

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2024-10-19T05:14:20.370
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 56783904356567808
 2Mass ID (if available) : 03350452+1859530

ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s

RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 6.79
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00

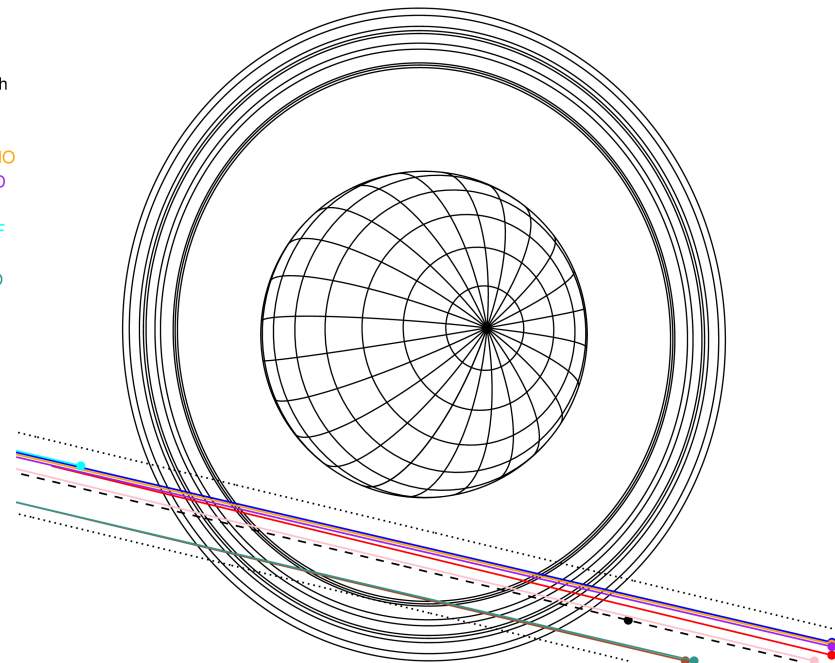
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2024-10-19T05:14:20.3700 ex: 03 35 04.55210 s: +18 59 53.077 C/A 2.653° PA 346.46 deg v_sky -19.42 km/s D 18.70 AU
 Credit: Styled after SORA/Lucky Star

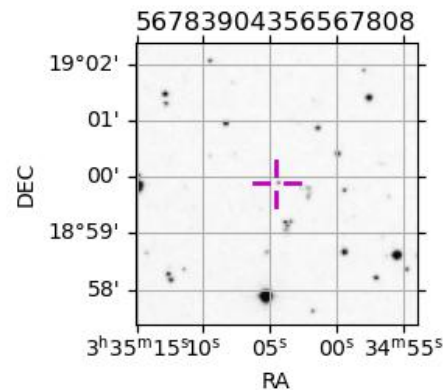
Uranus 2024-10-19T05:14:20 K13.79 G17.38 XRgt

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

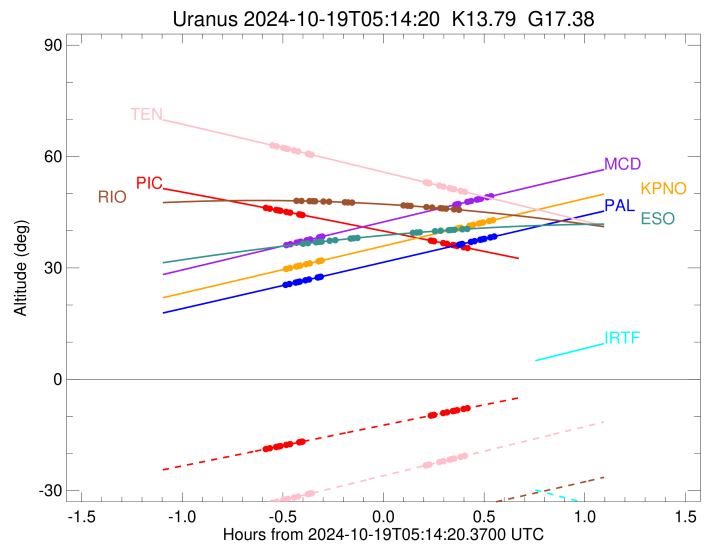
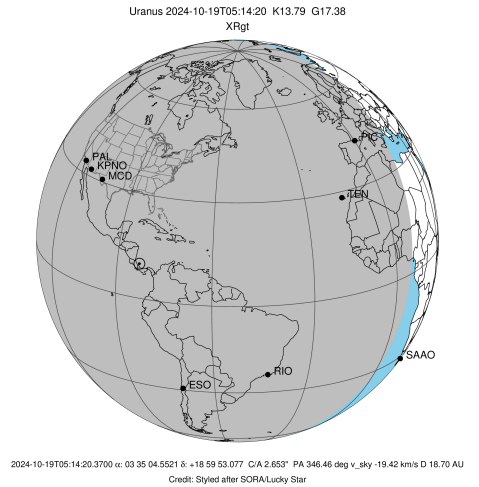


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	OCT 19 04:38 - OCT 19 05:39	PnnRie
PAL	Palomar Mt (200")	33.4	243.1	+++++		+++++	OCT 19 04:44 - OCT 19 05:47	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	OCT 19 04:44 - OCT 19 05:46	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	OCT 19 04:45 - OCT 19 05:46	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++		+++++	OCT 19 04:40 - OCT 19 05:38	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	+++++		+++++	OCT 19 04:48 - OCT 19 05:36	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	OCT 19 04:49 - OCT 19 05:39	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 : 2024-10-19T05:10:41.760
 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 : 56783904356567808
 2Mass ID (if available) : 03350452+1859530
 ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 7.26
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.493
 C/A sky separation (km) : 33804.3
 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

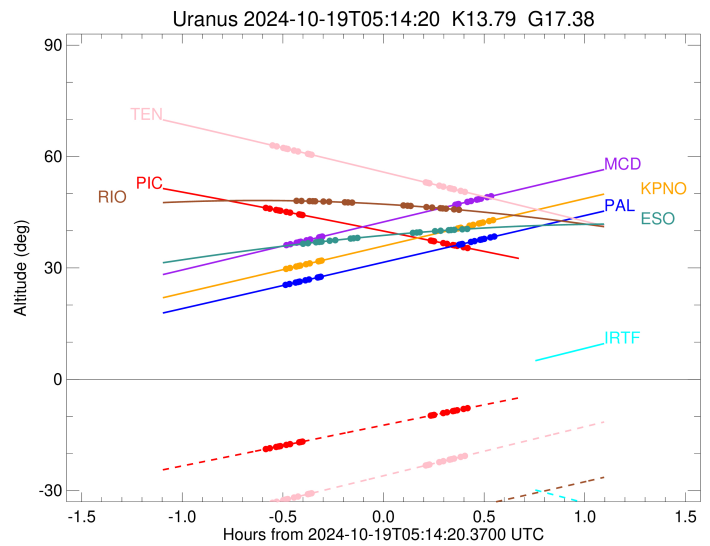
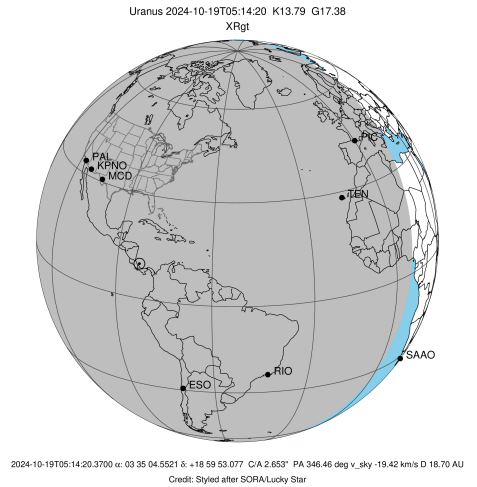


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2024-10-19T04:38:53.632		46.22	-18.87	51501.27	-15.79		
lambda	I	2024-10-19T04:40:27.777		45.95	-18.58	50026.71	-15.47		
delta	I	2024-10-19T04:42:21.151		45.62	-18.23	48300.35	-14.97		
gamma	I	2024-10-19T04:43:06.740		45.49	-18.09	47622.60	-14.76		
eta	I	2024-10-19T04:43:37.147		45.40	-18.00	47176.12	-14.61		
beta	I	2024-10-19T04:45:23.801		45.08	-17.67	45647.56	-14.05		
alpha	I	2024-10-19T04:46:29.108		44.89	-17.48	44740.99	-13.67		
4	I	2024-10-19T04:49:17.564		44.40	-16.96	42526.04	-12.63		
5	I	2024-10-19T04:49:38.276		44.34	-16.90	42268.06	-12.46		
6	I	2024-10-19T04:50:12.843		44.23	-16.79	41837.86	-12.26		

No planet occultations

6	E	2024-10-19T05:28:29.538		37.35	-9.78	41877.63	12.24		
5	E	2024-10-19T05:28:53.310		37.28	-9.70	42175.42	12.43		
4	E	2024-10-19T05:29:23.812		37.19	-9.61	42561.46	12.60		
alpha	E	2024-10-19T05:32:06.136		36.69	-9.12	44697.10	13.64		
beta	E	2024-10-19T05:33:14.477		36.48	-8.91	45644.88	14.02		
eta	E	2024-10-19T05:35:01.454		36.16	-8.58	47176.12	14.57		
gamma	E	2024-10-19T05:35:32.439		36.06	-8.49	47630.02	14.72		
delta	E	2024-10-19T05:36:17.639		35.93	-8.35	48300.35	14.94		
lambda	E	2024-10-19T05:38:11.311		35.58	-8.01	50026.71	15.43		
epsilon	E	2024-10-19T05:39:07.963		35.41	-7.83	50907.35	15.75		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2024-10-19T05:17:36.260
 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 : 56783904356567808
 2Mass ID (if available) : 03350452+1859530
 ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 5.99
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.393
 C/A sky separation (km) : 32452.7
 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

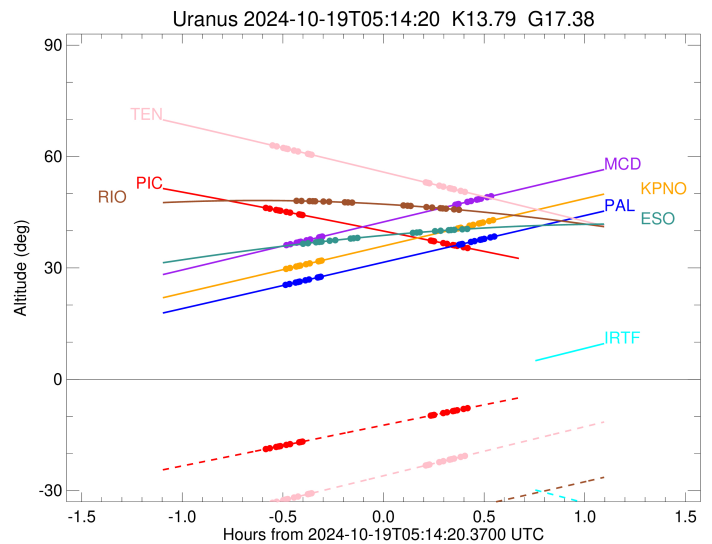
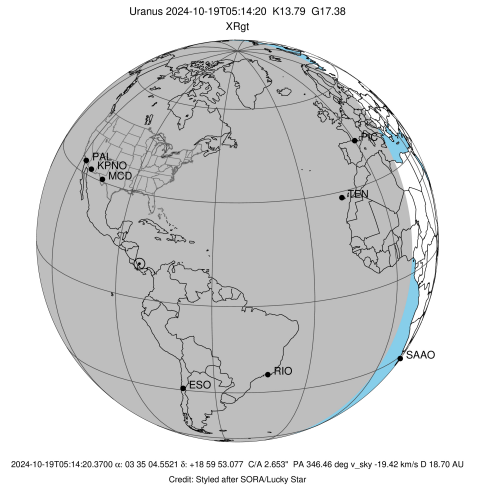


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2024-10-19T04:44:46.739		25.35	-45.21	51509.82	-16.16		
lambda	I	2024-10-19T04:46:19.162		25.67	-45.51	50026.71	-15.88		
delta	I	2024-10-19T04:48:09.372		26.05	-45.86	48300.35	-15.44		
gamma	I	2024-10-19T04:48:53.540		26.20	-46.01	47622.42	-15.26		
eta	I	2024-10-19T04:49:22.921		26.31	-46.10	47176.12	-15.12		
beta	I	2024-10-19T04:51:05.571		26.66	-46.43	45648.36	-14.64		
alpha	I	2024-10-19T04:52:08.060		26.88	-46.63	44742.35	-14.31		
4	I	2024-10-19T04:54:48.018		27.44	-47.15	42525.93	-13.41		
5	I	2024-10-19T04:55:07.172		27.50	-47.21	42272.51	-13.27		
6	I	2024-10-19T04:55:40.055		27.62	-47.32	41835.18	-13.10		

No planet occultations

6	E	2024-10-19T05:36:58.125		36.27	-54.90	41878.19	13.15		
5	E	2024-10-19T05:37:20.019		36.34	-54.96	42173.09	13.32		
4	E	2024-10-19T05:37:48.856		36.45	-55.04	42563.39	13.46		
alpha	E	2024-10-19T05:40:21.754		36.98	-55.48	44696.13	14.37		
beta	E	2024-10-19T05:41:26.861		37.21	-55.67	45645.30	14.70		
eta	E	2024-10-19T05:43:09.147		37.57	-55.96	47176.12	15.19		
gamma	E	2024-10-19T05:43:38.896		37.67	-56.04	47630.14	15.33		
delta	E	2024-10-19T05:44:22.350		37.82	-56.16	48300.35	15.52		
lambda	E	2024-10-19T05:46:12.011		38.20	-56.47	50026.71	15.96		
epsilon	E	2024-10-19T05:47:06.305		38.39	-56.62	50898.84	16.25		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2024-10-19T05:17:30.760
 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 : 56783904356567808
 2Mass ID (if available) : 03350452+1859530
 ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 6.04
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.416
 C/A sky separation (km) : 32760.3
 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

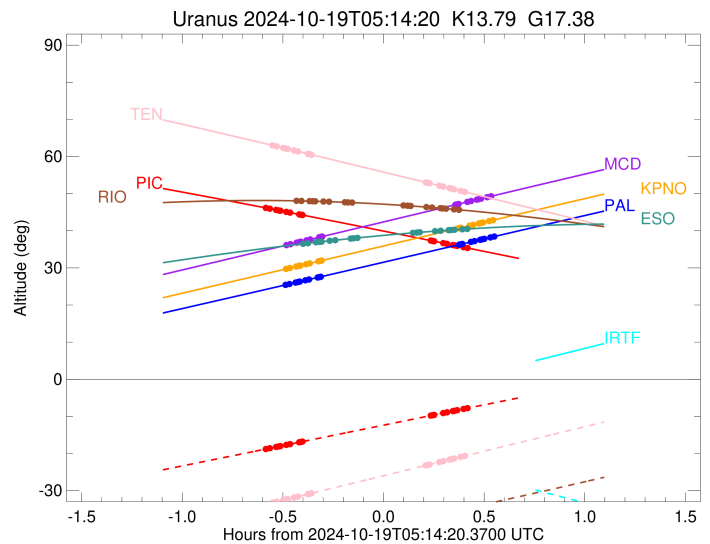
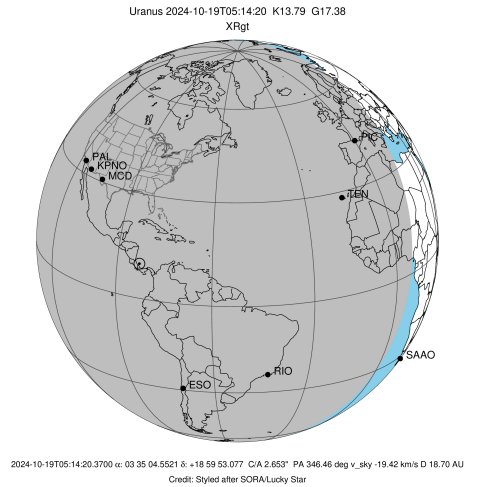


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2024-10-19T04:44:56.289		29.65	-49.87	51508.38	-16.08		
lambda	I	2024-10-19T04:46:29.087		29.98	-50.17	50026.71	-15.79		
delta	I	2024-10-19T04:48:19.942		30.37	-50.52	48300.35	-15.34		
gamma	I	2024-10-19T04:49:04.398		30.53	-50.67	47622.45	-15.15		
eta	I	2024-10-19T04:49:33.987		30.63	-50.76	47176.12	-15.02		
beta	I	2024-10-19T04:51:17.441		31.00	-51.09	45648.21	-14.51		
alpha	I	2024-10-19T04:52:20.493		31.22	-51.29	44742.11	-14.18		
4	I	2024-10-19T04:55:02.141		31.79	-51.80	42525.94	-13.25		
5	I	2024-10-19T04:55:21.593		31.86	-51.86	42271.70	-13.10		
6	I	2024-10-19T04:55:54.817		31.98	-51.97	41835.67	-12.93		

No planet occultations

6	E	2024-10-19T05:36:31.350		40.63	-59.21	41878.05	12.97		
5	E	2024-10-19T05:36:53.605		40.71	-59.27	42173.70	13.15		
4	E	2024-10-19T05:37:22.722		40.81	-59.35	42562.87	13.30		
alpha	E	2024-10-19T05:39:57.335		41.36	-59.77	44696.39	14.24		
beta	E	2024-10-19T05:41:03.007		41.59	-59.94	45645.18	14.57		
eta	E	2024-10-19T05:42:46.111		41.96	-60.22	47176.12	15.08		
gamma	E	2024-10-19T05:43:16.070		42.06	-60.30	47630.10	15.22		
delta	E	2024-10-19T05:43:59.820		42.22	-60.41	48300.35	15.42		
lambda	E	2024-10-19T05:45:50.143		42.61	-60.70	50026.71	15.87		
epsilon	E	2024-10-19T05:46:44.888		42.81	-60.84	50901.41	16.17		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2024-10-19T05:17:16.430
 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 : 56783904356567808
 2Mass ID (if available) : 03350452+1859530
 ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 6.12
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.445
 C/A sky separation (km) : 33154.2
 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_itrff93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

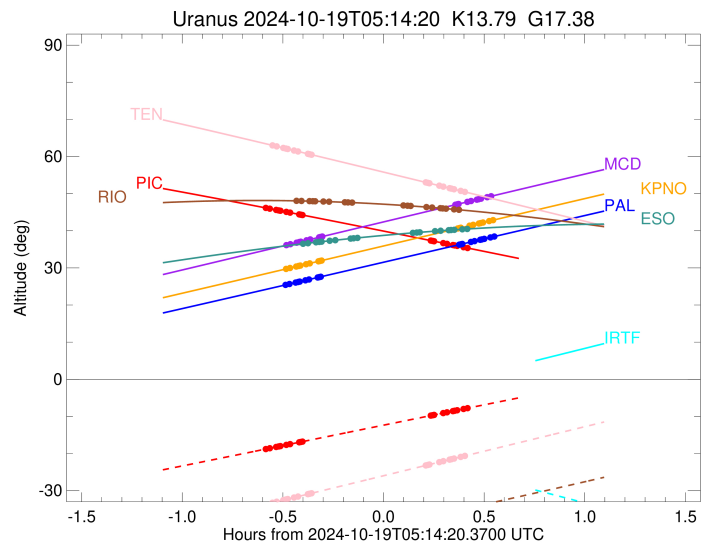
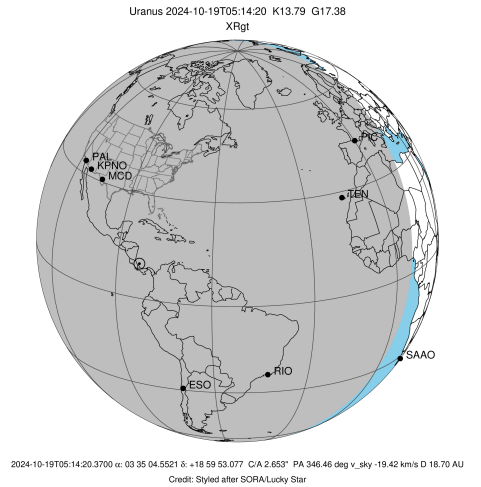


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2024-10-19T04:45:01.708		36.06	-56.23	51506.46	-15.98		
lambda	I	2024-10-19T04:46:34.991		36.39	-56.51	50026.71	-15.68		
delta	I	2024-10-19T04:48:26.690		36.79	-56.86	48300.35	-15.22		
gamma	I	2024-10-19T04:49:11.526		36.95	-56.99	47622.49	-15.02		
eta	I	2024-10-19T04:49:41.388		37.06	-57.08	47176.12	-14.88		
beta	I	2024-10-19T04:51:25.909		37.44	-57.40	45648.02	-14.35		
alpha	I	2024-10-19T04:52:29.711		37.67	-57.59	44741.79	-14.01		
4	I	2024-10-19T04:55:13.631		38.26	-58.08	42525.96	-13.04		
5	I	2024-10-19T04:55:33.488		38.33	-58.14	42270.62	-12.88		
6	I	2024-10-19T04:56:07.176		38.45	-58.24	41836.33	-12.70		

No planet occultations

6	E	2024-10-19T05:35:49.060		47.02	-64.63	41877.86	12.74		
5	E	2024-10-19T05:36:11.808		47.10	-64.68	42174.50	12.92		
4	E	2024-10-19T05:36:41.307		47.21	-64.75	42562.20	13.08		
alpha	E	2024-10-19T05:39:18.242		47.77	-65.11	44696.74	14.06		
beta	E	2024-10-19T05:40:24.673		48.01	-65.25	45645.03	14.41		
eta	E	2024-10-19T05:42:08.873		48.38	-65.48	47176.12	14.94		
gamma	E	2024-10-19T05:42:39.113		48.49	-65.55	47630.06	15.08		
delta	E	2024-10-19T05:43:23.257		48.65	-65.64	48300.35	15.28		
lambda	E	2024-10-19T05:45:14.461		49.05	-65.88	50026.71	15.76		
epsilon	E	2024-10-19T05:46:09.799		49.24	-65.99	50904.72	16.06		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2024-10-19T05:11:21.080
 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 : 56783904356567808
 2Mass ID (if available) : 03350452+1859530
 ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 7.31
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.615
 C/A sky separation (km) : 35456.3
 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

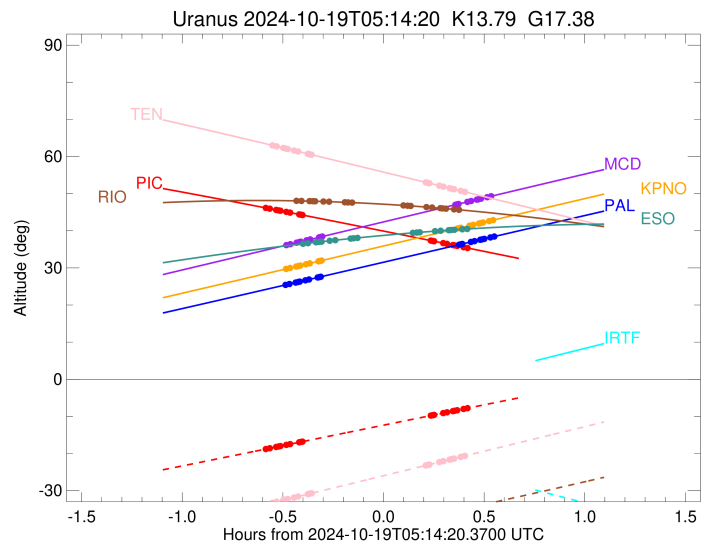
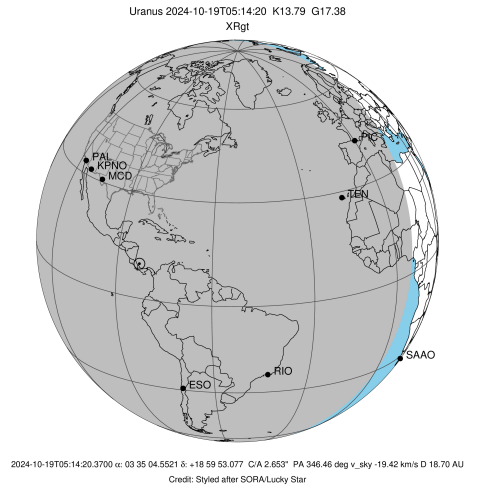


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2024-10-19T04:40:53.184		63.08	-33.34	51492.36	-15.24		
lambda	I	2024-10-19T04:42:30.322		62.74	-32.99	50026.71	-14.87		
delta	I	2024-10-19T04:44:28.684		62.31	-32.56	48300.35	-14.29		
gamma	I	2024-10-19T04:45:16.513		62.14	-32.38	47622.79	-14.04		
eta	I	2024-10-19T04:45:48.525		62.02	-32.26	47176.12	-13.87		
beta	I	2024-10-19T04:47:41.474		61.62	-31.85	45646.77	-13.20		
alpha	I	2024-10-19T04:48:51.255		61.37	-31.60	44739.49	-12.76		
4	I	2024-10-19T04:51:53.612		60.71	-30.93	42526.36	-11.50		
5	I	2024-10-19T04:52:16.841		60.62	-30.84	42262.98	-11.29		
6	I	2024-10-19T04:52:54.426		60.49	-30.71	41840.85	-11.05		

No planet occultations

6	E	2024-10-19T05:27:00.124		53.03	-23.20	41876.53	11.03		
5	E	2024-10-19T05:27:26.956		52.93	-23.10	42179.44	11.28		
4	E	2024-10-19T05:27:59.880		52.81	-22.98	42558.37	11.49		
alpha	E	2024-10-19T05:30:56.062		52.16	-22.34	44698.75	12.74		
beta	E	2024-10-19T05:32:08.823		51.89	-22.07	45644.22	13.18		
eta	E	2024-10-19T05:34:02.045		51.48	-21.65	47176.12	13.84		
gamma	E	2024-10-19T05:34:34.619		51.36	-21.53	47629.81	14.01		
delta	E	2024-10-19T05:35:22.039		51.18	-21.36	48300.35	14.26		
lambda	E	2024-10-19T05:37:20.643		50.75	-20.92	50026.71	14.84		
epsilon	E	2024-10-19T05:38:20.479		50.53	-20.70	50922.65	15.20		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2024-10-19T05:14:14.910
 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 : 56783904356567808
 2Mass ID (if available) : 03350452+1859530
 ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 7.29
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.975
 C/A sky separation (km) : 40340.3
 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

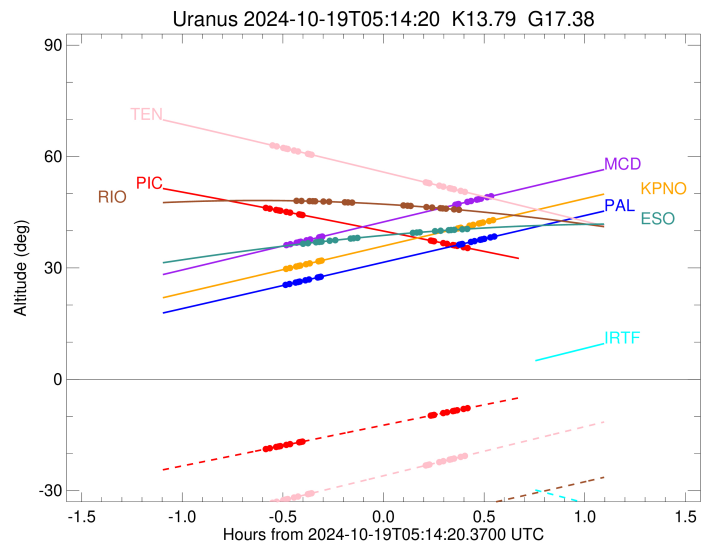
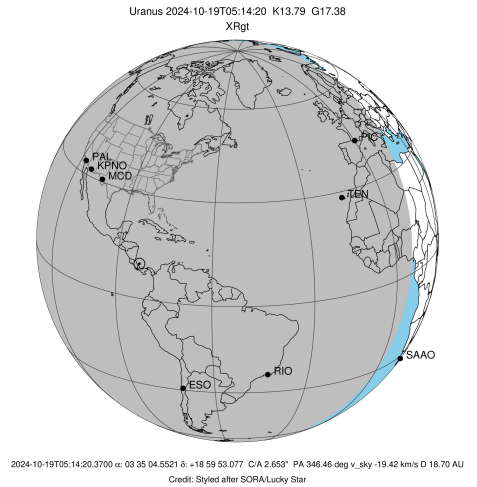


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2024-10-19T04:48:01.655		48.07	-44.19	51458.26	-12.97		
lambda	I	2024-10-19T04:49:54.039		48.04	-43.87	50026.71	-12.41		
delta	I	2024-10-19T04:52:18.396		47.99	-43.45	48300.35	-11.49		
gamma	I	2024-10-19T04:53:18.349		47.97	-43.28	47623.53	-11.08		
eta	I	2024-10-19T04:53:59.250		47.95	-43.16	47176.12	-10.79		
beta	I	2024-10-19T04:56:28.892		47.88	-42.72	45644.30	-9.66		
alpha	I	2024-10-19T04:58:07.182		47.84	-42.43	44733.39	-8.85		
4	I	2024-10-19T05:02:58.491		47.67	-41.57	42529.70	-6.21		
5	I	2024-10-19T05:03:46.902		47.64	-41.42	42240.56	-5.69		
6	I	2024-10-19T05:04:59.123		47.59	-41.20	41853.44	-5.01		

No planet occultations

6	E	2024-10-19T05:20:21.261		46.82	-38.36	41869.64	5.02		
5	E	2024-10-19T05:21:22.701		46.76	-38.17	42198.56	5.69		
4	E	2024-10-19T05:22:20.653		46.70	-37.99	42546.87	6.21		
alpha	E	2024-10-19T05:27:05.496		46.39	-37.08	44705.23	8.85		
beta	E	2024-10-19T05:28:46.617		46.27	-36.76	45642.38	9.66		
eta	E	2024-10-19T05:31:16.327		46.09	-36.28	47176.12	10.79		
gamma	E	2024-10-19T05:31:57.729		46.03	-36.14	47629.06	11.08		
delta	E	2024-10-19T05:32:57.188		45.96	-35.95	48300.35	11.49		
lambda	E	2024-10-19T05:35:21.556		45.77	-35.48	50026.71	12.41		
epsilon	E	2024-10-19T05:36:36.637		45.67	-35.24	50974.98	12.97		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2024-10-19T05:16:26.880
 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 : 56783904356567808
 2Mass ID (if available) : 03350452+1859530
 ICRS Star Coord at Epoch: 03h 35m 04.55210s +18:59:53.07708s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.789
 G magnitude : 17.385
 RP magnitude : 16.248
 BP magnitude : 18.749
 DUPflag : 0
 Distance (au) : 18.697
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 149.95
 Sun-Moon sep (deg) : 6.93
 B (ring opening deg) : 67.19
 PA of pole (deg) : -84.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.961
 C/A sky separation (km) : 40155.4
 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_itrff93_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	2024-10-19T04:49:58.800		36.46	-50.39	51460.49	-13.03		
lambda	I	2024-10-19T04:51:50.766		36.65	-50.33	50026.71	-12.48		
delta	I	2024-10-19T04:54:14.107		36.90	-50.24	48300.35	-11.59		
gamma	I	2024-10-19T04:55:13.532		37.00	-50.20	47623.48	-11.19		
eta	I	2024-10-19T04:55:54.023		37.07	-50.17	47176.12	-10.91		
beta	I	2024-10-19T04:58:21.781		37.31	-50.07	45644.43	-9.80		
alpha	I	2024-10-19T04:59:58.384		37.47	-49.99	44733.77	-9.02		
4	I	2024-10-19T05:04:41.215		37.91	-49.76	42529.39	-6.50		
5	I	2024-10-19T05:05:26.993		37.98	-49.72	42242.07	-6.01		
6	I	2024-10-19T05:06:35.207		38.08	-49.65	41852.61	-5.39		

No planet occultations

6	E	2024-10-19T05:23:10.772		39.44	-48.54	41870.08	5.39		
5	E	2024-10-19T05:24:08.135		39.51	-48.46	42197.56	6.02		
4	E	2024-10-19T05:25:03.430		39.58	-48.39	42547.36	6.51		
alpha	E	2024-10-19T05:29:39.503		39.90	-48.01	44704.99	9.03		
beta	E	2024-10-19T05:31:18.815		40.00	-47.86	45642.43	9.82		
eta	E	2024-10-19T05:33:46.434		40.16	-47.64	47176.12	10.92		
gamma	E	2024-10-19T05:34:27.363		40.20	-47.58	47629.08	11.21		
delta	E	2024-10-19T05:35:26.196		40.26	-47.49	48300.35	11.61		
lambda	E	2024-10-19T05:37:49.292		40.40	-47.27	50026.71	12.51		
epsilon	E	2024-10-19T05:39:03.720		40.47	-47.15	50973.67	13.06		