2.43x | 136774.40 | 25.13 | | | |
| F ring | E | 2026-10-15T22:39:21.303 | 10.49 | 1.94x | 140461.00 | 29.24 | | | |

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2026-10-15T23:53:37.360
 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 : 2549446927108355584
 2Mass ID (if available) : 00410678+0128477
 ICRS Star Coord at Epoch: 00h 41m 06.80986s +01:28:47.59685s
 RUWE (>1.4 is poor) : 1.37
 K magnitude : 9.863
 G magnitude : 11.655
 RP magnitude : 11.066
 BP magnitude : 12.072
 DUPflag : 1
 Distance (au) : 8.454
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.36
 Sun-Target sep (deg) : 167.46
 Sun-Moon sep (deg) : 107.11
 B (ring opening deg) : -7.09
 PA of pole (deg) : 3.30
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 8.746
 C/A sky separation (km) : 53625.6
 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 | 2026-10-15T22:08:35.413 | | 55.56 | -48.88 | 140461.00 | -35.59 | | |
| A (OER) | I | 2026-10-15T22:10:23.457 | | 55.48 | -48.91 | 136774.40 | -32.61 | | |
| Encke (OEG) | I | 2026-10-15T22:12:00.606 | | 55.40 | -48.93 | 133744.89 | -29.72 | | |
| Encke (IEG) | I | 2026-10-15T22:12:11.485 | | 55.39 | -48.94 | 133423.31 | -29.39 | | |
| A (IER) | I | 2026-10-15T22:22:09.206 | | 54.82 | -49.01 | 122050.38 | -7.70 | | |
| Saturn | I | 2026-10-15T23:30:24.018 | | 47.43 | -45.90 | 60236.48 | | 37.24 | 42.81 |
| Saturn | E | 2026-10-16T00:16:46.239 | | 40.01 | -40.74 | 60183.38 | | 82.76 | 83.99 |
| A (IER) | E | 2026-10-15T22:28:25.838 | | 54.38 | -48.98 | 122050.44 | 7.70 | | |
| Encke (IEG) | E | 2026-10-15T22:38:23.523 | | 53.57 | -48.83 | 133423.31 | 29.39 | | |
| Encke (OEG) | E | 2026-10-15T22:38:34.402 | | 53.56 | -48.82 | 133744.89 | 29.73 | | |
| A (OER) | E | 2026-10-15T22:40:11.540 | | 53.41 | -48.79 | 136774.40 | 32.62 | | |
| F ring | E | 2026-10-15T22:41:59.572 | | 53.25 | -48.74 | 140461.00 | 35.60 | | |