

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2033-09-16T15:24:02.700  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3377568745504063744  
 2Mass ID (if available) : 06232325+2334203

ICRS Star Coord at Epoch: 06h 23m 23.26299s +23:34:20.30837s

RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.473  
 G magnitude : 16.875  
 RP magnitude : 16.119  
 BP magnitude : 17.486  
 DUPflag : 0  
 Distance (au) : 19.150  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 12.46  
 Sun-Target sep (deg) : 78.25  
 Sun-Moon sep (deg) : 5.50  
 B (ring opening deg) : 70.63  
 PA of pole (deg) : 67.67

# 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

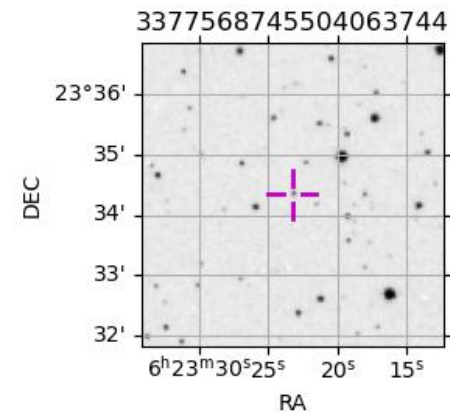
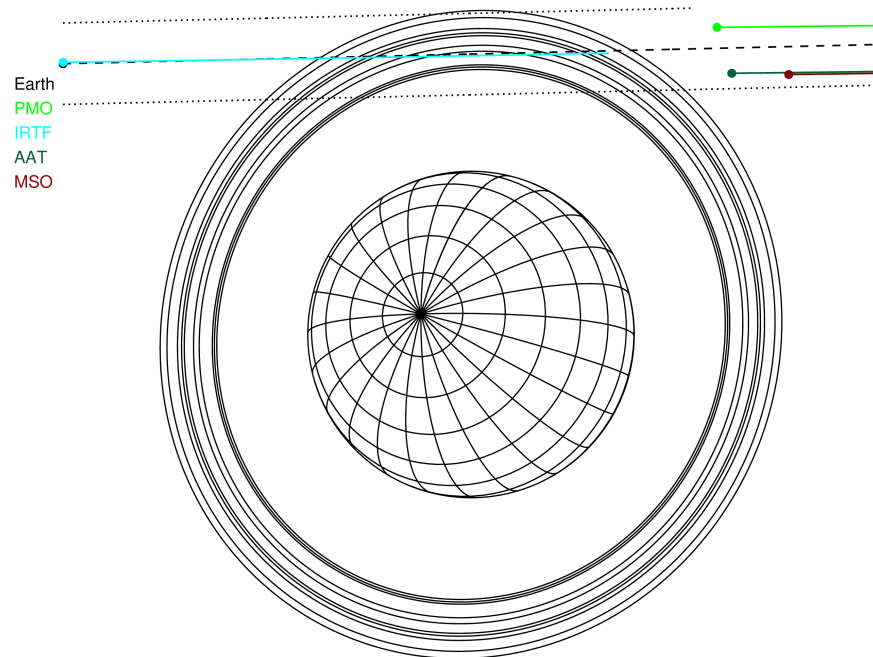
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	SEP 16 14:48 - SEP 16 15:49	PnnRie
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

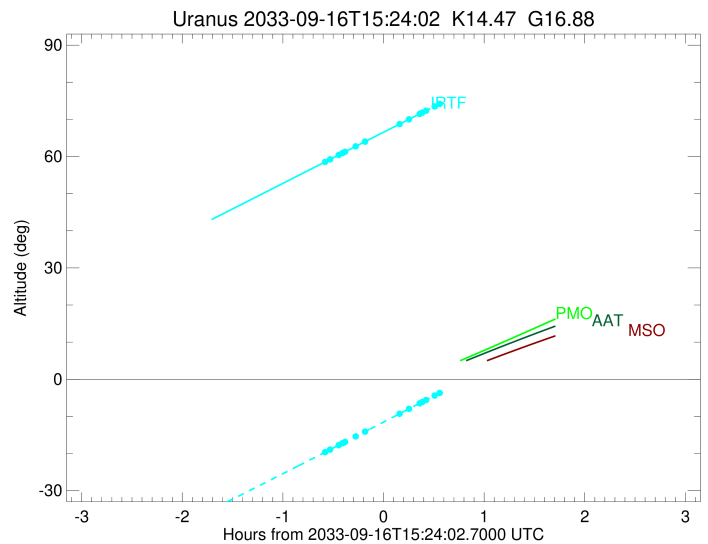
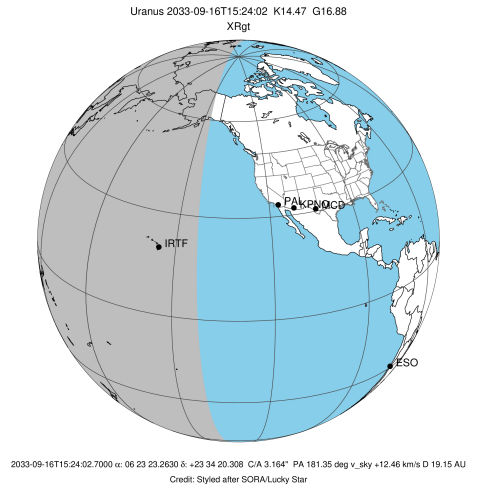


2033-09-16T15:24:02.7000 ex: 06 23 23.2630 s: +23 34 20.308 C/A 3.164" PA 181.35 deg v\_sky +12.46 km/s D 19.15 AU  
 Credit: Styled after SORA/Lucky Star

Uranus 2033-09-16T15:24:02 K14.47 G16.88 XRgt



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2033-09-16T15:20:53.000  
 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 : 3377568745504063744  
 2Mass ID (if available) : 06232325+2334203  
 ICRS Star Coord at Epoch: 06h 23m 23.26299s +23:34:20.30837s  
 RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.473  
 G magnitude : 16.875  
 RP magnitude : 16.119  
 BP magnitude : 17.486  
 DUPflag : 0  
 Distance (au) : 19.150  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 12.46  
 Sun-Target sep (deg) : 78.25  
 Sun-Moon sep (deg) : 5.52  
 B (ring opening deg) : 70.63  
 PA of pole (deg) : 67.67  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.142  
 C/A sky separation (km) : 43642.8  
 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\_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	2033-09-16T14:48:15.506		58.33	-19.86	51541.79	-6.64		
lambda	I	2033-09-16T14:52:14.651		59.25	-18.94	50026.71	-6.04		
delta	I	2033-09-16T14:57:20.667		60.42	-17.75	48300.35	-5.23		
gamma	I	2033-09-16T14:59:33.413		60.93	-17.24	47631.51	-4.85		
eta	I	2033-09-16T15:01:10.205		61.30	-16.86	47176.12	-4.56		
beta	I	2033-09-16T15:07:34.180		62.77	-15.37	45654.53	-3.34		
alpha	I	2033-09-16T15:13:25.006		64.11	-14.01	44684.93	-2.15		

No planet occultations

alpha	E	2033-09-16T15:33:15.241		68.65	-9.38	44685.30	2.14		
beta	E	2033-09-16T15:39:04.964		69.98	-8.01	45645.82	3.33		
eta	E	2033-09-16T15:45:32.726		71.46	-6.50	47176.12	4.54		
gamma	E	2033-09-16T15:47:09.499		71.82	-6.12	47629.40	4.83		
delta	E	2033-09-16T15:49:23.306		72.33	-5.60	48300.35	5.20		
lambda	E	2033-09-16T15:54:30.971		73.49	-4.39x	50026.71	6.01		
epsilon	E	2033-09-16T15:58:13.207		74.33	-3.52x	51421.14	6.60		