

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-11T22:24:06.840
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425422549560940416
 2Mass ID (if available) : 06122707+2341033

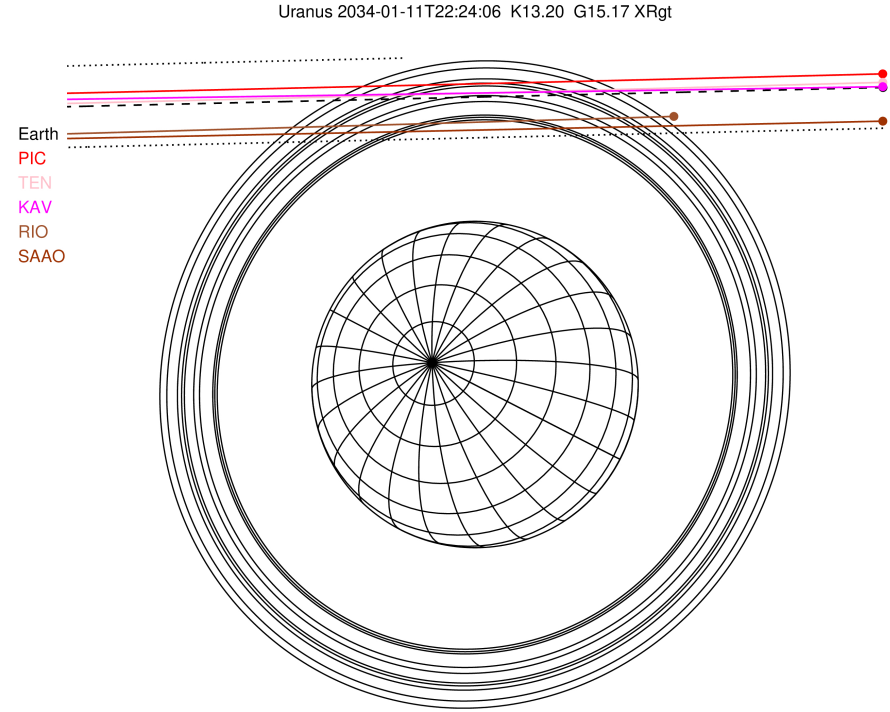
ICRS Star Coord at Epoch: 06h 12m 27.07280s +23:41:03.20797s

RUWE (>1.4 is poor) : 1.88
 K magnitude : 13.200
 G magnitude : 15.170
 RP magnitude : 14.488
 BP magnitude : 15.670
 DUPflag : 0
 Distance (au) : 18.015
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.88
 Sun-Target sep (deg) : 161.56
 Sun-Moon sep (deg) : 101.74
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.10

#	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

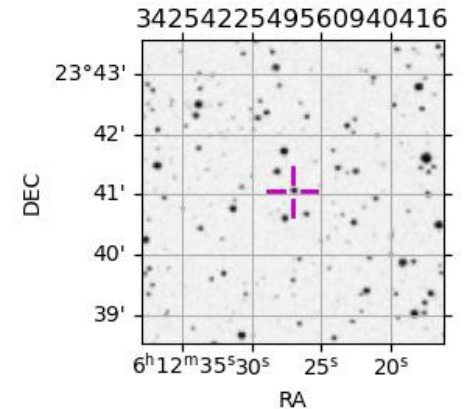


2034-01-11T22:24:06.8400 ex: 06 12 27.0728 ex: +23 41 03.208 C/A 3.451'' PA 181.35 deg v_sky -21.88 km/s D 18.01 AU
 Credit: Styled after SORA/Lucky Star

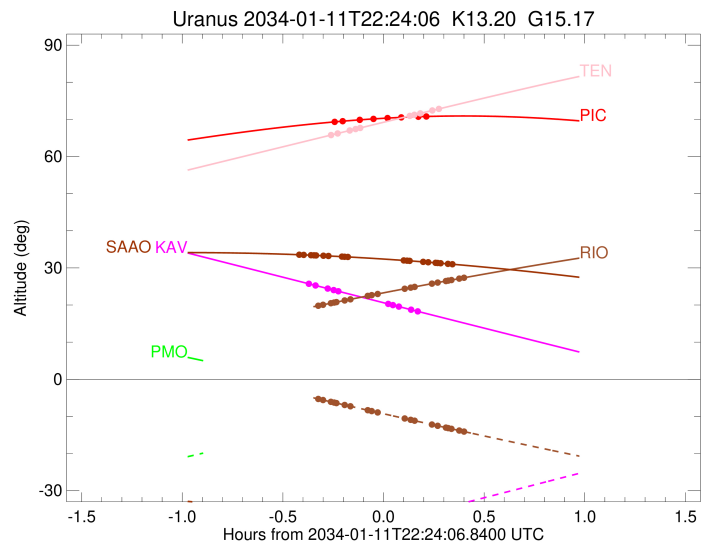
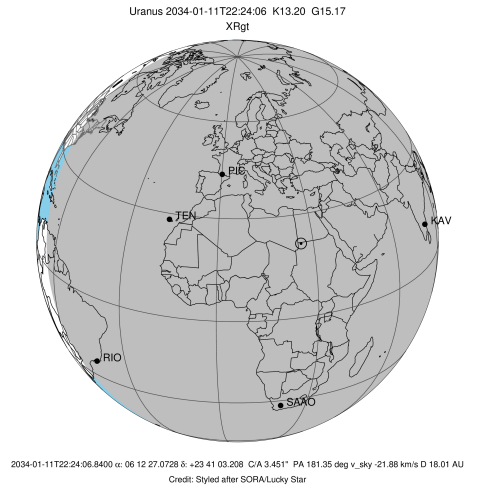


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	++++		++++	JAN 11 22:10 - JAN 11 22:36	PnnRie
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	+++++		+++++	JAN 11 22:09 - JAN 11 22:40	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++		+++++	JAN 11 22:02 - JAN 11 22:33	PnnRie
RIO	Rio de Janeiro	-22.9	316.8	+++++		+++++	JAN 11 22:05 - JAN 11 22:47	PnnRie
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	+++++		+++++	JAN 11 21:59 - JAN 11 22:44	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-11T22:24:31.690
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3425422549560940416
 2Mass ID (if available) : 06122707+2341033
 ICRS Star Coord at Epoch: 06h 12m 27.07280s +23:41:03.20797s
 RUWE (>1.4 is poor) : 1.88
 K magnitude : 13.200
 G magnitude : 15.170
 RP magnitude : 14.488
 BP magnitude : 15.670
 DUPflag : 0
 Distance (au) : 18.015
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.88
 Sun-Target sep (deg) : 161.56
 Sun-Moon sep (deg) : 102.55
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.10
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.603
 C/A sky separation (km) : 47072.8
 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



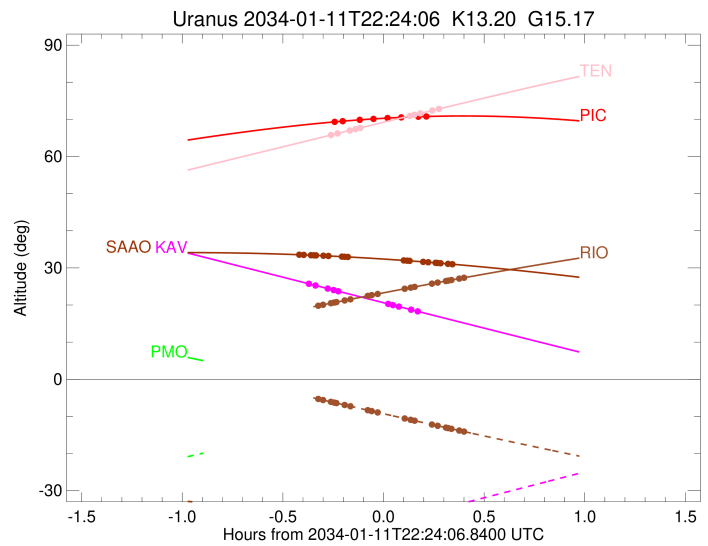
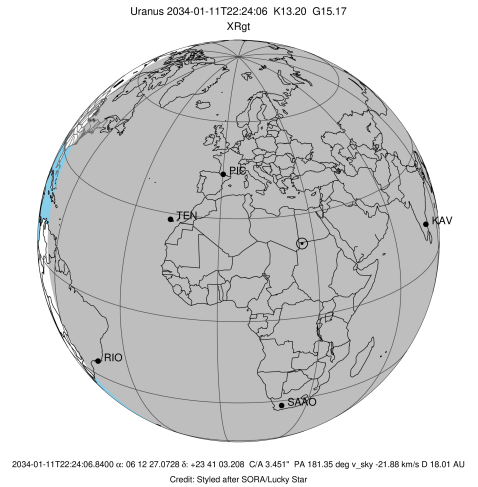
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-11T22:10:22.620		69.40	-57.78	50758.27	-8.01		
lambda	I	2034-01-11T22:11:58.790		69.52	-58.03	50026.71	-7.15		
delta	I	2034-01-11T22:17:05.863		69.89	-58.82	48300.35	-4.04		
gamma	I	2034-01-11T22:21:20.707		70.15	-59.46	47623.51	-1.25		

No planet occultations

gamma	E	2034-01-11T22:25:05.802		70.35	-60.02	47623.03	1.25		
delta	E	2034-01-11T22:29:21.024		70.54	-60.64	48300.35	4.04		
lambda	E	2034-01-11T22:34:28.090		70.72	-61.37	50026.71	7.15		
epsilon	E	2034-01-11T22:36:07.206		70.77	-61.60	50782.07	8.01		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-11T22:25:49.450
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3425422549560940416
 2Mass ID (if available) : 06122707+2341033
 ICRS Star Coord at Epoch: 06h 12m 27.07280s +23:41:03.20797s
 RUWE (>1.4 is poor) : 1.88
 K magnitude : 13.200
 G magnitude : 15.170
 RP magnitude : 14.488
 BP magnitude : 15.670
 DUPflag : 0
 Distance (au) : 18.015
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.88
 Sun-Target sep (deg) : 161.56
 Sun-Moon sep (deg) : 102.50
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.10
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.490
 C/A sky separation (km) : 45599.8
 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

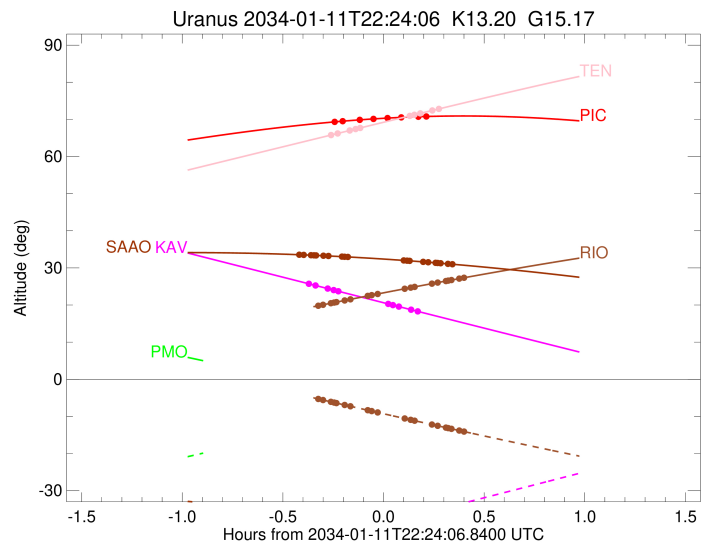
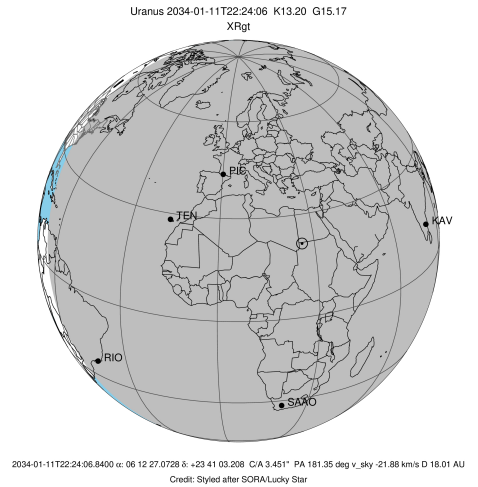


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-11T22:09:09.065		65.94	-47.83	50767.29	-9.63		
lambda	I	2034-01-11T22:10:28.345		66.23	-48.12	50026.71	-8.99		
delta	I	2034-01-11T22:14:04.772		67.02	-48.92	48300.35	-6.93		
gamma	I	2034-01-11T22:15:50.544		67.41	-49.31	47624.46	-5.84		
eta	I	2034-01-11T22:17:13.461		67.71	-49.61	47176.12	-4.96		

No planet occultations

eta	E	2034-01-11T22:31:53.707		70.93	-52.84	47176.12	4.97		
gamma	E	2034-01-11T22:33:16.212		71.23	-53.15	47622.25	5.85		
delta	E	2034-01-11T22:35:02.311		71.62	-53.54	48300.35	6.93		
lambda	E	2034-01-11T22:38:38.603		72.40	-54.33	50026.71	9.00		
epsilon	E	2034-01-11T22:40:00.838		72.70	-54.63	50796.56	9.64		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-11T22:19:20.780
 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 : 3425422549560940416
 2Mass ID (if available) : 06122707+2341033
 ICRS Star Coord at Epoch: 06h 12m 27.07280s +23:41:03.20797s
 RUWE (>1.4 is poor) : 1.88
 K magnitude : 13.200
 G magnitude : 15.170
 RP magnitude : 14.488
 BP magnitude : 15.670
 DUPflag : 0
 Distance (au) : 18.015
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.88
 Sun-Target sep (deg) : 161.56
 Sun-Moon sep (deg) : 102.23
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.10
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.492
 C/A sky separation (km) : 45628.4
 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_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



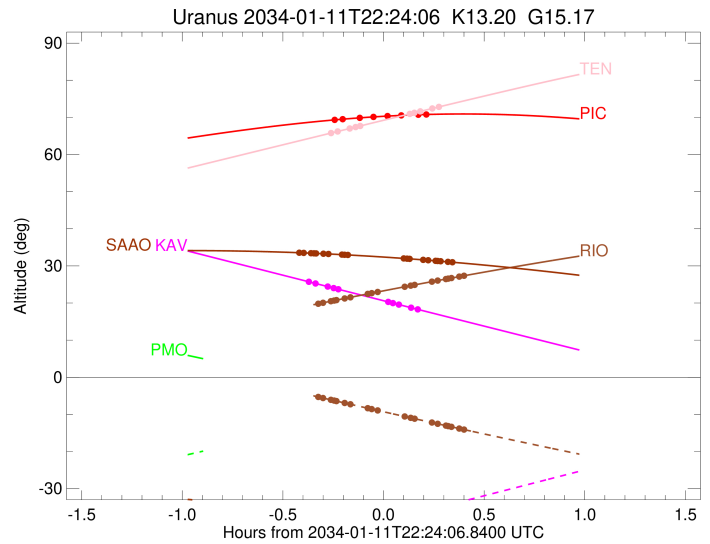
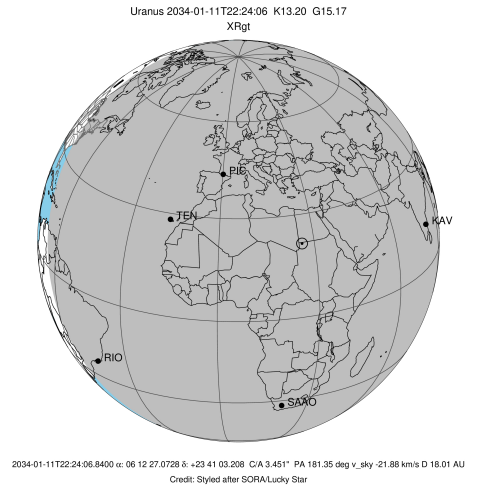
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-11T22:02:32.292		25.56	-43.90	50768.63	-9.54		
lambda	I	2034-01-11T22:03:52.511		25.26	-43.59	50026.71	-8.90		
delta	I	2034-01-11T22:07:31.301		24.42	-42.74	48300.35	-6.85		
gamma	I	2034-01-11T22:09:18.363		24.01	-42.33	47624.51	-5.77		
eta	I	2034-01-11T22:10:42.420		23.69	-42.01	47176.12	-4.89		

No planet occultations

eta	E	2034-01-11T22:25:28.076		20.31	-38.58	47176.12	4.89		
gamma	E	2034-01-11T22:26:51.873		19.99	-38.25	47622.28	5.76		
delta	E	2034-01-11T22:28:39.515		19.58	-37.84	48300.35	6.83		
lambda	E	2034-01-11T22:32:18.810		18.75	-36.99	50026.71	8.87		
epsilon	E	2034-01-11T22:33:41.953		18.43	-36.67	50794.51	9.51		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-11T22:27:33.420
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 3425422549560940416
 2Mass ID (if available) : 06122707+2341033
 ICRS Star Coord at Epoch: 06h 12m 27.07280s +23:41:03.20797s
 RUWE (>1.4 is poor) : 1.88
 K magnitude : 13.200
 G magnitude : 15.170
 RP magnitude : 14.488
 BP magnitude : 15.670
 DUPflag : 0
 Distance (au) : 18.015
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.88
 Sun-Target sep (deg) : 161.56
 Sun-Moon sep (deg) : 101.96
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.10
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.142
 C/A sky separation (km) : 41053.6
 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



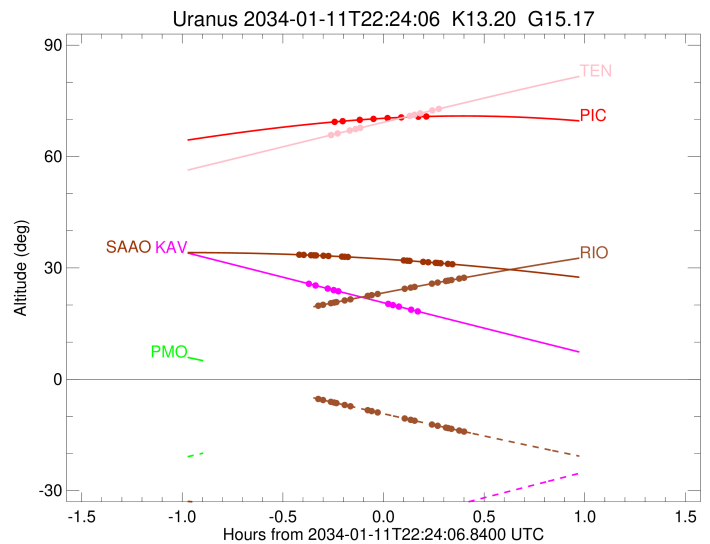
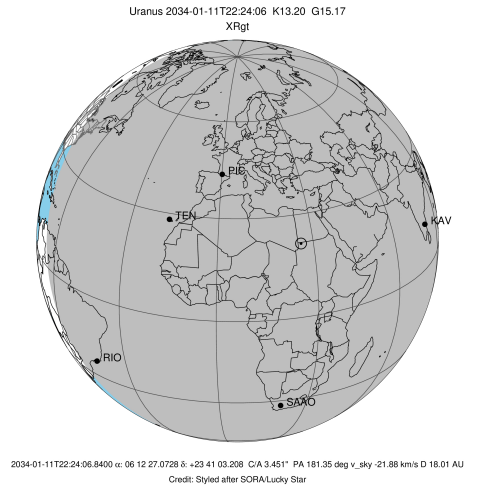
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-11T22:05:07.312		19.89	-5.40	50797.42	-13.16		
lambda	I	2034-01-11T22:06:06.456		20.07	-5.60	50026.71	-12.82		
delta	I	2034-01-11T22:08:26.863		20.49	-6.08	48300.35	-11.75		
gamma	I	2034-01-11T22:09:25.458		20.67	-6.28	47625.77	-11.27		
eta	I	2034-01-11T22:10:05.970		20.79	-6.42	47176.12	-10.93		
beta	I	2034-01-11T22:12:31.612		21.23	-6.92	45679.23	-9.61		
alpha	I	2034-01-11T22:14:17.883		21.55	-7.29	44713.53	-8.58		
4	I	2034-01-11T22:19:37.047		22.49	-8.37	42526.26	-5.05		
5	I	2034-01-11T22:20:29.272		22.64	-8.55	42275.43	-4.40		
6	I	2034-01-11T22:22:26.088		22.99	-8.95	41840.13	-3.03		

No planet occultations

6	E	2034-01-11T22:30:27.645		24.38	-10.57	41851.13	3.04		
5	E	2034-01-11T22:32:14.038		24.69	-10.93	42246.43	4.40		
4	E	2034-01-11T22:33:12.697		24.85	-11.13	42532.96	5.06		
alpha	E	2034-01-11T22:38:33.334		25.76	-12.20	44738.16	8.59		
beta	E	2034-01-11T22:40:16.796		26.05	-12.54	45679.54	9.63		
eta	E	2034-01-11T22:42:42.079		26.45	-13.02	47176.12	10.95		
gamma	E	2034-01-11T22:43:22.133		26.56	-13.15	47621.49	11.29		
delta	E	2034-01-11T22:44:20.987		26.73	-13.35	48300.35	11.78		
lambda	E	2034-01-11T22:46:41.080		27.11	-13.81	50026.71	12.85		
epsilon	E	2034-01-11T22:47:43.214		27.28	-14.01	50839.05	13.20		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-11T22:22:54.970
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : SAAO
Location            : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)      : -32.37953
E. Longitude (deg)  : 20.81070
Altitude (km)       : 1.768
Gaia source ID      : 3425422549560940416
2Mass ID (if available) : 06122707+2341033
ICRS Star Coord at Epoch: 06h 12m 27.07280s +23:41:03.20797s
RUWE (>1.4 is poor) : 1.88
K magnitude         : 13.200
G magnitude         : 15.170
RP magnitude        : 14.488
BP magnitude        : 15.670
DUPflag            : 0
Distance (au)       : 18.015
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -21.88
Sun-Target sep (deg) : 161.56
Sun-Moon sep (deg)  : 102.25
B (ring opening deg) : 72.86
PA of pole (deg)    : 63.10
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.048
C/A sky separation (km) : 39824.9
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
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-11T21:59:24.714		33.53	-35.04	50807.70	-14.02		
lambda	I	2034-01-11T22:00:20.857		33.50	-35.08	50026.71	-13.72		
delta	I	2034-01-11T22:02:31.100		33.42	-35.18	48300.35	-12.77		
gamma	I	2034-01-11T22:03:24.764		33.39	-35.22	47626.08	-12.35		
eta	I	2034-01-11T22:04:01.632		33.36	-35.25	47176.12	-12.05		
beta	I	2034-01-11T22:06:11.835		33.28	-35.34	45678.59	-10.94		
alpha	I	2034-01-11T22:07:43.953		33.21	-35.40	44710.98	-10.08		
4	I	2034-01-11T22:11:52.067		33.03	-35.55	42525.93	-7.48		
5	I	2034-01-11T22:12:25.057		33.00	-35.57	42283.83	-7.08		
6	I	2034-01-11T22:13:32.039		32.95	-35.61	41833.60	-6.36		

No planet occultations

6	E	2034-01-11T22:30:11.038		32.01	-36.01	41856.56	6.35		
5	E	2034-01-11T22:31:07.757		31.95	-36.03	42237.53	7.07		
4	E	2034-01-11T22:31:47.212		31.91	-36.03	42535.58	7.47		
alpha	E	2034-01-11T22:35:57.308		31.63	-36.08	44739.82	10.08		
beta	E	2034-01-11T22:37:26.864		31.52	-36.10	45679.08	10.93		
eta	E	2034-01-11T22:39:37.062		31.37	-36.11	47176.12	12.04		
gamma	E	2034-01-11T22:40:13.583		31.32	-36.11	47621.39	12.34		
delta	E	2034-01-11T22:41:07.677		31.26	-36.12	48300.35	12.76		
lambda	E	2034-01-11T22:43:18.053		31.09	-36.12	50026.71	13.71		
epsilon	E	2034-01-11T22:44:17.125		31.02	-36.13	50848.11	14.00		