

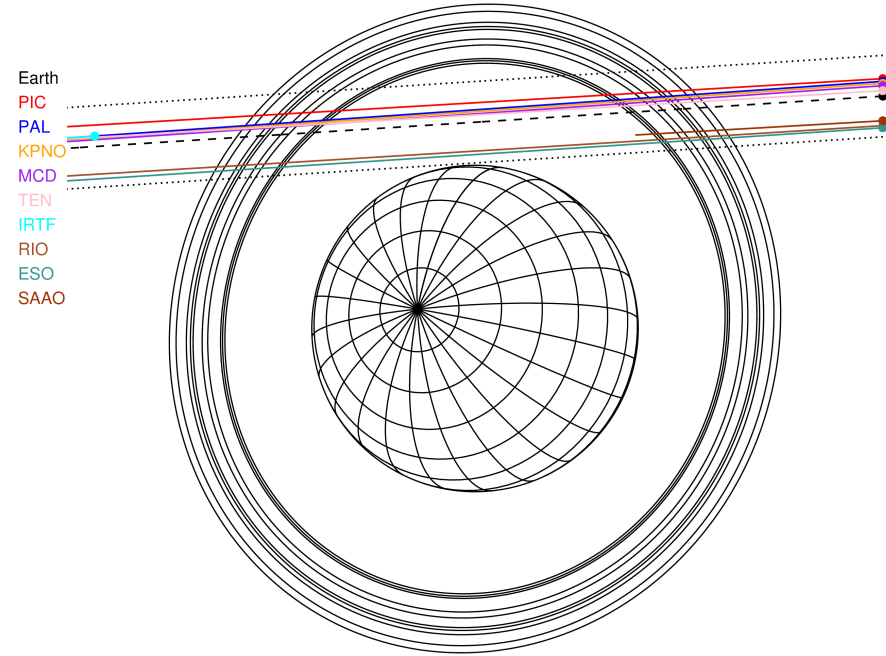
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:27:21.370
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471

ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 76.35
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39



2034-12-31T03:27:21.3700 ra: 06 34 54.7713 s: +23 31 46.9111 C/A 2.490° PA 183.66 deg v_sky -23.37 km/s D 17.91 AU
 Credit: Styled after SORA/Lucky Star

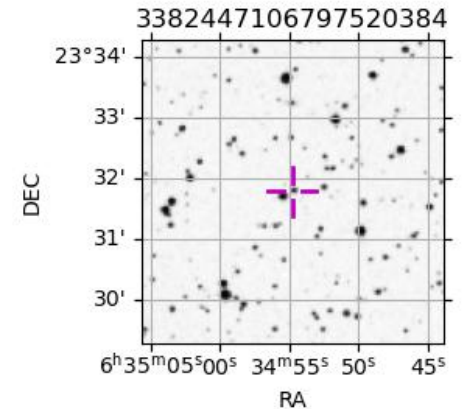
Uranus 2034-12-31T03:27:21 K13.90 G15.41 XRgt



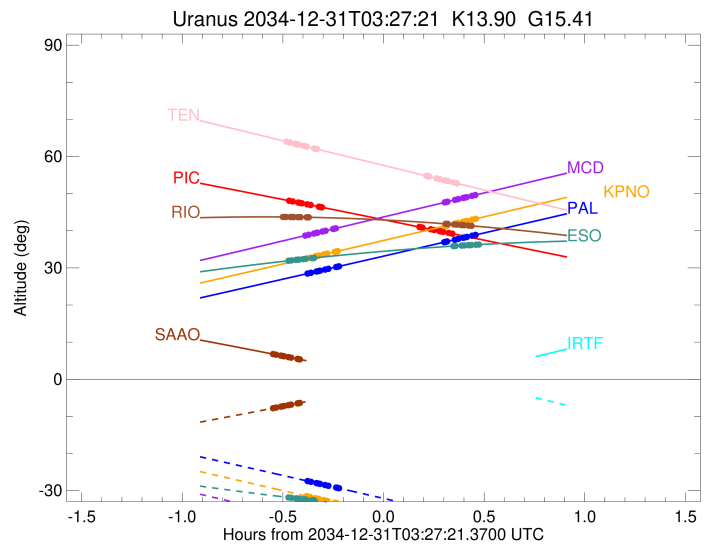
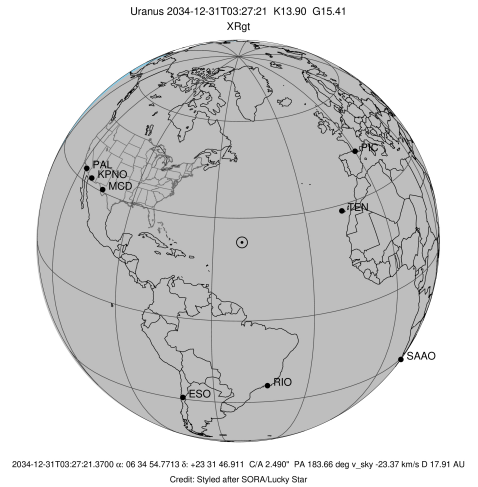
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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 31 02:58 - DEC 31 03:47	PnnRie
PAL	Palomar Mt (200")	33.4	243.1	+++++		+++++	DEC 31 03:04 - DEC 31 03:54	PnnRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	DEC 31 03:04 - DEC 31 03:54	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	DEC 31 03:03 - DEC 31 03:54	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++		+++++	DEC 31 02:58 - DEC 31 03:49	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 31 02:57 - DEC 31 03:53	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	DEC 31 02:58 - DEC 31 03:55	PnnRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++			DEC 31 02:54 - DEC 31 03:02	PnnRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:24:44.930
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 76.86
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.717
 C/A sky separation (km) : 35289.0
 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

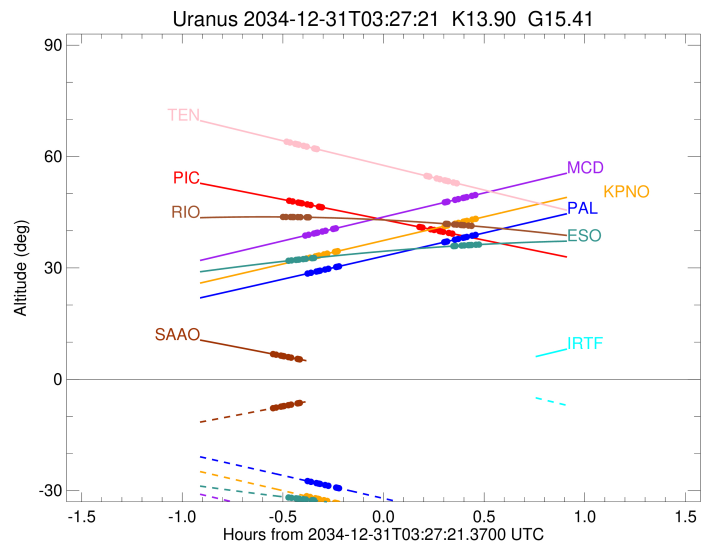
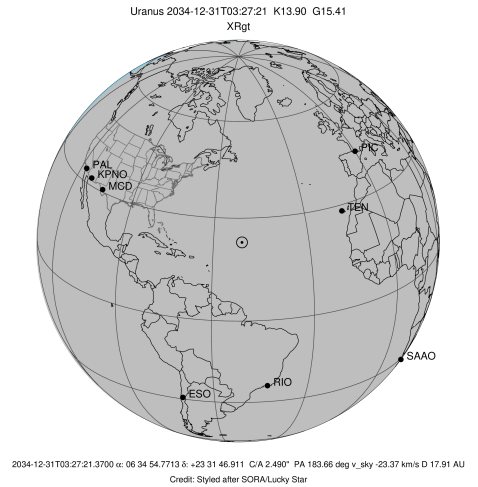


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-31T02:58:52.867		48.15	-48.66	51537.68	-18.14		
lambda	I	2034-12-31T03:00:17.162		47.90	-48.41	50026.71	-17.66		
delta	I	2034-12-31T03:01:56.790		47.60	-48.11	48300.35	-16.98		
gamma	I	2034-12-31T03:02:37.141		47.48	-47.99	47620.97	-16.69		
eta	I	2034-12-31T03:03:03.960		47.40	-47.91	47176.12	-16.48		
beta	I	2034-12-31T03:04:37.008		47.12	-47.63	45677.07	-15.74		
alpha	I	2034-12-31T03:05:41.069		46.92	-47.44	44685.62	-15.17		
4	I	2034-12-31T03:08:04.338		46.49	-47.01	42609.77	-13.79		
5	I	2034-12-31T03:08:37.520		46.39	-46.91	42155.20	-13.42		
6	I	2034-12-31T03:08:58.219		46.33	-46.85	41879.49	-13.20		

No planet occultations

6	E	2034-12-31T03:38:03.681		41.02	-41.58	41860.40	13.18		
5	E	2034-12-31T03:38:28.477		40.95	-41.50	42193.53	13.40		
4	E	2034-12-31T03:38:59.973		40.85	-41.41	42608.53	13.77		
alpha	E	2034-12-31T03:41:25.320		40.41	-40.97	44717.41	15.15		
beta	E	2034-12-31T03:42:27.352		40.22	-40.78	45676.58	15.71		
eta	E	2034-12-31T03:44:00.537		39.93	-40.49	47176.12	16.45		
gamma	E	2034-12-31T03:44:27.716		39.85	-40.41	47626.00	16.65		
delta	E	2034-12-31T03:45:07.854		39.72	-40.29	48300.35	16.95		
lambda	E	2034-12-31T03:46:47.714		39.42	-39.98	50026.71	17.62		
epsilon	E	2034-12-31T03:47:43.351		39.25	-39.81	51016.66	18.10		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:31:00.020
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 77.02
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.631
 C/A sky separation (km) : 34166.5
 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

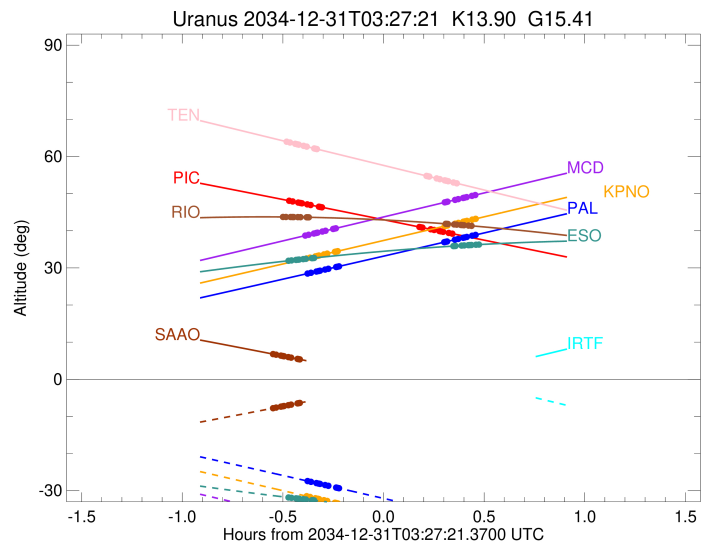
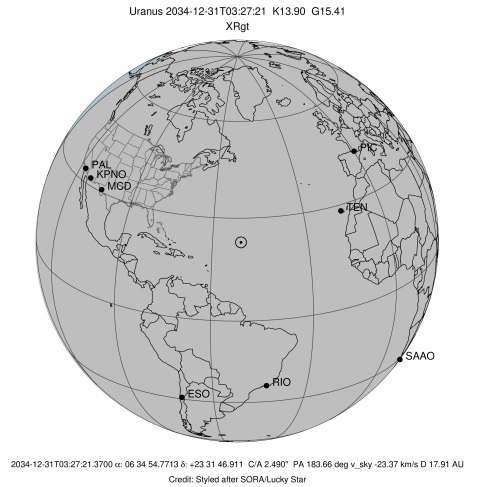


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-31T03:04:22.687		28.41	-27.35	51539.95	-18.57		
lambda	I	2034-12-31T03:05:45.046		28.69	-27.63	50026.71	-18.13		
delta	I	2034-12-31T03:07:21.837		29.02	-27.97	48300.35	-17.53		
gamma	I	2034-12-31T03:08:00.895		29.16	-28.10	47620.96	-17.26		
eta	I	2034-12-31T03:08:26.802		29.25	-28.19	47176.12	-17.08		
beta	I	2034-12-31T03:09:56.350		29.55	-28.50	45676.71	-16.41		
alpha	I	2034-12-31T03:10:57.594		29.76	-28.71	44685.38	-15.91		
4	I	2034-12-31T03:13:13.230		30.23	-29.17	42608.88	-14.70		
5	I	2034-12-31T03:13:44.172		30.34	-29.28	42155.55	-14.37		
6	I	2034-12-31T03:14:03.500		30.41	-29.34	41879.28	-14.18		

No planet occultations

6	E	2034-12-31T03:45:28.291		36.93	-35.85	41858.27	14.21		
5	E	2034-12-31T03:45:51.731		37.02	-35.93	42197.54	14.40		
4	E	2034-12-31T03:46:20.734		37.12	-36.03	42607.03	14.73		
alpha	E	2034-12-31T03:48:37.952		37.59	-36.51	44719.10	15.95		
beta	E	2034-12-31T03:49:36.858		37.80	-36.71	45675.94	16.46		
eta	E	2034-12-31T03:51:06.137		38.11	-37.02	47176.12	17.13		
gamma	E	2034-12-31T03:51:32.277		38.20	-37.11	47626.23	17.31		
delta	E	2034-12-31T03:52:10.921		38.34	-37.25	48300.35	17.58		
lambda	E	2034-12-31T03:53:47.425		38.67	-37.58	50026.71	18.19		
epsilon	E	2034-12-31T03:54:40.556		38.86	-37.77	51001.60	18.63		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:30:51.630
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 77.07
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.608
 C/A sky separation (km) : 33871.8
 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

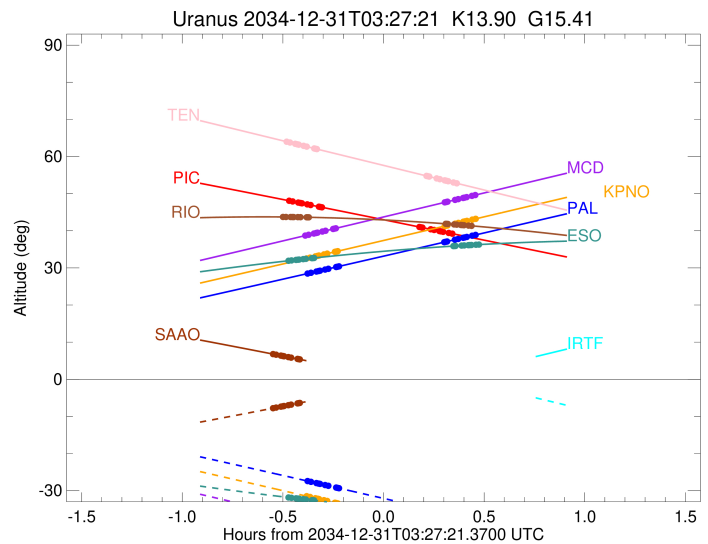
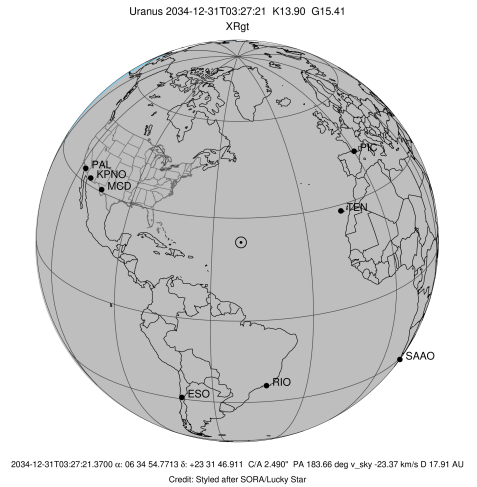


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-31T03:04:06.685		32.48	-31.42	51540.84	-18.73		
lambda	I	2034-12-31T03:05:28.364		32.77	-31.71	50026.71	-18.30		
delta	I	2034-12-31T03:07:04.208		33.10	-32.04	48300.35	-17.71		
gamma	I	2034-12-31T03:07:42.850		33.24	-32.18	47620.96	-17.45		
eta	I	2034-12-31T03:08:08.470		33.33	-32.27	47176.12	-17.27		
beta	I	2034-12-31T03:09:36.952		33.64	-32.58	45676.58	-16.63		
alpha	I	2034-12-31T03:10:37.371		33.85	-32.79	44685.31	-16.14		
4	I	2034-12-31T03:12:50.898		34.32	-33.26	42608.57	-14.96		
5	I	2034-12-31T03:13:21.241		34.43	-33.36	42155.69	-14.64		
6	I	2034-12-31T03:13:40.216		34.49	-33.43	41879.20	-14.46		

No planet occultations

6	E	2034-12-31T03:45:36.364		41.26	-40.17	41857.82	14.49		
5	E	2034-12-31T03:45:59.446		41.34	-40.25	42198.38	14.67		
4	E	2034-12-31T03:46:27.848		41.44	-40.35	42606.71	14.99		
alpha	E	2034-12-31T03:48:42.970		41.92	-40.83	44719.45	16.18		
beta	E	2034-12-31T03:49:41.061		42.12	-41.03	45675.81	16.67		
eta	E	2034-12-31T03:51:09.283		42.43	-41.34	47176.12	17.32		
gamma	E	2034-12-31T03:51:35.138		42.53	-41.44	47626.28	17.50		
delta	E	2034-12-31T03:52:13.371		42.66	-41.57	48300.35	17.76		
lambda	E	2034-12-31T03:53:48.939		43.00	-41.91	50026.71	18.36		
epsilon	E	2034-12-31T03:54:41.447		43.19	-42.09	50998.76	18.79		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:30:34.670
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 77.13
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.582
 C/A sky separation (km) : 33534.3
 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

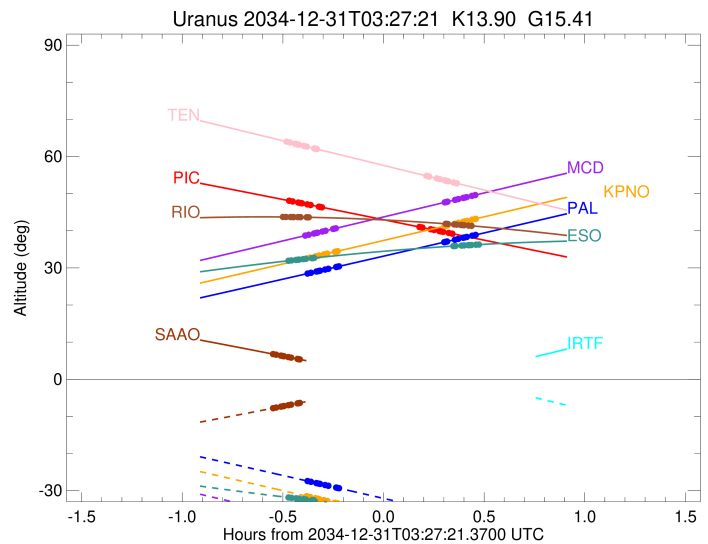
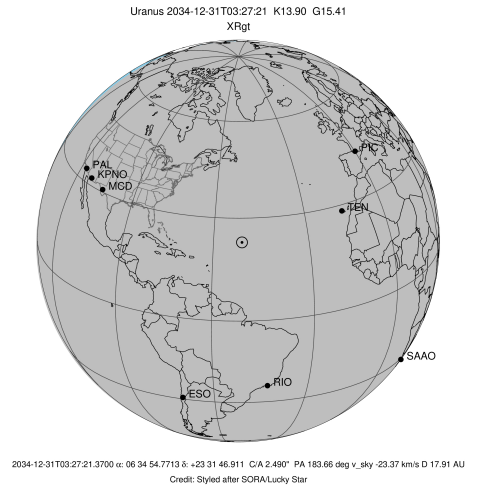


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-31T03:03:41.749		38.63	-37.58	51541.83	-18.92		
lambda	I	2034-12-31T03:05:02.644		38.92	-37.86	50026.71	-18.50		
delta	I	2034-12-31T03:06:37.407		39.26	-38.20	48300.35	-17.92		
gamma	I	2034-12-31T03:07:15.578		39.40	-38.34	47620.96	-17.67		
eta	I	2034-12-31T03:07:40.873		39.49	-38.43	47176.12	-17.50		
beta	I	2034-12-31T03:09:08.154		39.80	-38.74	45676.43	-16.87		
alpha	I	2034-12-31T03:10:07.649		40.01	-38.95	44685.23	-16.40		
4	I	2034-12-31T03:12:18.843		40.48	-39.42	42608.21	-15.26		
5	I	2034-12-31T03:12:48.529		40.59	-39.52	42155.87	-14.95		
6	I	2034-12-31T03:13:07.120		40.65	-39.59	41879.09	-14.78		

No planet occultations

6	E	2034-12-31T03:45:37.477		47.66	-46.57	41857.32	14.80		
5	E	2034-12-31T03:46:00.169		47.74	-46.65	42199.33	14.98		
4	E	2034-12-31T03:46:27.917		47.84	-46.75	42606.35	15.29		
alpha	E	2034-12-31T03:48:40.727		48.32	-47.23	44719.83	16.43		
beta	E	2034-12-31T03:49:37.913		48.52	-47.43	45675.67	16.91		
eta	E	2034-12-31T03:51:04.953		48.83	-47.74	47176.12	17.54		
gamma	E	2034-12-31T03:51:30.488		48.93	-47.84	47626.33	17.72		
delta	E	2034-12-31T03:52:08.260		49.06	-47.97	48300.35	17.97		
lambda	E	2034-12-31T03:53:42.770		49.40	-48.31	50026.71	18.55		
epsilon	E	2034-12-31T03:54:34.577		49.59	-48.50	50995.61	18.97		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:24:58.850
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 77.02
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.570
 C/A sky separation (km) : 33377.4
 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

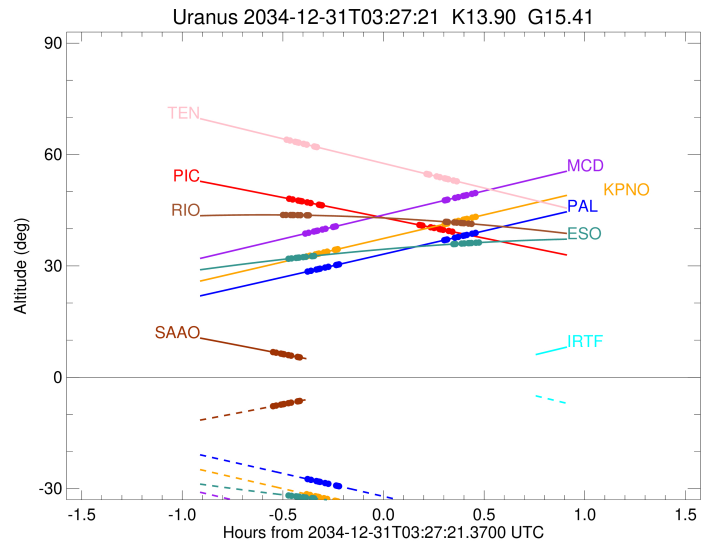
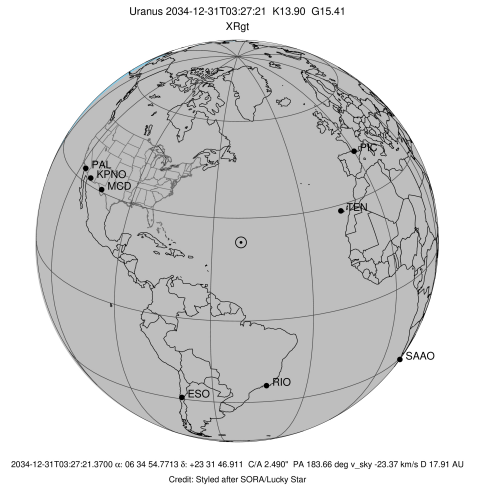


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-31T02:58:09.227		64.07	-64.89	51543.19	-19.11		
lambda	I	2034-12-31T02:59:29.380		63.77	-64.59	50026.71	-18.69		
delta	I	2034-12-31T03:01:03.156		63.43	-64.25	48300.35	-18.12		
gamma	I	2034-12-31T03:01:40.916		63.29	-64.11	47620.96	-17.87		
eta	I	2034-12-31T03:02:05.934		63.20	-64.02	47176.12	-17.69		
beta	I	2034-12-31T03:03:32.236		62.88	-63.70	45676.24	-17.07		
alpha	I	2034-12-31T03:04:31.011		62.66	-63.49	44685.14	-16.60		
4	I	2034-12-31T03:06:40.521		62.19	-63.01	42607.80	-15.47		
5	I	2034-12-31T03:07:09.737		62.08	-62.91	42156.08	-15.17		
6	I	2034-12-31T03:07:28.078		62.01	-62.84	41878.97	-15.00		

No planet occultations

6	E	2034-12-31T03:40:10.522		54.78	-55.64	41857.38	14.97		
5	E	2034-12-31T03:40:32.948		54.70	-55.55	42199.19	15.14		
4	E	2034-12-31T03:41:00.413		54.60	-55.45	42606.40	15.45		
alpha	E	2034-12-31T03:43:11.980		54.11	-54.97	44719.73	16.57		
beta	E	2034-12-31T03:44:08.722		53.91	-54.76	45675.71	17.04		
eta	E	2034-12-31T03:45:35.142		53.59	-54.44	47176.12	17.66		
gamma	E	2034-12-31T03:46:00.510		53.49	-54.35	47626.31	17.83		
delta	E	2034-12-31T03:46:38.048		53.36	-54.21	48300.35	18.08		
lambda	E	2034-12-31T03:48:12.025		53.01	-53.87	50026.71	18.65		
epsilon	E	2034-12-31T03:49:03.653		52.82	-53.68	50997.20	19.06		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:26:27.110
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 76.94
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.135
 C/A sky separation (km) : 27730.1
 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

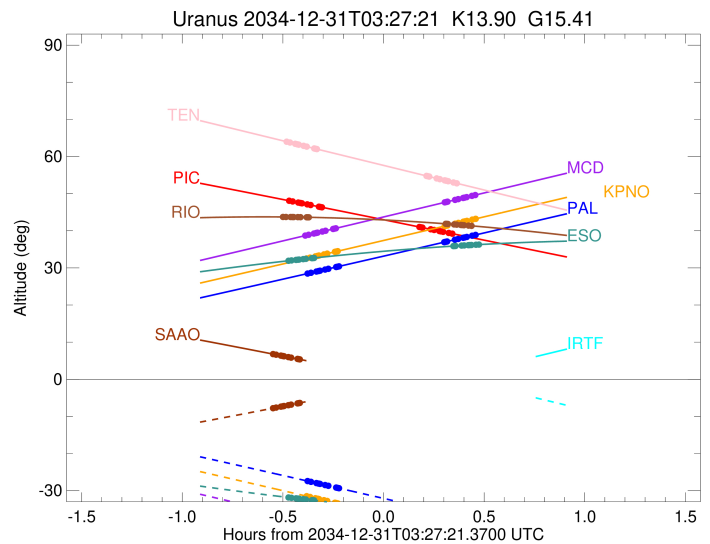
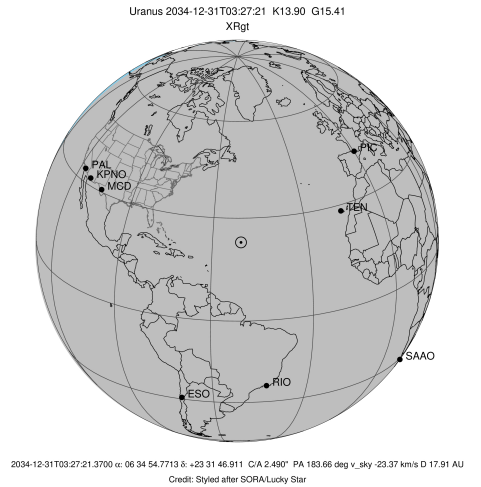


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-31T02:57:05.180		43.73	-44.15	51552.94	-21.29		
lambda	I	2034-12-31T02:58:17.284		43.72	-44.15	50026.71	-21.03		
delta	I	2034-12-31T02:59:40.076		43.70	-44.14	48300.35	-20.67		
gamma	I	2034-12-31T03:00:13.058		43.70	-44.14	47621.01	-20.52		
eta	I	2034-12-31T03:00:34.792		43.69	-44.14	47176.12	-20.42		
beta	I	2034-12-31T03:01:49.075		43.68	-44.13	45673.82	-20.05		
alpha	I	2034-12-31T03:02:38.640		43.67	-44.12	44684.61	-19.77		
4	I	2034-12-31T03:04:25.731		43.64	-44.10	42601.99	-19.13		
5	I	2034-12-31T03:04:48.636		43.63	-44.10	42160.39	-18.94		
6	I	2034-12-31T03:05:03.586		43.63	-44.10	41876.53	-18.86		

No planet occultations

6	E	2034-12-31T03:45:54.250		41.88	-42.56	41849.32	18.85		
5	E	2034-12-31T03:46:13.308		41.86	-42.54	42214.33	18.93		
4	E	2034-12-31T03:46:34.221		41.83	-42.51	42600.10	19.11		
alpha	E	2034-12-31T03:48:23.279		41.71	-42.40	44725.76	19.75		
beta	E	2034-12-31T03:49:10.740		41.65	-42.34	45673.12	20.03		
eta	E	2034-12-31T03:50:25.042		41.56	-42.26	47176.12	20.40		
gamma	E	2034-12-31T03:50:47.091		41.54	-42.24	47627.16	20.51		
delta	E	2034-12-31T03:51:19.797		41.50	-42.20	48300.35	20.66		
lambda	E	2034-12-31T03:52:42.648		41.40	-42.10	50026.71	21.01		
epsilon	E	2034-12-31T03:53:26.202		41.34	-42.05	50945.53	21.28		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:28:22.740
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 76.92
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.093
 C/A sky separation (km) : 27177.8
 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

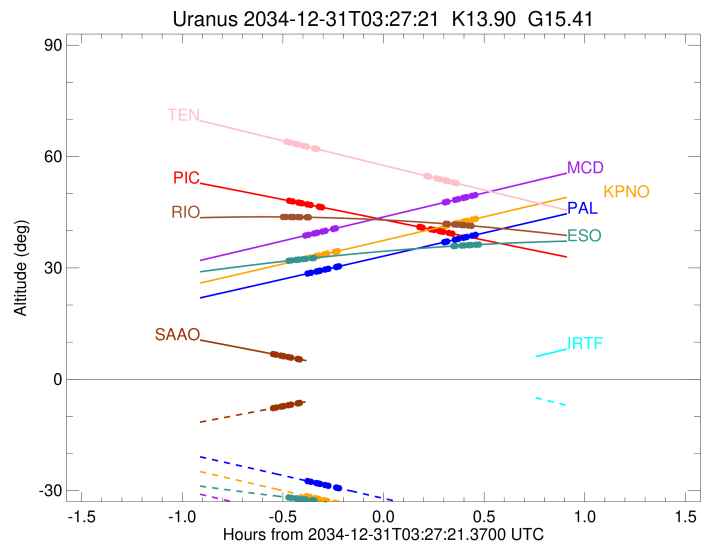
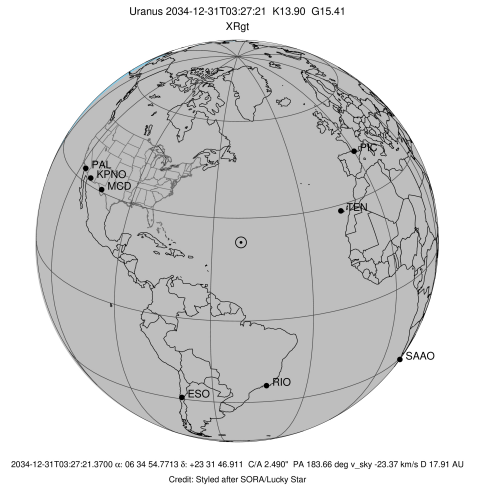


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-31T02:58:43.954		31.89	-31.81	51553.34	-21.41		
lambda	I	2034-12-31T02:59:55.651		32.01	-31.94	50026.71	-21.16		
delta	I	2034-12-31T03:01:17.882		32.15	-32.08	48300.35	-20.82		
gamma	I	2034-12-31T03:01:50.615		32.21	-32.14	47621.02	-20.68		
eta	I	2034-12-31T03:02:12.179		32.24	-32.18	47176.12	-20.58		
beta	I	2034-12-31T03:03:25.832		32.37	-32.30	45673.63	-20.23		
alpha	I	2034-12-31T03:04:14.907		32.45	-32.39	44684.62	-19.97		
4	I	2034-12-31T03:06:00.829		32.62	-32.56	42601.52	-19.36		
5	I	2034-12-31T03:06:23.398		32.65	-32.60	42160.82	-19.19		
6	I	2034-12-31T03:06:38.184		32.68	-32.63	41876.29	-19.11		

No planet occultations

6	E	2034-12-31T03:48:11.332		35.88	-36.01	41848.47	19.13		
5	E	2034-12-31T03:48:30.237		35.89	-36.03	42215.92	19.21		
4	E	2034-12-31T03:48:50.729		35.91	-36.05	42599.39	19.38		
alpha	E	2034-12-31T03:50:38.472		36.01	-36.16	44726.38	19.99		
beta	E	2034-12-31T03:51:25.347		36.06	-36.20	45672.82	20.25		
eta	E	2034-12-31T03:52:38.897		36.12	-36.28	47176.12	20.61		
gamma	E	2034-12-31T03:53:00.737		36.14	-36.30	47627.25	20.70		
delta	E	2034-12-31T03:53:33.134		36.17	-36.33	48300.35	20.85		
lambda	E	2034-12-31T03:54:55.267		36.24	-36.40	50026.71	21.18		
epsilon	E	2034-12-31T03:55:38.211		36.27	-36.44	50939.96	21.44		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-31T03:23:23.140
 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 : 3382447106797520384
 2Mass ID (if available) : 06345477+2331471
 ICRS Star Coord at Epoch: 06h 34m 54.77126s +23:31:46.91082s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 13.896
 G magnitude : 15.407
 RP magnitude : 14.881
 BP magnitude : 15.756
 DUPflag : 0
 Distance (au) : 17.906
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.37
 Sun-Target sep (deg) : 178.92
 Sun-Moon sep (deg) : 76.18
 B (ring opening deg) : 68.17
 PA of pole (deg) : 71.39
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.219
 C/A sky separation (km) : 28814.4
 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	2034-12-31T02:54:06.762		6.84	-7.85	51551.92	-20.70		
lambda	I	2034-12-31T02:55:20.939		6.62	-7.63	50026.71	-20.41		
delta	I	2034-12-31T02:56:46.327		6.37	-7.38	48300.35	-20.02		
gamma	I	2034-12-31T02:57:20.398		6.27	-7.28	47620.99	-19.86		
eta	I	2034-12-31T02:57:42.867		6.20	-7.21	47176.12	-19.74		
beta	I	2034-12-31T02:58:59.761		5.97	-6.98	45674.23	-19.34		
alpha	I	2034-12-31T02:59:51.224		5.82	-6.83	44684.63	-19.03		
4	I	2034-12-31T03:01:42.680		5.48	-6.50	42602.98	-18.32		
5	I	2034-12-31T03:02:06.715		5.41	-6.43	42159.52	-18.12		
6	I	2034-12-31T03:02:22.279		5.37	-6.38	41877.02	-18.03		

No planet occultations

6	E	2034-12-31T03:42:23.999	-2.03x	0.97x	41850.92	17.98			
5	E	2034-12-31T03:42:43.727	-2.09x	1.03x	42211.33	18.07			
4	E	2034-12-31T03:43:05.876	-2.16x	1.10x	42601.42	18.27			
alpha	E	2034-12-31T03:44:59.577	-2.52x	1.46x	44724.58	18.97			
beta	E	2034-12-31T03:45:49.058	-2.68x	1.62x	45673.67	19.27			
eta	E	2034-12-31T03:47:06.178	-2.93x	1.86x	47176.12	19.67			
gamma	E	2034-12-31T03:47:29.031	-3.00x	1.93x	47626.99	19.78			
delta	E	2034-12-31T03:48:02.923	-3.11x	2.04x	48300.35	19.95			
lambda	E	2034-12-31T03:49:28.634	-3.38x	2.31x	50026.71	20.33			
epsilon	E	2034-12-31T03:50:14.133	-3.52x	2.45x	50955.91	20.61			