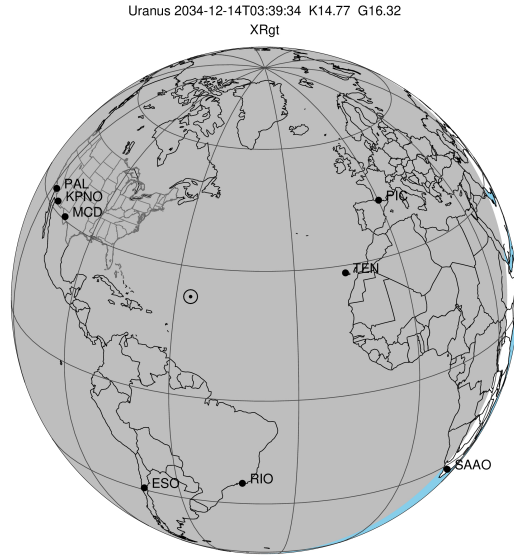


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T03:39:34.280
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3382409276725653632
 2Mass ID (if available) : 06380287+2328518

ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s

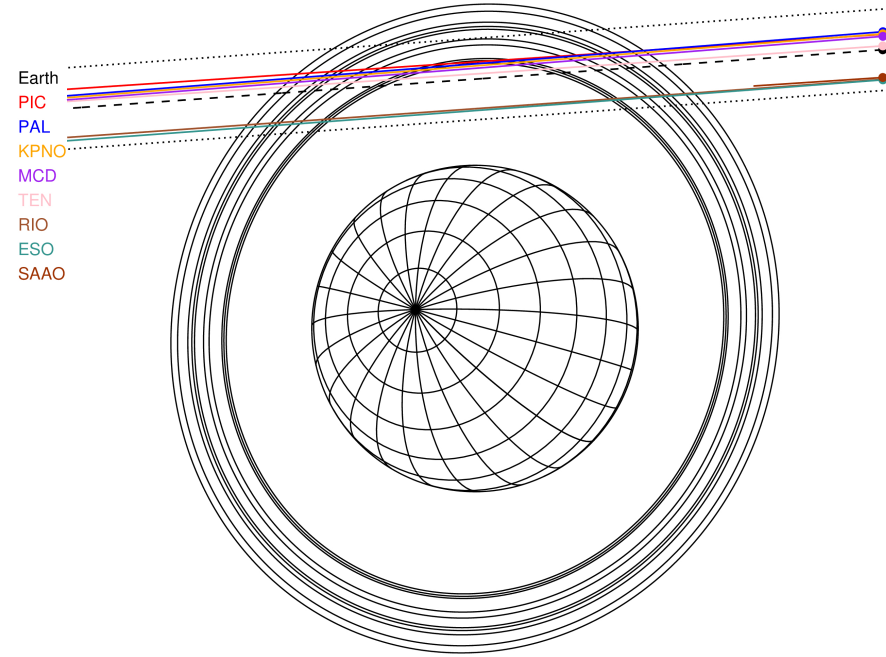
RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.766
 G magnitude : 16.318
 RP magnitude : 15.775
 BP magnitude : 16.673
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.08
 Sun-Target sep (deg) : 163.00
 Sun-Moon sep (deg) : 160.10
 B (ring opening deg) : 67.50
 PA of pole (deg) : 72.36

#	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



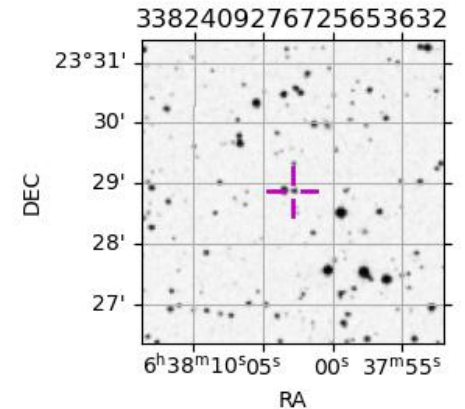
2034-12-14T03:39:34.2800 ra: 06 38 02.8760 s: +23 28 51.745 C/A 3.0011 PA 184.12 deg v_sky -22.08 km/s D 17.95 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2034-12-14T03:39:34 K14.77 G16.32 XRgt

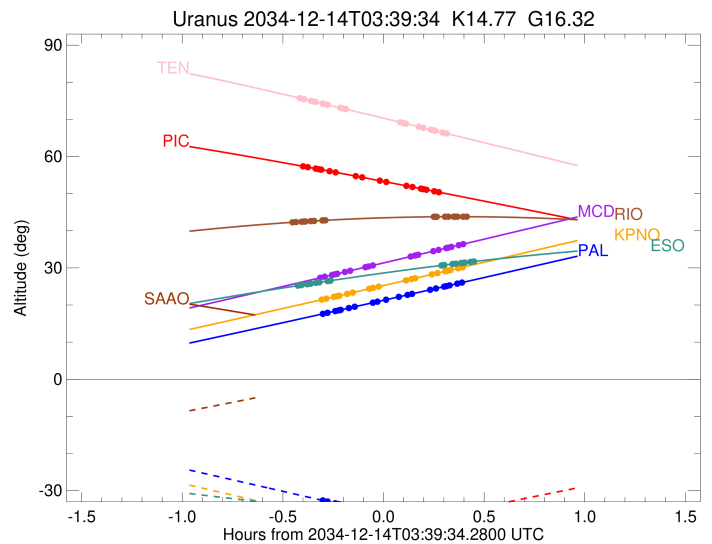
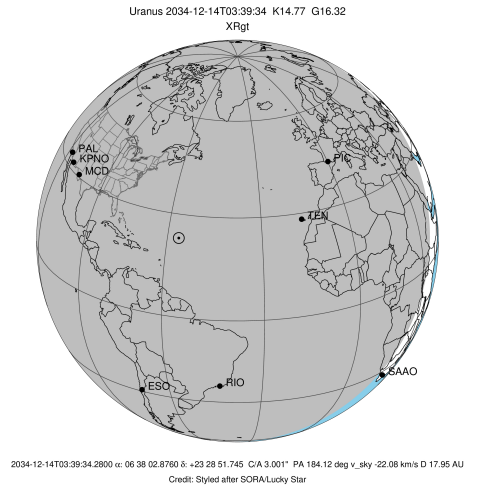


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	DEC 14 03:15 - DEC 14 03:55	PnnRie
PAL	Palomar Mt (200")	33.4	243.1	+++++		+++++	DEC 14 03:21 - DEC 14 04:02	PnnRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	DEC 14 03:20 - DEC 14 04:02	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	DEC 14 03:20 - DEC 14 04:03	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++		+++++	DEC 14 03:14 - DEC 14 03:58	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 14 03:12 - DEC 14 04:04	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	DEC 14 03:13 - DEC 14 04:06	PnnRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T03:37:25.910
 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 : 3382409276725653632
 2Mass ID (if available) : 06380287+2328518
 ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.766
 G magnitude : 16.318
 RP magnitude : 15.775
 BP magnitude : 16.673
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.08
 Sun-Target sep (deg) : 163.00
 Sun-Moon sep (deg) : 160.06
 B (ring opening deg) : 67.50
 PA of pole (deg) : 72.36
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.199
 C/A sky separation (km) : 41648.4
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

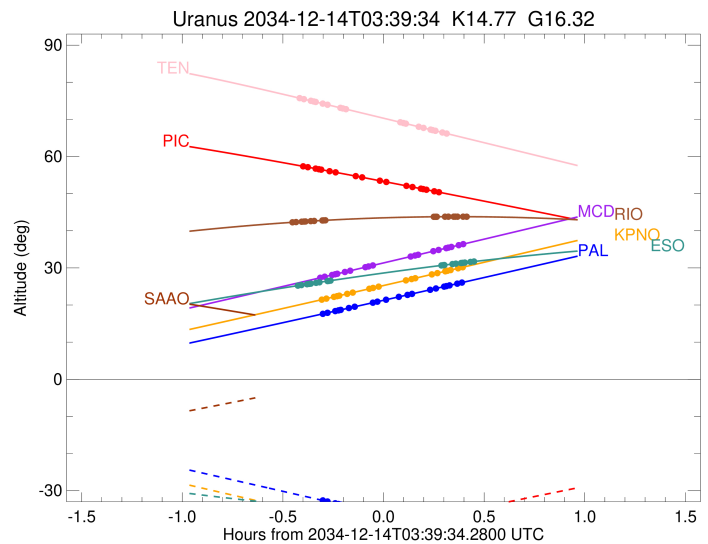
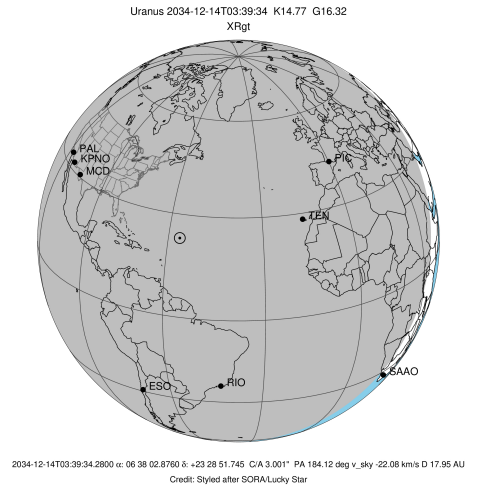


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-14T03:15:19.331		57.41	-44.27	51401.12	-13.64		
lambda	I	2034-12-14T03:17:02.121		57.13	-43.96	50026.71	-12.96		
delta	I	2034-12-14T03:19:21.616		56.74	-43.54	48300.35	-11.77		
gamma	I	2034-12-14T03:20:20.560		56.58	-43.36	47622.69	-11.22		
eta	I	2034-12-14T03:21:01.047		56.46	-43.24	47176.12	-10.84		
beta	I	2034-12-14T03:23:29.213		56.05	-42.79	45680.72	-9.32		
alpha	I	2034-12-14T03:25:21.026		55.73	-42.45	44706.15	-8.11		
4	I	2034-12-14T03:31:12.375		54.74	-41.38	42607.55	-3.74		
5	I	2034-12-14T03:33:38.304		54.32	-40.93	42204.75	-1.84		

No planet occultations

5	E	2034-12-14T03:38:08.648		53.54	-40.11	42216.44	1.84		
4	E	2034-12-14T03:40:27.004		53.14	-39.69	42597.43	3.74		
alpha	E	2034-12-14T03:46:23.927		52.10	-38.60	44729.06	8.10		
beta	E	2034-12-14T03:48:12.269		51.79	-38.27	45671.59	9.32		
eta	E	2034-12-14T03:50:41.444		51.35	-37.81	47176.12	10.82		
gamma	E	2034-12-14T03:51:22.406		51.23	-37.69	47627.50	11.21		
delta	E	2034-12-14T03:52:20.993		51.06	-37.51	48300.35	11.75		
lambda	E	2034-12-14T03:54:40.674		50.64	-37.08	50026.71	12.95		
epsilon	E	2034-12-14T03:55:49.775		50.44	-36.87	50940.24	13.62		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T03:43:51.570
 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 : 3382409276725653632
 2Mass ID (if available) : 06380287+2328518
 ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.766
 G magnitude : 16.318
 RP magnitude : 15.775
 BP magnitude : 16.673
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.08
 Sun-Target sep (deg) : 163.00
 Sun-Moon sep (deg) : 160.99
 B (ring opening deg) : 67.50
 PA of pole (deg) : 72.36
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.174
 C/A sky separation (km) : 41313.0
 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



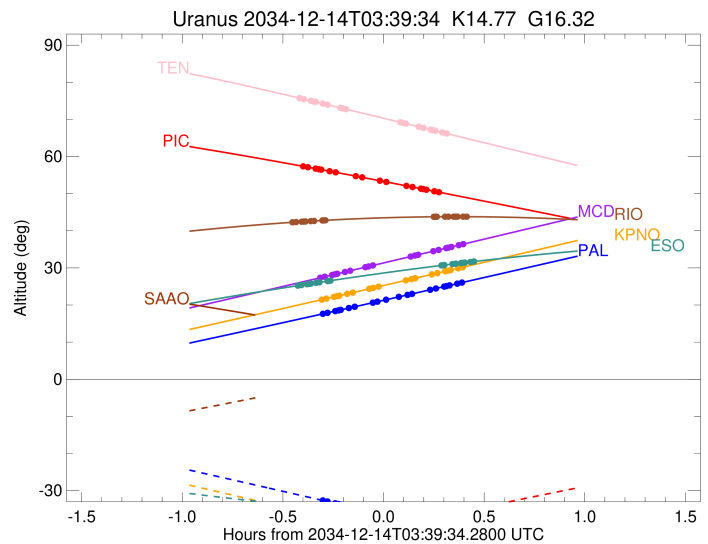
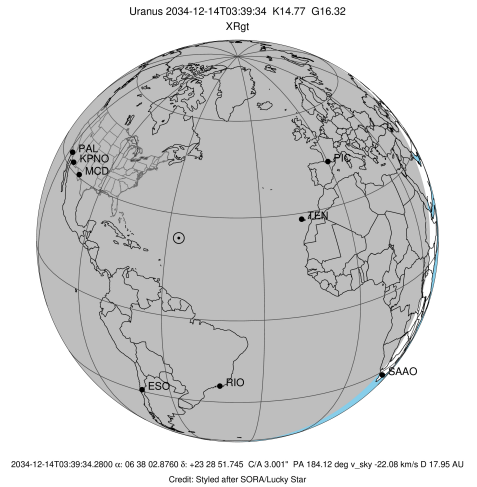
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-14T03:21:11.871		17.56	-32.59	51401.21	-13.70		
lambda	I	2034-12-14T03:22:54.115		17.91	-32.94	50026.71	-13.05		
delta	I	2034-12-14T03:25:12.290		18.37	-33.42	48300.35	-11.91		
gamma	I	2034-12-14T03:26:10.422		18.56	-33.62	47622.67	-11.40		
eta	I	2034-12-14T03:26:50.239		18.70	-33.76	47176.12	-11.03		
beta	I	2034-12-14T03:29:14.970		19.18	-34.26	45680.76	-9.61		
alpha	I	2034-12-14T03:31:02.763		19.55	-34.63	44705.83	-8.48		
4	I	2034-12-14T03:36:19.434		20.61	-35.73	42608.38	-4.68		
5	I	2034-12-14T03:38:00.922		20.96	-36.08	42200.52	-3.42		
6	I	2034-12-14T03:40:24.922		21.44	-36.58	41852.08	-1.44		

No planet occultations

6	E	2034-12-14T03:43:58.796	22.17	-37.32	41847.15	1.44
5	E	2034-12-14T03:46:32.644	22.69	-37.85	42222.55	3.42
4	E	2034-12-14T03:48:06.334	23.01	-38.18	42595.47	4.69
alpha	E	2034-12-14T03:53:28.008	24.10	-39.30	44730.04	8.49
beta	E	2034-12-14T03:55:11.976	24.45	-39.66	45671.11	9.63
eta	E	2034-12-14T03:57:37.256	24.95	-40.16	47176.12	11.06
gamma	E	2034-12-14T03:58:17.406	25.09	-40.30	47627.62	11.43
delta	E	2034-12-14T03:59:14.952	25.28	-40.50	48300.35	11.95
lambda	E	2034-12-14T04:01:32.727	25.75	-40.98	50026.71	13.09
epsilon	E	2034-12-14T04:02:40.573	25.99	-41.22	50932.98	13.75

```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2034-12-14T03:43:48.100
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         : 3382409276725653632
2Mass ID (if available) : 06380287+2328518
ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s
RUWE (>1.4 is poor)  : 1.11
K magnitude             : 14.766
G magnitude            : 16.318
RP magnitude           : 15.775
BP magnitude           : 16.673
DUPflag                : 0
Distance (au)          : 17.948
f0 (km)                : 0.000
g0 (km)                : 0.000
skyplane vel. (km/s)   : -22.08
Sun-Target sep (deg)   : 163.00
Sun-Moon sep (deg)     : 161.00
B (ring opening deg)   : 67.50
PA of pole (deg)       : 72.36
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (")  : 3.150
C/A sky separation (km) : 41000.0
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
    
```

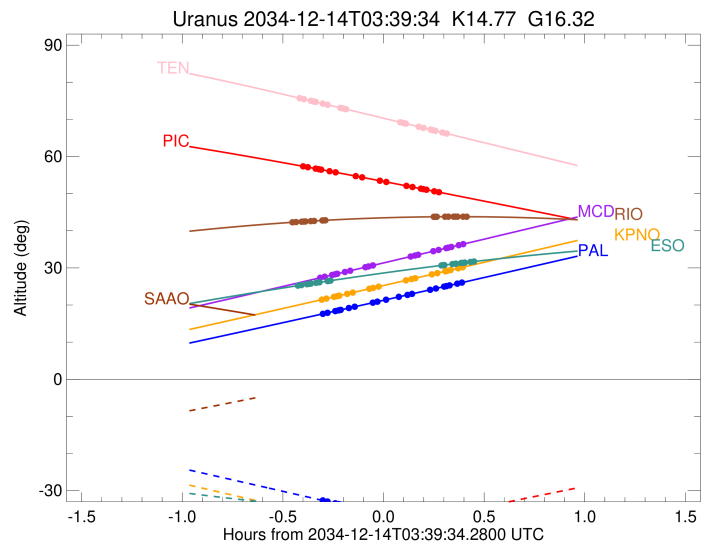
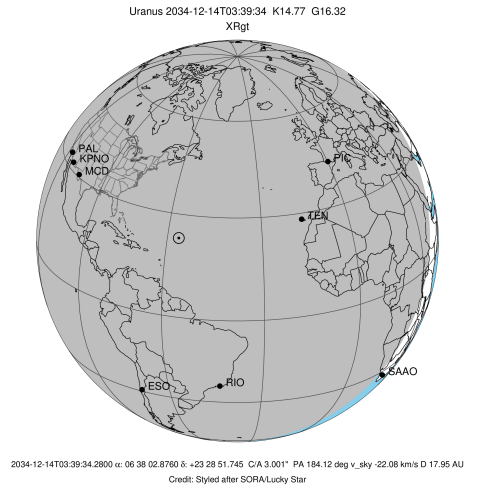


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-14T03:20:52.838		21.38	-36.75	51404.62	-13.93		
lambda	I	2034-12-14T03:22:33.565		21.73	-37.10	50026.71	-13.30		
delta	I	2034-12-14T03:24:48.869		22.19	-37.58	48300.35	-12.20		
gamma	I	2034-12-14T03:25:45.580		22.39	-37.78	47622.62	-11.70		
eta	I	2034-12-14T03:26:24.322		22.52	-37.91	47176.12	-11.35		
beta	I	2034-12-14T03:28:44.339		23.00	-38.41	45680.83	-9.99		
alpha	I	2034-12-14T03:30:27.516		23.36	-38.77	44705.22	-8.92		
4	I	2034-12-14T03:35:16.759		24.36	-39.79	42609.27	-5.49		
5	I	2034-12-14T03:36:39.838		24.65	-40.08	42197.28	-4.48		
6	I	2034-12-14T03:38:08.603		24.95	-40.40	41855.09	-3.26		

No planet occultations

6	E	2034-12-14T03:46:10.008		26.62	-42.10	41843.97	3.26		
5	E	2034-12-14T03:47:48.604		26.96	-42.44	42226.12	4.49		
4	E	2034-12-14T03:49:03.888		27.22	-42.71	42594.13	5.50		
alpha	E	2034-12-14T03:53:58.131		28.25	-43.75	44730.65	8.94		
beta	E	2034-12-14T03:55:37.491		28.59	-44.10	45670.82	10.01		
eta	E	2034-12-14T03:57:58.060		29.08	-44.60	47176.12	11.38		
gamma	E	2034-12-14T03:58:37.137		29.22	-44.74	47627.69	11.73		
delta	E	2034-12-14T03:59:33.265		29.41	-44.94	48300.35	12.23		
lambda	E	2034-12-14T04:01:48.174		29.89	-45.41	50026.71	13.34		
epsilon	E	2034-12-14T04:02:54.564		30.12	-45.65	50929.41	13.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T03:43:37.420
 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 : 3382409276725653632
 2Mass ID (if available) : 06380287+2328518
 ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.766
 G magnitude : 16.318
 RP magnitude : 15.775
 BP magnitude : 16.673
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.08
 Sun-Target sep (deg) : 163.00
 Sun-Moon sep (deg) : 160.99
 B (ring opening deg) : 67.50
 PA of pole (deg) : 72.36
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.121
 C/A sky separation (km) : 40625.9
 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

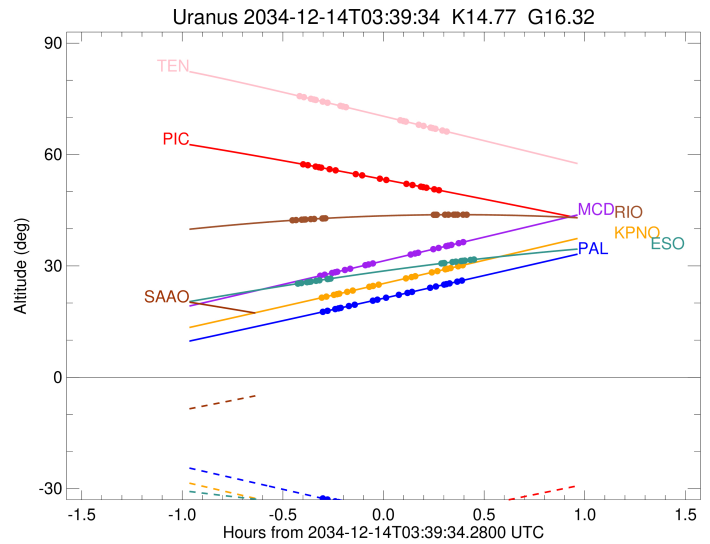
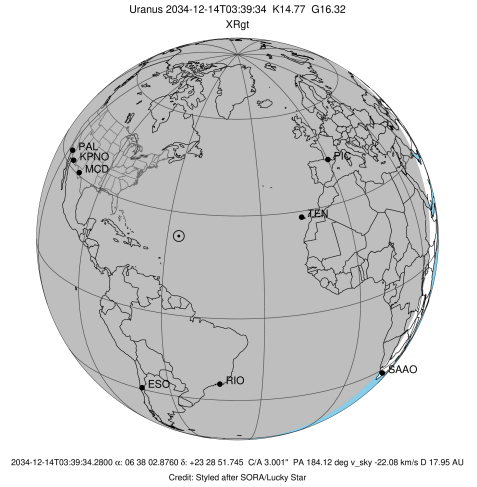


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-14T03:20:24.669		27.28	-42.98	51408.67	-14.20		
lambda	I	2034-12-14T03:22:03.646		27.63	-43.33	50026.71	-13.59		
delta	I	2034-12-14T03:24:15.695		28.09	-43.81	48300.35	-12.53		
gamma	I	2034-12-14T03:25:10.816		28.29	-44.00	47622.56	-12.06		
eta	I	2034-12-14T03:25:48.368		28.42	-44.14	47176.12	-11.72		
beta	I	2034-12-14T03:28:03.267		28.90	-44.62	45680.90	-10.43		
alpha	I	2034-12-14T03:29:41.611		29.24	-44.97	44704.53	-9.42		
4	I	2034-12-14T03:34:06.272		30.18	-45.92	42610.13	-6.33		
5	I	2034-12-14T03:35:16.926		30.43	-46.18	42194.26	-5.49		
6	I	2034-12-14T03:36:24.194		30.66	-46.42	41857.20	-4.56		

No planet occultations

6	E	2034-12-14T03:47:35.389		33.04	-48.82	41841.66	4.56		
5	E	2034-12-14T03:48:52.466		33.32	-49.10	42229.51	5.50		
4	E	2034-12-14T03:49:55.335		33.54	-49.33	42592.73	6.34		
alpha	E	2034-12-14T03:54:25.003		34.50	-50.29	44731.33	9.44		
beta	E	2034-12-14T03:55:59.545		34.83	-50.63	45670.49	10.45		
eta	E	2034-12-14T03:58:15.009		35.32	-51.12	47176.12	11.75		
gamma	E	2034-12-14T03:58:52.898		35.45	-51.26	47627.77	12.09		
delta	E	2034-12-14T03:59:47.444		35.65	-51.45	48300.35	12.57		
lambda	E	2034-12-14T04:01:59.115		36.11	-51.92	50026.71	13.64		
epsilon	E	2034-12-14T04:03:03.848		36.35	-52.16	50925.31	14.25		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T03:37:59.200
 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 : 3382409276725653632
 2Mass ID (if available) : 06380287+2328518
 ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.766
 G magnitude : 16.318
 RP magnitude : 15.775
 BP magnitude : 16.673
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.08
 Sun-Target sep (deg) : 163.00
 Sun-Moon sep (deg) : 160.15
 B (ring opening deg) : 67.50
 PA of pole (deg) : 72.36
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.055
 C/A sky separation (km) : 39770.2
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

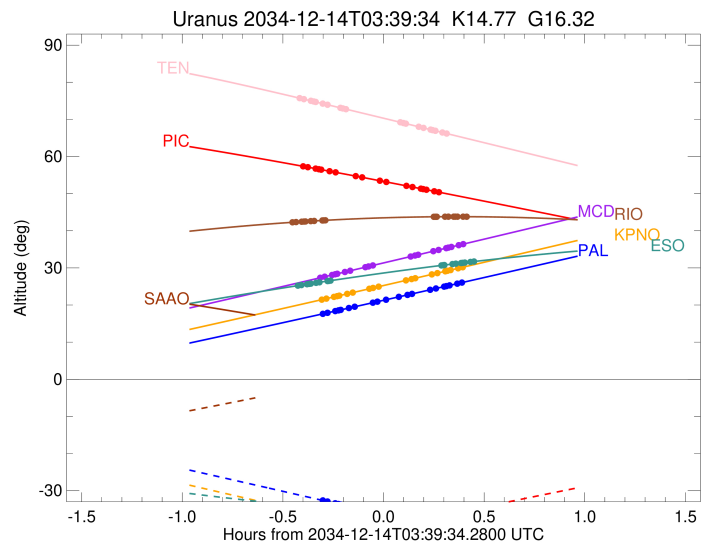
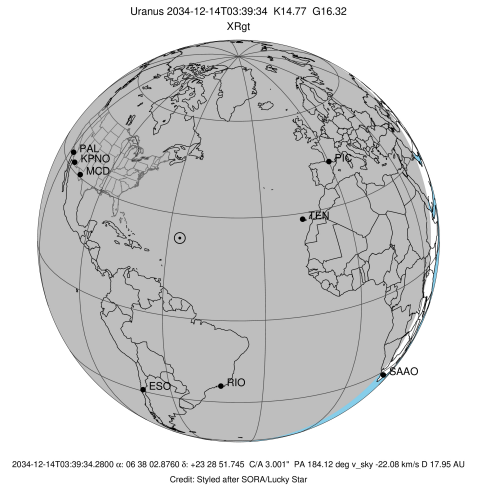


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-14T03:14:17.095		75.79	-59.54	51420.21	-14.92		
lambda	I	2034-12-14T03:15:51.935		75.45	-59.19	50026.71	-14.35		
delta	I	2034-12-14T03:17:56.455		75.01	-58.73	48300.35	-13.36		
gamma	I	2034-12-14T03:18:48.026		74.82	-58.54	47622.39	-12.93		
eta	I	2034-12-14T03:19:22.967		74.70	-58.42	47176.12	-12.62		
beta	I	2034-12-14T03:21:27.102		74.25	-57.96	45681.06	-11.45		
alpha	I	2034-12-14T03:22:55.922		73.94	-57.63	44702.81	-10.56		
4	I	2034-12-14T03:26:40.557		73.13	-56.81	42611.84	-8.00		
5	I	2034-12-14T03:27:35.818		72.93	-56.61	42188.41	-7.36		
6	I	2034-12-14T03:28:22.462		72.76	-56.43	41860.80	-6.71		

No planet occultations

6	E	2034-12-14T03:44:30.782		69.24	-52.88	41838.23	6.71		
5	E	2034-12-14T03:45:27.209		69.04	-52.67	42235.03	7.36		
4	E	2034-12-14T03:46:14.856		68.86	-52.50	42590.29	7.99		
alpha	E	2034-12-14T03:50:04.980		68.02	-51.65	44732.52	10.56		
beta	E	2034-12-14T03:51:30.304		67.71	-51.34	45669.89	11.44		
eta	E	2034-12-14T03:53:35.398		67.25	-50.88	47176.12	12.61		
gamma	E	2034-12-14T03:54:10.797		67.12	-50.75	47627.91	12.92		
delta	E	2034-12-14T03:55:01.990		66.93	-50.56	48300.35	13.35		
lambda	E	2034-12-14T03:57:06.634		66.48	-50.10	50026.71	14.33		
epsilon	E	2034-12-14T03:58:07.917		66.25	-49.88	50918.80	14.90		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T03:39:42.650
 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 : 3382409276725653632
 2Mass ID (if available) : 06380287+2328518
 ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.766
 G magnitude : 16.318
 RP magnitude : 15.775
 BP magnitude : 16.673
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.08
 Sun-Target sep (deg) : 163.00
 Sun-Moon sep (deg) : 160.20
 B (ring opening deg) : 67.50
 PA of pole (deg) : 72.36
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.638
 C/A sky separation (km) : 34333.6
 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

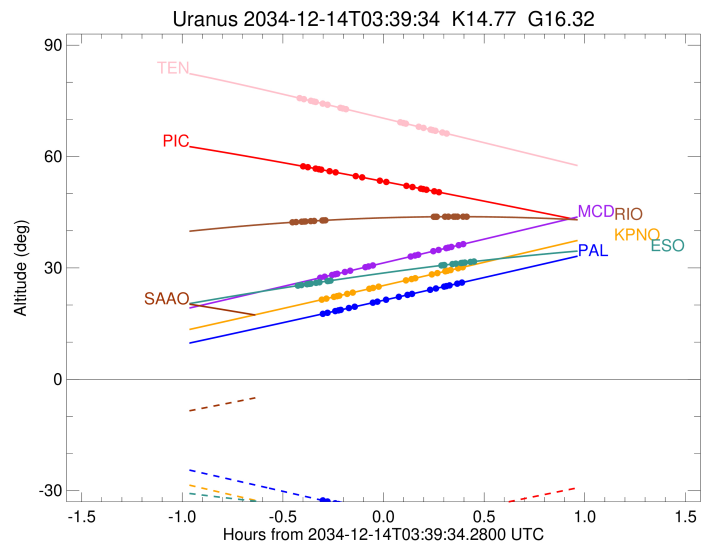
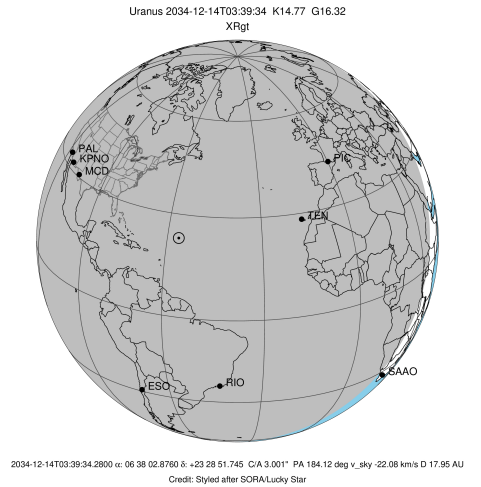


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-14T03:12:08.938		42.26	-43.65	51463.61	-17.73		
lambda	I	2034-12-14T03:13:30.613		42.35	-43.60	50026.71	-17.37		
delta	I	2034-12-14T03:15:11.697		42.45	-43.55	48300.35	-16.77		
gamma	I	2034-12-14T03:15:52.459		42.48	-43.52	47621.79	-16.52		
eta	I	2034-12-14T03:16:19.588		42.51	-43.51	47176.12	-16.34		
beta	I	2034-12-14T03:17:52.940		42.60	-43.45	45681.17	-15.69		
alpha	I	2034-12-14T03:18:56.571		42.65	-43.41	44696.50	-15.21		
4	I	2034-12-14T03:21:18.898		42.78	-43.31	42615.81	-13.99		
5	I	2034-12-14T03:21:50.917		42.80	-43.28	42171.61	-13.73		
6	I	2034-12-14T03:22:12.983		42.82	-43.27	41870.40	-13.48		

No planet occultations

6	E	2034-12-14T03:54:30.855		43.77	-41.23	41825.10	13.48		
5	E	2034-12-14T03:55:02.653		43.77	-41.18	42258.54	13.73		
4	E	2034-12-14T03:55:26.836		43.78	-41.15	42578.04	14.00		
alpha	E	2034-12-14T03:57:54.475		43.79	-40.95	44739.22	15.22		
beta	E	2034-12-14T03:58:54.489		43.79	-40.86	45665.82	15.69		
eta	E	2034-12-14T04:00:28.672		43.80	-40.72	47176.12	16.35		
gamma	E	2034-12-14T04:00:56.214		43.80	-40.68	47628.83	16.53		
delta	E	2034-12-14T04:01:36.529		43.80	-40.62	48300.35	16.78		
lambda	E	2034-12-14T04:03:17.560		43.80	-40.47	50026.71	17.38		
epsilon	E	2034-12-14T04:04:05.615		43.79	-40.40	50868.30	17.74		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T03:41:37.390
 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 : 3382409276725653632
 2Mass ID (if available) : 06380287+2328518
 ICRS Star Coord at Epoch: 06h 38m 02.87602s +23:28:51.74463s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.766
 G magnitude : 16.318
 RP magnitude : 15.775
 BP magnitude : 16.673
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.08
 Sun-Target sep (deg) : 163.00
 Sun-Moon sep (deg) : 160.44
 B (ring opening deg) : 67.50
 PA of pole (deg) : 72.36
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.614
 C/A sky separation (km) : 34027.0
 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	2034-12-14T03:13:45.358		25.18	-33.97	51464.86	-17.77		
lambda	I	2034-12-14T03:15:06.861		25.38	-34.08	50026.71	-17.43		
delta	I	2034-12-14T03:16:47.542		25.61	-34.22	48300.35	-16.85		
gamma	I	2034-12-14T03:17:28.104		25.70	-34.28	47621.77	-16.60		
eta	I	2034-12-14T03:17:55.085		25.77	-34.32	47176.12	-16.43		
beta	I	2034-12-14T03:19:27.839		25.98	-34.44	45681.16	-15.80		
alpha	I	2034-12-14T03:20:30.978		26.13	-34.53	44696.30	-15.34		
4	I	2034-12-14T03:22:51.807		26.45	-34.71	42615.88	-14.17		
5	I	2034-12-14T03:23:23.450		26.52	-34.76	42171.15	-13.91		
6	I	2034-12-14T03:23:45.154		26.57	-34.78	41870.66	-13.68		

No planet occultations

6	E	2034-12-14T03:56:47.240		30.66	-36.80	41824.45	13.70		
5	E	2034-12-14T03:57:18.688		30.72	-36.82	42259.75	13.94		
4	E	2034-12-14T03:57:42.412		30.76	-36.84	42577.35	14.19		
alpha	E	2034-12-14T04:00:08.392		31.03	-36.94	44739.59	15.37		
beta	E	2034-12-14T04:01:07.804		31.14	-36.98	45665.56	15.83		
eta	E	2034-12-14T04:02:41.256		31.31	-37.04	47176.12	16.46		
gamma	E	2034-12-14T04:03:08.609		31.36	-37.06	47628.89	16.64		
delta	E	2034-12-14T04:03:48.657		31.43	-37.08	48300.35	16.89		
lambda	E	2034-12-14T04:05:29.112		31.61	-37.14	50026.71	17.47		
epsilon	E	2034-12-14T04:06:16.745		31.69	-37.17	50865.03	17.82		