

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:20:01.380
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514

ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s

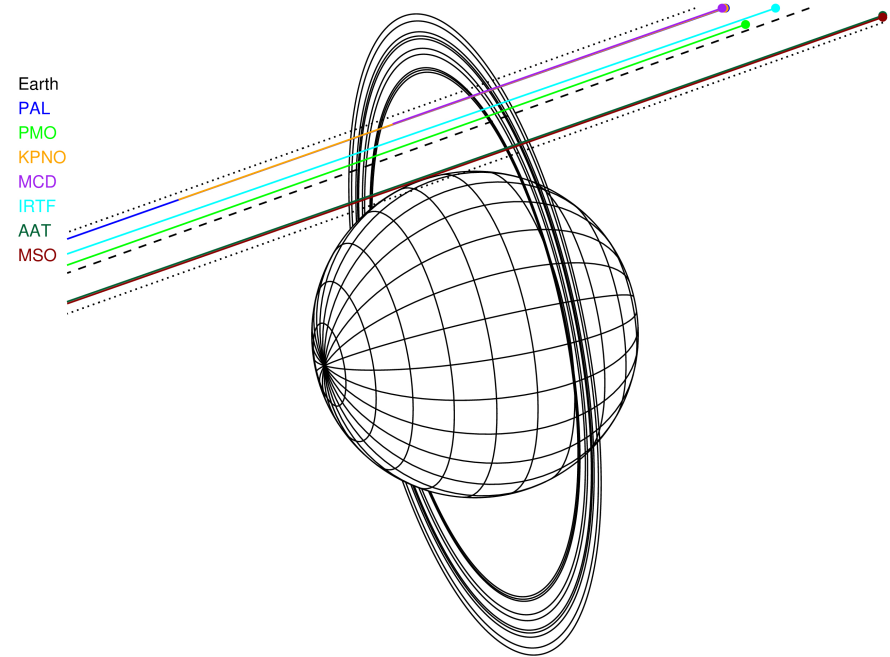
RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 10.63
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71

#	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



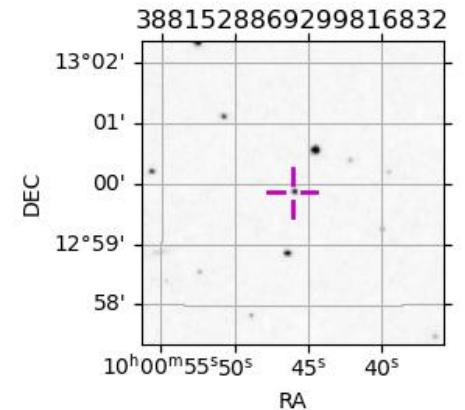
2046-03-19T11:20:01.380000: 10 00 46.02760 s +12 59 51.43313 s C/A 2.412° PA 199.65 deg v_sky -18.88 km/s D 17.47 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2046-03-19T11:20:01 K14.28 G17.21 XRgt

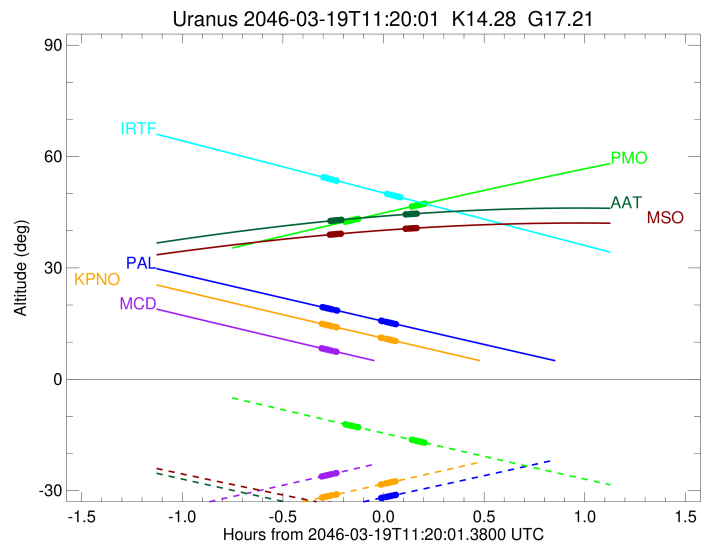
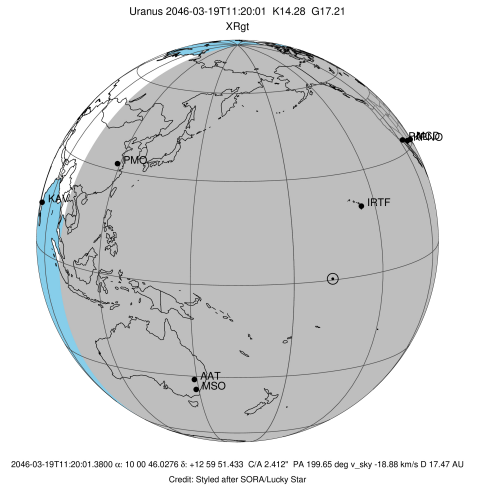


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+++++		+++++	MAR 19 11:02 - MAR 19 11:23	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++		+++++	MAR 19 11:08 - MAR 19 11:32	PnnRie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	MAR 19 11:01 - MAR 19 11:23	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	MAR 19 11:01 - MAR 19 11:06	PnnRin
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++		+++++	MAR 19 11:02 - MAR 19 11:25	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					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1	+++++		+++++	MAR 19 11:04 - MAR 19 11:30	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	MAR 19 11:04 - MAR 19 11:29	PnnRie



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:16:27.110
 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 : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514
 ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 11.38
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.785
 C/A sky separation (km) : 35285.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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

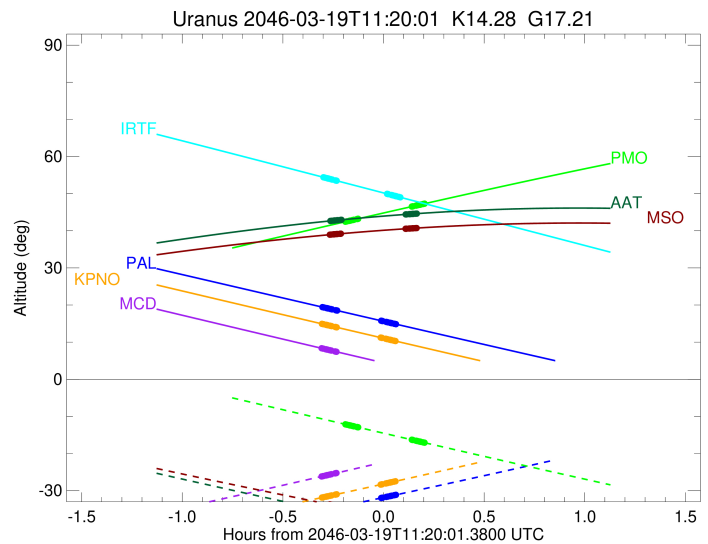
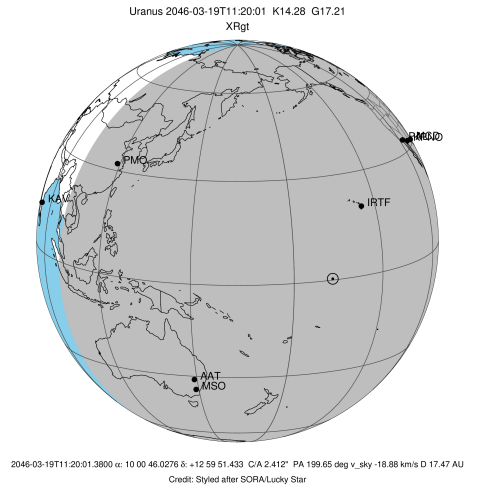


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-19T11:02:00.017		19.39	-35.27	50751.75	-40.01		
lambda	I	2046-03-19T11:02:18.296		19.33	-35.21	50026.71	-39.38		
delta	I	2046-03-19T11:03:02.972		19.17	-35.07	48300.35	-37.88		
gamma	I	2046-03-19T11:03:21.044		19.11	-35.01	47621.62	-37.23		
eta	I	2046-03-19T11:03:33.083		19.07	-34.98	47176.12	-36.78		
beta	I	2046-03-19T11:04:15.282		18.92	-34.85	45665.53	-35.13		
alpha	I	2046-03-19T11:04:42.449		18.83	-34.76	44702.23	-33.92		
4	I	2046-03-19T11:05:49.770		18.59	-34.55	42545.41	-30.70		
5	I	2046-03-19T11:05:58.417		18.56	-34.52	42304.90	-30.21		
6	I	2046-03-19T11:06:16.287		18.50	-34.47	41797.02	-29.40		

No planet occultations

6	E	2046-03-19T11:19:21.420		15.76	-31.98	41831.45	29.37		
5	E	2046-03-19T11:19:34.820		15.71	-31.93	42228.31	30.18		
4	E	2046-03-19T11:19:41.338		15.69	-31.91	42526.78	30.66		
alpha	E	2046-03-19T11:20:50.742		15.45	-31.69	44742.84	33.87		
beta	E	2046-03-19T11:21:18.301		15.35	-31.60	45681.23	35.08		
eta	E	2046-03-19T11:21:59.874		15.21	-31.47	47176.12	36.72		
gamma	E	2046-03-19T11:22:12.113		15.17	-31.43	47628.27	37.17		
delta	E	2046-03-19T11:22:30.038		15.10	-31.37	48300.35	37.81		
lambda	E	2046-03-19T11:23:14.798		14.95	-31.23	50026.71	39.30		
epsilon	E	2046-03-19T11:23:45.271		14.84	-31.13	51238.65	39.93		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:23:48.130
 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 : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514
 ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 10.09
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.489
 C/A sky separation (km) : 31543.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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

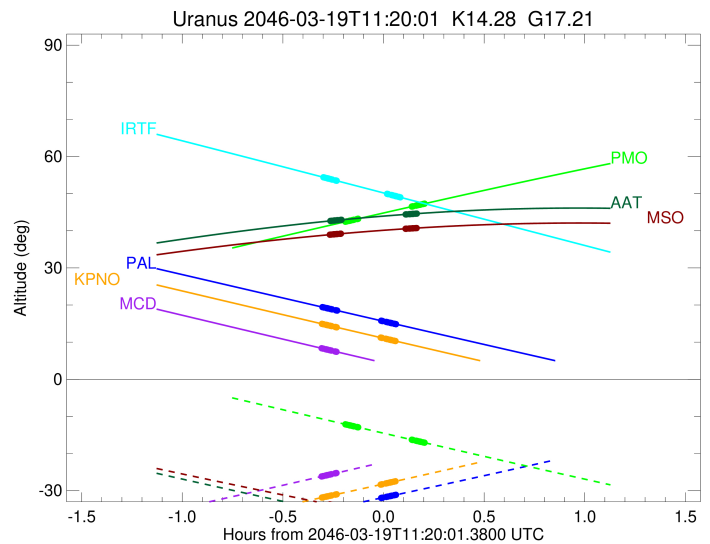
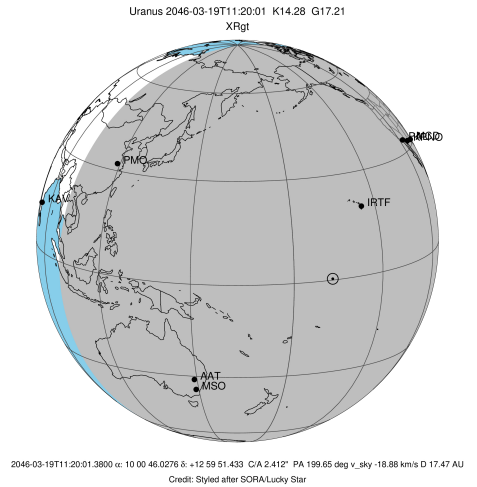


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-19T11:08:50.038		42.48	-12.17	50745.74	-44.11		
lambda	I	2046-03-19T11:09:06.425		42.53	-12.23	50026.71	-43.67		
delta	I	2046-03-19T11:09:46.447		42.67	-12.37	48300.35	-42.58		
gamma	I	2046-03-19T11:10:02.481		42.73	-12.43	47621.36	-42.11		
eta	I	2046-03-19T11:10:13.095		42.76	-12.47	47176.12	-41.78		
beta	I	2046-03-19T11:10:50.004		42.89	-12.59	45663.13	-40.62		
alpha	I	2046-03-19T11:11:13.286		42.97	-12.68	44698.59	-39.76		
4	I	2046-03-19T11:12:09.563		43.17	-12.87	42551.03	-37.59		
5	I	2046-03-19T11:12:16.351		43.19	-12.90	42309.92	-37.23		
6	I	2046-03-19T11:12:31.171		43.24	-12.95	41795.41	-36.70		

No planet occultations

6	E	2046-03-19T11:28:29.125		46.53	-16.30	41837.96	36.74		
5	E	2046-03-19T11:28:39.582		46.56	-16.33	42216.51	37.27		
4	E	2046-03-19T11:28:44.670		46.58	-16.35	42528.54	37.62		
alpha	E	2046-03-19T11:29:42.841		46.78	-16.55	44745.69	39.80		
beta	E	2046-03-19T11:30:06.328		46.86	-16.63	45681.07	40.66		
eta	E	2046-03-19T11:30:42.537		46.98	-16.76	47176.12	41.83		
gamma	E	2046-03-19T11:30:53.316		47.02	-16.80	47628.82	42.16		
delta	E	2046-03-19T11:31:09.155		47.07	-16.85	48300.35	42.63		
lambda	E	2046-03-19T11:31:49.130		47.21	-16.99	50026.71	43.73		
epsilon	E	2046-03-19T11:32:17.501		47.30	-17.09	51277.46	44.17		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:16:19.760
 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 : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514
 ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 11.39
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.787
 C/A sky separation (km) : 35318.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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

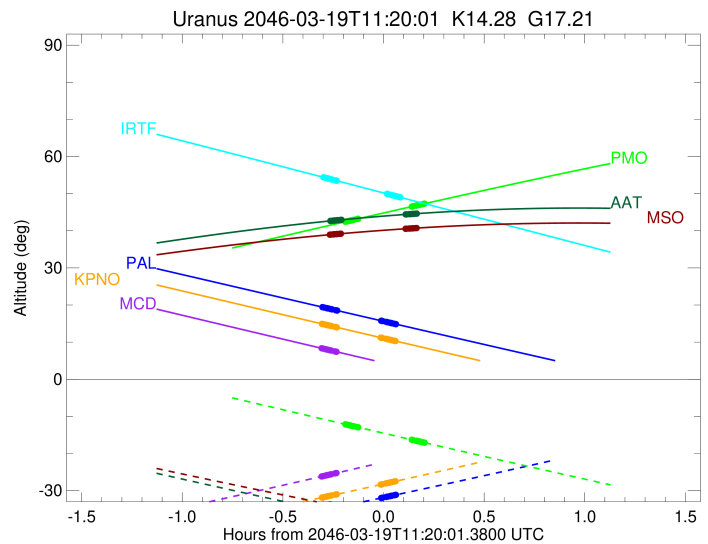
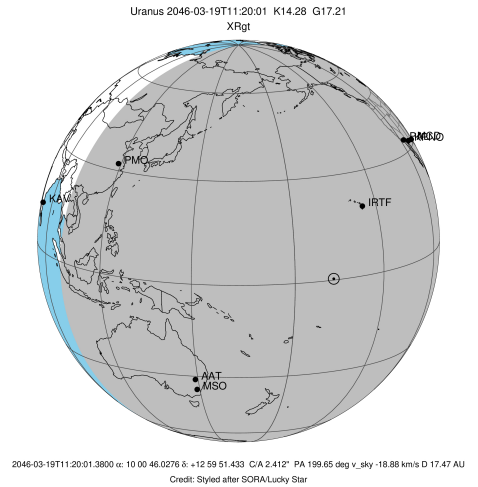


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-19T11:01:50.710		14.89	-31.83	50751.84	-39.90		
lambda	I	2046-03-19T11:02:09.042		14.83	-31.77	50026.71	-39.27		
delta	I	2046-03-19T11:02:53.845		14.67	-31.62	48300.35	-37.77		
gamma	I	2046-03-19T11:03:11.971		14.61	-31.56	47621.62	-37.12		
eta	I	2046-03-19T11:03:24.046		14.56	-31.52	47176.12	-36.66		
beta	I	2046-03-19T11:04:06.379		14.41	-31.38	45665.56	-35.01		
alpha	I	2046-03-19T11:04:33.639		14.32	-31.29	44702.27	-33.80		
4	I	2046-03-19T11:05:41.212		14.08	-31.07	42545.34	-30.57		
5	I	2046-03-19T11:05:49.897		14.05	-31.04	42304.83	-30.08		
6	I	2046-03-19T11:06:07.837		13.98	-30.98	41797.05	-29.27		

No planet occultations

6	E	2046-03-19T11:19:12.390		11.22	-28.37	41831.39	29.24		
5	E	2046-03-19T11:19:25.852		11.17	-28.33	42228.41	30.05		
4	E	2046-03-19T11:19:32.400		11.15	-28.30	42526.77	30.54		
alpha	E	2046-03-19T11:20:42.064		10.91	-28.07	44742.82	33.75		
beta	E	2046-03-19T11:21:09.718		10.81	-27.98	45681.23	34.96		
eta	E	2046-03-19T11:21:51.425		10.66	-27.84	47176.12	36.60		
gamma	E	2046-03-19T11:22:03.702		10.62	-27.80	47628.27	37.05		
delta	E	2046-03-19T11:22:21.681		10.56	-27.74	48300.35	37.70		
lambda	E	2046-03-19T11:23:06.571		10.40	-27.58	50026.71	39.19		
epsilon	E	2046-03-19T11:23:37.122		10.29	-27.48	51238.34	39.82		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:16:16.850
 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 : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514
 ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 11.38
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.793
 C/A sky separation (km) : 35389.6
 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_itrff93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

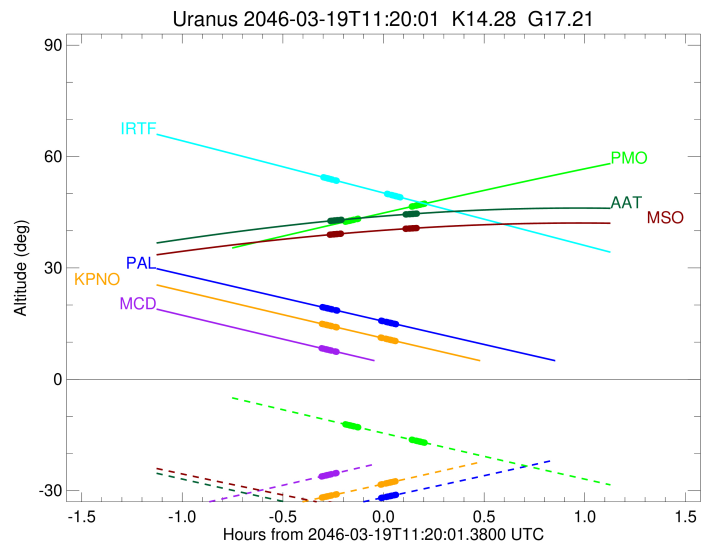
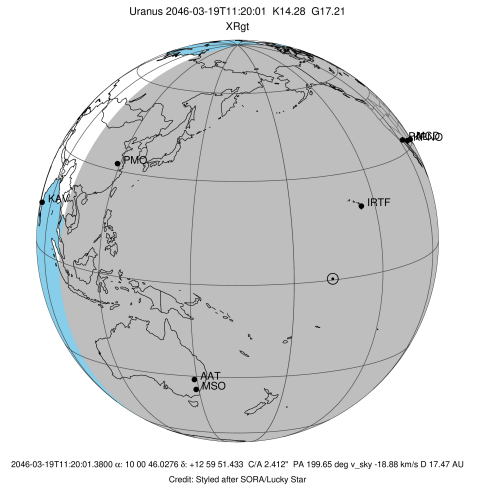


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-19T11:01:44.907		8.31	-26.14	50752.03	-39.71		
lambda	I	2046-03-19T11:02:03.332		8.25	-26.08	50026.71	-39.07		
delta	I	2046-03-19T11:02:48.364		8.09	-25.92	48300.35	-37.57		
gamma	I	2046-03-19T11:03:06.586		8.02	-25.86	47621.63	-36.92		
eta	I	2046-03-19T11:03:18.729		7.98	-25.82	47176.12	-36.46		
beta	I	2046-03-19T11:04:01.304		7.83	-25.67	45665.62	-34.80		
alpha	I	2046-03-19T11:04:28.736		7.73	-25.58	44702.36	-33.58		
4	I	2046-03-19T11:05:36.787		7.49	-25.34	42545.21	-30.34		
5	I	2046-03-19T11:05:45.546		7.46	-25.31	42304.69	-29.85		
6	I	2046-03-19T11:06:03.619		7.40	-25.25	41797.09	-29.03		

No planet occultations

6	E	2046-03-19T11:19:05.888		4.63x	-22.53	41831.25	29.00		
5	E	2046-03-19T11:19:19.469		4.59x	-22.48	42228.65	29.81		
4	E	2046-03-19T11:19:26.076		4.56x	-22.46	42526.75	30.30		
alpha	E	2046-03-19T11:20:36.226		4.32x	-22.21	44742.76	33.54		
beta	E	2046-03-19T11:21:04.056		4.22x	-22.12	45681.23	34.75		
eta	E	2046-03-19T11:21:46.006		4.07x	-21.97	47176.12	36.40		
gamma	E	2046-03-19T11:21:58.350		4.03x	-21.93	47628.26	36.85		
delta	E	2046-03-19T11:22:16.427		3.96x	-21.86	48300.35	37.50		
lambda	E	2046-03-19T11:23:01.546		3.81x	-21.71	50026.71	39.00		
epsilon	E	2046-03-19T11:23:32.228		3.70x	-21.60	51237.63	39.63		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:16:52.190
 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 : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514
 ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 11.34
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.594
 C/A sky separation (km) : 32863.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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

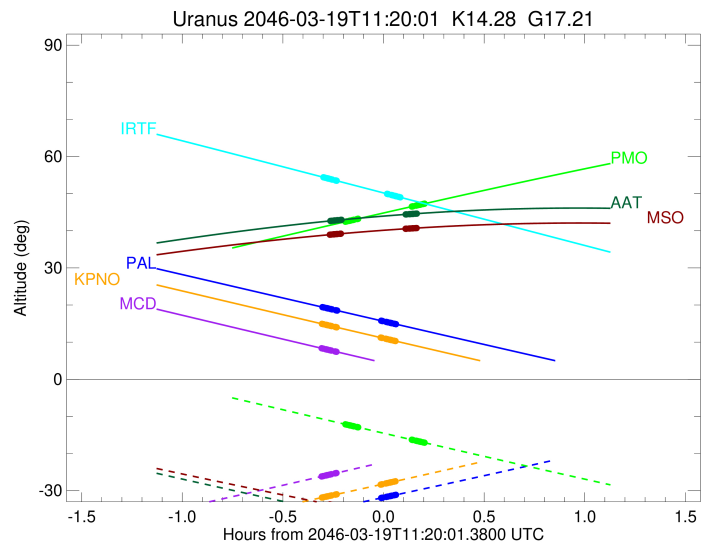
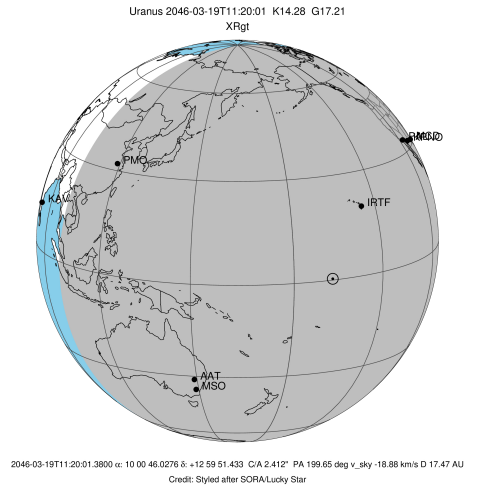


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-19T11:02:17.136		54.37	-69.09	50747.24	-43.04		
lambda	I	2046-03-19T11:02:33.981		54.31	-69.06	50026.71	-42.54		
delta	I	2046-03-19T11:03:15.148		54.14	-68.99	48300.35	-41.31		
gamma	I	2046-03-19T11:03:31.688		54.08	-68.97	47621.44	-40.78		
eta	I	2046-03-19T11:03:42.657		54.04	-68.95	47176.12	-40.41		
beta	I	2046-03-19T11:04:20.884		53.89	-68.89	45663.90	-39.09		
alpha	I	2046-03-19T11:04:45.137		53.79	-68.85	44699.70	-38.12		
4	I	2046-03-19T11:05:44.153		53.56	-68.75	42549.22	-35.62		
5	I	2046-03-19T11:05:51.418		53.53	-68.73	42308.51	-35.22		
6	I	2046-03-19T11:06:06.980		53.47	-68.71	41795.81	-34.61		

No planet occultations

6	E	2046-03-19T11:21:06.756		49.94	-66.92	41835.76	34.58		
5	E	2046-03-19T11:21:17.956		49.90	-66.89	42220.46	35.19		
4	E	2046-03-19T11:21:23.399		49.88	-66.88	42527.84	35.59		
alpha	E	2046-03-19T11:22:24.432		49.64	-66.74	44744.75	38.08		
beta	E	2046-03-19T11:22:48.989		49.54	-66.68	45681.16	39.04		
eta	E	2046-03-19T11:23:26.598		49.39	-66.60	47176.12	40.36		
gamma	E	2046-03-19T11:23:37.758		49.35	-66.57	47628.63	40.73		
delta	E	2046-03-19T11:23:54.146		49.29	-66.53	48300.35	41.25		
lambda	E	2046-03-19T11:24:35.375		49.12	-66.44	50026.71	42.47		
epsilon	E	2046-03-19T11:25:04.233		49.01	-66.37	51263.76	42.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:19:43.710
 Event type : XRgt
 : No Uranus occs
 : 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 : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514
 ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 10.74
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.048
 C/A sky separation (km) : 25947.3
 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

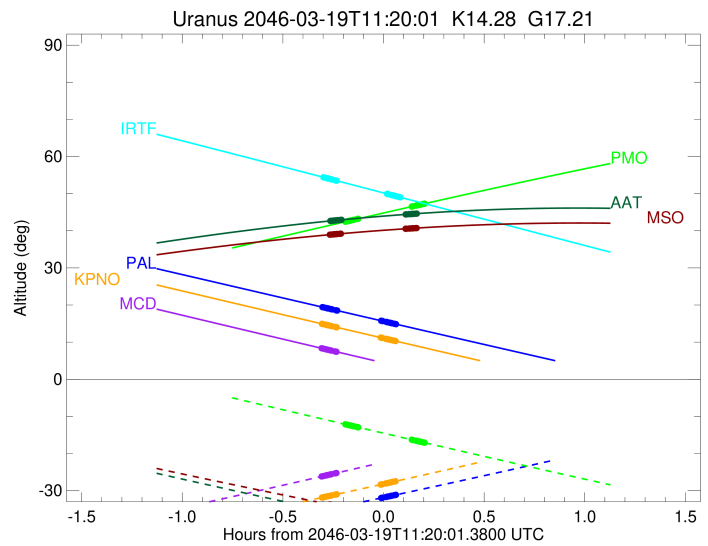
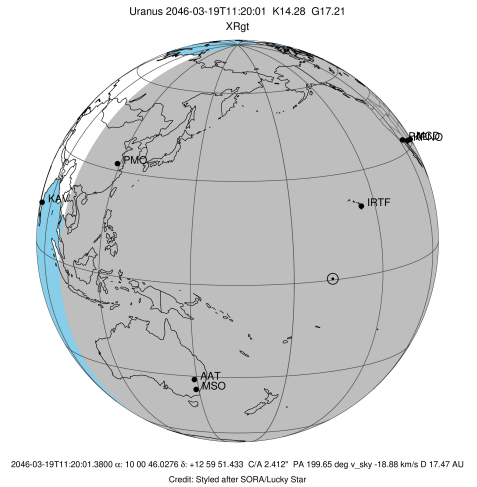


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-19T11:04:20.532		42.67	-35.67	50743.71	-48.74		
lambda	I	2046-03-19T11:04:35.279		42.69	-35.72	50026.71	-48.49		
delta	I	2046-03-19T11:05:11.123		42.75	-35.83	48300.35	-47.82		
gamma	I	2046-03-19T11:05:25.369		42.77	-35.88	47621.12	-47.54		
eta	I	2046-03-19T11:05:34.749		42.78	-35.91	47176.12	-47.34		
beta	I	2046-03-19T11:06:07.194		42.83	-36.01	45659.89	-46.65		
alpha	I	2046-03-19T11:06:27.330		42.86	-36.08	44694.29	-46.13		
4	I	2046-03-19T11:07:15.186		42.93	-36.23	42558.78	-44.90		
5	I	2046-03-19T11:07:20.455		42.94	-36.25	42313.95	-44.64		
6	I	2046-03-19T11:07:33.086		42.96	-36.29	41794.75	-44.36		

No planet occultations

6	E	2046-03-19T11:26:39.037		44.41	-39.87	41845.86	44.38		
5	E	2046-03-19T11:26:47.454		44.42	-39.90	42202.57	44.66		
4	E	2046-03-19T11:26:51.677		44.42	-39.91	42531.97	44.91		
alpha	E	2046-03-19T11:27:41.425		44.48	-40.06	44748.66	46.15		
beta	E	2046-03-19T11:28:01.611		44.50	-40.12	45680.41	46.67		
eta	E	2046-03-19T11:28:33.427		44.53	-40.22	47176.12	47.36		
gamma	E	2046-03-19T11:28:42.980		44.54	-40.25	47629.48	47.56		
delta	E	2046-03-19T11:28:57.044		44.56	-40.29	48300.35	47.84		
lambda	E	2046-03-19T11:29:32.876		44.60	-40.40	50026.71	48.51		
epsilon	E	2046-03-19T11:29:59.568		44.62	-40.48	51327.64	48.76		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-19T11:19:35.850
 Event type : XRgt
 : No Uranus occs
 : 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 : 3881528869299816832
 2Mass ID (if available) : 10004602+1259514
 ICRS Star Coord at Epoch: 10h 00m 46.02760s +12:59:51.43313s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.279
 G magnitude : 17.207
 RP magnitude : 15.974
 BP magnitude : 17.328
 DUPflag : 0
 Distance (au) : 17.471
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.88
 Sun-Target sep (deg) : 149.34
 Sun-Moon sep (deg) : 10.76
 B (ring opening deg) : 19.61
 PA of pole (deg) : 101.71
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.026
 C/A sky separation (km) : 25671.9
 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	2046-03-19T11:04:10.325		38.96	-33.74	50743.80	-48.88		
lambda	I	2046-03-19T11:04:25.031		38.98	-33.78	50026.71	-48.64		
delta	I	2046-03-19T11:05:00.759		39.03	-33.89	48300.35	-47.99		
gamma	I	2046-03-19T11:05:14.954		39.05	-33.93	47621.11	-47.71		
eta	I	2046-03-19T11:05:24.299		39.06	-33.96	47176.12	-47.52		
beta	I	2046-03-19T11:05:56.619		39.10	-34.05	45659.74	-46.84		
alpha	I	2046-03-19T11:06:16.666		39.13	-34.11	44694.11	-46.34		
4	I	2046-03-19T11:07:04.284		39.19	-34.25	42559.13	-45.14		
5	I	2046-03-19T11:07:09.504		39.20	-34.27	42314.06	-44.89		
6	I	2046-03-19T11:07:22.074		39.22	-34.31	41794.76	-44.62		

No planet occultations

6	E	2046-03-19T11:26:36.789		40.54	-37.67	41846.21	44.64		
5	E	2046-03-19T11:26:45.147		40.55	-37.69	42201.96	44.91		
4	E	2046-03-19T11:26:49.351		40.55	-37.70	42532.16	45.16		
alpha	E	2046-03-19T11:27:38.862		40.60	-37.84	44748.77	46.36		
beta	E	2046-03-19T11:27:58.951		40.62	-37.90	45680.36	46.86		
eta	E	2046-03-19T11:28:30.644		40.65	-37.99	47176.11	47.54		
gamma	E	2046-03-19T11:28:40.162		40.66	-38.02	47629.51	47.73		
delta	E	2046-03-19T11:28:54.177		40.67	-38.06	48300.35	48.01		
lambda	E	2046-03-19T11:29:29.893		40.71	-38.16	50026.71	48.66		
epsilon	E	2046-03-19T11:29:56.555		40.73	-38.23	51329.97	48.90		