

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-10T01:53:25.020
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425445085251840896
 2Mass ID (if available) : 06124672+2340507

ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s

RUWE (>1.4 is poor) : 0.93
 K magnitude : 14.988
 G magnitude : 17.216
 RP magnitude : 16.425
 BP magnitude : 17.885
 DUPflag : 0
 Distance (au) : 18.006
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.18
 Sun-Target sep (deg) : 163.52
 Sun-Moon sep (deg) : 79.49
 B (ring opening deg) : 72.80
 PA of pole (deg) : 63.26

a(km) ring

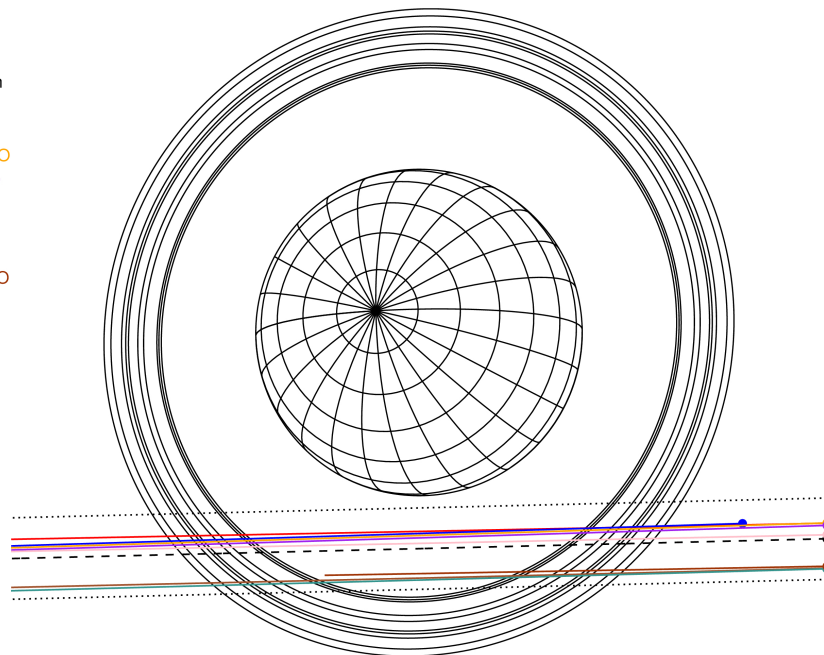
 1 41837.2 6
 2 42235.0 5
 3 42571.2 4
 4 44718.5 alpha
 5 45661.1 beta
 6 47176.1 eta
 7 47626.3 gamma
 8 48300.3 delta
 9 50026.7 lambda
 10 51149.4 epsilon



2034-01-10T01:53:25.0200 α: 06 12 46.7291 δ: +23 40 50.714 C/A 2.584" PA 1.39 deg v_sky -22.18 km/s D 18.01 AU
 Credit: Styled after SORA/Lucky Star

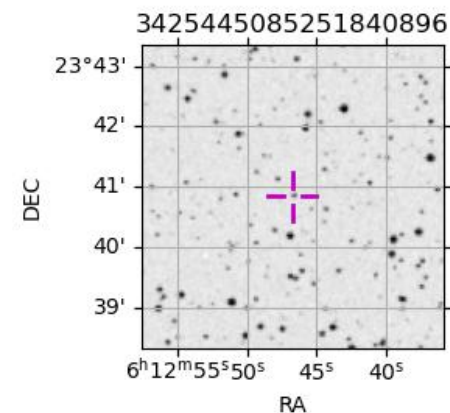
Uranus 2034-01-10T01:53:25 K14.99 G17.22 XRgt

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 RIO
 ESO
 SAAO

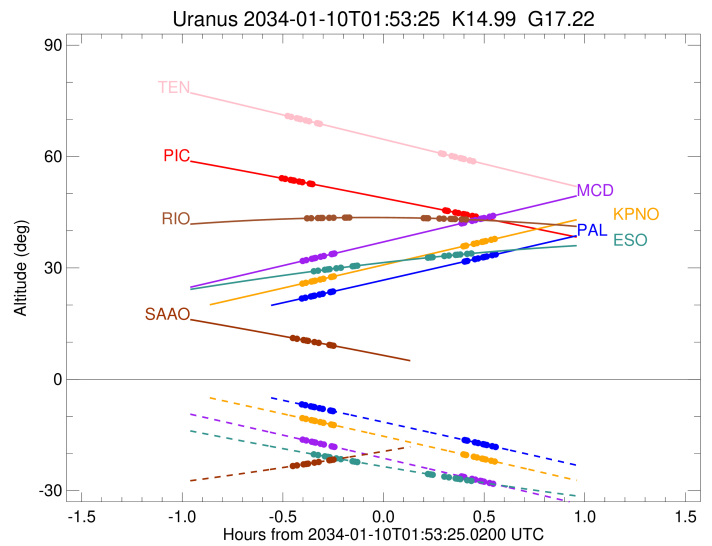
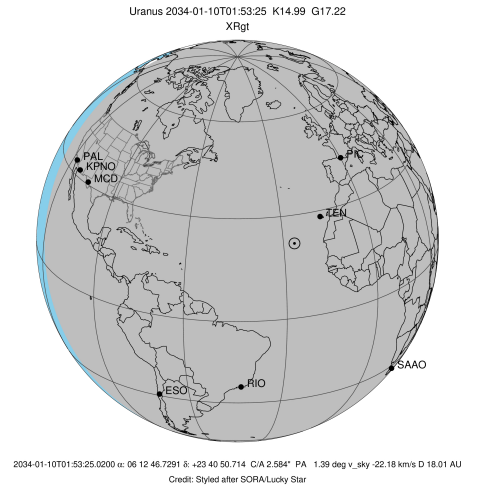


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

| Obs | Location | lat | Elon | Rings I | Planet | Rings E | Observed Events Interval | OEcode |
|------|-----------------------|-------|-------|---------|--------|---------|-----------------------------|--------|
| PIC | Pic du Midi | 42.9 | 0.1 | +++++ | | +++++ | JAN 10 01:22 - JAN 10 02:21 | PnnRie |
| PAL | Palomar Mt (200") | 33.4 | 243.1 | +++++ | | +++++ | JAN 10 01:28 - JAN 10 02:27 | PnnRie |
| PMO | Purple Mtn Obs. Nanki | 32.1 | 118.8 | | | | | PnnRnn |
| KPNO | Kitt Peak Natl Obs | 32.0 | 248.4 | +++++ | | +++++ | JAN 10 01:29 - JAN 10 02:26 | PnnRie |
| MCD | McDonald Obs. 2.7m | 30.7 | 256.0 | +++++ | | +++++ | JAN 10 01:29 - JAN 10 02:26 | PnnRie |
| TEN | Teide Obs./Tenerife | 28.3 | 343.5 | +++++ | | +++++ | JAN 10 01:24 - JAN 10 02:20 | PnnRie |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | | | | | PnnRnn |
| KAV | Kavalur Observatory | 12.6 | 78.8 | | | | | PnnRnn |
| RIO | Rio de Janeiro | -22.9 | 316.8 | +++++ | | +++++ | JAN 10 01:30 - JAN 10 02:18 | PnnRie |
| ESO | European Southern Obs | -29.3 | 289.3 | +++++ | | +++++ | JAN 10 01:32 - JAN 10 02:19 | PnnRie |
| AAT | Siding Spring (AAT) | -31.3 | 149.1 | | | | | PnnRnn |
| SAAO | So. Afr. Astro. Obs. | -32.4 | 20.8 | +++++ | | | JAN 10 01:26 - JAN 10 01:38 | PnnRin |
| MSO | Mt. Stromlo Observato | -35.3 | 149.0 | | | | | PnnRnn |



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-10T01:51:08.460
 Event type : XRgt
 : No Uranus occs
 : 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 : 3425445085251840896
 2Mass ID (if available) : 06124672+2340507
 ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 14.988
 G magnitude : 17.216
 RP magnitude : 16.425
 BP magnitude : 17.885
 DUPflag : 0
 Distance (au) : 18.006
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.18
 Sun-Target sep (deg) : 163.52
 Sun-Moon sep (deg) : 80.09
 B (ring opening deg) : 72.80
 PA of pole (deg) : 63.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.385
 C/A sky separation (km) : 31146.9
 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



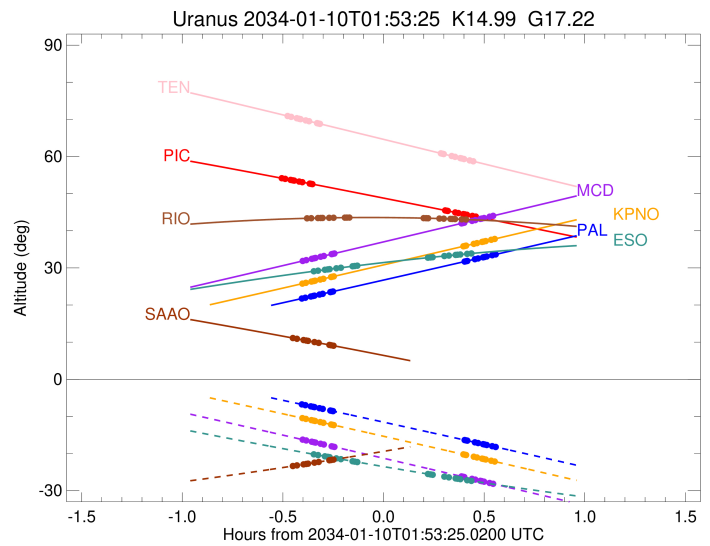
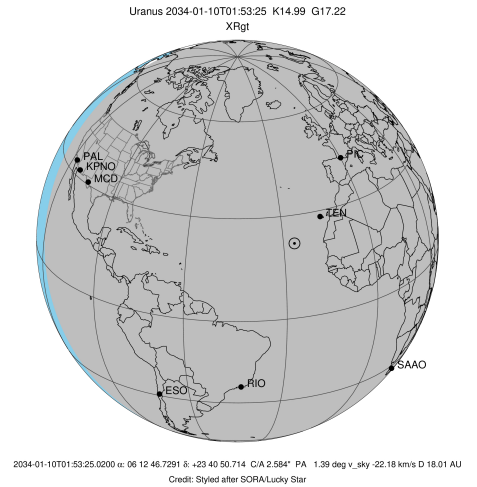
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-10T01:22:54.761 | | 54.19 | -63.85 | 51353.75 | -18.49 | | |
| lambda | I | 2034-01-10T01:24:07.516 | | 53.98 | -63.70 | 50026.71 | -18.09 | | |
| delta | I | 2034-01-10T01:25:44.108 | | 53.70 | -63.49 | 48300.35 | -17.65 | | |
| gamma | I | 2034-01-10T01:26:22.199 | | 53.59 | -63.41 | 47631.56 | -17.46 | | |
| eta | I | 2034-01-10T01:26:48.376 | | 53.51 | -63.36 | 47176.12 | -17.33 | | |
| beta | I | 2034-01-10T01:28:17.731 | | 53.25 | -63.16 | 45647.87 | -16.85 | | |
| alpha | I | 2034-01-10T01:29:15.300 | | 53.09 | -63.03 | 44688.50 | -16.52 | | |
| 4 | I | 2034-01-10T01:31:25.938 | | 52.71 | -62.74 | 42589.40 | -15.69 | | |
| 5 | I | 2034-01-10T01:31:45.279 | | 52.65 | -62.70 | 42271.55 | -15.50 | | |
| 6 | I | 2034-01-10T01:32:15.639 | | 52.56 | -62.63 | 41801.47 | -15.32 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:11:47.648 | | 45.49 | -56.72 | 41855.35 | 15.29 | | |
| 5 | E | 2034-01-10T02:12:07.938 | | 45.43 | -56.67 | 42168.03 | 15.47 | | |
| 4 | E | 2034-01-10T02:12:36.656 | | 45.34 | -56.59 | 42614.21 | 15.66 | | |
| alpha | E | 2034-01-10T02:14:48.631 | | 44.94 | -56.24 | 44734.63 | 16.48 | | |
| beta | E | 2034-01-10T02:15:43.304 | | 44.77 | -56.09 | 45646.76 | 16.81 | | |
| eta | E | 2034-01-10T02:17:12.998 | | 44.50 | -55.84 | 47176.12 | 17.29 | | |
| gamma | E | 2034-01-10T02:17:38.876 | | 44.42 | -55.77 | 47625.23 | 17.42 | | |
| delta | E | 2034-01-10T02:18:17.428 | | 44.31 | -55.67 | 48300.35 | 17.60 | | |
| lambda | E | 2034-01-10T02:19:54.278 | | 44.01 | -55.40 | 50026.71 | 18.04 | | |
| epsilon | E | 2034-01-10T02:21:11.594 | | 43.78 | -55.19 | 51433.66 | 18.43 | | |

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-10T01:57:07.170
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 3425445085251840896
2Mass ID (if available) : 06124672+2340507
ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 14.988
G magnitude          : 17.216
RP magnitude         : 16.425
BP magnitude         : 17.885
DUPflag             : 0
Distance (au)       : 18.006
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -22.18
Sun-Target sep (deg) : 163.52
Sun-Moon sep (deg)  : 80.03
B (ring opening deg) : 72.80
PA of pole (deg)    : 63.26
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.410
C/A sky separation (km) : 31466.7
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



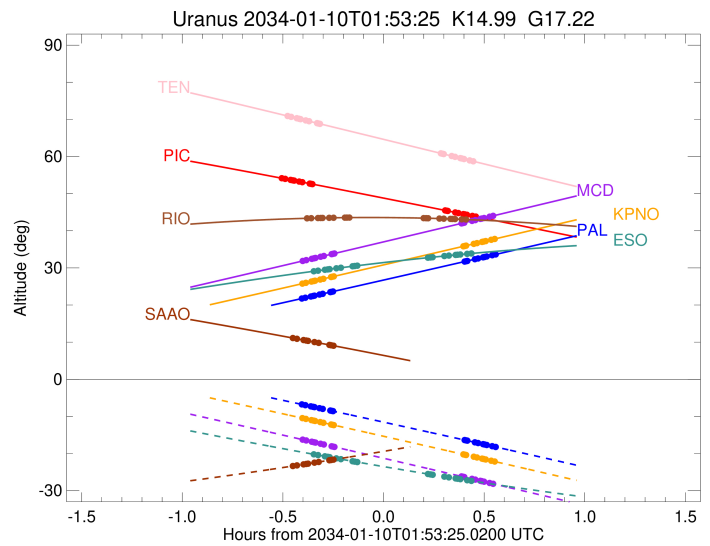
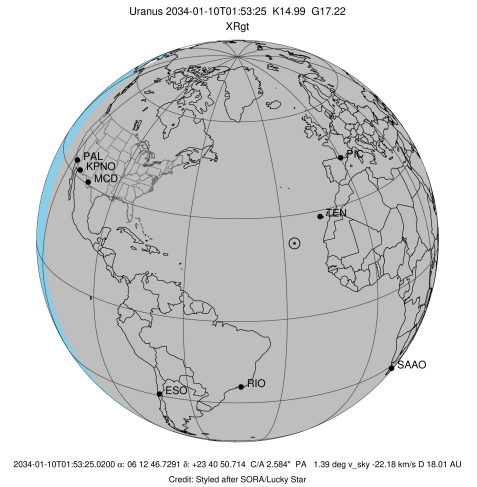
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-10T01:28:53.959 | | 21.72 | -6.74 | 51352.97 | -18.21 | | |
| lambda | I | 2034-01-10T01:30:07.809 | | 21.97 | -6.98 | 50026.71 | -17.80 | | |
| delta | I | 2034-01-10T01:31:45.969 | | 22.30 | -7.29 | 48300.35 | -17.36 | | |
| gamma | I | 2034-01-10T01:32:24.698 | | 22.43 | -7.42 | 47631.56 | -17.17 | | |
| eta | I | 2034-01-10T01:32:51.322 | | 22.52 | -7.51 | 47176.12 | -17.04 | | |
| beta | I | 2034-01-10T01:34:22.255 | | 22.83 | -7.80 | 45647.87 | -16.55 | | |
| alpha | I | 2034-01-10T01:35:20.892 | | 23.03 | -7.99 | 44688.51 | -16.21 | | |
| 4 | I | 2034-01-10T01:37:34.135 | | 23.48 | -8.43 | 42589.45 | -15.37 | | |
| 5 | I | 2034-01-10T01:37:53.899 | | 23.55 | -8.49 | 42271.44 | -15.17 | | |
| 6 | I | 2034-01-10T01:38:24.913 | | 23.65 | -8.59 | 41801.52 | -14.99 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:17:36.261 | | 31.71 | -16.37 | 41854.47 | 15.03 | | |
| 5 | E | 2034-01-10T02:17:57.029 | | 31.78 | -16.44 | 42169.05 | 15.22 | | |
| 4 | E | 2034-01-10T02:18:26.180 | | 31.88 | -16.54 | 42614.52 | 15.41 | | |
| alpha | E | 2034-01-10T02:20:40.034 | | 32.34 | -16.99 | 44733.99 | 16.26 | | |
| beta | E | 2034-01-10T02:21:35.446 | | 32.54 | -17.17 | 45646.47 | 16.60 | | |
| eta | E | 2034-01-10T02:23:06.222 | | 32.85 | -17.48 | 47176.12 | 17.10 | | |
| gamma | E | 2034-01-10T02:23:32.393 | | 32.94 | -17.57 | 47625.33 | 17.23 | | |
| delta | E | 2034-01-10T02:24:11.348 | | 33.07 | -17.70 | 48300.35 | 17.42 | | |
| lambda | E | 2034-01-10T02:25:49.151 | | 33.41 | -18.03 | 50026.71 | 17.87 | | |
| epsilon | E | 2034-01-10T02:27:07.454 | | 33.68 | -18.29 | 51439.12 | 18.28 | | |

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-10T01:57:02.510
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 3425445085251840896
2Mass ID (if available) : 06124672+2340507
ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 14.988
G magnitude          : 17.216
RP magnitude         : 16.425
BP magnitude         : 17.885
DUPflag             : 0
Distance (au)       : 18.006
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -22.18
Sun-Target sep (deg) : 163.52
Sun-Moon sep (deg)  : 80.08
B (ring opening deg) : 72.80
PA of pole (deg)    : 63.26
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.433
C/A sky separation (km) : 31779.1
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```

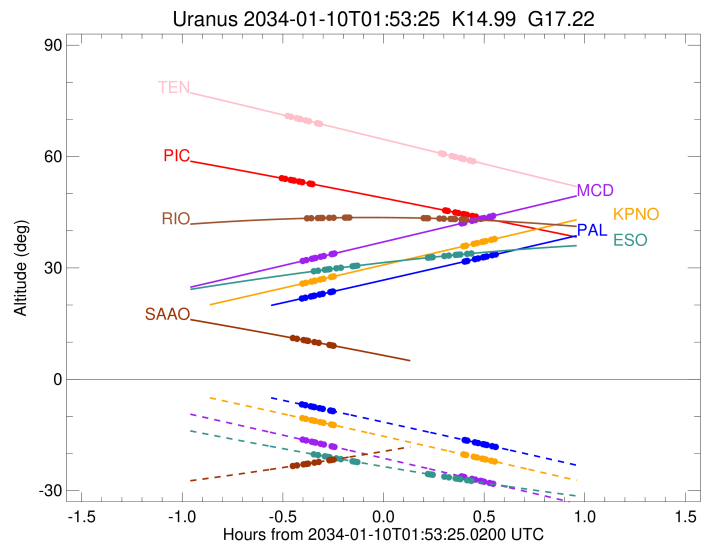
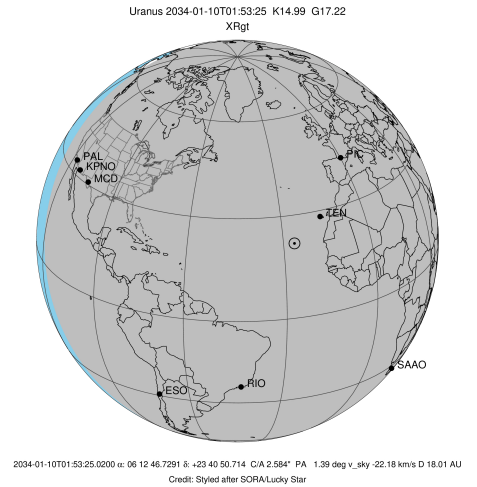


| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-10T01:29:03.197 | | 25.72 | -10.43 | 51355.76 | -18.12 | | |
| lambda | I | 2034-01-10T01:30:17.564 | | 25.98 | -10.68 | 50026.71 | -17.71 | | |
| delta | I | 2034-01-10T01:31:56.277 | | 26.32 | -11.01 | 48300.35 | -17.26 | | |
| gamma | I | 2034-01-10T01:32:35.249 | | 26.46 | -11.14 | 47631.56 | -17.06 | | |
| eta | I | 2034-01-10T01:33:02.050 | | 26.55 | -11.23 | 47176.12 | -16.92 | | |
| beta | I | 2034-01-10T01:34:33.657 | | 26.87 | -11.54 | 45647.73 | -16.42 | | |
| alpha | I | 2034-01-10T01:35:32.766 | | 27.07 | -11.74 | 44688.67 | -16.07 | | |
| 4 | I | 2034-01-10T01:37:47.300 | | 27.54 | -12.19 | 42589.92 | -15.20 | | |
| 5 | I | 2034-01-10T01:38:07.381 | | 27.61 | -12.25 | 42270.61 | -15.00 | | |
| 6 | I | 2034-01-10T01:38:38.694 | | 27.72 | -12.36 | 41801.79 | -14.80 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:17:14.099 | | 35.82 | -20.23 | 41854.02 | 14.84 | | |
| 5 | E | 2034-01-10T02:17:35.186 | | 35.89 | -20.30 | 42169.56 | 15.04 | | |
| 4 | E | 2034-01-10T02:18:04.649 | | 36.00 | -20.40 | 42614.66 | 15.24 | | |
| alpha | E | 2034-01-10T02:20:19.803 | | 36.47 | -20.87 | 44733.69 | 16.12 | | |
| beta | E | 2034-01-10T02:21:15.694 | | 36.67 | -21.06 | 45646.35 | 16.47 | | |
| eta | E | 2034-01-10T02:22:47.152 | | 36.99 | -21.38 | 47176.12 | 16.98 | | |
| gamma | E | 2034-01-10T02:23:13.502 | | 37.08 | -21.47 | 47625.38 | 17.12 | | |
| delta | E | 2034-01-10T02:23:52.703 | | 37.22 | -21.60 | 48300.35 | 17.32 | | |
| lambda | E | 2034-01-10T02:25:31.067 | | 37.57 | -21.94 | 50026.71 | 17.78 | | |
| epsilon | E | 2034-01-10T02:26:49.882 | | 37.85 | -22.21 | 51441.28 | 18.19 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-10T01:56:50.650
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3425445085251840896
 2Mass ID (if available) : 06124672+2340507
 ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 14.988
 G magnitude : 17.216
 RP magnitude : 16.425
 BP magnitude : 17.885
 DUPflag : 0
 Distance (au) : 18.006
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.18
 Sun-Target sep (deg) : 163.52
 Sun-Moon sep (deg) : 80.16
 B (ring opening deg) : 72.80
 PA of pole (deg) : 63.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.462
 C/A sky separation (km) : 32152.7
 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

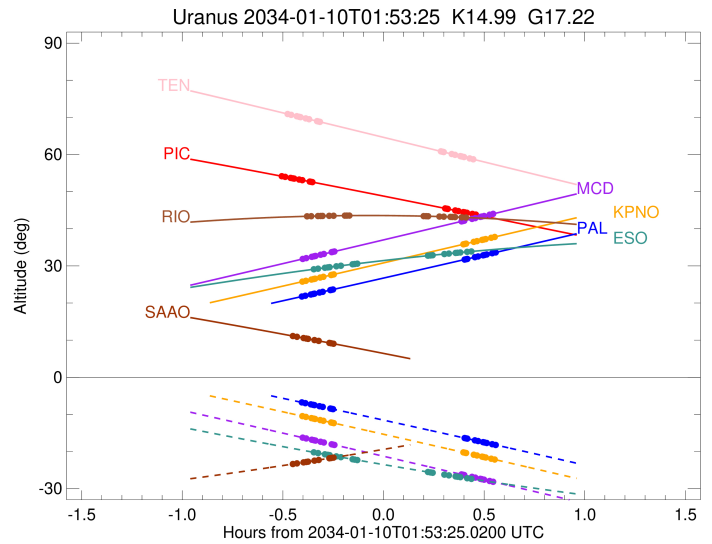
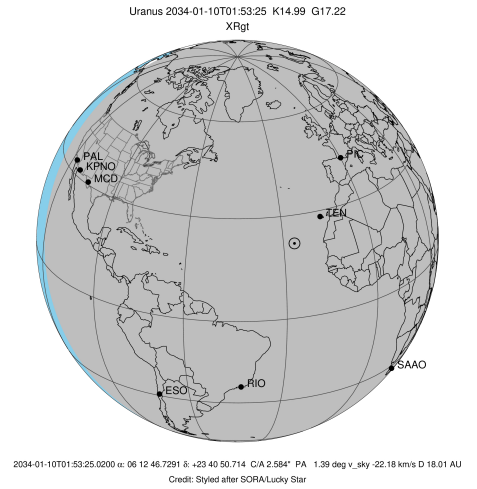


| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-10T01:29:08.591 | | 31.83 | -16.23 | 51359.17 | -18.03 | | |
| lambda | I | 2034-01-10T01:30:23.576 | | 32.10 | -16.49 | 50026.71 | -17.61 | | |
| delta | I | 2034-01-10T01:32:02.944 | | 32.45 | -16.83 | 48300.35 | -17.13 | | |
| gamma | I | 2034-01-10T01:32:42.208 | | 32.59 | -16.96 | 47631.56 | -16.93 | | |
| eta | I | 2034-01-10T01:33:09.219 | | 32.68 | -17.06 | 47176.12 | -16.79 | | |
| beta | I | 2034-01-10T01:34:41.641 | | 33.01 | -17.38 | 45647.54 | -16.26 | | |
| alpha | I | 2034-01-10T01:35:41.322 | | 33.22 | -17.58 | 44688.87 | -15.91 | | |
| 4 | I | 2034-01-10T01:37:57.442 | | 33.70 | -18.05 | 42590.50 | -14.99 | | |
| 5 | I | 2034-01-10T01:38:17.917 | | 33.78 | -18.13 | 42269.58 | -14.79 | | |
| 6 | I | 2034-01-10T01:38:49.601 | | 33.89 | -18.23 | 41802.14 | -14.58 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:16:40.559 | | 41.99 | -26.17 | 41853.48 | 14.62 | | |
| 5 | E | 2034-01-10T02:17:02.043 | | 42.07 | -26.24 | 42170.19 | 14.82 | | |
| 4 | E | 2034-01-10T02:17:31.895 | | 42.18 | -26.35 | 42614.83 | 15.03 | | |
| alpha | E | 2034-01-10T02:19:48.657 | | 42.67 | -26.83 | 44733.33 | 15.95 | | |
| beta | E | 2034-01-10T02:20:45.136 | | 42.87 | -27.03 | 45646.19 | 16.31 | | |
| eta | E | 2034-01-10T02:22:17.425 | | 43.20 | -27.35 | 47176.12 | 16.84 | | |
| gamma | E | 2034-01-10T02:22:43.992 | | 43.30 | -27.45 | 47625.43 | 16.99 | | |
| delta | E | 2034-01-10T02:23:23.493 | | 43.44 | -27.59 | 48300.35 | 17.19 | | |
| lambda | E | 2034-01-10T02:25:02.535 | | 43.79 | -27.94 | 50026.71 | 17.67 | | |
| epsilon | E | 2034-01-10T02:26:21.960 | | 44.08 | -28.22 | 51443.80 | 18.09 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-10T01:51:35.140
 Event type : XRgt
 : No Uranus occs
 : 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 : 3425445085251840896
 2Mass ID (if available) : 06124672+2340507
 ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 14.988
 G magnitude : 17.216
 RP magnitude : 16.425
 BP magnitude : 17.885
 DUPflag : 0
 Distance (au) : 18.006
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.18
 Sun-Target sep (deg) : 163.52
 Sun-Moon sep (deg) : 80.25
 B (ring opening deg) : 72.80
 PA of pole (deg) : 63.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.529
 C/A sky separation (km) : 33022.7
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



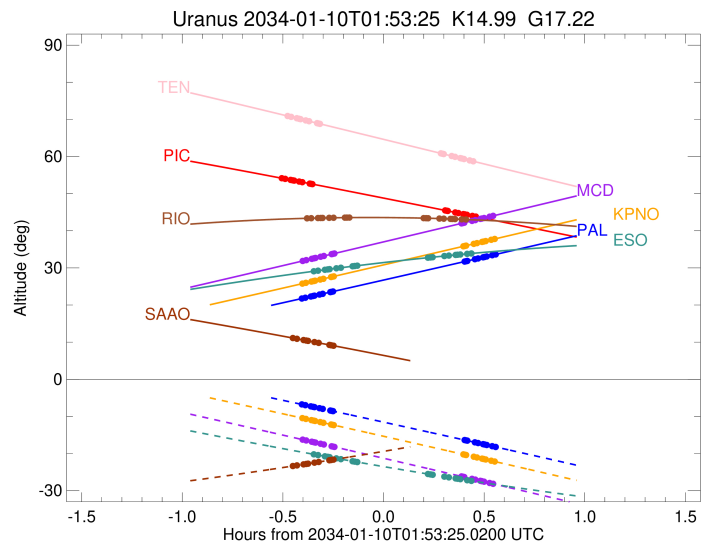
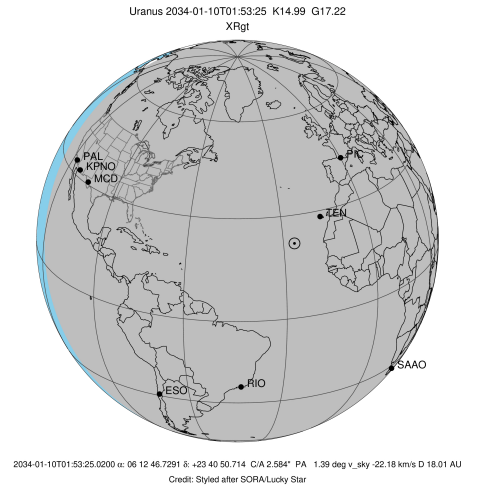
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-10T01:24:38.064 | | 70.96 | -83.32 | 51369.90 | -17.88 | | |
| lambda | I | 2034-01-10T01:25:54.371 | | 70.68 | -83.20 | 50026.71 | -17.42 | | |
| delta | I | 2034-01-10T01:27:34.930 | | 70.31 | -83.04 | 48300.35 | -16.90 | | |
| gamma | I | 2034-01-10T01:28:14.750 | | 70.17 | -82.96 | 47631.54 | -16.68 | | |
| eta | I | 2034-01-10T01:28:42.173 | | 70.07 | -82.91 | 47176.12 | -16.53 | | |
| beta | I | 2034-01-10T01:30:16.253 | | 69.73 | -82.73 | 45647.01 | -15.95 | | |
| alpha | I | 2034-01-10T01:31:17.119 | | 69.50 | -82.61 | 44689.52 | -15.56 | | |
| 4 | I | 2034-01-10T01:33:36.724 | | 68.99 | -82.31 | 42592.18 | -14.55 | | |
| 5 | I | 2034-01-10T01:33:58.195 | | 68.91 | -82.26 | 42266.51 | -14.32 | | |
| 6 | I | 2034-01-10T01:34:30.663 | | 68.80 | -82.18 | 41803.19 | -14.09 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:10:31.398 | | 60.86 | -75.66 | 41852.52 | 14.08 | | |
| 5 | E | 2034-01-10T02:10:53.842 | | 60.77 | -75.58 | 42171.32 | 14.30 | | |
| 4 | E | 2034-01-10T02:11:24.701 | | 60.66 | -75.48 | 42615.10 | 14.53 | | |
| alpha | E | 2034-01-10T02:13:45.568 | | 60.14 | -75.00 | 44732.74 | 15.53 | | |
| beta | E | 2034-01-10T02:14:43.516 | | 59.93 | -74.80 | 45645.95 | 15.92 | | |
| eta | E | 2034-01-10T02:16:17.895 | | 59.58 | -74.47 | 47176.12 | 16.50 | | |
| gamma | E | 2034-01-10T02:16:45.009 | | 59.48 | -74.38 | 47625.52 | 16.65 | | |
| delta | E | 2034-01-10T02:17:25.268 | | 59.33 | -74.24 | 48300.35 | 16.87 | | |
| lambda | E | 2034-01-10T02:19:06.032 | | 58.96 | -73.89 | 50026.71 | 17.38 | | |
| epsilon | E | 2034-01-10T02:20:26.863 | | 58.66 | -73.61 | 51447.27 | 17.84 | | |

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-10T01:53:15.490
Event type           : XRgt
: No Uranus occs
: 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       : 3425445085251840896
2Mass ID (if available) : 06124672+2340507
ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 14.988
G magnitude           : 17.216
RP magnitude          : 16.425
BP magnitude          : 17.885
DUPflag              : 0
Distance (au)         : 18.006
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.18
Sun-Target sep (deg) : 163.52
Sun-Moon sep (deg)   : 80.11
B (ring opening deg) : 72.80
PA of pole (deg)     : 63.26
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.945
C/A sky separation (km) : 38456.3
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```

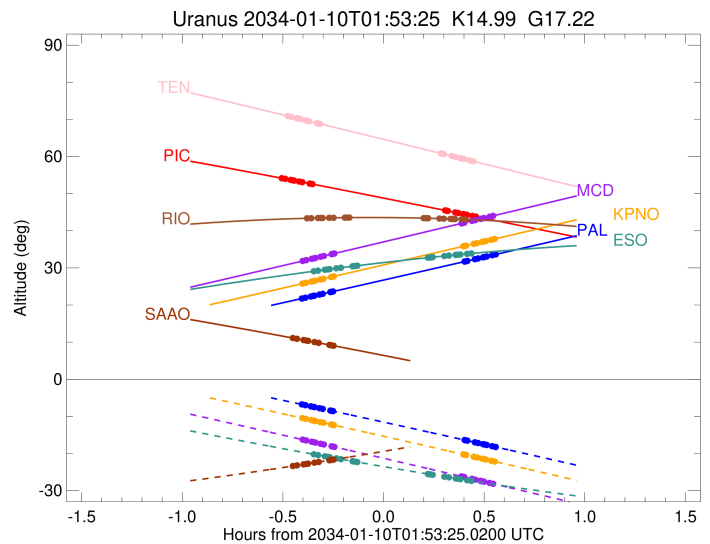
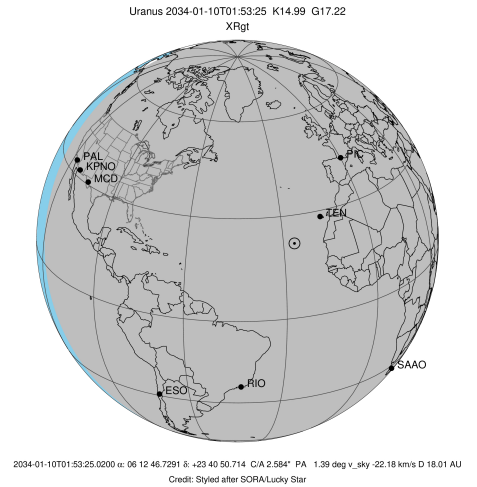


| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-10T01:30:20.859 | | 43.35 | -40.22 | 51417.60 | -15.45 | | |
| lambda | I | 2034-01-10T01:31:53.264 | | 43.39 | -40.38 | 50026.71 | -14.75 | | |
| delta | I | 2034-01-10T01:33:53.632 | | 43.43 | -40.59 | 48300.35 | -13.91 | | |
| gamma | I | 2034-01-10T01:34:42.345 | | 43.44 | -40.67 | 47631.35 | -13.55 | | |
| eta | I | 2034-01-10T01:35:16.272 | | 43.45 | -40.73 | 47176.12 | -13.29 | | |
| beta | I | 2034-01-10T01:37:15.890 | | 43.49 | -40.93 | 45644.51 | -12.29 | | |
| alpha | I | 2034-01-10T01:38:35.701 | | 43.51 | -41.07 | 44693.77 | -11.59 | | |
| 4 | I | 2034-01-10T01:41:53.008 | | 43.54 | -41.39 | 42601.32 | -9.62 | | |
| 5 | I | 2034-01-10T01:42:29.338 | | 43.55 | -41.44 | 42246.89 | -9.16 | | |
| 6 | I | 2034-01-10T01:43:18.039 | | 43.55 | -41.52 | 41811.05 | -8.68 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:05:21.725 | | 43.41 | -43.33 | 41841.33 | 8.68 | | |
| 5 | E | 2034-01-10T02:06:00.407 | | 43.39 | -43.38 | 42186.04 | 9.16 | | |
| 4 | E | 2034-01-10T02:06:46.270 | | 43.37 | -43.43 | 42616.57 | 9.62 | | |
| alpha | E | 2034-01-10T02:10:04.597 | | 43.29 | -43.65 | 44725.87 | 11.58 | | |
| beta | E | 2034-01-10T02:11:21.380 | | 43.26 | -43.73 | 45643.63 | 12.29 | | |
| eta | E | 2034-01-10T02:13:21.161 | | 43.20 | -43.85 | 47176.12 | 13.28 | | |
| gamma | E | 2034-01-10T02:13:54.734 | | 43.18 | -43.89 | 47626.47 | 13.55 | | |
| delta | E | 2034-01-10T02:14:43.817 | | 43.15 | -43.94 | 48300.35 | 13.91 | | |
| lambda | E | 2034-01-10T02:16:44.211 | | 43.09 | -44.05 | 50026.71 | 14.75 | | |
| epsilon | E | 2034-01-10T02:18:21.089 | | 43.03 | -44.14 | 51485.93 | 15.44 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-10T01:55:04.250
 Event type : XRgt
 : No Uranus occs
 : 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 : 3425445085251840896
 2Mass ID (if available) : 06124672+2340507
 ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
 RUWE (>1.4 is poor) : 0.93
 K magnitude : 14.988
 G magnitude : 17.216
 RP magnitude : 16.425
 BP magnitude : 17.885
 DUPflag : 0
 Distance (au) : 18.006
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.18
 Sun-Target sep (deg) : 163.52
 Sun-Moon sep (deg) : 80.02
 B (ring opening deg) : 72.80
 PA of pole (deg) : 63.26
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.968
 C/A sky separation (km) : 38759.1
 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



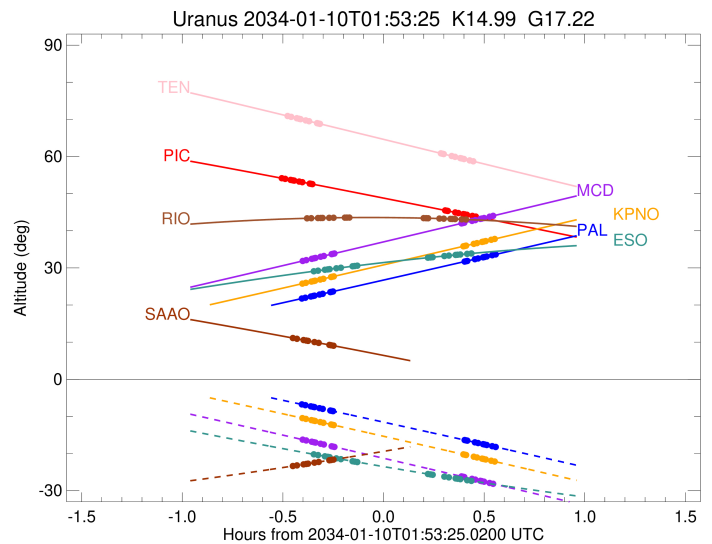
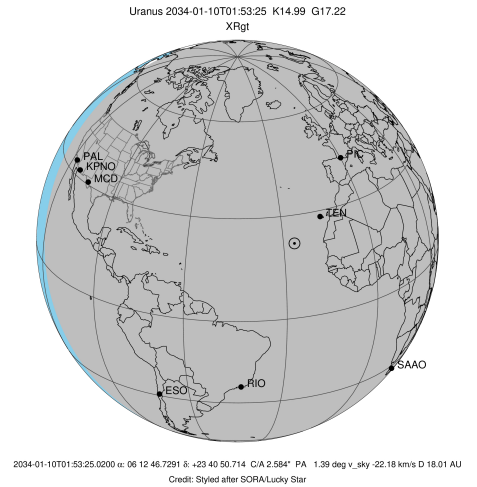
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-01-10T01:32:21.365 | | 29.06 | -20.17 | 51419.44 | -15.23 | | |
| lambda | I | 2034-01-10T01:33:55.297 | | 29.25 | -20.43 | 50026.71 | -14.52 | | |
| delta | I | 2034-01-10T01:35:57.739 | | 29.49 | -20.76 | 48300.35 | -13.66 | | |
| gamma | I | 2034-01-10T01:36:47.388 | | 29.59 | -20.89 | 47631.33 | -13.28 | | |
| eta | I | 2034-01-10T01:37:22.004 | | 29.66 | -20.99 | 47176.12 | -13.01 | | |
| beta | I | 2034-01-10T01:39:24.371 | | 29.89 | -21.31 | 45644.39 | -11.99 | | |
| alpha | I | 2034-01-10T01:40:46.316 | | 30.05 | -21.53 | 44694.03 | -11.26 | | |
| 4 | I | 2034-01-10T01:44:10.749 | | 30.44 | -22.08 | 42601.83 | -9.21 | | |
| 5 | I | 2034-01-10T01:44:49.044 | | 30.51 | -22.18 | 42245.62 | -8.72 | | |
| 6 | I | 2034-01-10T01:45:40.170 | | 30.60 | -22.31 | 41811.64 | -8.20 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:06:38.798 | | 32.75 | -25.51 | 41840.32 | 8.21 | | |
| 5 | E | 2034-01-10T02:07:19.842 | | 32.81 | -25.61 | 42187.48 | 8.73 | | |
| 4 | E | 2034-01-10T02:08:07.690 | | 32.89 | -25.73 | 42616.56 | 9.21 | | |
| alpha | E | 2034-01-10T02:11:32.926 | | 33.20 | -26.23 | 44725.29 | 11.27 | | |
| beta | E | 2034-01-10T02:12:51.741 | | 33.31 | -26.42 | 45643.47 | 12.00 | | |
| eta | E | 2034-01-10T02:14:54.124 | | 33.49 | -26.71 | 47176.12 | 13.03 | | |
| gamma | E | 2034-01-10T02:15:28.339 | | 33.54 | -26.79 | 47626.55 | 13.30 | | |
| delta | E | 2034-01-10T02:16:18.288 | | 33.61 | -26.91 | 48300.35 | 13.68 | | |
| lambda | E | 2034-01-10T02:18:20.573 | | 33.78 | -27.19 | 50026.71 | 14.54 | | |
| epsilon | E | 2034-01-10T02:19:58.948 | | 33.92 | -27.42 | 51488.76 | 15.25 | | |


```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2034-01-10T01:49:52.180
Event type            : XRgt
: No Uranus occs
: 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        : 3425445085251840896
2Mass ID (if available) : 06124672+2340507
ICRS Star Coord at Epoch: 06h 12m 46.72906s +23:40:50.71442s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 14.988
G magnitude           : 17.216
RP magnitude          : 16.425
BP magnitude          : 17.885
DUPflag              : 0
Distance (au)         : 18.006
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -22.18
Sun-Target sep (deg)  : 163.52
Sun-Moon sep (deg)    : 79.46
B (ring opening deg)  : 72.80
PA of pole (deg)      : 63.26
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.891
C/A sky separation (km) : 37759.0
NAIF SPICE kernels    : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_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 | 2034-01-10T01:26:07.259 | | 11.15 | -23.41 | 51413.00 | -15.66 | | |
| lambda | I | 2034-01-10T01:27:37.929 | | 10.90 | -23.20 | 50026.71 | -15.01 | | |
| delta | I | 2034-01-10T01:29:35.937 | | 10.56 | -22.92 | 48300.35 | -14.23 | | |
| gamma | I | 2034-01-10T01:30:23.502 | | 10.43 | -22.81 | 47631.37 | -13.89 | | |
| eta | I | 2034-01-10T01:30:56.557 | | 10.34 | -22.73 | 47176.12 | -13.65 | | |
| beta | I | 2034-01-10T01:32:52.484 | | 10.01 | -22.46 | 45644.77 | -12.73 | | |
| alpha | I | 2034-01-10T01:34:09.282 | | 9.79 | -22.28 | 44693.19 | -12.10 | | |
| 4 | I | 2034-01-10T01:37:15.893 | | 9.25 | -21.83 | 42600.18 | -10.34 | | |
| 5 | I | 2034-01-10T01:37:49.114 | | 9.16 | -21.75 | 42249.69 | -9.94 | | |
| 6 | I | 2034-01-10T01:38:34.181 | | 9.03 | -21.64 | 41809.80 | -9.52 | | |

No planet occultations

| | | | | | | | | |
|---------|---|-------------------------|-------|--------|----------|-------|--|--|
| 6 | E | 2034-01-10T02:03:17.673 | 4.66x | -17.89 | 41843.41 | 9.50 | | |
| 5 | E | 2034-01-10T02:03:52.679 | 4.56x | -17.80 | 42183.13 | 9.92 | | |
| 4 | E | 2034-01-10T02:04:35.547 | 4.43x | -17.69 | 42616.51 | 10.33 | | |
| alpha | E | 2034-01-10T02:07:43.607 | 3.86x | -17.19 | 44727.09 | 12.07 | | |
| beta | E | 2034-01-10T02:08:57.525 | 3.64x | -16.99 | 45643.98 | 12.70 | | |
| eta | E | 2034-01-10T02:10:53.901 | 3.28x | -16.68 | 47176.12 | 13.61 | | |
| gamma | E | 2034-01-10T02:11:26.686 | 3.18x | -16.59 | 47626.31 | 13.85 | | |
| delta | E | 2034-01-10T02:12:14.760 | 3.04x | -16.47 | 48300.35 | 14.19 | | |
| lambda | E | 2034-01-10T02:14:13.146 | 2.68x | -16.15 | 50026.71 | 14.96 | | |
| epsilon | E | 2034-01-10T02:15:48.439 | 2.39x | -15.89 | 51479.85 | 15.61 | | |