

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-11-15T01:07:37.870
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 615092436943230720
 2Mass ID (if available) : 09543195+1328535

ICRS Star Coord at Epoch: 09h 54m 31.96343s +13:28:53.21899s

RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.953
 G magnitude : 18.211
 RP magnitude : 17.124
 BP magnitude : 19.370
 DUPflag : 0
 Distance (au) : 18.406
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.53
 Sun-Target sep (deg) : 86.55
 Sun-Moon sep (deg) : 32.32
 B (ring opening deg) : 21.20
 PA of pole (deg) : 101.29

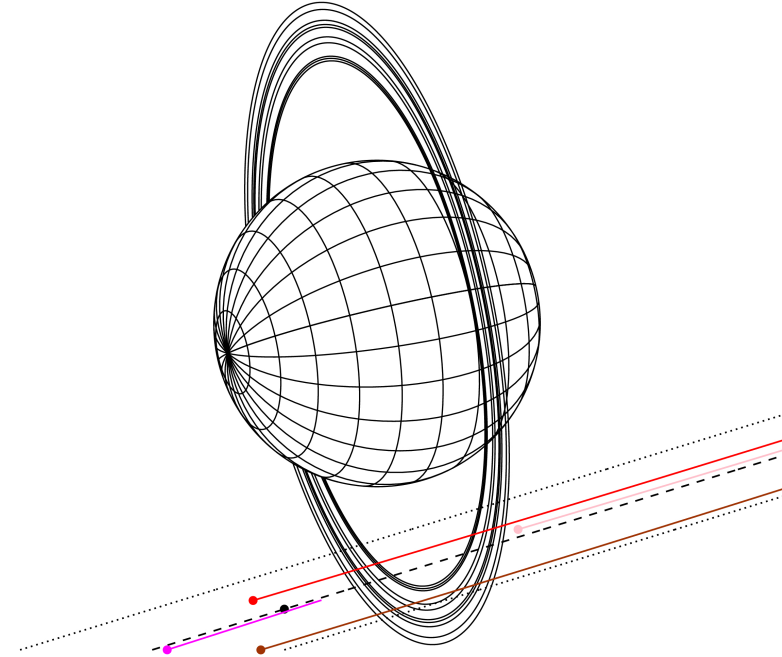
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2044-11-15T01:07:37.8700 α: 09 54 31.9634 δ: +13 28 53.219 C/A 2.893° PA 17.05 deg v_sky + 8.53 km/s D 18.41 AU
 Credit: Styled after SORA/Lucky Star

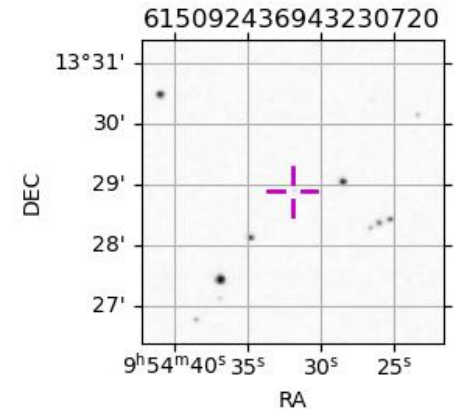
Earth
 PIC
 TEN
 KAV
 SAAO

Uranus 2044-11-15T01:07:37 K14.95 G18.21 XRgt

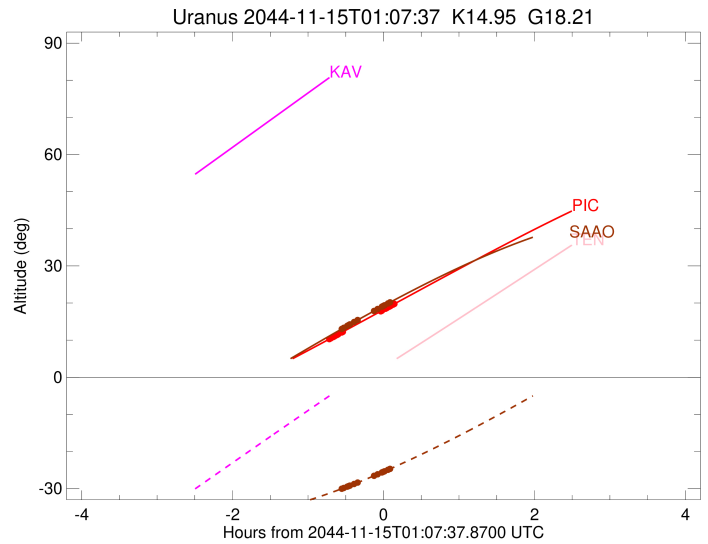
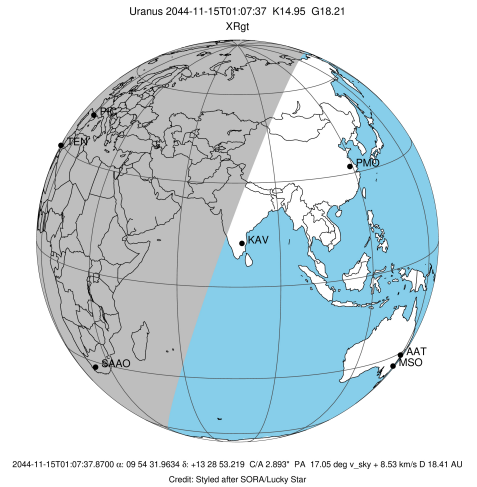


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	NOV 15 00:24 - NOV 15 01:16	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					PnnRnn
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	+++++		+++++	NOV 15 00:33 - NOV 15 01:13	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-11-15T00:56:13.790
 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 : 615092436943230720
 2Mass ID (if available) : 09543195+1328535
 ICRS Star Coord at Epoch: 09h 54m 31.96343s +13:28:53.21899s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.953
 G magnitude : 18.211
 RP magnitude : 17.124
 BP magnitude : 19.370
 DUPflag : 0
 Distance (au) : 18.406
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.53
 Sun-Target sep (deg) : 86.55
 Sun-Moon sep (deg) : 33.21
 B (ring opening deg) : 21.20
 PA of pole (deg) : 101.29
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.697
 C/A sky separation (km) : 36002.5
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

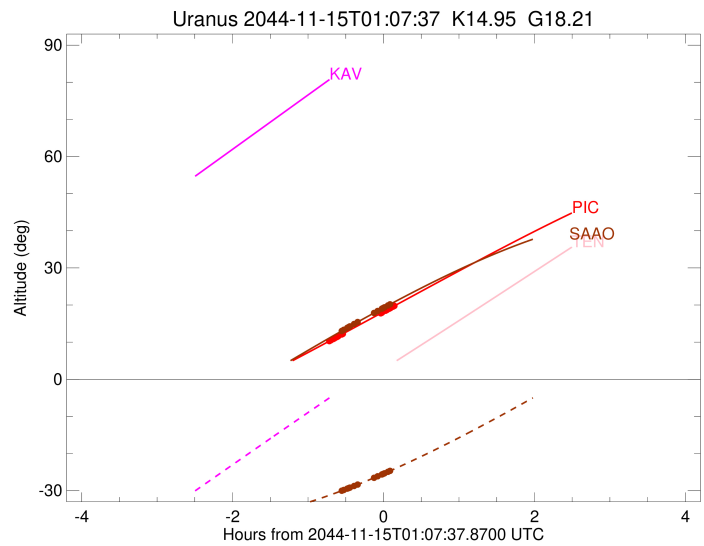
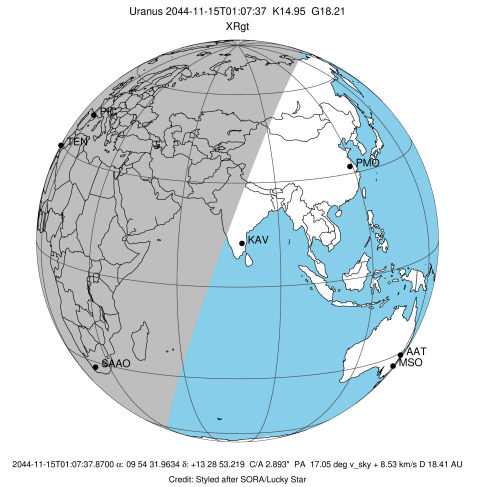


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2044-11-15T00:24:17.132		10.23	-64.38	51451.15	-16.78		
lambda	I	2044-11-15T00:25:43.719		10.49	-64.28	50026.71	-16.21		
delta	I	2044-11-15T00:27:32.431		10.82	-64.15	48300.35	-15.54		
gamma	I	2044-11-15T00:28:16.542		10.95	-64.09	47621.11	-15.25		
eta	I	2044-11-15T00:28:45.909		11.04	-64.05	47176.12	-15.05		
beta	I	2044-11-15T00:30:27.772		11.35	-63.92	45680.35	-14.32		
alpha	I	2044-11-15T00:31:33.376		11.55	-63.83	44739.72	-13.77		
4	I	2044-11-15T00:34:22.456		12.07	-63.60	42538.07	-12.30		
5	I	2044-11-15T00:34:47.741		12.14	-63.56	42251.86	-12.10		
6	I	2044-11-15T00:35:22.432		12.25	-63.51	41852.66	-11.83		

No planet occultations

6	E	2044-11-15T01:05:25.383		17.76	-60.34	41879.31	11.76		
5	E	2044-11-15T01:05:49.240		17.84	-60.29	42173.66	12.02		
4	E	2044-11-15T01:06:24.043		17.94	-60.22	42528.80	12.22		
alpha	E	2044-11-15T01:09:08.920		18.45	-59.88	44699.88	13.67		
beta	E	2044-11-15T01:10:17.873		18.66	-59.73	45660.35	14.20		
eta	E	2044-11-15T01:12:02.436		18.98	-59.51	47176.12	14.92		
gamma	E	2044-11-15T01:12:32.283		19.07	-59.45	47624.24	15.11		
delta	E	2044-11-15T01:13:16.610		19.21	-59.35	48300.35	15.39		
lambda	E	2044-11-15T01:15:06.422		19.55	-59.11	50026.71	16.04		
epsilon	E	2044-11-15T01:16:31.698		19.81	-58.92	51414.08	16.59		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-11-15T01:01:14.360
 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 : 615092436943230720
 2Mass ID (if available) : 09543195+1328535
 ICRS Star Coord at Epoch: 09h 54m 31.96343s +13:28:53.21899s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.953
 G magnitude : 18.211
 RP magnitude : 17.124
 BP magnitude : 19.370
 DUPflag : 0
 Distance (au) : 18.406
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 8.53
 Sun-Target sep (deg) : 86.55
 Sun-Moon sep (deg) : 32.81
 B (ring opening deg) : 21.20
 PA of pole (deg) : 101.29
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.268
 C/A sky separation (km) : 43619.3
 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	2044-11-15T00:33:58.125		12.92	-30.09	51507.31	-12.17		
lambda	I	2044-11-15T00:36:05.702		13.33	-29.82	50026.71	-11.10		
delta	I	2044-11-15T00:38:51.758		13.86	-29.46	48300.35	-9.67		
gamma	I	2044-11-15T00:40:04.536		14.09	-29.30	47620.97	-9.00		
eta	I	2044-11-15T00:40:55.352		14.25	-29.19	47176.12	-8.51		
beta	I	2044-11-15T00:44:14.930		14.89	-28.75	45676.89	-6.47		
alpha	I	2044-11-15T00:47:05.555		15.42	-28.36	44726.74	-4.56		

No planet occultations

alpha	E	2044-11-15T01:00:01.550		17.84	-26.56	44713.28	4.55		
beta	E	2044-11-15T01:02:55.875		18.38	-26.14	45667.66	6.44		
eta	E	2044-11-15T01:06:18.312		19.00	-25.65	47176.12	8.46		
gamma	E	2044-11-15T01:07:09.625		19.16	-25.52	47622.86	8.94		
delta	E	2044-11-15T01:08:22.634		19.38	-25.34	48300.35	9.61		
lambda	E	2044-11-15T01:11:09.839		19.89	-24.93	50026.71	11.02		
epsilon	E	2044-11-15T01:13:16.086		20.27	-24.61	51479.15	12.07		