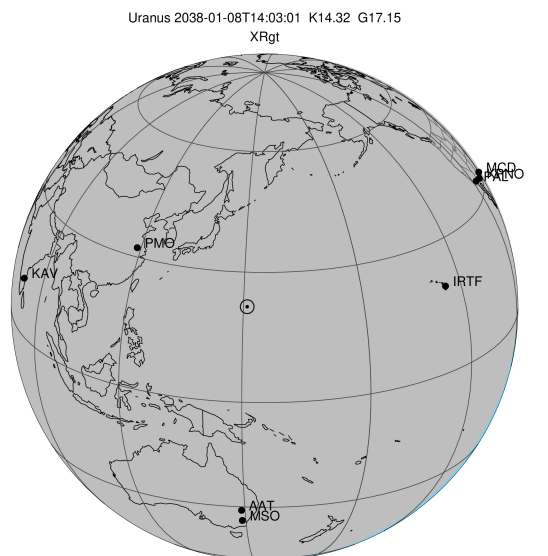


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-01-08T14:03:01.130
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 865600458932323072
 2Mass ID (if available) : 07342695+2210054

ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s

RUWE (>1.4 is poor) : 1.28
 K magnitude : 14.318
 G magnitude : 17.147
 RP magnitude : 16.123
 BP magnitude : 17.575
 DUPflag : 0
 Distance (au) : 17.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.23
 Sun-Target sep (deg) : 176.05
 Sun-Moon sep (deg) : 148.20
 B (ring opening deg) : 54.99
 PA of pole (deg) : 84.89

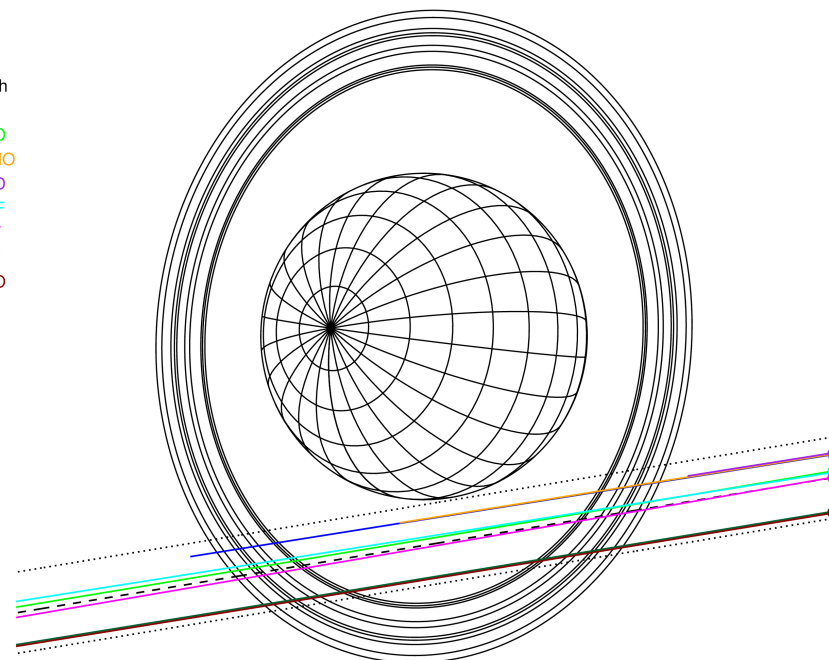
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2038-01-08T14:03:01.1300 a: 07 34 26.9248 & +22 10 05.532 C/A 2.502" PA 9.39 deg v_sky -23.23 km/s D 17.72 AU
 Credit: Styled after SORA/Lucky Star

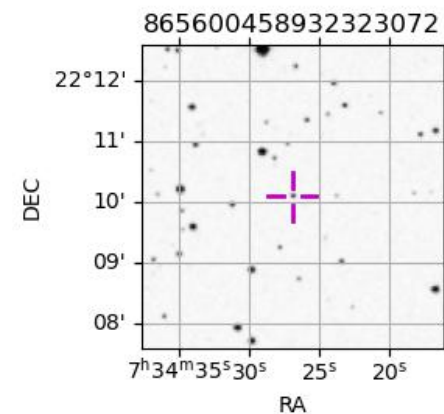
Uranus 2038-01-08T14:03:01 K14.32 G17.15 XRgt

Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 KAV
 AAT
 MSO

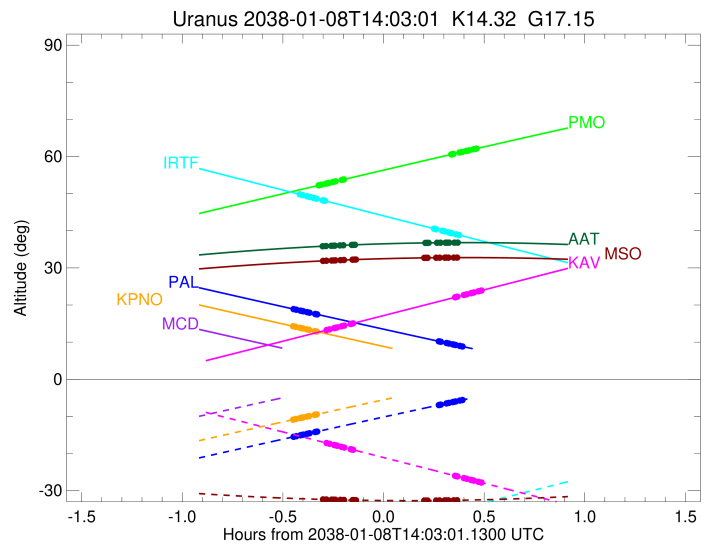
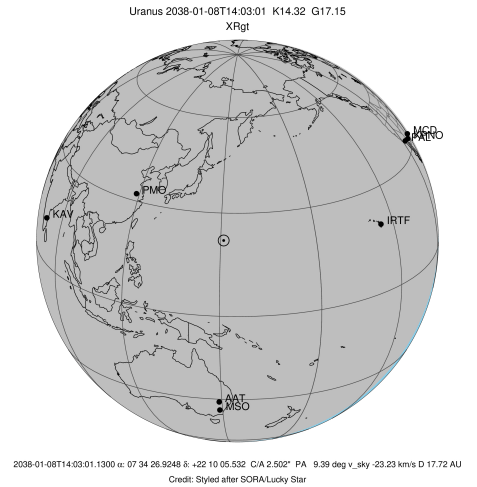


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	JAN 08 13:36 - JAN 08 14:26	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++		+++++	JAN 08 13:43 - JAN 08 14:30	PnnRie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	JAN 08 13:36 - JAN 08 13:43	PnnRin
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	+++++		+++++	JAN 08 13:38 - JAN 08 14:25	PnnRie
KAV	Kavalur Observatory	12.6	78.8	+++++		+++++	JAN 08 13:46 - JAN 08 14:32	PnnRie
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	+++++		+++++	JAN 08 13:45 - JAN 08 14:24	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	JAN 08 13:45 - JAN 08 14:24	PnnRie



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-01-08T13:59:45.210
 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 : 865600458932323072
 2Mass ID (if available) : 07342695+2210054
 ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s
 RUWE (>1.4 is poor) : 1.28
 K magnitude : 14.318
 G magnitude : 17.147
 RP magnitude : 16.123
 BP magnitude : 17.575
 DUPflag : 0
 Distance (au) : 17.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.23
 Sun-Target sep (deg) : 176.05
 Sun-Moon sep (deg) : 147.69
 B (ring opening deg) : 54.99
 PA of pole (deg) : 84.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.202
 C/A sky separation (km) : 28301.1
 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

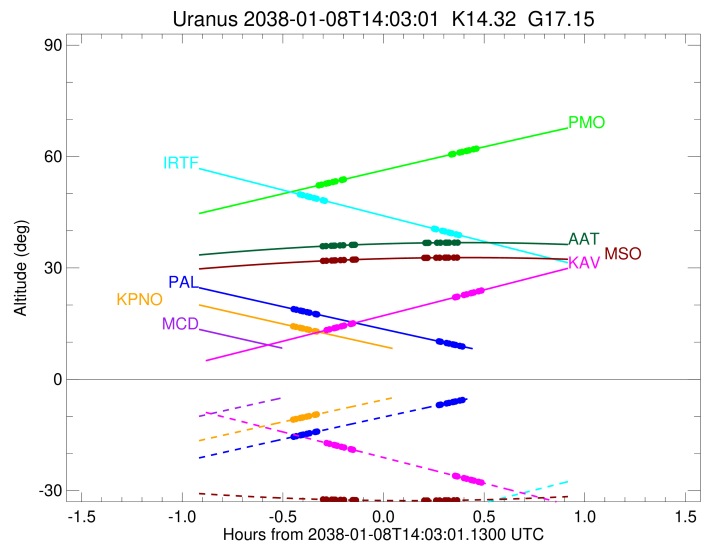
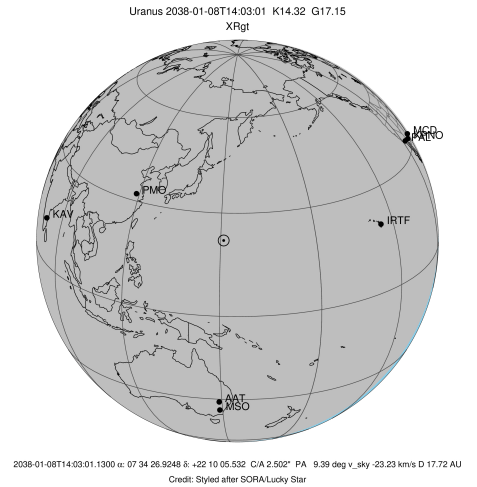


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-01-08T13:36:24.004		18.86	-15.46	50902.17	-23.16		
lambda	I	2038-01-08T13:37:01.793		18.73	-15.33	50026.71	-23.07		
delta	I	2038-01-08T13:38:17.288		18.48	-15.08	48300.35	-22.66		
gamma	I	2038-01-08T13:38:46.963		18.38	-14.98	47630.58	-22.48		
eta	I	2038-01-08T13:39:07.232		18.31	-14.91	47176.12	-22.36		
beta	I	2038-01-08T13:40:16.535		18.07	-14.68	45643.88	-21.91		
alpha	I	2038-01-08T13:41:00.665		17.93	-14.54	44688.46	-21.59		
4	I	2038-01-08T13:42:40.665		17.59	-14.20	42548.28	-20.78		
5	I	2038-01-08T13:42:51.578		17.55	-14.17	42315.11	-20.70		
6	I	2038-01-08T13:43:15.054		17.47	-14.09	41843.39	-20.54		

No planet occultations

6	E	2038-01-08T14:19:31.260		10.22	-6.95	41878.77	20.49		
5	E	2038-01-08T14:19:49.902		10.16	-6.89	42232.68	20.65		
4	E	2038-01-08T14:20:04.190		10.11	-6.84	42534.56	20.73		
alpha	E	2038-01-08T14:21:46.747		9.77	-6.51	44708.55	21.53		
beta	E	2038-01-08T14:22:31.134		9.63	-6.37	45674.90	21.85		
eta	E	2038-01-08T14:23:39.202		9.40	-6.15	47176.12	22.29		
gamma	E	2038-01-08T14:23:59.155		9.34	-6.08	47622.08	22.41		
delta	E	2038-01-08T14:24:29.304		9.24	-5.99	48300.35	22.58		
lambda	E	2038-01-08T14:25:45.049		8.99	-5.74	50026.71	22.99		
epsilon	E	2038-01-08T14:26:24.481		8.86	-5.62	50937.25	23.08		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-01-08T14:05:24.040
 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 : 865600458932323072
 2Mass ID (if available) : 07342695+2210054
 ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s
 RUWE (>1.4 is poor) : 1.28
 K magnitude : 14.318
 G magnitude : 17.147
 RP magnitude : 16.123
 BP magnitude : 17.575
 DUPflag : 0
 Distance (au) : 17.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.23
 Sun-Target sep (deg) : 176.05
 Sun-Moon sep (deg) : 149.01
 B (ring opening deg) : 54.99
 PA of pole (deg) : 84.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.439
 C/A sky separation (km) : 31355.7
 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



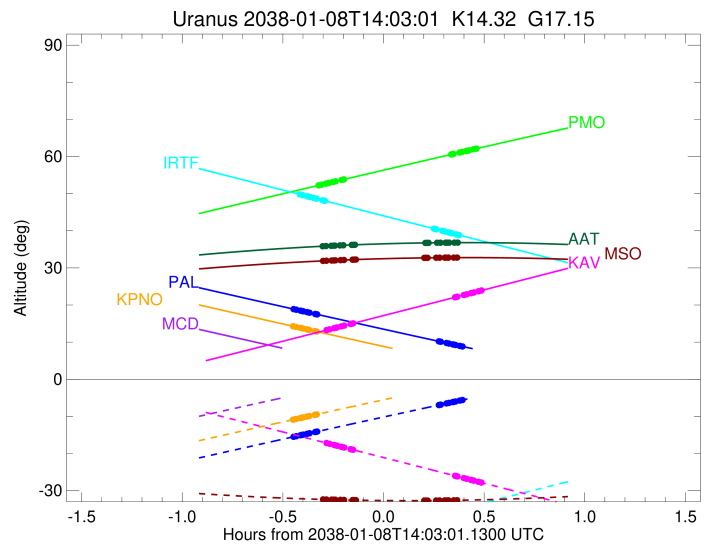
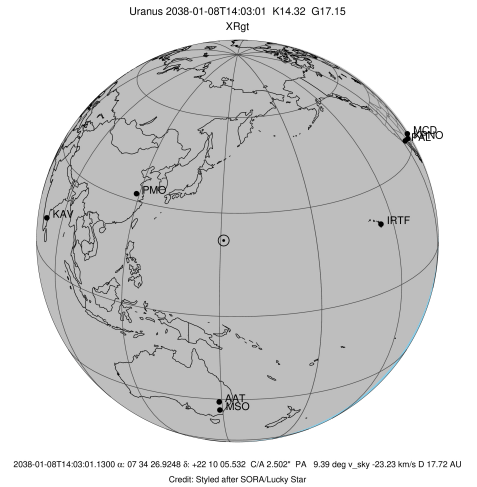
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-01-08T13:43:54.391		52.28	-55.93	50880.53	-22.13		
lambda	I	2038-01-08T13:44:33.004		52.42	-56.07	50026.71	-21.99		
delta	I	2038-01-08T13:45:52.478		52.70	-56.34	48300.35	-21.45		
gamma	I	2038-01-08T13:46:23.887		52.81	-56.46	47630.32	-21.21		
eta	I	2038-01-08T13:46:45.379		52.89	-56.53	47176.12	-21.05		
beta	I	2038-01-08T13:47:59.234		53.15	-56.79	45644.80	-20.46		
alpha	I	2038-01-08T13:48:46.770		53.32	-56.96	44687.20	-20.03		
4	I	2038-01-08T13:50:35.695		53.70	-57.34	42544.59	-18.93		
5	I	2038-01-08T13:50:47.553		53.74	-57.38	42315.19	-18.82		
6	I	2038-01-08T13:51:12.964		53.83	-57.47	41847.59	-18.59		

No planet occultations

6	E	2038-01-08T14:23:13.144		60.57	-64.11	41879.53	18.62		
5	E	2038-01-08T14:23:33.764		60.64	-64.18	42241.57	18.84		
4	E	2038-01-08T14:23:48.868		60.69	-64.23	42531.87	18.96		
alpha	E	2038-01-08T14:25:39.968		61.08	-64.61	44705.36	20.06		
beta	E	2038-01-08T14:26:27.529		61.24	-64.77	45673.43	20.49		
eta	E	2038-01-08T14:27:39.833		61.49	-65.02	47176.12	21.09		
gamma	E	2038-01-08T14:28:00.912		61.56	-65.09	47622.39	21.25		
delta	E	2038-01-08T14:28:32.638		61.67	-65.20	48300.35	21.49		
lambda	E	2038-01-08T14:29:51.961		61.95	-65.46	50026.71	22.03		
epsilon	E	2038-01-08T14:30:31.809		62.09	-65.60	50909.73	22.17		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2038-01-08T13:59:41.840
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      : 865600458932323072
2Mass ID (if available) : 07342695+2210054
ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s
RUWE (>1.4 is poor) : 1.28
K magnitude         : 14.318
G magnitude         : 17.147
RP magnitude        : 16.123
BP magnitude        : 17.575
DUPflag            : 0
Distance (au)       : 17.723
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -23.23
Sun-Target sep (deg) : 176.05
Sun-Moon sep (deg)  : 147.64
B (ring opening deg) : 54.99
PA of pole (deg)    : 84.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.196
C/A sky separation (km) : 28223.1
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```



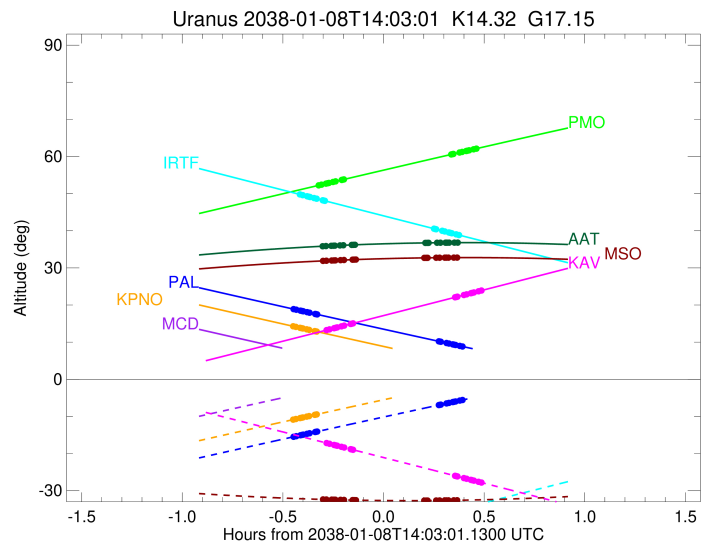
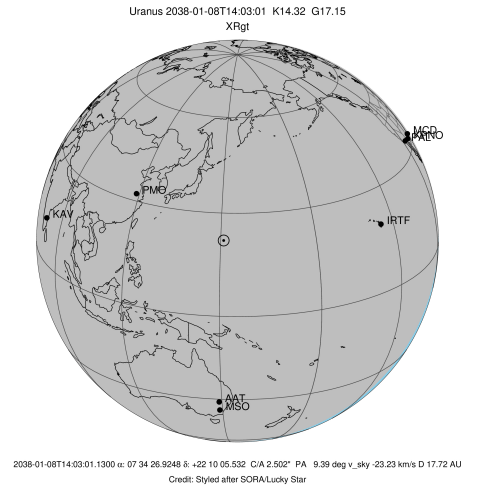
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-01-08T13:36:16.366		14.24	-10.83	50902.80	-23.16		
lambda	I	2038-01-08T13:36:54.189		14.11	-10.71	50026.71	-23.07		
delta	I	2038-01-08T13:38:09.691		13.85	-10.45	48300.35	-22.66		
gamma	I	2038-01-08T13:38:39.366		13.75	-10.36	47630.58	-22.48		
eta	I	2038-01-08T13:38:59.634		13.68	-10.29	47176.12	-22.36		
beta	I	2038-01-08T13:40:08.927		13.45	-10.06	45643.86	-21.92		
alpha	I	2038-01-08T13:40:53.039		13.30	-9.91	44688.50	-21.60		
4	I	2038-01-08T13:42:32.978		12.96	-9.58	42548.38	-20.80		
5	I	2038-01-08T13:42:43.886		12.93	-9.54	42315.10	-20.72		
6	I	2038-01-08T13:43:07.354		12.85	-9.46	41843.28	-20.56		

No planet occultations

6	E	2038-01-08T14:19:32.116		5.57	-2.32x	41878.75	20.51		
5	E	2038-01-08T14:19:50.741		5.51	-2.26x	42232.49	20.67		
4	E	2038-01-08T14:20:05.030		5.47	-2.21x	42534.63	20.75		
alpha	E	2038-01-08T14:21:47.532		5.13	-1.88x	44708.62	21.54		
beta	E	2038-01-08T14:22:31.905		4.98x	-1.74x	45674.93	21.85		
eta	E	2038-01-08T14:23:39.964		4.76x	-1.52x	47176.12	22.29		
gamma	E	2038-01-08T14:23:59.917		4.70x	-1.46x	47622.08	22.41		
delta	E	2038-01-08T14:24:30.068		4.60x	-1.36x	48300.35	22.58		
lambda	E	2038-01-08T14:25:45.824		4.35x	-1.12x	50026.71	22.99		
epsilon	E	2038-01-08T14:26:25.293		4.22x	-0.99x	50937.84	23.08		

```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2038-01-08T14:00:03.150
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         : 865600458932323072
2Mass ID (if available) : 07342695+2210054
ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s
RUWE (>1.4 is poor)  : 1.28
K magnitude             : 14.318
G magnitude             : 17.147
RP magnitude           : 16.123
BP magnitude           : 17.575
DUPflag                : 0
Distance (au)          : 17.723
f0 (km)                : 0.000
g0 (km)                : 0.000
skyplane vel. (km/s)  : -23.23
Sun-Target sep (deg)   : 176.05
Sun-Moon sep (deg)     : 147.99
B (ring opening deg)   : 54.99
PA of pole (deg)       : 84.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.414
C/A sky separation (km) : 31033.4
NAIF SPICE kernels     : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```

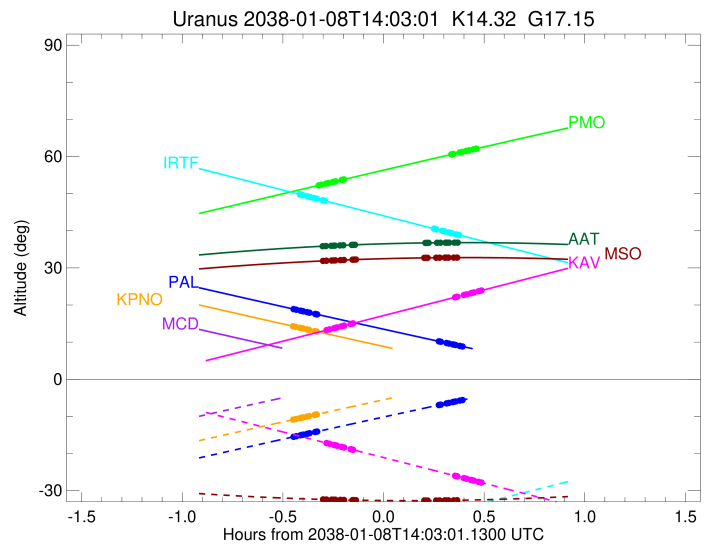
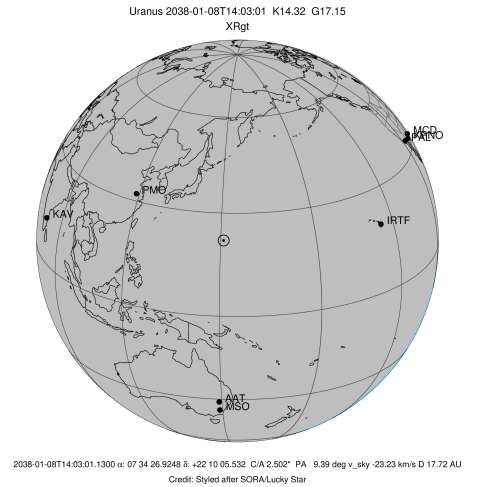


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-01-08T13:38:18.248		49.75	-45.81	50880.98	-22.29		
lambda	I	2038-01-08T13:38:56.599		49.60	-45.66	50026.71	-22.15		
delta	I	2038-01-08T13:40:15.448		49.29	-45.36	48300.35	-21.62		
gamma	I	2038-01-08T13:40:46.592		49.17	-45.24	47630.33	-21.40		
eta	I	2038-01-08T13:41:07.896		49.09	-45.16	47176.12	-21.24		
beta	I	2038-01-08T13:42:21.061		48.81	-44.88	45644.76	-20.66		
alpha	I	2038-01-08T13:43:08.102		48.63	-44.70	44687.25	-20.25		
4	I	2038-01-08T13:44:55.735		48.21	-44.29	42544.78	-19.18		
5	I	2038-01-08T13:45:07.443		48.17	-44.24	42315.20	-19.07		
6	I	2038-01-08T13:45:32.534		48.07	-44.14	41847.36	-18.85		

No planet occultations

6	E	2038-01-08T14:18:04.689		40.56	-36.68	41879.44	18.82		
5	E	2038-01-08T14:18:25.072		40.48	-36.60	42240.04	19.03		
4	E	2038-01-08T14:18:40.118		40.42	-36.54	42532.31	19.15		
alpha	E	2038-01-08T14:20:30.301		40.00	-36.12	44705.92	20.20		
beta	E	2038-01-08T14:21:17.542		39.82	-35.94	45673.70	20.62		
eta	E	2038-01-08T14:22:29.452		39.54	-35.67	47176.12	21.19		
gamma	E	2038-01-08T14:22:50.434		39.46	-35.59	47622.33	21.35		
delta	E	2038-01-08T14:23:22.032		39.34	-35.47	48300.35	21.57		
lambda	E	2038-01-08T14:24:41.089		39.04	-35.17	50026.71	22.09		
epsilon	E	2038-01-08T14:25:21.064		38.89	-35.02	50914.86	22.23		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-01-08T14:07:13.050
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 865600458932323072
 2Mass ID (if available) : 07342695+2210054
 ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s
 RUWE (>1.4 is poor) : 1.28
 K magnitude : 14.318
 G magnitude : 17.147
 RP magnitude : 16.123
 BP magnitude : 17.575
 DUPflag : 0
 Distance (au) : 17.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.23
 Sun-Target sep (deg) : 176.05
 Sun-Moon sep (deg) : 149.10
 B (ring opening deg) : 54.99
 PA of pole (deg) : 84.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.537
 C/A sky separation (km) : 32607.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.bsp
 ural61.bsp
 vgr2.ural61.bsp
 peph.ural60.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

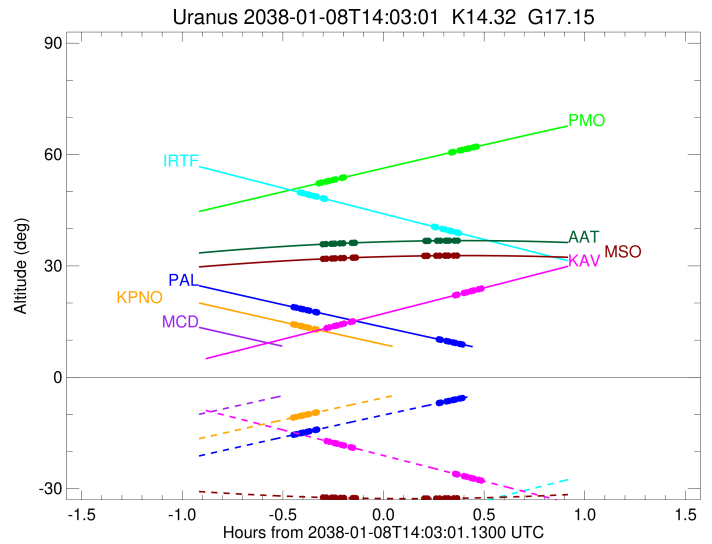
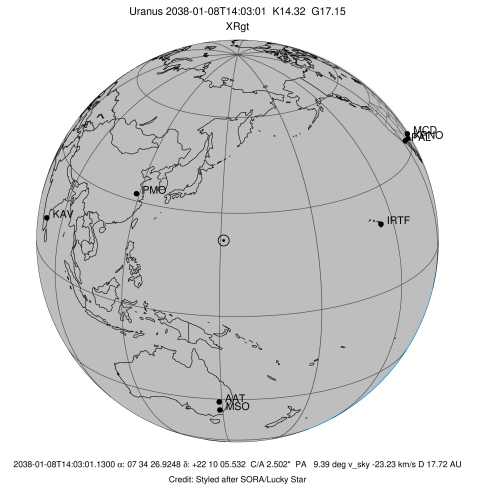


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-01-08T13:46:16.135		13.29	-17.23	50871.93	-21.34		
lambda	I	2038-01-08T13:46:55.792		13.45	-17.38	50026.71	-21.18		
delta	I	2038-01-08T13:48:18.451		13.76	-17.70	48300.35	-20.58		
gamma	I	2038-01-08T13:48:51.215		13.89	-17.82	47630.21	-20.32		
eta	I	2038-01-08T13:49:13.656		13.97	-17.91	47176.12	-20.14		
beta	I	2038-01-08T13:50:30.993		14.27	-18.21	45645.23	-19.48		
alpha	I	2038-01-08T13:51:21.046		14.46	-18.40	44686.73	-19.01		
4	I	2038-01-08T13:53:16.515		14.91	-18.84	42543.06	-17.78		
5	I	2038-01-08T13:53:29.111		14.95	-18.89	42314.98	-17.64		
6	I	2038-01-08T13:53:56.026		15.06	-18.99	41849.40	-17.38		

No planet occultations

6	E	2038-01-08T14:24:22.167		22.08	-26.01	41879.69	17.42		
5	E	2038-01-08T14:24:44.241		22.17	-26.10	42245.64	17.69		
4	E	2038-01-08T14:25:00.070		22.23	-26.16	42530.80	17.82		
alpha	E	2038-01-08T14:26:57.614		22.68	-26.61	44703.95	19.06		
beta	E	2038-01-08T14:27:47.611		22.88	-26.80	45672.72	19.55		
eta	E	2038-01-08T14:29:03.262		23.17	-27.09	47176.12	20.21		
gamma	E	2038-01-08T14:29:25.252		23.25	-27.18	47622.54	20.39		
delta	E	2038-01-08T14:29:58.279		23.38	-27.31	48300.35	20.65		
lambda	E	2038-01-08T14:31:20.642		23.70	-27.62	50026.71	21.26		
epsilon	E	2038-01-08T14:32:01.357		23.86	-27.78	50897.91	21.42		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-01-08T14:02:52.800
 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 : 865600458932323072
 2Mass ID (if available) : 07342695+2210054
 ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s
 RUWE (>1.4 is poor) : 1.28
 K magnitude : 14.318
 G magnitude : 17.147
 RP magnitude : 16.123
 BP magnitude : 17.575
 DUPflag : 0
 Distance (au) : 17.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.23
 Sun-Target sep (deg) : 176.05
 Sun-Moon sep (deg) : 148.50
 B (ring opening deg) : 54.99
 PA of pole (deg) : 84.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.909
 C/A sky separation (km) : 37394.4
 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

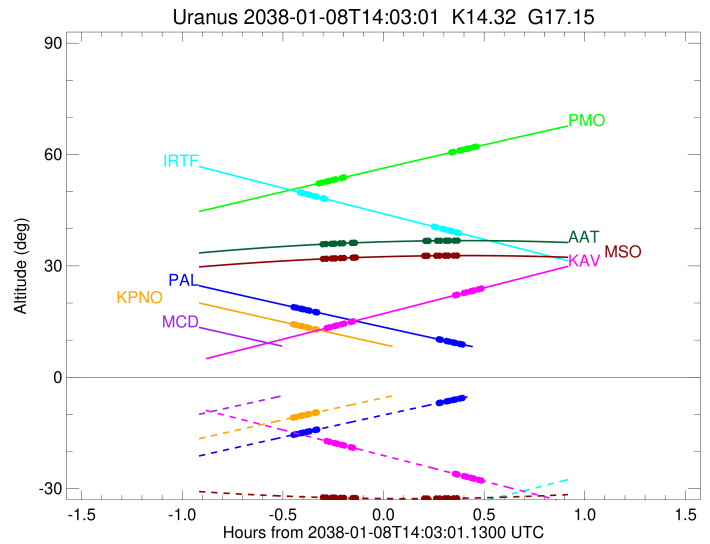
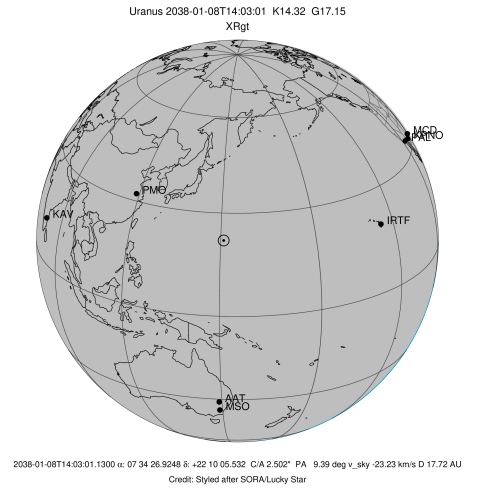


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-01-08T13:45:09.906		35.85	-36.38	50833.56	-18.97		
lambda	I	2038-01-08T13:45:52.623		35.88	-36.40	50026.71	-18.69		
delta	I	2038-01-08T13:47:27.283		35.95	-36.44	48300.35	-17.77		
gamma	I	2038-01-08T13:48:05.467		35.98	-36.45	47629.60	-17.36		
eta	I	2038-01-08T13:48:31.801		36.00	-36.46	47176.12	-17.08		
beta	I	2038-01-08T13:50:04.246		36.06	-36.50	45647.60	-16.01		
alpha	I	2038-01-08T13:51:06.194		36.10	-36.52	44685.11	-15.22		
4	I	2038-01-08T13:53:36.837		36.19	-36.57	42536.17	-13.07		
5	I	2038-01-08T13:53:53.992		36.20	-36.58	42311.64	-12.80		
6	I	2038-01-08T13:54:29.920		36.23	-36.59	41858.21	-12.30		

No planet occultations

6	E	2038-01-08T14:15:31.984		36.73	-36.71	41879.18	12.30		
5	E	2038-01-08T14:16:03.340		36.74	-36.71	42261.57	12.81		
4	E	2038-01-08T14:16:23.769		36.74	-36.71	42527.54	13.07		
alpha	E	2038-01-08T14:18:56.856		36.77	-36.69	44698.95	15.22		
beta	E	2038-01-08T14:19:58.812		36.78	-36.68	45669.94	16.01		
eta	E	2038-01-08T14:21:29.806		36.79	-36.66	47176.12	17.08		
gamma	E	2038-01-08T14:21:55.761		36.79	-36.65	47623.13	17.37		
delta	E	2038-01-08T14:22:34.307		36.80	-36.65	48300.35	17.77		
lambda	E	2038-01-08T14:24:08.940		36.80	-36.62	50026.71	18.70		
epsilon	E	2038-01-08T14:24:53.033		36.81	-36.61	50860.07	18.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2038-01-08T14:02:49.980
 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 : 865600458932323072
 2Mass ID (if available) : 07342695+2210054
 ICRS Star Coord at Epoch: 07h 34m 26.92476s +22:10:05.53219s
 RUWE (>1.4 is poor) : 1.28
 K magnitude : 14.318
 G magnitude : 17.147
 RP magnitude : 16.123
 BP magnitude : 17.575
 DUPflag : 0
 Distance (au) : 17.723
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.23
 Sun-Target sep (deg) : 176.05
 Sun-Moon sep (deg) : 148.47
 B (ring opening deg) : 54.99
 PA of pole (deg) : 84.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.928
 C/A sky separation (km) : 37642.2
 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_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	2038-01-08T13:45:17.122		31.90	-32.38	50831.70	-18.80		
lambda	I	2038-01-08T13:46:00.141		31.93	-32.39	50026.71	-18.51		
delta	I	2038-01-08T13:47:35.798		31.99	-32.43	48300.35	-17.56		
gamma	I	2038-01-08T13:48:14.436		32.02	-32.44	47629.56	-17.15		
eta	I	2038-01-08T13:48:41.099		32.03	-32.45	47176.12	-16.86		
beta	I	2038-01-08T13:50:14.843		32.09	-32.49	45647.75	-15.76		
alpha	I	2038-01-08T13:51:17.837		32.13	-32.51	44685.05	-14.95		
4	I	2038-01-08T13:53:51.816		32.22	-32.55	42535.80	-12.73		
5	I	2038-01-08T13:54:09.449		32.23	-32.56	42311.31	-12.45		
6	I	2038-01-08T13:54:46.345		32.25	-32.57	41858.73	-11.92		

No planet occultations

6	E	2038-01-08T14:15:11.889		32.70	-32.68	41879.08	11.93		
5	E	2038-01-08T14:15:44.216		32.71	-32.68	42262.59	12.45		
4	E	2038-01-08T14:16:05.126		32.71	-32.68	42527.39	12.73		
alpha	E	2038-01-08T14:18:41.557		32.74	-32.66	44698.65	14.95		
beta	E	2038-01-08T14:19:44.557		32.75	-32.65	45669.75	15.77		
eta	E	2038-01-08T14:21:16.849		32.76	-32.64	47176.12	16.86		
gamma	E	2038-01-08T14:21:43.132		32.76	-32.63	47623.17	17.16		
delta	E	2038-01-08T14:22:22.133		32.76	-32.63	48300.35	17.57		
lambda	E	2038-01-08T14:23:57.763		32.77	-32.61	50026.71	18.52		
epsilon	E	2038-01-08T14:24:42.157		32.77	-32.60	50857.94	18.81		