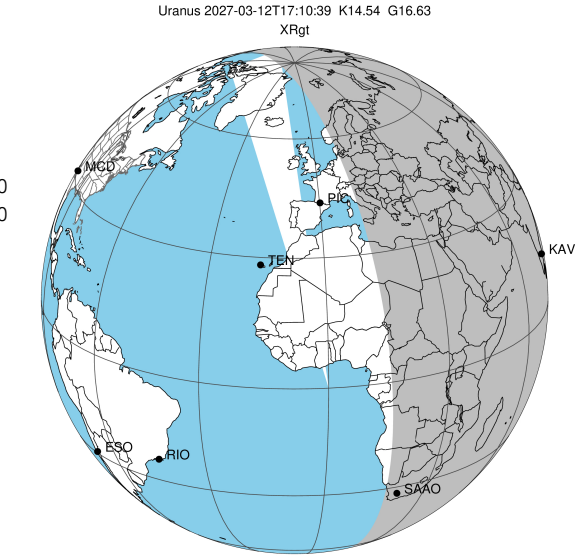


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-03-12T17:10:39.120
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 51389391073609728
 2Mass ID (if available) : 03584215+2023198

ICRS Star Coord at Epoch: 03h 58m 42.15401s +20:23:19.85569s

RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.544
 G magnitude : 16.628
 RP magnitude : 15.944
 BP magnitude : 17.146
 DUPflag : 0
 Distance (au) : 19.725
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.41
 Sun-Target sep (deg) : 70.23
 Sun-Moon sep (deg) : 18.95
 B (ring opening deg) : 72.43
 PA of pole (deg) : -75.60

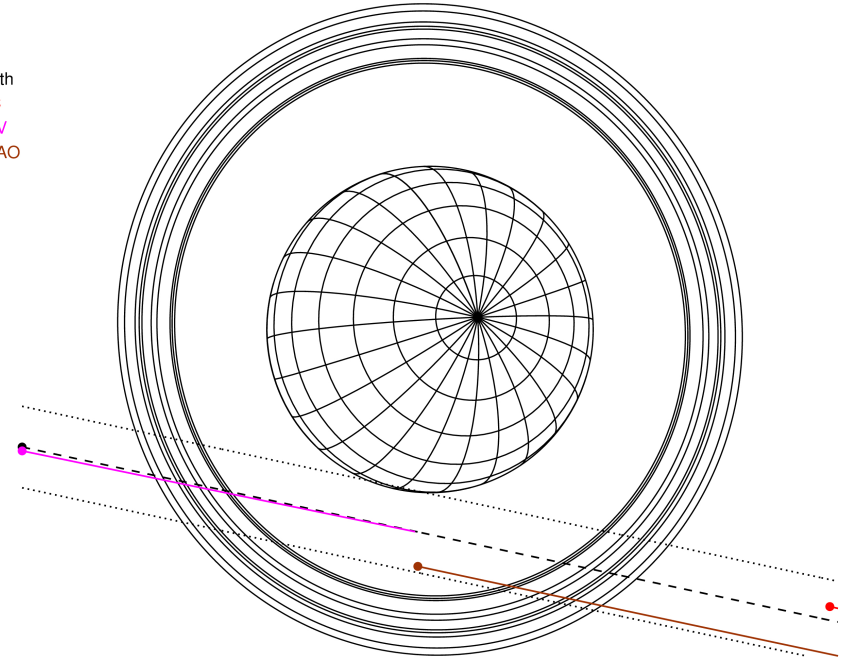
| # | a(km) | ring |
|----|---------|---------|
| 1 | 41837.2 | 6 |
| 2 | 42235.0 | 5 |
| 3 | 42571.2 | 4 |
| 4 | 44718.5 | alpha |
| 5 | 45661.1 | beta |
| 6 | 47176.1 | eta |
| 7 | 47626.3 | gamma |
| 8 | 48300.3 | delta |
| 9 | 50026.7 | lambda |
| 10 | 51149.4 | epsilon |



2027-03-12T17:10:39.1200 ex: 03 58 42.1540 s: +20 23 19.8556 C/A 2.192° PA 347.89 deg v_sky +16.41 km/s D 19.73 AU
 Credit: Styled after SORA/Lucky Star

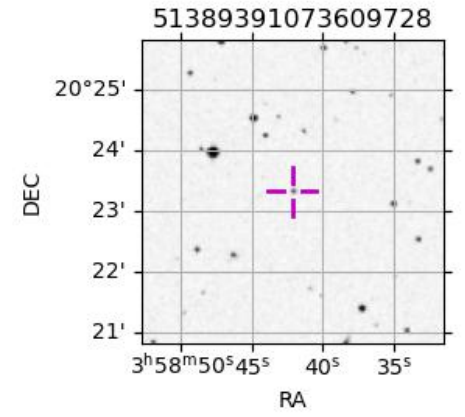
Earth
 PIC
 KAV
 SAAO

Uranus 2027-03-12T17:10:39 K14.54 G16.63 XRgt



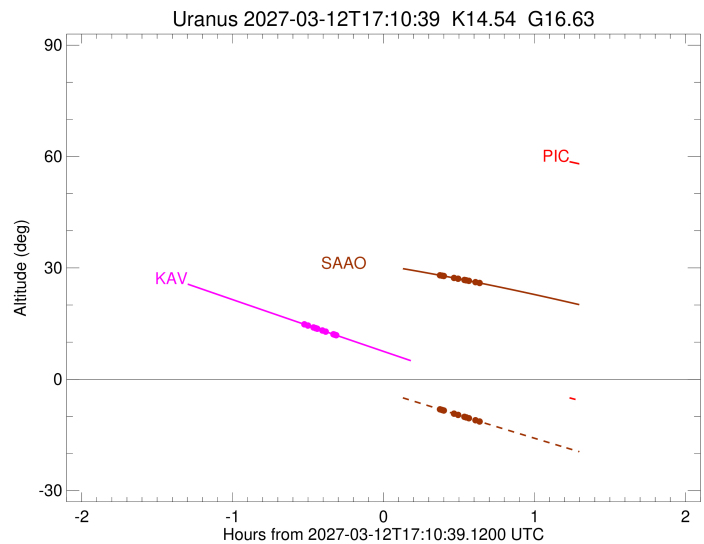
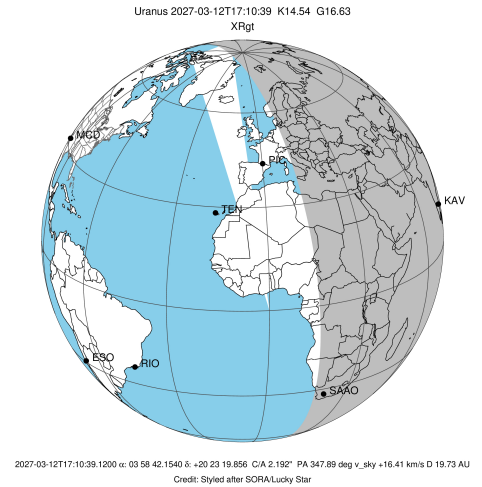
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

| 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 | | | | | PnnRnn |
| 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 | +++++ | | | MAR 12 16:39 - MAR 12 16:51 | PnnRin |
| 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 | | | | | PnnRnn |
| SAAO | So. Afr. Astro. Obs. | -32.4 | 20.8 | | +++++ | | MAR 12 17:32 - MAR 12 17:48 | PnnRne |
| MSO | Mt. Stromlo Observato | -35.3 | 149.0 | | | | | PnnRnn |



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2027-03-12T17:17:23.400
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      : 51389391073609728
2Mass ID (if available) : 03584215+2023198
ICRS Star Coord at Epoch: 03h 58m 42.15401s +20:23:19.85569s
RUWE (>1.4 is poor) : 0.96
K magnitude         : 14.544
G magnitude         : 16.628
RP magnitude        : 15.944
BP magnitude        : 17.146
DUPflag            : 0
Distance (au)       : 19.725
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : 16.41
Sun-Target sep (deg) : 70.23
Sun-Moon sep (deg)  : 19.86
B (ring opening deg) : 72.43
PA of pole (deg)    : -75.60
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.201
C/A sky separation (km) : 31491.1
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
ural11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ural11.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
  
```



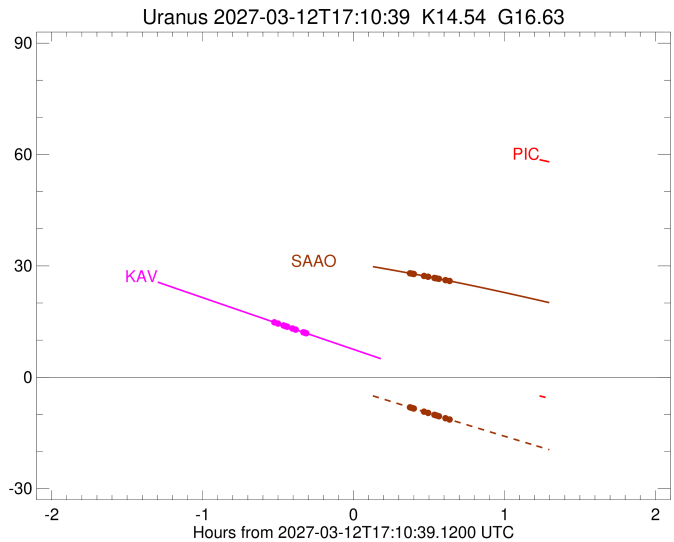
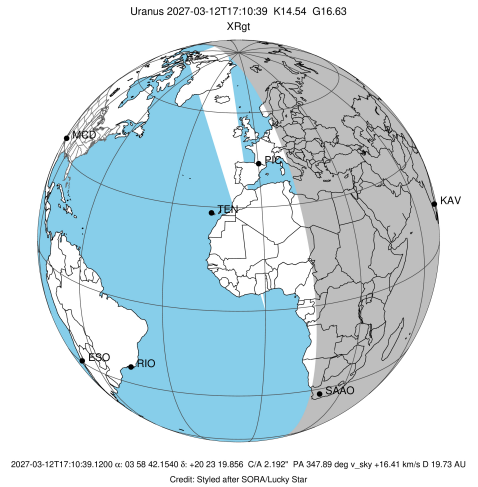
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2027-03-12T16:39:27.169 | | 14.74 | -55.36 | 50955.47 | -13.15 | | |
| lambda | I | 2027-03-12T16:40:37.819 | | 14.47 | -55.64 | 50026.71 | -13.07 | | |
| delta | I | 2027-03-12T16:42:51.557 | | 13.95 | -56.17 | 48300.35 | -12.74 | | |
| gamma | I | 2027-03-12T16:43:44.465 | | 13.75 | -56.38 | 47629.66 | -12.61 | | |
| eta | I | 2027-03-12T16:44:20.579 | | 13.61 | -56.52 | 47176.12 | -12.51 | | |
| beta | I | 2027-03-12T16:46:24.915 | | 13.12 | -57.01 | 45641.82 | -12.15 | | |
| alpha | I | 2027-03-12T16:47:43.110 | | 12.82 | -57.32 | 44703.86 | -11.90 | | |
| 4 | I | 2027-03-12T16:50:42.657 | | 12.13 | -58.03 | 42615.13 | -11.29 | | |
| 5 | I | 2027-03-12T16:51:11.970 | | 12.01 | -58.15 | 42295.76 | -11.16 | | |
| 6 | I | 2027-03-12T16:51:54.924 | | 11.85 | -58.31 | 41817.30 | -11.00 | | |

No planet occultations

| | | | | | | | | |
|---------|---|-------------------------|--------|--------|----------|-------|--|--|
| 6 | E | 2027-03-12T17:45:04.888 | -0.39x | -70.50 | 41797.03 | 11.09 | | |
| 5 | E | 2027-03-12T17:45:40.788 | -0.53x | -70.63 | 42191.19 | 11.25 | | |
| 4 | E | 2027-03-12T17:46:15.741 | -0.66x | -70.75 | 42587.46 | 11.38 | | |
| alpha | E | 2027-03-12T17:49:15.248 | -1.35x | -71.40 | 44687.76 | 12.01 | | |
| beta | E | 2027-03-12T17:50:34.905 | -1.65x | -71.68 | 45656.21 | 12.26 | | |
| eta | E | 2027-03-12T17:52:36.986 | -2.11x | -72.11 | 47176.12 | 12.63 | | |
| gamma | E | 2027-03-12T17:53:12.770 | -2.25x | -72.24 | 47629.95 | 12.73 | | |
| delta | E | 2027-03-12T17:54:05.128 | -2.45x | -72.42 | 48300.35 | 12.87 | | |
| lambda | E | 2027-03-12T17:56:17.475 | -2.95x | -72.88 | 50026.71 | 13.21 | | |
| epsilon | E | 2027-03-12T17:57:18.790 | -3.18x | -73.09 | 50841.00 | 13.30 | | |

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2027-03-12T17:12:12.600
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      : 51389391073609728
2Mass ID (if available) : 03584215+2023198
ICRS Star Coord at Epoch: 03h 58m 42.15401s +20:23:19.85569s
RUWE (>1.4 is poor) : 0.96
K magnitude         : 14.544
G magnitude         : 16.628
RP magnitude        : 15.944
BP magnitude        : 17.146
DUPflag            : 0
Distance (au)       : 19.725
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : 16.41
Sun-Target sep (deg) : 70.23
Sun-Moon sep (deg)  : 19.55
B (ring opening deg) : 72.43
PA of pole (deg)    : -75.60
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.563
C/A sky separation (km) : 36667.1
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 | 2027-03-12T16:38:40.780 | | 33.79 | 3.37x | 50910.72 | -11.35 | | |
| lambda | I | 2027-03-12T16:39:58.924 | | 33.68 | 3.09x | 50026.71 | -11.20 | | |
| delta | I | 2027-03-12T16:42:36.594 | | 33.45 | 2.54x | 48300.35 | -10.69 | | |
| gamma | I | 2027-03-12T16:43:39.901 | | 33.36 | 2.31x | 47630.24 | -10.48 | | |
| eta | I | 2027-03-12T16:44:23.573 | | 33.29 | 2.16x | 47176.12 | -10.32 | | |
| beta | I | 2027-03-12T16:46:56.459 | | 33.06 | 1.62x | 45641.18 | -9.74 | | |
| alpha | I | 2027-03-12T16:48:35.612 | | 32.91 | 1.27x | 44698.75 | -9.32 | | |
| 4 | I | 2027-03-12T16:52:31.691 | | 32.54 | 0.44x | 42616.51 | -8.25 | | |
| 5 | I | 2027-03-12T16:53:13.680 | | 32.47 | 0.29x | 42283.69 | -8.02 | | |
| 6 | I | 2027-03-12T16:54:13.007 | | 32.38 | 0.08x | 41809.77 | -7.73 | | |

No planet occultations

| | | | | | | |
|---------|---|-------------------------|-------|--------|----------|-------|
| 6 | E | 2027-03-12T17:32:58.700 | 28.03 | -8.07 | 41794.95 | 7.75 |
| 5 | E | 2027-03-12T17:33:51.129 | 27.92 | -8.25 | 42207.32 | 8.04 |
| 4 | E | 2027-03-12T17:34:38.865 | 27.81 | -8.42 | 42596.30 | 8.27 |
| alpha | E | 2027-03-12T17:38:35.687 | 27.31 | -9.24 | 44685.59 | 9.35 |
| beta | E | 2027-03-12T17:40:16.662 | 27.09 | -9.60 | 45652.72 | 9.77 |
| eta | E | 2027-03-12T17:42:47.891 | 26.76 | -10.12 | 47176.12 | 10.36 |
| gamma | E | 2027-03-12T17:43:31.417 | 26.66 | -10.27 | 47630.54 | 10.52 |
| delta | E | 2027-03-12T17:44:34.434 | 26.52 | -10.49 | 48300.35 | 10.74 |
| lambda | E | 2027-03-12T17:47:11.416 | 26.17 | -11.03 | 50026.71 | 11.25 |
| epsilon | E | 2027-03-12T17:48:20.000 | 26.01 | -11.27 | 50805.24 | 11.40 |