

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-11T07:17:55.340
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3380123662631101184
 2Mass ID (if available) : 06585141+2308054

ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s

RUWE (>1.4 is poor) : 0.91
 K magnitude : 14.866
 G magnitude : 17.680
 RP magnitude : 16.839
 BP magnitude : 18.440
 DUPflag : 0
 Distance (au) : 17.933
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.56
 Sun-Target sep (deg) : 155.05
 Sun-Moon sep (deg) : 75.76
 B (ring opening deg) : 62.97
 PA of pole (deg) : 77.81

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

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

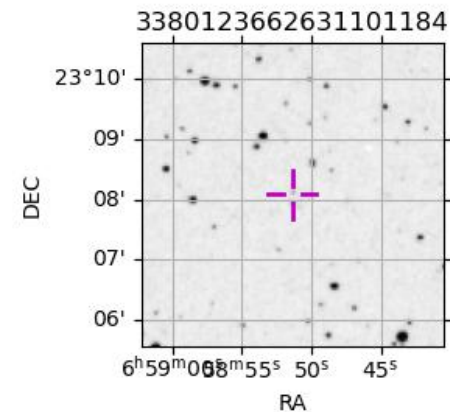
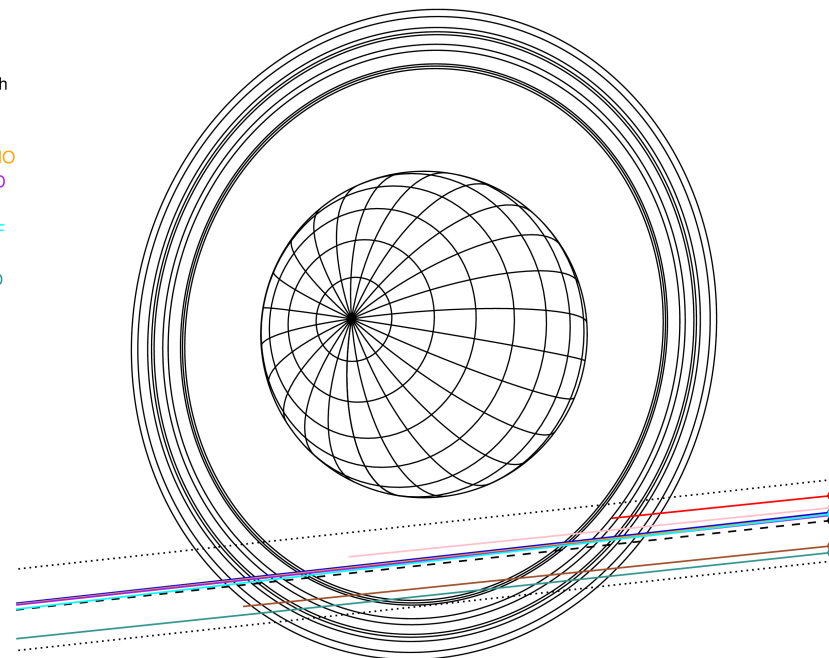
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++			DEC 11 06:47 - DEC 11 06:52	PnnRin
PAL	Palomar Mt (200")	33.4	243.1	+++++		+++++	DEC 11 06:55 - DEC 11 07:48	PnnRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	DEC 11 06:55 - DEC 11 07:48	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	DEC 11 06:55 - DEC 11 07:47	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++			DEC 11 06:48 - DEC 11 06:57	PnnRin
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++		+++++	DEC 11 06:58 - DEC 11 07:50	PnnRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++		+++++	DEC 11 06:54 - DEC 11 07:39	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	DEC 11 06:57 - DEC 11 07:40	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



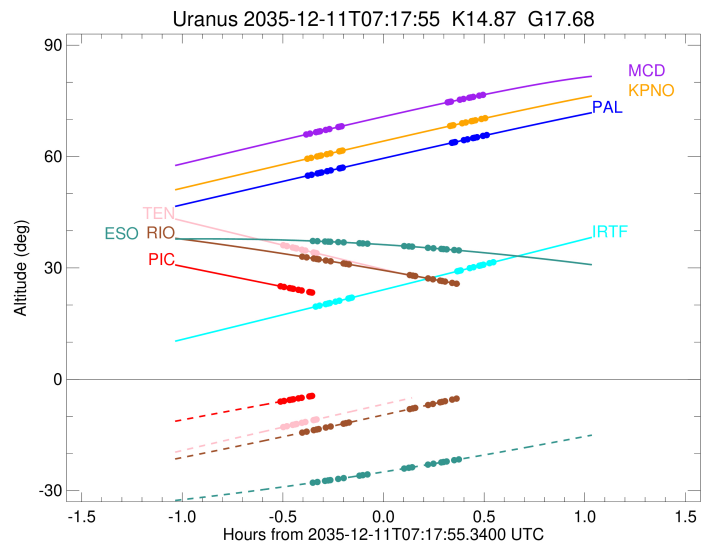
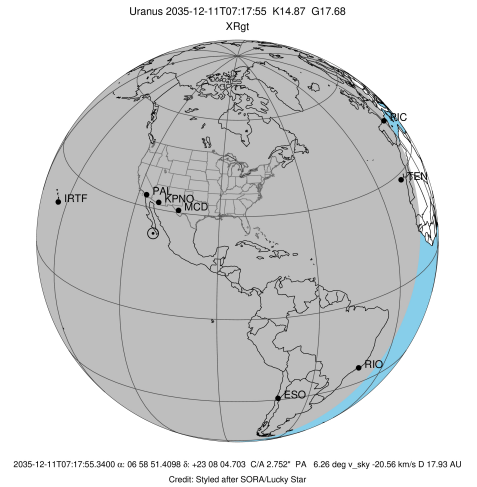
2035-12-11T07:17:55.3400 a: 06 58 51.4098 & +23 08 04.703 C/A 2.752" PA 6.26 deg v_sky -20.56 km/s D 17.93 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

Uranus 2035-12-11T07:17:55 K14.87 G17.68 XRgt



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-11T07:14:41.560
 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 : 3380123662631101184
 2Mass ID (if available) : 06585141+2308054
 ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 14.866
 G magnitude : 17.680
 RP magnitude : 16.839
 BP magnitude : 18.440
 DUPflag : 0
 Distance (au) : 17.933
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.56
 Sun-Target sep (deg) : 155.05
 Sun-Moon sep (deg) : 76.24
 B (ring opening deg) : 62.97
 PA of pole (deg) : 77.81
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.433
 C/A sky separation (km) : 31642.2
 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

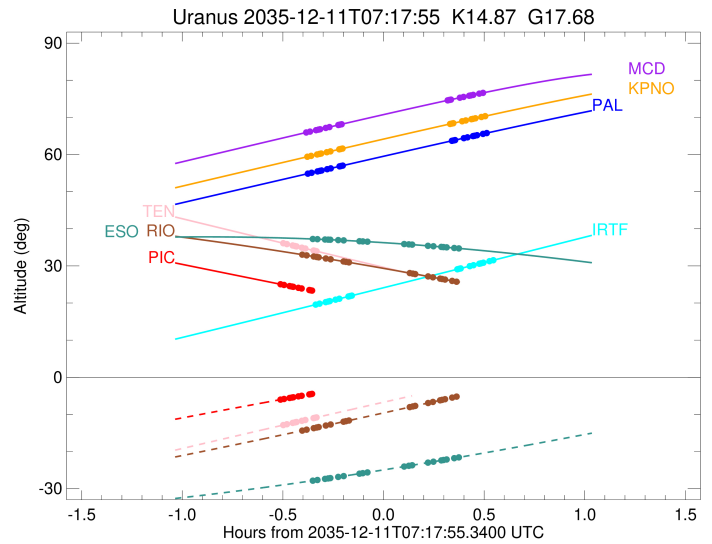
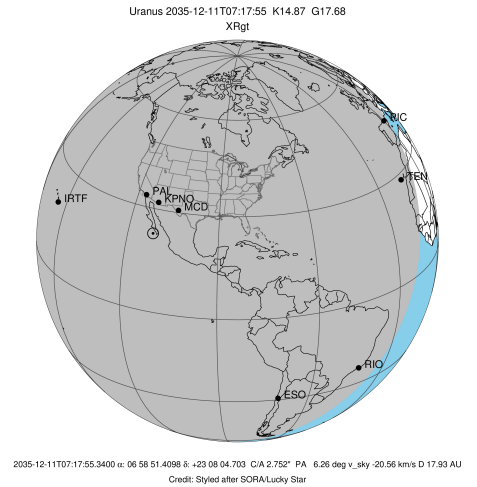


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-11T06:47:36.731		24.98	-5.96	50744.26	-17.79		
lambda	I	2035-12-11T06:48:17.251		24.86	-5.85	50026.71	-17.62		
delta	I	2035-12-11T06:49:56.464		24.56	-5.57	48300.35	-17.17		
gamma	I	2035-12-11T06:50:36.213		24.44	-5.47	47621.62	-16.98		
eta	I	2035-12-11T06:51:02.557		24.36	-5.39	47176.12	-16.84		
beta	I	2035-12-11T06:52:34.225		24.08	-5.14	45652.92	-16.34		
alpha	I	2035-12-11T06:53:30.712		23.91	-4.99x	44734.79	-16.03		
4	I	2035-12-11T06:55:48.442		23.50	-4.61x	42602.61	-15.15		
5	I	2035-12-11T06:56:16.009		23.41	-4.54x	42178.59	-14.92		
6	I	2035-12-11T06:56:37.162		23.35	-4.48x	41878.75	-14.80		

No planet occultations

6	E	2035-12-11T07:35:57.417		16.31	1.72x	41853.07	14.76		
5	E	2035-12-11T07:36:18.591		16.25	1.77x	42170.19	14.88		
4	E	2035-12-11T07:36:48.232		16.16	1.85x	42607.60	15.11		
alpha	E	2035-12-11T07:39:06.075		15.76	2.20x	44748.58	15.98		
beta	E	2035-12-11T07:40:01.421		15.60	2.34x	45642.98	16.29		
eta	E	2035-12-11T07:41:34.103		15.32	2.57x	47176.12	16.79		
gamma	E	2035-12-11T07:42:00.682		15.25	2.64x	47624.16	16.92		
delta	E	2035-12-11T07:42:40.411		15.13	2.74x	48300.35	17.12		
lambda	E	2035-12-11T07:44:19.961		14.84	2.98x	50026.71	17.56		
epsilon	E	2035-12-11T07:45:26.753		14.65	3.15x	51208.85	17.72		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-11T07:20:17.020
 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 : 3380123662631101184
 2Mass ID (if available) : 06585141+2308054
 ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 14.866
 G magnitude : 17.680
 RP magnitude : 16.839
 BP magnitude : 18.440
 DUPflag : 0
 Distance (au) : 17.933
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.56
 Sun-Target sep (deg) : 155.05
 Sun-Moon sep (deg) : 76.47
 B (ring opening deg) : 62.97
 PA of pole (deg) : 77.81
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.676
 C/A sky separation (km) : 34799.1
 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



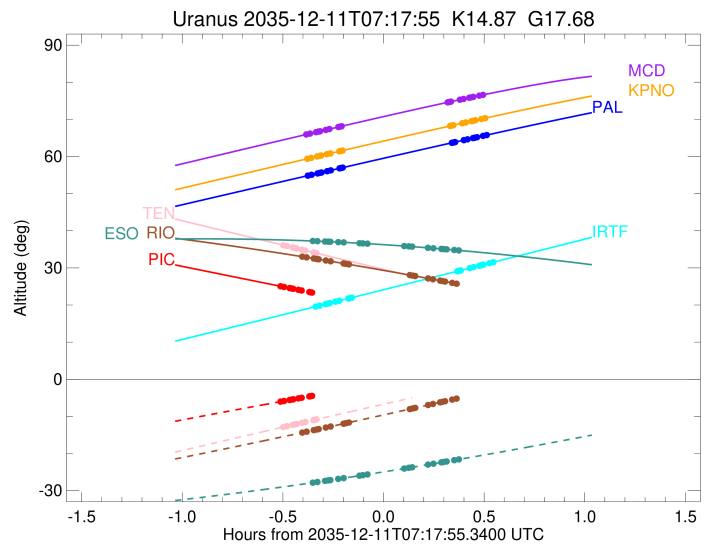
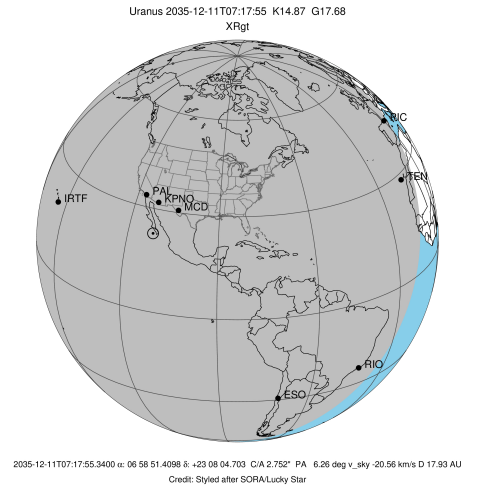
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-11T06:55:46.829		54.94	-75.84	50743.56	-16.70		
lambda	I	2035-12-11T06:56:30.050		55.09	-75.95	50026.71	-16.47		
delta	I	2035-12-11T06:58:16.746		55.46	-76.21	48300.35	-15.88		
gamma	I	2035-12-11T06:58:59.858		55.61	-76.32	47621.42	-15.62		
eta	I	2035-12-11T06:59:28.534		55.71	-76.39	47176.12	-15.44		
beta	I	2035-12-11T07:01:09.365		56.06	-76.63	45651.20	-14.76		
alpha	I	2035-12-11T07:02:11.937		56.27	-76.78	44737.70	-14.33		
4	I	2035-12-11T07:04:48.354		56.81	-77.14	42606.15	-13.09		
5	I	2035-12-11T07:05:21.132		56.93	-77.21	42172.25	-12.76		
6	I	2035-12-11T07:05:45.297		57.01	-77.26	41879.55	-12.58		

No planet occultations

6	E	2035-12-11T07:38:19.282		63.70	-79.79	41858.29	12.60		
5	E	2035-12-11T07:38:43.177		63.78	-79.80	42164.48	12.79		
4	E	2035-12-11T07:39:18.053		63.90	-79.80	42610.81	13.11		
alpha	E	2035-12-11T07:41:53.824		64.42	-79.80	44750.20	14.36		
beta	E	2035-12-11T07:42:54.972		64.62	-79.79	45642.14	14.79		
eta	E	2035-12-11T07:44:36.330		64.96	-79.76	47176.12	15.47		
gamma	E	2035-12-11T07:45:05.085		65.06	-79.75	47623.68	15.65		
delta	E	2035-12-11T07:45:47.952		65.20	-79.74	48300.35	15.91		
lambda	E	2035-12-11T07:47:34.387		65.56	-79.69	50026.71	16.52		
epsilon	E	2035-12-11T07:48:42.994		65.79	-79.64	51172.05	16.74		

```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2035-12-11T07:19:58.320
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        : 3380123662631101184
2Mass ID (if available) : 06585141+2308054
ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
RUWE (>1.4 is poor)  : 0.91
K magnitude           : 14.866
G magnitude           : 17.680
RP magnitude          : 16.839
BP magnitude          : 18.440
DUPflag              : 0
Distance (au)         : 17.933
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -20.56
Sun-Target sep (deg)  : 155.05
Sun-Moon sep (deg)    : 76.52
B (ring opening deg)  : 62.97
PA of pole (deg)      : 77.81
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.691
C/A sky separation (km) : 34996.7
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
    
```

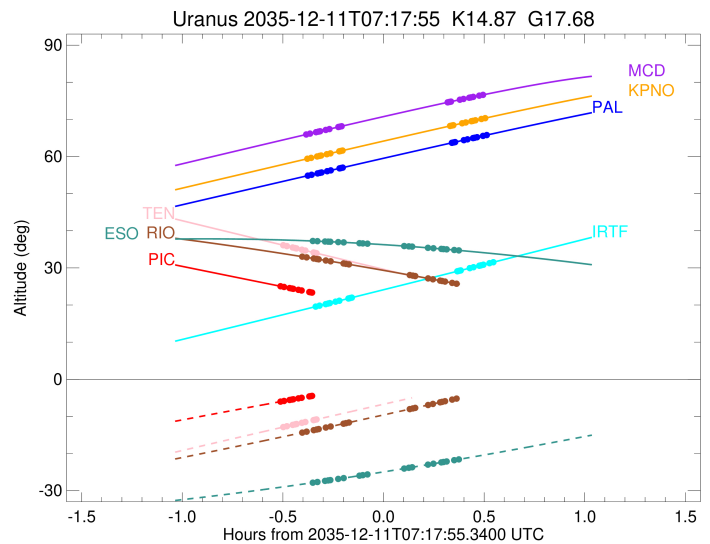
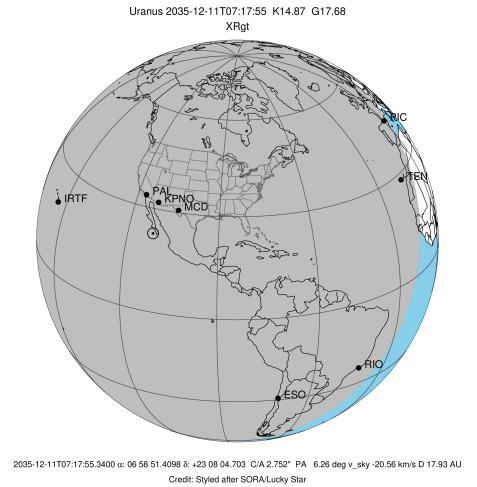


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-11T06:55:38.458		59.49	-79.74	50743.61	-16.63		
lambda	I	2035-12-11T06:56:21.864		59.64	-79.82	50026.71	-16.40		
delta	I	2035-12-11T06:58:09.072		60.02	-80.01	48300.35	-15.79		
gamma	I	2035-12-11T06:58:52.421		60.17	-80.09	47621.40	-15.53		
eta	I	2035-12-11T06:59:21.263		60.27	-80.13	47176.12	-15.35		
beta	I	2035-12-11T07:01:02.763		60.63	-80.30	45651.07	-14.66		
alpha	I	2035-12-11T07:02:05.792		60.85	-80.39	44737.92	-14.21		
4	I	2035-12-11T07:04:43.687		61.40	-80.61	42606.41	-12.94		
5	I	2035-12-11T07:05:16.899		61.52	-80.65	42171.80	-12.61		
6	I	2035-12-11T07:05:41.317		61.60	-80.68	41879.59	-12.42		

No planet occultations

6	E	2035-12-11T07:37:46.602		68.24	-80.30	41858.59	12.44		
5	E	2035-12-11T07:38:10.753		68.32	-80.26	42164.17	12.63		
4	E	2035-12-11T07:38:46.069		68.44	-80.20	42610.98	12.96		
alpha	E	2035-12-11T07:41:23.349		68.97	-79.94	44750.28	14.24		
beta	E	2035-12-11T07:42:24.974		69.18	-79.82	45642.10	14.68		
eta	E	2035-12-11T07:44:07.027		69.52	-79.63	47176.12	15.38		
gamma	E	2035-12-11T07:44:35.956		69.61	-79.57	47623.65	15.56		
delta	E	2035-12-11T07:45:19.072		69.76	-79.49	48300.35	15.83		
lambda	E	2035-12-11T07:47:06.050		70.11	-79.27	50026.71	16.44		
epsilon	E	2035-12-11T07:48:14.847		70.34	-79.12	51170.10	16.67		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-11T07:19:28.560
 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 : 3380123662631101184
 2Mass ID (if available) : 06585141+2308054
 ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 14.866
 G magnitude : 17.680
 RP magnitude : 16.839
 BP magnitude : 18.440
 DUPflag : 0
 Distance (au) : 17.933
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.56
 Sun-Target sep (deg) : 155.05
 Sun-Moon sep (deg) : 76.59
 B (ring opening deg) : 62.97
 PA of pole (deg) : 77.81
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.704
 C/A sky separation (km) : 35174.3
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

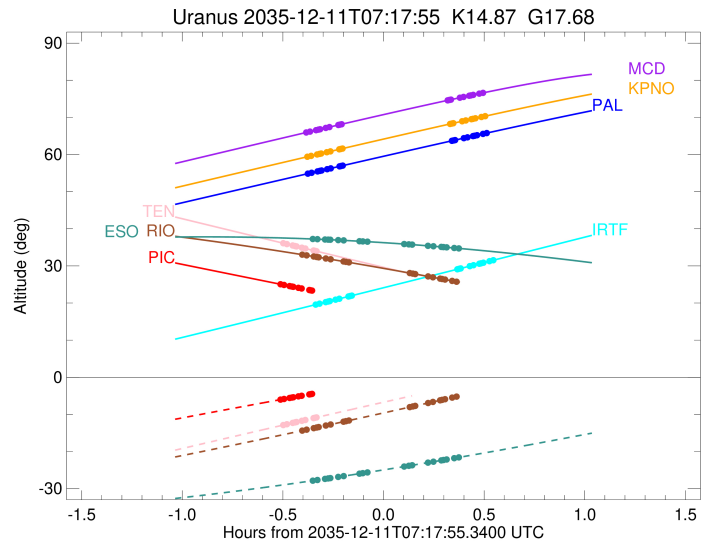
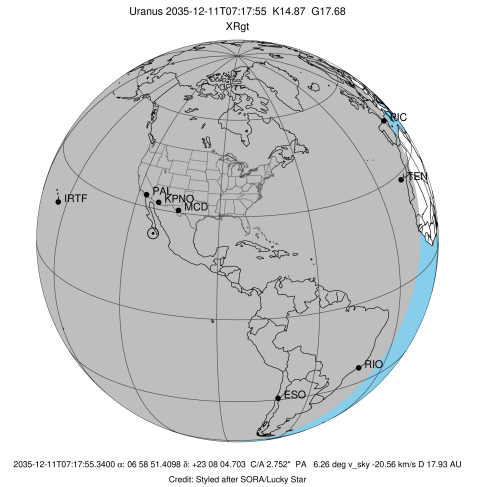


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-11T06:55:18.254		66.03	-82.35	50743.66	-16.58		
lambda	I	2035-12-11T06:56:01.816		66.18	-82.32	50026.71	-16.34		
delta	I	2035-12-11T06:57:49.461		66.56	-82.23	48300.35	-15.72		
gamma	I	2035-12-11T06:58:33.013		66.71	-82.19	47621.39	-15.45		
eta	I	2035-12-11T06:59:01.999		66.82	-82.16	47176.12	-15.27		
beta	I	2035-12-11T07:00:44.087		67.17	-82.04	45650.95	-14.56		
alpha	I	2035-12-11T07:01:47.518		67.40	-81.96	44738.12	-14.11		
4	I	2035-12-11T07:04:26.739		67.95	-81.74	42606.65	-12.81		
5	I	2035-12-11T07:05:00.349		68.07	-81.68	42171.37	-12.48		
6	I	2035-12-11T07:05:24.995		68.16	-81.64	41879.62	-12.28		

No planet occultations

6	E	2035-12-11T07:37:03.826		74.60	-76.93	41858.85	12.30		
5	E	2035-12-11T07:37:28.216		74.68	-76.86	42163.91	12.49		
4	E	2035-12-11T07:38:03.936		74.80	-76.75	42611.12	12.83		
alpha	E	2035-12-11T07:40:42.597		75.31	-76.26	44750.34	14.13		
beta	E	2035-12-11T07:41:44.654		75.51	-76.06	45642.07	14.59		
eta	E	2035-12-11T07:43:27.334		75.84	-75.74	47176.12	15.29		
gamma	E	2035-12-11T07:43:56.420		75.93	-75.65	47623.63	15.48		
delta	E	2035-12-11T07:44:39.758		76.06	-75.51	48300.35	15.75		
lambda	E	2035-12-11T07:46:27.223		76.40	-75.17	50026.71	16.37		
epsilon	E	2035-12-11T07:47:36.196		76.62	-74.95	51168.50	16.61		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-11T07:14:09.220
 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 : 3380123662631101184
 2Mass ID (if available) : 06585141+2308054
 ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 14.866
 G magnitude : 17.680
 RP magnitude : 16.839
 BP magnitude : 18.440
 DUPflag : 0
 Distance (au) : 17.933
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.56
 Sun-Target sep (deg) : 155.05
 Sun-Moon sep (deg) : 76.41
 B (ring opening deg) : 62.97
 PA of pole (deg) : 77.81
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.572
 C/A sky separation (km) : 33449.0
 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



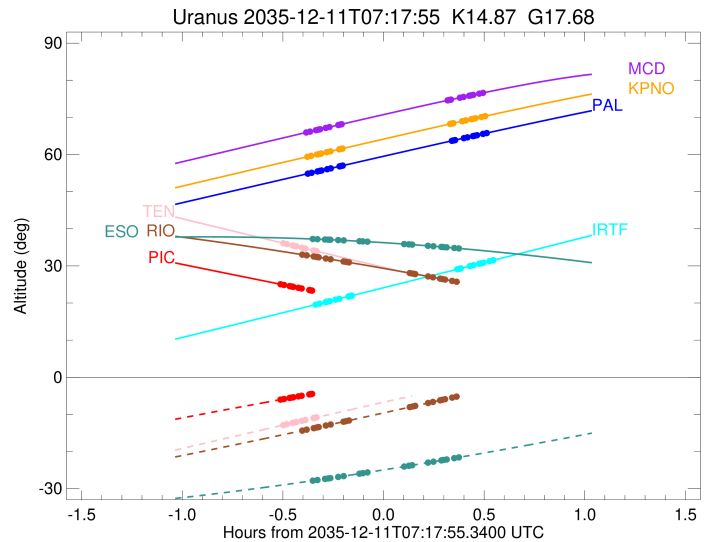
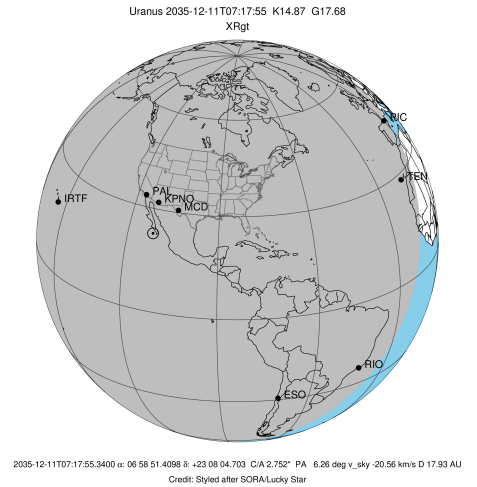
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-11T06:48:26.392		36.02	-12.79	50743.55	-17.19		
lambda	I	2035-12-11T06:49:08.324		35.87	-12.65	50026.71	-16.99		
delta	I	2035-12-11T06:50:51.489		35.50	-12.29	48300.35	-16.46		
gamma	I	2035-12-11T06:51:33.007		35.34	-12.15	47621.49	-16.23		
eta	I	2035-12-11T06:52:00.572		35.24	-12.05	47176.12	-16.08		
beta	I	2035-12-11T06:53:37.021		34.89	-11.72	45651.85	-15.48		
alpha	I	2035-12-11T06:54:36.630		34.68	-11.51	44736.58	-15.10		
4	I	2035-12-11T06:57:03.845		34.14	-11.01	42604.78	-14.04		
5	I	2035-12-11T06:57:34.060		34.03	-10.90	42174.73	-13.76		
6	I	2035-12-11T06:57:56.666		33.95	-10.83	41879.30	-13.61		

No planet occultations

6	E	2035-12-11T07:33:42.242		26.21	-3.54x	41855.76	13.58		
5	E	2035-12-11T07:34:04.818		26.13	-3.46x	42167.14	13.73		
4	E	2035-12-11T07:34:37.156		26.02	-3.35x	42609.31	14.00		
alpha	E	2035-12-11T07:37:04.487		25.49	-2.86x	44749.45	15.06		
beta	E	2035-12-11T07:38:02.995		25.28	-2.66x	45642.53	15.44		
eta	E	2035-12-11T07:39:40.492		24.93	-2.34x	47176.12	16.02		
gamma	E	2035-12-11T07:40:08.300		24.83	-2.25x	47623.92	16.18		
delta	E	2035-12-11T07:40:49.813		24.68	-2.11x	48300.35	16.41		
lambda	E	2035-12-11T07:42:33.354		24.31	-1.76x	50026.71	16.93		
epsilon	E	2035-12-11T07:43:41.454		24.07	-1.54x	51190.53	17.13		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-12-11T07:22:23.090
Event type           : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code        : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 3380123662631101184
2Mass ID (if available) : 06585141+2308054
ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 14.866
G magnitude          : 17.680
RP magnitude         : 16.839
BP magnitude         : 18.440
DUPflag              : 0
Distance (au)        : 17.932
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -20.56
Sun-Target sep (deg) : 155.05
Sun-Moon sep (deg)  : 75.93
B (ring opening deg) : 62.97
PA of pole (deg)    : 77.81
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.720
C/A sky separation (km) : 35370.1
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
    
```

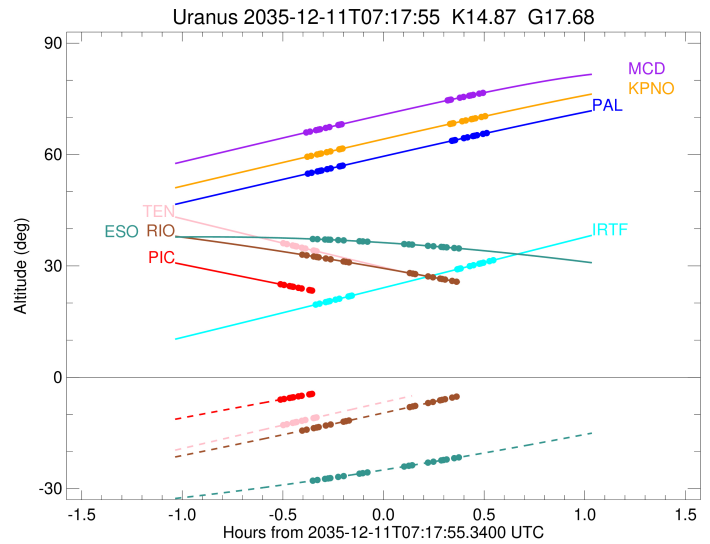
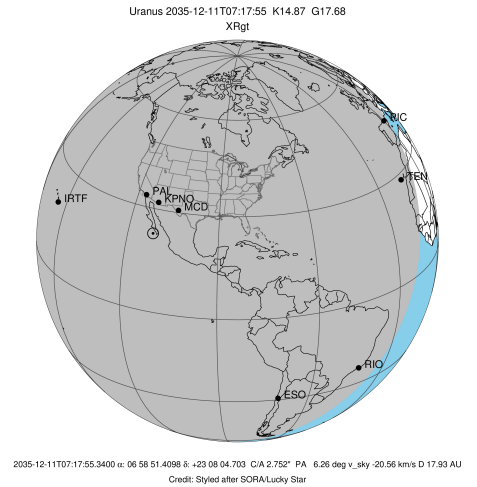


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-11T06:58:07.937		19.67	-44.28	50743.66	-16.28		
lambda	I	2035-12-11T06:58:52.289		19.83	-44.45	50026.71	-16.05		
delta	I	2035-12-11T07:00:41.946		20.24	-44.86	48300.35	-15.43		
gamma	I	2035-12-11T07:01:26.343		20.41	-45.03	47621.39	-15.16		
eta	I	2035-12-11T07:01:55.902		20.52	-45.15	47176.12	-14.97		
beta	I	2035-12-11T07:03:40.089		20.91	-45.54	45650.92	-14.26		
alpha	I	2035-12-11T07:04:44.893		21.15	-45.79	44738.18	-13.80		
4	I	2035-12-11T07:07:27.908		21.76	-46.42	42606.74	-12.49		
5	I	2035-12-11T07:08:02.421		21.89	-46.55	42171.19	-12.15		
6	I	2035-12-11T07:08:27.717		21.98	-46.64	41879.63	-11.95		

No planet occultations

6	E	2035-12-11T07:39:56.567		29.09	-53.87	41859.42	11.99		
5	E	2035-12-11T07:40:21.487		29.19	-53.97	42163.35	12.19		
4	E	2035-12-11T07:40:58.124		29.33	-54.11	42611.44	12.53		
alpha	E	2035-12-11T07:43:40.198		29.94	-54.73	44750.50	13.85		
beta	E	2035-12-11T07:44:43.439		30.18	-54.97	45641.98	14.32		
eta	E	2035-12-11T07:46:27.970		30.57	-55.37	47176.12	15.03		
gamma	E	2035-12-11T07:46:57.547		30.69	-55.49	47623.57	15.22		
delta	E	2035-12-11T07:47:41.608		30.85	-55.65	48300.35	15.50		
lambda	E	2035-12-11T07:49:30.765		31.27	-56.07	50026.71	16.12		
epsilon	E	2035-12-11T07:50:40.474		31.53	-56.34	51163.69	16.36		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-11T07:14:43.700
 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 : 3380123662631101184
 2Mass ID (if available) : 06585141+2308054
 ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 14.866
 G magnitude : 17.680
 RP magnitude : 16.839
 BP magnitude : 18.440
 DUPflag : 0
 Distance (au) : 17.933
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.56
 Sun-Target sep (deg) : 155.05
 Sun-Moon sep (deg) : 76.37
 B (ring opening deg) : 62.97
 PA of pole (deg) : 77.81
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.036
 C/A sky separation (km) : 39490.5
 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

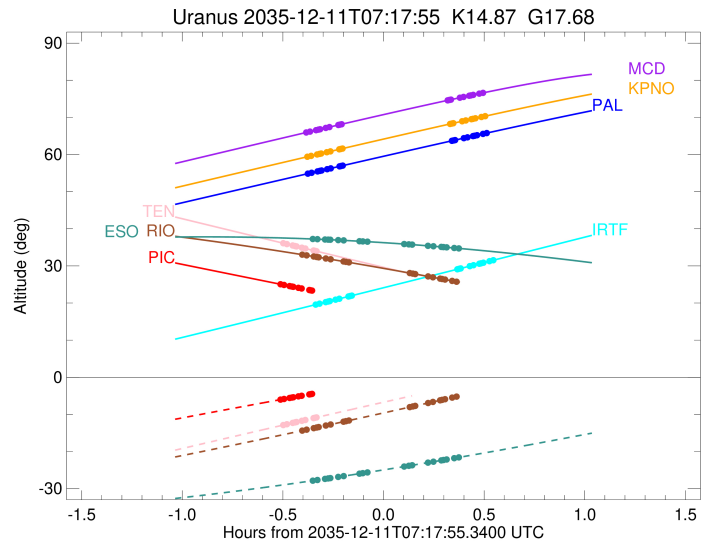
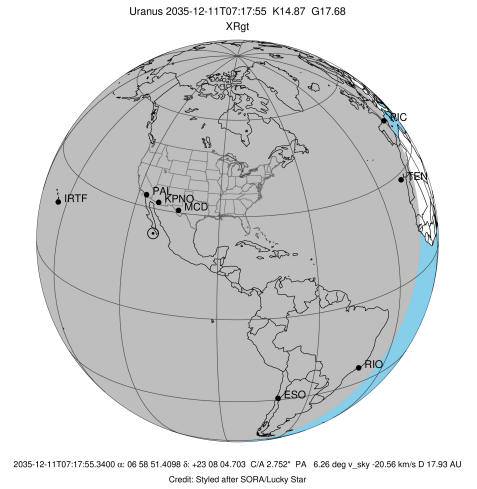


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-11T06:54:10.262		32.96	-14.28	50748.76	-14.37		
lambda	I	2035-12-11T06:55:01.203		32.84	-14.12	50026.71	-14.00		
delta	I	2035-12-11T06:57:08.625		32.53	-13.70	48300.35	-13.08		
gamma	I	2035-12-11T06:58:01.381		32.40	-13.53	47621.12	-12.67		
eta	I	2035-12-11T06:58:36.909		32.31	-13.42	47176.12	-12.38		
beta	I	2035-12-11T07:00:45.900		31.99	-13.00	45648.05	-11.26		
alpha	I	2035-12-11T07:02:08.799		31.78	-12.73	44742.99	-10.51		
4	I	2035-12-11T07:05:57.723		31.21	-11.98	42612.21	-8.15		
5	I	2035-12-11T07:06:54.153		31.06	-11.79	42161.43	-7.48		
6	I	2035-12-11T07:07:34.404		30.96	-11.66	41879.07	-7.04		

No planet occultations

6	E	2035-12-11T07:25:47.413		28.07	-8.03	41867.00	7.03		
5	E	2035-12-11T07:26:27.379		27.96	-7.90	42157.29	7.47		
4	E	2035-12-11T07:27:26.111		27.79	-7.70	42614.85	8.14		
alpha	E	2035-12-11T07:31:14.875		27.16	-6.93	44751.91	10.49		
beta	E	2035-12-11T07:32:36.656		26.94	-6.65	45641.29	11.25		
eta	E	2035-12-11T07:34:46.618		26.57	-6.21	47176.12	12.36		
gamma	E	2035-12-11T07:35:22.359		26.47	-6.09	47622.99	12.64		
delta	E	2035-12-11T07:36:15.067		26.32	-5.92	48300.35	13.05		
lambda	E	2035-12-11T07:38:22.751		25.96	-5.48	50026.71	13.97		
epsilon	E	2035-12-11T07:39:39.558		25.74	-5.22	51119.47	14.34		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-11T07:16:35.020
 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 : 3380123662631101184
 2Mass ID (if available) : 06585141+2308054
 ICRS Star Coord at Epoch: 06h 58m 51.40978s +23:08:04.70328s
 RUWE (>1.4 is poor) : 0.91
 K magnitude : 14.866
 G magnitude : 17.680
 RP magnitude : 16.839
 BP magnitude : 18.440
 DUPflag : 0
 Distance (au) : 17.933
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.56
 Sun-Target sep (deg) : 155.05
 Sun-Moon sep (deg) : 76.37
 B (ring opening deg) : 62.97
 PA of pole (deg) : 77.81
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.131
 C/A sky separation (km) : 40716.1
 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	2035-12-11T06:57:20.644		37.23	-27.79	50751.49	-13.65		
lambda	I	2035-12-11T06:58:14.609		37.20	-27.67	50026.71	-13.24		
delta	I	2035-12-11T07:00:30.325		37.11	-27.37	48300.35	-12.19		
gamma	I	2035-12-11T07:01:27.160		37.07	-27.25	47621.06	-11.71		
eta	I	2035-12-11T07:02:05.689		37.05	-27.16	47176.12	-11.38		
beta	I	2035-12-11T07:04:27.939		36.94	-26.84	45647.21	-10.07		
alpha	I	2035-12-11T07:06:01.647		36.88	-26.63	44744.42	-9.15		
4	I	2035-12-11T07:10:41.866		36.65	-25.98	42613.83	-6.05		
5	I	2035-12-11T07:12:02.218		36.58	-25.79	42158.46	-5.06		
6	I	2035-12-11T07:13:03.761		36.53	-25.65	41877.88	-4.31		

No planet occultations

6	E	2035-12-11T07:24:09.106		35.88	-24.05	41870.54	4.31		
5	E	2035-12-11T07:25:10.263		35.82	-23.90	42155.57	5.06		
4	E	2035-12-11T07:26:32.932		35.73	-23.69	42615.85	6.05		
alpha	E	2035-12-11T07:31:12.735		35.41	-22.99	44752.23	9.15		
beta	E	2035-12-11T07:32:45.229		35.30	-22.76	45641.14	10.06		
eta	E	2035-12-11T07:35:08.291		35.12	-22.39	47176.12	11.38		
gamma	E	2035-12-11T07:35:46.981		35.07	-22.29	47622.78	11.71		
delta	E	2035-12-11T07:36:43.694		35.00	-22.15	48300.35	12.18		
lambda	E	2035-12-11T07:38:59.474		34.82	-21.80	50026.71	13.23		
epsilon	E	2035-12-11T07:40:19.046		34.72	-21.59	51102.05	13.65		