

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-07T06:14:50.910
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 52027348334514304
 2Mass ID (if available) : 04082305+2048306

ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s

RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.449
 G magnitude : 17.096
 RP magnitude : 16.300
 BP magnitude : 17.798
 DUPflag : 0
 Distance (au) : 18.498
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.74
 Sun-Target sep (deg) : 160.42
 Sun-Moon sep (deg) : 136.71
 B (ring opening deg) : 74.48
 PA of pole (deg) : -71.22

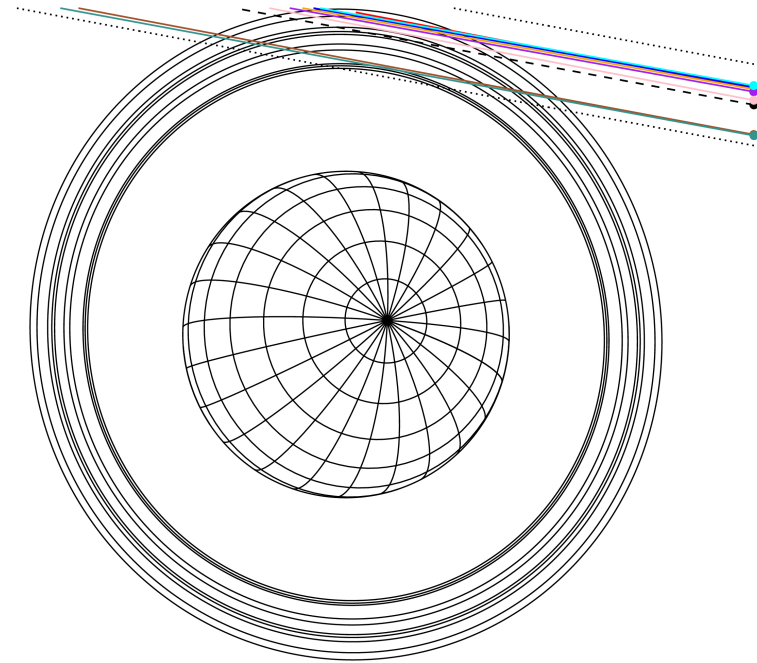
| # | a(km) | ring |
|----|---------|---------|
| 1 | 41837.2 | 6 |
| 2 | 42235.0 | 5 |
| 3 | 42571.2 | 4 |
| 4 | 44718.5 | alpha |
| 5 | 45661.1 | beta |
| 6 | 47176.1 | eta |
| 7 | 47626.3 | gamma |
| 8 | 48300.3 | delta |
| 9 | 50026.7 | lambda |
| 10 | 51149.4 | epsilon |



2026-11-07T06:14:50.9100 ra: 04 08 23.0531 s: +20 48 30.360 C/A 3.512° PA 169.44 deg v_sky -21.74 km/s D 18.50 AU
 Credit: Styled after SORA/Lucky Star

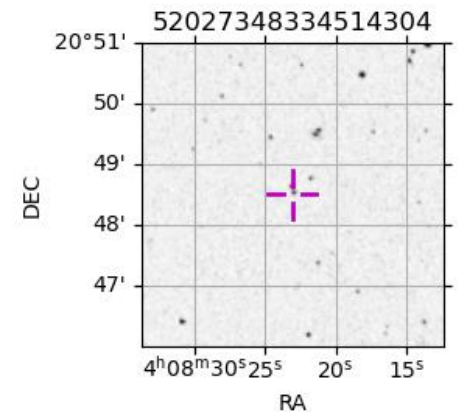
Uranus 2026-11-07T06:14:50 K14.45 G17.10 XRgt

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

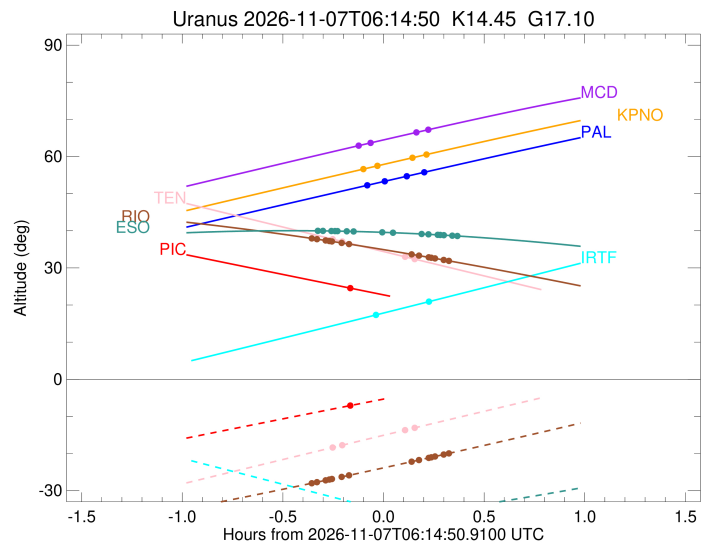
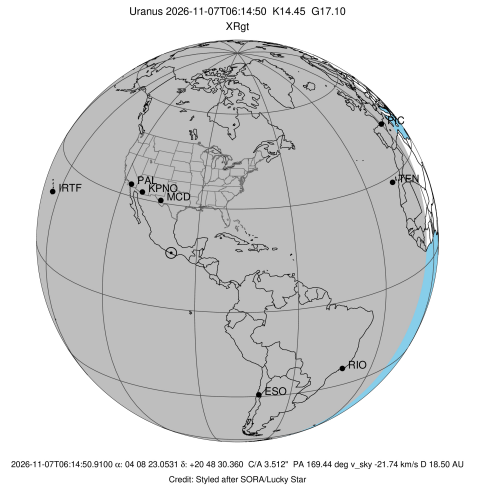


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

| Obs | Location | lat | Elon | Rings I | Planet | Rings E | Observed Events Interval | OEcode |
|------|-----------------------|-------|-------|---------|--------|---------|-----------------------------|--------|
| PIC | Pic du Midi | 42.9 | 0.1 | + | | | NOV 07 06:06 - NOV 07 06:06 | PnnRin |
| PAL | Palomar Mt (200") | 33.4 | 243.1 | ++ | | ++ | NOV 07 06:11 - NOV 07 06:25 | PnnRie |
| PNO | Purple Mtn Obs. Nanki | 32.1 | 118.8 | | | | | PnnRnn |
| KPNO | Kitt Peak Natl Obs | 32.0 | 248.4 | ++ | | ++ | NOV 07 06:09 - NOV 07 06:26 | PnnRie |
| MCD | McDonald Obs. 2.7m | 30.7 | 256.0 | ++ | | ++ | NOV 07 06:08 - NOV 07 06:27 | PnnRie |
| TEN | Teide Obs./Tenerife | 28.3 | 343.5 | ++ | | ++ | NOV 07 06:00 - NOV 07 06:23 | PnnRie |
| IRTF | Mauna Kea/IRTF | 19.8 | 204.5 | + | | + | NOV 07 06:14 - NOV 07 06:26 | PnnRie |
| KAV | Kavalur Observatory | 12.6 | 78.8 | | | | | PnnRnn |
| RIO | Rio de Janeiro | -22.9 | 316.8 | +++++++ | | +++++++ | NOV 07 05:53 - NOV 07 06:33 | PnnRie |
| ESO | European Southern Obs | -29.3 | 289.3 | +++++++ | | +++++++ | NOV 07 05:55 - NOV 07 06:36 | PnnRie |
| AAT | Siding Spring (AAT) | -31.3 | 149.1 | | | | | PnnRnn |
| SAAO | So. Afr. Astro. Obs. | -32.4 | 20.8 | | | | | PnnRnn |
| MSO | Mt. Stromlo Observato | -35.3 | 149.0 | | | | | PnnRnn |



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-07T06:10:43.620
 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 : 52027348334514304
 2Mass ID (if available) : 04082305+2048306
 ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.449
 G magnitude : 17.096
 RP magnitude : 16.300
 BP magnitude : 17.798
 DUPflag : 0
 Distance (au) : 18.498
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.74
 Sun-Target sep (deg) : 160.42
 Sun-Moon sep (deg) : 137.47
 B (ring opening deg) : 74.48
 PA of pole (deg) : -71.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.715
 C/A sky separation (km) : 49837.5
 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

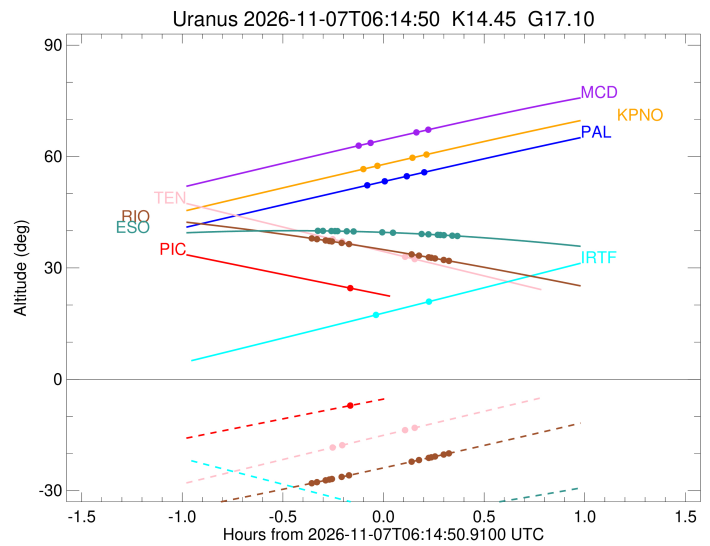
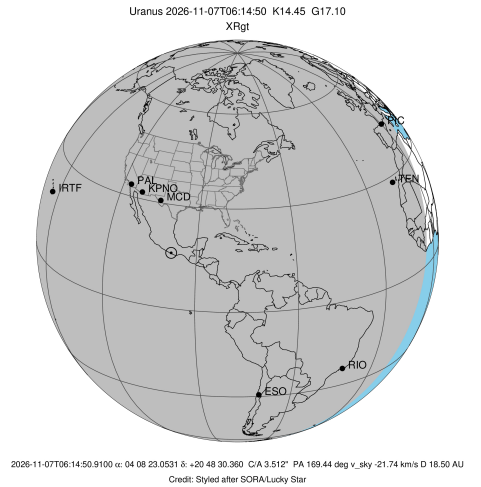


b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|------------------------|-----|-------------------------|----|-------|---------|----------|-------|---------|--------------|
| epsilon | I | 2026-11-07T06:06:40.102 | | 24.23 | -6.78 | 50789.50 | -3.05 | | |
| No planet occultations | | | | | | | | | |
| epsilon | E | 2026-11-07T06:16:58.090 | | 22.35 | -4.97x | 50753.04 | 3.05 | | |

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2026-11-07T06:17:21.010
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       : 52027348334514304
2Mass ID (if available) : 04082305+2048306
ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 14.449
G magnitude           : 17.096
RP magnitude          : 16.300
BP magnitude          : 17.798
DUPflag              : 0
Distance (au)        : 18.498
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -21.74
Sun-Target sep (deg) : 160.42
Sun-Moon sep (deg)   : 136.87
B (ring opening deg) : 74.48
PA of pole (deg)     : -71.22
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.683
C/A sky separation (km) : 49406.3
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.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
  
```

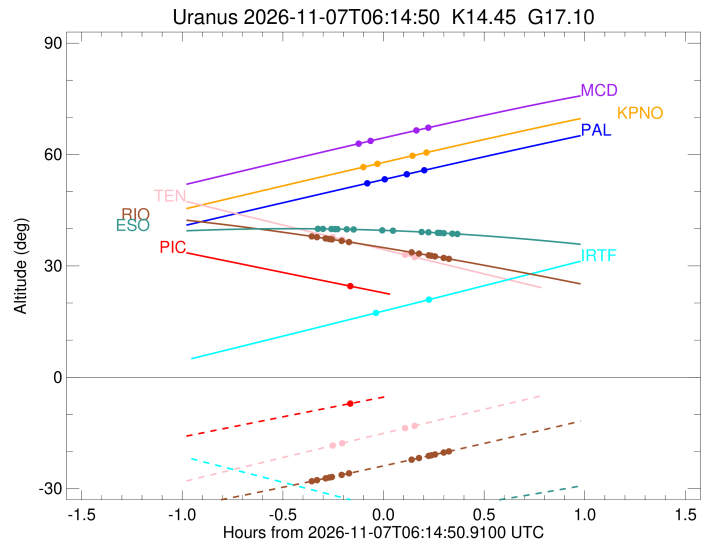
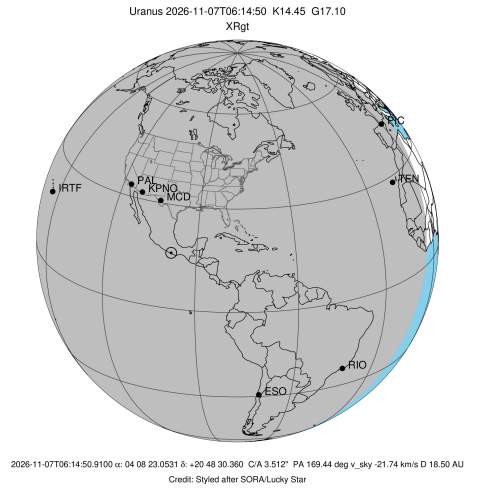


| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|-------|---------|--------------|
| epsilon | I | 2026-11-07T06:11:17.469 | | 52.52 | -65.32 | 50797.34 | -4.29 | | |
| lambda | I | 2026-11-07T06:15:20.363 | | 53.35 | -65.97 | 50026.71 | -1.95 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|------|--|--|
| lambda | E | 2026-11-07T06:21:40.052 | | 54.66 | -66.97 | 50026.71 | 1.95 | | |
| epsilon | E | 2026-11-07T06:25:31.297 | | 55.46 | -67.55 | 50747.72 | 4.29 | | |

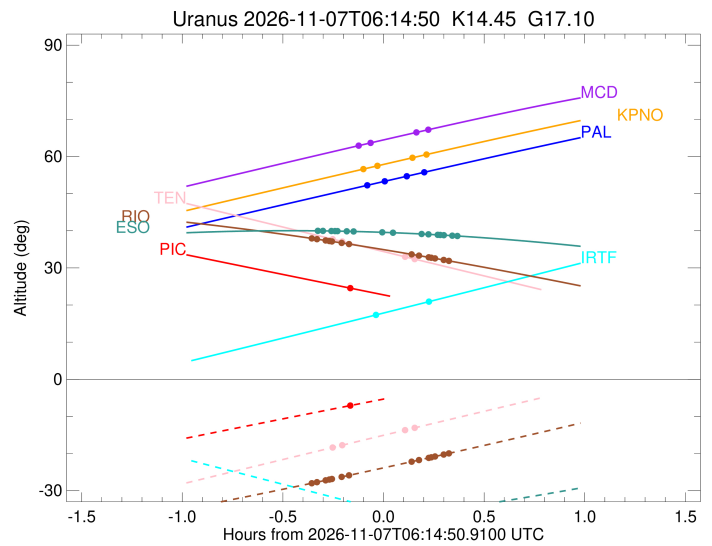
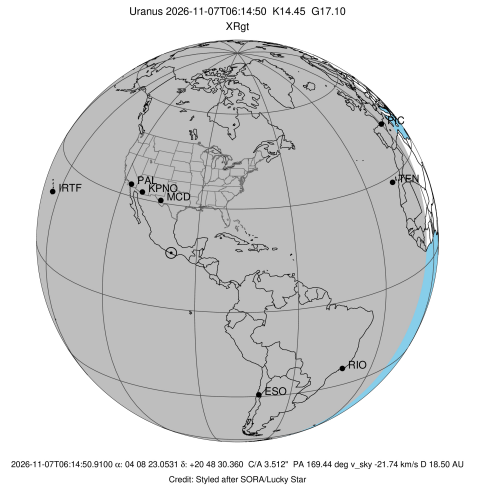
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-07T06:17:06.870
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 52027348334514304
 2Mass ID (if available) : 04082305+2048306
 ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.449
 G magnitude : 17.096
 RP magnitude : 16.300
 BP magnitude : 17.798
 DUPflag : 0
 Distance (au) : 18.498
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.74
 Sun-Target sep (deg) : 160.42
 Sun-Moon sep (deg) : 136.94
 B (ring opening deg) : 74.48
 PA of pole (deg) : -71.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.660
 C/A sky separation (km) : 49100.2
 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 | 2026-11-07T06:09:58.055 | | 56.85 | -69.35 | 50803.41 | -4.95 | | |
| lambda | I | 2026-11-07T06:13:06.620 | | 57.51 | -69.81 | 50026.71 | -3.18 | | |
| No planet occultations | | | | | | | | | |
| lambda | E | 2026-11-07T06:23:24.470 | | 59.65 | -71.23 | 50026.71 | 3.18 | | |
| epsilon | E | 2026-11-07T06:26:21.405 | | 60.26 | -71.60 | 50746.10 | 4.96 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-07T06:16:41.670
 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 : 52027348334514304
 2Mass ID (if available) : 04082305+2048306
 ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.449
 G magnitude : 17.096
 RP magnitude : 16.300
 BP magnitude : 17.798
 DUPflag : 0
 Distance (au) : 18.498
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.74
 Sun-Target sep (deg) : 160.42
 Sun-Moon sep (deg) : 137.03
 B (ring opening deg) : 74.48
 PA of pole (deg) : -71.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.633
 C/A sky separation (km) : 48736.6
 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



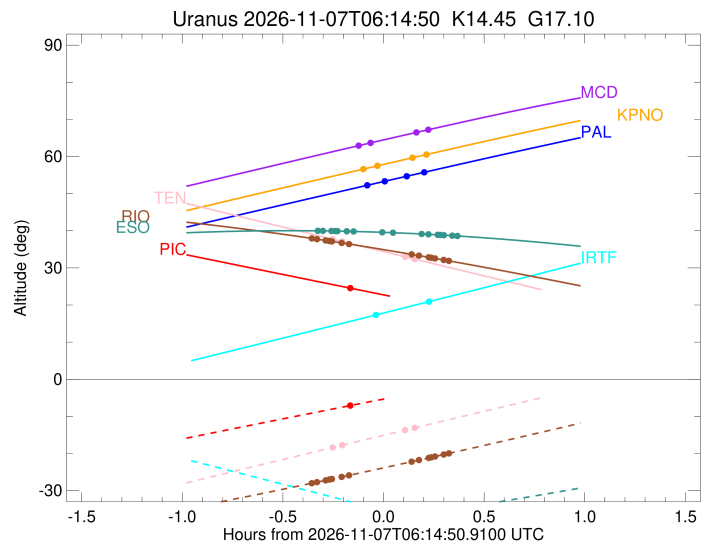
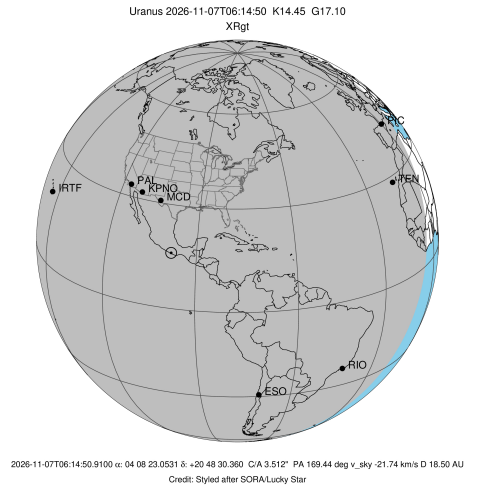
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|-------|---------|--------------|
| epsilon | I | 2026-11-07T06:08:25.869 | | 63.14 | -74.09 | 50810.13 | -5.64 | | |
| lambda | I | 2026-11-07T06:11:03.511 | | 63.69 | -74.35 | 50026.71 | -4.19 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|------|--|--|
| lambda | E | 2026-11-07T06:24:35.983 | | 66.49 | -75.38 | 50026.71 | 4.20 | | |
| epsilon | E | 2026-11-07T06:27:02.019 | | 66.99 | -75.50 | 50744.88 | 5.64 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-07T06:10:46.330
 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 : 52027348334514304
 2Mass ID (if available) : 04082305+2048306
 ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.449
 G magnitude : 17.096
 RP magnitude : 16.300
 BP magnitude : 17.798
 DUPflag : 0
 Distance (au) : 18.498
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.74
 Sun-Target sep (deg) : 160.42
 Sun-Moon sep (deg) : 137.61
 B (ring opening deg) : 74.48
 PA of pole (deg) : -71.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.575
 C/A sky separation (km) : 47961.9
 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_itrf93_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

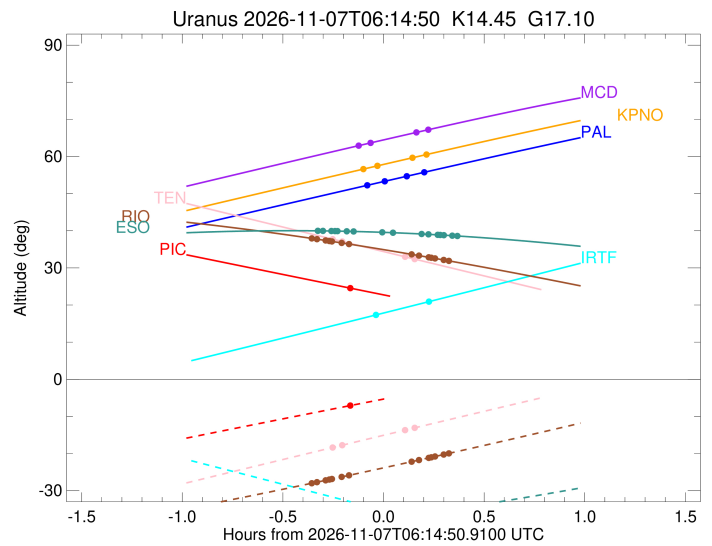
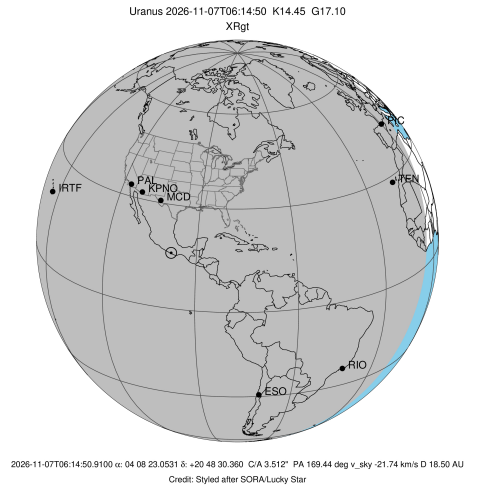
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|-------|---------|--------------|
| epsilon | I | 2026-11-07T06:00:28.726 | | 37.56 | -18.21 | 50825.05 | -6.80 | | |
| lambda | I | 2026-11-07T06:02:35.158 | | 37.10 | -17.76 | 50026.71 | -5.72 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|------|--|--|
| lambda | E | 2026-11-07T06:21:14.431 | | 33.00 | -13.71 | 50026.71 | 5.71 | | |
| epsilon | E | 2026-11-07T06:23:09.139 | | 32.59 | -13.30 | 50743.78 | 6.79 | | |

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2026-11-07T06:19:20.260
Event type           : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code        : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 52027348334514304
2Mass ID (if available) : 04082305+2048306
ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 14.449
G magnitude           : 17.096
RP magnitude          : 16.300
BP magnitude          : 17.798
DUPflag              : 0
Distance (au)         : 18.498
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -21.74
Sun-Target sep (deg) : 160.42
Sun-Moon sep (deg)   : 136.30
B (ring opening deg) : 74.48
PA of pole (deg)     : -71.22
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.698
C/A sky separation (km) : 49610.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.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
  
```



```

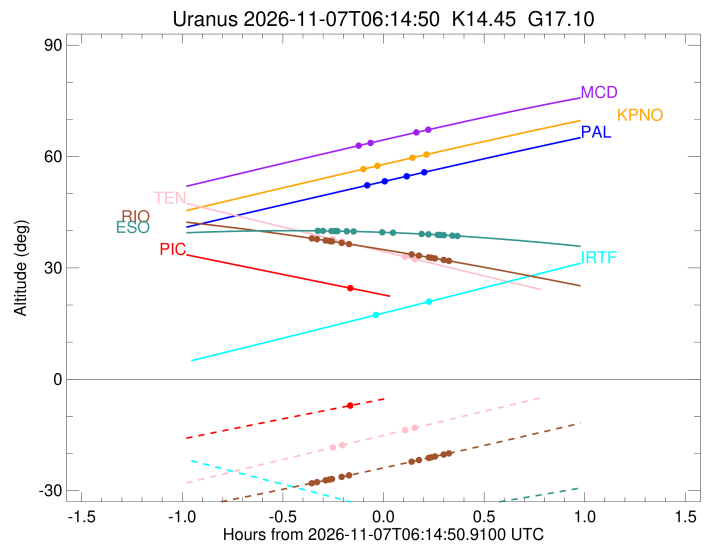
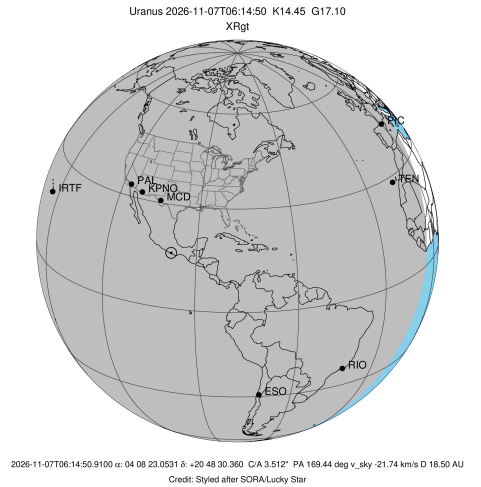
b: ring blocked by planet  x: target alt < 5.0 deg or sun > -5.0 deg
Ring      I/E      UTC      b? alt  alt-sun  radius  r-dot  lat-geo lat-geodetic
-----
epsilon   I 2026-11-07T06:14:03.437  17.66 -35.11  50792.81 -3.75
  
```

No planet occultations

```

epsilon   E 2026-11-07T06:26:45.466  20.54 -38.08  50749.19  3.76
  
```


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-07T06:12:54.130
 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 : 52027348334514304
 2Mass ID (if available) : 04082305+2048306
 ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.449
 G magnitude : 17.096
 RP magnitude : 16.300
 BP magnitude : 17.798
 DUPflag : 0
 Distance (au) : 18.498
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.74
 Sun-Target sep (deg) : 160.42
 Sun-Moon sep (deg) : 137.39
 B (ring opening deg) : 74.48
 PA of pole (deg) : -71.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.167
 C/A sky separation (km) : 42492.5
 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



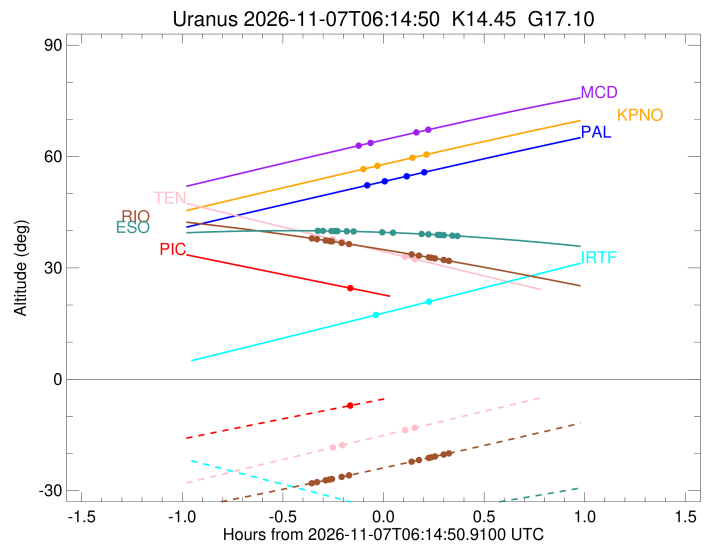
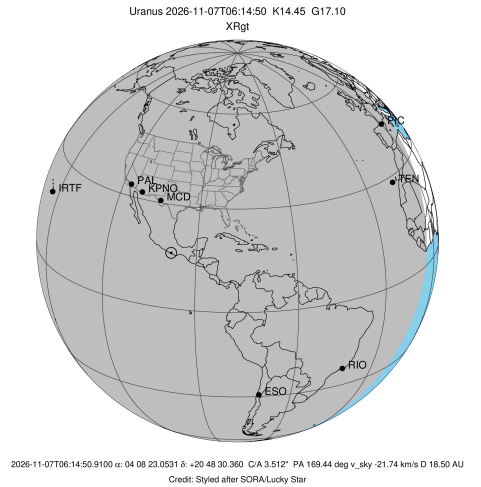
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2026-11-07T05:53:49.303 | | 37.90 | -27.94 | 50896.81 | -12.15 | | |
| lambda | I | 2026-11-07T05:55:01.827 | | 37.74 | -27.71 | 50026.71 | -11.73 | | |
| delta | I | 2026-11-07T05:57:37.181 | | 37.39 | -27.22 | 48300.35 | -10.48 | | |
| gamma | I | 2026-11-07T05:58:42.786 | | 37.24 | -27.01 | 47631.46 | -9.91 | | |
| eta | I | 2026-11-07T05:59:29.723 | | 37.13 | -26.86 | 47176.12 | -9.49 | | |
| beta | I | 2026-11-07T06:02:24.690 | | 36.72 | -26.30 | 45659.30 | -7.83 | | |
| alpha | I | 2026-11-07T06:04:39.332 | | 36.41 | -25.86 | 44700.59 | -6.44 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| alpha | E | 2026-11-07T06:23:11.883 | | 33.65 | -22.21 | 44719.07 | 6.44 | | |
| beta | E | 2026-11-07T06:25:25.249 | | 33.31 | -21.77 | 45672.64 | 7.82 | | |
| eta | E | 2026-11-07T06:28:18.709 | | 32.86 | -21.18 | 47176.12 | 9.48 | | |
| gamma | E | 2026-11-07T06:29:05.412 | | 32.73 | -21.03 | 47628.64 | 9.90 | | |
| delta | E | 2026-11-07T06:30:11.379 | | 32.56 | -20.81 | 48300.35 | 10.46 | | |
| lambda | E | 2026-11-07T06:32:46.936 | | 32.14 | -20.28 | 50026.71 | 11.71 | | |
| epsilon | E | 2026-11-07T06:33:47.844 | | 31.98 | -20.08 | 50753.77 | 12.13 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-07T06:15:05.460
 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 : 52027348334514304
 2Mass ID (if available) : 04082305+2048306
 ICRS Star Coord at Epoch: 04h 08m 23.05305s +20:48:30.35988s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.449
 G magnitude : 17.096
 RP magnitude : 16.300
 BP magnitude : 17.798
 DUPflag : 0
 Distance (au) : 18.498
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.74
 Sun-Target sep (deg) : 160.42
 Sun-Moon sep (deg) : 137.14
 B (ring opening deg) : 74.48
 PA of pole (deg) : -71.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.142
 C/A sky separation (km) : 42151.4
 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 | 2026-11-07T05:55:37.522 | | 39.98 | -39.78 | 50899.79 | -12.40 | | |
| lambda | I | 2026-11-07T05:56:48.738 | | 39.97 | -39.66 | 50026.71 | -12.00 | | |
| delta | I | 2026-11-07T05:59:20.058 | | 39.94 | -39.39 | 48300.35 | -10.80 | | |
| gamma | I | 2026-11-07T06:00:23.574 | | 39.92 | -39.28 | 47631.48 | -10.26 | | |
| eta | I | 2026-11-07T06:01:08.839 | | 39.91 | -39.20 | 47176.12 | -9.86 | | |
| beta | I | 2026-11-07T06:03:55.787 | | 39.86 | -38.89 | 45658.93 | -8.30 | | |
| alpha | I | 2026-11-07T06:06:01.240 | | 39.81 | -38.66 | 44699.93 | -7.02 | | |
| 4 | I | 2026-11-07T06:19:26.509 | | 39.42 | -37.06 | 42534.65 | -0.04 | | |

No planet occultations

| | | | | | | | | | |
|---------|---|-------------------------|--|-------|--------|----------|-------|--|--|
| 4 | E | 2026-11-07T06:13:01.034 | | 39.63 | -37.84 | 42534.64 | 0.05 | | |
| alpha | E | 2026-11-07T06:26:10.770 | | 39.14 | -36.21 | 44720.08 | 7.03 | | |
| beta | E | 2026-11-07T06:28:14.842 | | 39.04 | -35.94 | 45673.05 | 8.30 | | |
| eta | E | 2026-11-07T06:31:00.115 | | 38.91 | -35.57 | 47176.12 | 9.86 | | |
| gamma | E | 2026-11-07T06:31:45.092 | | 38.87 | -35.47 | 47628.54 | 10.26 | | |
| delta | E | 2026-11-07T06:32:48.892 | | 38.82 | -35.33 | 48300.35 | 10.80 | | |
| lambda | E | 2026-11-07T06:35:20.207 | | 38.68 | -34.99 | 50026.71 | 12.00 | | |
| epsilon | E | 2026-11-07T06:36:19.837 | | 38.63 | -34.85 | 50755.27 | 12.40 | | |