

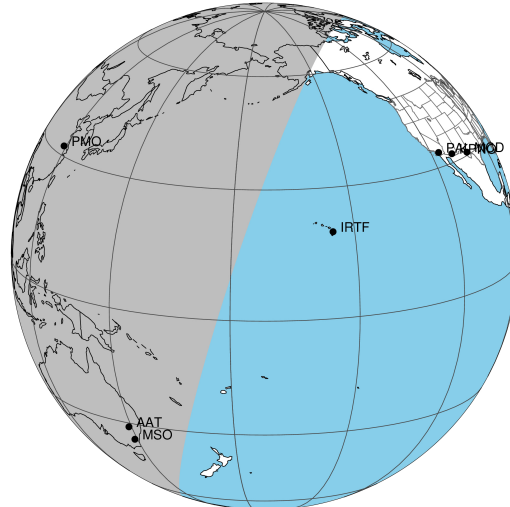
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-08T17:55:36.980
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 618727014362838784
 2Mass ID (if available) : 09355912+1501469

Uranus 2043-11-08T17:55:36 K12.87 G14.17 PtRgt

ICRS Star Coord at Epoch: 09h 35m 59.09189s +15:01:46.33998s

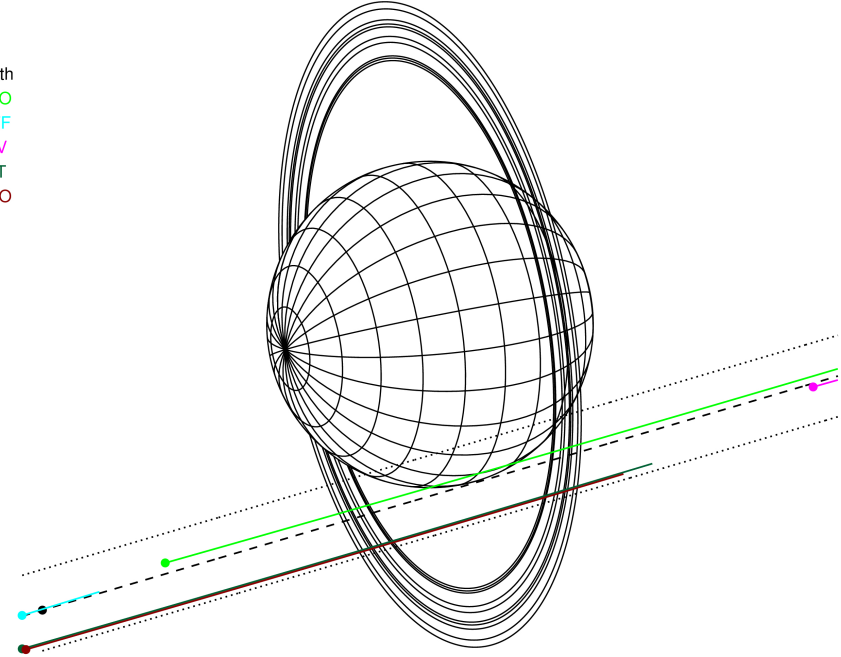
RUWE (>1.4 is poor) : 1.02
 K magnitude : 12.865
 G magnitude : 14.173
 RP magnitude : 13.698
 BP magnitude : 14.486
 DUPflag : 0
 Distance (au) : 18.482
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.68
 Sun-Target sep (deg) : 84.22
 Sun-Moon sep (deg) : 159.53
 B (ring opening deg) : 25.90
 PA of pole (deg) : 99.84

Uranus 2043-11-08T17:55:36 K12.87 G14.17 PtRgt



2043-11-08T17:55:36.9800 α: 09 35 59.0919 β: +15 01 46.340 C/A 1.930° PA 16.40 deg v_sky + 9.68 km/s D 18.48 AU
 Credit: Styled after SORA/Lucky Star

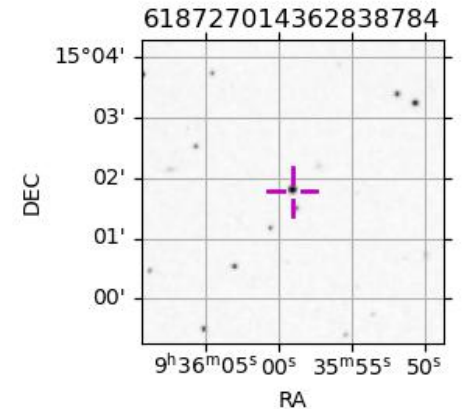
Earth
 PMO
 IRTF
 KAV
 AAT
 MSO



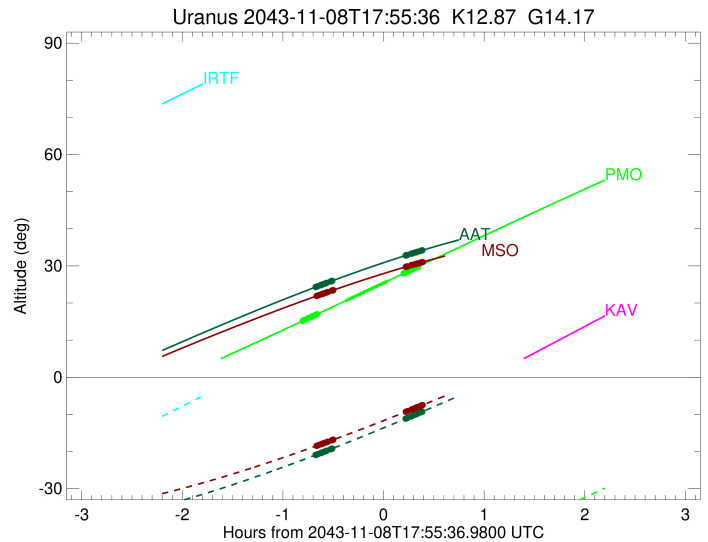
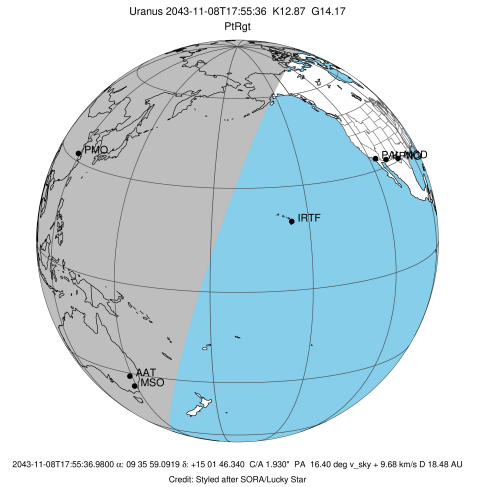
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	NOV 08 17:07 - NOV 08 18:15	PieRie
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	+++++		+++++	NOV 08 17:15 - NOV 08 18:18	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	NOV 08 17:15 - NOV 08 18:18	PnnRie

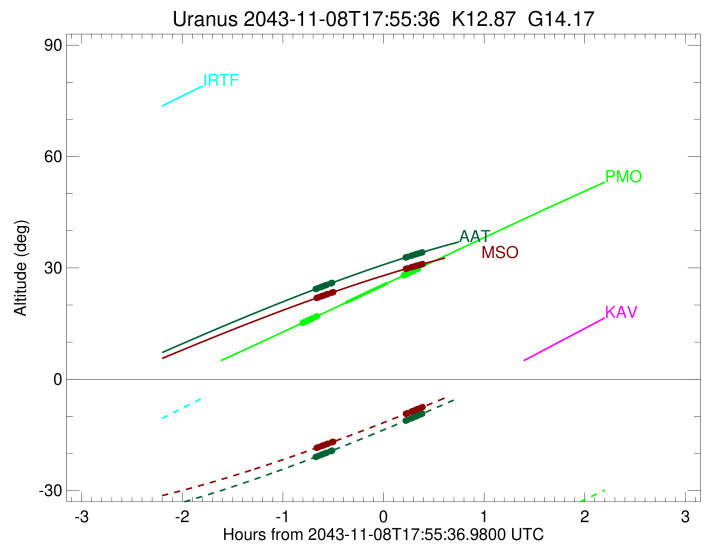
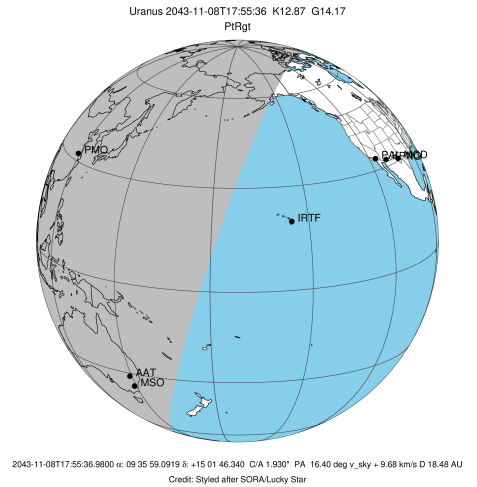


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-08T17:45:30.980
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 618727014362838784
 2Mass ID (if available) : 09355912+1501469
 ICRS Star Coord at Epoch: 09h 35m 59.09189s +15:01:46.33998s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 12.865
 G magnitude : 14.173
 RP magnitude : 13.698
 BP magnitude : 14.486
 DUPflag : 0
 Distance (au) : 18.482
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.68
 Sun-Target sep (deg) : 84.22
 Sun-Moon sep (deg) : 158.90
 B (ring opening deg) : 25.90
 PA of pole (deg) : 99.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.830
 C/A sky separation (km) : 24534.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.bsp
 ural61.bsp
 vgr2.ural61.bsp
 peph.ural60.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	2043-11-08T17:07:32.579		15.22	-66.47	51145.49	-19.10		
lambda	I	2043-11-08T17:08:31.111		15.42	-66.31	50026.71	-19.05		
delta	I	2043-11-08T17:10:02.297		15.75	-66.04	48300.35	-18.82		
gamma	I	2043-11-08T17:10:38.166		15.87	-65.94	47627.17	-18.72		
eta	I	2043-11-08T17:11:02.306		15.96	-65.87	47176.12	-18.65		
beta	I	2043-11-08T17:12:23.464		16.24	-65.63	45677.92	-18.41		
alpha	I	2043-11-08T17:13:16.960		16.43	-65.47	44699.34	-18.24		
4	I	2043-11-08T17:15:14.115		16.84	-65.12	42616.55	-17.84		
5	I	2043-11-08T17:15:26.911		16.89	-65.09	42303.93	-17.76		
6	I	2043-11-08T17:15:58.175		17.00	-64.99	41802.85	-17.68		
Uranus	I	2043-11-08T17:33:01.066		20.60	-61.84	25555.60		9.04	9.46
Uranus	E	2043-11-08T17:57:57.979		25.90	-56.97	25542.84		-20.04	-20.91
6	E	2043-11-08T18:07:39.034		27.96	-55.02	41871.47	17.49		
5	E	2043-11-08T18:08:03.299		28.05	-54.94	42251.89	17.58		
4	E	2043-11-08T18:08:21.936		28.12	-54.88	42555.29	17.65		
alpha	E	2043-11-08T18:10:21.389		28.54	-54.47	44700.22	18.03		
beta	E	2043-11-08T18:11:14.388		28.73	-54.29	45644.12	18.19		
eta	E	2043-11-08T18:12:38.407		29.03	-54.01	47176.12	18.42		
gamma	E	2043-11-08T18:13:02.532		29.11	-53.93	47621.21	18.48		
delta	E	2043-11-08T18:13:39.190		29.24	-53.80	48300.35	18.57		
lambda	E	2043-11-08T18:15:11.599		29.57	-53.49	50026.71	18.79		
epsilon	E	2043-11-08T18:15:52.927		29.72	-53.35	50805.02	18.83		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-08T17:52:05.790
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 618727014362838784
 2Mass ID (if available) : 09355912+1501469
 ICRS Star Coord at Epoch: 09h 35m 59.09189s +15:01:46.33998s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 12.865
 G magnitude : 14.173
 RP magnitude : 13.698
 BP magnitude : 14.486
 DUPflag : 0
 Distance (au) : 18.482
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.68
 Sun-Target sep (deg) : 84.22
 Sun-Moon sep (deg) : 159.56
 B (ring opening deg) : 25.90
 PA of pole (deg) : 99.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.301
 C/A sky separation (km) : 30846.7
 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



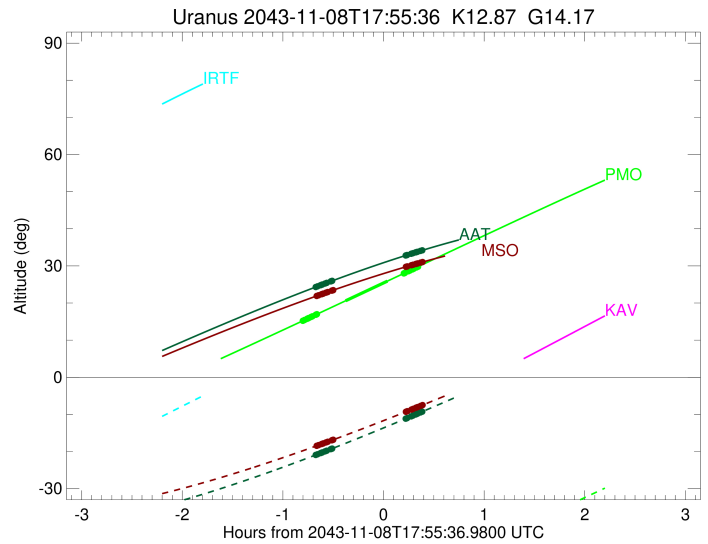
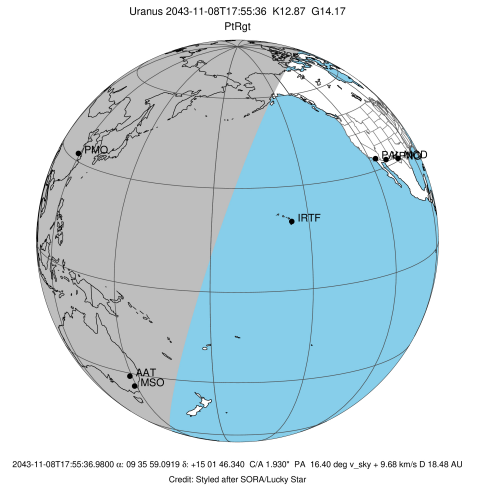
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-11-08T17:15:17.448	24.32	-20.91	51083.65	-16.94		
lambda	I	2043-11-08T17:16:19.876	24.50	-20.73	50026.71	-16.82		
delta	I	2043-11-08T17:18:03.698	24.80	-20.43	48300.35	-16.43		
gamma	I	2043-11-08T17:18:44.936	24.92	-20.31	47626.28	-16.26		
eta	I	2043-11-08T17:19:12.718	24.99	-20.23	47176.12	-16.14		
beta	I	2043-11-08T17:20:47.141	25.26	-19.96	45675.66	-15.72		
alpha	I	2043-11-08T17:21:50.081	25.44	-19.77	44694.49	-15.42		
4	I	2043-11-08T17:24:10.076	25.83	-19.36	42615.40	-14.69		
5	I	2043-11-08T17:24:25.634	25.87	-19.32	42310.84	-14.56		
6	I	2043-11-08T17:25:02.950	25.98	-19.21	41808.76	-14.38		

No planet occultations

6	E	2043-11-08T18:08:46.386	32.80	-11.17	41865.73	14.29		
5	E	2043-11-08T18:09:16.393	32.87	-11.08	42266.96	14.46		
4	E	2043-11-08T18:09:39.476	32.92	-11.00	42563.81	14.59		
alpha	E	2043-11-08T18:12:00.823	33.26	-10.55	44695.43	15.30		
beta	E	2043-11-08T18:13:03.291	33.41	-10.35	45646.21	15.60		
eta	E	2043-11-08T18:14:40.371	33.63	-10.05	47176.12	16.01		
gamma	E	2043-11-08T18:15:08.060	33.70	-9.96	47621.01	16.12		
delta	E	2043-11-08T18:15:49.979	33.79	-9.82	48300.35	16.29		
lambda	E	2043-11-08T18:17:34.732	34.03	-9.49	50026.71	16.67		
epsilon	E	2043-11-08T18:18:19.572	34.14	-9.34	50777.46	16.78		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-11-08T17:52:30.660
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 618727014362838784
 2Mass ID (if available) : 09355912+1501469
 ICRS Star Coord at Epoch: 09h 35m 59.09189s +15:01:46.33998s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 12.865
 G magnitude : 14.173
 RP magnitude : 13.698
 BP magnitude : 14.486
 DUPflag : 0
 Distance (au) : 18.482
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.68
 Sun-Target sep (deg) : 84.22
 Sun-Moon sep (deg) : 159.58
 B (ring opening deg) : 25.90
 PA of pole (deg) : 99.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.320
 C/A sky separation (km) : 31102.1
 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



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	2043-11-08T17:15:52.426		21.92	-18.45	51081.11	-16.87		
lambda	I	2043-11-08T17:16:54.941		22.09	-18.28	50026.71	-16.75		
delta	I	2043-11-08T17:18:39.207		22.36	-17.99	48300.35	-16.35		
gamma	I	2043-11-08T17:19:20.643		22.47	-17.88	47626.24	-16.18		
eta	I	2043-11-08T17:19:48.561		22.55	-17.80	47176.12	-16.06		
beta	I	2043-11-08T17:21:23.506		22.80	-17.54	45675.56	-15.63		
alpha	I	2043-11-08T17:22:26.836		22.97	-17.37	44694.30	-15.32		
4	I	2043-11-08T17:24:47.838		23.34	-16.98	42615.31	-14.57		
5	I	2043-11-08T17:25:03.543		23.38	-16.93	42311.07	-14.44		
6	I	2043-11-08T17:25:41.133		23.48	-16.83	41809.05	-14.25		

No planet occultations

6	E	2043-11-08T18:08:53.985		29.74	-9.31	41865.44	14.16		
5	E	2043-11-08T18:09:24.265		29.81	-9.22	42267.62	14.35		
4	E	2043-11-08T18:09:47.544		29.86	-9.15	42564.21	14.47		
alpha	E	2043-11-08T18:12:09.831		30.17	-8.72	44695.23	15.21		
beta	E	2043-11-08T18:13:12.680		30.31	-8.53	45646.31	15.51		
eta	E	2043-11-08T18:14:50.248		30.52	-8.23	47176.12	15.94		
gamma	E	2043-11-08T18:15:18.065		30.58	-8.15	47621.01	16.05		
delta	E	2043-11-08T18:16:00.168		30.67	-8.02	48300.35	16.22		
lambda	E	2043-11-08T18:17:45.329		30.89	-7.70	50026.71	16.61		
epsilon	E	2043-11-08T18:18:30.261		30.99	-7.56	50776.42	16.72		