

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-03-07T00:59:33.260
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 866276491080621440
 2Mass ID (if available) : 07254765+2228288

ICRS Star Coord at Epoch: 07h 25m 47.64678s +22:28:28.86802s

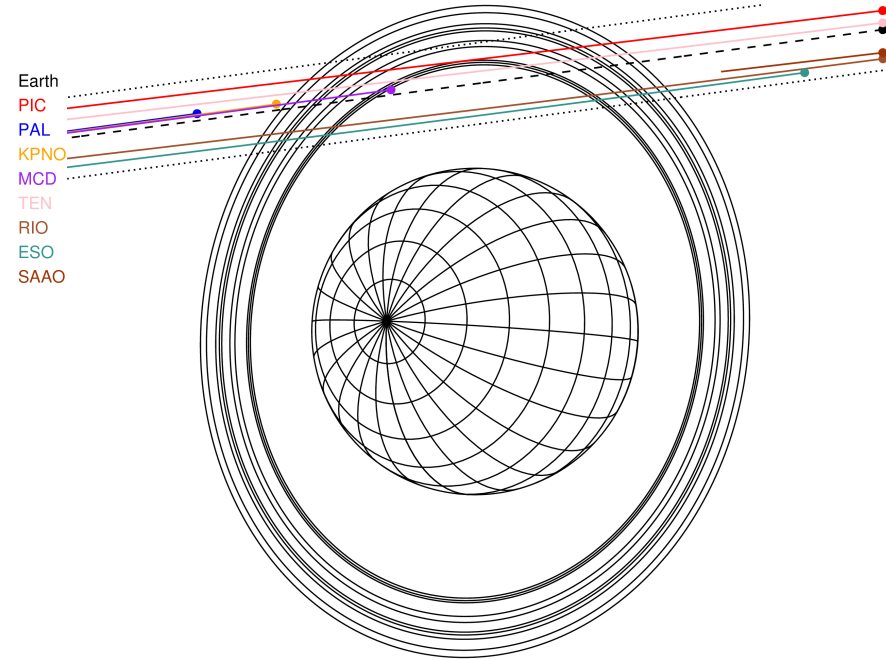
RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.233
 G magnitude : 14.622
 RP magnitude : 14.173
 BP magnitude : 14.903
 DUPflag : 0
 Distance (au) : 18.126
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.07
 Sun-Target sep (deg) : 123.72
 Sun-Moon sep (deg) : 111.87
 B (ring opening deg) : 56.95
 PA of pole (deg) : 83.31
 # 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



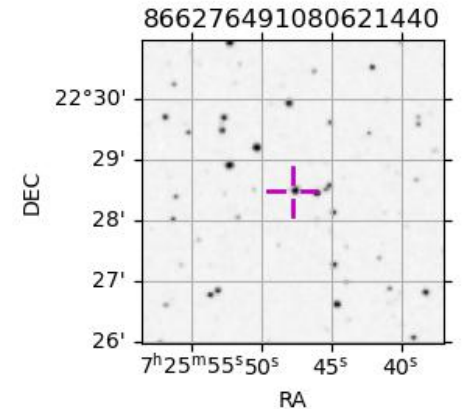
2038-03-07T00:59:33.2600 ra: 07 25 47.6468 s: +22 28 28.868 C/A 2.929° PA 187.57 deg v_sky -10.07 km/s D 18.13 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2038-03-07T00:59:33 K13.23 G14.62 XRgt

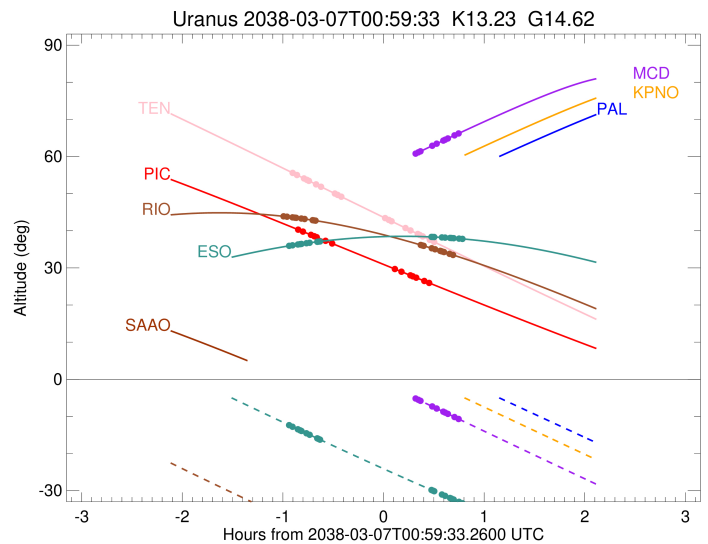
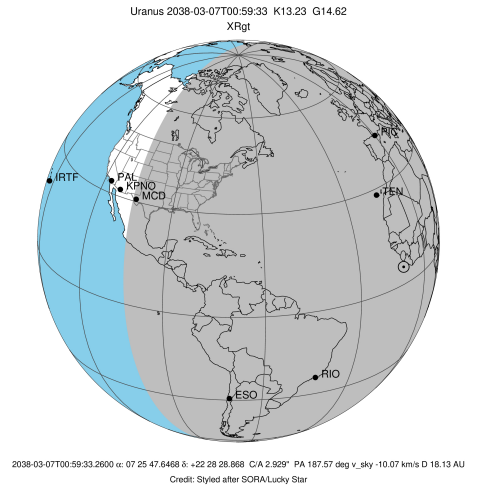


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1	+++++++		+++++++	MAR 07 00:09 - MAR 07 01:27	PnnRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PNO	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			+++++++	MAR 07 01:18 - MAR 07 01:44	PnnRne
TEN	Teide Obs./Tenerife	28.3	343.5	+++++++		+++++++	MAR 07 00:05 - MAR 07 01:30	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	+++++++		+++++++	MAR 07 00:00 - MAR 07 01:41	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++++		+++++++	MAR 07 00:03 - MAR 07 01:47	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 : 2038-03-07T00:52:20.150
 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 : 866276491080621440
 2Mass ID (if available) : 07254765+2228288
 ICRS Star Coord at Epoch: 07h 25m 47.64678s +22:28:28.86802s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.233
 G magnitude : 14.622
 RP magnitude : 14.173
 BP magnitude : 14.903
 DUPflag : 0
 Distance (au) : 18.126
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.07
 Sun-Target sep (deg) : 123.72
 Sun-Moon sep (deg) : 112.08
 B (ring opening deg) : 56.95
 PA of pole (deg) : 83.31
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.216
 C/A sky separation (km) : 42272.9
 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

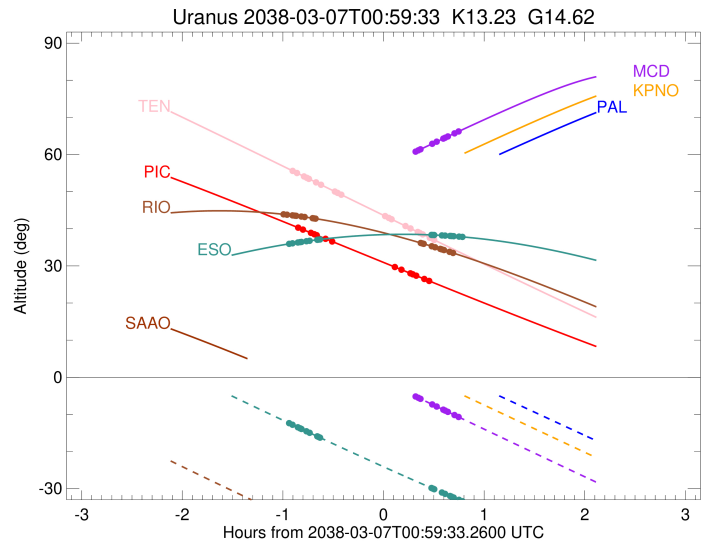
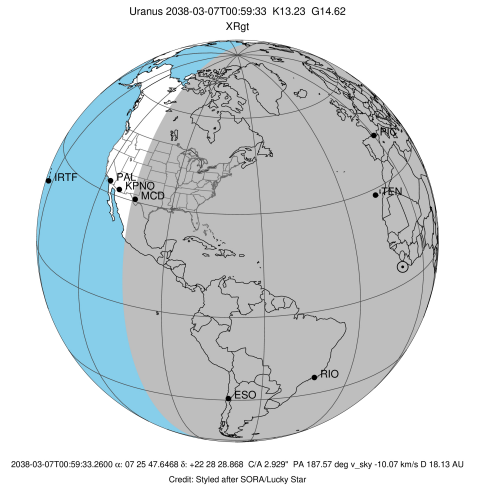


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-03-07T00:09:08.913		40.21	-52.58	50970.65	-6.73		
lambda	I	2038-03-07T00:11:34.031		39.77	-52.58	50026.71	-6.35		
delta	I	2038-03-07T00:16:20.262		38.89	-52.55	48300.35	-5.70		
gamma	I	2038-03-07T00:18:20.856		38.52	-52.53	47630.50	-5.41		
eta	I	2038-03-07T00:19:46.608		38.26	-52.52	47176.12	-5.19		
beta	I	2038-03-07T00:25:07.624		37.28	-52.43	45645.92	-4.32		
alpha	I	2038-03-07T00:29:09.058		36.54	-52.34	44685.51	-3.63		

No planet occultations

alpha	E	2038-03-07T01:06:09.211		29.73	-50.58	44695.83	3.60		
beta	E	2038-03-07T01:10:07.475		29.00	-50.30	45641.06	4.29		
eta	E	2038-03-07T01:15:32.677		28.01	-49.88	47176.12	5.14		
gamma	E	2038-03-07T01:16:59.420		27.74	-49.76	47631.38	5.35		
delta	E	2038-03-07T01:19:01.084		27.37	-49.59	48300.35	5.64		
lambda	E	2038-03-07T01:23:50.574		26.49	-49.18	50026.71	6.27		
epsilon	E	2038-03-07T01:27:24.655		25.84	-48.86	51416.09	6.64		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-03-07T01:05:15.070
 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 : 866276491080621440
 2Mass ID (if available) : 07254765+2228288
 ICRS Star Coord at Epoch: 07h 25m 47.64678s +22:28:28.86802s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.233
 G magnitude : 14.622
 RP magnitude : 14.173
 BP magnitude : 14.903
 DUPflag : 0
 Distance (au) : 18.126
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.07
 Sun-Target sep (deg) : 123.72
 Sun-Moon sep (deg) : 112.75
 B (ring opening deg) : 56.95
 PA of pole (deg) : 83.31
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.988
 C/A sky separation (km) : 39282.4
 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

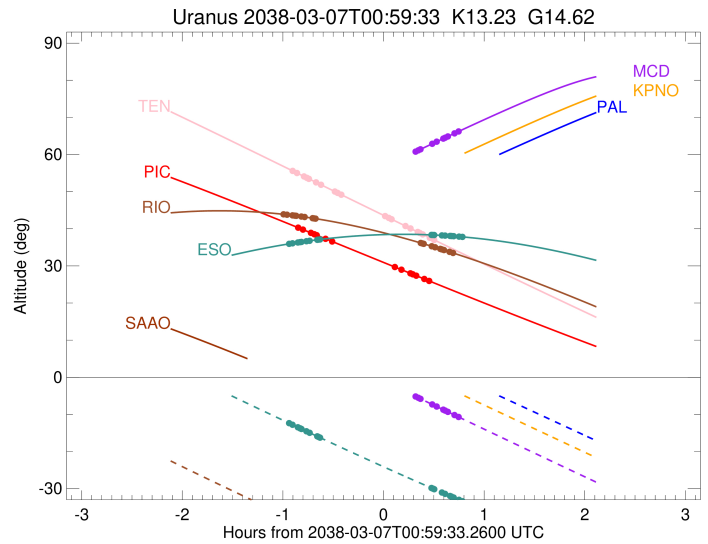
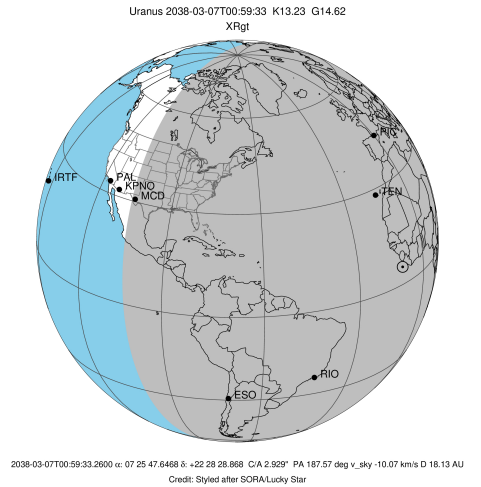


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-03-07T00:17:17.967		47.56	7.93x	50941.44	-7.76		
lambda	I	2038-03-07T00:19:18.565		48.00	7.50x	50026.71	-7.47		
delta	I	2038-03-07T00:23:16.973		48.85	6.66x	48300.35	-7.00		
gamma	I	2038-03-07T00:24:54.146		49.20	6.32x	47630.13	-6.79		
eta	I	2038-03-07T00:26:01.726		49.45	6.08x	47176.12	-6.64		
beta	I	2038-03-07T00:30:01.765		50.31	5.23x	45647.84	-6.07		
alpha	I	2038-03-07T00:32:46.004		50.90	4.65x	44684.70	-5.65		
4	I	2038-03-07T00:39:52.800		52.44	3.13x	42528.97	-4.44		
5	I	2038-03-07T00:40:46.225		52.63	2.94x	42297.97	-4.28		
6	I	2038-03-07T00:42:28.940		53.00	2.58x	41871.12	-3.92		

No planet occultations

6	E	2038-03-07T01:18:36.769		60.77	-5.16	41848.81	3.93		
5	E	2038-03-07T01:20:34.052		61.18	-5.58	42315.19	4.29		
4	E	2038-03-07T01:21:27.620		61.37	-5.78	42550.86	4.45		
alpha	E	2038-03-07T01:28:31.176		62.88	-7.30	44700.94	5.67		
beta	E	2038-03-07T01:31:10.070		63.44	-7.87	45641.39	6.10		
eta	E	2038-03-07T01:35:10.414		64.29	-8.73	47176.12	6.67		
gamma	E	2038-03-07T01:36:17.826		64.53	-8.97	47631.13	6.83		
delta	E	2038-03-07T01:37:54.380		64.86	-9.32	48300.35	7.04		
lambda	E	2038-03-07T01:41:51.543		65.70	-10.17	50026.71	7.51		
epsilon	E	2038-03-07T01:44:56.492		66.34	-10.83	51448.47	7.80		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-03-07T00:51:52.460
 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 : 866276491080621440
 2Mass ID (if available) : 07254765+2228288
 ICRS Star Coord at Epoch: 07h 25m 47.64678s +22:28:28.86802s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.233
 G magnitude : 14.622
 RP magnitude : 14.173
 BP magnitude : 14.903
 DUPflag : 0
 Distance (au) : 18.126
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.07
 Sun-Target sep (deg) : 123.72
 Sun-Moon sep (deg) : 112.22
 B (ring opening deg) : 56.95
 PA of pole (deg) : 83.31
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.073
 C/A sky separation (km) : 40397.1
 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

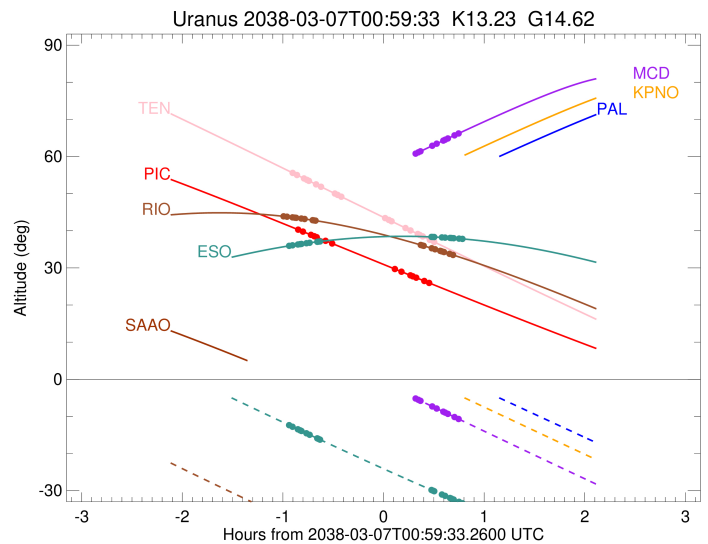
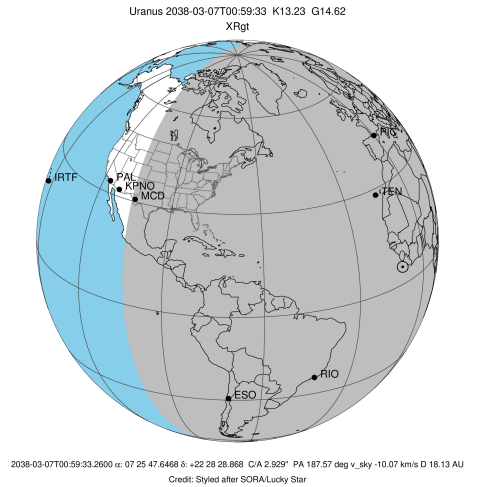


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-03-07T00:05:52.719		55.48	-61.62	50947.51	-7.46		
lambda	I	2038-03-07T00:07:59.457		55.02	-61.92	50026.71	-7.14		
delta	I	2038-03-07T00:12:10.514		54.09	-62.48	48300.35	-6.60		
gamma	I	2038-03-07T00:13:53.823		53.71	-62.71	47630.22	-6.37		
eta	I	2038-03-07T00:15:06.104		53.44	-62.87	47176.12	-6.20		
beta	I	2038-03-07T00:19:26.280		52.48	-63.41	45647.35	-5.54		
alpha	I	2038-03-07T00:22:28.172		51.81	-63.77	44684.82	-5.04		
4	I	2038-03-07T00:30:49.756		49.97	-64.69	42530.05	-3.53		
5	I	2038-03-07T00:31:57.090		49.72	-64.80	42301.10	-3.31		
6	I	2038-03-07T00:34:17.414		49.20	-65.03	41869.05	-2.81		

No planet occultations

6	E	2038-03-07T01:00:26.265		43.43	-66.84	41853.17	2.80		
5	E	2038-03-07T01:03:02.706		42.86	-66.94	42315.12	3.30		
4	E	2038-03-07T01:04:10.333		42.61	-66.97	42547.19	3.51		
alpha	E	2038-03-07T01:12:33.423		40.77	-67.15	44698.95	5.00		
beta	E	2038-03-07T01:15:32.182		40.11	-67.17	45641.20	5.48		
eta	E	2038-03-07T01:19:56.405		39.15	-67.16	47176.12	6.13		
gamma	E	2038-03-07T01:21:09.644		38.88	-67.15	47631.25	6.30		
delta	E	2038-03-07T01:22:53.975		38.50	-67.13	48300.35	6.53		
lambda	E	2038-03-07T01:27:08.163		37.57	-67.04	50026.71	7.05		
epsilon	E	2038-03-07T01:30:22.904		36.86	-66.95	51434.60	7.35		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-03-07T00:54:08.900
 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 : 866276491080621440
 2Mass ID (if available) : 07254765+2228288
 ICRS Star Coord at Epoch: 07h 25m 47.64678s +22:28:28.86802s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.233
 G magnitude : 14.622
 RP magnitude : 14.173
 BP magnitude : 14.903
 DUPflag : 0
 Distance (au) : 18.126
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.07
 Sun-Target sep (deg) : 123.72
 Sun-Moon sep (deg) : 112.25
 B (ring opening deg) : 56.95
 PA of pole (deg) : 83.31
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.621
 C/A sky separation (km) : 34460.9
 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

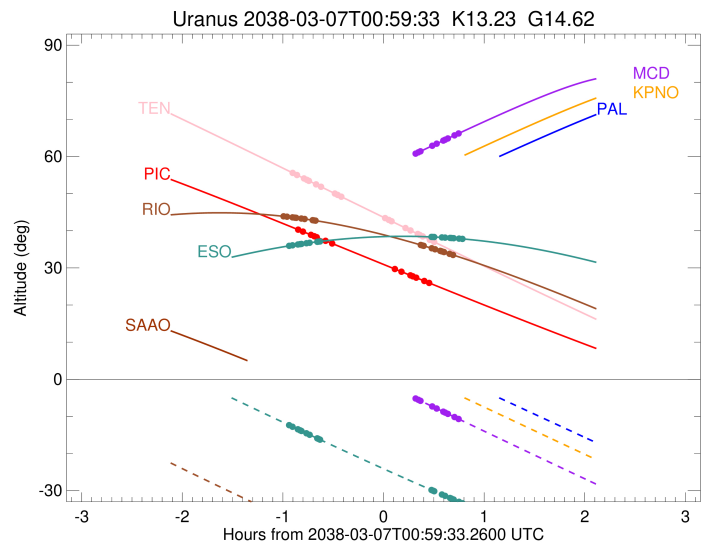
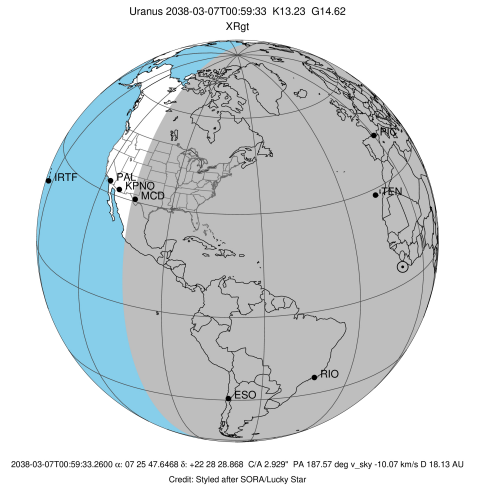


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-03-07T00:00:26.809		43.87	-37.12	50890.85	-9.13		
lambda	I	2038-03-07T00:02:02.719		43.79	-37.45	50026.71	-8.94		
delta	I	2038-03-07T00:05:19.202		43.61	-38.12	48300.35	-8.63		
gamma	I	2038-03-07T00:06:37.566		43.54	-38.39	47629.42	-8.50		
eta	I	2038-03-07T00:07:31.226		43.49	-38.57	47176.12	-8.40		
beta	I	2038-03-07T00:10:36.401		43.30	-39.20	45651.10	-8.05		
alpha	I	2038-03-07T00:12:38.195		43.17	-39.62	44684.95	-7.80		
4	I	2038-03-07T00:17:27.490		42.84	-40.59	42526.21	-7.15		
5	I	2038-03-07T00:18:02.313		42.80	-40.71	42282.84	-7.09		
6	I	2038-03-07T00:18:57.635		42.74	-40.89	41876.87	-6.91		

No planet occultations

6	E	2038-03-07T01:21:41.357		36.19	-52.44	41838.21	6.87		
5	E	2038-03-07T01:22:51.460		36.03	-52.62	42312.17	7.04		
4	E	2038-03-07T01:23:26.620		35.95	-52.72	42560.69	7.11		
alpha	E	2038-03-07T01:28:16.092		35.30	-53.49	44706.66	7.74		
beta	E	2038-03-07T01:30:14.292		35.03	-53.79	45642.33	7.98		
eta	E	2038-03-07T01:33:22.411		34.59	-54.27	47176.12	8.33		
gamma	E	2038-03-07T01:34:16.712		34.46	-54.41	47630.75	8.42		
delta	E	2038-03-07T01:35:35.639		34.27	-54.61	48300.35	8.55		
lambda	E	2038-03-07T01:38:54.026		33.79	-55.09	50026.71	8.85		
epsilon	E	2038-03-07T01:41:36.244		33.40	-55.48	51480.83	9.04		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-03-07T00:58:42.050
 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 : 866276491080621440
 2Mass ID (if available) : 07254765+2228288
 ICRS Star Coord at Epoch: 07h 25m 47.64678s +22:28:28.86802s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.233
 G magnitude : 14.622
 RP magnitude : 14.173
 BP magnitude : 14.903
 DUPflag : 0
 Distance (au) : 18.126
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -10.07
 Sun-Target sep (deg) : 123.72
 Sun-Moon sep (deg) : 112.39
 B (ring opening deg) : 56.95
 PA of pole (deg) : 83.31
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.545
 C/A sky separation (km) : 33463.1
 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	2038-03-07T00:03:46.652		35.98	-12.47	50884.61	-9.32		
lambda	I	2038-03-07T00:05:19.802		36.09	-12.80	50026.71	-9.15		
delta	I	2038-03-07T00:08:31.473		36.31	-13.48	48300.35	-8.86		
gamma	I	2038-03-07T00:09:47.701		36.40	-13.75	47629.31	-8.74		
eta	I	2038-03-07T00:10:39.797		36.46	-13.93	47176.12	-8.66		
beta	I	2038-03-07T00:13:38.971		36.65	-14.56	45651.57	-8.34		
alpha	I	2038-03-07T00:15:36.324		36.77	-14.98	44685.10	-8.12		
4	I	2038-03-07T00:20:12.901		37.04	-15.95	42526.07	-7.54		
5	I	2038-03-07T00:20:46.255		37.07	-16.07	42280.62	-7.48		
6	I	2038-03-07T00:21:38.006		37.12	-16.25	41877.39	-7.32		

No planet occultations

6	E	2038-03-07T01:28:04.862		38.35	-29.81	41836.23	7.31		
5	E	2038-03-07T01:29:10.819		38.33	-30.03	42311.09	7.47		
4	E	2038-03-07T01:29:44.458		38.32	-30.14	42562.66	7.53		
alpha	E	2038-03-07T01:34:19.579		38.21	-31.03	44707.94	8.10		
beta	E	2038-03-07T01:36:12.590		38.16	-31.40	45642.62	8.32		
eta	E	2038-03-07T01:39:13.428		38.07	-31.98	47176.12	8.64		
gamma	E	2038-03-07T01:40:05.780		38.05	-32.15	47630.65	8.73		
delta	E	2038-03-07T01:41:22.011		38.00	-32.39	48300.35	8.84		
lambda	E	2038-03-07T01:44:34.090		37.89	-33.01	50026.71	9.13		
epsilon	E	2038-03-07T01:47:12.376		37.79	-33.51	51488.05	9.30		