

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-01-19T14:55:01.100  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3380323606245660800  
 2Mass ID (if available) : 06514346+2317598

ICRS Star Coord at Epoch: 06h 51m 43.46699s +23:17:59.78327s

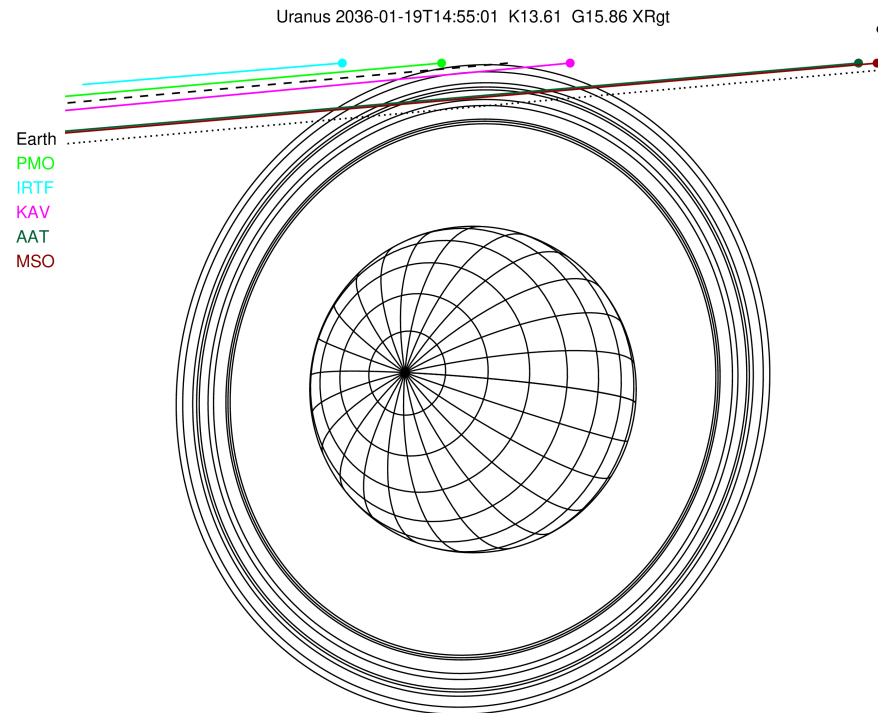
RUWE (>1.4 is poor) : 1.04  
 K magnitude : 13.613  
 G magnitude : 15.865  
 RP magnitude : 15.151  
 BP magnitude : 16.431  
 DUPflag : 0  
 Distance (au) : 17.879  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -22.09  
 Sun-Target sep (deg) : 163.25  
 Sun-Moon sep (deg) : 98.79  
 B (ring opening deg) : 64.53  
 PA of pole (deg) : 76.03

# 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

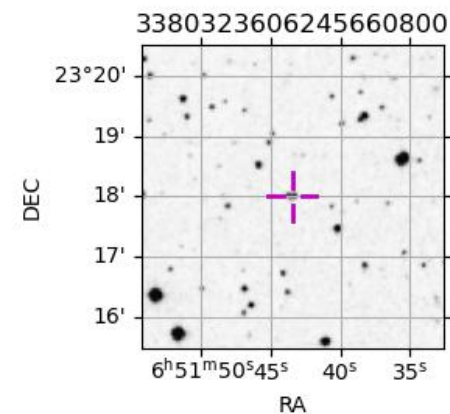


2036-01-19T14:55:01.1000 α: 06 51 43.4670 δ: +23 17 59.783 C/A 3.896° PA 185.17 deg v\_sky -22.09 km/s D 17.88 AU  
 Credit: Styled after SORA/Lucky Star



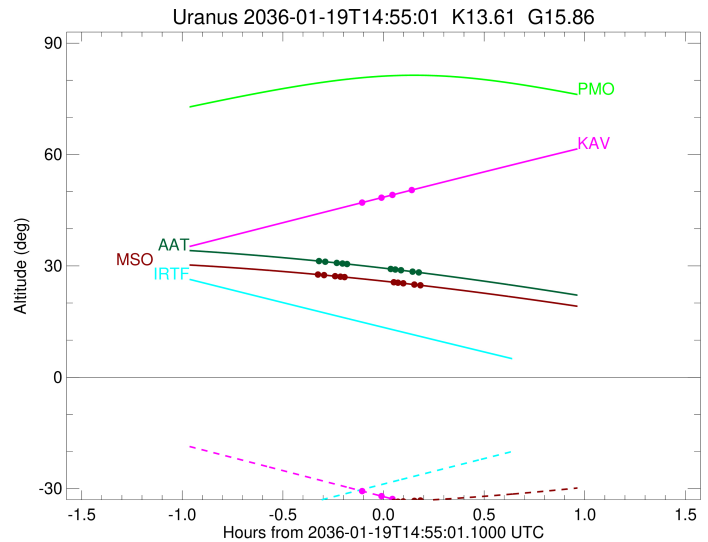
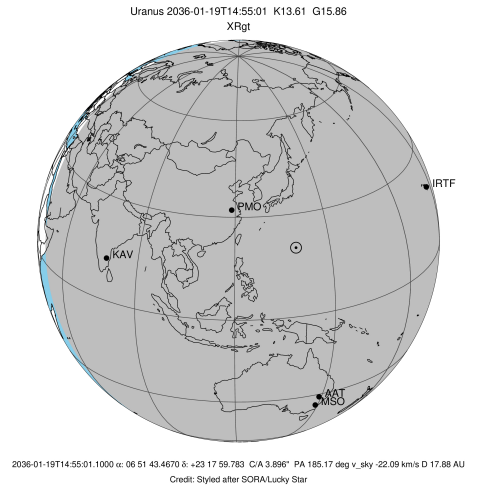
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	++		++	JAN 19 14:49 - JAN 19 15:03	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	+++++		+++++	JAN 19 14:36 - JAN 19 15:05	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	JAN 19 14:35 - JAN 19 15:06	PnnRie



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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2036-01-19T14:58:13.170
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      : 3380323606245660800
2Mass ID (if available) : 06514346+2317598
ICRS Star Coord at Epoch: 06h 51m 43.46699s +23:17:59.78327s
RUWE (>1.4 is poor) : 1.04
K magnitude          : 13.613
G magnitude          : 15.865
RP magnitude         : 15.151
BP magnitude         : 16.431
DUPflag             : 0
Distance (au)       : 17.879
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -22.09
Sun-Target sep (deg) : 163.25
Sun-Moon sep (deg)  : 99.39
B (ring opening deg) : 64.53
PA of pole (deg)    : 76.03
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.814
C/A sky separation (km) : 49458.3
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_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



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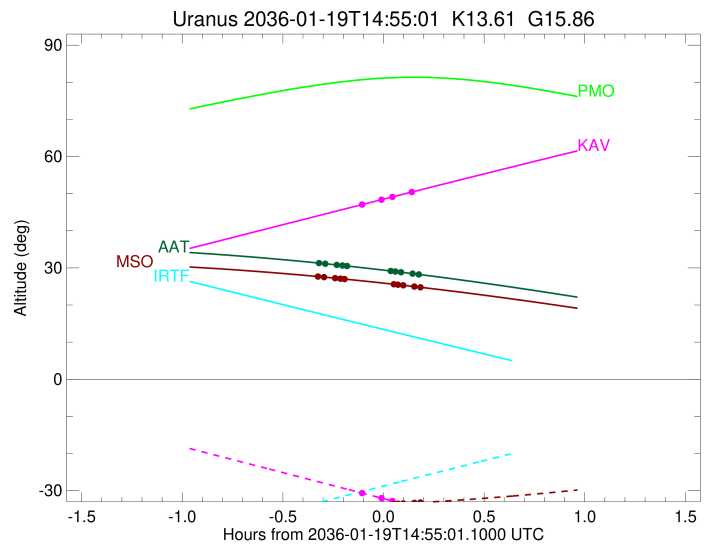
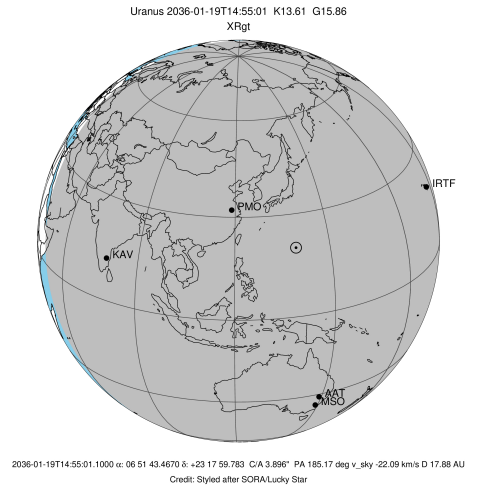
b: ring blocked by planet  x: target alt < 5.0 deg or sun > -5.0 deg
Ring      I/E      UTC      b? alt  alt-sun  radius  r-dot  lat-geo lat-geodetic
-----
epsilon   I 2036-01-19T14:49:12.712  47.18 -30.80  50992.60 -5.05
lambda    I 2036-01-19T14:54:37.775  48.42 -32.07  50026.71 -1.03

No planet occultations

lambda    E 2036-01-19T14:57:28.446  49.07 -32.73  50026.72  1.03
epsilon   E 2036-01-19T15:03:25.670  50.43 -34.13  51156.04  5.05
  
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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2036-01-19T14:52:37.430
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : AAT
Location            : Siding Spring (AAT)
Latitude (deg)      : -31.27703
E. Longitude (deg)  : 149.06608
Altitude (km)       : 1.164
Gaia source ID      : 3380323606245660800
2Mass ID (if available) : 06514346+2317598
ICRS Star Coord at Epoch: 06h 51m 43.46699s +23:17:59.78327s
RUWE (>1.4 is poor) : 1.04
K magnitude          : 13.613
G magnitude          : 15.865
RP magnitude         : 15.151
BP magnitude         : 16.431
DUPflag             : 0
Distance (au)       : 17.879
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -22.09
Sun-Target sep (deg) : 163.25
Sun-Moon sep (deg)  : 99.31
B (ring opening deg) : 64.53
PA of pole (deg)    : 76.03
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.527
C/A sky separation (km) : 45734.6
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
  
```



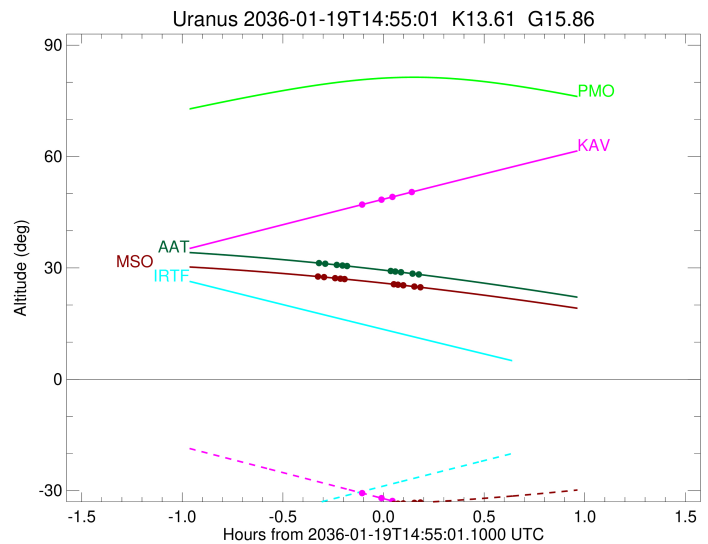
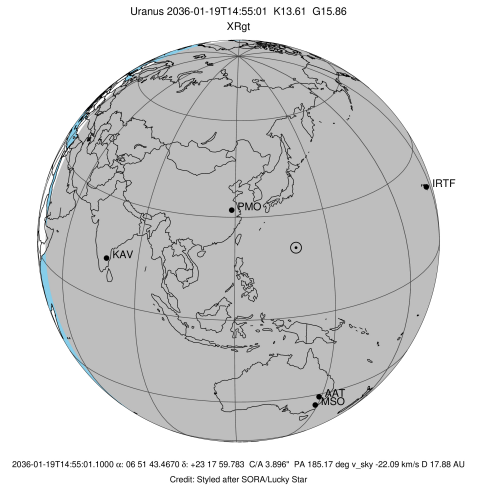
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-19T14:36:11.509		31.26	-38.29	50907.81	-10.49		
lambda	I	2036-01-19T14:37:40.481		31.12	-38.26	50026.71	-9.45		
delta	I	2036-01-19T14:41:07.521		30.80	-38.16	48300.35	-7.19		
gamma	I	2036-01-19T14:42:49.995		30.64	-38.11	47625.16	-5.98		
eta	I	2036-01-19T14:44:11.828		30.50	-38.06	47176.12	-4.99		

No planet occultations

eta	E	2036-01-19T14:57:07.912		29.18	-37.55	47176.12	4.99		
gamma	E	2036-01-19T14:58:30.225		29.03	-37.48	47627.74	5.98		
delta	E	2036-01-19T15:00:12.345		28.84	-37.40	48300.35	7.18		
lambda	E	2036-01-19T15:03:39.585		28.46	-37.22	50026.71	9.44		
epsilon	E	2036-01-19T15:05:40.945		28.23	-37.11	51246.54	10.48		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-01-19T14:52:42.080  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : MSO  
 Location : Mt. Stromlo Observatory  
 Latitude (deg) : -35.32000  
 E. Longitude (deg) : 149.00833  
 Altitude (km) : 0.770  
 Gaia source ID : 3380323606245660800  
 2Mass ID (if available) : 06514346+2317598  
 ICRS Star Coord at Epoch: 06h 51m 43.46699s +23:17:59.78327s  
 RUWE (>1.4 is poor) : 1.04  
 K magnitude : 13.613  
 G magnitude : 15.865  
 RP magnitude : 15.151  
 BP magnitude : 16.431  
 DUPflag : 0  
 Distance (au) : 17.879  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -22.09  
 Sun-Target sep (deg) : 163.25  
 Sun-Moon sep (deg) : 99.26  
 B (ring opening deg) : 64.53  
 PA of pole (deg) : 76.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 3.506  
 C/A sky separation (km) : 45466.5  
 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



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	2036-01-19T14:35:53.092		27.64	-34.30	50903.90	-10.75		
lambda	I	2036-01-19T14:37:19.178		27.52	-34.27	50026.71	-9.76		
delta	I	2036-01-19T14:40:37.465		27.23	-34.18	48300.35	-7.62		
gamma	I	2036-01-19T14:42:13.007		27.09	-34.14	47625.05	-6.51		
eta	I	2036-01-19T14:43:26.985		26.98	-34.11	47176.12	-5.62		

No planet occultations

eta	E	2036-01-19T14:58:03.134		25.60	-33.58	47176.12	5.62		
gamma	E	2036-01-19T14:59:17.592		25.48	-33.52	47627.86	6.51		
delta	E	2036-01-19T15:00:52.776		25.31	-33.45	48300.35	7.61		
lambda	E	2036-01-19T15:04:11.254		24.97	-33.29	50026.71	9.75		
epsilon	E	2036-01-19T15:06:09.749		24.76	-33.20	51251.43	10.74		