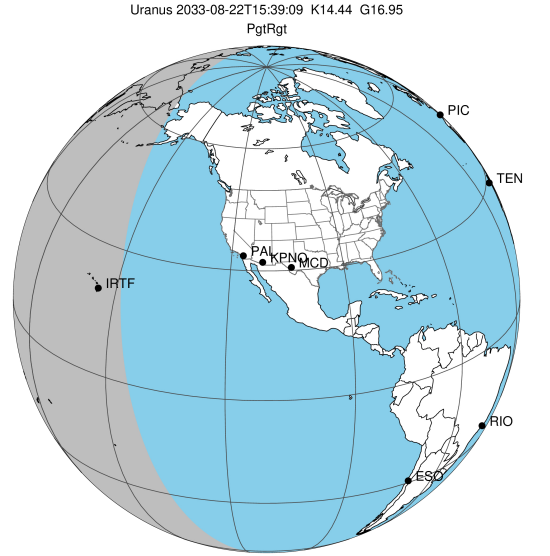


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2033-08-22T15:39:09.480  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3377537095886688000  
 2Mass ID (if available) : 06195993+2335299

ICRS Star Coord at Epoch: 06h 19m 59.93780s +23:35:29.81802s

RUWE (>1.4 is poor) : 1.76  
 K magnitude : 14.443  
 G magnitude : 16.953  
 RP magnitude : 16.143  
 BP magnitude : 17.489  
 DUPflag : 0  
 Distance (au) : 19.540  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 23.56  
 Sun-Target sep (deg) : 54.82  
 Sun-Moon sep (deg) : 29.49  
 B (ring opening deg) : 71.34  
 PA of pole (deg) : 66.40

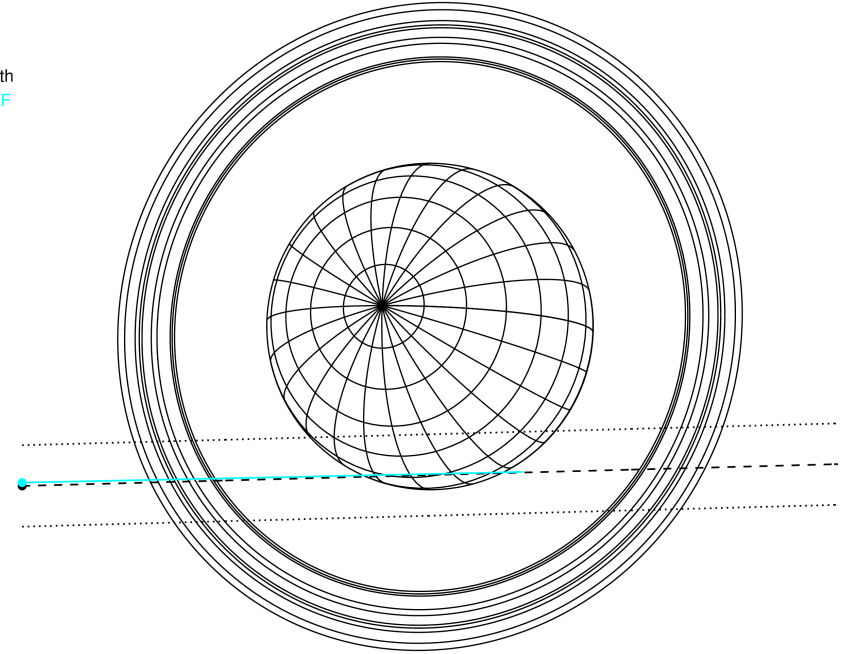
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2033-08-22T15:39:09.4800 α: 06 19 59.9378 δ: +23 35 29.818 C/A 1.636° PA 1.53 deg v\_sky +23.56 km/s D 19.54 AU  
 Credit: Styled after SORA/Lucky Star

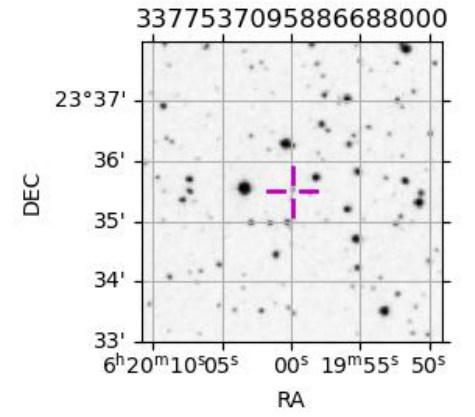
Uranus 2033-08-22T15:39:09 K14.44 G16.95 PgtRgt

Earth  
 IRTF

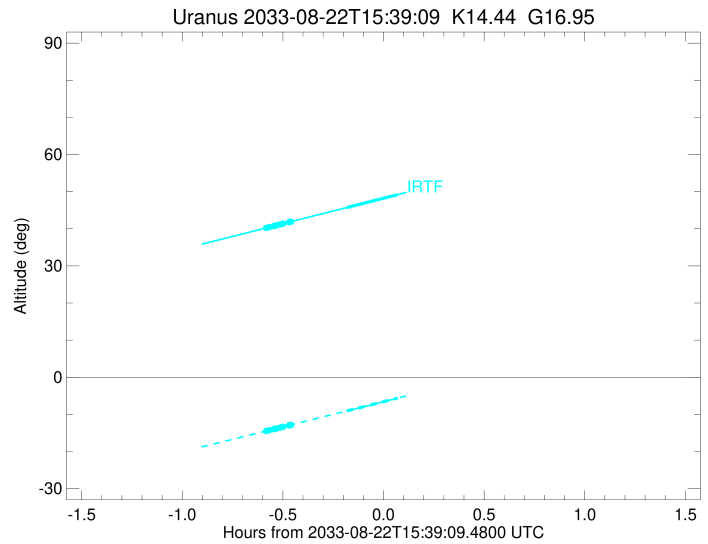
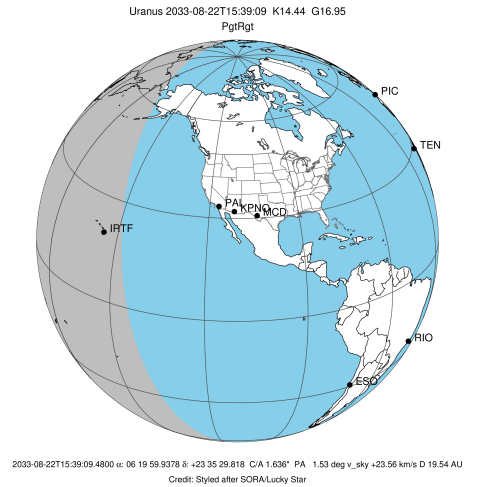


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++	+		AUG 22 15:04 - AUG 22 15:43	PieRin
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 : 2033-08-22T15:36:01.800  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : 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 : 3377537095886688000  
 2Mass ID (if available) : 06195993+2335299  
 ICRS Star Coord at Epoch: 06h 19m 59.93780s +23:35:29.81802s  
 RUWE (>1.4 is poor) : 1.76  
 K magnitude : 14.443  
 G magnitude : 16.953  
 RP magnitude : 16.143  
 BP magnitude : 17.489  
 DUPflag : 0  
 Distance (au) : 19.540  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 23.56  
 Sun-Target sep (deg) : 54.82  
 Sun-Moon sep (deg) : 30.37  
 B (ring opening deg) : 71.34  
 PA of pole (deg) : 66.40  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.629  
 C/A sky separation (km) : 23089.6  
 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	2033-08-22T15:04:26.010		40.28	-14.42	50859.32	-21.59		
lambda	I	2033-08-22T15:05:04.542		40.43	-14.28	50026.71	-21.56		
delta	I	2033-08-22T15:06:25.025		40.73	-13.98	48300.35	-21.34		
gamma	I	2033-08-22T15:06:56.853		40.85	-13.86	47622.71	-21.24		
eta	I	2033-08-22T15:07:17.908		40.93	-13.78	47176.12	-21.18		
beta	I	2033-08-22T15:08:29.219		41.21	-13.52	45674.71	-20.94		
alpha	I	2033-08-22T15:09:13.288		41.37	-13.35	44752.28	-20.79		
4	I	2033-08-22T15:10:57.543		41.77	-12.96	42611.03	-20.39		
5	I	2033-08-22T15:11:19.144		41.85	-12.88	42168.04	-20.30		
6	I	2033-08-22T15:11:34.835		41.91	-12.82	41846.58	-20.20		
Uranus	I	2033-08-22T15:28:10.459		45.71	-9.08	25558.94		0.18	0.19
Uranus	E	2033-08-22T15:43:22.349		49.19	-5.63	25257.91		-13.93	-14.56
6	E	2033-08-22T15:59:10.156		52.82	-2.02x	41795.32	20.13		
5	E	2033-08-22T15:59:35.127		52.91	-1.92x	42301.77	20.23		
4	E	2033-08-22T15:59:47.655		52.96	-1.87x	42575.17	20.32		
alpha	E	2033-08-22T16:01:32.046		53.36	-1.47x	44705.89	20.71		
beta	E	2033-08-22T16:02:16.858		53.53	-1.30x	45641.65	20.86		
eta	E	2033-08-22T16:03:30.060		53.81	-1.02x	47176.12	21.09		
gamma	E	2033-08-22T16:03:51.298		53.89	-0.94x	47624.76	21.15		
delta	E	2033-08-22T16:04:23.163		54.01	-0.82x	48300.35	21.25		
lambda	E	2033-08-22T16:05:43.995		54.32	-0.51x	50026.71	21.46		
epsilon	E	2033-08-22T16:06:33.011		54.51	-0.32x	51081.77	21.50		