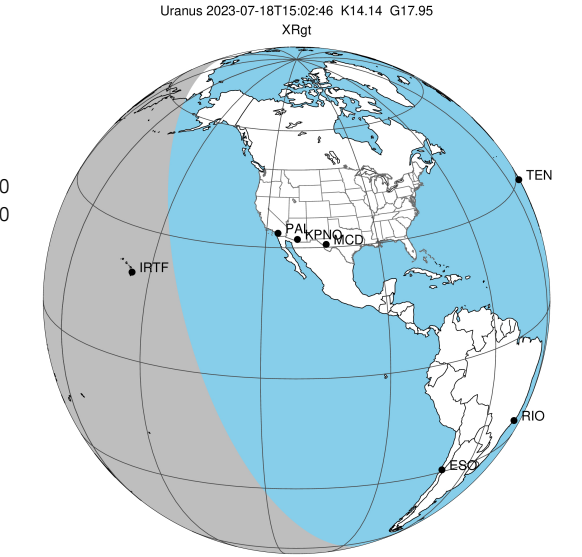


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2023-07-18T15:02:46.060
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 56039019587188096
 2Mass ID (if available) : 03185340+1758336

ICRS Star Coord at Epoch: 03h 18m 53.38166s +17:58:33.30830s

RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.144
 G magnitude : 17.951
 RP magnitude : 16.772
 BP magnitude : 19.453
 DUPflag : 0
 Distance (au) : 20.074
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 19.70
 Sun-Target sep (deg) : 63.38
 Sun-Moon sep (deg) : 72.90
 B (ring opening deg) : 63.43
 PA of pole (deg) : -88.08

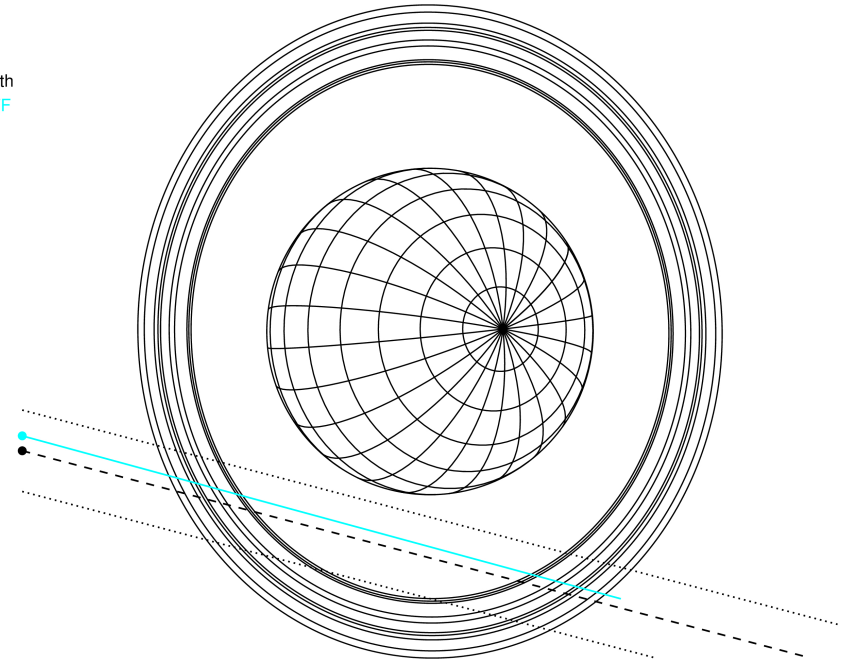
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2023-07-18T15:02:46.06000: 03 18 53.38166 +17 58 33.30830 C/A 2.354 PA 345.27 deg v_sky +19.70 km/s D 20.07 AU
 Credit: Styled after SORA/Lucky Star

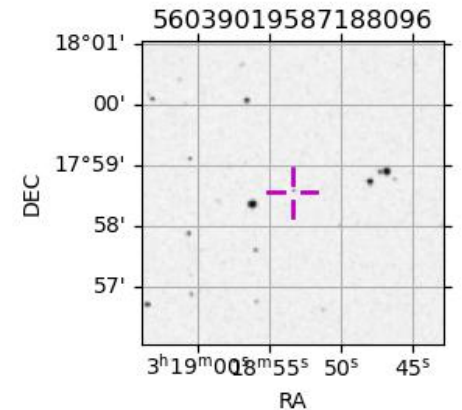
Uranus 2023-07-18T15:02:46 K14.14 G17.95 XRgt

Earth
 IRTF



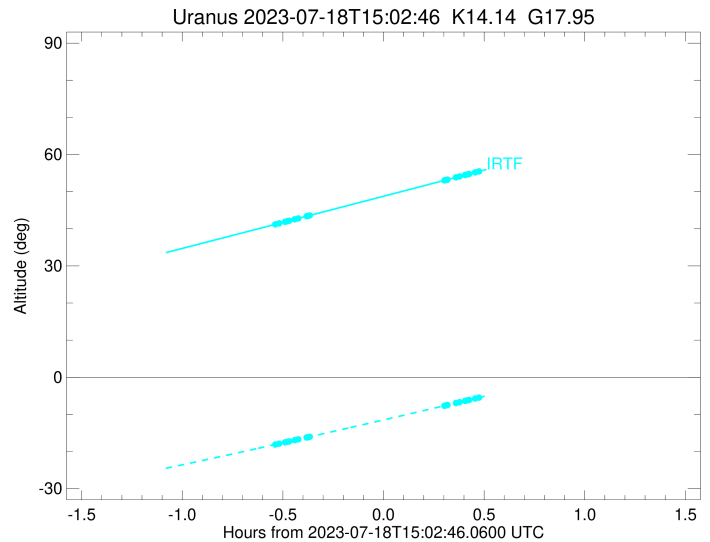
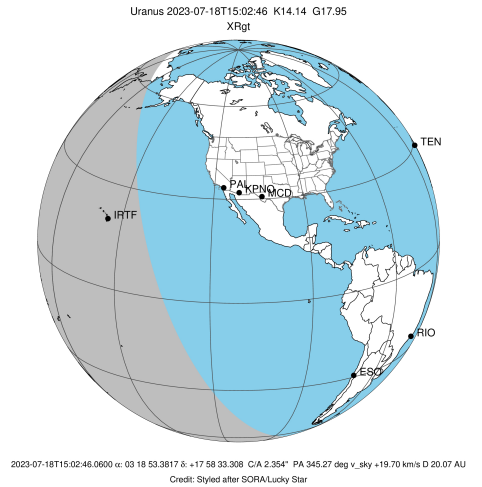
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	JUL 18 14:30 - JUL 18 15:31	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



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2023-07-18T14:59:13.740
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      : 56039019587188096
2Mass ID (if available) : 03185340+1758336
ICRS Star Coord at Epoch: 03h 18m 53.38166s +17:58:33.30830s
RUWE (>1.4 is poor) : 1.04
K magnitude          : 14.144
G magnitude          : 17.951
RP magnitude         : 16.772
BP magnitude         : 19.453
DUPflag             : 0
Distance (au)       : 20.074
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : 19.70
Sun-Target sep (deg) : 63.38
Sun-Moon sep (deg)  : 73.70
B (ring opening deg) : 63.43
PA of pole (deg)    : -88.08
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.235
C/A sky separation (km) : 32543.8
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_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	2023-07-18T14:30:49.233		41.27	-18.05	50851.20	-16.40		
lambda	I	2023-07-18T14:31:39.584		41.46	-17.89	50026.71	-16.27		
delta	I	2023-07-18T14:33:27.148		41.88	-17.52	48300.35	-15.82		
gamma	I	2023-07-18T14:34:10.231		42.05	-17.38	47623.16	-15.62		
eta	I	2023-07-18T14:34:38.976		42.16	-17.28	47176.12	-15.48		
beta	I	2023-07-18T14:36:17.146		42.55	-16.95	45681.07	-14.99		
alpha	I	2023-07-18T14:37:24.145		42.81	-16.72	44689.04	-14.61		
4	I	2023-07-18T14:39:56.895		43.40	-16.21	42532.39	-13.71		
5	I	2023-07-18T14:40:13.436		43.47	-16.15	42315.06	-13.59		
6	I	2023-07-18T14:40:51.989		43.62	-16.02	41797.80	-13.34		

No planet occultations

6	E	2023-07-18T15:20:55.004		53.03	-7.68	41843.32	13.29		
5	E	2023-07-18T15:21:25.034		53.15	-7.57	42246.10	13.54		
4	E	2023-07-18T15:21:49.782		53.24	-7.48	42586.62	13.66		
alpha	E	2023-07-18T15:24:19.619		53.83	-6.95	44699.40	14.55		
beta	E	2023-07-18T15:25:24.933		54.09	-6.72	45664.36	14.92		
eta	E	2023-07-18T15:27:04.542		54.48	-6.37	47176.12	15.41		
gamma	E	2023-07-18T15:27:33.354		54.59	-6.26	47622.12	15.55		
delta	E	2023-07-18T15:28:16.708		54.76	-6.11	48300.35	15.74		
lambda	E	2023-07-18T15:30:04.808		55.19	-5.73	50026.71	16.19		
epsilon	E	2023-07-18T15:30:59.821		55.40	-5.53	50923.33	16.31		