

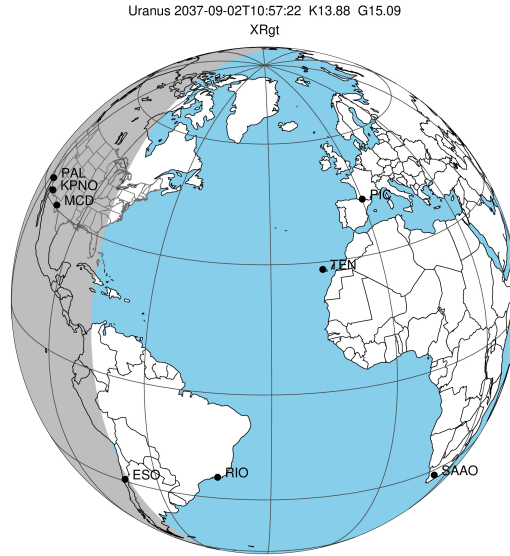
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-09-02T10:57:22.170
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 865486491975735424
 2Mass ID (if available) : 07362977+2201572

ICRS Star Coord at Epoch: 07h 36m 29.77070s +22:01:57.11662s

RUWE (>1.4 is poor) : 1.02
 K magnitude : 13.881
 G magnitude : 15.092
 RP magnitude : 14.668
 BP magnitude : 15.354
 DUPflag : 0
 Distance (au) : 19.391
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.62
 Sun-Target sep (deg) : 47.54
 Sun-Moon sep (deg) : 48.04
 B (ring opening deg) : 54.53
 PA of pole (deg) : 85.33

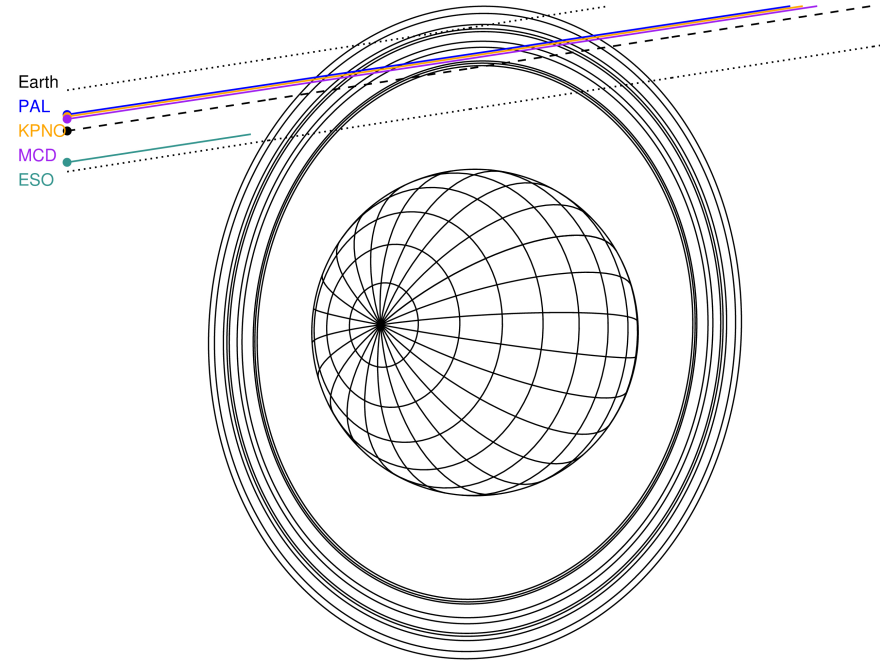
a(km) ring

- 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



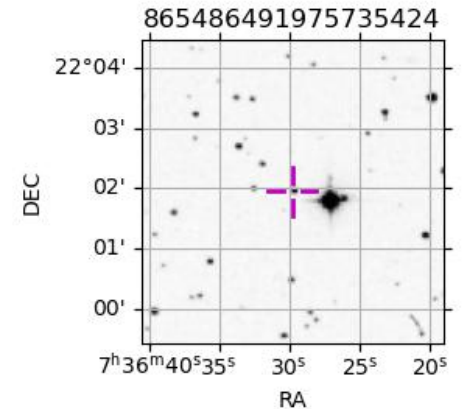
2037-09-02T10:57:22.1700 ex: 07 36 29.7707 s: +22 01 57.117 C/A 2.920" PA 188.83 deg v_sky +26.62 km/s D 19.39 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2037-09-02T10:57:22 K13.88 G15.09 XRgt

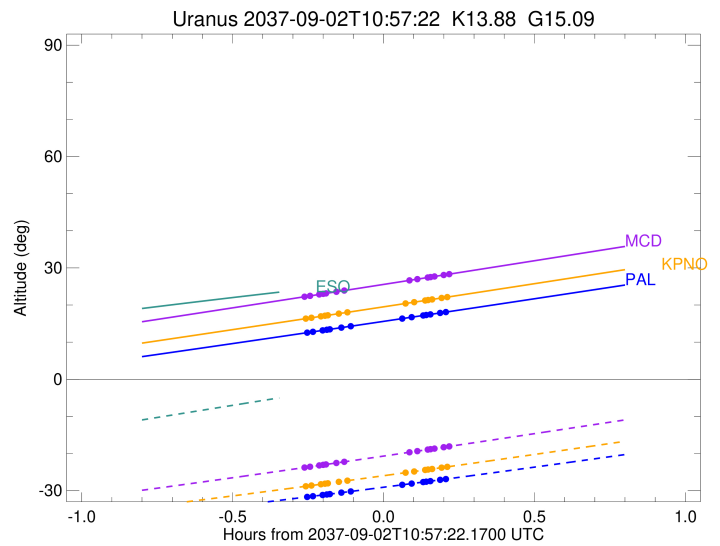
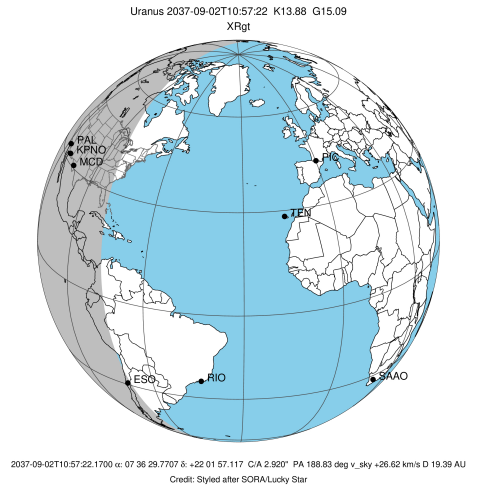


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	++++++		++++++	SEP 02 10:42 - SEP 02 11:09	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	++++++		++++++	SEP 02 10:42 - SEP 02 11:09	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	++++++		++++++	SEP 02 10:42 - SEP 02 11:10	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



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-09-02T10:53:54.910
 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 : 865486491975735424
 2Mass ID (if available) : 07362977+2201572
 ICRS Star Coord at Epoch: 07h 36m 29.77070s +22:01:57.11662s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 13.881
 G magnitude : 15.092
 RP magnitude : 14.668
 BP magnitude : 15.354
 DUPflag : 0
 Distance (au) : 19.391
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.62
 Sun-Target sep (deg) : 47.54
 Sun-Moon sep (deg) : 47.69
 B (ring opening deg) : 54.53
 PA of pole (deg) : 85.33
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.073
 C/A sky separation (km) : 43219.4
 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



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

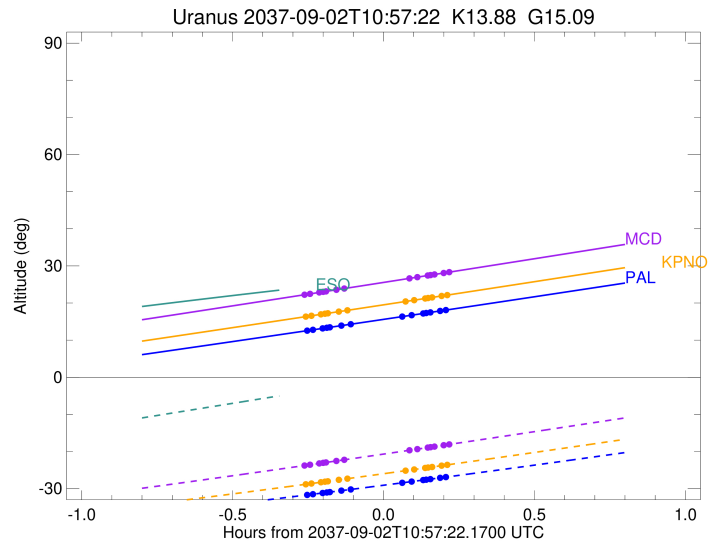
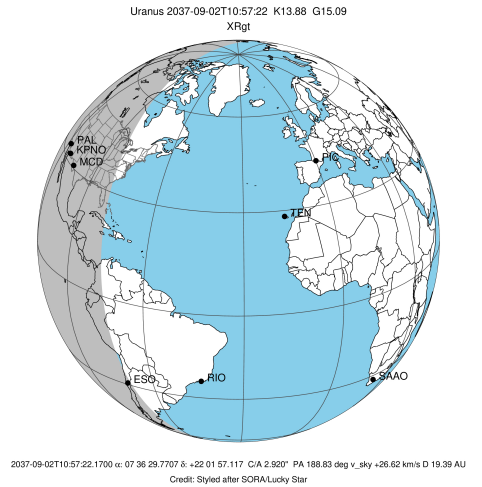
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-09-02T10:42:35.736		12.63	-31.63	50772.50	-16.48		
lambda	I	2037-09-02T10:43:21.754		12.79	-31.50	50026.71	-15.84		
delta	I	2037-09-02T10:45:17.716		13.17	-31.17	48300.35	-13.89		
gamma	I	2037-09-02T10:46:07.471		13.34	-31.03	47631.21	-12.99		
eta	I	2037-09-02T10:46:43.415		13.46	-30.93	47176.12	-12.32		
beta	I	2037-09-02T10:49:03.737		13.92	-30.53	45641.72	-9.51		
alpha	I	2037-09-02T10:50:54.585		14.29	-30.21	44718.22	-7.09		

No planet occultations

alpha	E	2037-09-02T11:01:01.348		16.33	-28.45	44703.73	7.09		
beta	E	2037-09-02T11:02:54.363		16.71	-28.11	45642.20	9.51		
eta	E	2037-09-02T11:05:14.638		17.18	-27.70	47176.12	12.31		
gamma	E	2037-09-02T11:05:50.399		17.30	-27.59	47628.19	12.98		
delta	E	2037-09-02T11:06:40.459		17.47	-27.44	48300.35	13.87		
lambda	E	2037-09-02T11:08:36.614		17.86	-27.10	50026.71	15.82		
epsilon	E	2037-09-02T11:09:26.556		18.03	-26.95	50836.07	16.45		

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2037-09-02T10:53:55.370
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      : 865486491975735424
2Mass ID (if available) : 07362977+2201572
ICRS Star Coord at Epoch: 07h 36m 29.77070s +22:01:57.11662s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 13.881
G magnitude          : 15.092
RP magnitude         : 14.668
BP magnitude         : 15.354
DUPflag             : 0
Distance (au)        : 19.391
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 26.62
Sun-Target sep (deg) : 47.54
Sun-Moon sep (deg)  : 47.73
B (ring opening deg) : 54.53
PA of pole (deg)    : 85.33
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.051
C/A sky separation (km) : 42911.6
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_itrf93_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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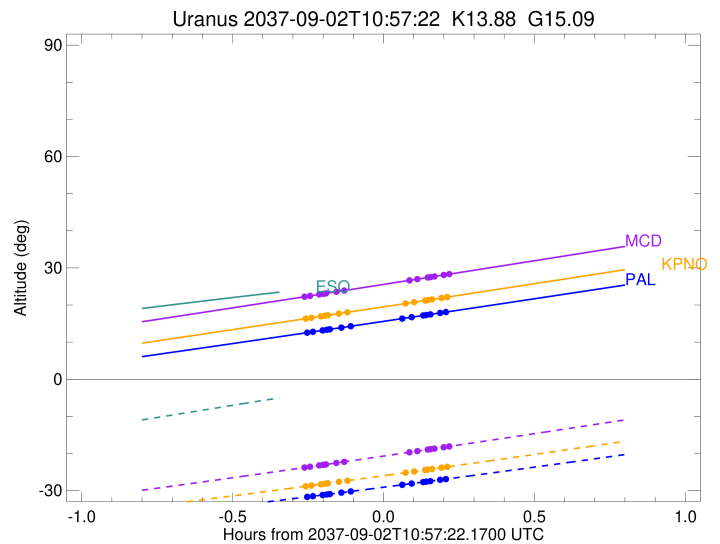
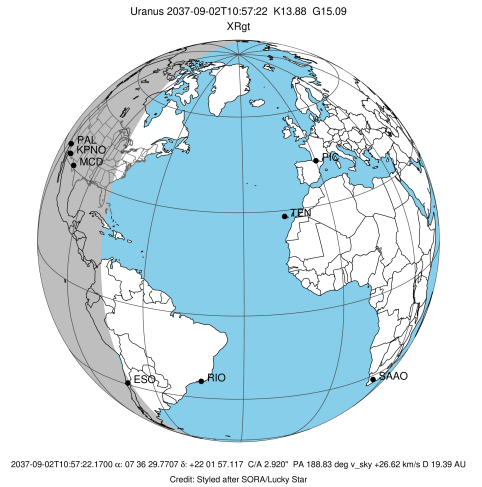


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-09-02T10:42:18.491		16.41	-28.76	50774.32	-16.78		
lambda	I	2037-09-02T10:43:03.732		16.57	-28.62	50026.71	-16.17		
delta	I	2037-09-02T10:44:56.888		16.95	-28.28	48300.35	-14.30		
gamma	I	2037-09-02T10:45:45.097		17.12	-28.13	47631.24	-13.45		
eta	I	2037-09-02T10:46:19.759		17.24	-28.03	47176.12	-12.81		
beta	I	2037-09-02T10:48:33.028		17.69	-27.62	45641.84	-10.19		
alpha	I	2037-09-02T10:50:14.101		18.04	-27.31	44719.23	-8.01		

No planet occultations

alpha	E	2037-09-02T11:01:41.520		20.40	-25.18	44702.83	8.01		
beta	E	2037-09-02T11:03:24.763		20.76	-24.85	45642.35	10.18		
eta	E	2037-09-02T11:05:37.988		21.22	-24.43	47176.12	12.79		
gamma	E	2037-09-02T11:06:12.466		21.34	-24.32	47628.12	13.43		
delta	E	2037-09-02T11:07:00.981		21.51	-24.17	48300.35	14.28		
lambda	E	2037-09-02T11:08:54.331		21.90	-23.81	50026.71	16.15		
epsilon	E	2037-09-02T11:09:43.499		22.07	-23.66	50839.09	16.75		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-09-02T10:54:00.250
 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 : 865486491975735424
 2Mass ID (if available) : 07362977+2201572
 ICRS Star Coord at Epoch: 07h 36m 29.77070s +22:01:57.11662s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 13.881
 G magnitude : 15.092
 RP magnitude : 14.668
 BP magnitude : 15.354
 DUPflag : 0
 Distance (au) : 19.391
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.62
 Sun-Target sep (deg) : 47.54
 Sun-Moon sep (deg) : 47.81
 B (ring opening deg) : 54.53
 PA of pole (deg) : 85.33
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.025
 C/A sky separation (km) : 42547.2
 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	2037-09-02T10:42:02.765		22.31	-23.71	50776.52	-17.13		
lambda	I	2037-09-02T10:42:47.180		22.47	-23.56	50026.71	-16.55		
delta	I	2037-09-02T10:44:37.352		22.85	-23.21	48300.35	-14.76		
gamma	I	2037-09-02T10:45:23.947		23.02	-23.05	47631.28	-13.95		
eta	I	2037-09-02T10:45:57.287		23.14	-22.95	47176.12	-13.35		
beta	I	2037-09-02T10:48:03.610		23.58	-22.53	45641.99	-10.92		
alpha	I	2037-09-02T10:49:36.071		23.90	-22.23	44720.30	-8.97		

No planet occultations

alpha	E	2037-09-02T11:02:28.125		26.63	-19.68	44701.91	8.96		
beta	E	2037-09-02T11:04:02.759		26.96	-19.37	45642.53	10.90		
eta	E	2037-09-02T11:06:09.038		27.41	-18.95	47176.12	13.33		
gamma	E	2037-09-02T11:06:42.193		27.52	-18.84	47628.03	13.93		
delta	E	2037-09-02T11:07:29.093		27.69	-18.68	48300.35	14.74		
lambda	E	2037-09-02T11:09:19.457		28.08	-18.31	50026.71	16.52		
epsilon	E	2037-09-02T11:10:07.797		28.25	-18.15	50842.59	17.09		