

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-14T17:00:11.070
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424826060207009280
 2Mass ID (if available) : 05573019+2339031

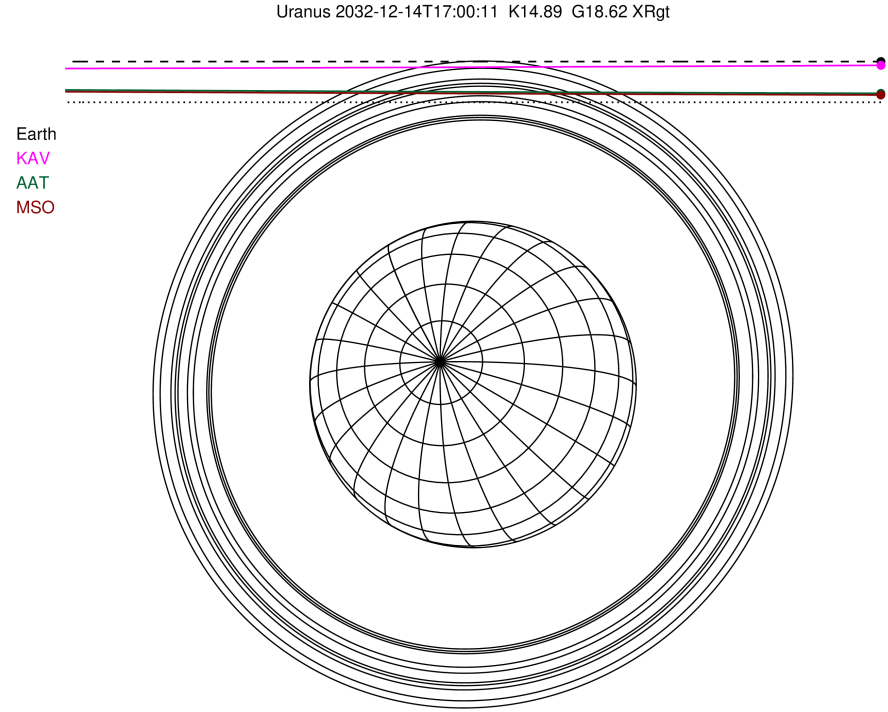
ICRS Star Coord at Epoch: 05h 57m 30.20233s +23:39:02.98886s

RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.891
 G magnitude : 18.616
 RP magnitude : 17.549
 BP magnitude : 19.754
 DUPflag : 0
 Distance (au) : 18.043
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.21
 Sun-Target sep (deg) : 173.37
 Sun-Moon sep (deg) : 33.45
 B (ring opening deg) : 75.82
 PA of pole (deg) : 55.46

#	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

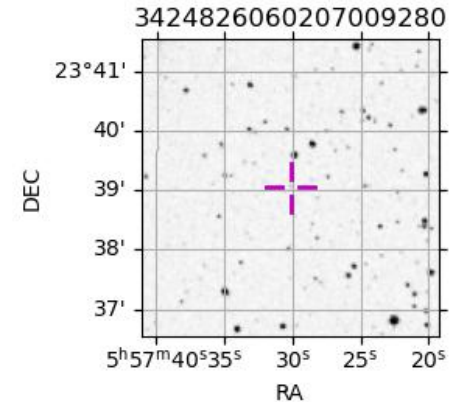


2032-12-14T17:00:11.0700 ex: 05 57 30.20233 s: +23 39 02.9889 C/A 3.872° PA 180.00 deg v_sky -23.21 km/s D 18.04 AU
 Credit: Styled after SORA/Lucky Star

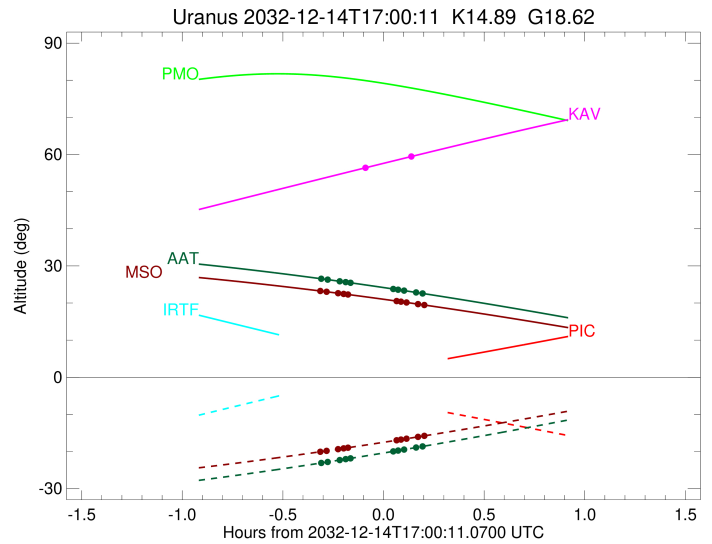
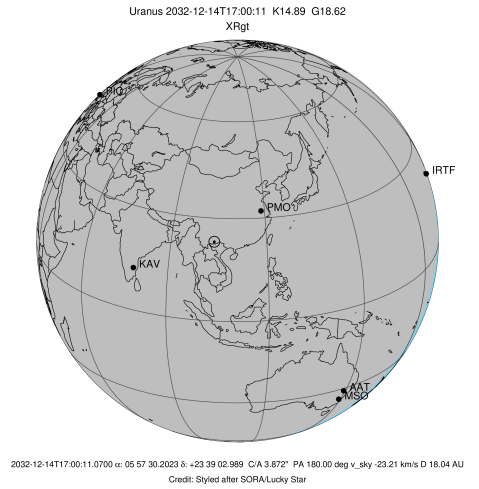


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+		+	DEC 14 16:53 - DEC 14 17:09	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	+++++		+++++	DEC 14 16:41 - DEC 14 17:12	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	DEC 14 16:40 - DEC 14 17:12	PnnRie



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-14T17:02:39.420
 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 : 3424826060207009280
 2Mass ID (if available) : 05573019+2339031
 ICRS Star Coord at Epoch: 05h 57m 30.20233s +23:39:02.98886s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.891
 G magnitude : 18.616
 RP magnitude : 17.549
 BP magnitude : 19.754
 DUPflag : 0
 Distance (au) : 18.043
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.21
 Sun-Target sep (deg) : 173.37
 Sun-Moon sep (deg) : 33.47
 B (ring opening deg) : 75.82
 PA of pole (deg) : 55.46
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.797
 C/A sky separation (km) : 49692.3
 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



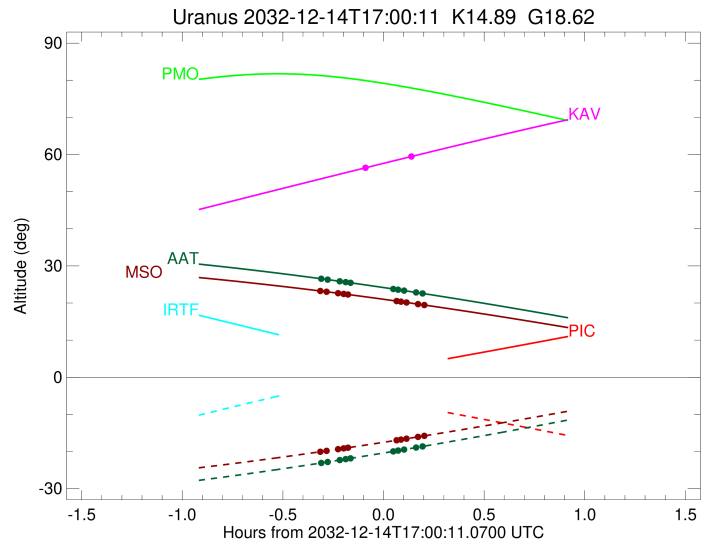
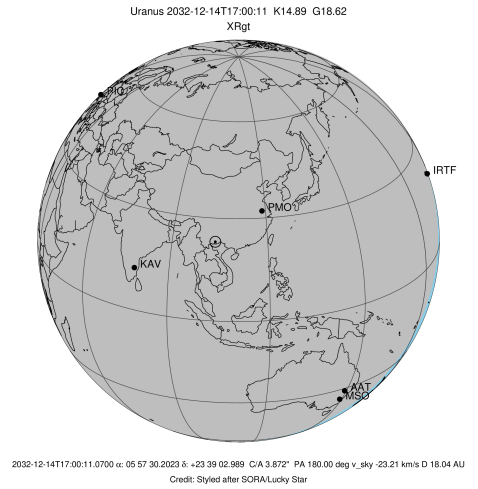
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-14T16:53:33.296		56.15	-62.63	51546.85	-5.52		

No planet occultations

epsilon	E	2032-12-14T17:09:43.963		59.74	-66.10	51542.47	5.52		
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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-12-14T16:57:38.920
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       : 3424826060207009280
2Mass ID (if available) : 05573019+2339031
ICRS Star Coord at Epoch: 05h 57m 30.20233s +23:39:02.98886s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.891
G magnitude           : 18.616
RP magnitude          : 17.549
BP magnitude          : 19.754
DUPflag              : 0
Distance (au)         : 18.043
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.21
Sun-Target sep (deg)  : 173.37
Sun-Moon sep (deg)   : 34.05
B (ring opening deg) : 75.82
PA of pole (deg)     : 55.46
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.502
C/A sky separation (km) : 45829.7
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.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
  
```



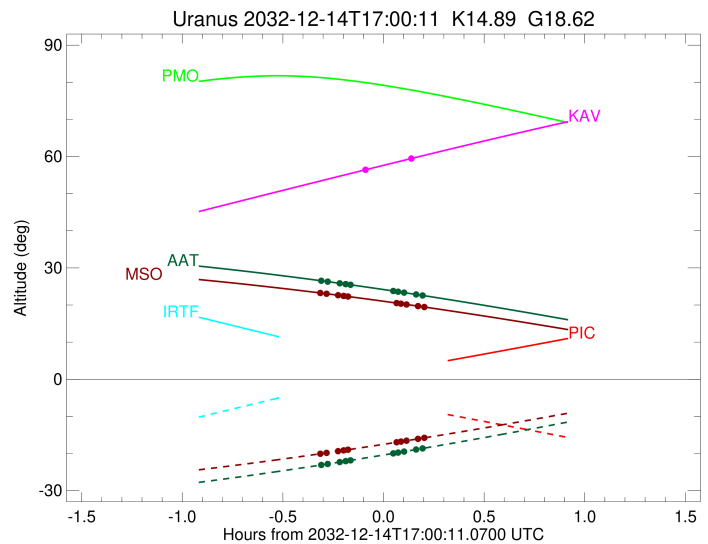
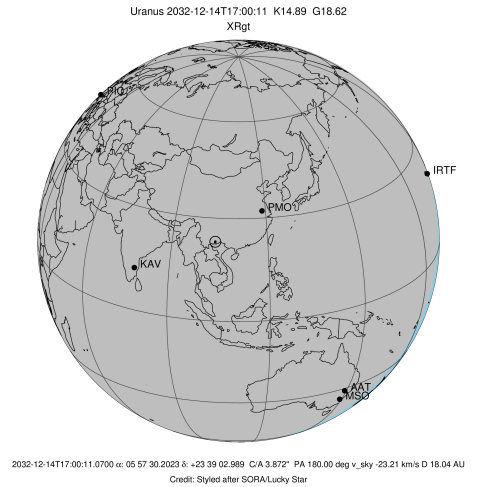
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-14T16:41:03.356		26.60	-23.16	51516.30	-10.63		
lambda	I	2032-12-14T16:43:34.513		26.30	-22.81	50026.71	-9.13		
delta	I	2032-12-14T16:47:09.804		25.85	-22.30	48300.35	-6.87		
gamma	I	2032-12-14T16:48:57.117		25.63	-22.05	47627.24	-5.66		
eta	I	2032-12-14T16:50:24.585		25.44	-21.84	47176.12	-4.65		

No planet occultations

eta	E	2032-12-14T17:03:02.502		23.79	-19.97	47176.12	4.64		
gamma	E	2032-12-14T17:04:29.583		23.59	-19.75	47624.75	5.66		
delta	E	2032-12-14T17:06:17.419		23.35	-19.48	48300.35	6.87		
lambda	E	2032-12-14T17:09:52.926		22.85	-18.93	50026.71	9.12		
epsilon	E	2032-12-14T17:12:23.744		22.50	-18.54	51510.71	10.62		

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-12-14T16:57:45.860
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      : 3424826060207009280
2Mass ID (if available) : 05573019+2339031
ICRS Star Coord at Epoch: 05h 57m 30.20233s +23:39:02.98886s
RUWE (>1.4 is poor) : 1.05
K magnitude         : 14.891
G magnitude         : 18.616
RP magnitude        : 17.549
BP magnitude        : 19.754
DUPflag            : 0
Distance (au)       : 18.043
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -23.21
Sun-Target sep (deg) : 173.37
Sun-Moon sep (deg)  : 34.00
B (ring opening deg) : 75.82
PA of pole (deg)    : 55.46
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.482
C/A sky separation (km) : 45563.9
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.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	2032-12-14T16:40:47.665		23.31	-20.14	51514.28	-10.88		
lambda	I	2032-12-14T16:43:14.551		23.03	-19.82	50026.71	-9.43		
delta	I	2032-12-14T16:46:40.485		22.64	-19.37	48300.35	-7.30		
gamma	I	2032-12-14T16:48:20.179		22.44	-19.14	47627.36	-6.19		
eta	I	2032-12-14T16:49:38.742		22.29	-18.97	47176.12	-5.29		

No planet occultations

eta	E	2032-12-14T17:04:02.795		20.53	-16.98	47176.12	5.29		
gamma	E	2032-12-14T17:05:20.969		20.37	-16.79	47624.63	6.19		
delta	E	2032-12-14T17:07:01.183		20.15	-16.55	48300.35	7.29		
lambda	E	2032-12-14T17:10:27.323		19.71	-16.06	50026.71	9.42		
epsilon	E	2032-12-14T17:12:53.855		19.39	-15.70	51508.49	10.87		