

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-30T15:16:32.100
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425387601412594304
 2Mass ID (if available) : 06093020+2341514

ICRS Star Coord at Epoch: 06h 09m 30.20293s +23:41:51.00924s

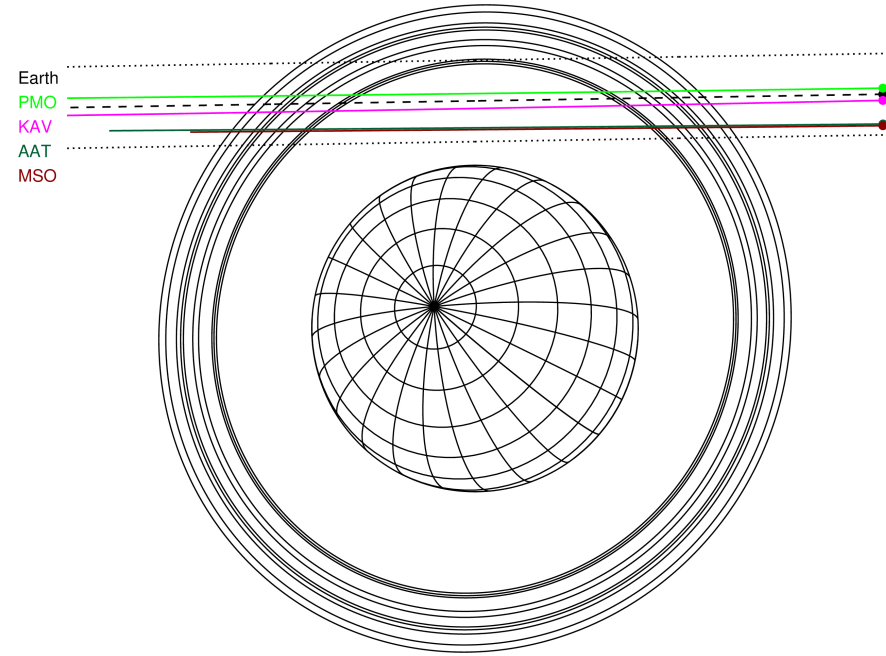
RUWE (>1.4 is poor) : 0.94
 K magnitude : 14.841
 G magnitude : 17.139
 RP magnitude : 16.352
 BP magnitude : 17.727
 DUPflag : 0
 Distance (au) : 18.163
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.03
 Sun-Target sep (deg) : 141.85
 Sun-Moon sep (deg) : 10.62
 B (ring opening deg) : 73.45
 PA of pole (deg) : 61.74

| # | a(km) | ring |
|----|---------|---------|
| 1 | 41837.2 | 6 |
| 2 | 42235.0 | 5 |
| 3 | 42571.2 | 4 |
| 4 | 44718.5 | alpha |
| 5 | 45661.1 | beta |
| 6 | 47176.1 | eta |
| 7 | 47626.3 | gamma |
| 8 | 48300.3 | delta |
| 9 | 50026.7 | lambda |
| 10 | 51149.4 | epsilon |



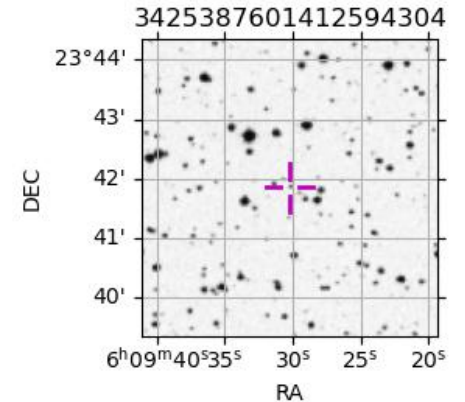
2034-01-30T15:16:32.1000 ex: 06 09 30.20293 s: +23 41 51.009 C/A 2.712" PA 180.94 deg v_sky -17.03 km/s D 18.16 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2034-01-30T15:16:32 K14.84 G17.14 XRgt

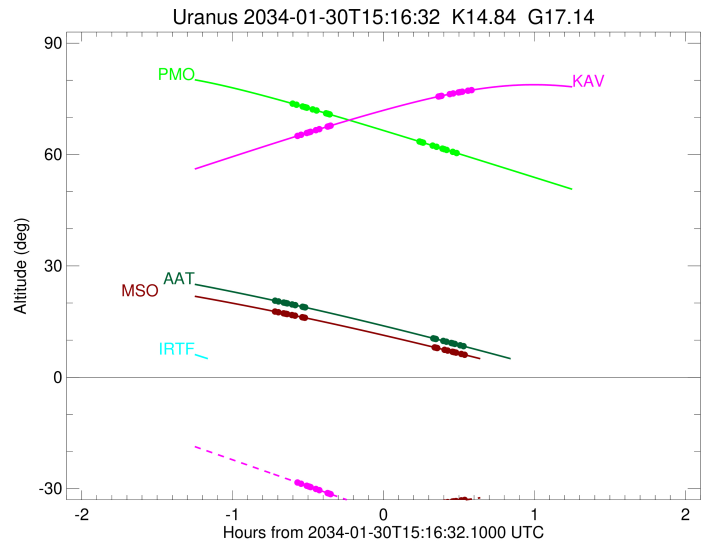
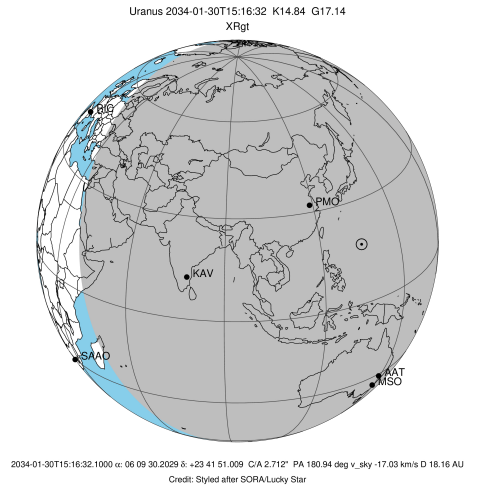


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

| 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 (200") | 33.4 | 243.1 | | | | | PnnRnn |
| PMO | Purple Mtn Obs. Nanki | 32.1 | 118.8 | +++++ | | +++++ | JAN 30 14:40 - JAN 30 15:45 | PnnRie |
| KPNO | Kitt Peak Natl Obs | 32.0 | 248.4 | | | | | PnnRnn |
| MCD | McDonald Obs. 2.7m | 30.7 | 256.0 | | | | | PnnRnn |
| TEN | Teide Obs./Tenerife | 28.3 | 343.5 | | | | | PnnRnn |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | | | | | PnnRnn |
| KAV | Kavalur Observatory | 12.6 | 78.8 | +++++ | | +++++ | JAN 30 14:42 - JAN 30 15:51 | PnnRie |
| RIO | Rio de Janeiro | -22.9 | 316.8 | | | | | PnnRnn |
| ESO | European Southern Obs | -29.3 | 289.3 | | | | | PnnRnn |
| AAT | Siding Spring (AAT) | -31.3 | 149.1 | +++++ | | +++++ | JAN 30 14:33 - JAN 30 15:47 | PnnRie |
| SAAO | So. Afr. Astro. Obs. | -32.4 | 20.8 | | | | | PnnRnn |
| MSO | Mt. Stromlo Observato | -35.3 | 149.0 | +++++ | | +++++ | JAN 30 14:33 - JAN 30 15:48 | PnnRie |



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-30T15:14:13.080
 Event type : XRgt
 : No Uranus occs
 : 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 : 3425387601412594304
 2Mass ID (if available) : 06093020+2341514
 ICRS Star Coord at Epoch: 06h 09m 30.20293s +23:41:51.00924s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 14.841
 G magnitude : 17.139
 RP magnitude : 16.352
 BP magnitude : 17.727
 DUPflag : 0
 Distance (au) : 18.163
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.03
 Sun-Target sep (deg) : 141.85
 Sun-Moon sep (deg) : 11.17
 B (ring opening deg) : 73.45
 PA of pole (deg) : 61.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.793
 C/A sky separation (km) : 36786.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



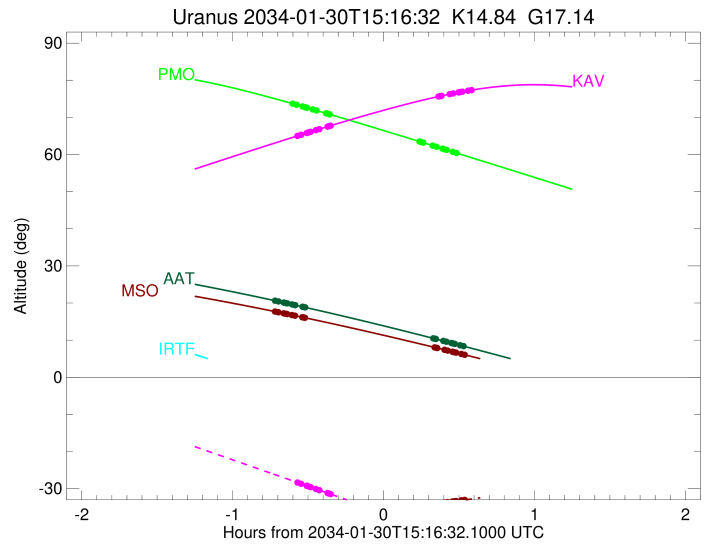
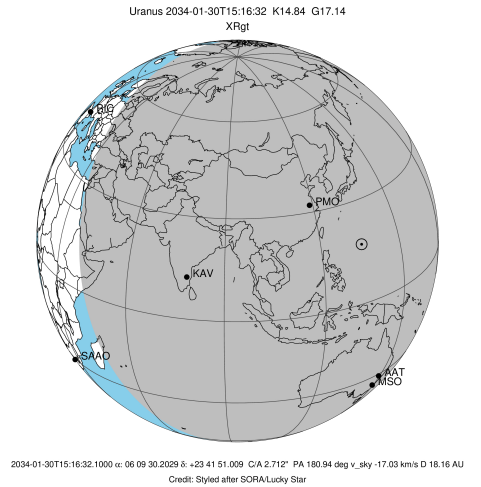
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-30T14:40:40.548 | | 73.66 | -63.75 | 50969.87 | -12.23 | | |
| lambda | I | 2034-01-30T14:41:57.902 | | 73.41 | -63.99 | 50026.71 | -12.06 | | |
| delta | I | 2034-01-30T14:44:24.395 | | 72.94 | -64.45 | 48300.35 | -11.50 | | |
| gamma | I | 2034-01-30T14:45:23.326 | | 72.75 | -64.63 | 47629.49 | -11.26 | | |
| eta | I | 2034-01-30T14:46:03.884 | | 72.62 | -64.76 | 47176.12 | -11.09 | | |
| beta | I | 2034-01-30T14:48:23.913 | | 72.16 | -65.19 | 45666.28 | -10.47 | | |
| alpha | I | 2034-01-30T14:49:59.398 | | 71.85 | -65.48 | 44688.65 | -10.00 | | |
| 4 | I | 2034-01-30T14:53:47.229 | | 71.10 | -66.17 | 42547.66 | -8.75 | | |
| 5 | I | 2034-01-30T14:54:14.105 | | 71.01 | -66.25 | 42314.40 | -8.62 | | |
| 6 | I | 2034-01-30T14:55:15.383 | | 70.80 | -66.43 | 41797.82 | -8.25 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-30T15:30:48.044 | | 63.51 | -72.10 | 41827.26 | 8.23 | | |
| 5 | E | 2034-01-30T15:31:42.502 | | 63.32 | -72.22 | 42287.93 | 8.60 | | |
| 4 | E | 2034-01-30T15:32:08.811 | | 63.23 | -72.28 | 42525.93 | 8.73 | | |
| alpha | E | 2034-01-30T15:36:03.764 | | 62.41 | -72.78 | 44721.87 | 9.98 | | |
| beta | E | 2034-01-30T15:37:37.511 | | 62.08 | -72.97 | 45681.18 | 10.44 | | |
| eta | E | 2034-01-30T15:39:56.488 | | 61.60 | -73.25 | 47176.12 | 11.06 | | |
| gamma | E | 2034-01-30T15:40:36.576 | | 61.45 | -73.32 | 47622.85 | 11.23 | | |
| delta | E | 2034-01-30T15:41:36.278 | | 61.25 | -73.44 | 48300.35 | 11.47 | | |
| lambda | E | 2034-01-30T15:44:03.246 | | 60.73 | -73.70 | 50026.71 | 12.02 | | |
| epsilon | E | 2034-01-30T15:45:04.749 | | 60.51 | -73.81 | 50772.34 | 12.19 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-30T15:18:07.120
 Event type : XRgt
 : No Uranus occs
 : 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 : 3425387601412594304
 2Mass ID (if available) : 06093020+2341514
 ICRS Star Coord at Epoch: 06h 09m 30.20293s +23:41:51.00924s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 14.841
 G magnitude : 17.139
 RP magnitude : 16.352
 BP magnitude : 17.727
 DUPflag : 0
 Distance (au) : 18.163
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.03
 Sun-Target sep (deg) : 141.85
 Sun-Moon sep (deg) : 10.49
 B (ring opening deg) : 73.45
 PA of pole (deg) : 61.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.615
 C/A sky separation (km) : 34449.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

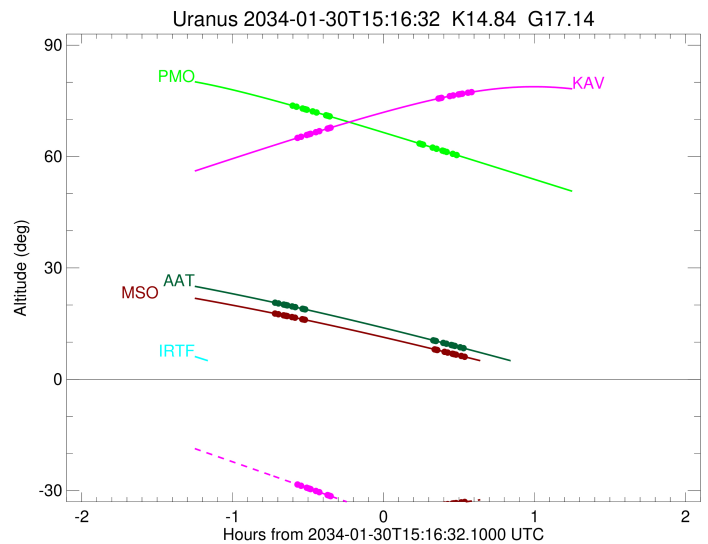
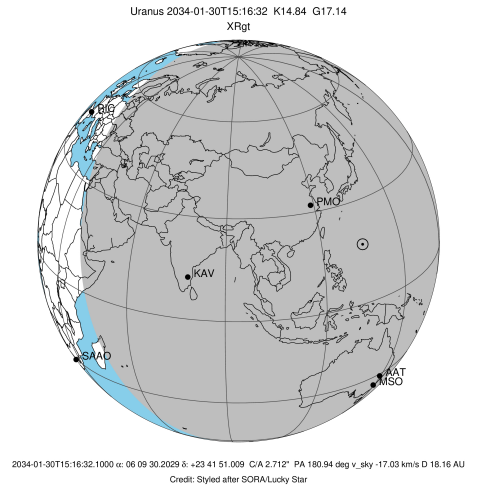


| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-30T14:42:33.819 | | 65.07 | -28.40 | 50991.68 | -13.10 | | |
| lambda | I | 2034-01-30T14:43:47.618 | | 65.33 | -28.69 | 50026.71 | -12.96 | | |
| delta | I | 2034-01-30T14:46:03.114 | | 65.80 | -29.23 | 48300.35 | -12.51 | | |
| gamma | I | 2034-01-30T14:46:57.120 | | 65.99 | -29.45 | 47629.77 | -12.32 | | |
| eta | I | 2034-01-30T14:47:34.149 | | 66.12 | -29.59 | 47176.12 | -12.18 | | |
| beta | I | 2034-01-30T14:49:40.782 | | 66.56 | -30.09 | 45664.76 | -11.69 | | |
| alpha | I | 2034-01-30T14:51:05.679 | | 66.86 | -30.43 | 44687.43 | -11.32 | | |
| 4 | I | 2034-01-30T14:54:22.310 | | 67.54 | -31.21 | 42551.55 | -10.37 | | |
| 5 | I | 2034-01-30T14:54:45.601 | | 67.62 | -31.30 | 42312.84 | -10.27 | | |
| 6 | I | 2034-01-30T14:55:36.578 | | 67.79 | -31.50 | 41796.38 | -10.00 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-30T15:38:22.330 | | 75.62 | -41.68 | 41832.14 | 10.01 | | |
| 5 | E | 2034-01-30T15:39:06.317 | | 75.73 | -41.86 | 42280.86 | 10.28 | | |
| 4 | E | 2034-01-30T15:39:29.137 | | 75.79 | -41.95 | 42526.16 | 10.38 | | |
| alpha | E | 2034-01-30T15:42:52.110 | | 76.27 | -42.75 | 44725.04 | 11.33 | | |
| beta | E | 2034-01-30T15:44:14.938 | | 76.46 | -43.08 | 45681.23 | 11.70 | | |
| eta | E | 2034-01-30T15:46:20.030 | | 76.73 | -43.58 | 47176.12 | 12.19 | | |
| gamma | E | 2034-01-30T15:46:56.436 | | 76.81 | -43.72 | 47622.54 | 12.33 | | |
| delta | E | 2034-01-30T15:47:50.975 | | 76.92 | -43.94 | 48300.35 | 12.53 | | |
| lambda | E | 2034-01-30T15:50:06.328 | | 77.19 | -44.48 | 50026.71 | 12.98 | | |
| epsilon | E | 2034-01-30T15:51:04.285 | | 77.30 | -44.71 | 50783.99 | 13.11 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-30T15:11:53.330
 Event type : XRgt
 : No Uranus occs
 : 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 : 3425387601412594304
 2Mass ID (if available) : 06093020+2341514
 ICRS Star Coord at Epoch: 06h 09m 30.20293s +23:41:51.00924s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 14.841
 G magnitude : 17.139
 RP magnitude : 16.352
 BP magnitude : 17.727
 DUPflag : 0
 Distance (au) : 18.163
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.03
 Sun-Target sep (deg) : 141.85
 Sun-Moon sep (deg) : 10.98
 B (ring opening deg) : 73.45
 PA of pole (deg) : 61.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.386
 C/A sky separation (km) : 31426.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



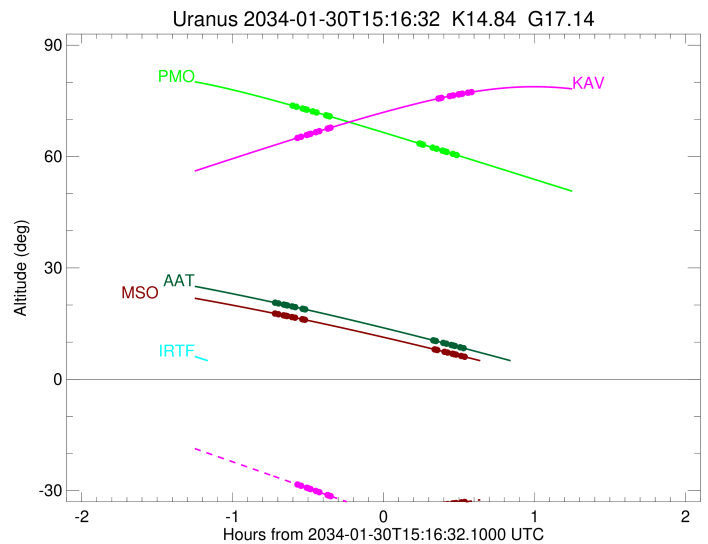
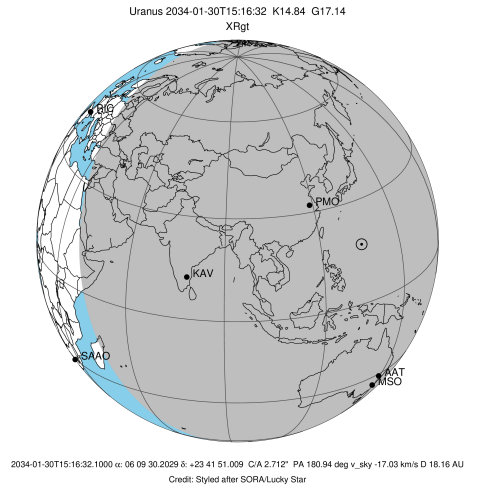
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-30T14:33:35.776 | | 20.60 | -41.20 | 51025.74 | -13.94 | | |
| lambda | I | 2034-01-30T14:34:47.489 | | 20.43 | -41.18 | 50026.71 | -13.84 | | |
| delta | I | 2034-01-30T14:36:53.782 | | 20.11 | -41.13 | 48300.35 | -13.49 | | |
| gamma | I | 2034-01-30T14:37:43.721 | | 19.99 | -41.11 | 47630.15 | -13.35 | | |
| eta | I | 2034-01-30T14:38:17.874 | | 19.91 | -41.10 | 47176.12 | -13.24 | | |
| beta | I | 2034-01-30T14:40:13.821 | | 19.62 | -41.05 | 45662.61 | -12.87 | | |
| alpha | I | 2034-01-30T14:41:30.423 | | 19.42 | -41.01 | 44686.10 | -12.60 | | |
| 4 | I | 2034-01-30T14:44:24.073 | | 18.98 | -40.93 | 42556.82 | -11.90 | | |
| 5 | I | 2034-01-30T14:44:45.175 | | 18.93 | -40.91 | 42309.73 | -11.84 | | |
| 6 | I | 2034-01-30T14:45:29.029 | | 18.82 | -40.89 | 41795.21 | -11.64 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-30T15:36:18.682 | | 10.49 | -37.78 | 41836.89 | 11.59 | | |
| 5 | E | 2034-01-30T15:36:55.829 | | 10.38 | -37.73 | 42273.47 | 11.78 | | |
| 4 | E | 2034-01-30T15:37:16.537 | | 10.32 | -37.70 | 42526.90 | 11.84 | | |
| alpha | E | 2034-01-30T15:40:17.671 | | 9.80 | -37.42 | 44728.12 | 12.53 | | |
| beta | E | 2034-01-30T15:41:32.738 | | 9.58 | -37.31 | 45681.12 | 12.80 | | |
| eta | E | 2034-01-30T15:43:27.926 | | 9.24 | -37.13 | 47176.12 | 13.16 | | |
| gamma | E | 2034-01-30T15:44:01.698 | | 9.14 | -37.08 | 47622.24 | 13.25 | | |
| delta | E | 2034-01-30T15:44:52.555 | | 8.99 | -37.00 | 48300.35 | 13.41 | | |
| lambda | E | 2034-01-30T15:46:59.698 | | 8.62 | -36.79 | 50026.71 | 13.74 | | |
| epsilon | E | 2034-01-30T15:47:55.484 | | 8.45 | -36.70 | 50797.33 | 13.84 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-30T15:12:05.500
 Event type : XRgt
 : No Uranus occs
 : 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 : 3425387601412594304
 2Mass ID (if available) : 06093020+2341514
 ICRS Star Coord at Epoch: 06h 09m 30.20293s +23:41:51.00924s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 14.841
 G magnitude : 17.139
 RP magnitude : 16.352
 BP magnitude : 17.727
 DUPflag : 0
 Distance (au) : 18.163
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.03
 Sun-Target sep (deg) : 141.85
 Sun-Moon sep (deg) : 10.93
 B (ring opening deg) : 73.45
 PA of pole (deg) : 61.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.364
 C/A sky separation (km) : 31137.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-30T14:33:33.850 | | 17.68 | -37.19 | 51028.44 | -14.01 | | |
| lambda | I | 2034-01-30T14:34:45.384 | | 17.51 | -37.17 | 50026.71 | -13.91 | | |
| delta | I | 2034-01-30T14:36:50.953 | | 17.22 | -37.13 | 48300.35 | -13.58 | | |
| gamma | I | 2034-01-30T14:37:40.574 | | 17.11 | -37.11 | 47630.18 | -13.43 | | |
| eta | I | 2034-01-30T14:38:14.502 | | 17.03 | -37.10 | 47176.12 | -13.33 | | |
| beta | I | 2034-01-30T14:40:09.626 | | 16.76 | -37.06 | 45662.44 | -12.97 | | |
| alpha | I | 2034-01-30T14:41:25.600 | | 16.58 | -37.02 | 44686.02 | -12.70 | | |
| 4 | I | 2034-01-30T14:44:17.566 | | 16.17 | -36.95 | 42557.25 | -12.03 | | |
| 5 | I | 2034-01-30T14:44:38.511 | | 16.12 | -36.94 | 42309.43 | -11.97 | | |
| 6 | I | 2034-01-30T14:45:21.856 | | 16.02 | -36.92 | 41795.14 | -11.78 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|------|--------|----------|-------|--|--|
| 6 | E | 2034-01-30T15:36:51.171 | | 8.05 | -34.06 | 41837.35 | 11.72 | | |
| 5 | E | 2034-01-30T15:37:27.794 | | 7.95 | -34.01 | 42272.72 | 11.91 | | |
| 4 | E | 2034-01-30T15:37:48.356 | | 7.89 | -33.98 | 42527.00 | 11.97 | | |
| alpha | E | 2034-01-30T15:40:47.769 | | 7.40 | -33.74 | 44728.43 | 12.64 | | |
| beta | E | 2034-01-30T15:42:02.189 | | 7.19 | -33.63 | 45681.10 | 12.90 | | |
| eta | E | 2034-01-30T15:43:56.528 | | 6.87 | -33.47 | 47176.12 | 13.25 | | |
| gamma | E | 2034-01-30T15:44:30.067 | | 6.78 | -33.42 | 47622.21 | 13.35 | | |
| delta | E | 2034-01-30T15:45:20.595 | | 6.64 | -33.35 | 48300.35 | 13.49 | | |
| lambda | E | 2034-01-30T15:47:26.981 | | 6.28 | -33.16 | 50026.71 | 13.82 | | |
| epsilon | E | 2034-01-30T15:48:22.576 | | 6.13 | -33.08 | 50798.88 | 13.91 | | |