

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-12T00:30:15.880
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3881513300043120512
 2Mass ID (if available) : 10015100+1254125

ICRS Star Coord at Epoch: 10h 01m 51.00960s +12:54:11.56065s

RUWE (>1.4 is poor) : 1.29
 K magnitude : 14.816
 G magnitude : 18.380
 RP magnitude : 17.158
 BP magnitude : 19.720
 DUPflag : 0
 Distance (au) : 17.416
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.70
 Sun-Target sep (deg) : 157.04
 Sun-Moon sep (deg) : 110.10
 B (ring opening deg) : 19.34
 PA of pole (deg) : 101.78

a(km) ring

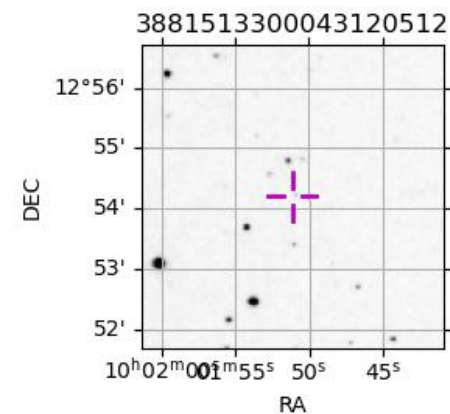
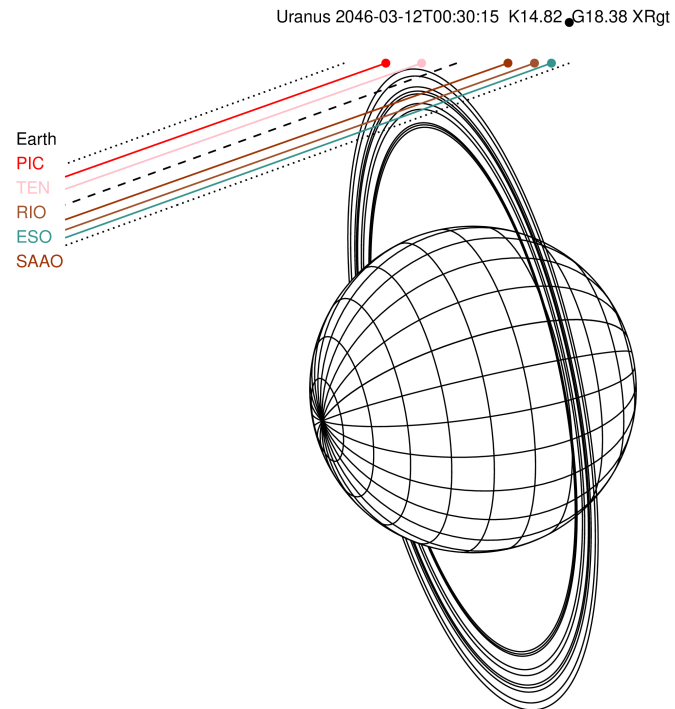
 1 41837.2 6
 2 42235.0 5
 3 42571.2 4
 4 44718.5 alpha
 5 45661.1 beta
 6 47176.1 eta
 7 47626.3 gamma
 8 48300.3 delta
 9 50026.7 lambda
 10 51149.4 epsilon

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

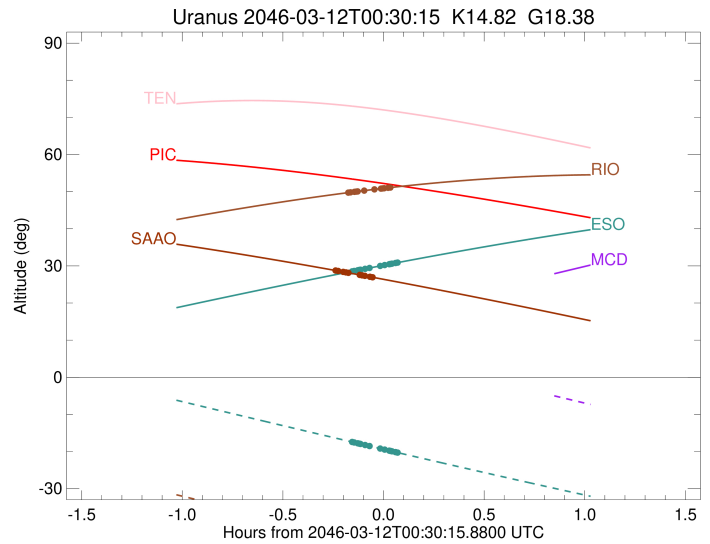
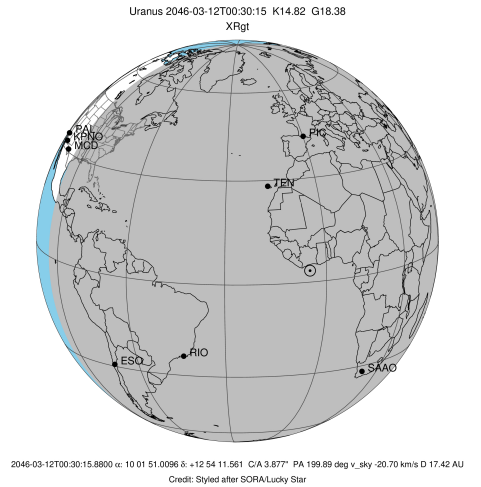
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++		+++++	MAR 12 00:19 - MAR 12 00:32	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	MAR 12 00:21 - MAR 12 00:34	PnnRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++		+++++	MAR 12 00:16 - MAR 12 00:27	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



2046-03-12T00:30:15.8800 cc: 10 01 51.0096 s; +12 54 11.561 C/A 3.877" PA 199.89 deg v_sky -20.70 km/s D 17.42 AU
 Credit: Styled after SORA/Lucky Star



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-12T00:30:21.260
 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 : 3881513300043120512
 2Mass ID (if available) : 10015100+1254125
 ICRS Star Coord at Epoch: 10h 01m 51.00960s +12:54:11.56065s
 RUWE (>1.4 is poor) : 1.29
 K magnitude : 14.816
 G magnitude : 18.380
 RP magnitude : 17.158
 BP magnitude : 19.720
 DUPflag : 0
 Distance (au) : 17.416
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.70
 Sun-Target sep (deg) : 157.04
 Sun-Moon sep (deg) : 110.76
 B (ring opening deg) : 19.34
 PA of pole (deg) : 101.78
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.556
 C/A sky separation (km) : 44922.7
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

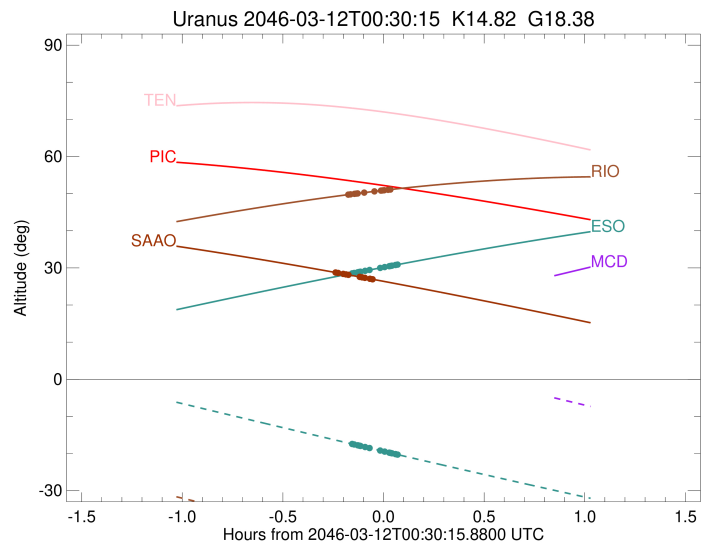
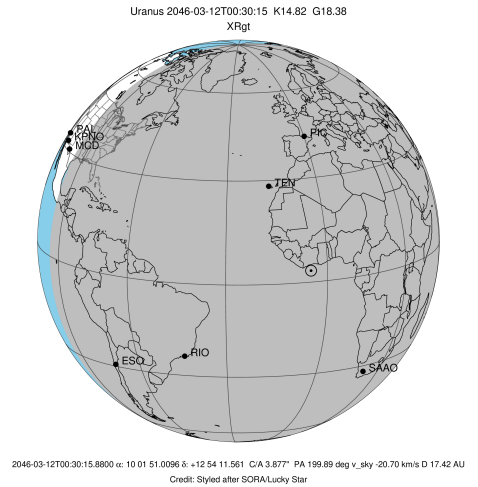


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-12T00:19:57.438		49.76	-42.53	50838.93	-28.94		
lambda	I	2046-03-12T00:20:26.733		49.82	-42.62	50026.71	-26.78		
delta	I	2046-03-12T00:21:37.549		49.95	-42.86	48300.35	-21.88		
gamma	I	2046-03-12T00:22:10.249		50.02	-42.98	47624.08	-19.46		
eta	I	2046-03-12T00:22:34.423		50.06	-43.06	47176.12	-17.59		
beta	I	2046-03-12T00:24:30.809		50.28	-43.45	45678.43	-8.03		

No planet occultations

beta	E	2046-03-12T00:27:34.441		50.61	-44.07	45680.45	8.04		
eta	E	2046-03-12T00:29:30.234		50.82	-44.45	47176.12	17.60		
gamma	E	2046-03-12T00:29:54.571		50.86	-44.53	47627.33	19.47		
delta	E	2046-03-12T00:30:27.099		50.92	-44.64	48300.35	21.89		
lambda	E	2046-03-12T00:31:37.903		51.04	-44.88	50026.71	26.79		
epsilon	E	2046-03-12T00:32:19.011		51.11	-45.01	51182.05	28.95		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-12T00:32:02.570
 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 : 3881513300043120512
 2Mass ID (if available) : 10015100+1254125
 ICRS Star Coord at Epoch: 10h 01m 51.00960s +12:54:11.56065s
 RUWE (>1.4 is poor) : 1.29
 K magnitude : 14.816
 G magnitude : 18.380
 RP magnitude : 17.158
 BP magnitude : 19.720
 DUPflag : 0
 Distance (au) : 17.416
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.70
 Sun-Target sep (deg) : 157.04
 Sun-Moon sep (deg) : 110.62
 B (ring opening deg) : 19.34
 PA of pole (deg) : 101.78
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.478
 C/A sky separation (km) : 43934.0
 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



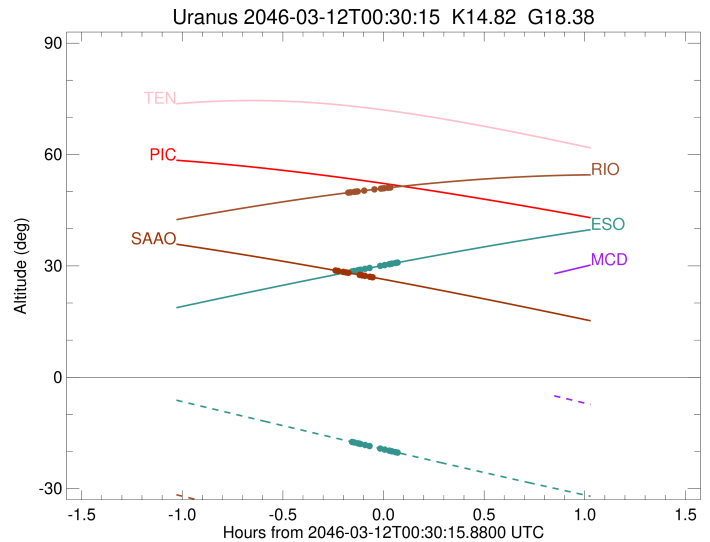
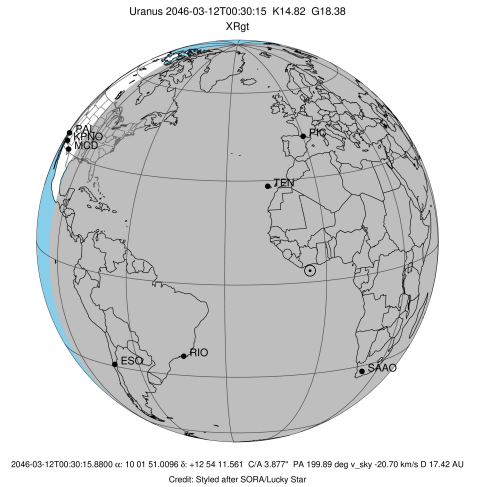
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-12T00:21:06.002		28.56	-17.47	50828.96	-31.00		
lambda	I	2046-03-12T00:21:32.803		28.64	-17.57	50026.71	-29.11		
delta	I	2046-03-12T00:22:36.584		28.83	-17.79	48300.35	-24.94		
gamma	I	2046-03-12T00:23:04.823		28.91	-17.89	47623.80	-22.96		
eta	I	2046-03-12T00:23:24.964		28.97	-17.96	47176.12	-21.49		
beta	I	2046-03-12T00:24:46.728		29.21	-18.25	45677.14	-15.16		
alpha	I	2046-03-12T00:26:06.742		29.44	-18.53	44728.61	-8.37		

No planet occultations

alpha	E	2046-03-12T00:29:16.430		29.99	-19.20	44736.80	8.38		
beta	E	2046-03-12T00:30:37.089		30.22	-19.48	45680.97	15.17		
eta	E	2046-03-12T00:31:58.245		30.46	-19.77	47176.12	21.50		
gamma	E	2046-03-12T00:32:18.545		30.52	-19.84	47627.65	22.98		
delta	E	2046-03-12T00:32:46.601		30.60	-19.94	48300.35	24.96		
lambda	E	2046-03-12T00:33:50.345		30.78	-20.16	50026.71	29.14		
epsilon	E	2046-03-12T00:34:29.015		30.89	-20.30	51198.73	31.03		

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target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2046-03-12T00:25:54.920
Event type             : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code         : SAAO
Location              : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)        : -32.37953
E. Longitude (deg)    : 20.81070
Altitude (km)         : 1.768
Gaia source ID        : 3881513300043120512
2Mass ID (if available) : 10015100+1254125
ICRS Star Coord at Epoch: 10h 01m 51.00960s +12:54:11.56065s
RUWE (>1.4 is poor)  : 1.29
K magnitude           : 14.816
G magnitude           : 18.380
RP magnitude          : 17.158
BP magnitude          : 19.720
DUPflag              : 0
Distance (au)         : 17.416
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -20.70
Sun-Target sep (deg)  : 157.04
Sun-Moon sep (deg)    : 110.22
B (ring opening deg)  : 19.34
PA of pole (deg)      : 101.78
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.671
C/A sky separation (km) : 46371.2
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_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	2046-03-12T00:16:10.564		28.73	-48.57	50856.72	-25.00		
lambda	I	2046-03-12T00:16:45.874		28.63	-48.50	50026.71	-22.31		
delta	I	2046-03-12T00:18:16.373		28.38	-48.32	48300.35	-15.72		
gamma	I	2046-03-12T00:19:05.224		28.25	-48.22	47624.69	-11.91		
eta	I	2046-03-12T00:19:49.531		28.13	-48.12	47176.12	-8.32		

No planet occultations

eta	E	2046-03-12T00:23:08.969		27.58	-47.70	47176.12	8.33		
gamma	E	2046-03-12T00:23:53.455		27.46	-47.61	47626.69	11.92		
delta	E	2046-03-12T00:24:42.156		27.32	-47.50	48300.35	15.72		
lambda	E	2046-03-12T00:26:12.701		27.07	-47.31	50026.71	22.30		
epsilon	E	2046-03-12T00:26:59.939		26.94	-47.20	51155.01	24.99		