

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-08T17:39:56.330  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 673887137611261184  
 2Mass ID (if available) : 07593901+2108285

ICRS Star Coord at Epoch: 07h 59m 39.00688s +21:08:28.52068s

RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.962  
 G magnitude : 16.602  
 RP magnitude : 16.068  
 BP magnitude : 16.968  
 DUPflag : 0  
 Distance (au) : 17.902  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -15.77  
 Sun-Target sep (deg) : 138.47  
 Sun-Moon sep (deg) : 74.21  
 B (ring opening deg) : 49.20  
 PA of pole (deg) : 88.94

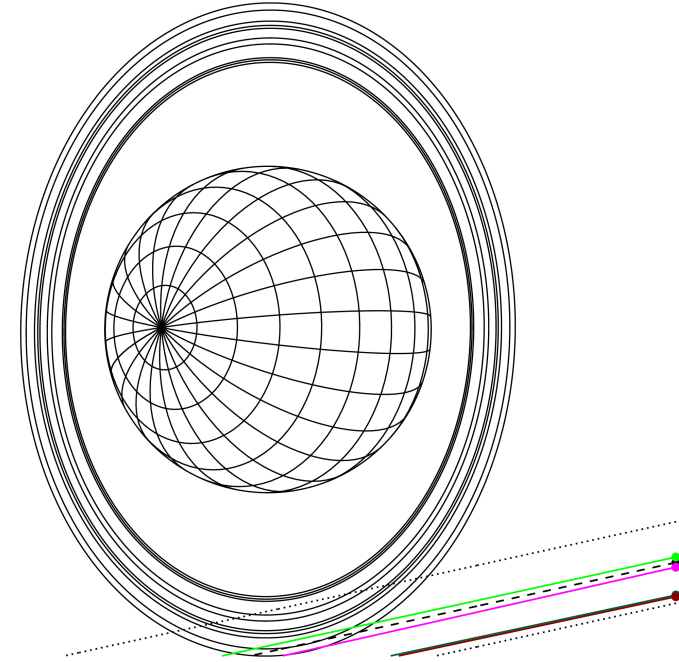
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2038-12-08T17:39:56.3300 α: 07 59 39.00688 s: +21 08 28.521 C/A 3.787" PA 12.37 deg v\_sky -15.77 km/s D 17.90 AU  
 Credit: Styled after SORA/Lucky Star

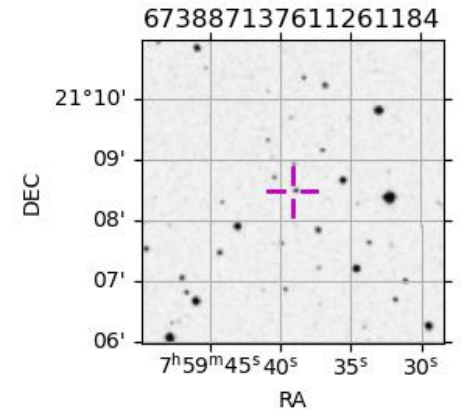
Uranus 2038-12-08T17:39:56 K14.96 G16.60 XRgt

Earth  
 PMO  
 KAV  
 AAT  
 MSO

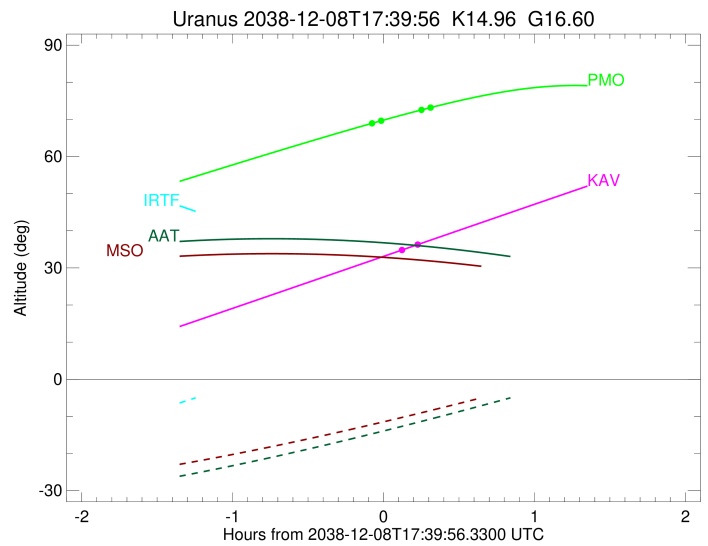
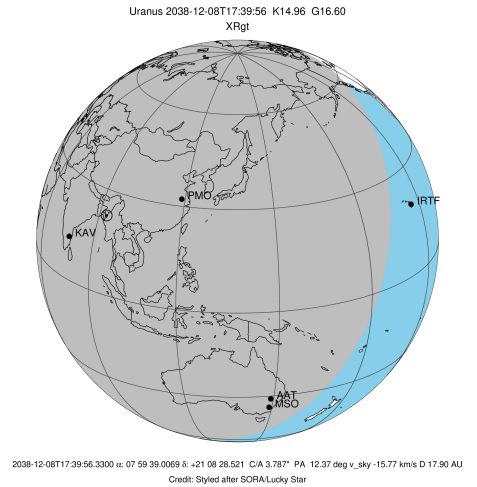


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	++		++	DEC 08 17:35 - DEC 08 17:59	PnnRie
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	+		+	DEC 08 17:47 - DEC 08 17:54	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					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



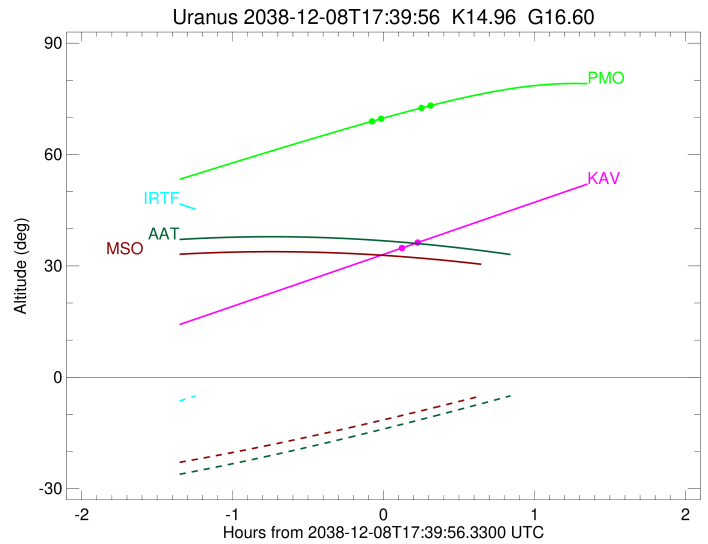
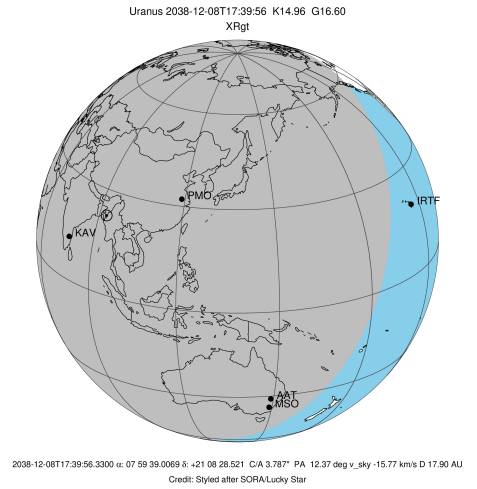
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-08T17:42:07.860  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : PMO  
 Location : Purple Mtn Obs. Nanking  
 Latitude (deg) : 32.06667  
 E. Longitude (deg) : 118.82089  
 Altitude (km) : 0.364  
 Gaia source ID : 673887137611261184  
 2Mass ID (if available) : 07593901+2108285  
 ICRS Star Coord at Epoch: 07h 59m 39.00688s +21:08:28.52068s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.962  
 G magnitude : 16.602  
 RP magnitude : 16.068  
 BP magnitude : 16.968  
 DUPflag : 0  
 Distance (au) : 17.902  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -15.77  
 Sun-Target sep (deg) : 138.47  
 Sun-Moon sep (deg) : 74.96  
 B (ring opening deg) : 49.20  
 PA of pole (deg) : 88.94  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.730  
 C/A sky separation (km) : 48433.9  
 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\_itrf93\_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	2038-12-08T17:35:36.363		68.99	-66.28	51086.34	-6.11		
lambda	I	2038-12-08T17:39:03.947		69.65	-65.58	50026.71	-4.24		
No planet occultations									
lambda	E	2038-12-08T17:54:59.123		72.55	-62.29	50026.71	4.24		
epsilon	E	2038-12-08T17:59:04.761		73.26	-61.44	51319.95	6.12		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-08T17:45:07.420  
 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 : 673887137611261184  
 2Mass ID (if available) : 07593901+2108285  
 ICRS Star Coord at Epoch: 07h 59m 39.00688s +21:08:28.52068s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.962  
 G magnitude : 16.602  
 RP magnitude : 16.068  
 BP magnitude : 16.968  
 DUPflag : 0  
 Distance (au) : 17.902  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -15.77  
 Sun-Target sep (deg) : 138.47  
 Sun-Moon sep (deg) : 74.49  
 B (ring opening deg) : 49.20  
 PA of pole (deg) : 88.94  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.880  
 C/A sky separation (km) : 50383.0  
 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	2038-12-08T17:47:13.593		34.80	-74.39	51168.43	-1.80		

No planet occultations

epsilon	E	2038-12-08T17:54:14.068		36.44	-75.60	51237.87	1.80		
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