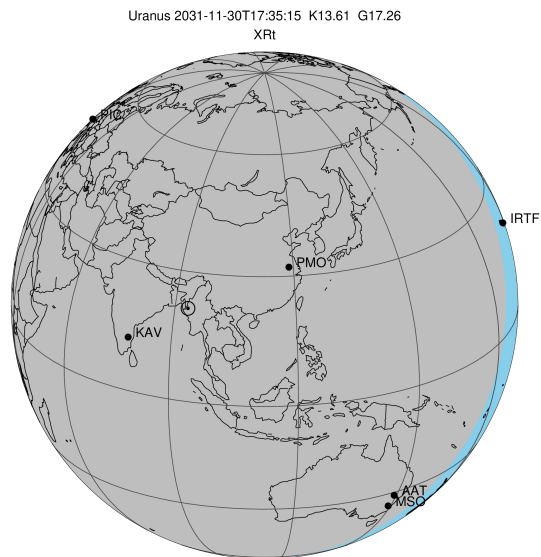


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2031-11-30T17:35:15.340
 Event type : XRT
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Gaia source ID : 3404411535188380032
 2Mass ID (if available) : 05401460+2330426

ICRS Star Coord at Epoch: 05h 40m 14.61114s +23:30:42.60836s

RUWE (>1.4 is poor) : 1.02
 K magnitude : 13.605
 G magnitude : 17.260
 RP magnitude : 16.185
 BP magnitude : 18.437
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.03
 Sun-Target sep (deg) : 162.39
 Sun-Moon sep (deg) : 4.16
 B (ring opening deg) : 78.92
 PA of pole (deg) : 42.61

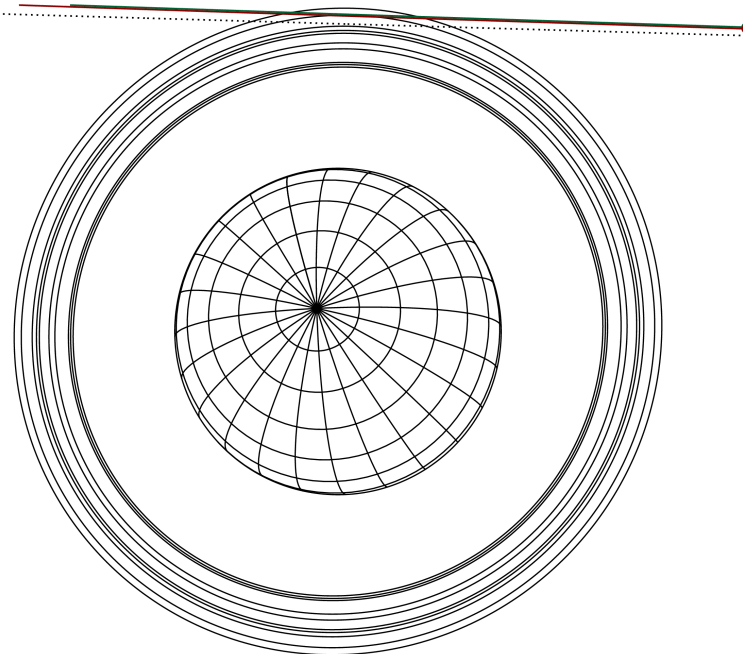
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2031-11-30T17:35:15.3400 ra: 05 40 14.6111 s: +23 30 42.608 C/A 4.151" PA 178.33 deg v_sky -22.03 km/s D 18.15 AU
 Credit: Styled after SORA/Lucky Star

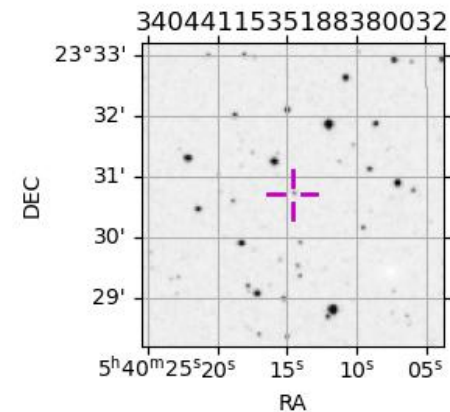
Uranus 2031-11-30T17:35:15 K13.61 G17.26 XRT

Earth
 AAT
 MSO



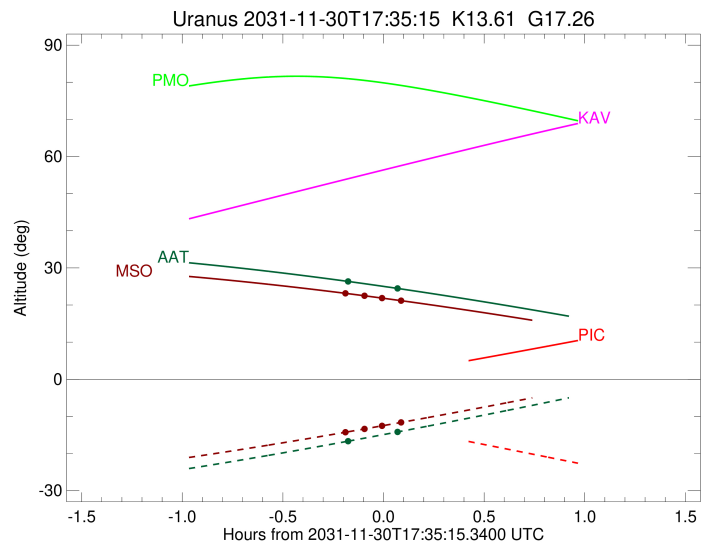
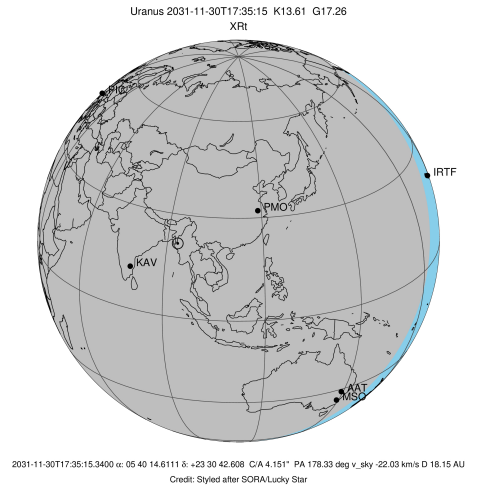
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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					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					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1	+				PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8				NOV 30 17:26 - NOV 30 17:37	PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	++			NOV 30 17:25 - NOV 30 17:38	PnnRie



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2031-11-30T17:32:46.390
Event type           : XRt
: No Uranus occs
: Ring occs: topocentric, not geocentric
Observer code        : AAT
Location             : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 3404411535188380032
2Mass ID (if available) : 05401460+2330426
ICRS Star Coord at Epoch: 05h 40m 14.61114s +23:30:42.60836s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 13.605
G magnitude           : 17.260
RP magnitude          : 16.185
BP magnitude          : 18.437
DUPflag              : 0
Distance (au)         : 18.147
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.03
Sun-Target sep (deg) : 162.39
Sun-Moon sep (deg)   : 3.36
B (ring opening deg) : 78.92
PA of pole (deg)     : 42.61
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.775
C/A sky separation (km) : 49690.3
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.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
  
```

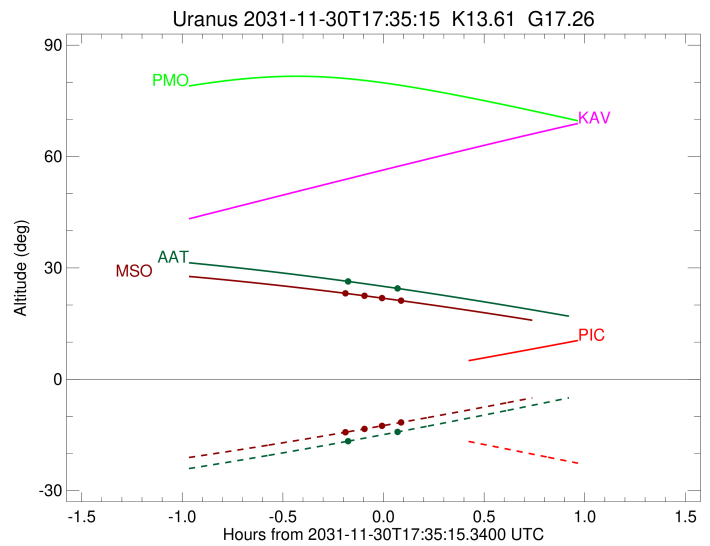
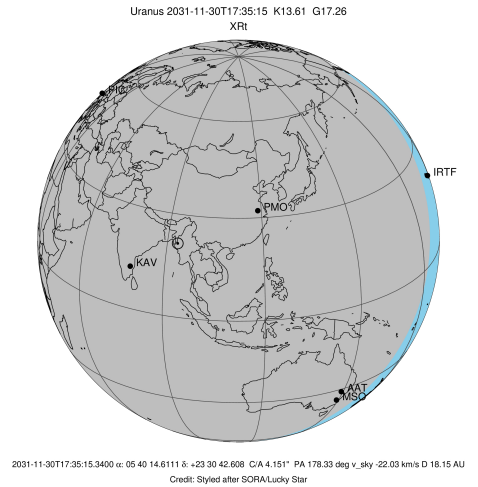


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2031-11-30T17:26:14.562		26.17	-16.42	50797.14	-3.43		

No planet occultations

epsilon	E	2031-11-30T17:37:41.870		24.70	-14.49	50753.39	3.43		
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target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2031-11-30T17:32:53.800
 Event type : XRt
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 3404411535188380032
 2Mass ID (if available) : 05401460+2330426
 ICRS Star Coord at Epoch: 05h 40m 14.61114s +23:30:42.60836s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 13.605
 G magnitude : 17.260
 RP magnitude : 16.185
 BP magnitude : 18.437
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.03
 Sun-Target sep (deg) : 162.39
 Sun-Moon sep (deg) : 3.34
 B (ring opening deg) : 78.92
 PA of pole (deg) : 42.61
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.756
 C/A sky separation (km) : 49429.6
 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_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	2031-11-30T17:25:13.116		23.00	-14.07	50803.19	-4.11		
lambda	I	2031-11-30T17:29:44.282		22.47	-13.35	50026.71	-1.50		

No planet occultations

lambda	E	2031-11-30T17:34:40.057		21.89	-12.57	50026.71	1.51		
epsilon	E	2031-11-30T17:38:58.567		21.36	-11.87	50750.55	4.11		