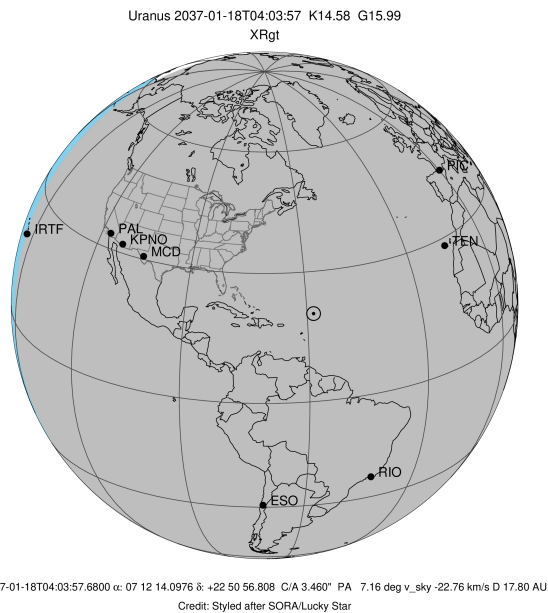


target : Uranus
target radius (km) : 25559.00
C/A epoch : 2037-01-18T04:03:57.680
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Gaia source ID : 3367525870717990784
2Mass ID (if available) : 07121410+2250568

ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s

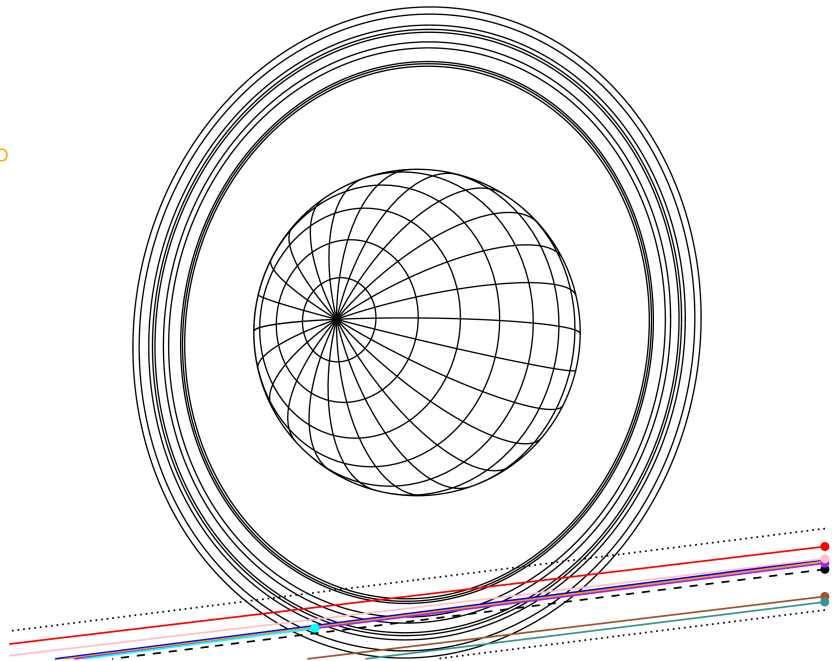
RUWE (>1.4 is poor) : 1.00
K magnitude : 14.578
G magnitude : 15.990
RP magnitude : 15.489
BP magnitude : 16.318
DUPflag : 0
Distance (au) : 17.797
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -22.76
Sun-Target sep (deg) : 168.70
Sun-Moon sep (deg) : 149.36
B (ring opening deg) : 60.00
PA of pole (deg) : 80.69

Table with 3 columns: #, a(km), ring. Lists 10 rings from a=41837.2 km to a=51149.4 km, including names like alpha, beta, eta, gamma, delta, lambda, epsilon.



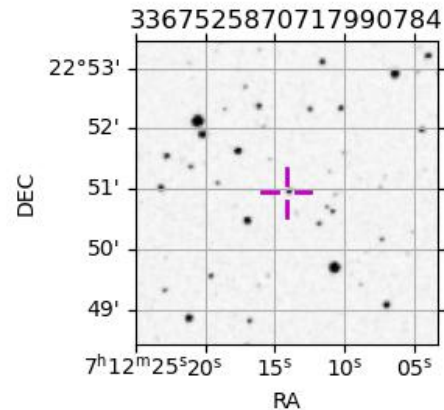
Uranus 2037-01-18T04:03:57 K14.58 G15.99 XRgt

Color key for observation sites: Earth, PIC, PAL, KPNO, MCD, TEN, IRTF, RIO, ESO.

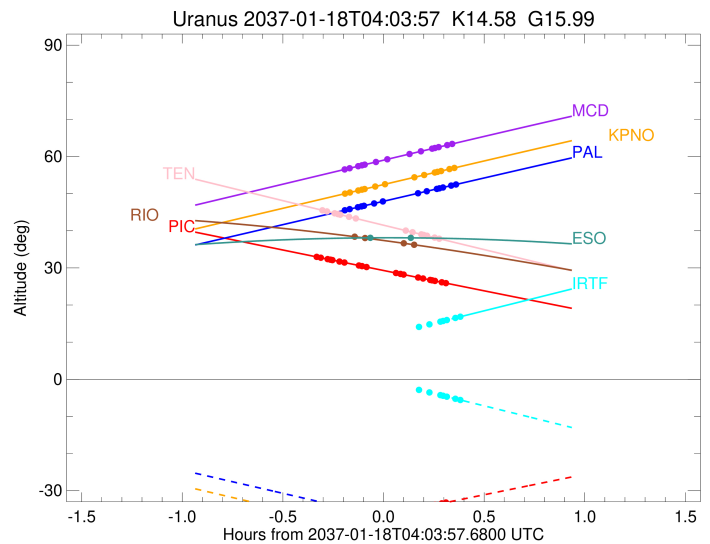
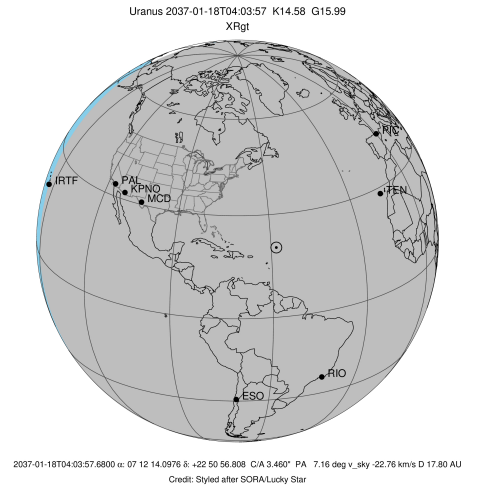


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Table of observation events with columns: Obs, Location, lat, Elon, Rings I, Planet, Rings E, Observed Events Interval, OCode.



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-01-18T04:01:16.150
 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 : 3367525870717990784
 2Mass ID (if available) : 07121410+2250568
 ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.578
 G magnitude : 15.990
 RP magnitude : 15.489
 BP magnitude : 16.318
 DUPflag : 0
 Distance (au) : 17.797
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 168.70
 Sun-Moon sep (deg) : 149.09
 B (ring opening deg) : 60.00
 PA of pole (deg) : 80.69
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.166
 C/A sky separation (km) : 40867.7
 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

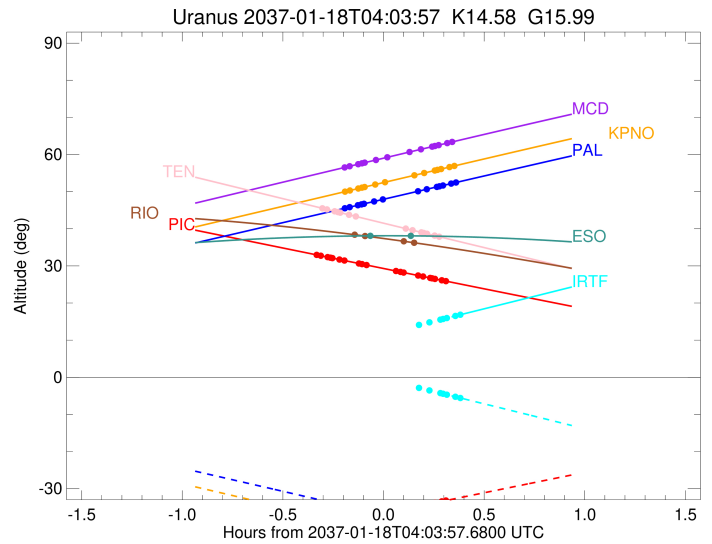
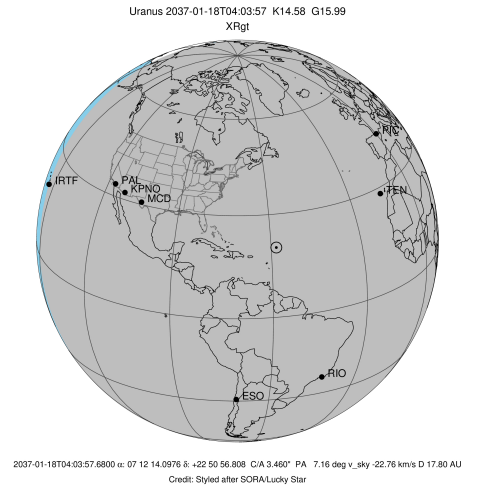


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-01-18T03:43:38.938		33.04	-40.32	51526.09	-15.59		
lambda	I	2037-01-18T03:45:17.429		32.74	-40.02	50026.71	-14.78		
delta	I	2037-01-18T03:47:19.102		32.36	-39.65	48300.35	-13.58		
gamma	I	2037-01-18T03:48:10.109		32.21	-39.50	47621.39	-13.04		
eta	I	2037-01-18T03:48:44.761		32.10	-39.39	47176.12	-12.66		
beta	I	2037-01-18T03:50:52.849		31.71	-39.00	45649.61	-11.17		
alpha	I	2037-01-18T03:52:22.643		31.43	-38.73	44699.80	-10.01		
4	I	2037-01-18T03:56:35.952		30.66	-37.96	42600.69	-6.47		
5	I	2037-01-18T03:57:50.081		30.43	-37.74	42158.32	-5.30		
6	I	2037-01-18T03:58:54.516		30.23	-37.54	41862.08	-4.29		

No planet occultations

6	E	2037-01-18T04:07:39.890		28.63	-35.94	41849.56	4.29		
5	E	2037-01-18T04:08:44.210		28.43	-35.74	42155.33	5.29		
4	E	2037-01-18T04:10:01.963		28.19	-35.51	42613.62	6.47		
alpha	E	2037-01-18T04:14:12.263		27.43	-34.74	44685.29	10.00		
beta	E	2037-01-18T04:15:44.963		27.15	-34.46	45666.53	11.15		
eta	E	2037-01-18T04:17:51.714		26.76	-34.07	47176.12	12.64		
gamma	E	2037-01-18T04:18:26.477		26.65	-33.96	47621.99	13.01		
delta	E	2037-01-18T04:19:17.537		26.50	-33.81	48300.35	13.55		
lambda	E	2037-01-18T04:21:19.470		26.13	-33.44	50026.71	14.74		
epsilon	E	2037-01-18T04:22:31.578		25.91	-33.21	51113.40	15.56		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-01-18T04:06:48.490
 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 : 3367525870717990784
 2Mass ID (if available) : 07121410+2250568
 ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.578
 G magnitude : 15.990
 RP magnitude : 15.489
 BP magnitude : 16.318
 DUPflag : 0
 Distance (au) : 17.797
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 168.70
 Sun-Moon sep (deg) : 150.19
 B (ring opening deg) : 60.00
 PA of pole (deg) : 80.69
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.370
 C/A sky separation (km) : 43492.2
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

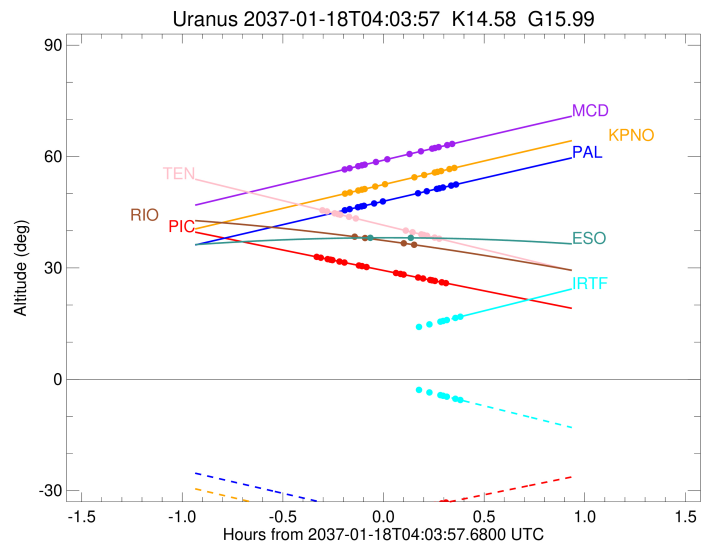
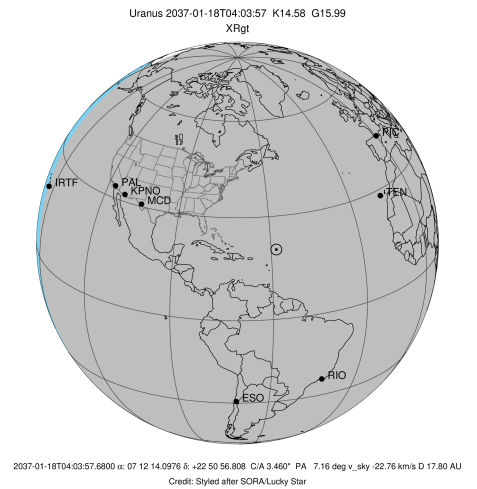
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-01-18T03:52:00.555		45.44	-34.49	51511.76	-13.63		
lambda	I	2037-01-18T03:53:53.576		45.83	-34.88	50026.71	-12.55		
delta	I	2037-01-18T03:56:20.622		46.35	-35.39	48300.35	-10.90		
gamma	I	2037-01-18T03:57:25.252		46.57	-35.62	47621.18	-10.11		
eta	I	2037-01-18T03:58:10.520		46.73	-35.78	47176.12	-9.55		
beta	I	2037-01-18T04:01:13.243		47.37	-36.41	45652.38	-7.11		
alpha	I	2037-01-18T04:03:54.884		47.94	-36.98	44694.45	-4.73		

No planet occultations

alpha	E	2037-01-18T04:14:05.700		50.07	-39.10	44687.55	4.74		
beta	E	2037-01-18T04:16:49.988		50.64	-39.68	45663.07	7.11		
eta	E	2037-01-18T04:19:50.999		51.27	-40.31	47176.12	9.56		
gamma	E	2037-01-18T04:20:36.260		51.43	-40.47	47621.61	10.13		
delta	E	2037-01-18T04:21:40.770		51.66	-40.69	48300.35	10.91		
lambda	E	2037-01-18T04:24:07.616		52.17	-41.20	50026.71	12.57		
epsilon	E	2037-01-18T04:25:34.200		52.47	-41.50	51154.60	13.65		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch             : 2037-01-18T04:06:34.930
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        : 3367525870717990784
2Mass ID (if available) : 07121410+2250568
ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 14.578
G magnitude           : 15.990
RP magnitude          : 15.489
BP magnitude          : 16.318
DUPflag              : 0
Distance (au)         : 17.797
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.76
Sun-Target sep (deg)  : 168.70
Sun-Moon sep (deg)   : 150.17
B (ring opening deg) : 60.00
PA of pole (deg)     : 80.69
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.388
C/A sky separation (km) : 43724.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural161.bsp
vgr2.ural161.bsp
peph.ural160.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```

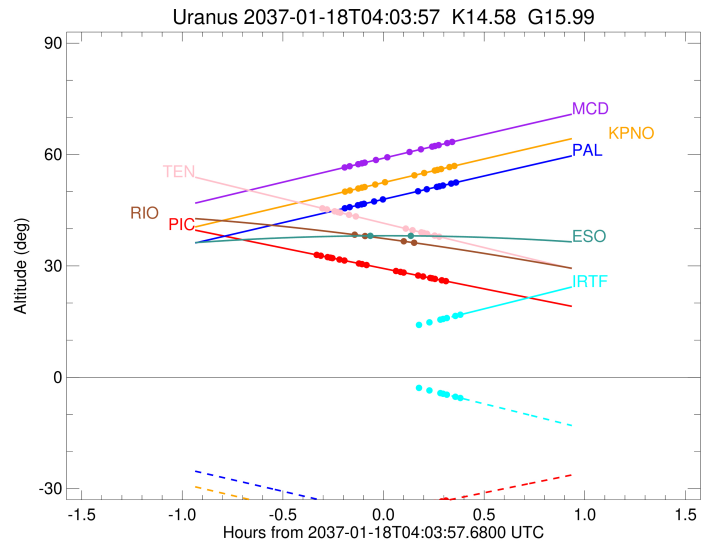
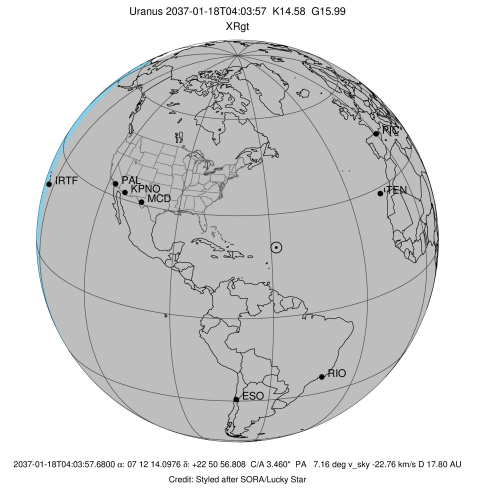


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-01-18T03:52:03.334		49.91	-38.87	51510.04	-13.44		
lambda	I	2037-01-18T03:53:57.937		50.32	-39.28	50026.71	-12.34		
delta	I	2037-01-18T03:56:28.059		50.85	-39.81	48300.35	-10.63		
gamma	I	2037-01-18T03:57:34.498		51.09	-40.05	47621.16	-9.81		
eta	I	2037-01-18T03:58:21.266		51.25	-40.21	47176.12	-9.22		
beta	I	2037-01-18T04:01:33.330		51.93	-40.89	45652.74	-6.62		
alpha	I	2037-01-18T04:04:35.133		52.58	-41.53	44693.70	-3.91		

No planet occultations

alpha	E	2037-01-18T04:12:59.008		54.36	-43.32	44688.00	3.92		
beta	E	2037-01-18T04:16:03.462		55.02	-43.97	45662.68	6.62		
eta	E	2037-01-18T04:19:13.831		55.69	-44.64	47176.12	9.23		
gamma	E	2037-01-18T04:20:00.596		55.85	-44.81	47621.58	9.82		
delta	E	2037-01-18T04:21:06.922		56.09	-45.04	48300.35	10.64		
lambda	E	2037-01-18T04:23:36.862		56.62	-45.57	50026.71	12.36		
epsilon	E	2037-01-18T04:25:05.064		56.93	-45.89	51158.01	13.47		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-01-18T04:06:11.950
 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 : 3367525870717990784
 2Mass ID (if available) : 07121410+2250568
 ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.578
 G magnitude : 15.990
 RP magnitude : 15.489
 BP magnitude : 16.318
 DUPflag : 0
 Distance (au) : 17.797
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 168.70
 Sun-Moon sep (deg) : 150.13
 B (ring opening deg) : 60.00
 PA of pole (deg) : 80.69
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.406
 C/A sky separation (km) : 43955.9
 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



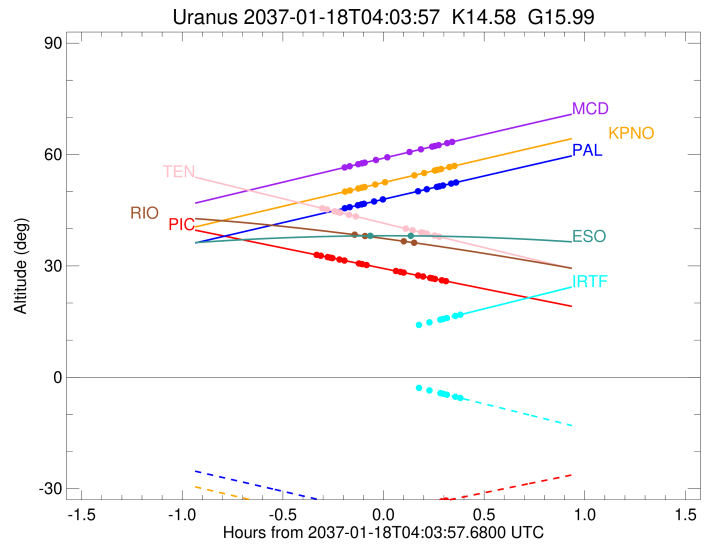
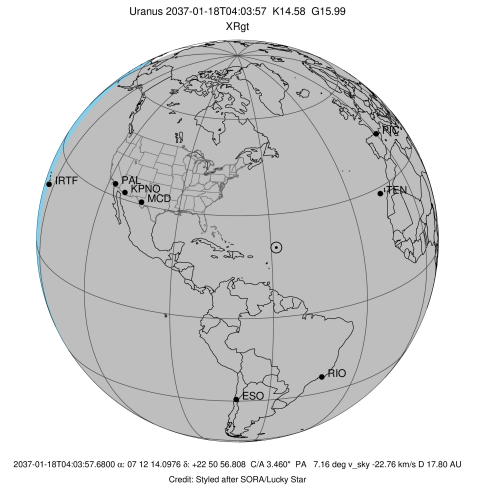
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-01-18T03:51:56.970		56.43	-45.33	51508.23	-13.26		
lambda	I	2037-01-18T03:53:53.192		56.85	-45.75	50026.71	-12.13		
delta	I	2037-01-18T03:56:26.557		57.40	-46.30	48300.35	-10.35		
gamma	I	2037-01-18T03:57:34.952		57.64	-46.54	47621.14	-9.50		
eta	I	2037-01-18T03:58:23.370		57.82	-46.72	47176.12	-8.88		
beta	I	2037-01-18T04:01:46.445		58.55	-47.44	45653.14	-6.09		
alpha	I	2037-01-18T04:05:20.236		59.31	-48.21	44692.77	-2.87		

No planet occultations

alpha	E	2037-01-18T04:11:28.299		60.63	-49.53	44688.61	2.87		
beta	E	2037-01-18T04:15:04.752		61.40	-50.30	45662.28	6.09		
eta	E	2037-01-18T04:18:26.159		62.12	-51.02	47176.12	8.88		
gamma	E	2037-01-18T04:19:14.582		62.29	-51.20	47621.55	9.51		
delta	E	2037-01-18T04:20:22.876		62.53	-51.44	48300.35	10.36		
lambda	E	2037-01-18T04:22:56.089		63.08	-51.99	50026.71	12.14		
epsilon	E	2037-01-18T04:24:25.961		63.39	-52.31	51161.33	13.28		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-01-18T04:01:02.910
 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 : 3367525870717990784
 2Mass ID (if available) : 07121410+2250568
 ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.578
 G magnitude : 15.990
 RP magnitude : 15.489
 BP magnitude : 16.318
 DUPflag : 0
 Distance (au) : 17.797
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 168.70
 Sun-Moon sep (deg) : 149.14
 B (ring opening deg) : 60.00
 PA of pole (deg) : 80.69
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.311
 C/A sky separation (km) : 42735.7
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

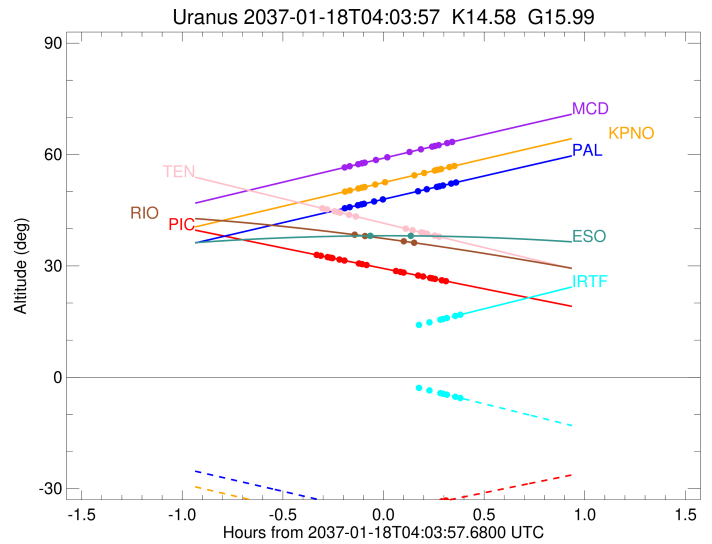
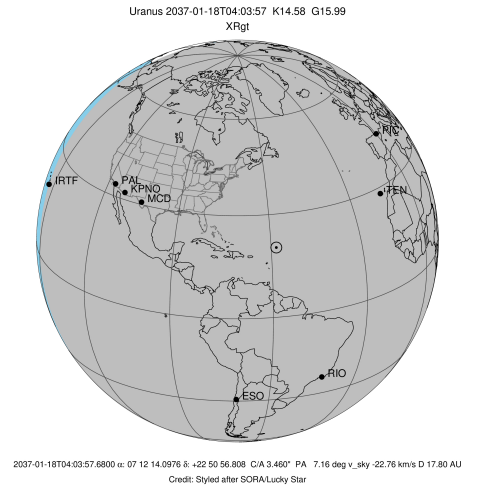
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-01-18T03:45:19.977		45.61	-55.34	51515.41	-14.28		
lambda	I	2037-01-18T03:47:07.587		45.21	-54.95	50026.71	-13.29		
delta	I	2037-01-18T03:49:25.032		44.71	-54.44	48300.35	-11.80		
gamma	I	2037-01-18T03:50:24.316		44.49	-54.23	47621.23	-11.10		
eta	I	2037-01-18T03:51:05.307		44.34	-54.08	47176.12	-10.61		
beta	I	2037-01-18T03:53:44.174		43.75	-53.49	45651.49	-8.57		
alpha	I	2037-01-18T03:55:48.482		43.30	-53.04	44696.24	-6.80		

No planet occultations

alpha	E	2037-01-18T04:10:28.912		40.08	-49.80	44686.44	6.80		
beta	E	2037-01-18T04:12:36.104		39.61	-49.34	45664.40	8.56		
eta	E	2037-01-18T04:15:13.644		39.03	-48.76	47176.12	10.59		
gamma	E	2037-01-18T04:15:54.747		38.88	-48.61	47621.74	11.09		
delta	E	2037-01-18T04:16:54.086		38.67	-48.39	48300.35	11.78		
lambda	E	2037-01-18T04:19:11.796		38.17	-47.88	50026.71	13.27		
epsilon	E	2037-01-18T04:20:33.153		37.87	-47.58	51139.28	14.25		


```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2037-01-18T04:08:14.270
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       : 3367525870717990784
2Mass ID (if available) : 07121410+2250568
ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 14.578
G magnitude           : 15.990
RP magnitude          : 15.489
BP magnitude          : 16.318
DUPflag              : 0
Distance (au)        : 17.797
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.76
Sun-Target sep (deg) : 168.70
Sun-Moon sep (deg)   : 150.21
B (ring opening deg) : 60.00
PA of pole (deg)     : 80.69
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.394
C/A sky separation (km) : 43801.3
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
    
```

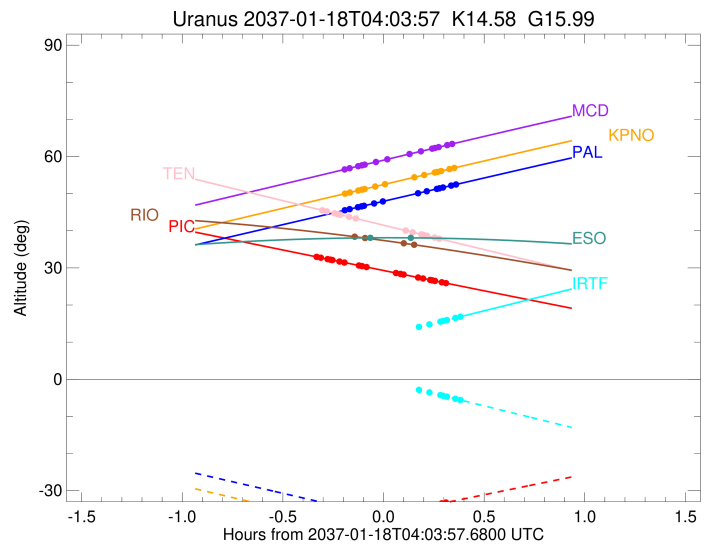
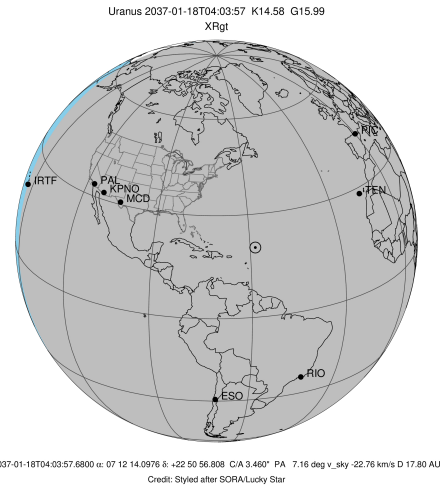


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-01-18T03:53:41.002		9.48	1.70x	51510.11	-13.22		
lambda	I	2037-01-18T03:55:37.667		9.91	1.28x	50026.71	-12.11		
delta	I	2037-01-18T03:58:10.836		10.47	0.72x	48300.35	-10.40		
gamma	I	2037-01-18T03:59:18.817		10.72	0.47x	47621.16	-9.58		
eta	I	2037-01-18T04:00:06.773		10.90	0.30x	47176.12	-8.98		
beta	I	2037-01-18T04:03:25.254		11.63	-0.42x	45652.82	-6.34		
alpha	I	2037-01-18T04:06:39.846		12.35	-1.13x	44693.45	-3.50		

No planet occultations

alpha	E	2037-01-18T04:14:19.964		14.05	-2.82x	44688.28	3.50		
beta	E	2037-01-18T04:17:37.163		14.79	-3.54x	45662.44	6.35		
eta	E	2037-01-18T04:20:53.806		15.52	-4.26x	47176.12	8.99		
gamma	E	2037-01-18T04:21:41.720		15.69	-4.44x	47621.55	9.60		
delta	E	2037-01-18T04:22:49.531		15.95	-4.69x	48300.35	10.42		
lambda	E	2037-01-18T04:25:22.366		16.52	-5.25	50026.71	12.14		
epsilon	E	2037-01-18T04:26:52.300		16.85	-5.58	51161.05	13.25		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-01-18T04:01:50.230
 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 : 3367525870717990784
 2Mass ID (if available) : 07121410+2250568
 ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.578
 G magnitude : 15.990
 RP magnitude : 15.489
 BP magnitude : 16.318
 DUPflag : 0
 Distance (au) : 17.797
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 168.70
 Sun-Moon sep (deg) : 149.25
 B (ring opening deg) : 60.00
 PA of pole (deg) : 80.69
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.773
 C/A sky separation (km) : 48700.9
 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



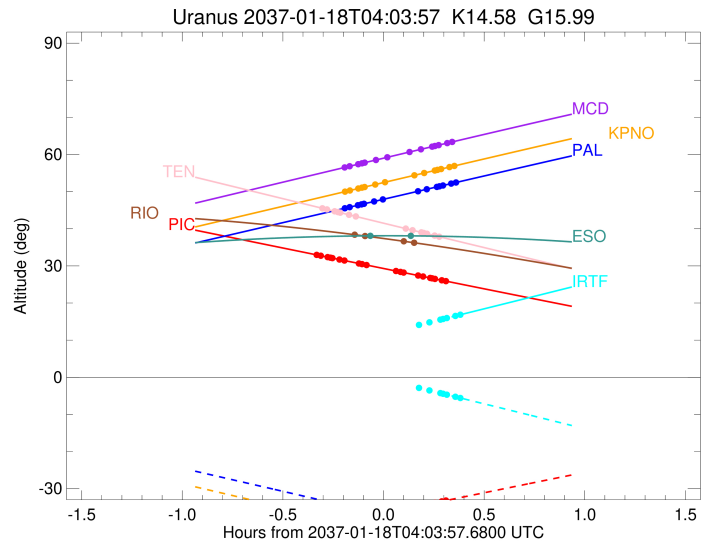
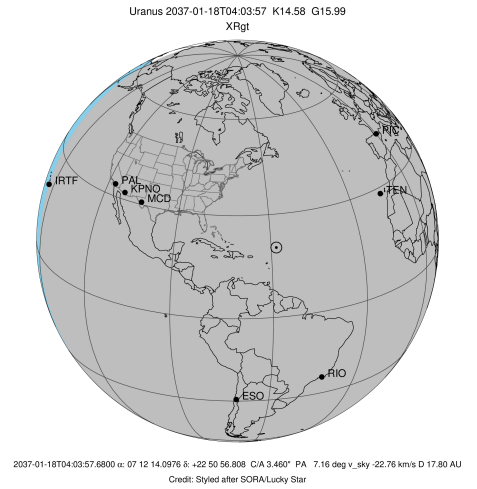
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-01-18T03:54:43.730		38.48	-44.98	51452.51	-7.62		
lambda	I	2037-01-18T03:58:30.131		38.04	-44.72	50026.71	-4.80		

No planet occultations

lambda	E	2037-01-18T04:09:57.868		36.64	-43.81	50026.71	4.80		
epsilon	E	2037-01-18T04:13:18.096		36.21	-43.52	51253.08	7.61		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-01-18T04:03:36.380
 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 : 3367525870717990784
 2Mass ID (if available) : 07121410+2250568
 ICRS Star Coord at Epoch: 07h 12m 14.09757s +22:50:56.80756s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.578
 G magnitude : 15.990
 RP magnitude : 15.489
 BP magnitude : 16.318
 DUPflag : 0
 Distance (au) : 17.797
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 168.70
 Sun-Moon sep (deg) : 149.57
 B (ring opening deg) : 60.00
 PA of pole (deg) : 80.69
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.854
 C/A sky separation (km) : 49743.8
 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	2037-01-18T03:59:11.990		38.10	-38.74	51429.65	-5.47		

No planet occultations

epsilon	E	2037-01-18T04:12:30.802		38.09	-39.47	51286.69	5.47		
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