

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-17T07:55:20.450
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3379776942809906944
 2Mass ID (if available) : 06420453+2324310

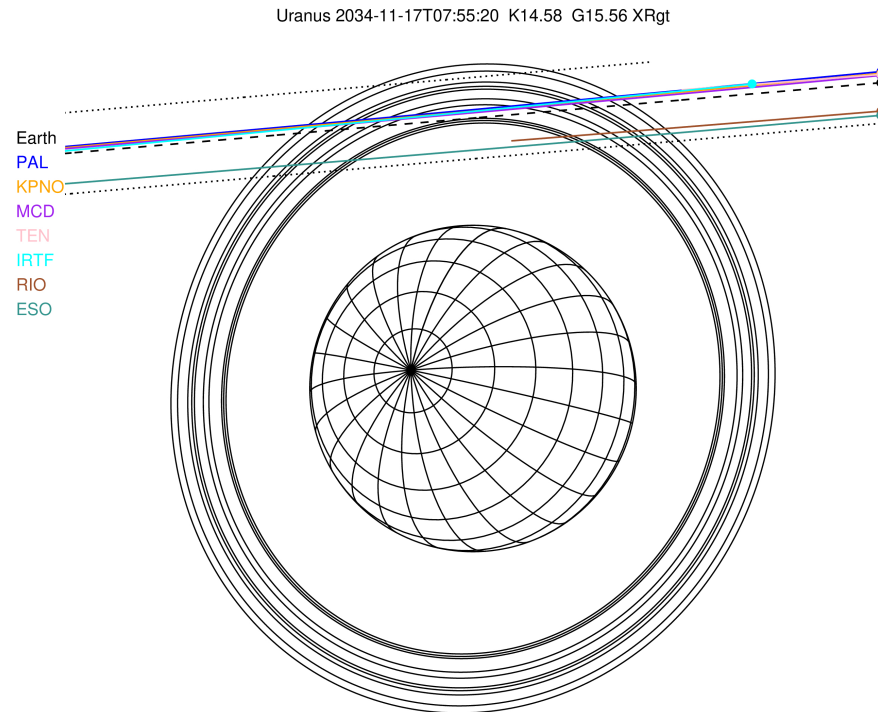
ICRS Star Coord at Epoch: 06h 42m 04.53627s +23:24:31.03177s

RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.578
 G magnitude : 15.555
 RP magnitude : 15.176
 BP magnitude : 15.787
 DUPflag : 0
 Distance (au) : 18.185
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.62
 Sun-Target sep (deg) : 134.91
 Sun-Moon sep (deg) : 155.99
 B (ring opening deg) : 66.64
 PA of pole (deg) : 73.57

#	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

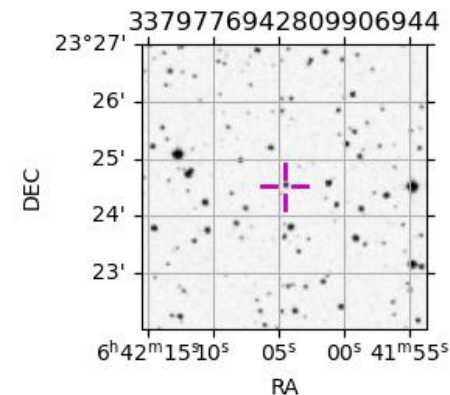


2034-11-17T07:55:20.4500 ra: 06 42 04.5363 s: +23 24 31.032 C/A 3.208" PA 184.96 deg v_sky -14.62 km/s D 18.19 AU
 Credit: Styled after SORA/Lucky Star

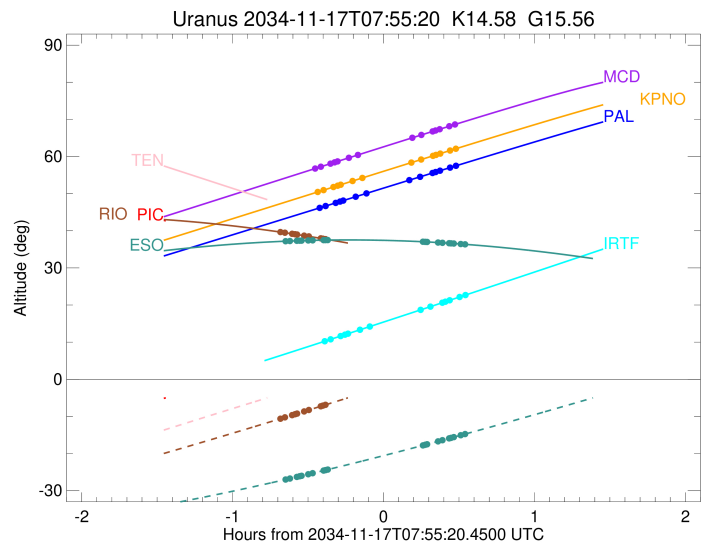
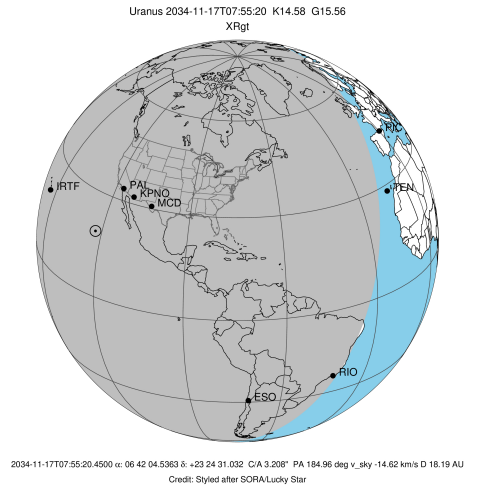


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	NOV 17 07:30 - NOV 17 08:23	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	NOV 17 07:29 - NOV 17 08:23	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	NOV 17 07:28 - NOV 17 08:23	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++		+++++	NOV 17 07:32 - NOV 17 08:27	PnnRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++			NOV 17 07:14 - NOV 17 07:32	PnnRin
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	NOV 17 07:16 - NOV 17 08:27	PnnRie
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 : 2034-11-17T07:59:46.170
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3379776942809906944
 2Mass ID (if available) : 06420453+2324310
 ICRS Star Coord at Epoch: 06h 42m 04.53627s +23:24:31.03177s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.578
 G magnitude : 15.555
 RP magnitude : 15.176
 BP magnitude : 15.787
 DUPflag : 0
 Distance (au) : 18.185
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.62
 Sun-Target sep (deg) : 134.91
 Sun-Moon sep (deg) : 156.80
 B (ring opening deg) : 66.64
 PA of pole (deg) : 73.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.297
 C/A sky separation (km) : 43480.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.bsp
 ural161.bsp
 vgr2.ural161.bsp
 peph.ural160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



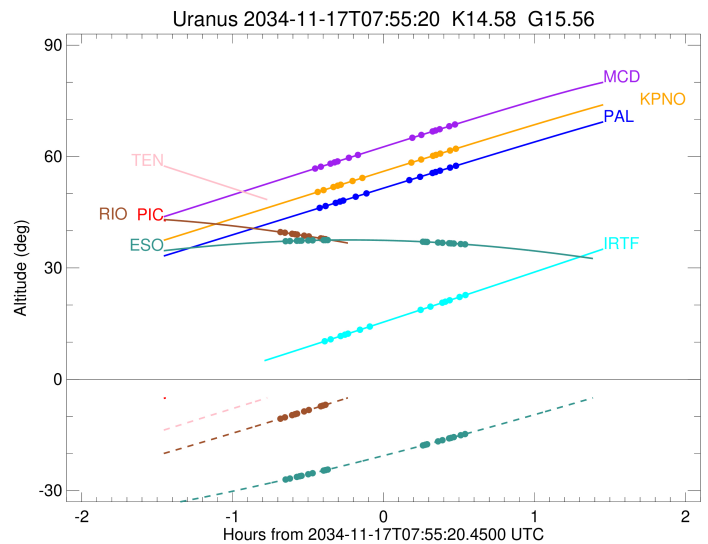
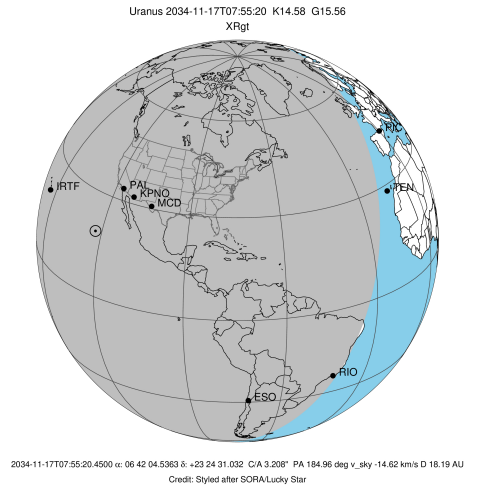
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-17T07:30:03.057		46.19	-75.83	51123.36	-8.08		
lambda	I	2034-11-17T07:32:21.436		46.67	-75.84	50026.71	-7.66		
delta	I	2034-11-17T07:36:22.544		47.51	-75.81	48300.35	-6.65		
gamma	I	2034-11-17T07:38:07.538		47.88	-75.78	47627.27	-6.17		
eta	I	2034-11-17T07:39:22.765		48.14	-75.75	47176.12	-5.82		
beta	I	2034-11-17T07:44:19.325		49.18	-75.59	45666.15	-4.33		
alpha	I	2034-11-17T07:48:31.479		50.06	-75.39	44743.42	-2.98		

No planet occultations

alpha	E	2034-11-17T08:05:40.979		53.66	-74.00	44750.08	2.98		
beta	E	2034-11-17T08:09:48.639		54.52	-73.56	45655.34	4.34		
eta	E	2034-11-17T08:14:46.740		55.55	-72.96	47176.12	5.84		
gamma	E	2034-11-17T08:16:02.261		55.82	-72.81	47630.67	6.20		
delta	E	2034-11-17T08:17:46.320		56.18	-72.58	48300.35	6.67		
lambda	E	2034-11-17T08:21:46.415		57.01	-72.05	50026.71	7.69		
epsilon	E	2034-11-17T08:23:22.555		57.34	-71.83	50784.52	8.12		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-17T07:59:20.070
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 3379776942809906944
 2Mass ID (if available) : 06420453+2324310
 ICRS Star Coord at Epoch: 06h 42m 04.53627s +23:24:31.03177s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.578
 G magnitude : 15.555
 RP magnitude : 15.176
 BP magnitude : 15.787
 DUPflag : 0
 Distance (au) : 18.185
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.62
 Sun-Target sep (deg) : 134.91
 Sun-Moon sep (deg) : 156.76
 B (ring opening deg) : 66.64
 PA of pole (deg) : 73.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.279
 C/A sky separation (km) : 43245.4
 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



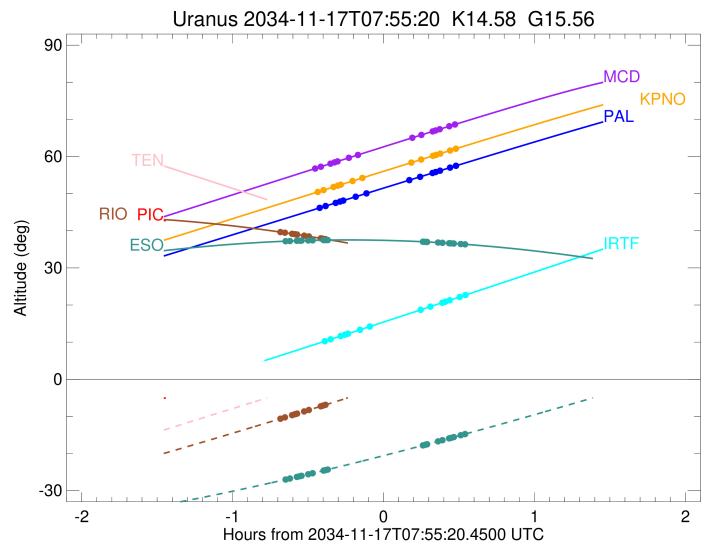
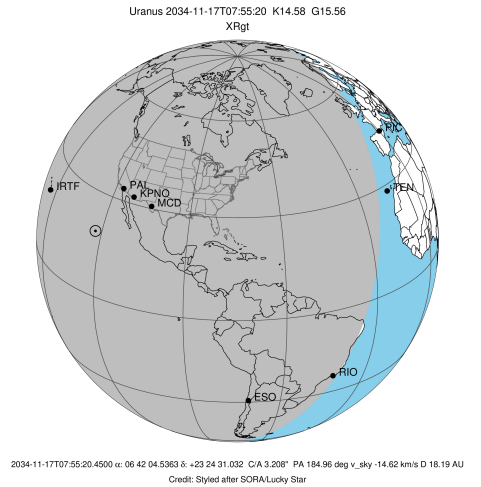
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-17T07:29:16.158		50.47	-76.60	51127.39	-8.22		
lambda	I	2034-11-17T07:31:32.471		50.96	-76.44	50026.71	-7.81		
delta	I	2034-11-17T07:35:27.972		51.79	-76.12	48300.35	-6.83		
gamma	I	2034-11-17T07:37:09.885		52.16	-75.96	47627.20	-6.38		
eta	I	2034-11-17T07:38:22.554		52.41	-75.85	47176.12	-6.04		
beta	I	2034-11-17T07:43:04.749		53.41	-75.36	45666.53	-4.63		
alpha	I	2034-11-17T07:46:54.271		54.23	-74.92	44742.77	-3.41		

No planet occultations

alpha	E	2034-11-17T08:06:28.791		58.38	-72.19	44750.40	3.42		
beta	E	2034-11-17T08:10:13.860		59.18	-71.60	45654.99	4.64		
eta	E	2034-11-17T08:14:57.662		60.17	-70.82	47176.12	6.06		
gamma	E	2034-11-17T08:16:10.644		60.43	-70.61	47630.70	6.40		
delta	E	2034-11-17T08:17:51.656		60.79	-70.33	48300.35	6.86		
lambda	E	2034-11-17T08:21:46.227		61.61	-69.65	50026.71	7.85		
epsilon	E	2034-11-17T08:23:20.402		61.94	-69.38	50783.02	8.26		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-17T07:58:36.880
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3379776942809906944
 2Mass ID (if available) : 06420453+2324310
 ICRS Star Coord at Epoch: 06h 42m 04.53627s +23:24:31.03177s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.578
 G magnitude : 15.555
 RP magnitude : 15.176
 BP magnitude : 15.787
 DUPflag : 0
 Distance (au) : 18.185
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.62
 Sun-Target sep (deg) : 134.91
 Sun-Moon sep (deg) : 156.70
 B (ring opening deg) : 66.64
 PA of pole (deg) : 73.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.261
 C/A sky separation (km) : 43008.3
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



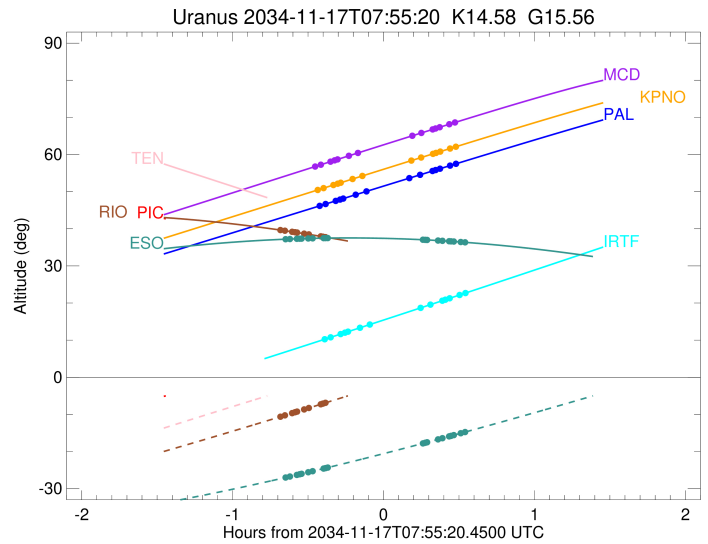
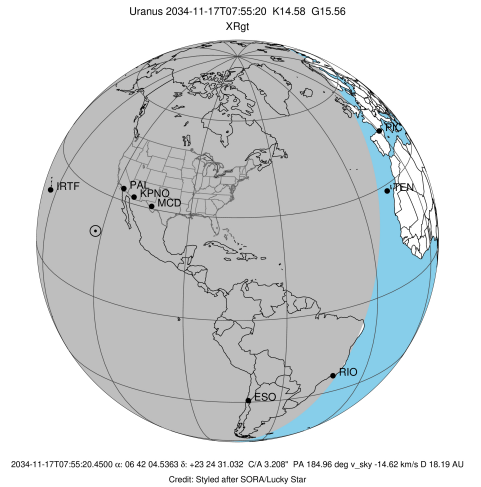
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-17T07:28:13.396	56.78	-74.31	51131.59	-8.37		
lambda	I	2034-11-17T07:30:27.687	57.26	-73.96	50026.71	-7.97		
delta	I	2034-11-17T07:34:17.785	58.09	-73.34	48300.35	-7.02		
gamma	I	2034-11-17T07:35:56.795	58.44	-73.07	47627.12	-6.58		
eta	I	2034-11-17T07:37:07.087	58.70	-72.88	47176.12	-6.25		
beta	I	2034-11-17T07:41:36.588	59.66	-72.11	45666.89	-4.92		
alpha	I	2034-11-17T07:45:08.552	60.42	-71.49	44742.16	-3.80		

No planet occultations

alpha	E	2034-11-17T08:06:51.421	65.07	-67.44	44750.65	3.81		
beta	E	2034-11-17T08:10:19.000	65.80	-66.77	45654.67	4.93		
eta	E	2034-11-17T08:14:50.216	66.76	-65.88	47176.12	6.27		
gamma	E	2034-11-17T08:16:00.857	67.01	-65.64	47630.74	6.60		
delta	E	2034-11-17T08:17:39.018	67.35	-65.32	48300.35	7.04		
lambda	E	2034-11-17T08:21:28.323	68.16	-64.55	50026.71	8.00		
epsilon	E	2034-11-17T08:23:00.608	68.48	-64.24	50781.63	8.40		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-17T08:02:44.520
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 3379776942809906944
 2Mass ID (if available) : 06420453+2324310
 ICRS Star Coord at Epoch: 06h 42m 04.53627s +23:24:31.03177s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.578
 G magnitude : 15.555
 RP magnitude : 15.176
 BP magnitude : 15.787
 DUPflag : 0
 Distance (au) : 18.185
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.62
 Sun-Target sep (deg) : 134.91
 Sun-Moon sep (deg) : 156.91
 B (ring opening deg) : 66.64
 PA of pole (deg) : 73.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.274
 C/A sky separation (km) : 43187.8
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



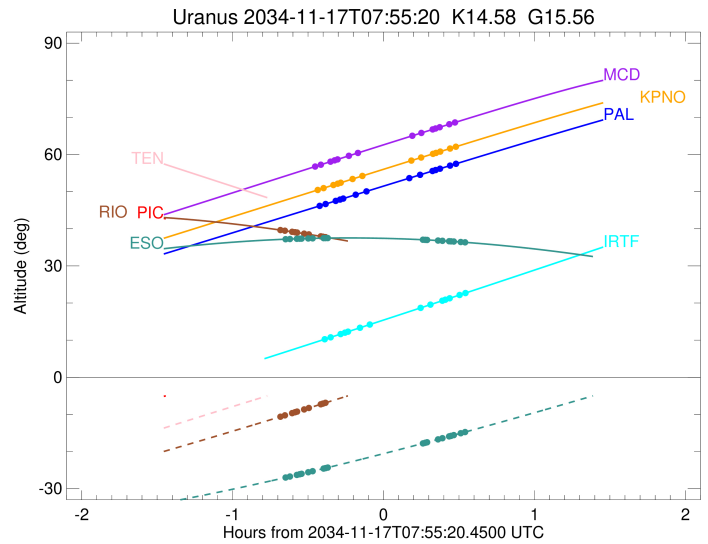
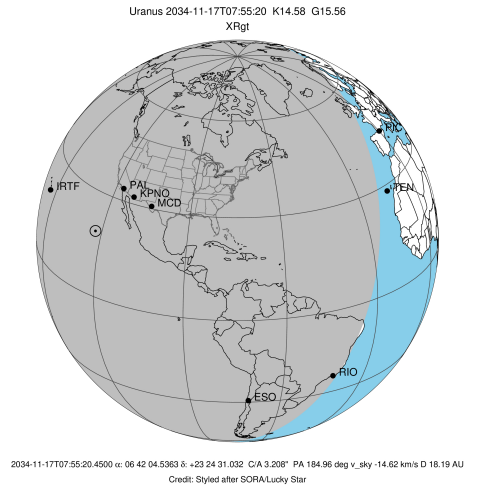
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-17T07:32:03.119		10.26	-53.58	51125.58	-8.10		
lambda	I	2034-11-17T07:34:21.287		10.76	-54.12	50026.71	-7.70		
delta	I	2034-11-17T07:38:20.136		11.64	-55.05	48300.35	-6.74		
gamma	I	2034-11-17T07:40:03.370		12.02	-55.45	47627.22	-6.30		
eta	I	2034-11-17T07:41:16.925		12.29	-55.74	47176.12	-5.97		
beta	I	2034-11-17T07:46:01.846		13.34	-56.85	45666.47	-4.60		
alpha	I	2034-11-17T07:49:51.953		14.19	-57.75	44742.81	-3.42		

No planet occultations

alpha	E	2034-11-17T08:10:09.916		18.71	-62.52	44750.52	3.43		
beta	E	2034-11-17T08:13:55.171		19.55	-63.40	45654.81	4.62		
eta	E	2034-11-17T08:18:41.134		20.61	-64.52	47176.12	6.00		
gamma	E	2034-11-17T08:19:54.826		20.89	-64.81	47630.73	6.34		
delta	E	2034-11-17T08:21:36.876		21.27	-65.21	48300.35	6.78		
lambda	E	2034-11-17T08:25:34.071		22.16	-66.14	50026.71	7.76		
epsilon	E	2034-11-17T08:27:09.180		22.51	-66.51	50781.64	8.16		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-17T07:51:13.360
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 3379776942809906944
 2Mass ID (if available) : 06420453+2324310
 ICRS Star Coord at Epoch: 06h 42m 04.53627s +23:24:31.03177s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.578
 G magnitude : 15.555
 RP magnitude : 15.176
 BP magnitude : 15.787
 DUPflag : 0
 Distance (au) : 18.185
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.62
 Sun-Target sep (deg) : 134.91
 Sun-Moon sep (deg) : 155.68
 B (ring opening deg) : 66.64
 PA of pole (deg) : 73.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.895
 C/A sky separation (km) : 38187.7
 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

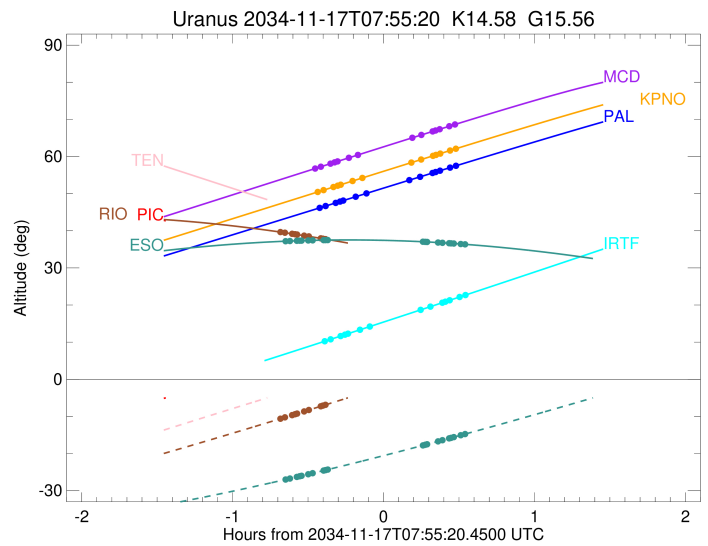
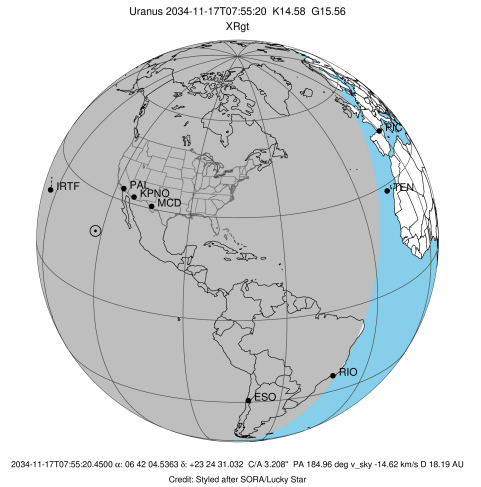


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-11-17T07:14:18.258		39.66	-10.64	51201.76	-10.55		
lambda	I	2034-11-17T07:16:10.437		39.47	-10.25	50026.71	-10.30		
delta	I	2034-11-17T07:19:02.652		39.18	-9.66	48300.35	-9.74		
gamma	I	2034-11-17T07:20:12.809		39.06	-9.41	47625.98	-9.49		
eta	I	2034-11-17T07:21:00.669		38.98	-9.25	47176.12	-9.31		
beta	I	2034-11-17T07:23:48.012		38.69	-8.66	45671.71	-8.65		
alpha	I	2034-11-17T07:25:39.272		38.49	-8.28	44733.84	-8.19		
4	I	2034-11-17T07:30:26.745		37.96	-7.27	42570.59	-6.81		
5	I	2034-11-17T07:31:10.956		37.87	-7.11	42275.09	-6.63		
6	I	2034-11-17T07:32:22.857		37.74	-6.86	41813.32	-6.21		

No planet occultations

6	E	2034-11-17T08:05:27.786		33.50	0.20x	41795.48	6.20		
5	E	2034-11-17T08:06:49.053		33.31	0.49x	42313.56	6.62		
4	E	2034-11-17T08:07:22.124		33.23	0.61x	42536.27	6.80		
alpha	E	2034-11-17T08:12:17.996		32.52	1.68x	44752.40	8.18		
beta	E	2034-11-17T08:14:05.399		32.26	2.06x	45650.28	8.63		
eta	E	2034-11-17T08:16:55.561		31.84	2.68x	47176.12	9.29		
gamma	E	2034-11-17T08:17:44.104		31.72	2.86x	47631.21	9.46		
delta	E	2034-11-17T08:18:53.907		31.55	3.11x	48300.35	9.71		
lambda	E	2034-11-17T08:21:46.642		31.11	3.74x	50026.71	10.27		
epsilon	E	2034-11-17T08:22:57.272		30.93	3.99x	50759.75	10.51		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-11-17T07:54:20.010
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 3379776942809906944
 2Mass ID (if available) : 06420453+2324310
 ICRS Star Coord at Epoch: 06h 42m 04.53627s +23:24:31.03177s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.578
 G magnitude : 15.555
 RP magnitude : 15.176
 BP magnitude : 15.787
 DUPflag : 0
 Distance (au) : 18.185
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.62
 Sun-Target sep (deg) : 134.91
 Sun-Moon sep (deg) : 156.00
 B (ring opening deg) : 66.64
 PA of pole (deg) : 73.57
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.819
 C/A sky separation (km) : 37184.9
 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	2034-11-17T07:16:20.703		37.19	-27.02	51211.76	-10.91		
lambda	I	2034-11-17T07:18:09.935		37.24	-26.74	50026.71	-10.69		
delta	I	2034-11-17T07:20:55.334		37.30	-26.30	48300.35	-10.17		
gamma	I	2034-11-17T07:22:02.364		37.33	-26.12	47625.82	-9.95		
eta	I	2034-11-17T07:22:47.923		37.34	-26.00	47176.12	-9.79		
beta	I	2034-11-17T07:25:26.163		37.39	-25.58	45672.31	-9.20		
alpha	I	2034-11-17T07:27:10.520		37.42	-25.30	44732.67	-8.79		
4	I	2034-11-17T07:31:33.513		37.48	-24.59	42572.78	-7.59		
5	I	2034-11-17T07:32:13.937		37.49	-24.48	42271.56	-7.44		
6	I	2034-11-17T07:33:16.740		37.50	-24.31	41815.24	-7.09		

No planet occultations

6	E	2034-11-17T08:10:51.230		37.05	-17.84	41795.07	7.09		
5	E	2034-11-17T08:12:03.157		37.01	-17.63	42314.39	7.44		
4	E	2034-11-17T08:12:32.468		37.00	-17.54	42534.68	7.59		
alpha	E	2034-11-17T08:17:03.109		36.83	-16.72	44752.43	8.80		
beta	E	2034-11-17T08:18:43.318		36.76	-16.42	45649.54	9.20		
eta	E	2034-11-17T08:21:23.865		36.65	-15.93	47176.12	9.80		
gamma	E	2034-11-17T08:22:09.950		36.62	-15.79	47631.28	9.96		
delta	E	2034-11-17T08:23:16.397		36.57	-15.59	48300.35	10.18		
lambda	E	2034-11-17T08:26:01.705		36.44	-15.08	50026.71	10.70		
epsilon	E	2034-11-17T08:27:09.268		36.38	-14.87	50756.12	10.92		