

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2023-12-08T00:42:57.140
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 58621703681230208
 2Mass ID (if available) : 03093583+1722196

ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s

RUWE (>1.4 is poor) : 1.08
 K magnitude : 14.967
 G magnitude : 17.198
 RP magnitude : 16.415
 BP magnitude : 17.874
 DUPflag : 0
 Distance (au) : 18.724
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.53
 Sun-Target sep (deg) : 154.44
 Sun-Moon sep (deg) : 146.07
 B (ring opening deg) : 61.23
 PA of pole (deg) : -90.01

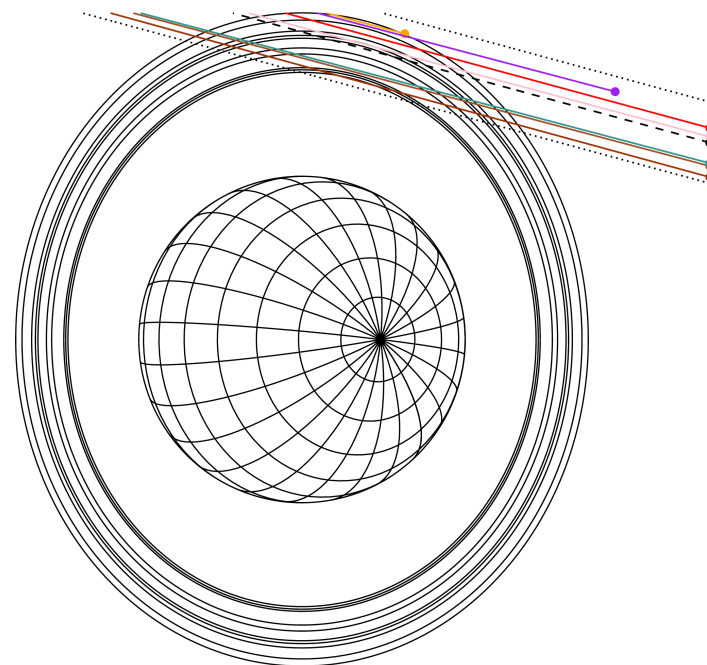
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2023-12-08T00:42:57.1400 ex: 03 09 35.8399 s: +17 22 19.725 C/A 3.425° PA 164.81 deg v_sky -20.53 km/s D 18.72 AU
 Credit: Styled after SORA/Lucky Star

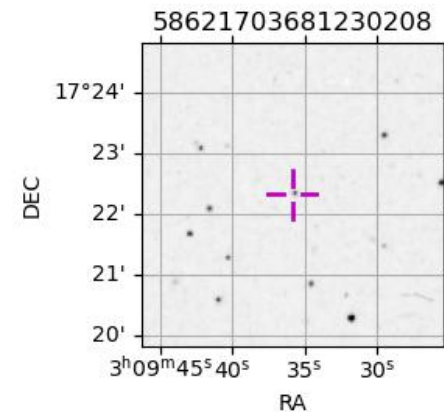
Earth
 PIC
 KPNO
 MCD
 TEN
 RIO
 ESO
 SAAO

Uranus 2023-12-08T00:42:57 K14.97 G17.20 XRgt



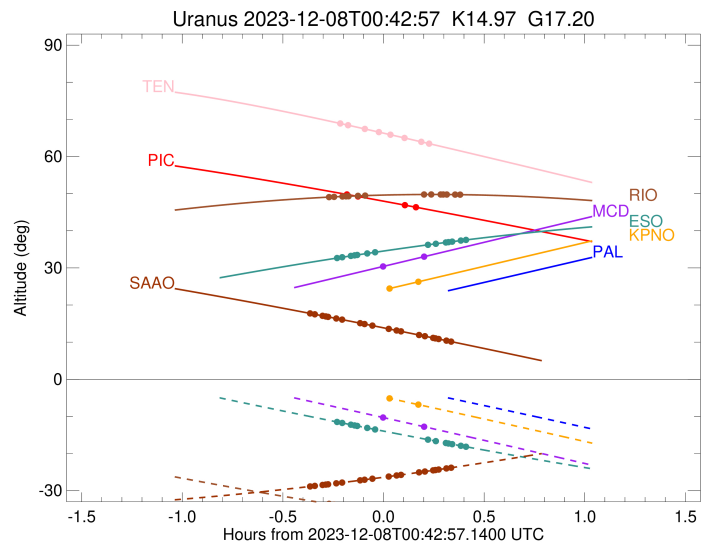
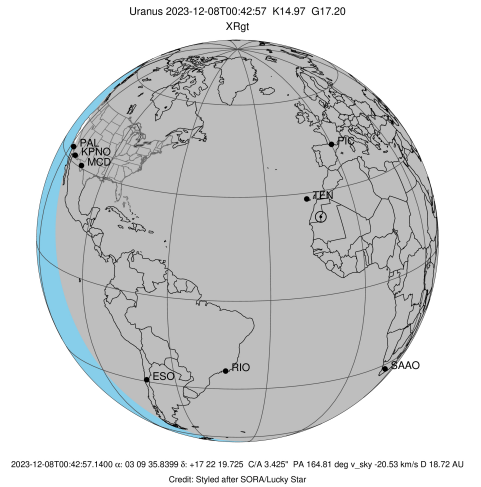
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	++		++	DEC 08 00:33 - DEC 08 00:51	PnnRie
PAL	Palomar Mt (200")	33.4	243.1	+			DEC 08 01:05 - DEC 08 01:05	PnnRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			+	DEC 08 01:43 - DEC 08 01:43	PnnRne
MCD	McDonald Obs. 2.7m	30.7	256.0	+		+	DEC 08 00:44 - DEC 08 00:52	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	++++		++++	DEC 08 00:30 - DEC 08 00:55	PnnRie
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	++++++		++++++	DEC 08 00:27 - DEC 08 01:05	PnnRie
ESO	European Southern Obs	-29.3	289.3	++++++		++++++	DEC 08 00:29 - DEC 08 01:07	PnnRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	++++++		++++++	DEC 08 00:21 - DEC 08 01:02	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2023-12-08T00:40:01.160
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      : 58621703681230208
2Mass ID (if available) : 03093583+1722196
ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 14.967
G magnitude          : 17.198
RP magnitude         : 16.415
BP magnitude         : 17.874
DUPflag             : 0
Distance (au)        : 18.724
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -20.53
Sun-Target sep (deg) : 154.44
Sun-Moon sep (deg)  : 146.89
B (ring opening deg) : 61.23
PA of pole (deg)    : -90.01
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.583
C/A sky separation (km) : 48650.8
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl.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
  
```



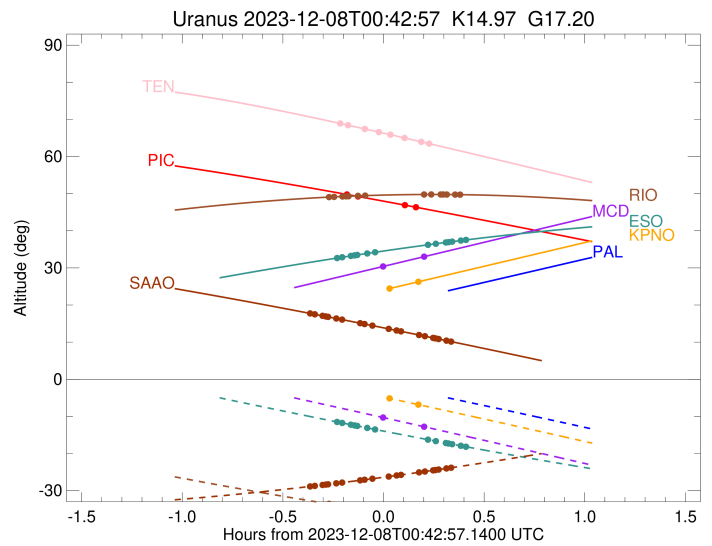
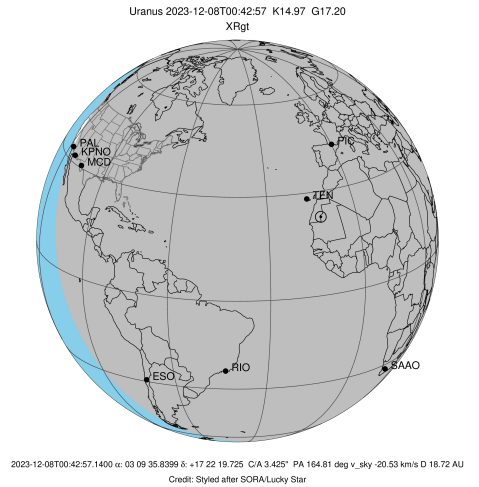
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2023-12-08T00:33:04.494	49.62	-68.10	50771.86	-6.01		
lambda	I	2023-12-08T00:35:23.753	49.23	-67.90	50026.71	-4.62		

No planet occultations

lambda	E	2023-12-08T00:49:16.619	46.91	-66.55	50026.71	4.62		
epsilon	E	2023-12-08T00:51:31.956	46.53	-66.31	50747.51	6.00		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2023-12-08T00:46:39.590
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 58621703681230208
 2Mass ID (if available) : 03093583+1722196
 ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
 RUWE (>1.4 is poor) : 1.08
 K magnitude : 14.967
 G magnitude : 17.198
 RP magnitude : 16.415
 BP magnitude : 17.874
 DUPflag : 0
 Distance (au) : 18.724
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.53
 Sun-Target sep (deg) : 154.44
 Sun-Moon sep (deg) : 145.74
 B (ring opening deg) : 61.23
 PA of pole (deg) : -90.01
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.733
 C/A sky separation (km) : 50688.2
 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

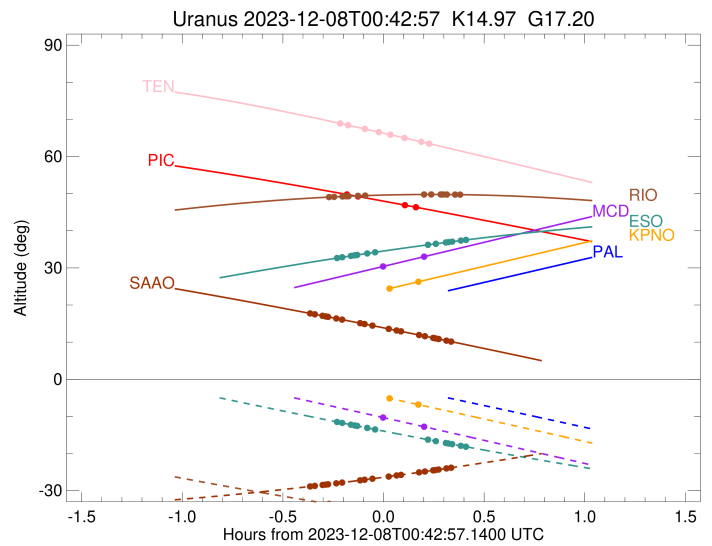
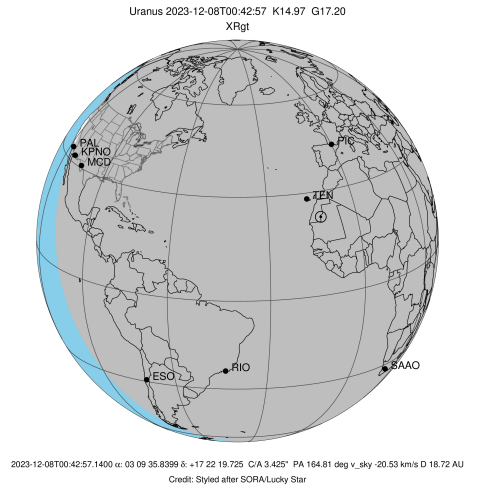


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2023-12-08T01:05:51.386		24.60	-5.71	51096.72	-0.34		

No planet occultations

epsilon	E	2023-12-08T00:37:25.409		18.68	-0.33x	51100.69	0.48		
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target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2023-12-08T00:46:41.210
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 58621703681230208
 2Mass ID (if available) : 03093583+1722196
 ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
 RUWE (>1.4 is poor) : 1.08
 K magnitude : 14.967
 G magnitude : 17.198
 RP magnitude : 16.415
 BP magnitude : 17.874
 DUPflag : 0
 Distance (au) : 18.724
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.53
 Sun-Target sep (deg) : 154.44
 Sun-Moon sep (deg) : 145.78
 B (ring opening deg) : 61.23
 PA of pole (deg) : -90.01
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.712
 C/A sky separation (km) : 50409.3
 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



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

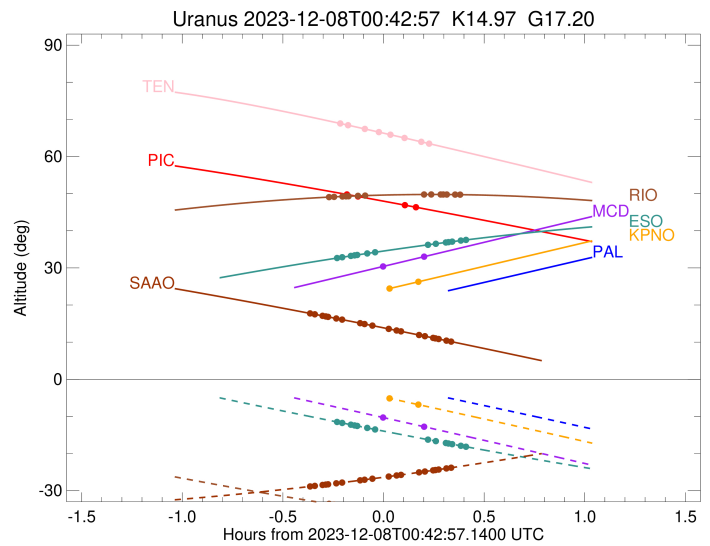
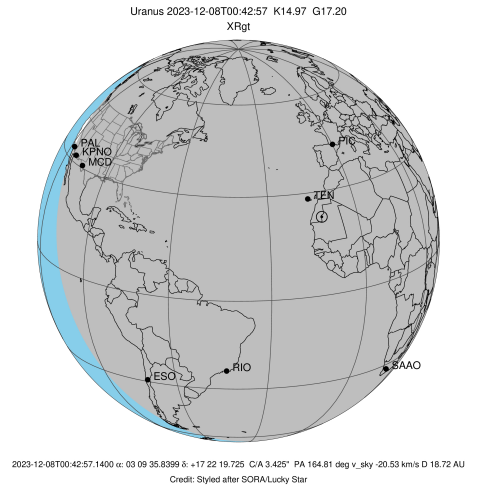
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2023-12-08T00:26:47.928		20.64	-1.68x	50808.62	0.05		

No planet occultations

epsilon	E	2023-12-08T01:43:12.939		36.88	-16.81	50808.67	-0.02		
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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2023-12-08T00:46:36.390
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : MCD
Location            : McDonald Obs. 2.7m
Latitude (deg)      : 30.67158
E. Longitude (deg)  : 255.97844
Altitude (km)       : 2.075
Gaia source ID      : 58621703681230208
2Mass ID (if available) : 03093583+1722196
ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 14.967
G magnitude          : 17.198
RP magnitude         : 16.415
BP magnitude         : 17.874
DUPflag             : 0
Distance (au)       : 18.724
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -20.53
Sun-Target sep (deg) : 154.44
Sun-Moon sep (deg)  : 145.84
B (ring opening deg) : 61.23
PA of pole (deg)    : -90.01
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.685
C/A sky separation (km) : 50041.9
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
  
```



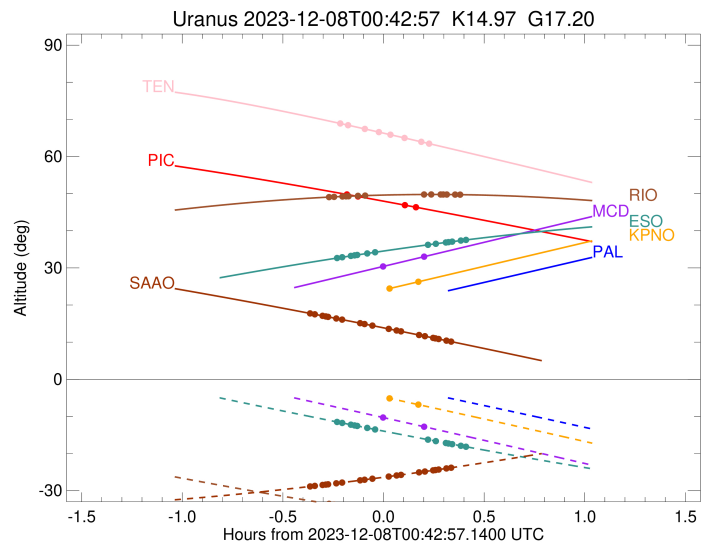
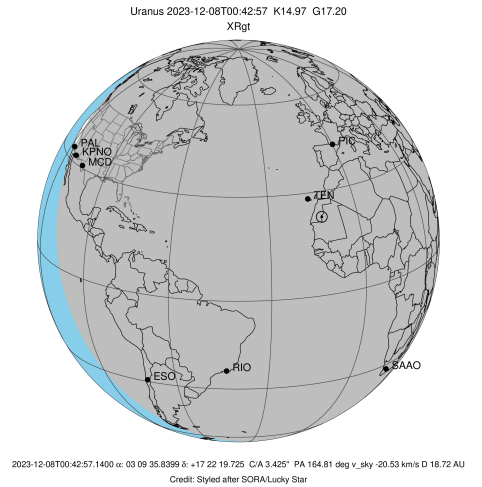
Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2023-12-08T00:44:55.102	30.84	-10.73	50755.65	-2.58		

No planet occultations

epsilon	E	2023-12-08T00:52:54.597	32.56	-12.35	50745.91	2.58		
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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2023-12-08T00:41:04.890
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      : 58621703681230208
2Mass ID (if available) : 03093583+1722196
ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
RUWE (>1.4 is poor) : 1.08
K magnitude         : 14.967
G magnitude         : 17.198
RP magnitude        : 16.415
BP magnitude        : 17.874
DUPflag            : 0
Distance (au)       : 18.724
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -20.53
Sun-Target sep (deg) : 154.44
Sun-Moon sep (deg)  : 146.83
B (ring opening deg) : 61.23
PA of pole (deg)    : -90.01
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.475
C/A sky separation (km) : 47190.9
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_itrfr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



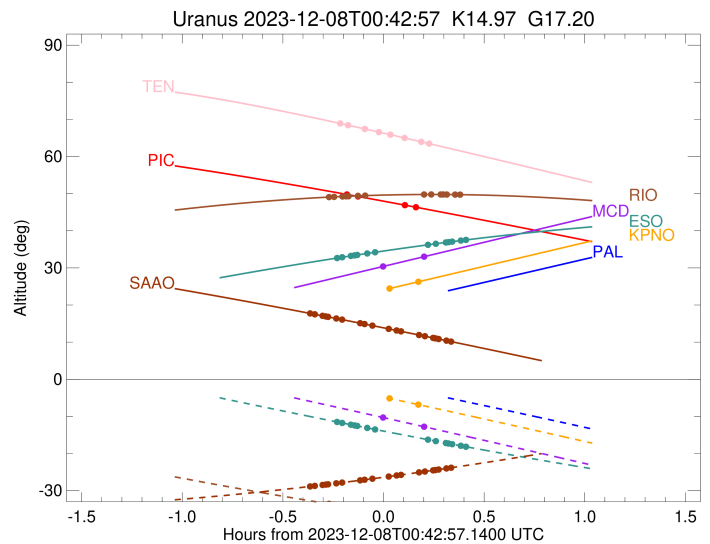
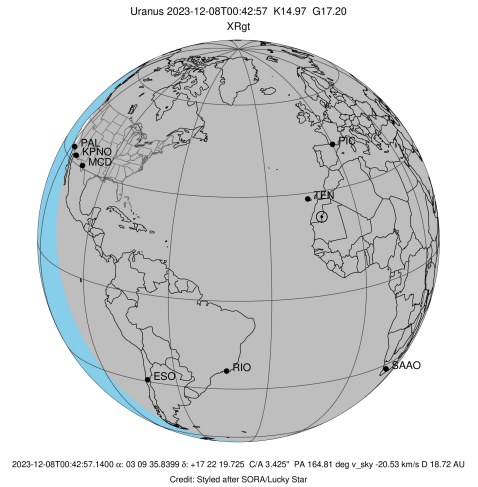
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2023-12-08T00:30:47.800	68.76	-81.85	50787.45	-8.20		
lambda	I	2023-12-08T00:32:25.298	68.43	-82.12	50026.71	-7.31		
delta	I	2023-12-08T00:37:26.946	67.42	-82.90	48300.35	-4.07		
gamma	I	2023-12-08T00:41:50.225	66.53	-83.48	47625.25	-1.03		

No planet occultations

gamma	E	2023-12-08T00:44:45.359	65.93	-83.82	47624.80	1.03		
delta	E	2023-12-08T00:49:09.140	65.02	-84.21	48300.35	4.07		
lambda	E	2023-12-08T00:54:10.960	63.97	-84.48	50026.71	7.31		
epsilon	E	2023-12-08T00:55:44.592	63.64	-84.52	50754.89	8.20		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2023-12-08T00:44:17.290
 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 : 58621703681230208
 2Mass ID (if available) : 03093583+1722196
 ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
 RUWE (>1.4 is poor) : 1.08
 K magnitude : 14.967
 G magnitude : 17.198
 RP magnitude : 16.415
 BP magnitude : 17.874
 DUPflag : 0
 Distance (au) : 18.724
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.53
 Sun-Target sep (deg) : 154.44
 Sun-Moon sep (deg) : 146.27
 B (ring opening deg) : 61.23
 PA of pole (deg) : -90.01
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.137
 C/A sky separation (km) : 42606.8
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

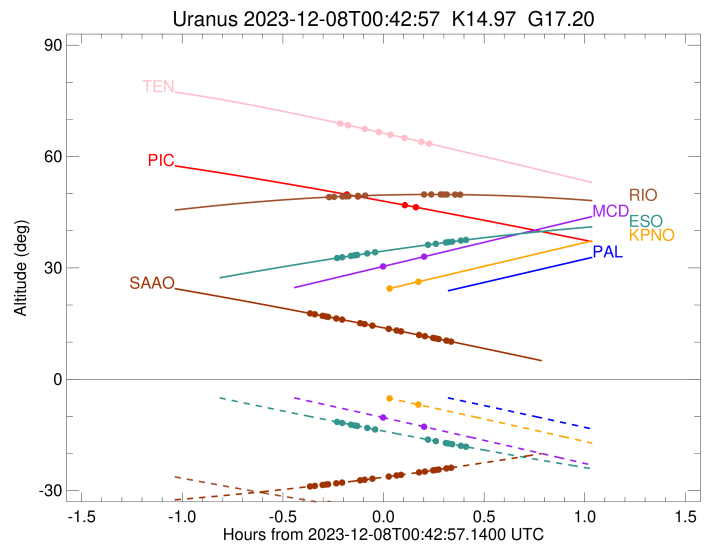
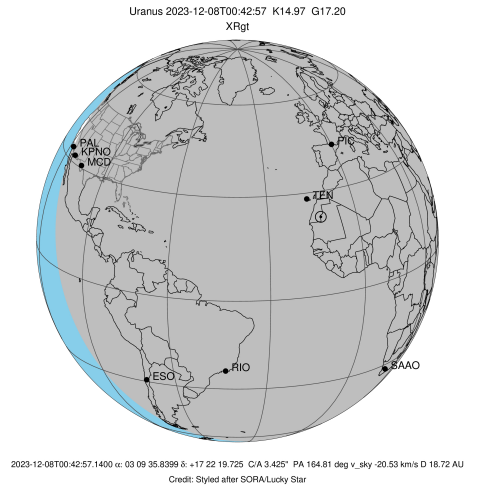


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2023-12-08T00:27:09.466		49.09	-33.62	50831.85	-12.58		
lambda	I	2023-12-08T00:28:14.297		49.14	-33.78	50026.71	-12.15		
delta	I	2023-12-08T00:30:44.270		49.24	-34.13	48300.35	-10.84		
gamma	I	2023-12-08T00:31:48.082		49.28	-34.28	47627.35	-10.24		
eta	I	2023-12-08T00:32:33.087		49.31	-34.39	47176.12	-9.81		
beta	I	2023-12-08T00:35:22.569		49.41	-34.78	45660.68	-8.05		
alpha	I	2023-12-08T00:37:27.529		49.48	-35.07	44741.84	-6.62		

No planet occultations

alpha	E	2023-12-08T00:55:01.678		49.78	-37.35	44725.00	6.63		
beta	E	2023-12-08T00:57:10.836		49.78	-37.61	45673.61	8.06		
eta	E	2023-12-08T00:59:58.709		49.78	-37.95	47176.12	9.81		
gamma	E	2023-12-08T01:00:43.273		49.77	-38.04	47622.90	10.24		
delta	E	2023-12-08T01:01:47.511		49.77	-38.16	48300.35	10.85		
lambda	E	2023-12-08T01:04:17.463		49.75	-38.45	50026.71	12.16		
epsilon	E	2023-12-08T01:05:18.437		49.74	-38.57	50783.13	12.58		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2023-12-08T00:46:20.500
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 58621703681230208
 2Mass ID (if available) : 03093583+1722196
 ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
 RUWE (>1.4 is poor) : 1.08
 K magnitude : 14.967
 G magnitude : 17.198
 RP magnitude : 16.415
 BP magnitude : 17.874
 DUPflag : 0
 Distance (au) : 18.724
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.53
 Sun-Target sep (deg) : 154.44
 Sun-Moon sep (deg) : 145.88
 B (ring opening deg) : 61.23
 PA of pole (deg) : -90.01
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.165
 C/A sky separation (km) : 42973.8
 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

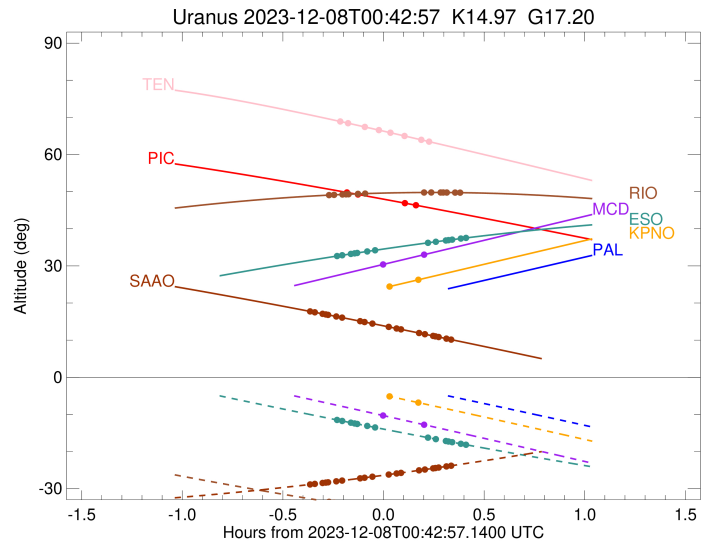
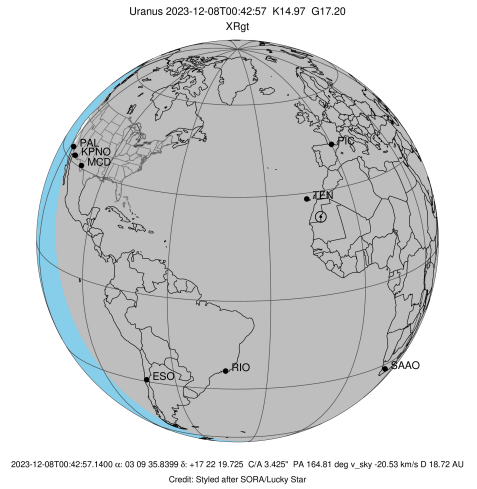
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2023-12-08T00:29:33.423		32.72	-11.58	50828.13	-12.24		
lambda	I	2023-12-08T00:30:39.798		32.87	-11.78	50026.71	-11.80		
delta	I	2023-12-08T00:33:14.883		33.23	-12.24	48300.35	-10.44		
gamma	I	2023-12-08T00:34:21.361		33.39	-12.44	47627.25	-9.81		
eta	I	2023-12-08T00:35:08.458		33.49	-12.58	47176.12	-9.35		
beta	I	2023-12-08T00:38:08.338		33.90	-13.11	45661.20	-7.47		
alpha	I	2023-12-08T00:40:25.766		34.21	-13.52	44741.03	-5.89		

No planet occultations

alpha	E	2023-12-08T00:56:11.515		36.22	-16.26	44725.98	5.90		
beta	E	2023-12-08T00:58:33.068		36.50	-16.66	45673.25	7.48		
eta	E	2023-12-08T01:01:31.178		36.85	-17.16	47176.12	9.36		
gamma	E	2023-12-08T01:02:17.787		36.94	-17.30	47622.97	9.82		
delta	E	2023-12-08T01:03:24.622		37.07	-17.48	48300.35	10.45		
lambda	E	2023-12-08T01:05:59.500		37.36	-17.92	50026.71	11.82		
epsilon	E	2023-12-08T01:07:01.962		37.48	-18.09	50781.04	12.26		


```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2023-12-08T00:40:05.250
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      : 58621703681230208
2Mass ID (if available) : 03093583+1722196
ICRS Star Coord at Epoch: 03h 09m 35.83986s +17:22:19.72533s
RUWE (>1.4 is poor) : 1.08
K magnitude          : 14.967
G magnitude          : 17.198
RP magnitude         : 16.415
BP magnitude         : 17.874
DUPflag             : 0
Distance (au)       : 18.724
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -20.53
Sun-Target sep (deg) : 154.44
Sun-Moon sep (deg)  : 146.59
B (ring opening deg) : 61.23
PA of pole (deg)    : -90.01
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.046
C/A sky separation (km) : 41358.0
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	2023-12-08T00:21:27.688		17.67	-28.83	50845.15	-13.34		
lambda	I	2023-12-08T00:22:29.619		17.49	-28.72	50026.71	-12.98		
delta	I	2023-12-08T00:24:48.544		17.09	-28.47	48300.35	-11.85		
gamma	I	2023-12-08T00:25:46.527		16.92	-28.37	47627.68	-11.34		
eta	I	2023-12-08T00:26:26.974		16.80	-28.30	47176.12	-10.98		
beta	I	2023-12-08T00:28:54.497		16.37	-28.03	45659.09	-9.57		
alpha	I	2023-12-08T00:30:35.686		16.07	-27.84	44744.03	-8.49		
4	I	2023-12-08T00:35:57.058		15.12	-27.23	42600.80	-4.75		
5	I	2023-12-08T00:37:46.832		14.79	-27.01	42157.50	-3.40		
6	I	2023-12-08T00:39:29.564		14.48	-26.81	41876.58	-2.05		

No planet occultations

6	E	2023-12-08T00:44:39.672		13.55	-26.19	41873.19	2.05		
5	E	2023-12-08T00:46:26.995		13.22	-25.97	42166.61	3.40		
4	E	2023-12-08T00:48:09.777		12.91	-25.76	42584.80	4.75		
alpha	E	2023-12-08T00:53:31.852		11.92	-25.08	44722.34	8.48		
beta	E	2023-12-08T00:55:17.480		11.60	-24.86	45674.62	9.55		
eta	E	2023-12-08T00:57:43.709		11.15	-24.54	47176.12	10.96		
gamma	E	2023-12-08T00:58:23.812		11.02	-24.45	47622.70	11.32		
delta	E	2023-12-08T00:59:22.381		10.84	-24.33	48300.35	11.82		
lambda	E	2023-12-08T01:01:41.689		10.41	-24.02	50026.71	12.94		
epsilon	E	2023-12-08T01:02:39.677		10.23	-23.89	50789.86	13.30		