

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-12-02T01:04:27.850
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 865439934530311040
 2Mass ID (if available) : 07402662+2155284

ICRS Star Coord at Epoch: 07h 40m 26.58681s +21:55:28.16092s

RUWE (>1.4 is poor) : 3.12
 K magnitude : 12.400
 G magnitude : 14.702
 RP magnitude : 13.958
 BP magnitude : 15.256
 DUPflag : 0
 Distance (au) : 17.983
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -15.09
 Sun-Target sep (deg) : 136.47
 Sun-Moon sep (deg) : 70.13
 B (ring opening deg) : 53.63
 PA of pole (deg) : 85.95

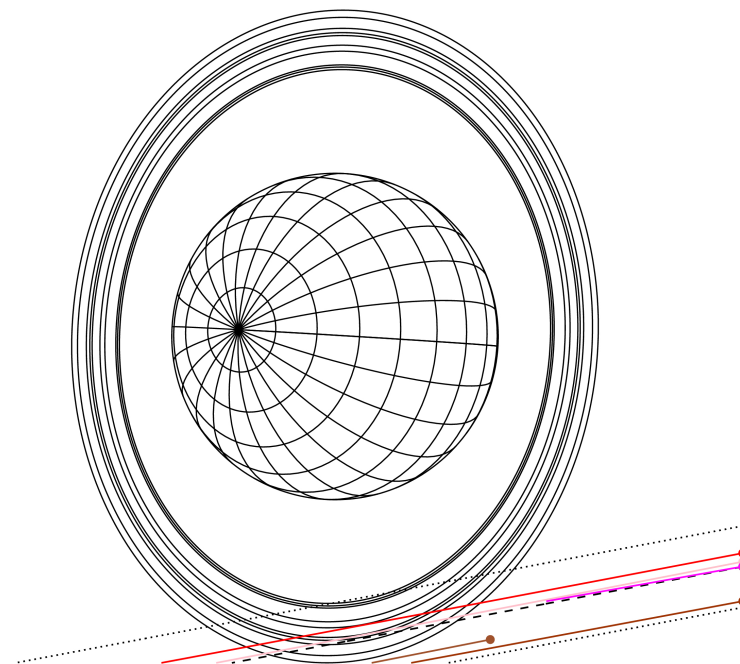
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2037-12-02T01:04:27.8500 α: 07 40 26.5868 δ: +21 55 28.161 C/A 3.611° PA 10.66 deg v_sky -15.09 km/s D 17.88 AU
 Credit: Styled after SORA/Lucky Star

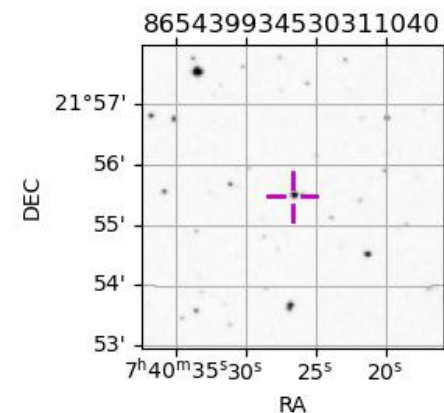
Earth
 PIC
 TEN
 KAV
 RIO
 SAAO

Uranus 2037-12-02T01:04:27 K12.40 G14.70 XRgt

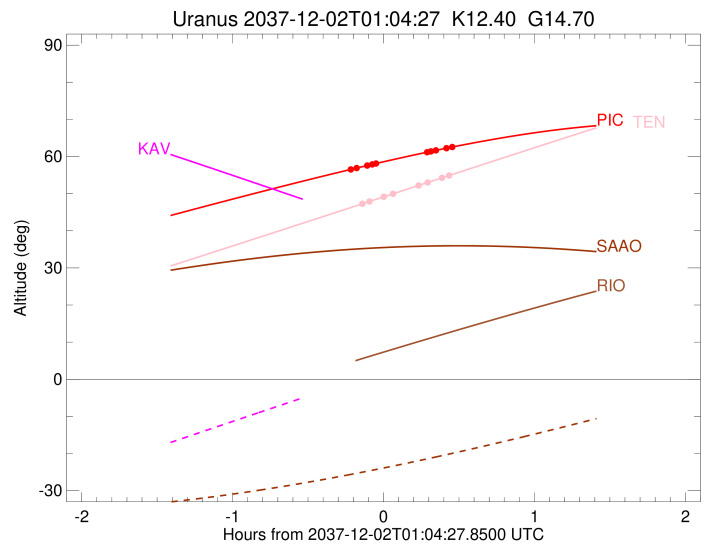
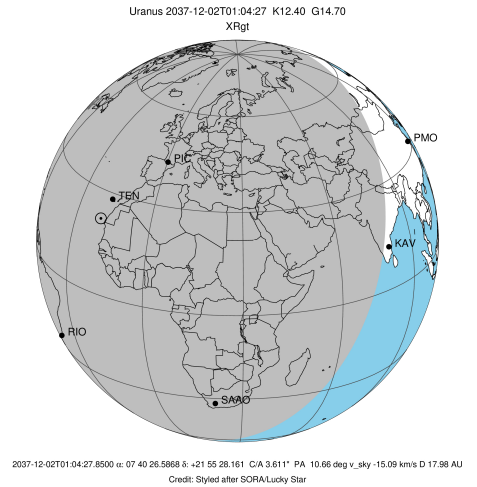


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	DEC 02 00:51 - DEC 02 01:31	PnnRie
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	++++		++++	DEC 02 00:56 - DEC 02 01:29	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 : 2037-12-02T01:07:18.990
 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 : 865439934530311040
 2Mass ID (if available) : 07402662+2155284
 ICRS Star Coord at Epoch: 07h 40m 26.58681s +21:55:28.16092s
 RUWE (>1.4 is poor) : 3.12
 K magnitude : 12.400
 G magnitude : 14.702
 RP magnitude : 13.958
 BP magnitude : 15.256
 DUPflag : 0
 Distance (au) : 17.983
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -15.09
 Sun-Target sep (deg) : 136.47
 Sun-Moon sep (deg) : 71.05
 B (ring opening deg) : 53.63
 PA of pole (deg) : 85.95
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.468
 C/A sky separation (km) : 45228.1
 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

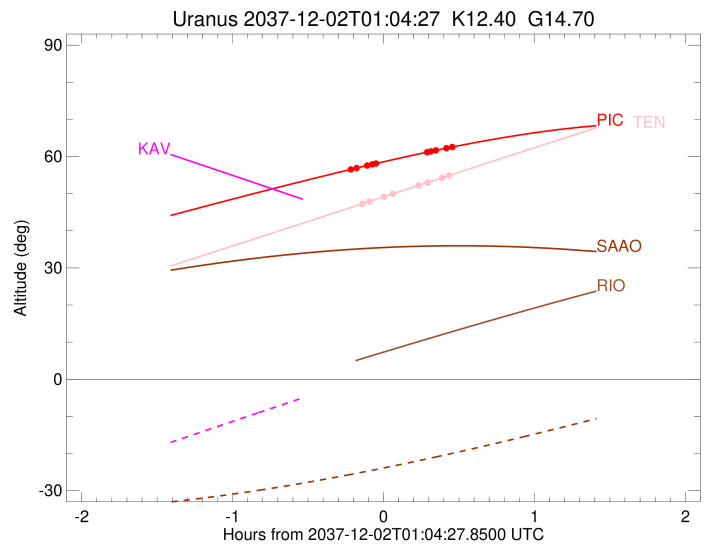
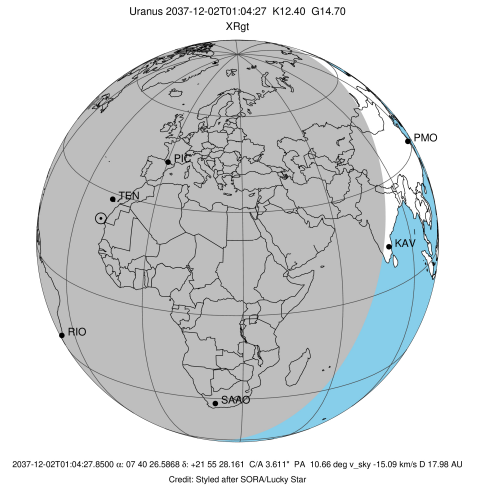


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-12-02T00:51:42.566		56.56	-65.42	51043.96	-8.23		
lambda	I	2037-12-02T00:53:49.752		56.90	-65.19	50026.71	-7.63		
delta	I	2037-12-02T00:58:01.886		57.57	-64.70	48300.35	-6.04		
gamma	I	2037-12-02T01:00:00.455		57.89	-64.46	47631.55	-5.24		
eta	I	2037-12-02T01:01:33.157		58.13	-64.27	47176.12	-4.59		

No planet occultations

eta	E	2037-12-02T01:21:44.605		61.16	-61.60	47176.12	4.59		
gamma	E	2037-12-02T01:23:16.979		61.38	-61.38	47630.43	5.24		
delta	E	2037-12-02T01:25:15.590		61.66	-61.10	48300.35	6.05		
lambda	E	2037-12-02T01:29:27.271		62.24	-60.49	50026.71	7.64		
epsilon	E	2037-12-02T01:31:01.886		62.46	-60.26	50776.23	8.25		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-12-02T01:08:47.130
 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 : 865439934530311040
 2Mass ID (if available) : 07402662+2155284
 ICRS Star Coord at Epoch: 07h 40m 26.58681s +21:55:28.16092s
 RUWE (>1.4 is poor) : 3.12
 K magnitude : 12.400
 G magnitude : 14.702
 RP magnitude : 13.958
 BP magnitude : 15.256
 DUPflag : 0
 Distance (au) : 17.983
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -15.09
 Sun-Target sep (deg) : 136.47
 Sun-Moon sep (deg) : 71.05
 B (ring opening deg) : 53.63
 PA of pole (deg) : 85.95
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.582
 C/A sky separation (km) : 46723.5
 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	2037-12-02T00:56:25.523	47.35	-83.83	51016.18	-6.95		
lambda	I	2037-12-02T00:58:54.881	47.90	-83.78	50026.71	-6.16		
delta	I	2037-12-02T01:04:38.594	49.16	-83.48	48300.35	-3.84		
gamma	I	2037-12-02T01:08:17.305	49.97	-83.17	47631.39	-2.26		

No planet occultations

gamma	E	2037-12-02T01:18:20.132	52.19	-81.93	47630.91	2.26		
delta	E	2037-12-02T01:21:58.779	52.99	-81.37	48300.35	3.85		
lambda	E	2037-12-02T01:27:41.763	54.26	-80.42	50026.71	6.18		
epsilon	E	2037-12-02T01:29:38.336	54.69	-80.08	50789.53	6.97		