

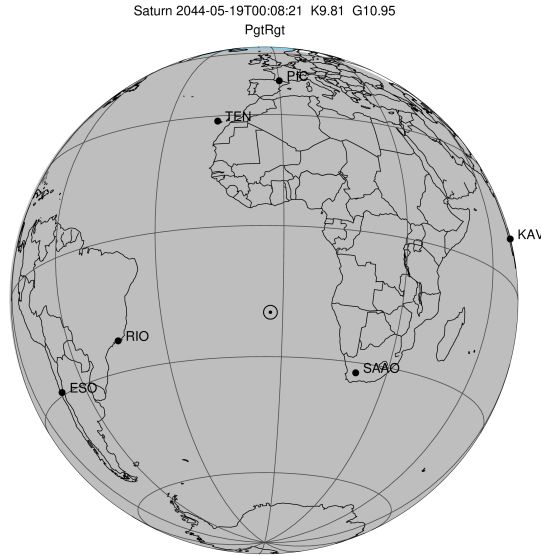
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2044-05-19T00:08:21.510
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 6261454120140877568
 2Mass ID (if available) : 15374216-1702051

Saturn 2044-05-19T00:08:21 K9.81 G10.95 PgtRgt

ICRS Star Coord at Epoch: 15h 37m 42.11732s -17:02:05.64295s

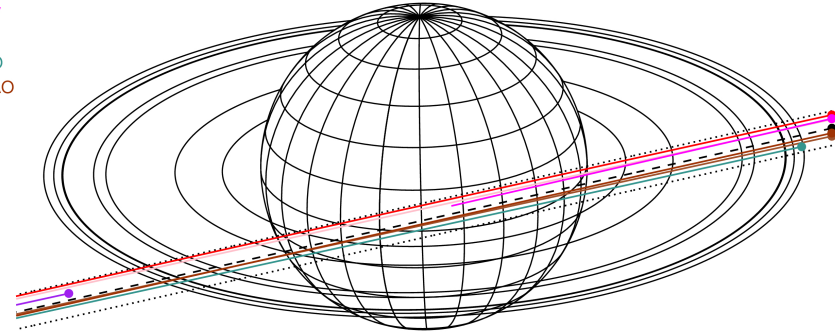
RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.807
 G magnitude : 10.950
 RP magnitude : 10.540
 BP magnitude : 11.199
 DUPflag : 0
 Distance (au) : 8.936
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.18
 Sun-Target sep (deg) : 177.01
 Sun-Moon sep (deg) : 78.90
 B (ring opening deg) : 23.34
 PA of pole (deg) : 1.69

| # | 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 |



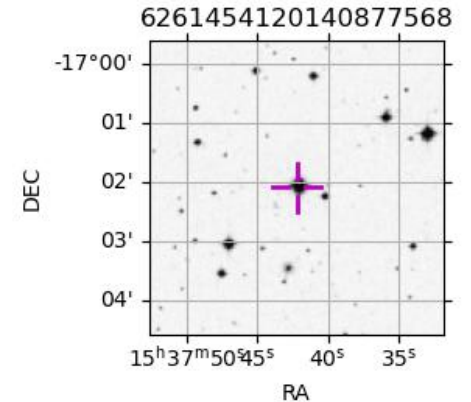
2044-05-19T00:08:21.5100 α: 15 37 42.11732 δ: -17 02 05.643 C/A 2.984° PA 12.71 deg v_sky -20.18 km/s D 08.94 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO

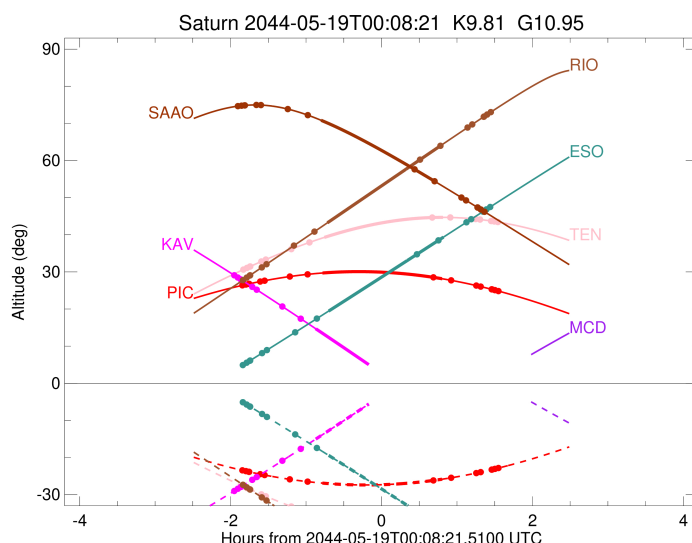
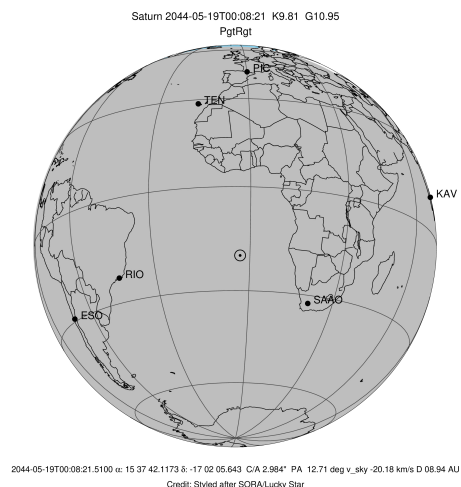


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

| Obs | Location | lat | Elon | Rings I | Planet | Rings E | Observed Events Interval | OEcode |
|------|----------------|-------|-------|---------|--------|---------|-----------------------------|--------|
| PIC | Pic du Midi | 42.9 | 0.1 | + | + | + | MAY 18 22:17 - MAY 19 01:41 | PieRie |
| 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 | + | + | + | MAY 18 22:18 - MAY 19 01:40 | PieRie |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | | | | | PnnRnn |
| KAV | Kavalur Observ | 12.6 | 78.8 | + | + | + | MAY 18 22:11 - MAY 18 23:16 | PinRin |
| RIO | Rio de Janeiro | -22.9 | 316.8 | + | + | + | MAY 18 22:18 - MAY 19 01:35 | PieRie |
| ESO | European South | -29.3 | 289.3 | + | + | + | MAY 18 22:21 - MAY 19 01:34 | PieRie |
| AAT | Siding Spring | -31.3 | 149.1 | | | | | PnnRnn |
| SAAO | So. Afr. Astro | -32.4 | 20.8 | + | + | + | MAY 18 22:14 - MAY 19 01:30 | PieRie |
| MSO | Mt. Stromlo Ob | -35.3 | 149.0 | | | | | PnnRnn |

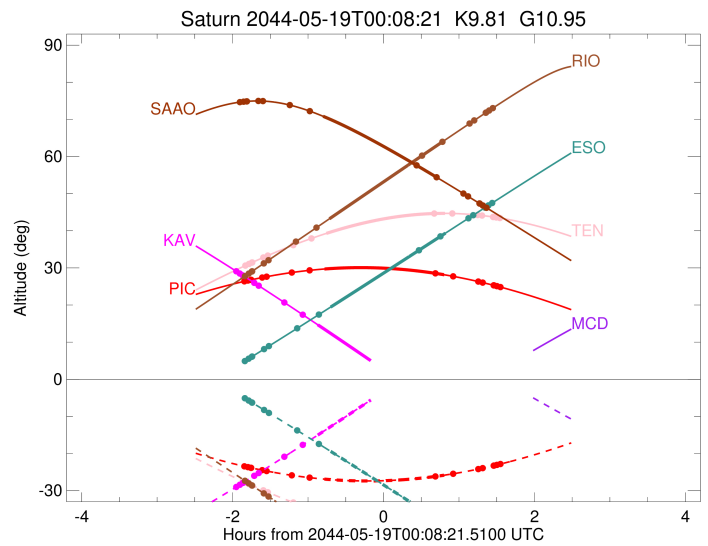
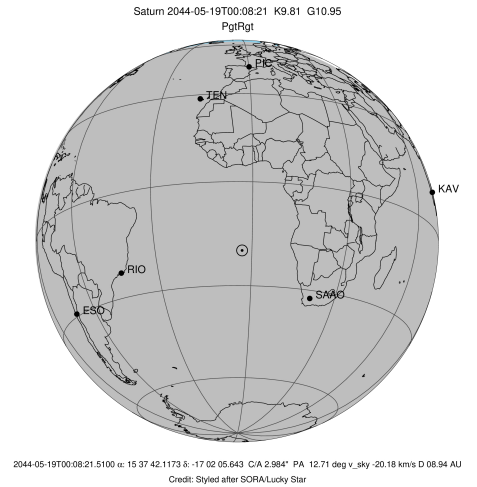


target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2044-05-19T00:09:04.230
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 6261454120140877568
 2Mass ID (if available) : 15374216-1702051
 ICRS Star Coord at Epoch: 15h 37m 42.11732s -17:02:05.64295s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.807
 G magnitude : 10.950
 RP magnitude : 10.540
 BP magnitude : 11.199
 DUPflag : 0
 Distance (au) : 8.936
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.18
 Sun-Target sep (deg) : 177.01
 Sun-Moon sep (deg) : 79.38
 B (ring opening deg) : 23.34
 PA of pole (deg) : 1.69
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.142
 C/A sky separation (km) : 13880.8
 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 | 2044-05-18T22:17:44.778 | | 26.38 | -23.45 | 140461.00 | -21.72 | | |
| A (OER) | I | 2044-05-18T22:20:34.648 | | 26.60 | -23.67 | 136774.40 | -21.69 | | |
| Encke (OEG) | I | 2044-05-18T22:22:54.426 | | 26.77 | -23.85 | 133744.89 | -21.66 | | |
| Encke (IEG) | I | 2044-05-18T22:23:09.274 | | 26.79 | -23.86 | 133423.31 | -21.66 | | |
| A (IER) | I | 2044-05-18T22:31:55.833 | | 27.40 | -24.49 | 122050.38 | -21.53 | | |
| B (OER) | I | 2044-05-18T22:35:24.121 | | 27.63 | -24.72 | 117571.16 | -21.47 | | |
| B (IER) | I | 2044-05-18T22:55:28.900 | | 28.75 | -25.88 | 91984.69 | -20.93 | | |
| C (IER) | I | 2044-05-18T23:09:38.669 | | 29.34 | -26.50 | 74490.58 | -20.16 | | |
| Saturn | I | 2044-05-18T23:21:25.798 | | 29.71 | -26.90 | 60266.27 | | -2.30 | -2.83 |
| Saturn | E | 2044-05-19T00:56:35.334 | | 28.16 | -25.84 | 60116.26 | | -22.13 | -26.48 |
| C (IER) | E | 2044-05-19T00:49:39.476 | b | 28.53 | -26.17 | 74490.58 | 20.17 | | |
| B (IER) | E | 2044-05-19T01:03:48.079 | | 27.72 | -25.46 | 91984.69 | 20.97 | | |
| B (OER) | E | 2044-05-19T01:23:49.822 | | 26.31 | -24.19 | 117571.16 | 21.54 | | |
| A (IER) | E | 2044-05-19T01:27:17.464 | | 26.04 | -23.94 | 122050.38 | 21.60 | | |
| Encke (IEG) | E | 2044-05-19T01:36:02.252 | | 25.30 | -23.27 | 133423.31 | 21.73 | | |
| Encke (OEG) | E | 2044-05-19T01:36:17.047 | | 25.28 | -23.25 | 133744.89 | 21.74 | | |
| A (OER) | E | 2044-05-19T01:38:36.321 | | 25.08 | -23.06 | 136774.40 | 21.77 | | |
| F ring | E | 2044-05-19T01:41:25.562 | | 24.83 | -22.83 | 140461.00 | 21.80 | | |

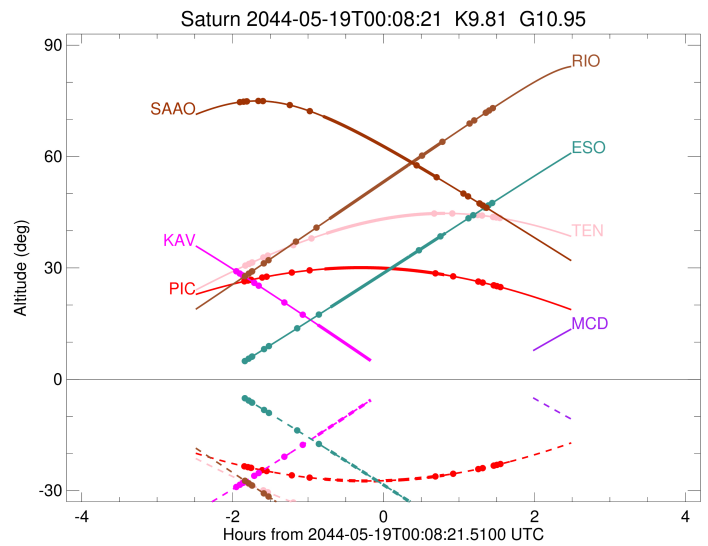
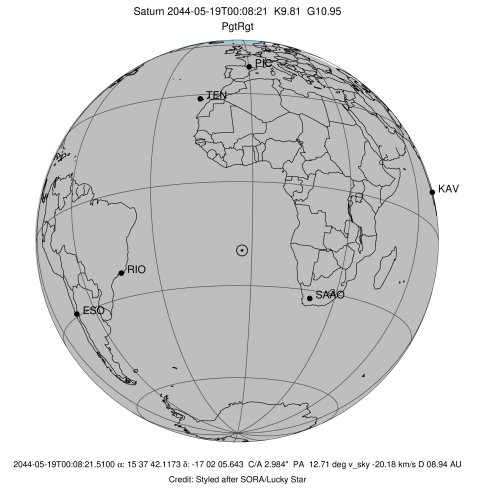
target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2044-05-19T00:10:08.820
 Event type : PgtRgt
 : Saturn occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 6261454120140877568
 2Mass ID (if available) : 15374216-1702051
 ICRS Star Coord at Epoch: 15h 37m 42.11732s -17:02:05.64295s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.807
 G magnitude : 10.950
 RP magnitude : 10.540
 BP magnitude : 11.199
 DUPflag : 0
 Distance (au) : 8.936
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.18
 Sun-Target sep (deg) : 177.01
 Sun-Moon sep (deg) : 79.58
 B (ring opening deg) : 23.34
 PA of pole (deg) : 1.69
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.345
 C/A sky separation (km) : 15196.3
 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

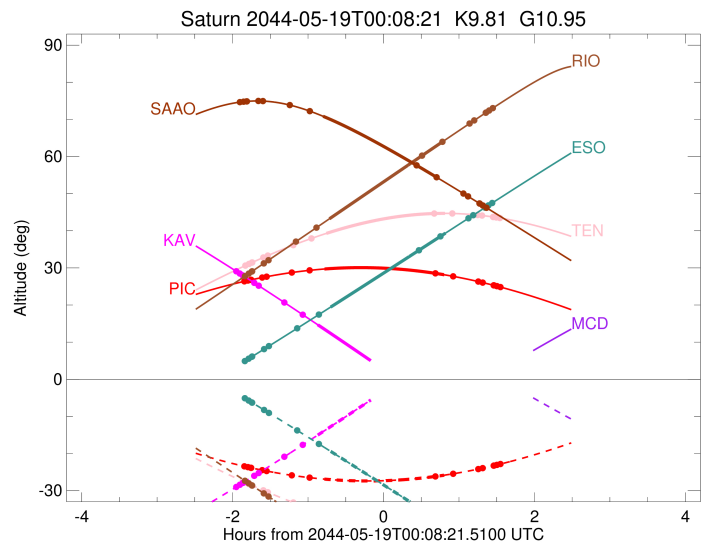
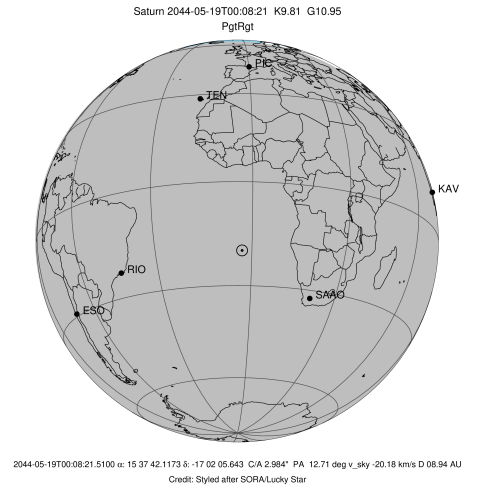
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|-------------|-----|-------------------------|----|-------|---------|-----------|--------|---------|--------------|
| F ring | I | 2044-05-18T22:18:32.386 | | 30.62 | -27.79 | 140461.00 | -21.56 | | |
| A (OER) | I | 2044-05-18T22:21:23.556 | | 31.07 | -28.23 | 136774.40 | -21.52 | | |
| Encke (OEG) | I | 2044-05-18T22:23:44.439 | | 31.43 | -28.58 | 133744.89 | -21.49 | | |
| Encke (IEG) | I | 2044-05-18T22:23:59.406 | | 31.47 | -28.62 | 133423.31 | -21.48 | | |
| A (IER) | I | 2044-05-18T22:32:50.487 | | 32.80 | -29.93 | 122050.38 | -21.34 | | |
| B (OER) | I | 2044-05-18T22:36:20.746 | | 33.32 | -30.43 | 117571.16 | -21.27 | | |
| B (IER) | I | 2044-05-18T22:56:40.158 | | 36.13 | -33.20 | 91984.69 | -20.61 | | |
| C (IER) | I | 2044-05-18T23:11:06.425 | | 37.94 | -34.99 | 74490.58 | -19.67 | | |
| Saturn | I | 2044-05-18T23:22:52.156 | | 39.29 | -36.32 | 60263.78 | | -3.60 | -4.42 |
| Saturn | E | 2044-05-19T00:57:14.364 | | 44.69 | -41.98 | 60102.30 | | -23.19 | -27.68 |
| C (IER) | E | 2044-05-19T00:48:43.017 | b | 44.65 | -41.89 | 74490.58 | 19.73 | | |
| B (IER) | E | 2044-05-19T01:03:05.988 | | 44.66 | -42.00 | 91984.69 | 20.71 | | |
| B (OER) | E | 2044-05-19T01:23:18.246 | | 44.23 | -41.73 | 117571.17 | 21.41 | | |
| A (IER) | E | 2044-05-19T01:26:47.030 | | 44.11 | -41.64 | 122050.38 | 21.49 | | |
| Encke (IEG) | E | 2044-05-19T01:35:34.099 | | 43.72 | -41.33 | 133423.31 | 21.66 | | |
| Encke (OEG) | E | 2044-05-19T01:35:48.947 | | 43.71 | -41.32 | 133744.89 | 21.66 | | |
| A (OER) | E | 2044-05-19T01:38:08.696 | | 43.59 | -41.22 | 136774.40 | 21.70 | | |
| F ring | E | 2044-05-19T01:40:58.450 | | 43.43 | -41.10 | 140461.00 | 21.74 | | |

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2044-05-19T00:03:35.410
 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 : 6261454120140877568
 2Mass ID (if available) : 15374216-1702051
 ICRS Star Coord at Epoch: 15h 37m 42.11732s -17:02:05.64295s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.807
 G magnitude : 10.950
 RP magnitude : 10.540
 BP magnitude : 11.199
 DUPflag : 0
 Distance (au) : 8.936
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.18
 Sun-Target sep (deg) : 177.01
 Sun-Moon sep (deg) : 78.79
 B (ring opening deg) : 23.34
 PA of pole (deg) : 1.69
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 2.542
 C/A sky separation (km) : 16471.6
 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



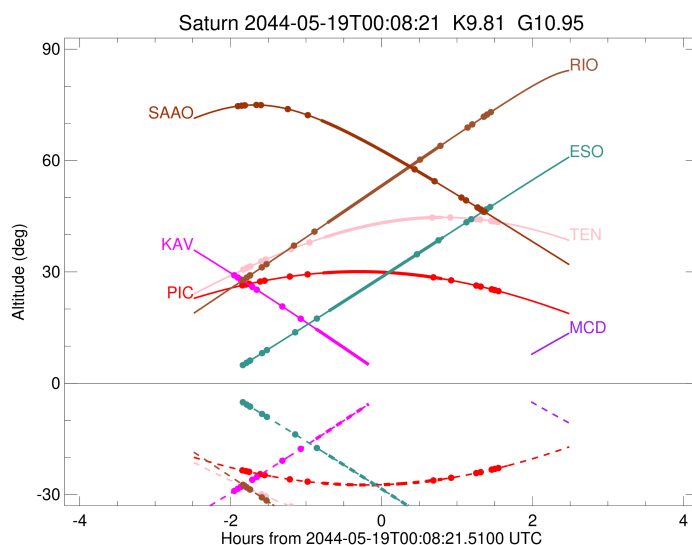
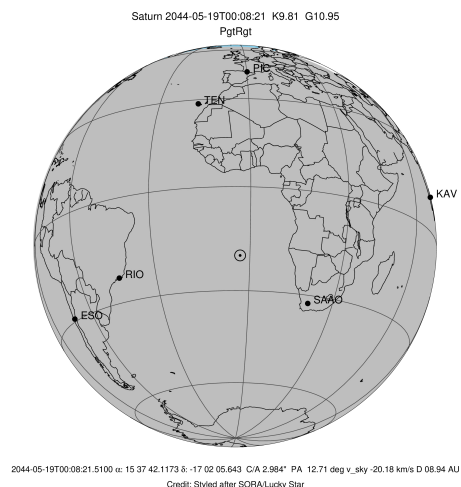
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|-------------|-----|-------------------------|----|---------|---------|-----------|--------|---------|--------------|
| F ring | I | 2044-05-18T22:11:18.881 | | 29.09 | -29.01 | 140461.00 | -21.62 | | |
| A (OER) | I | 2044-05-18T22:14:09.607 | | 28.47 | -28.42 | 136774.40 | -21.57 | | |
| Encke (OEG) | I | 2044-05-18T22:16:30.207 | | 27.97 | -27.93 | 133744.89 | -21.53 | | |
| Encke (IEG) | I | 2044-05-18T22:16:45.148 | | 27.91 | -27.87 | 133423.31 | -21.52 | | |
| A (IER) | I | 2044-05-18T22:25:35.913 | | 25.98 | -26.01 | 122050.38 | -21.33 | | |
| B (OER) | I | 2044-05-18T22:29:06.395 | | 25.21 | -25.26 | 117571.16 | -21.23 | | |
| B (IER) | I | 2044-05-18T22:49:32.182 | | 20.68 | -20.87 | 91984.69 | -20.42 | | |
| C (IER) | I | 2044-05-18T23:04:11.138 | | 17.39 | -17.67 | 74490.58 | -19.27 | | |
| Saturn | I | 2044-05-18T23:16:02.832 | | 14.70 | -15.05 | 60262.31 | | -4.18 | -5.13 |
| Saturn | E | 2044-05-19T00:51:11.363 | | -7.36x | 6.54x | 60078.58 | | -24.91 | -29.60 |
| C (IER) | E | 2044-05-19T00:39:57.156 | b | -4.72x | 3.95x | 74490.58 | 19.10 | | |
| B (IER) | E | 2044-05-19T00:54:44.295 | | -8.20x | 7.36x | 91984.69 | 20.22 | | |
| B (OER) | E | 2044-05-19T01:15:23.556 | | -13.07x | 12.14x | 117571.16 | 20.98 | | |
| A (IER) | E | 2044-05-19T01:18:56.658 | | -13.91x | 12.96x | 122050.38 | 21.06 | | |
| Encke (IEG) | E | 2044-05-19T01:27:54.456 | | -16.03x | 15.05x | 133423.31 | 21.23 | | |
| Encke (OEG) | E | 2044-05-19T01:28:09.604 | | -16.09x | 15.11x | 133744.89 | 21.23 | | |
| A (OER) | E | 2044-05-19T01:30:32.173 | | -16.65x | 15.66x | 136774.40 | 21.27 | | |
| F ring | E | 2044-05-19T01:33:25.349 | | -17.34x | 16.33x | 140461.00 | 21.31 | | |

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2044-05-19T00:11:14.100
 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 : 6261454120140877568
 2Mass ID (if available) : 15374216-1702051
 ICRS Star Coord at Epoch: 15h 37m 42.11732s -17:02:05.64295s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.807
 G magnitude : 10.950
 RP magnitude : 10.540
 BP magnitude : 11.199
 DUPflag : 0
 Distance (au) : 8.936
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.18
 Sun-Target sep (deg) : 177.01
 Sun-Moon sep (deg) : 79.70
 B (ring opening deg) : 23.34
 PA of pole (deg) : 1.69
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.255
 C/A sky separation (km) : 21094.2
 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



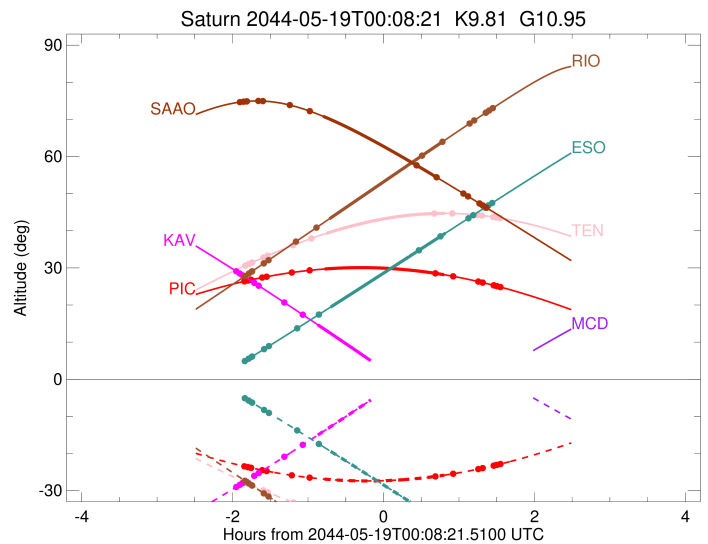
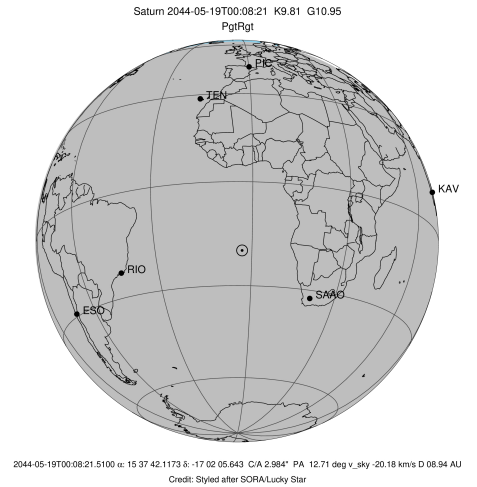
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|-------------|-----|-------------------------|----|-------|---------|-----------|--------|---------|--------------|
| F ring | I | 2044-05-18T22:18:14.020 | | 27.78 | -27.35 | 140461.00 | -20.70 | | |
| A (OER) | I | 2044-05-18T22:21:12.417 | | 28.46 | -28.02 | 136774.40 | -20.63 | | |
| Encke (OEG) | I | 2044-05-18T22:23:39.513 | | 29.03 | -28.58 | 133744.89 | -20.56 | | |
| Encke (IEG) | I | 2044-05-18T22:23:55.155 | | 29.09 | -28.64 | 133423.31 | -20.55 | | |
| A (IER) | I | 2044-05-18T22:33:12.324 | | 31.22 | -30.74 | 122050.38 | -20.25 | | |
| B (OER) | I | 2044-05-18T22:36:54.249 | | 32.06 | -31.58 | 117571.16 | -20.11 | | |
| B (IER) | I | 2044-05-18T22:58:45.287 | | 37.09 | -36.55 | 91984.69 | -18.75 | | |
| C (IER) | I | 2044-05-18T23:15:06.034 | | 40.86 | -40.29 | 74490.58 | -16.70 | | |
| Saturn | I | 2044-05-18T23:25:16.999 | | 43.21 | -42.62 | 60241.26 | | -9.09 | -11.11 |
| Saturn | E | 2044-05-19T00:56:52.477 | | 64.35 | -63.69 | 60026.68 | | -28.40 | -33.46 |
| C (IER) | E | 2044-05-19T00:38:59.893 | b | 60.24 | -59.57 | 74490.58 | 16.73 | | |
| B (IER) | E | 2044-05-19T00:55:16.063 | b | 63.98 | -63.32 | 91984.69 | 18.88 | | |
| B (OER) | E | 2044-05-19T01:16:55.325 | | 68.92 | -68.31 | 117571.17 | 20.33 | | |
| A (IER) | E | 2044-05-19T01:20:34.790 | | 69.75 | -69.15 | 122050.38 | 20.49 | | |
| Encke (IEG) | E | 2044-05-19T01:29:45.247 | | 71.81 | -71.26 | 133423.31 | 20.82 | | |
| Encke (OEG) | E | 2044-05-19T01:30:00.690 | | 71.87 | -71.32 | 133744.89 | 20.83 | | |
| A (OER) | E | 2044-05-19T01:32:25.887 | | 72.41 | -71.87 | 136774.40 | 20.90 | | |
| F ring | E | 2044-05-19T01:35:21.912 | | 73.06 | -72.55 | 140461.00 | 20.98 | | |

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2044-05-19T00:12:10.050
 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 : 6261454120140877568
 2Mass ID (if available) : 15374216-1702051
 ICRS Star Coord at Epoch: 15h 37m 42.11732s -17:02:05.64295s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.807
 G magnitude : 10.950
 RP magnitude : 10.540
 BP magnitude : 11.199
 DUPflag : 0
 Distance (au) : 8.936
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.18
 Sun-Target sep (deg) : 177.01
 Sun-Moon sep (deg) : 79.44
 B (ring opening deg) : 23.34
 PA of pole (deg) : 1.69
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.497
 C/A sky separation (km) : 22661.3
 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 | 2044-05-18T22:18:07.865 | | 4.90x | -5.11 | 140461.00 | -20.30 | | |
| A (OER) | I | 2044-05-18T22:21:09.832 | | 5.54 | -5.74 | 136774.40 | -20.22 | | |
| Encke (OEG) | I | 2044-05-18T22:23:39.974 | | 6.07 | -6.25 | 133744.89 | -20.14 | | |
| Encke (IEG) | I | 2044-05-18T22:23:55.945 | | 6.12 | -6.31 | 133423.31 | -20.13 | | |
| A (IER) | I | 2044-05-18T22:33:25.661 | | 8.12 | -8.27 | 122050.38 | -19.78 | | |
| B (OER) | I | 2044-05-18T22:37:13.096 | | 8.93 | -9.06 | 117571.16 | -19.61 | | |
| B (IER) | I | 2044-05-18T22:59:46.208 | | 13.73 | -13.78 | 91984.69 | -18.01 | | |
| C (IER) | I | 2044-05-18T23:17:00.505 | | 17.43 | -17.43 | 74490.58 | -15.55 | | |
| Saturn | I | 2044-05-18T23:26:18.865 | | 19.44 | -19.41 | 60232.24 | | -10.52 | -12.85 |
| Saturn | E | 2044-05-19T00:57:39.087 | | 39.37 | -39.17 | 60004.13 | | -29.84 | -35.02 |
| C (IER) | E | 2044-05-19T00:36:31.414 | b | 34.74 | -34.56 | 74490.58 | 15.57 | | |
| B (IER) | E | 2044-05-19T00:53:41.280 | b | 38.50 | -38.30 | 91984.69 | 18.14 | | |
| B (OER) | E | 2044-05-19T01:16:01.601 | | 43.40 | -43.18 | 117571.16 | 19.84 | | |
| A (IER) | E | 2044-05-19T01:19:46.340 | | 44.21 | -44.00 | 122050.38 | 20.02 | | |
| Encke (IEG) | E | 2044-05-19T01:29:08.699 | | 46.26 | -46.05 | 133423.31 | 20.41 | | |
| Encke (OEG) | E | 2044-05-19T01:29:24.452 | | 46.32 | -46.10 | 133744.89 | 20.42 | | |
| A (OER) | E | 2044-05-19T01:31:52.511 | | 46.86 | -46.64 | 136774.40 | 20.50 | | |
| F ring | E | 2044-05-19T01:34:51.878 | | 47.51 | -47.30 | 140461.00 | 20.60 | | |

target : Saturn
 target radius (km) : 60268.00
 C/A epoch : 2044-05-19T00:06:14.890
 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 : 6261454120140877568
 2Mass ID (if available) : 15374216-1702051
 ICRS Star Coord at Epoch: 15h 37m 42.11732s -17:02:05.64295s
 RUWE (>1.4 is poor) : 0.90
 K magnitude : 9.807
 G magnitude : 10.950
 RP magnitude : 10.540
 BP magnitude : 11.199
 DUPflag : 0
 Distance (au) : 8.936
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.18
 Sun-Target sep (deg) : 177.01
 Sun-Moon sep (deg) : 79.63
 B (ring opening deg) : 23.34
 PA of pole (deg) : 1.69
 Pole direction: RA (deg): 40.60000
 Dec (deg): 83.50000
 C/A sky separation (") : 3.180
 C/A sky separation (km) : 20610.3
 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 | 2044-05-18T22:14:11.320 | | 74.66 | -76.93 | 140461.00 | -21.10 | | |
| A (OER) | I | 2044-05-18T22:17:06.366 | | 74.78 | -77.13 | 136774.40 | -21.02 | | |
| Encke (OEG) | I | 2044-05-18T22:19:30.688 | | 74.85 | -77.27 | 133744.89 | -20.96 | | |
| Encke (IEG) | I | 2044-05-18T22:19:46.034 | | 74.86 | -77.28 | 133423.31 | -20.95 | | |
| A (IER) | I | 2044-05-18T22:28:52.553 | | 74.97 | -77.61 | 122050.38 | -20.65 | | |
| B (OER) | I | 2044-05-18T22:32:30.152 | | 74.94 | -77.64 | 117571.16 | -20.51 | | |
| B (IER) | I | 2044-05-18T22:53:53.574 | | 73.86 | -76.81 | 91984.69 | -19.20 | | |
| C (IER) | I | 2044-05-18T23:09:48.141 | | 72.22 | -75.18 | 74490.58 | -17.25 | | |
| Saturn | I | 2044-05-18T23:20:21.226 | | 70.84 | -73.76 | 60245.35 | | -8.36 | -10.23 |
| Saturn | E | 2044-05-19T00:52:01.043 | | 54.13 | -56.65 | 60028.55 | | -28.28 | -33.33 |
| C (IER) | E | 2044-05-19T00:34:40.173 | b | 57.63 | -60.20 | 74490.58 | 17.18 | | |
| B (IER) | E | 2044-05-19T00:50:37.042 | b | 54.41 | -56.94 | 91984.69 | 19.17 | | |
| B (OER) | E | 2044-05-19T01:12:01.546 | | 50.01 | -52.50 | 117571.16 | 20.50 | | |
| A (IER) | E | 2044-05-19T01:15:39.250 | | 49.25 | -51.75 | 122050.38 | 20.65 | | |
| Encke (IEG) | E | 2044-05-19T01:24:45.986 | | 47.35 | -49.84 | 133423.31 | 20.94 | | |
| Encke (OEG) | E | 2044-05-19T01:25:01.337 | | 47.30 | -49.78 | 133744.89 | 20.95 | | |
| A (OER) | E | 2044-05-19T01:27:25.708 | | 46.79 | -49.28 | 136774.40 | 21.02 | | |
| F ring | E | 2044-05-19T01:30:20.809 | | 46.18 | -48.66 | 140461.00 | 21.09 | | |