

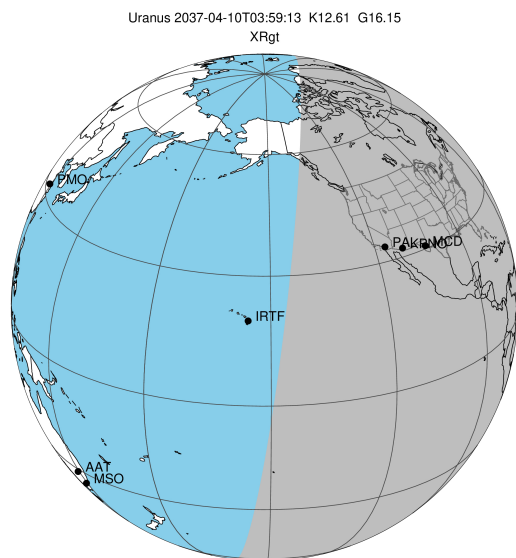
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-04-10T03:59:13.150
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3368423042141120256
 2Mass ID (if available) : 07055721+2300345

ICRS Star Coord at Epoch: 07h 05m 57.20388s +23:00:34.54905s

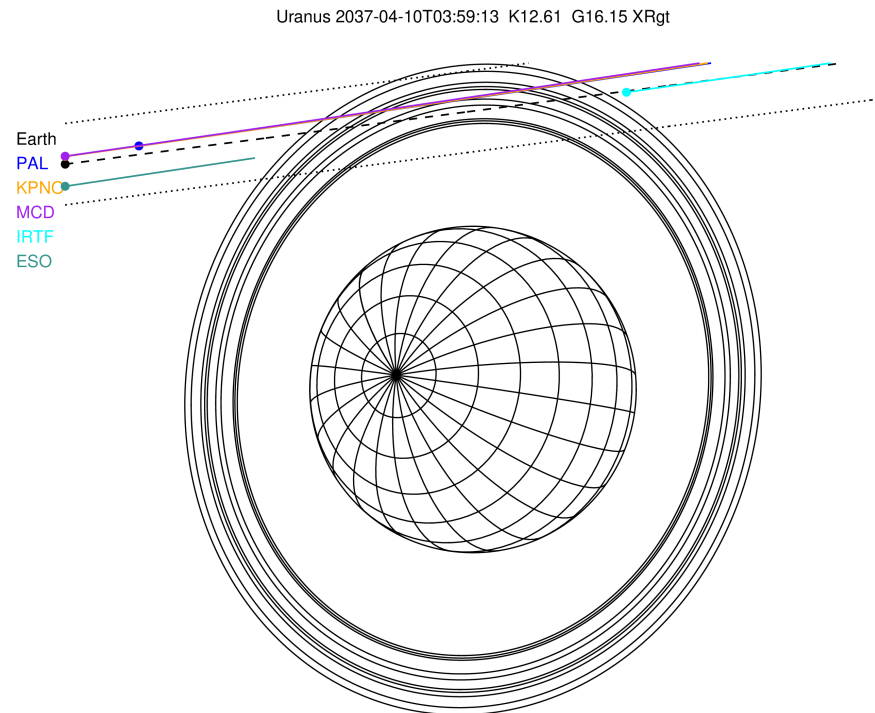
RUWE (>1.4 is poor) : 0.00
 K magnitude : 12.611
 G magnitude : 16.148
 RP magnitude : 14.766
 BP magnitude : 16.858
 DUPflag : 0
 Distance (au) : 18.809
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.02
 Sun-Target sep (deg) : 85.03
 Sun-Moon sep (deg) : 145.45
 B (ring opening deg) : 61.40
 PA of pole (deg) : 79.35

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

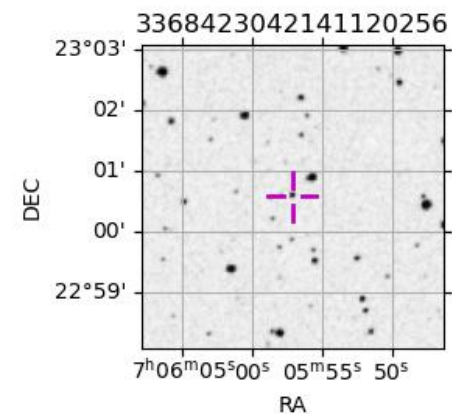


2037-04-10T03:59:13.1500 α: 07 05 57.2039 δ: +23 00 34.549 C/A 3.180° PA 187.41 deg v_sky + 9.03 km/s D 18.81 AU
 Credit: Styled after SORA/Lucky Star



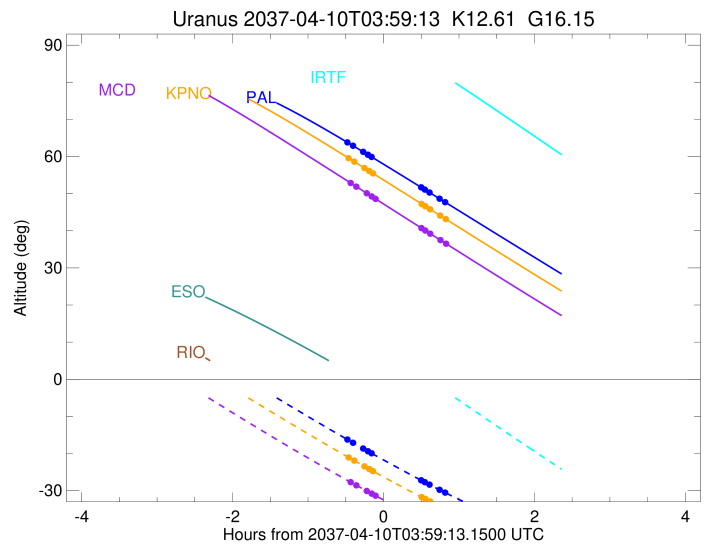
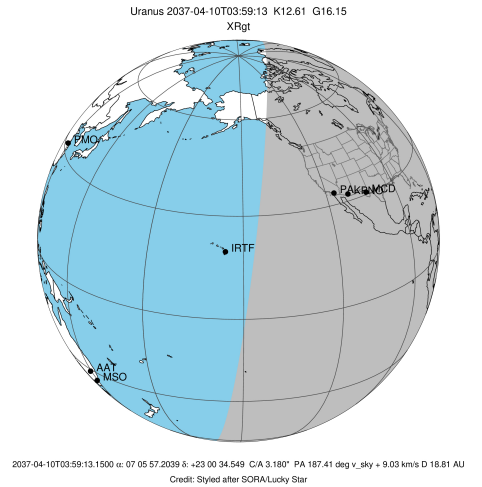
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	APR 10 03:29 - APR 10 04:49	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	APR 10 03:30 - APR 10 04:50	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	APR 10 03:31 - APR 10 04:50	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
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					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
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



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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2037-04-10T04:03:17.990
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      : 3368423042141120256
2Mass ID (if available) : 07055721+2300345
ICRS Star Coord at Epoch: 07h 05m 57.20388s +23:00:34.54905s
RUWE (>1.4 is poor) : 0.00
K magnitude         : 12.611
G magnitude         : 16.148
RP magnitude        : 14.766
BP magnitude        : 16.858
DUPflag            : 0
Distance (au)       : 18.809
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : 9.02
Sun-Target sep (deg) : 85.03
Sun-Moon sep (deg)  : 145.54
B (ring opening deg) : 61.40
PA of pole (deg)    : 79.35
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.311
C/A sky separation (km) : 45162.6
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
  
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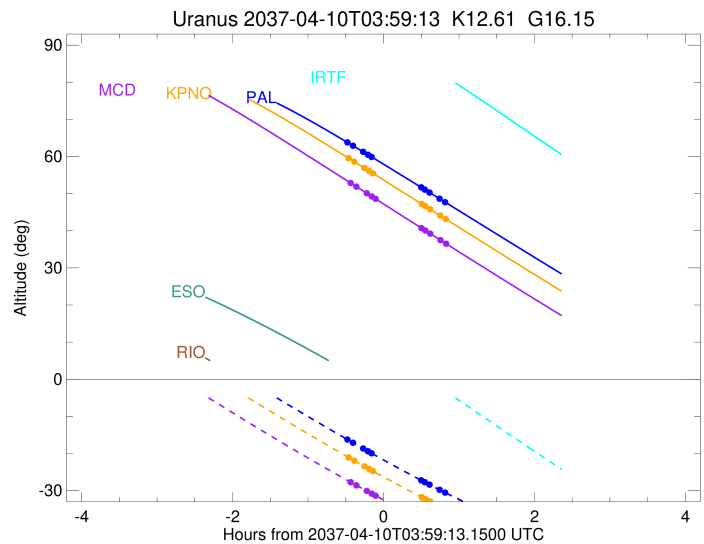
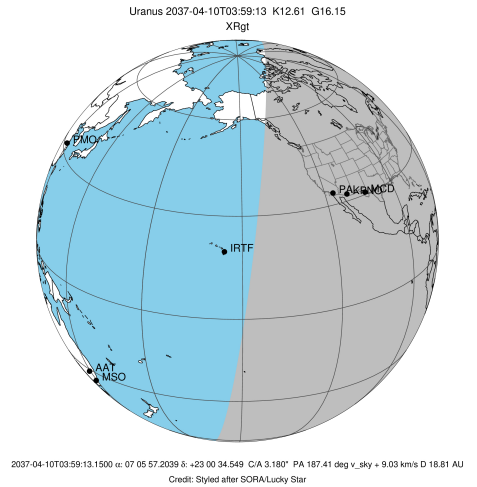
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-04-10T03:29:24.377		64.04	-16.02	51464.10	-4.53		
lambda	I	2037-04-10T03:35:04.024		62.89	-17.12	50026.71	-3.97		
delta	I	2037-04-10T03:43:07.778		61.25	-18.67	48300.35	-3.15		
gamma	I	2037-04-10T03:46:57.791		60.46	-19.41	47622.71	-2.73		
eta	I	2037-04-10T03:49:51.371		59.87	-19.96	47176.12	-2.41		

No planet occultations

eta	E	2037-04-10T04:29:04.507		51.72	-27.19	47176.12	2.42		
gamma	E	2037-04-10T04:31:56.384		51.12	-27.70	47621.15	2.75		
delta	E	2037-04-10T04:35:45.218		50.32	-28.37	48300.35	3.18		
lambda	E	2037-04-10T04:43:44.421		48.65	-29.76	50026.71	4.01		
epsilon	E	2037-04-10T04:49:36.728		47.42	-30.77	51539.56	4.59		

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2037-04-10T04:04:02.210
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      : 3368423042141120256
2Mass ID (if available) : 07055721+2300345
ICRS Star Coord at Epoch: 07h 05m 57.20388s +23:00:34.54905s
RUWE (>1.4 is poor) : 0.00
K magnitude         : 12.611
G magnitude         : 16.148
RP magnitude        : 14.766
BP magnitude        : 16.858
DUPflag            : 0
Distance (au)       : 18.809
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : 9.02
Sun-Target sep (deg) : 85.03
Sun-Moon sep (deg)  : 145.47
B (ring opening deg) : 61.40
PA of pole (deg)    : 79.35
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.314
C/A sky separation (km) : 45202.3
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
    
```



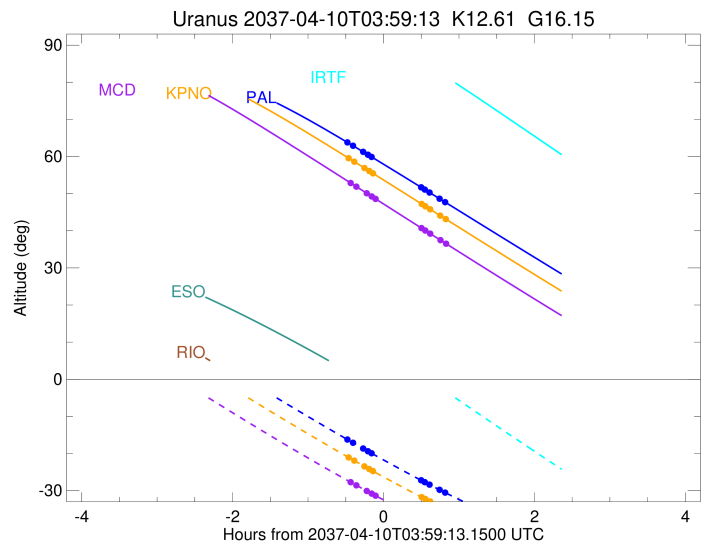
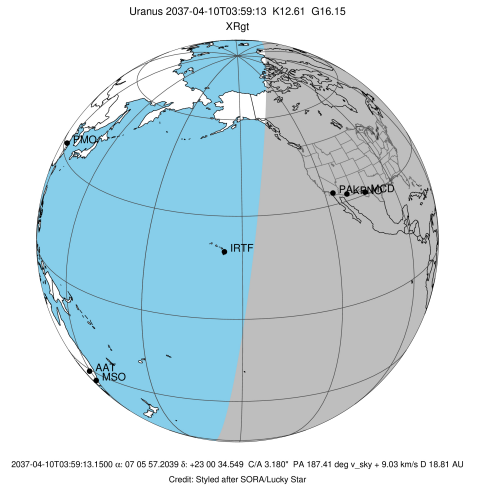
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-04-10T03:30:22.353	59.80	-20.84	51464.29	-4.52		
lambda	I	2037-04-10T03:36:02.946	58.60	-21.93	50026.71	-3.96		
delta	I	2037-04-10T03:44:08.996	56.89	-23.48	48300.35	-3.13		
gamma	I	2037-04-10T03:48:00.868	56.07	-24.21	47622.70	-2.71		
eta	I	2037-04-10T03:50:56.432	55.45	-24.76	47176.12	-2.38		

No planet occultations

eta	E	2037-04-10T04:29:29.190	47.25	-31.74	47176.12	2.39		
gamma	E	2037-04-10T04:32:22.946	46.63	-32.24	47621.16	2.73		
delta	E	2037-04-10T04:36:13.478	45.81	-32.89	48300.35	3.16		
lambda	E	2037-04-10T04:44:14.556	44.10	-34.24	50026.71	4.00		
epsilon	E	2037-04-10T04:50:07.487	42.85	-35.21	51539.86	4.58		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-04-10T04:04:58.000
 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 : 3368423042141120256
 2Mass ID (if available) : 07055721+2300345
 ICRS Star Coord at Epoch: 07h 05m 57.20388s +23:00:34.54905s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 12.611
 G magnitude : 16.148
 RP magnitude : 14.766
 BP magnitude : 16.858
 DUPflag : 0
 Distance (au) : 18.809
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.02
 Sun-Target sep (deg) : 85.03
 Sun-Moon sep (deg) : 145.37
 B (ring opening deg) : 61.40
 PA of pole (deg) : 79.35
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.324
 C/A sky separation (km) : 45351.1
 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



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	2037-04-10T03:31:58.249	53.12	-27.51	51465.66	-4.48		
lambda	I	2037-04-10T03:37:43.238	51.87	-28.58	50026.71	-3.90		
delta	I	2037-04-10T03:45:59.083	50.09	-30.10	48300.35	-3.05		
gamma	I	2037-04-10T03:49:58.702	49.23	-30.83	47622.66	-2.60		
eta	I	2037-04-10T03:53:02.536	48.57	-31.38	47176.12	-2.25		

No planet occultations

eta	E	2037-04-10T04:29:17.075	40.75	-37.59	47176.12	2.27		
gamma	E	2037-04-10T04:32:18.977	40.10	-38.08	47621.18	2.63		
delta	E	2037-04-10T04:36:17.061	39.25	-38.71	48300.35	3.08		
lambda	E	2037-04-10T04:44:27.431	37.49	-39.98	50026.71	3.95		
epsilon	E	2037-04-10T04:50:24.338	36.22	-40.87	51540.68	4.55		