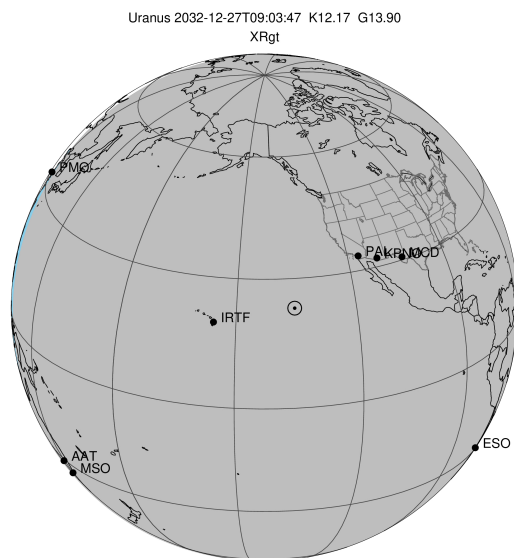


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-27T09:03:47.110
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3427814704608568576
 2Mass ID (if available) : 05550802+2338511

ICRS Star Coord at Epoch: 05h 55m 08.01897s +23:38:51.00894s

RUWE (>1.4 is poor) : 8.21
 K magnitude : 12.171
 G magnitude : 13.903
 RP magnitude : 13.308
 BP magnitude : 14.285
 DUPflag : 0
 Distance (au) : 18.041
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.22
 Sun-Target sep (deg) : 173.18
 Sun-Moon sep (deg) : 124.62
 B (ring opening deg) : 76.27
 PA of pole (deg) : 53.97

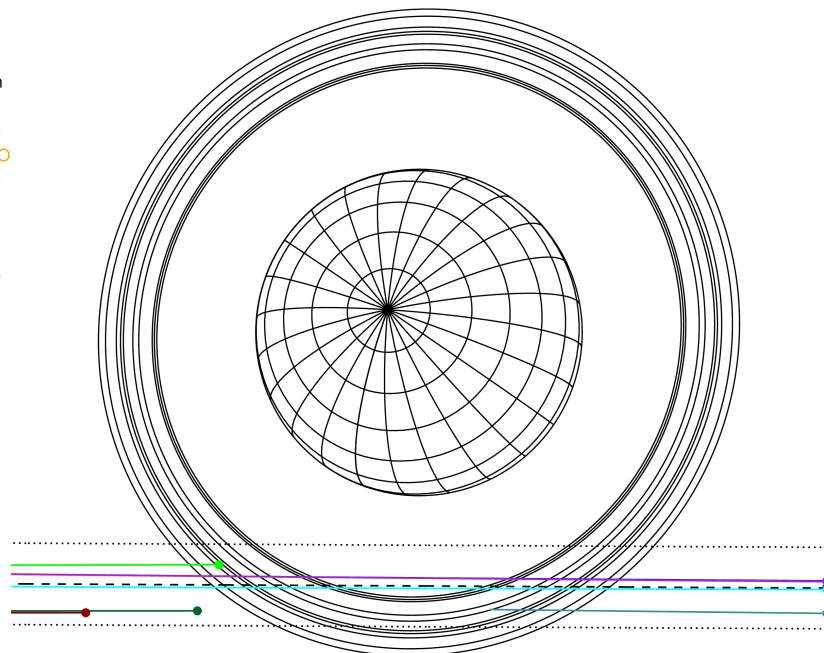
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2032-12-27T09:03:47.1100 ra: 05 55 08.0190 s: +23 38 51.009 C/A 3.027'' PA 359.70 deg v_sky -23.22 km/s D 18.04 AU
 Credit: Styled after SORA/Lucky Star

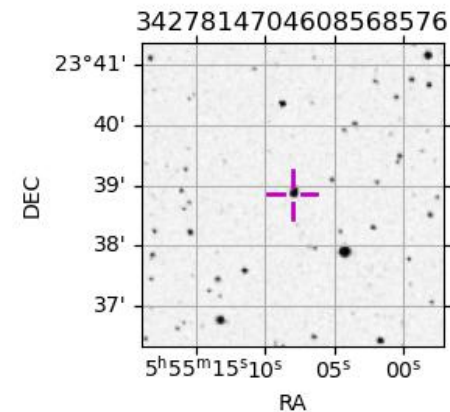
Uranus 2032-12-27T09:03:47 K12.17 G13.90 XRgt

Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 ESO
 AAT
 MSO

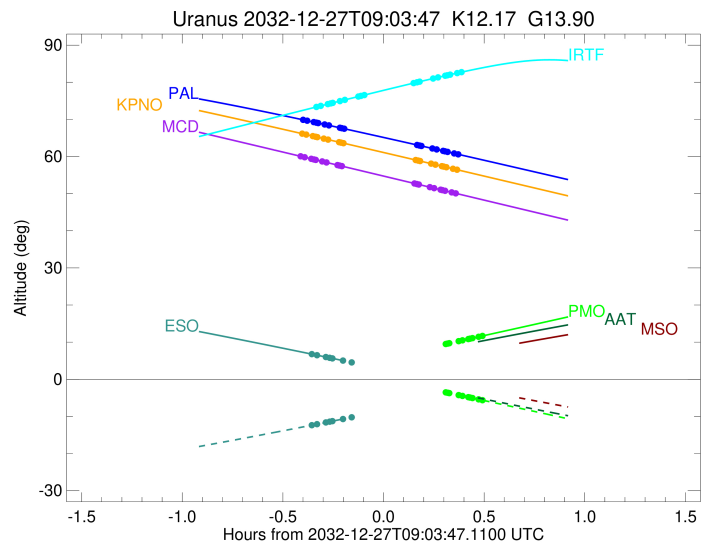
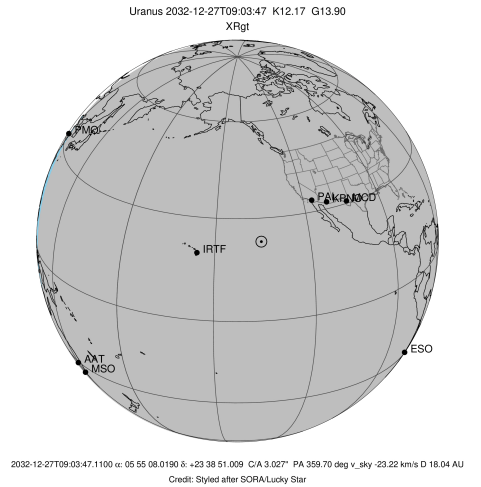


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+++++		+++++	DEC 27 08:40 - DEC 27 09:25	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8			+++	DEC 27 09:30 - DEC 27 09:33	PnnRne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	DEC 27 08:39 - DEC 27 09:25	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	DEC 27 08:39 - DEC 27 09:25	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++		+++++	DEC 27 08:44 - DEC 27 09:26	PnnRie
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	+++++			DEC 27 08:42 - DEC 27 08:51	PnnRin
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 : 2032-12-27T09:02:11.750
 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 : 3427814704608568576
 2Mass ID (if available) : 05550802+2338511
 ICRS Star Coord at Epoch: 05h 55m 08.01897s +23:38:51.00894s
 RUWE (>1.4 is poor) : 8.21
 K magnitude : 12.171
 G magnitude : 13.903
 RP magnitude : 13.308
 BP magnitude : 14.285
 DUPflag : 0
 Distance (au) : 18.041
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.22
 Sun-Target sep (deg) : 173.18
 Sun-Moon sep (deg) : 125.50
 B (ring opening deg) : 76.27
 PA of pole (deg) : 53.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.937
 C/A sky separation (km) : 38429.5
 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

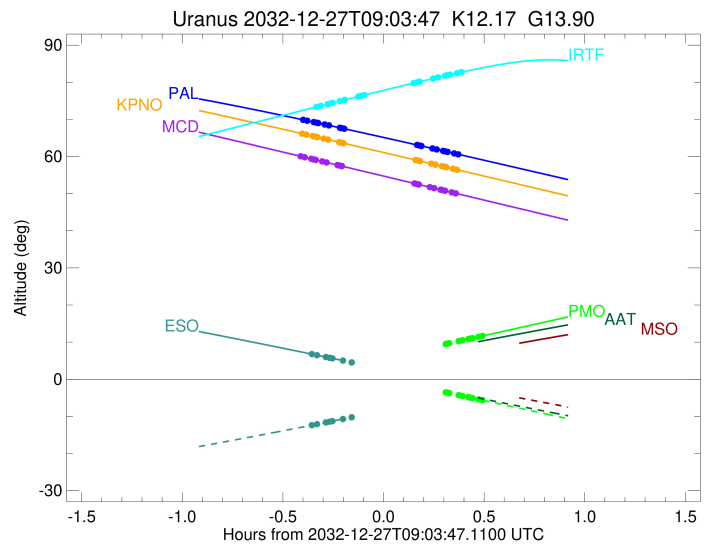
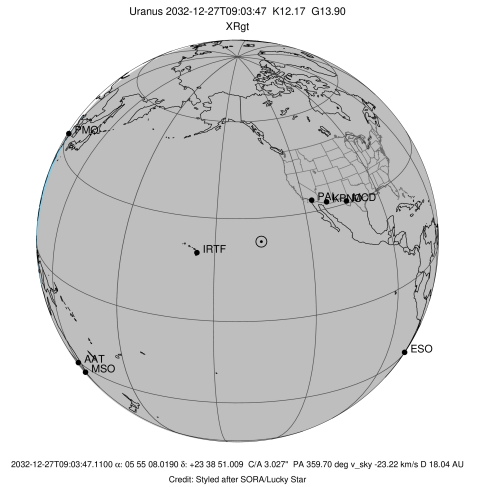


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-27T08:40:14.059		69.81	-74.96	50777.57	-15.44		
lambda	I	2032-12-27T08:41:03.037		69.65	-74.83	50026.71	-15.16		
delta	I	2032-12-27T08:43:00.154		69.27	-74.50	48300.35	-14.30		
gamma	I	2032-12-27T08:43:47.801		69.12	-74.36	47627.76	-13.92		
eta	I	2032-12-27T08:44:20.545		69.01	-74.27	47176.12	-13.66		
beta	I	2032-12-27T08:46:15.736		68.64	-73.94	45658.77	-12.64		
alpha	I	2032-12-27T08:47:33.669		68.38	-73.72	44703.90	-11.90		
4	I	2032-12-27T08:50:46.143		67.75	-73.15	42601.76	-9.88		
5	I	2032-12-27T08:51:30.737		67.60	-73.02	42165.64	-9.37		
6	I	2032-12-27T08:52:06.212		67.49	-72.91	41834.12	-8.99		

No planet occultations

6	E	2032-12-27T09:13:48.949		63.11	-68.86	41864.45	8.98		
5	E	2032-12-27T09:14:20.854		63.00	-68.75	42157.88	9.36		
4	E	2032-12-27T09:15:03.053		62.86	-68.62	42566.27	9.87		
alpha	E	2032-12-27T09:18:17.571		62.19	-67.99	44684.74	11.89		
beta	E	2032-12-27T09:19:35.639		61.92	-67.73	45642.22	12.63		
eta	E	2032-12-27T09:21:32.337		61.53	-67.35	47176.12	13.64		
gamma	E	2032-12-27T09:22:04.700		61.41	-67.24	47621.94	13.91		
delta	E	2032-12-27T09:22:52.824		61.25	-67.09	48300.35	14.29		
lambda	E	2032-12-27T09:24:50.096		60.85	-66.70	50026.71	15.14		
epsilon	E	2032-12-27T09:25:48.625		60.65	-66.51	50924.63	15.42		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-27T09:07:27.450
 Event type : XRgt
 : No Uranus occs
 : 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 : 3427814704608568576
 2Mass ID (if available) : 05550802+2338511
 ICRS Star Coord at Epoch: 05h 55m 08.01897s +23:38:51.00894s
 RUWE (>1.4 is poor) : 8.21
 K magnitude : 12.171
 G magnitude : 13.903
 RP magnitude : 13.308
 BP magnitude : 14.285
 DUPflag : 0
 Distance (au) : 18.041
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.22
 Sun-Target sep (deg) : 173.18
 Sun-Moon sep (deg) : 124.26
 B (ring opening deg) : 76.27
 PA of pole (deg) : 53.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.777
 C/A sky separation (km) : 36330.6
 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

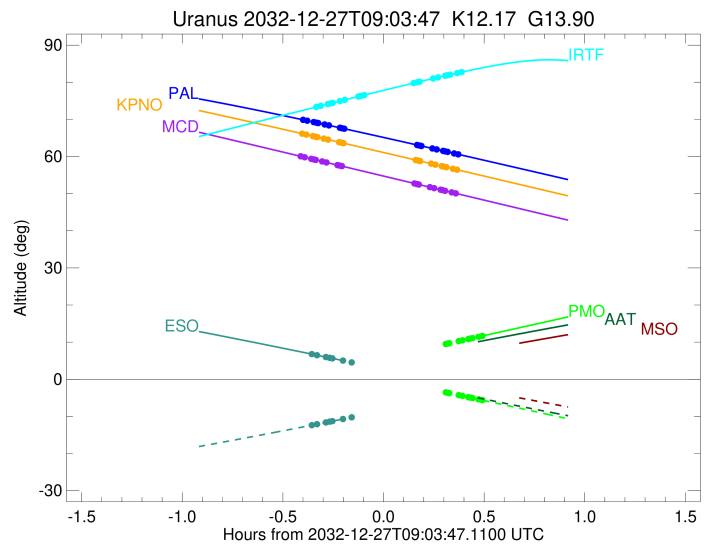
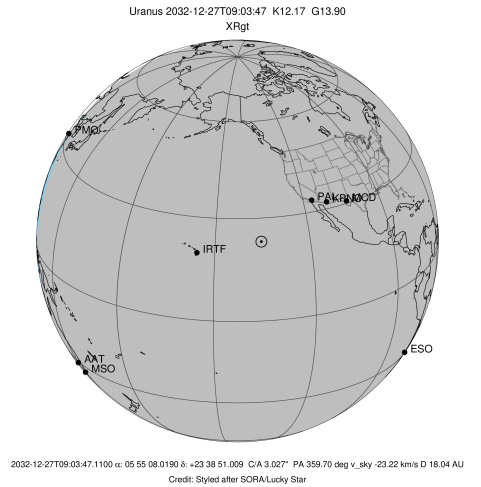


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-27T08:43:23.157		1.95x	3.78x	50790.07	-16.23		
lambda	I	2032-12-27T08:44:10.400		2.10x	3.63x	50026.71	-16.02		
delta	I	2032-12-27T08:46:00.506		2.45x	3.30x	48300.35	-15.33		
gamma	I	2032-12-27T08:46:44.795		2.59x	3.16x	47628.17	-15.02		
eta	I	2032-12-27T08:47:15.092		2.69x	3.07x	47176.12	-14.81		
beta	I	2032-12-27T08:49:00.076		3.02x	2.74x	45660.61	-14.02		
alpha	I	2032-12-27T08:50:09.675		3.24x	2.53x	44706.96	-13.45		
4	I	2032-12-27T08:52:54.795		3.77x	2.02x	42605.47	-11.96		
5	I	2032-12-27T08:53:31.198		3.89x	1.91x	42171.08	-11.59		
6	I	2032-12-27T08:54:00.450		3.98x	1.82x	41828.77	-11.34		

No planet occultations

6	E	2032-12-27T09:22:22.260		9.51	-3.53x	41867.82	11.36		
5	E	2032-12-27T09:22:47.700		9.59	-3.61x	42160.56	11.62		
4	E	2032-12-27T09:23:21.596		9.70	-3.72x	42561.87	11.98		
alpha	E	2032-12-27T09:26:08.210		10.25	-4.26x	44684.62	13.49		
beta	E	2032-12-27T09:27:17.706		10.48	-4.48x	45641.78	14.06		
eta	E	2032-12-27T09:29:03.794		10.83	-4.82x	47176.12	14.86		
gamma	E	2032-12-27T09:29:33.574		10.93	-4.92x	47621.75	15.07		
delta	E	2032-12-27T09:30:18.150		11.08	-5.06	48300.35	15.38		
lambda	E	2032-12-27T09:32:07.894		11.44	-5.41	50026.71	16.07		
epsilon	E	2032-12-27T09:33:04.282		11.63	-5.60	50942.56	16.29		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-27T09:01:52.590
 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 : 3427814704608568576
 2Mass ID (if available) : 05550802+2338511
 ICRS Star Coord at Epoch: 05h 55m 08.01897s +23:38:51.00894s
 RUWE (>1.4 is poor) : 8.21
 K magnitude : 12.171
 G magnitude : 13.903
 RP magnitude : 13.308
 BP magnitude : 14.285
 DUPflag : 0
 Distance (au) : 18.041
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.22
 Sun-Target sep (deg) : 173.18
 Sun-Moon sep (deg) : 125.52
 B (ring opening deg) : 76.27
 PA of pole (deg) : 53.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.941
 C/A sky separation (km) : 38486.0
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



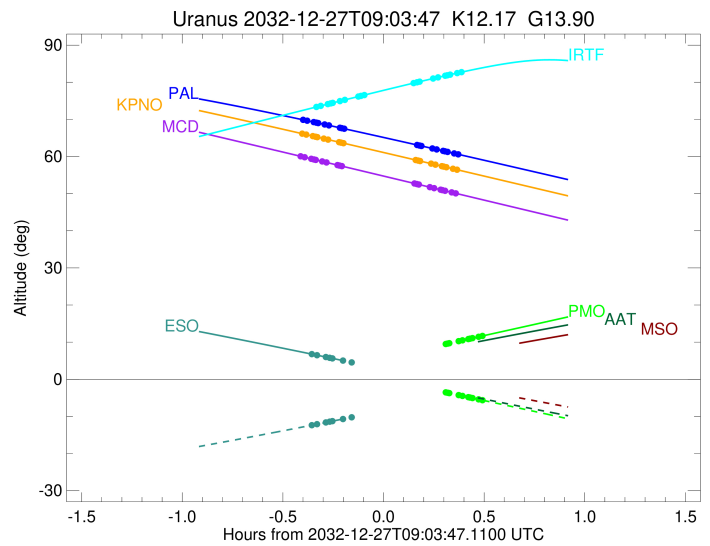
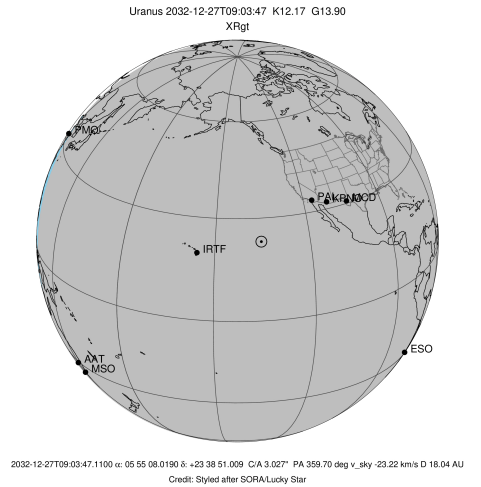
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-27T08:39:57.250		66.08	-71.88	50777.20	-15.40		
lambda	I	2032-12-27T08:40:46.324		65.91	-71.72	50026.71	-15.12		
delta	I	2032-12-27T08:42:43.764		65.50	-71.34	48300.35	-14.26		
gamma	I	2032-12-27T08:43:31.561		65.34	-71.18	47627.75	-13.88		
eta	I	2032-12-27T08:44:04.412		65.22	-71.08	47176.12	-13.61		
beta	I	2032-12-27T08:46:00.044		64.82	-70.70	45658.71	-12.59		
alpha	I	2032-12-27T08:47:18.330		64.55	-70.44	44703.81	-11.85		
4	I	2032-12-27T08:50:31.979		63.87	-69.79	42601.63	-9.80		
5	I	2032-12-27T08:51:16.933		63.72	-69.64	42165.48	-9.29		
6	I	2032-12-27T08:51:52.695		63.59	-69.52	41834.30	-8.90		

No planet occultations

6	E	2032-12-27T09:13:24.325		59.06	-65.13	41864.35	8.90		
5	E	2032-12-27T09:13:56.525		58.94	-65.02	42157.81	9.28		
4	E	2032-12-27T09:14:39.087		58.79	-64.88	42566.39	9.80		
alpha	E	2032-12-27T09:17:54.815		58.10	-64.20	44684.75	11.83		
beta	E	2032-12-27T09:19:13.252		57.83	-63.93	45642.24	12.58		
eta	E	2032-12-27T09:21:10.415		57.41	-63.52	47176.12	13.59		
gamma	E	2032-12-27T09:21:42.894		57.30	-63.41	47621.94	13.86		
delta	E	2032-12-27T09:22:31.179		57.13	-63.24	48300.35	14.24		
lambda	E	2032-12-27T09:24:28.805		56.71	-62.83	50026.71	15.10		
epsilon	E	2032-12-27T09:25:27.468		56.50	-62.63	50924.24	15.38		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-27T09:01:26.900
 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 : 3427814704608568576
 2Mass ID (if available) : 05550802+2338511
 ICRS Star Coord at Epoch: 05h 55m 08.01897s +23:38:51.00894s
 RUWE (>1.4 is poor) : 8.21
 K magnitude : 12.171
 G magnitude : 13.903
 RP magnitude : 13.308
 BP magnitude : 14.285
 DUPflag : 0
 Distance (au) : 18.041
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.22
 Sun-Target sep (deg) : 173.18
 Sun-Moon sep (deg) : 125.53
 B (ring opening deg) : 76.27
 PA of pole (deg) : 53.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.939
 C/A sky separation (km) : 38461.3
 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

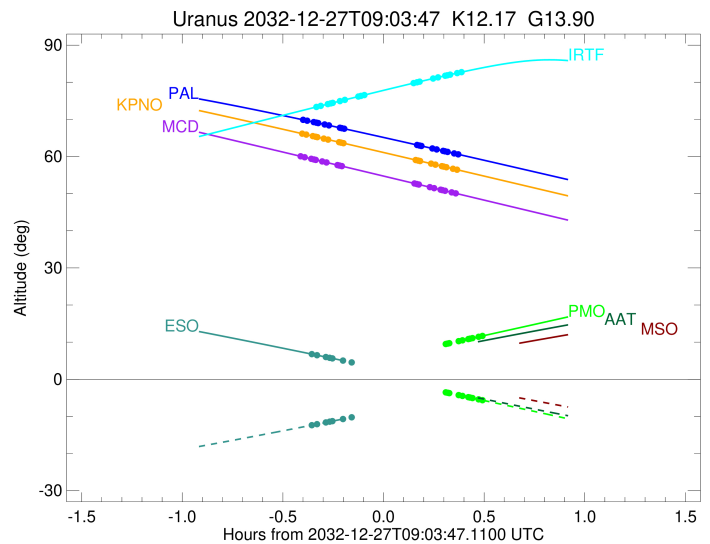
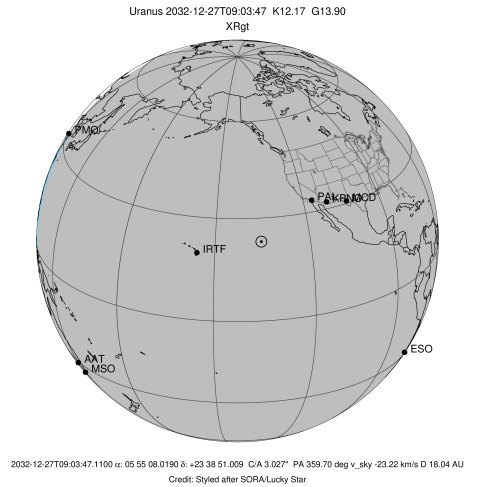


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-27T08:39:29.023		59.98	-66.16	50777.20	-15.40		
lambda	I	2032-12-27T08:40:18.090		59.80	-65.99	50026.71	-15.13		
delta	I	2032-12-27T08:42:15.499		59.38	-65.58	48300.35	-14.26		
gamma	I	2032-12-27T08:43:03.276		59.21	-65.41	47627.75	-13.89		
eta	I	2032-12-27T08:43:36.111		59.09	-65.29	47176.12	-13.62		
beta	I	2032-12-27T08:45:31.662		58.68	-64.88	45658.72	-12.60		
alpha	I	2032-12-27T08:46:49.869		58.40	-64.61	44703.82	-11.86		
4	I	2032-12-27T08:50:03.189		57.70	-63.92	42601.65	-9.83		
5	I	2032-12-27T08:50:48.027		57.54	-63.76	42165.51	-9.31		
6	I	2032-12-27T08:51:23.688		57.41	-63.64	41834.26	-8.93		

No planet occultations

6	E	2032-12-27T09:13:02.002		52.74	-59.01	41864.43	8.92		
5	E	2032-12-27T09:13:34.109		52.63	-58.90	42157.86	9.30		
4	E	2032-12-27T09:14:16.557		52.47	-58.75	42566.29	9.82		
alpha	E	2032-12-27T09:17:32.005		51.77	-58.05	44684.74	11.85		
beta	E	2032-12-27T09:18:50.384		51.49	-57.77	45642.22	12.58		
eta	E	2032-12-27T09:20:47.502		51.07	-57.35	47176.12	13.60		
gamma	E	2032-12-27T09:21:19.975		50.95	-57.23	47621.94	13.86		
delta	E	2032-12-27T09:22:08.256		50.77	-57.06	48300.35	14.24		
lambda	E	2032-12-27T09:24:05.892		50.35	-56.64	50026.71	15.10		
epsilon	E	2032-12-27T09:25:04.604		50.14	-56.43	50924.76	15.37		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-27T09:04:38.980
 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 : 3427814704608568576
 2Mass ID (if available) : 05550802+2338511
 ICRS Star Coord at Epoch: 05h 55m 08.01897s +23:38:51.00894s
 RUWE (>1.4 is poor) : 8.21
 K magnitude : 12.171
 G magnitude : 13.903
 RP magnitude : 13.308
 BP magnitude : 14.285
 DUPflag : 0
 Distance (au) : 18.041
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.22
 Sun-Target sep (deg) : 173.18
 Sun-Moon sep (deg) : 125.25
 B (ring opening deg) : 76.27
 PA of pole (deg) : 53.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.063
 C/A sky separation (km) : 40076.8
 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

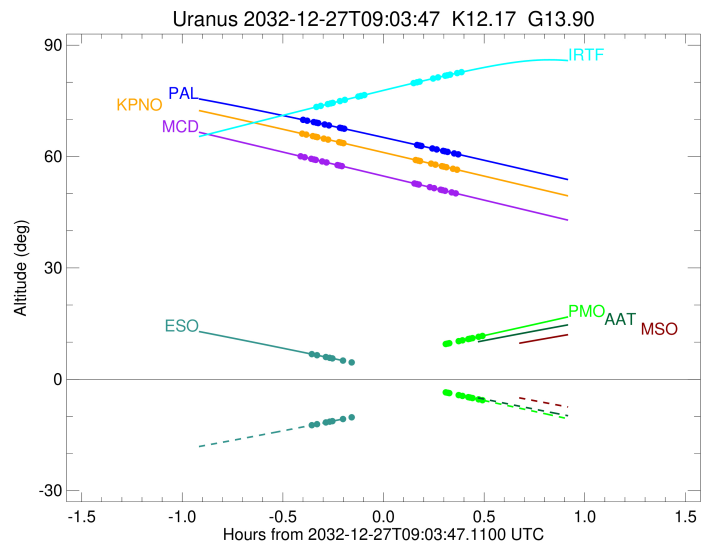
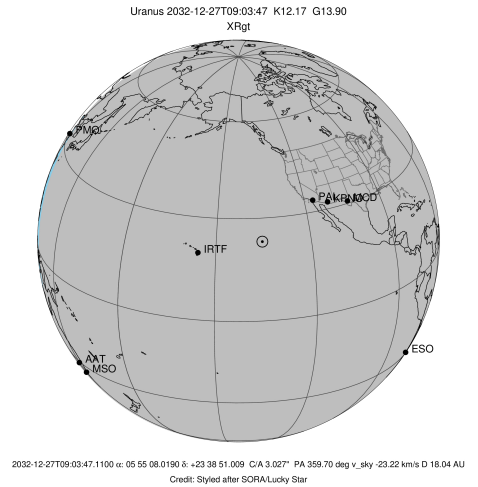


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-27T08:44:13.813		73.46	-66.76	50770.18	-14.48		
lambda	I	2032-12-27T08:45:05.646		73.65	-66.96	50026.71	-14.15		
delta	I	2032-12-27T08:47:12.099		74.13	-67.44	48300.35	-13.14		
gamma	I	2032-12-27T08:48:04.206		74.32	-67.64	47627.45	-12.69		
eta	I	2032-12-27T08:48:40.233		74.46	-67.77	47176.12	-12.37		
beta	I	2032-12-27T08:50:49.285		74.94	-68.27	45657.39	-11.13		
alpha	I	2032-12-27T08:52:19.036		75.28	-68.61	44701.60	-10.20		
4	I	2032-12-27T08:56:16.115		76.16	-69.51	42598.10	-7.47		
5	I	2032-12-27T08:57:16.563		76.38	-69.74	42161.52	-6.71		
6	I	2032-12-27T08:58:06.035		76.57	-69.93	41839.33	-6.11		

No planet occultations

6	E	2032-12-27T09:12:47.104		79.79	-73.27	41859.94	6.12		
5	E	2032-12-27T09:13:32.976		79.95	-73.44	42155.78	6.72		
4	E	2032-12-27T09:14:31.025		80.16	-73.66	42571.38	7.47		
alpha	E	2032-12-27T09:18:29.873		81.00	-74.56	44685.12	10.20		
beta	E	2032-12-27T09:19:59.634		81.31	-74.90	45642.81	11.13		
eta	E	2032-12-27T09:22:10.000		81.76	-75.39	47176.12	12.37		
gamma	E	2032-12-27T09:22:45.590		81.88	-75.52	47622.16	12.69		
delta	E	2032-12-27T09:23:38.083		82.06	-75.72	48300.35	13.15		
lambda	E	2032-12-27T09:25:44.457		82.48	-76.19	50026.71	14.16		
epsilon	E	2032-12-27T09:26:45.557		82.68	-76.42	50905.80	14.49		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-27T09:00:12.240
 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 : 3427814704608568576
 2Mass ID (if available) : 05550802+2338511
 ICRS Star Coord at Epoch: 05h 55m 08.01897s +23:38:51.00894s
 RUWE (>1.4 is poor) : 8.21
 K magnitude : 12.171
 G magnitude : 13.903
 RP magnitude : 13.308
 BP magnitude : 14.285
 DUPflag : 0
 Distance (au) : 18.041
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.22
 Sun-Target sep (deg) : 173.18
 Sun-Moon sep (deg) : 125.09
 B (ring opening deg) : 76.27
 PA of pole (deg) : 53.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.306
 C/A sky separation (km) : 43255.1
 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	2032-12-27T08:42:57.703		6.67	-12.27	50755.48	-12.10		
lambda	I	2032-12-27T08:43:59.064		6.48	-12.09	50026.71	-11.61		
delta	I	2032-12-27T08:46:37.409		5.99	-11.62	48300.35	-10.17		
gamma	I	2032-12-27T08:47:45.938		5.77	-11.42	47626.65	-9.49		
eta	I	2032-12-27T08:48:34.673		5.62	-11.27	47176.12	-8.99		
beta	I	2032-12-27T08:51:45.492		5.02	-10.70	45653.65	-6.91		
alpha	I	2032-12-27T08:54:25.889		4.52x	-10.22	44695.27	-5.02		

No planet occultations

alpha	E	2032-12-27T09:07:37.865		2.00x	-7.81	44687.16	5.02		
beta	E	2032-12-27T09:10:18.468		1.48x	-7.31	45644.56	6.90		
eta	E	2032-12-27T09:13:30.980		0.86x	-6.71	47176.12	8.98		
gamma	E	2032-12-27T09:14:19.383		0.71x	-6.56	47622.66	9.47		
delta	E	2032-12-27T09:15:28.470		0.48x	-6.35	48300.35	10.15		
lambda	E	2032-12-27T09:18:07.172		-0.03x	-5.85	50026.71	11.59		
epsilon	E	2032-12-27T09:19:18.375		-0.26x	-5.63	50873.12	12.06		