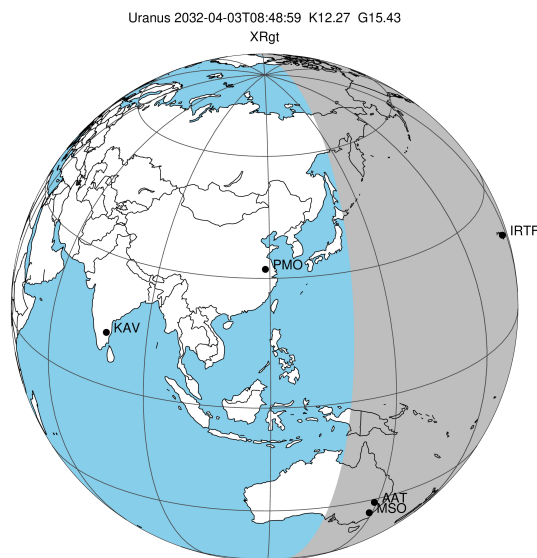


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-03T08:48:59.390
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3416184315424172032
 2Mass ID (if available) : 05302995+2325255

ICRS Star Coord at Epoch: 05h 30m 29.95756s +23:25:25.53862s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 12.266
 G magnitude : 15.435
 RP magnitude : 14.507
 BP magnitude : 16.302
 DUPflag : 0
 Distance (au) : 19.394
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.75
 Sun-Target sep (deg) : 69.52
 Sun-Moon sep (deg) : 159.70
 B (ring opening deg) : 80.35
 PA of pole (deg) : 32.22

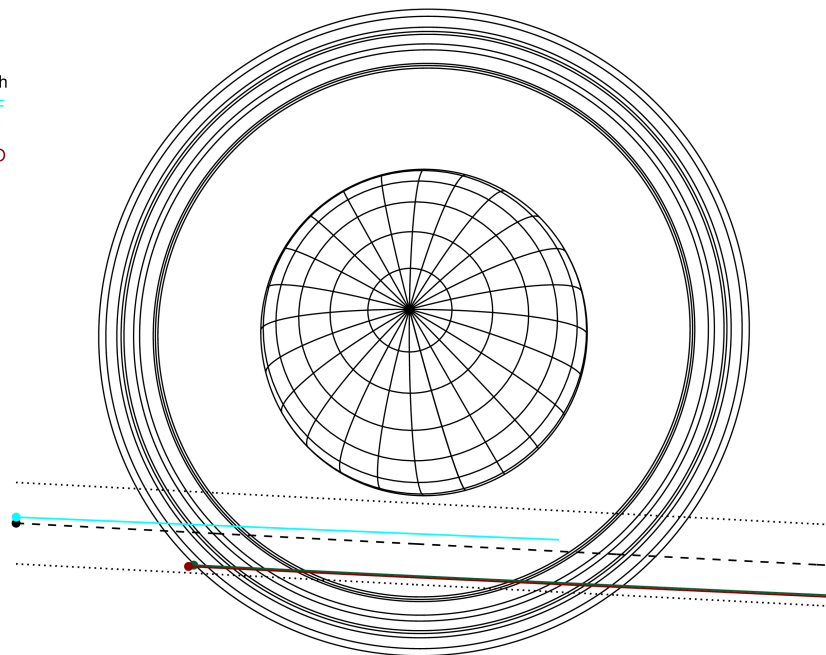
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2032-04-03T08:48:59.3900 ex: 05 30 29.95756 s: +23 25 25.539 C/A 2.350° PA 357.03 deg v_sky +16.75 km/s D 19.39 AU
 Credit: Styled after SORA/Lucky Star

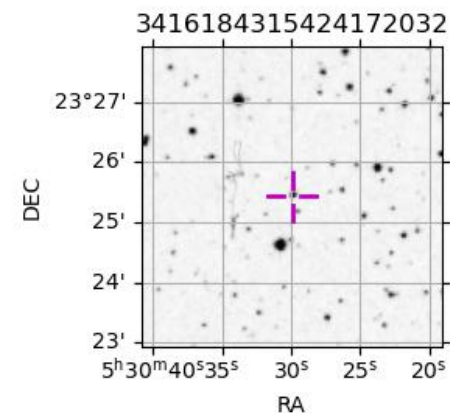
Uranus 2032-04-03T08:48:59 K12.27 G15.43 XRgt

Earth
 IRTF
 AAT
 MSO

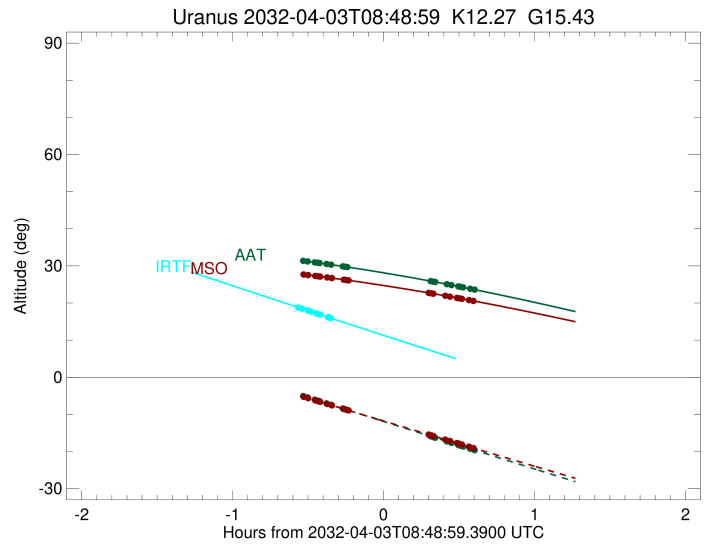
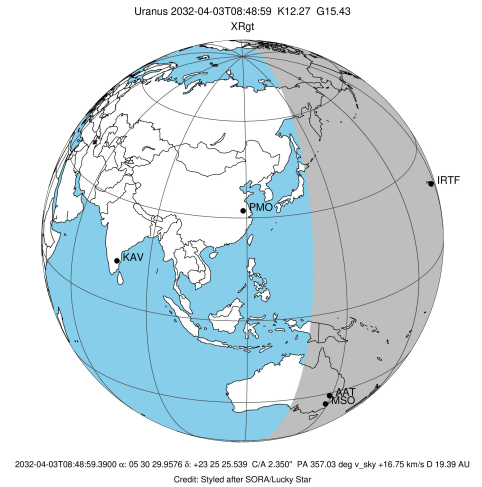


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	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					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++			APR 03 08:15 - APR 03 08:27	PnnRin
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	+++++		+++++	APR 03 08:17 - APR 03 09:24	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	APR 03 08:17 - APR 03 09:24	PnnRie



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-03T08:55:22.190
 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 : 3416184315424172032
 2Mass ID (if available) : 05302995+2325255
 ICRS Star Coord at Epoch: 05h 30m 29.95756s +23:25:25.53862s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 12.266
 G magnitude : 15.435
 RP magnitude : 14.507
 BP magnitude : 16.302
 DUPflag : 0
 Distance (au) : 19.394
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.75
 Sun-Target sep (deg) : 69.52
 Sun-Moon sep (deg) : 158.97
 B (ring opening deg) : 80.35
 PA of pole (deg) : 32.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.243
 C/A sky separation (km) : 31555.3
 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

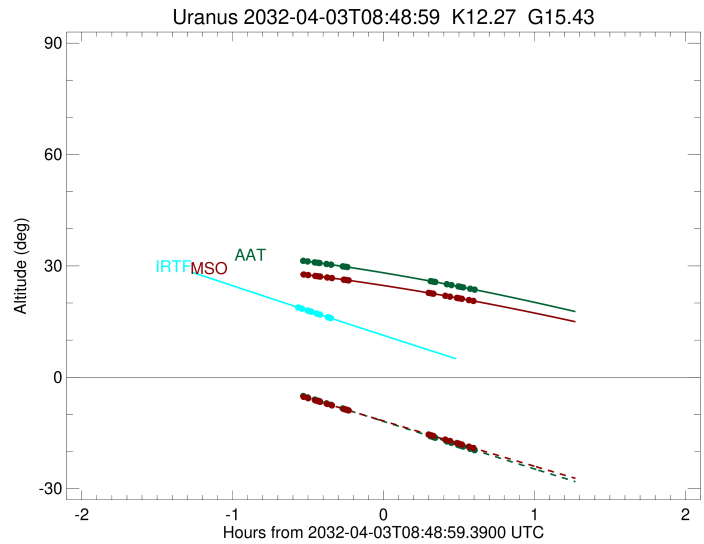
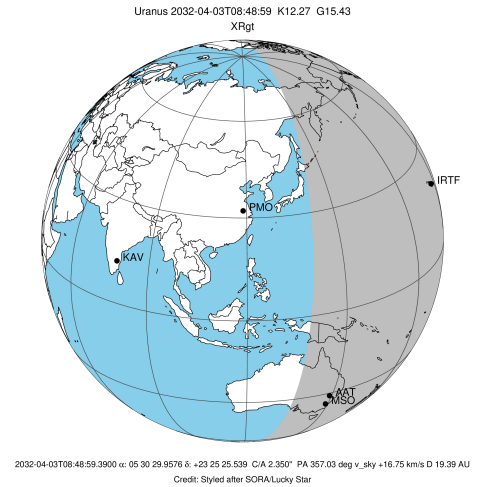


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-04-03T08:15:24.153		18.74	-49.31	50954.17	-12.96		
lambda	I	2032-04-03T08:16:35.747		18.47	-49.54	50026.71	-12.88		
delta	I	2032-04-03T08:18:51.485		17.97	-49.98	48300.35	-12.56		
gamma	I	2032-04-03T08:19:45.177		17.77	-50.15	47629.88	-12.42		
eta	I	2032-04-03T08:20:21.859		17.63	-50.26	47176.12	-12.32		
beta	I	2032-04-03T08:22:24.911		17.18	-50.65	45680.89	-11.97		
alpha	I	2032-04-03T08:23:43.810		16.88	-50.90	44745.79	-11.73		
4	I	2032-04-03T08:26:57.264		16.17	-51.50	42538.34	-11.08		
5	I	2032-04-03T08:27:30.377		16.04	-51.60	42171.06	-10.94		
6	I	2032-04-03T08:27:58.691		15.94	-51.69	41863.01	-10.84		

No planet occultations

6	E	2032-04-03T09:21:44.651		4.14x	-60.30	41808.07	10.92		
5	E	2032-04-03T09:22:17.644		4.02x	-60.37	42177.82	11.02		
4	E	2032-04-03T09:22:55.514		3.88x	-60.45	42598.11	11.17		
alpha	E	2032-04-03T09:25:58.154		3.22x	-60.83	44698.84	11.83		
beta	E	2032-04-03T09:27:18.223		2.93x	-60.99	45656.98	12.08		
eta	E	2032-04-03T09:29:22.196		2.49x	-61.24	47176.12	12.44		
gamma	E	2032-04-03T09:29:58.524		2.36x	-61.31	47629.77	12.54		
delta	E	2032-04-03T09:30:51.710		2.17x	-61.41	48300.35	12.68		
lambda	E	2032-04-03T09:33:06.088		1.69x	-61.66	50026.71	13.01		
epsilon	E	2032-04-03T09:34:08.302		1.46x	-61.77	50840.59	13.10		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-03T08:51:42.630
 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 : 3416184315424172032
 2Mass ID (if available) : 05302995+2325255
 ICRS Star Coord at Epoch: 05h 30m 29.95756s +23:25:25.53862s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 12.266
 G magnitude : 15.435
 RP magnitude : 14.507
 BP magnitude : 16.302
 DUPflag : 0
 Distance (au) : 19.394
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.75
 Sun-Target sep (deg) : 69.52
 Sun-Moon sep (deg) : 159.32
 B (ring opening deg) : 80.35
 PA of pole (deg) : 32.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.712
 C/A sky separation (km) : 38141.3
 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

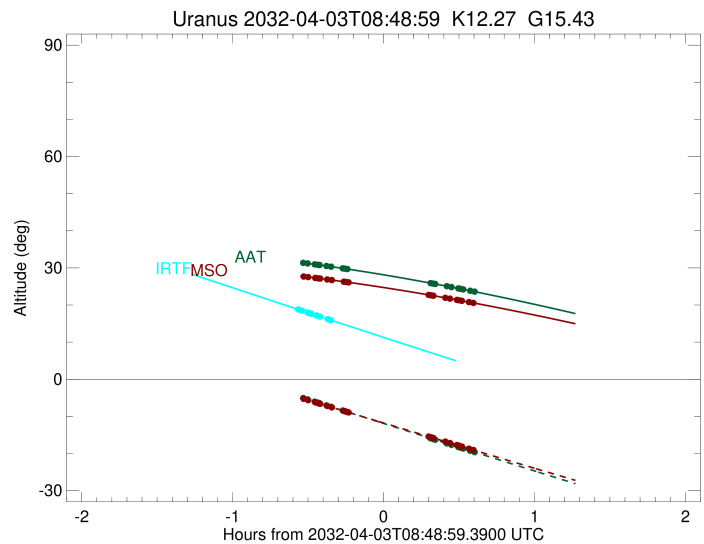
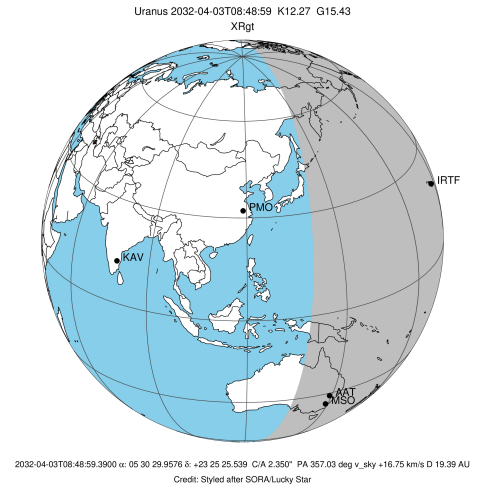


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-04-03T08:17:29.264		31.33	-5.14	50895.20	-10.66		
lambda	I	2032-04-03T08:18:51.120		31.21	-5.43	50026.71	-10.48		
delta	I	2032-04-03T08:21:40.341		30.95	-6.04	48300.35	-9.91		
gamma	I	2032-04-03T08:22:48.761		30.84	-6.28	47630.59	-9.66		
eta	I	2032-04-03T08:23:36.223		30.77	-6.45	47176.12	-9.49		
beta	I	2032-04-03T08:26:19.530		30.51	-7.03	45679.58	-8.83		
alpha	I	2032-04-03T08:28:08.850		30.34	-7.42	44740.28	-8.35		
4	I	2032-04-03T08:32:54.221		29.87	-8.44	42548.16	-6.99		
5	I	2032-04-03T08:33:50.338		29.77	-8.64	42159.95	-6.67		
6	I	2032-04-03T08:34:37.299		29.69	-8.81	41851.99	-6.42		

No planet occultations

6	E	2032-04-03T09:07:39.539		25.91	-15.89	41818.87	6.43		
5	E	2032-04-03T09:08:31.161		25.80	-16.07	42163.74	6.69		
4	E	2032-04-03T09:09:32.351		25.67	-16.29	42586.51	7.01		
alpha	E	2032-04-03T09:14:07.398		25.08	-17.27	44706.29	8.38		
beta	E	2032-04-03T09:15:58.199		24.84	-17.66	45661.71	8.86		
eta	E	2032-04-03T09:18:42.963		24.48	-18.25	47176.12	9.52		
gamma	E	2032-04-03T09:19:30.226		24.37	-18.42	47630.54	9.71		
delta	E	2032-04-03T09:20:38.361		24.22	-18.66	48300.35	9.96		
lambda	E	2032-04-03T09:23:26.815		23.84	-19.26	50026.71	10.53		
epsilon	E	2032-04-03T09:24:39.149		23.68	-19.52	50796.87	10.71		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-04-03T08:51:33.430
 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 : 3416184315424172032
 2Mass ID (if available) : 05302995+2325255
 ICRS Star Coord at Epoch: 05h 30m 29.95756s +23:25:25.53862s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 12.266
 G magnitude : 15.435
 RP magnitude : 14.507
 BP magnitude : 16.302
 DUPflag : 0
 Distance (au) : 19.394
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.75
 Sun-Target sep (deg) : 69.52
 Sun-Moon sep (deg) : 159.31
 B (ring opening deg) : 80.35
 PA of pole (deg) : 32.22
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.730
 C/A sky separation (km) : 38395.9
 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	2032-04-03T08:17:40.366		27.64	-5.36	50892.80	-10.57		
lambda	I	2032-04-03T08:19:02.686		27.53	-5.64	50026.71	-10.39		
delta	I	2032-04-03T08:21:53.563		27.29	-6.22	48300.35	-9.81		
gamma	I	2032-04-03T08:23:02.756		27.19	-6.46	47630.61	-9.55		
eta	I	2032-04-03T08:23:50.800		27.12	-6.62	47176.12	-9.37		
beta	I	2032-04-03T08:26:36.426		26.88	-7.19	45679.50	-8.69		
alpha	I	2032-04-03T08:28:27.654		26.72	-7.57	44739.99	-8.20		
4	I	2032-04-03T08:33:19.772		26.27	-8.56	42548.72	-6.78		
5	I	2032-04-03T08:34:17.856		26.18	-8.76	42159.53	-6.45		
6	I	2032-04-03T08:35:06.549		26.11	-8.93	41851.35	-6.18		

No planet occultations

6	E	2032-04-03T09:06:51.677		22.74	-15.42	41819.49	6.19		
5	E	2032-04-03T09:07:45.024		22.64	-15.60	42163.18	6.47		
4	E	2032-04-03T09:08:48.185		22.51	-15.82	42585.89	6.80		
alpha	E	2032-04-03T09:13:30.020		21.95	-16.77	44706.66	8.22		
beta	E	2032-04-03T09:15:22.742		21.72	-17.16	45661.92	8.72		
eta	E	2032-04-03T09:18:09.847		21.38	-17.72	47176.12	9.40		
gamma	E	2032-04-03T09:18:57.699		21.28	-17.89	47630.57	9.59		
delta	E	2032-04-03T09:20:06.618		21.14	-18.12	48300.35	9.85		
lambda	E	2032-04-03T09:22:56.757		20.79	-18.70	50026.71	10.44		
epsilon	E	2032-04-03T09:24:09.570		20.63	-18.94	50795.27	10.62		