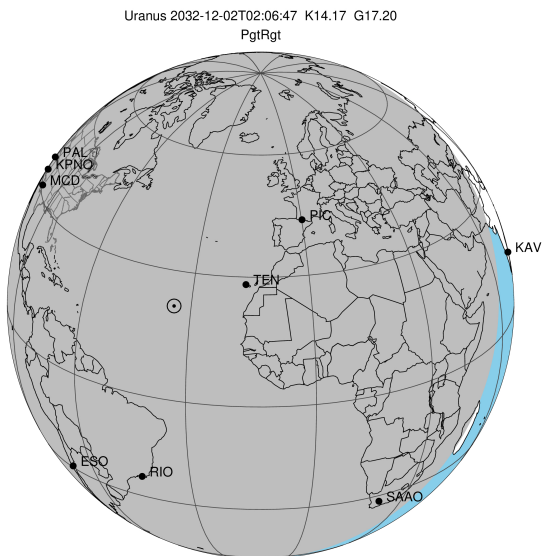


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:06:47.370
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548

ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s

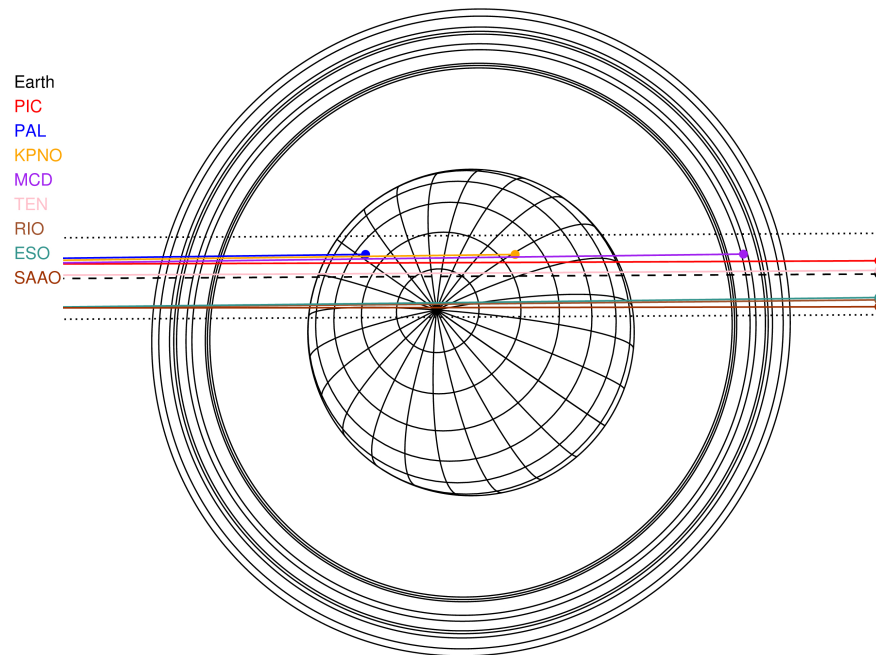
RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 150.29
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83

#	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



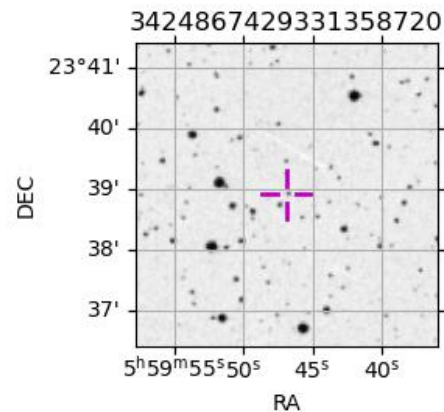
2032-12-02T02:06:47.3700 ex: 05 59 46.8707 s: +23 38 54.790 C/A 0.678° PA 180.31 deg v_sky -21.64 km/s D 18.09 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2032-12-02T02:06:47 K14.17 G17.20 PgtRgt



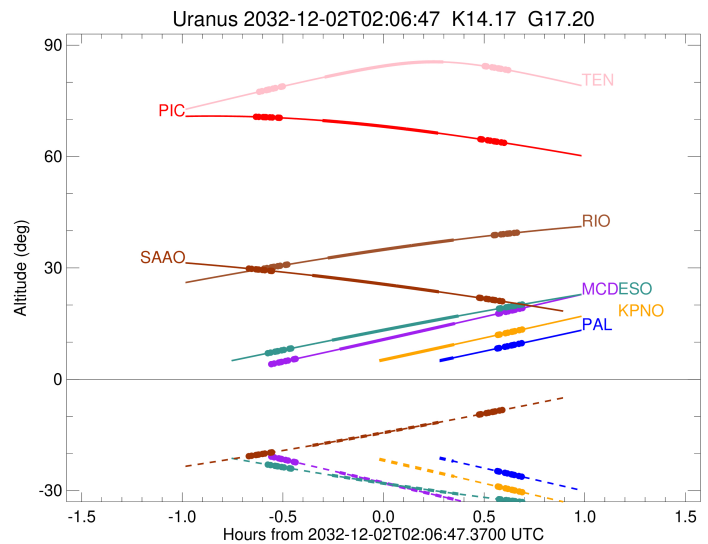
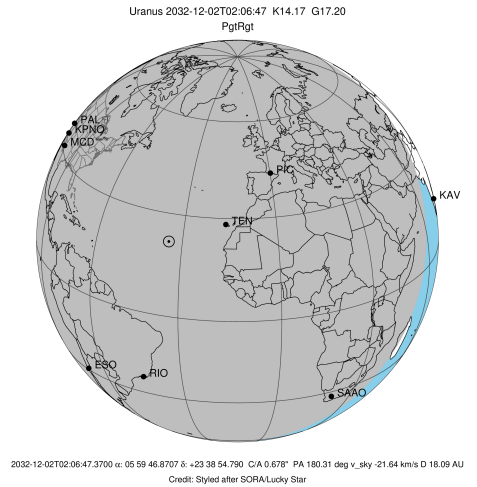
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1	+++++	+	+++++	DEC 02 01:28 - DEC 02 02:42	PieRie
PAL	Palomar Mt (200")	33.4	243.1		+	+++++	DEC 02 02:27 - DEC 02 02:47	PneRne
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4		+	+++++	DEC 02 02:27 - DEC 02 02:48	PneRne
MCD	McDonald Obs. 2.7m	30.7	256.0	++++	+	+++++	DEC 02 01:38 - DEC 02 02:48	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+	+++++	DEC 02 01:29 - DEC 02 02:43	PieRie
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 02 01:31 - DEC 02 02:46	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++	+	+++++	DEC 02 01:32 - DEC 02 02:48	PieRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+	+++++	DEC 02 01:26 - DEC 02 02:42	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



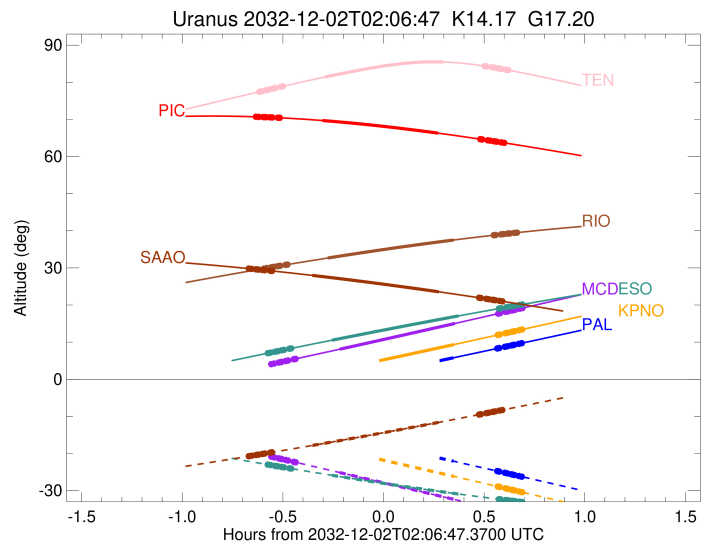
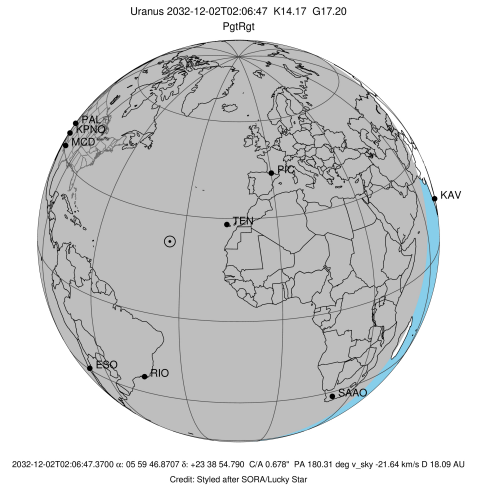
3424867429331358720

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:06:00.050
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 150.88
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.834
 C/A sky separation (km) : 10946.0
 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



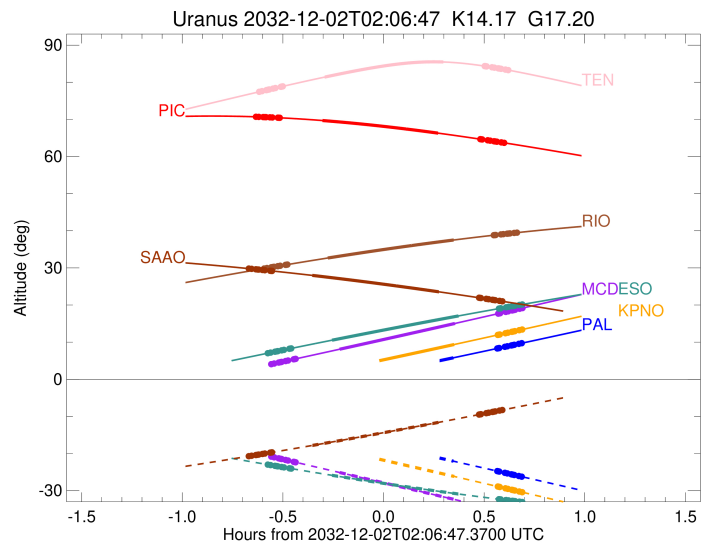
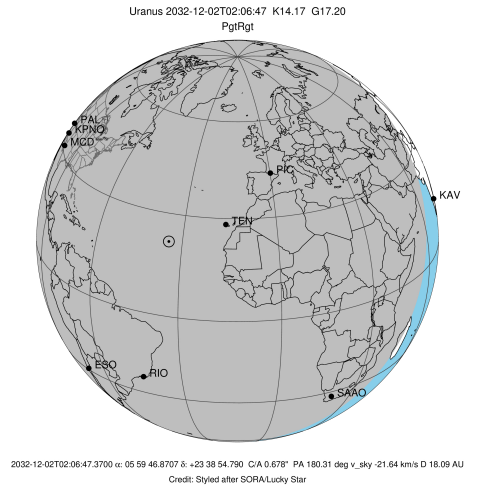
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-02T01:28:36.328		70.71	-60.66	51355.04	-21.99		
lambda	I	2032-12-02T01:29:36.852		70.67	-60.51	50026.71	-21.93		
delta	I	2032-12-02T01:30:55.638		70.63	-60.31	48300.35	-21.89		
gamma	I	2032-12-02T01:31:26.253		70.61	-60.24	47630.40	-21.87		
eta	I	2032-12-02T01:31:47.028		70.60	-60.19	47176.12	-21.86		
beta	I	2032-12-02T01:32:55.543		70.56	-60.02	45679.03	-21.82		
alpha	I	2032-12-02T01:33:38.213		70.53	-59.91	44751.34	-21.79		
4	I	2032-12-02T01:35:18.780		70.46	-59.66	42564.06	-21.71		
5	I	2032-12-02T01:35:30.124		70.45	-59.63	42315.25	-21.70		
6	I	2032-12-02T01:35:52.628		70.43	-59.57	41821.08	-21.69		
Uranus	I	2032-12-02T01:48:36.762		69.70	-57.60	25409.42		-7.48	-7.83
Uranus	E	2032-12-02T02:23:03.814		66.31	-51.89	25019.58		14.48	15.14
6	E	2032-12-02T02:35:40.760		64.67	-49.70	41871.22	21.68		
5	E	2032-12-02T02:35:54.083		64.64	-49.66	42165.79	21.69		
4	E	2032-12-02T02:36:11.525		64.60	-49.61	42554.81	21.70		
alpha	E	2032-12-02T02:37:49.697		64.38	-49.33	44685.65	21.78		
beta	E	2032-12-02T02:38:33.676		64.28	-49.20	45641.06	21.80		
eta	E	2032-12-02T02:39:43.960		64.12	-48.99	47176.12	21.85		
gamma	E	2032-12-02T02:40:04.320		64.07	-48.93	47621.07	21.86		
delta	E	2032-12-02T02:40:35.381		64.00	-48.84	48300.35	21.88		
lambda	E	2032-12-02T02:41:54.216		63.81	-48.61	50026.71	21.92		
epsilon	E	2032-12-02T02:42:43.401		63.70	-48.46	51105.35	21.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:10:53.010
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 149.69
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.948
 C/A sky separation (km) : 12440.1
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



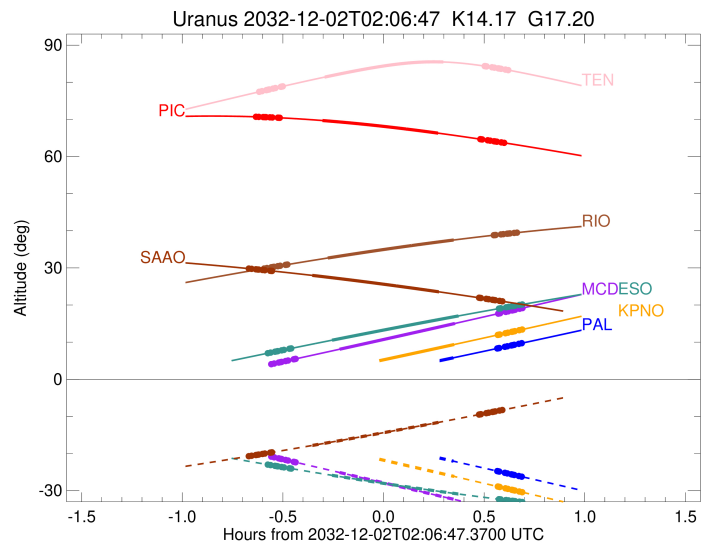
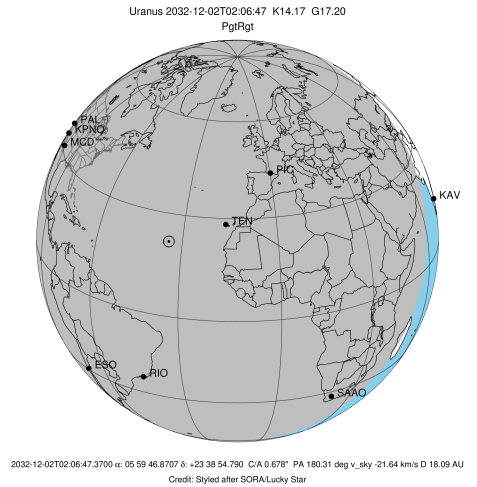
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-02T01:32:54.489	-4.33x	-11.05	51368.23	-21.35			
lambda	I	2032-12-02T01:33:57.483	-4.14x	-11.26	50026.71	-21.28			
delta	I	2032-12-02T01:35:18.711	-3.90x	-11.53	48300.35	-21.23			
gamma	I	2032-12-02T01:35:50.293	-3.80x	-11.63	47630.26	-21.21			
eta	I	2032-12-02T01:36:11.717	-3.74x	-11.70	47176.12	-21.19			
beta	I	2032-12-02T01:37:22.437	-3.53x	-11.94	45678.63	-21.14			
alpha	I	2032-12-02T01:38:06.481	-3.40x	-12.08	44750.94	-21.10			
4	I	2032-12-02T01:39:50.434	-3.09x	-12.43	42562.07	-21.01			
5	I	2032-12-02T01:40:02.096	-3.05x	-12.47	42315.16	-21.00			
6	I	2032-12-02T01:40:25.279	-2.98x	-12.54	41822.89	-20.98			
Uranus	I	2032-12-02T01:53:42.625	-0.57x	-15.19	25444.25			-6.54	-6.85
Uranus	E	2032-12-02T02:27:38.979	5.79	-22.06	25013.35			14.57	15.23
6	E	2032-12-02T02:40:44.117	8.31	-24.74	41871.94	21.08			
5	E	2032-12-02T02:40:57.843	8.35	-24.79	42166.97	21.10			
4	E	2032-12-02T02:41:15.640	8.41	-24.85	42553.62	21.11			
alpha	E	2032-12-02T02:42:56.545	8.73	-25.20	44685.88	21.22			
beta	E	2032-12-02T02:43:41.664	8.88	-25.35	45641.07	21.25			
eta	E	2032-12-02T02:44:53.744	9.11	-25.60	47176.12	21.31			
gamma	E	2032-12-02T02:45:14.613	9.18	-25.67	47621.05	21.33			
delta	E	2032-12-02T02:45:46.446	9.28	-25.78	48300.35	21.35			
lambda	E	2032-12-02T02:47:07.194	9.54	-26.06	50026.71	21.41			
epsilon	E	2032-12-02T02:47:57.948	9.71	-26.23	51114.01	21.48			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:11:00.860
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 149.69
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.924
 C/A sky separation (km) : 12129.7
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



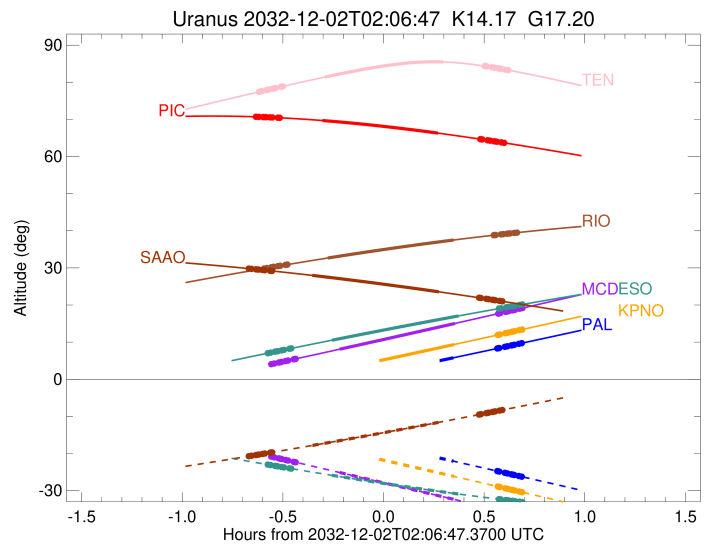
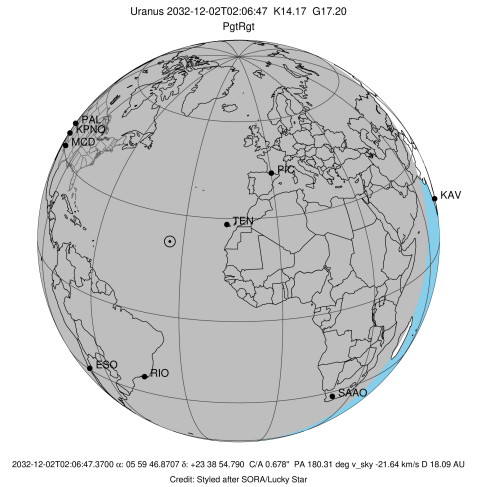
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-02T01:33:02.878	-1.18x	-14.87	51366.16	-21.41			
lambda	I	2032-12-02T01:34:05.579	-0.98x	-15.09	50026.71	-21.35			
delta	I	2032-12-02T01:35:26.546	-0.73x	-15.36	48300.35	-21.30			
gamma	I	2032-12-02T01:35:58.023	-0.63x	-15.47	47630.29	-21.28			
eta	I	2032-12-02T01:36:19.375	-0.57x	-15.54	47176.12	-21.26			
beta	I	2032-12-02T01:37:29.848	-0.35x	-15.78	45678.69	-21.21			
alpha	I	2032-12-02T01:38:13.736	-0.21x	-15.93	44751.01	-21.18			
4	I	2032-12-02T01:39:57.290	0.12x	-16.28	42562.40	-21.09			
5	I	2032-12-02T01:40:08.916	0.15x	-16.32	42315.19	-21.08			
6	I	2032-12-02T01:40:32.023	0.22x	-16.40	41822.58	-21.06			
Uranus	I	2032-12-02T01:53:44.512	2.73x	-19.10	25438.09			-6.72	-7.03
Uranus	E	2032-12-02T02:27:53.343	9.37	-26.18	25014.54			14.55	15.21
6	E	2032-12-02T02:40:53.839	11.95	-28.90	41871.75	21.17			
5	E	2032-12-02T02:41:07.501	11.99	-28.95	42166.64	21.19			
4	E	2032-12-02T02:41:25.262	12.05	-29.01	42553.95	21.20			
alpha	E	2032-12-02T02:43:05.754	12.39	-29.37	44685.81	21.30			
beta	E	2032-12-02T02:43:50.708	12.54	-29.52	45641.07	21.33			
eta	E	2032-12-02T02:45:02.527	12.78	-29.77	47176.12	21.39			
gamma	E	2032-12-02T02:45:23.322	12.85	-29.85	47621.05	21.40			
delta	E	2032-12-02T02:45:55.044	12.95	-29.96	48300.35	21.43			
lambda	E	2032-12-02T02:47:15.518	13.22	-30.24	50026.71	21.48			
epsilon	E	2032-12-02T02:48:05.983	13.39	-30.42	51111.40	21.55			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:11:06.390
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 149.71
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.894
 C/A sky separation (km) : 11729.2
 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



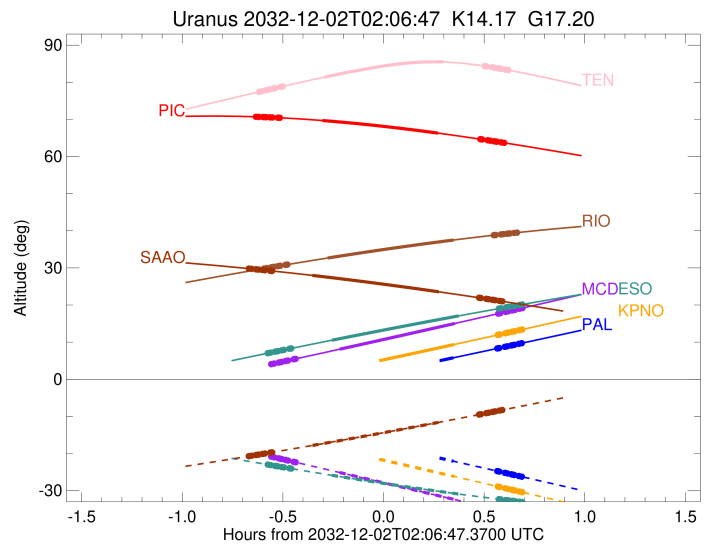
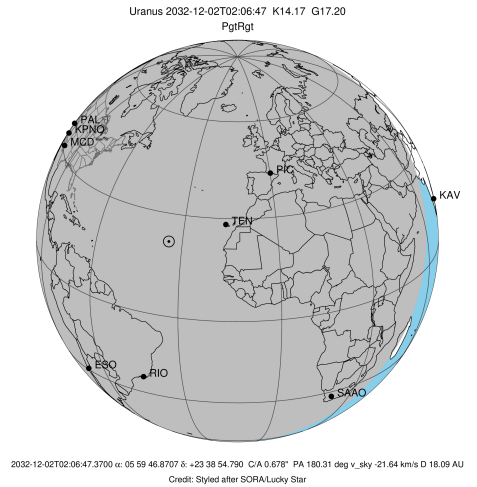
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-02T01:33:10.114		4.04x	-20.81	51363.43	-21.50		
lambda	I	2032-12-02T01:34:12.417		4.24x	-21.02	50026.71	-21.44		
delta	I	2032-12-02T01:35:33.021		4.50x	-21.31	48300.35	-21.40		
gamma	I	2032-12-02T01:36:04.351		4.60x	-21.41	47630.32	-21.38		
eta	I	2032-12-02T01:36:25.605		4.67x	-21.49	47176.12	-21.36		
beta	I	2032-12-02T01:37:35.737		4.90x	-21.73	45678.78	-21.32		
alpha	I	2032-12-02T01:38:19.411		5.05	-21.89	44751.10	-21.29		
4	I	2032-12-02T01:40:02.421		5.38	-22.25	42562.83	-21.20		
5	I	2032-12-02T01:40:13.999		5.42	-22.29	42315.22	-21.19		
6	I	2032-12-02T01:40:37.000		5.50	-22.37	41822.19	-21.17		
Uranus	I	2032-12-02T01:53:43.131		8.09	-25.12	25429.96		-6.94	-7.27
Uranus	E	2032-12-02T02:28:06.515		15.04	-32.42	25016.38		14.53	15.18
6	E	2032-12-02T02:41:00.993		17.69	-35.17	41871.49	21.28		
5	E	2032-12-02T02:41:14.570		17.73	-35.22	42166.22	21.30		
4	E	2032-12-02T02:41:32.281		17.79	-35.28	42554.37	21.31		
alpha	E	2032-12-02T02:43:12.221		18.14	-35.64	44685.72	21.41		
beta	E	2032-12-02T02:43:56.953		18.29	-35.80	45641.06	21.44		
eta	E	2032-12-02T02:45:08.422		18.54	-36.06	47176.12	21.49		
gamma	E	2032-12-02T02:45:29.119		18.61	-36.13	47621.06	21.51		
delta	E	2032-12-02T02:46:00.690		18.72	-36.24	48300.35	21.53		
lambda	E	2032-12-02T02:47:20.794		18.99	-36.53	50026.71	21.58		
epsilon	E	2032-12-02T02:48:10.881		19.17	-36.71	51108.10	21.65		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:07:04.440
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 150.71
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.709
 C/A sky separation (km) : 9306.5
 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



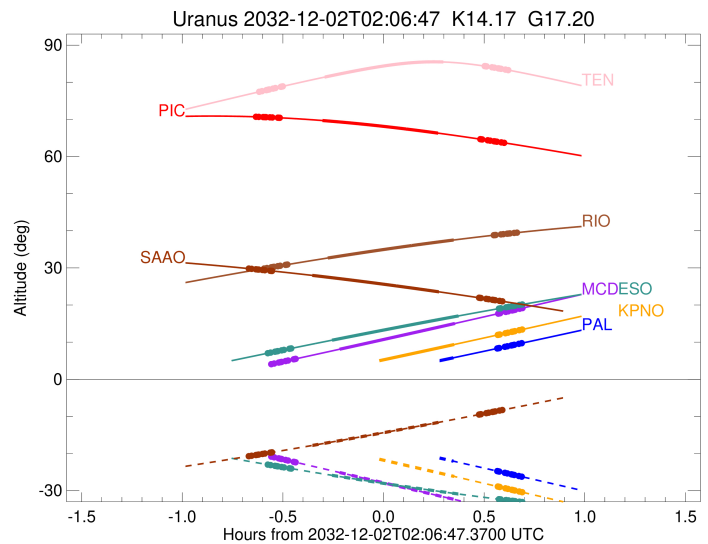
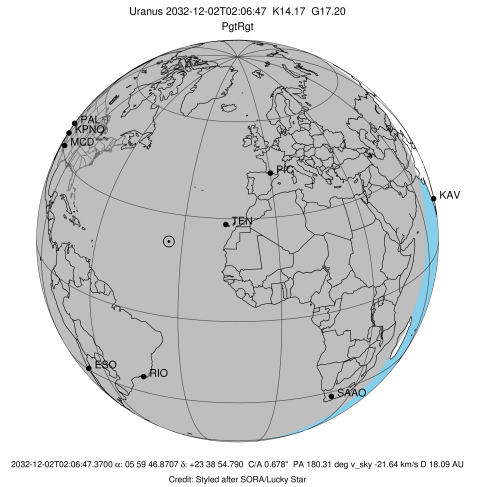
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-02T01:29:35.383		77.41	-80.13	51344.07	-22.20		
lambda	I	2032-12-02T01:30:34.839		77.62	-79.95	50026.71	-22.15		
delta	I	2032-12-02T01:31:52.841		77.89	-79.72	48300.35	-22.12		
gamma	I	2032-12-02T01:32:23.135		78.00	-79.63	47630.51	-22.10		
eta	I	2032-12-02T01:32:43.696		78.07	-79.57	47176.12	-22.10		
beta	I	2032-12-02T01:33:51.448		78.30	-79.36	45679.34	-22.06		
alpha	I	2032-12-02T01:34:33.636		78.45	-79.23	44751.62	-22.05		
4	I	2032-12-02T01:36:12.930		78.79	-78.92	42565.78	-21.99		
5	I	2032-12-02T01:36:24.187		78.83	-78.88	42315.20	-21.98		
6	I	2032-12-02T01:36:46.461		78.91	-78.81	41819.57	-21.97		
Uranus	I	2032-12-02T01:49:13.952		81.40	-76.37	25374.94		-8.31	-8.70
Uranus	E	2032-12-02T02:24:38.013		85.47	-68.93	25032.38		14.30	14.95
6	E	2032-12-02T02:36:59.184		84.36	-66.25	41870.10	21.99		
5	E	2032-12-02T02:37:12.286		84.33	-66.20	42164.15	22.00		
4	E	2032-12-02T02:37:29.669		84.29	-66.14	42556.59	22.00		
alpha	E	2032-12-02T02:39:06.422		84.05	-65.79	44685.34	22.06		
beta	E	2032-12-02T02:39:49.858		83.94	-65.63	45641.06	22.08		
eta	E	2032-12-02T02:40:59.280		83.77	-65.38	47176.12	22.11		
gamma	E	2032-12-02T02:41:19.400		83.71	-65.30	47621.12	22.12		
delta	E	2032-12-02T02:41:50.094		83.63	-65.19	48300.35	22.13		
lambda	E	2032-12-02T02:43:08.033		83.42	-64.91	50026.71	22.17		
epsilon	E	2032-12-02T02:43:56.050		83.29	-64.73	51091.42	22.21		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:09:01.860
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 150.12
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.341
 C/A sky separation (km) : 4477.9
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



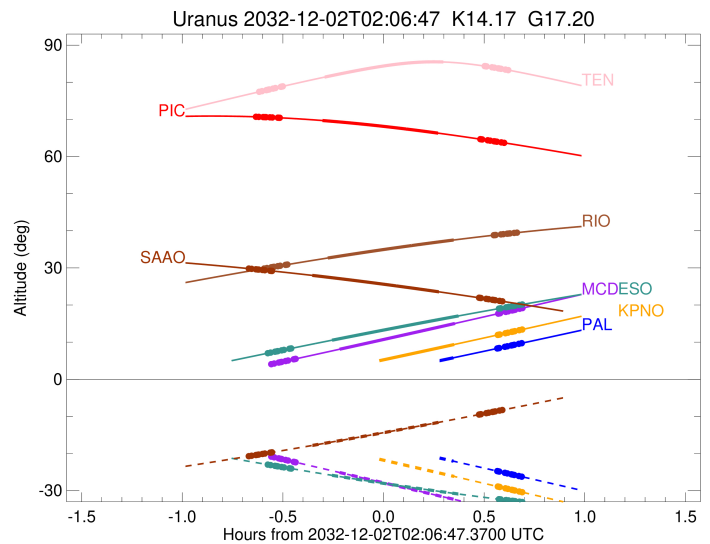
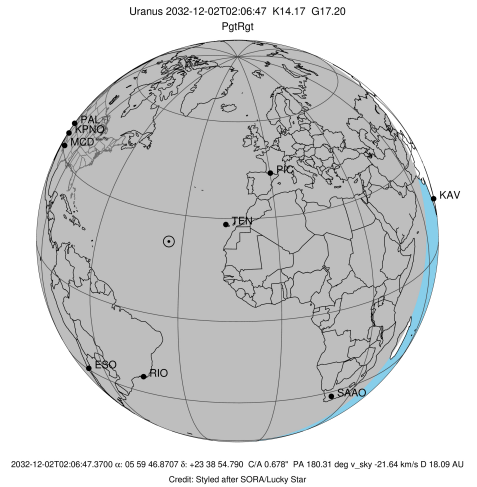
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-02T01:31:05.424		29.82	-42.00	51310.19	-22.40		
lambda	I	2032-12-02T01:32:02.757		29.97	-42.08	50026.71	-22.38		
delta	I	2032-12-02T01:33:19.890		30.16	-42.19	48300.35	-22.38		
gamma	I	2032-12-02T01:33:49.809		30.24	-42.24	47630.81	-22.38		
eta	I	2032-12-02T01:34:10.130		30.29	-42.27	47176.12	-22.38		
beta	I	2032-12-02T01:35:16.962		30.46	-42.36	45680.13	-22.37		
alpha	I	2032-12-02T01:35:58.580		30.57	-42.42	44752.22	-22.37		
4	I	2032-12-02T01:37:36.187		30.82	-42.55	42570.88	-22.35		
5	I	2032-12-02T01:37:47.452		30.84	-42.56	42314.35	-22.35		
6	I	2032-12-02T01:38:09.495		30.90	-42.59	41815.25	-22.35		
Uranus	I	2032-12-02T01:50:11.736		32.67	-43.48	25270.05		-10.47	-10.95
Uranus	E	2032-12-02T02:27:42.894		37.51	-45.09	25094.83		13.38	13.99
6	E	2032-12-02T02:39:41.660		38.81	-45.23	41866.59	22.41		
5	E	2032-12-02T02:39:54.472		38.83	-45.23	42160.15	22.42		
4	E	2032-12-02T02:40:12.024		38.86	-45.23	42561.81	22.42		
alpha	E	2032-12-02T02:41:46.782		39.02	-45.23	44684.76	22.44		
beta	E	2032-12-02T02:42:29.542		39.10	-45.23	45641.23	22.44		
eta	E	2032-12-02T02:43:37.881		39.21	-45.23	47176.12	22.45		
gamma	E	2032-12-02T02:43:57.709		39.24	-45.23	47621.28	22.45		
delta	E	2032-12-02T02:44:27.950		39.29	-45.23	48300.35	22.46		
lambda	E	2032-12-02T02:45:44.812		39.42	-45.22	50026.71	22.46		
epsilon	E	2032-12-02T02:46:30.437		39.49	-45.22	51051.77	22.48		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:10:23.130
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 149.74
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.359
 C/A sky separation (km) : 4710.8
 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	2032-12-02T01:32:10.317		7.00	-22.97	51312.71	-22.22		
lambda	I	2032-12-02T01:33:08.238		7.18	-23.12	50026.71	-22.20		
delta	I	2032-12-02T01:34:26.009		7.42	-23.32	48300.35	-22.20		
gamma	I	2032-12-02T01:34:56.177		7.51	-23.40	47630.79	-22.19		
eta	I	2032-12-02T01:35:16.665		7.58	-23.45	47176.12	-22.19		
beta	I	2032-12-02T01:36:24.054		7.78	-23.63	45680.08	-22.18		
alpha	I	2032-12-02T01:37:06.016		7.91	-23.73	44752.19	-22.18		
4	I	2032-12-02T01:38:44.447		8.21	-23.98	42570.53	-22.17		
5	I	2032-12-02T01:38:55.791		8.25	-24.01	42314.44	-22.17		
6	I	2032-12-02T01:39:18.010		8.32	-24.07	41815.53	-22.16		
Uranus	I	2032-12-02T01:51:26.630		10.53	-25.87	25276.42		-10.35	-10.83
Uranus	E	2032-12-02T02:29:09.471		17.07	-30.91	25092.14		13.42	14.03
6	E	2032-12-02T02:41:13.431		19.04	-32.31	41866.69	22.26		
5	E	2032-12-02T02:41:26.329		19.08	-32.33	42160.24	22.27		
4	E	2032-12-02T02:41:43.986		19.12	-32.37	42561.67	22.27		
alpha	E	2032-12-02T02:43:19.380		19.38	-32.54	44684.77	22.29		
beta	E	2032-12-02T02:44:02.420		19.49	-32.62	45641.22	22.30		
eta	E	2032-12-02T02:45:11.204		19.68	-32.75	47176.12	22.31		
gamma	E	2032-12-02T02:45:31.159		19.73	-32.78	47621.28	22.31		
delta	E	2032-12-02T02:46:01.596		19.81	-32.84	48300.35	22.31		
lambda	E	2032-12-02T02:47:18.948		20.01	-32.97	50026.71	22.32		
epsilon	E	2032-12-02T02:48:04.898		20.14	-33.06	51052.59	22.34		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-02T02:04:29.010
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3424867429331358720
 2Mass ID (if available) : 05594686+2338548
 ICRS Star Coord at Epoch: 05h 59m 46.87067s +23:38:54.78964s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.170
 G magnitude : 17.197
 RP magnitude : 16.252
 BP magnitude : 18.076
 DUPflag : 0
 Distance (au) : 18.093
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.64
 Sun-Target sep (deg) : 160.04
 Sun-Moon sep (deg) : 150.81
 B (ring opening deg) : 75.39
 PA of pole (deg) : 56.83
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.298
 C/A sky separation (km) : 3906.4
 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_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	2032-12-02T01:26:31.241		29.82	-20.74	51303.08	-22.45		
lambda	I	2032-12-02T01:27:28.120		29.74	-20.60	50026.71	-22.44		
delta	I	2032-12-02T01:28:45.071		29.62	-20.41	48300.35	-22.43		
gamma	I	2032-12-02T01:29:14.918		29.58	-20.34	47630.86	-22.43		
eta	I	2032-12-02T01:29:35.194		29.55	-20.29	47176.12	-22.43		
beta	I	2032-12-02T01:30:41.866		29.44	-20.12	45680.26	-22.42		
alpha	I	2032-12-02T01:31:23.392		29.38	-20.01	44752.29	-22.42		
4	I	2032-12-02T01:33:00.742		29.23	-19.77	42571.85	-22.41		
5	I	2032-12-02T01:33:12.021		29.21	-19.74	42314.08	-22.40		
6	I	2032-12-02T01:33:34.035		29.17	-19.69	41814.47	-22.40		
Uranus	I	2032-12-02T01:45:33.925		27.98	-17.83	25253.33		-10.77	-11.27
Uranus	E	2032-12-02T02:23:17.861		23.56	-11.60	25100.94		13.29	13.90
6	E	2032-12-02T02:35:17.871		21.96	-9.51	41866.39	22.35		
5	E	2032-12-02T02:35:30.721		21.93	-9.47	42159.97	22.35		
4	E	2032-12-02T02:35:48.351		21.89	-9.42	42562.08	22.35		
alpha	E	2032-12-02T02:37:23.395		21.67	-9.14	44684.75	22.36		
beta	E	2032-12-02T02:38:06.300		21.57	-9.01	45641.24	22.37		
eta	E	2032-12-02T02:39:14.878		21.41	-8.81	47176.12	22.37		
gamma	E	2032-12-02T02:39:34.777		21.37	-8.75	47621.29	22.37		
delta	E	2032-12-02T02:40:05.129		21.30	-8.66	48300.35	22.37		
lambda	E	2032-12-02T02:41:22.283		21.12	-8.43	50026.71	22.38		
epsilon	E	2032-12-02T02:42:08.019		21.01	-8.30	51050.26	22.39		