

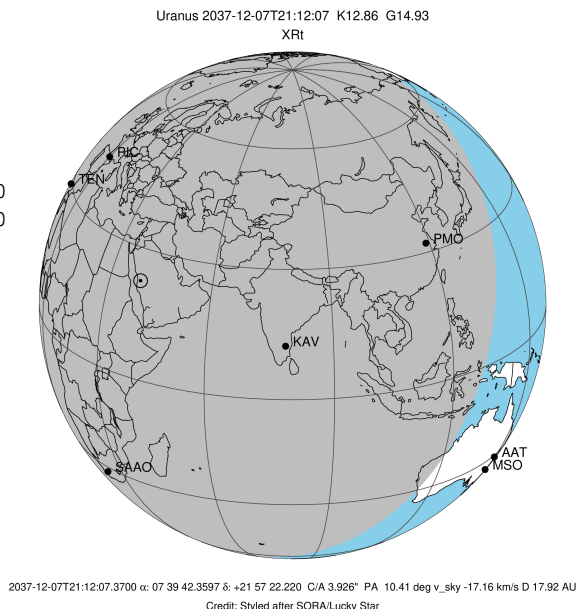
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-12-07T21:12:07.370
 Event type : XRT
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Gaia source ID : 865438147823930496
 2Mass ID (if available) : 07394235+2157223

ICRS Star Coord at Epoch: 07h 39m 42.35968s +21:57:22.21966s

RUWE (>1.4 is poor) : 1.03
 K magnitude : 12.862
 G magnitude : 14.929
 RP magnitude : 14.280
 BP magnitude : 15.413
 DUPflag : 0
 Distance (au) : 17.917
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.16
 Sun-Target sep (deg) : 142.57
 Sun-Moon sep (deg) : 154.09
 B (ring opening deg) : 53.80
 PA of pole (deg) : 85.82

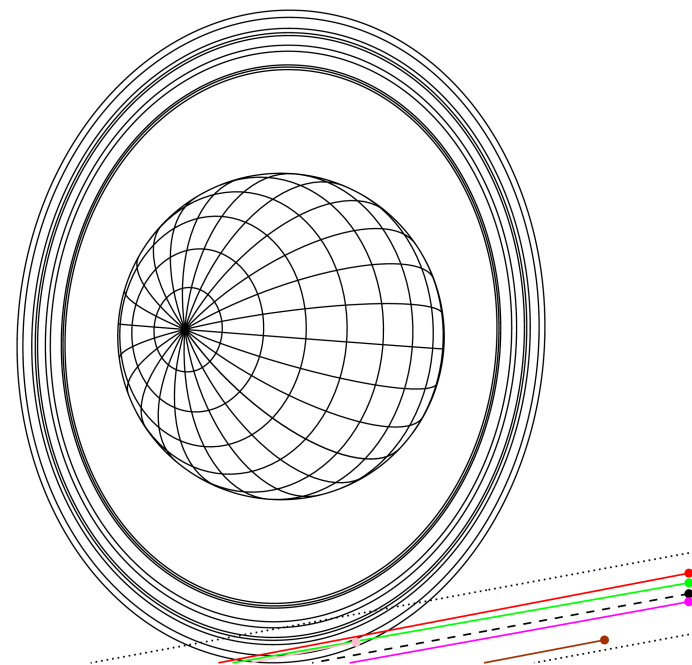
a(km) ring

- 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



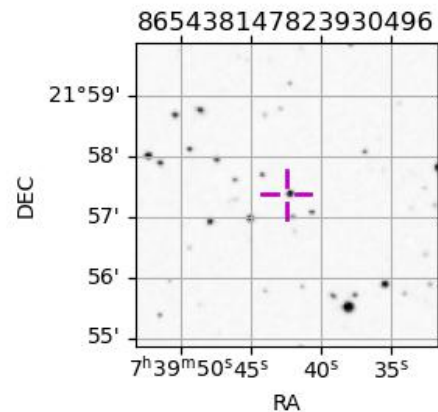
Uranus 2037-12-07T21:12:07 K12.86 G14.93 XRT

Earth
 PIC
 PMO
 TEN
 KAV
 SAAO

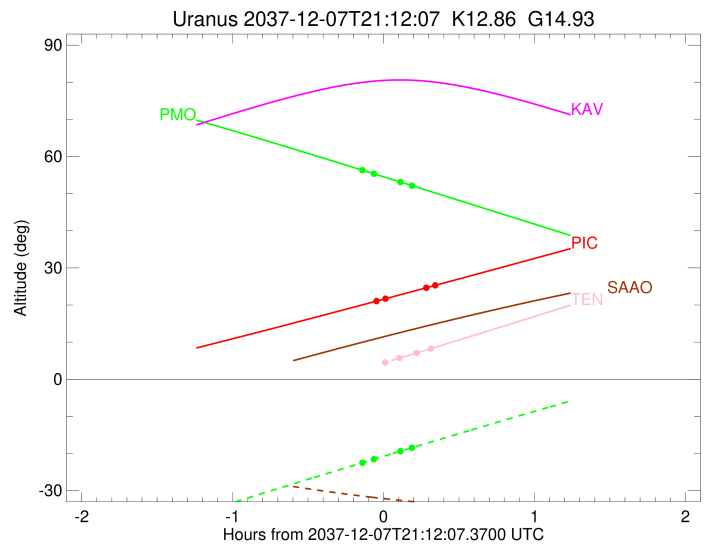
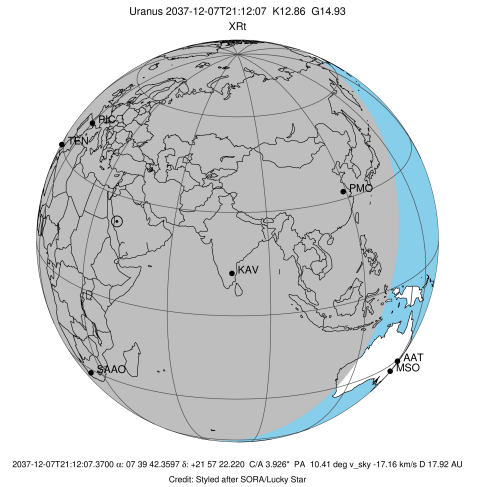


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	++		++	DEC 07 21:10 - DEC 07 21:31	PnnRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	++		++	DEC 07 21:04 - DEC 07 21:22	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	+		++	DEC 07 21:18 - DEC 07 21:29	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					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					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-12-07T21:16:51.920
 Event type : XRt
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 865438147823930496
 2Mass ID (if available) : 07394235+2157223
 ICRS Star Coord at Epoch: 07h 39m 42.35968s +21:57:22.21966s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 12.862
 G magnitude : 14.929
 RP magnitude : 14.280
 BP magnitude : 15.413
 DUPflag : 0
 Distance (au) : 17.917
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.16
 Sun-Target sep (deg) : 142.57
 Sun-Moon sep (deg) : 153.58
 B (ring opening deg) : 53.80
 PA of pole (deg) : 85.82
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.723
 C/A sky separation (km) : 48385.8
 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

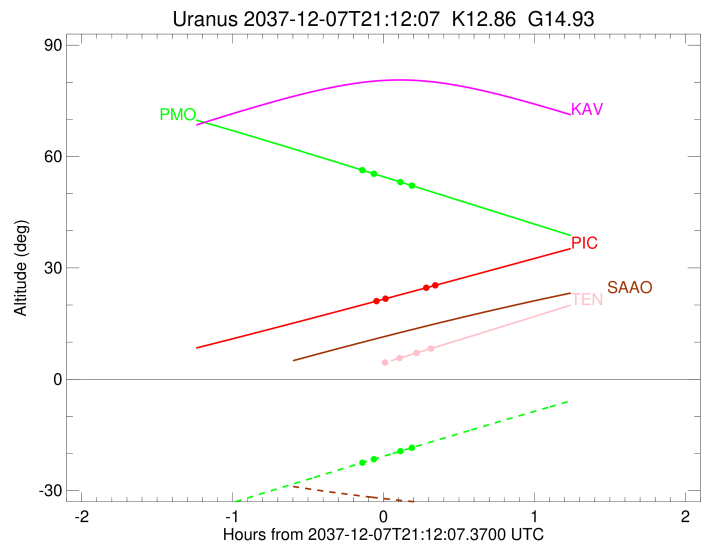
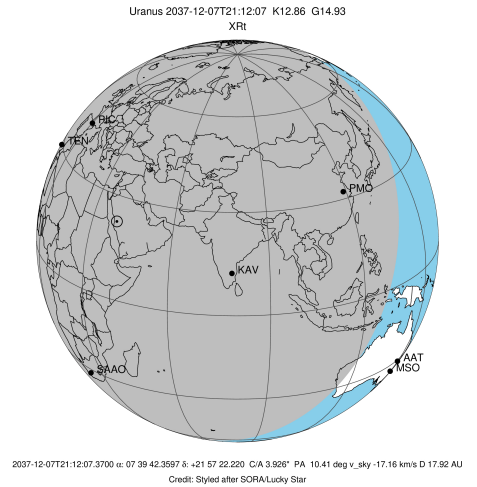


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-12-07T21:10:00.331		21.17	-51.16	50927.20	-5.66		
lambda	I	2037-12-07T21:12:58.305		21.71	-51.67	50026.71	-4.31		

No planet occultations

lambda	E	2037-12-07T21:29:05.224		24.64	-54.44	50026.71	4.32		
epsilon	E	2037-12-07T21:31:37.689		25.10	-54.87	50783.63	5.67		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-12-07T21:09:38.070
 Event type : XRt
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 865438147823930496
 2Mass ID (if available) : 07394235+2157223
 ICRS Star Coord at Epoch: 07h 39m 42.35968s +21:57:22.21966s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 12.862
 G magnitude : 14.929
 RP magnitude : 14.280
 BP magnitude : 15.413
 DUPflag : 0
 Distance (au) : 17.917
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.16
 Sun-Target sep (deg) : 142.57
 Sun-Moon sep (deg) : 154.87
 B (ring opening deg) : 53.80
 PA of pole (deg) : 85.82
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.774
 C/A sky separation (km) : 49047.1
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

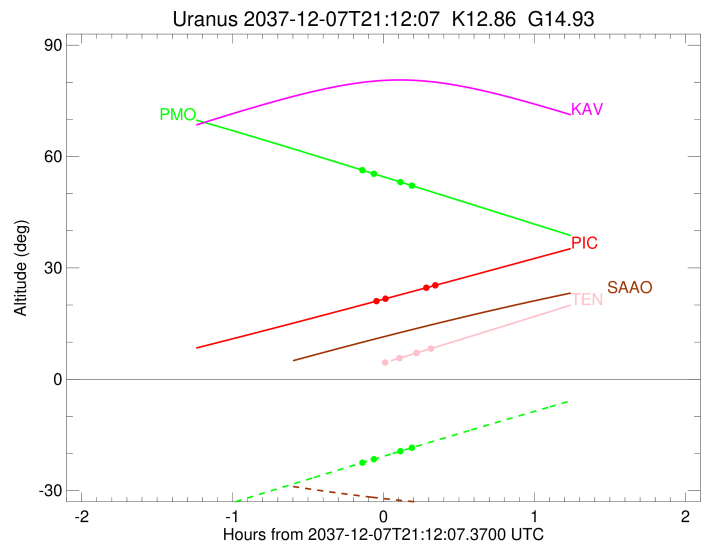
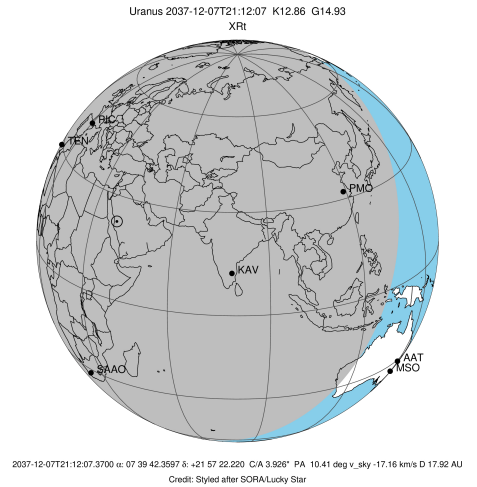


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-12-07T21:04:35.030		56.14	-22.31	50906.99	-4.73		
lambda	I	2037-12-07T21:08:22.533		55.34	-21.53	50026.71	-2.86		

No planet occultations

lambda	E	2037-12-07T21:18:47.598		53.14	-19.39	50026.71	2.86		
epsilon	E	2037-12-07T21:22:10.702		52.42	-18.70	50790.38	4.72		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-12-07T21:17:33.710
 Event type : XRt
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 865438147823930496
 2Mass ID (if available) : 07394235+2157223
 ICRS Star Coord at Epoch: 07h 39m 42.35968s +21:57:22.21966s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 12.862
 G magnitude : 14.929
 RP magnitude : 14.280
 BP magnitude : 15.413
 DUPflag : 0
 Distance (au) : 17.917
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.16
 Sun-Target sep (deg) : 142.57
 Sun-Moon sep (deg) : 153.33
 B (ring opening deg) : 53.80
 PA of pole (deg) : 85.82
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.790
 C/A sky separation (km) : 49250.0
 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	2037-12-07T21:13:43.286		4.71x	-39.57	50903.24	-4.10		
lambda	I	2037-12-07T21:18:36.188		5.71	-40.64	50026.71	-1.73		

No planet occultations

lambda	E	2037-12-07T21:25:07.933		7.06	-42.07	50026.71	1.73		
epsilon	E	2037-12-07T21:29:35.058		7.98	-43.05	50798.33	4.11		