

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-02-18T18:44:09.200
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3379615726916238464
 2Mass ID (if available) : 06471828+2323028

ICRS Star Coord at Epoch: 06h 47m 18.26924s +23:23:02.42279s

RUWE (>1.4 is poor) : 2.14
 K magnitude : 11.647
 G magnitude : 13.693
 RP magnitude : 13.032
 BP magnitude : 14.205
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.38
 Sun-Target sep (deg) : 131.65
 Sun-Moon sep (deg) : 135.64
 B (ring opening deg) : 65.49
 PA of pole (deg) : 74.87

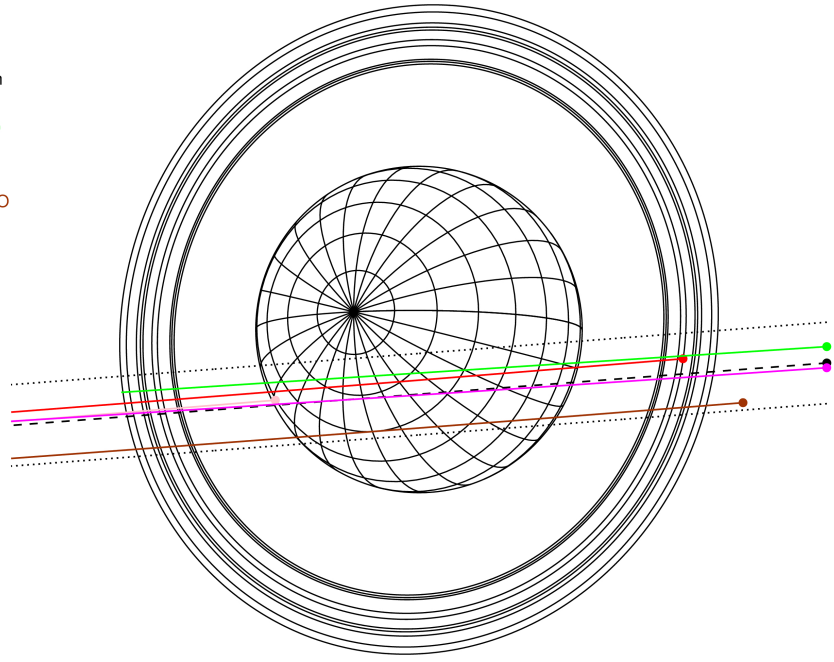
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-02-18T18:44:09.2000 α: 06 47 18.2692 δ: +23 23 02.423 C/A 0.761" PA 4.38 deg v_sky -13.38 km/s D 18.15 AU
 Credit: Styled after SORA/Lucky Star

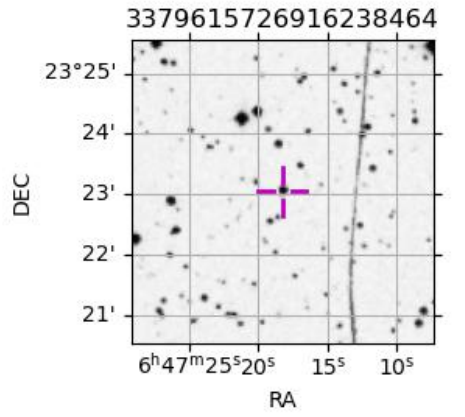
Uranus 2036-02-18T18:44:09 K11.65 G13.69 PgtRgt

Earth
 PIC
 PMO
 TEN
 KAV
 SAAO



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

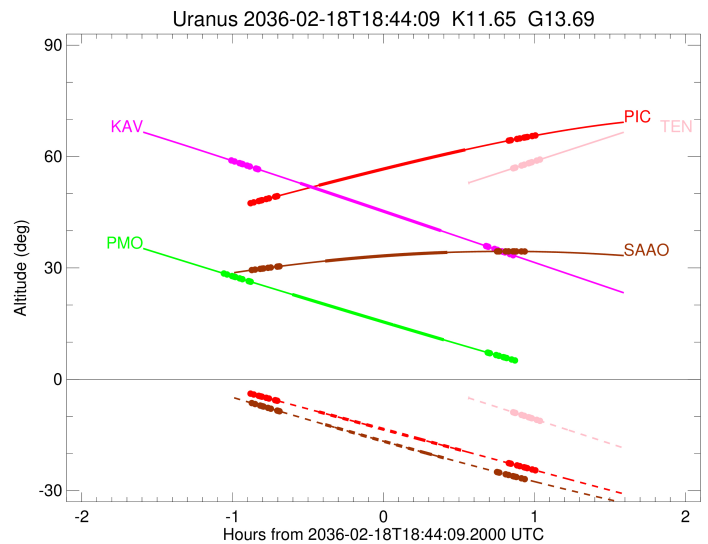
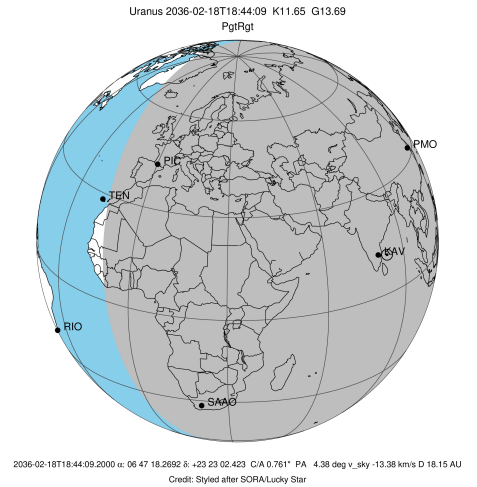
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	FEB 18 17:57 - FEB 18 19:44	PieRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	FEB 18 17:40 - FEB 18 19:36	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5		+	+++++	FEB 18 19:18 - FEB 18 19:46	PneRne
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++	+ +	+++++	FEB 18 17:43 - FEB 18 19:36	PieRie
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+ +	+++++	FEB 18 17:51 - FEB 18 19:40	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



3379615726916238464

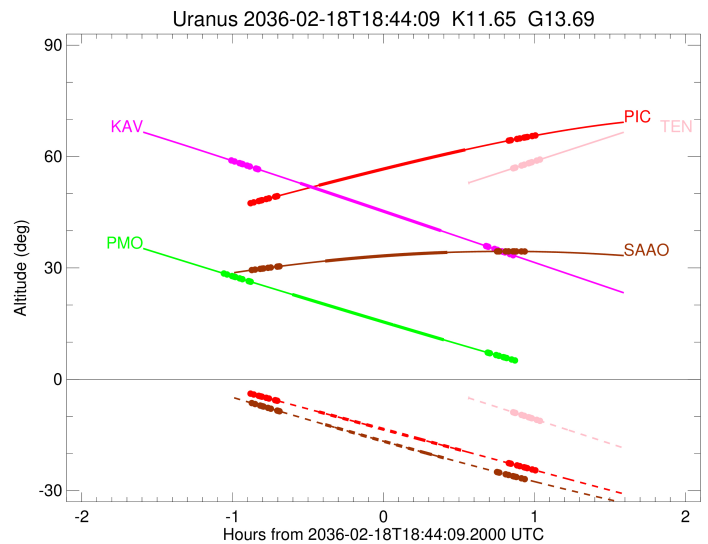
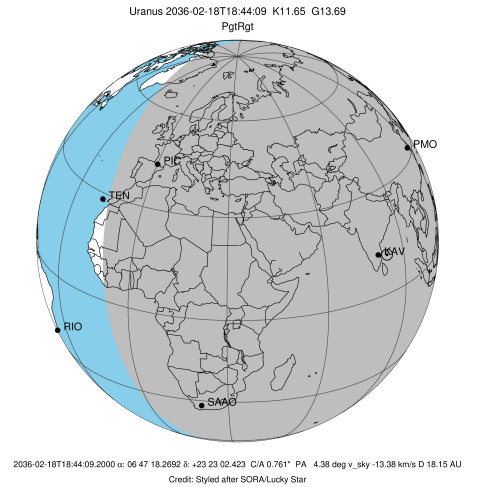
23°25'
 24'
 23'
 22'
 21'
 6h47m25s20s 15s 10s
 RA

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-02-18T18:47:26.390
 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 : 3379615726916238464
 2Mass ID (if available) : 06471828+2323028
 ICRS Star Coord at Epoch: 06h 47m 18.26924s +23:23:02.42279s
 RUWE (>1.4 is poor) : 2.14
 K magnitude : 11.647
 G magnitude : 13.693
 RP magnitude : 13.032
 BP magnitude : 14.205
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.38
 Sun-Target sep (deg) : 131.65
 Sun-Moon sep (deg) : 135.92
 B (ring opening deg) : 65.49
 PA of pole (deg) : 74.87
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.601
 C/A sky separation (km) : 7911.0
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



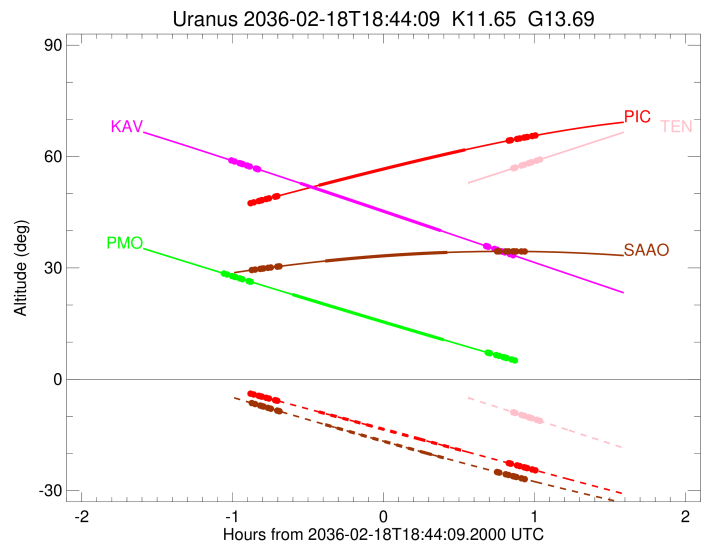
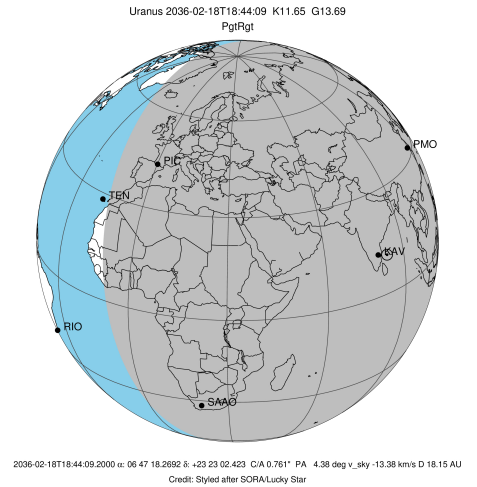
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-02-18T17:51:32.600		47.47	-3.92x	50951.82	-14.66		
lambda	I	2036-02-18T17:52:35.776		47.66	-4.11x	50026.71	-14.64		
delta	I	2036-02-18T17:54:33.743		48.01	-4.46x	48300.35	-14.63		
gamma	I	2036-02-18T17:55:20.015		48.15	-4.60x	47623.63	-14.62		
eta	I	2036-02-18T17:55:50.623		48.24	-4.69x	47176.12	-14.62		
beta	I	2036-02-18T17:57:35.448		48.56	-5.00	45645.96	-14.61		
alpha	I	2036-02-18T17:58:37.915		48.74	-5.19	44737.83	-14.60		
4	I	2036-02-18T18:01:05.743		49.18	-5.64	42566.02	-14.57		
5	I	2036-02-18T18:01:27.198		49.25	-5.70	42251.45	-14.57		
6	I	2036-02-18T18:01:57.367		49.34	-5.79	41804.30	-14.55		
Uranus	I	2036-02-18T18:18:24.566		52.24	-8.77	25075.08		-24.50	-25.52
Uranus	E	2036-02-18T19:16:40.277		61.82	-19.43	25254.50		19.10	19.93
6	E	2036-02-18T19:33:58.695		64.30	-22.60	41857.84	14.60		
5	E	2036-02-18T19:34:25.346		64.36	-22.68	42248.30	14.62		
4	E	2036-02-18T19:34:46.172		64.40	-22.75	42559.62	14.62		
alpha	E	2036-02-18T19:37:10.927		64.73	-23.19	44690.71	14.65		
beta	E	2036-02-18T19:38:18.682		64.88	-23.39	45679.89	14.66		
eta	E	2036-02-18T19:40:00.764		65.10	-23.70	47176.12	14.67		
gamma	E	2036-02-18T19:40:31.707		65.16	-23.80	47630.27	14.68		
delta	E	2036-02-18T19:41:17.347		65.26	-23.94	48300.35	14.68		
lambda	E	2036-02-18T19:43:14.848		65.51	-24.29	50026.71	14.70		
epsilon	E	2036-02-18T19:44:51.098		65.71	-24.58	51442.10	14.72		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-02-18T18:37:51.330
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3379615726916238464
 2Mass ID (if available) : 06471828+2323028
 ICRS Star Coord at Epoch: 06h 47m 18.26924s +23:23:02.42279s
 RUWE (>1.4 is poor) : 2.14
 K magnitude : 11.647
 G magnitude : 13.693
 RP magnitude : 13.032
 BP magnitude : 14.205
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.38
 Sun-Target sep (deg) : 131.65
 Sun-Moon sep (deg) : 136.39
 B (ring opening deg) : 65.49
 PA of pole (deg) : 74.87
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.517
 C/A sky separation (km) : 6806.0
 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_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



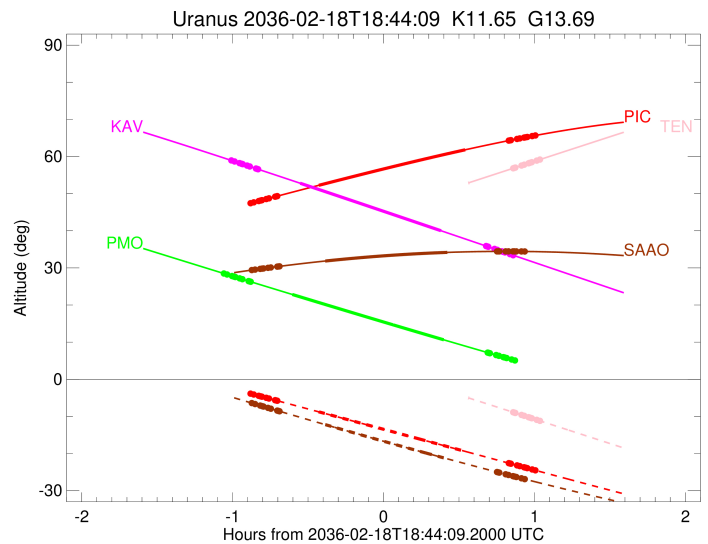
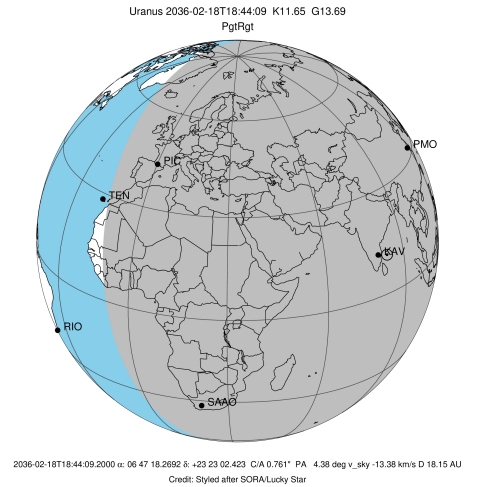
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-02-18T17:40:56.705		28.44	-62.22	50949.28	-14.60		
lambda	I	2036-02-18T17:41:59.979		28.22	-62.05	50026.71	-14.58		
delta	I	2036-02-18T17:43:58.469		27.81	-61.74	48300.35	-14.56		
gamma	I	2036-02-18T17:44:44.952		27.65	-61.61	47623.59	-14.56		
eta	I	2036-02-18T17:45:15.697		27.54	-61.53	47176.12	-14.55		
beta	I	2036-02-18T17:47:01.014		27.17	-61.24	45645.83	-14.54		
alpha	I	2036-02-18T17:48:03.743		26.96	-61.07	44738.12	-14.53		
4	I	2036-02-18T17:50:32.252		26.44	-60.67	42566.56	-14.50		
5	I	2036-02-18T17:50:53.899		26.37	-60.61	42250.49	-14.50		
6	I	2036-02-18T17:51:24.134		26.26	-60.52	41804.64	-14.49		
Uranus	I	2036-02-18T18:07:55.203		22.84	-57.66	25076.18		-24.47	-25.48
Uranus	E	2036-02-18T19:08:07.175		10.63	-46.08	25227.03		19.99	20.86
6	E	2036-02-18T19:25:36.113		7.18	-42.51	41859.31	14.29		
5	E	2036-02-18T19:26:02.985		7.09	-42.42	42245.13	14.30		
4	E	2036-02-18T19:26:24.646		7.02	-42.34	42561.37	14.30		
alpha	E	2036-02-18T19:28:52.612		6.54	-41.84	44691.48	14.32		
beta	E	2036-02-18T19:30:01.894		6.31	-41.60	45679.61	14.32		
eta	E	2036-02-18T19:31:46.450		5.97	-41.24	47176.12	14.33		
gamma	E	2036-02-18T19:32:18.138		5.87	-41.13	47630.14	14.33		
delta	E	2036-02-18T19:33:04.909		5.72	-40.97	48300.35	14.33		
lambda	E	2036-02-18T19:35:05.345		5.33	-40.55	50026.71	14.34		
epsilon	E	2036-02-18T19:36:43.354		5.01	-40.21	51432.10	14.35		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-02-18T18:49:24.100
 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 : 3379615726916238464
 2Mass ID (if available) : 06471828+2323028
 ICRS Star Coord at Epoch: 06h 47m 18.26924s +23:23:02.42279s
 RUWE (>1.4 is poor) : 2.14
 K magnitude : 11.647
 G magnitude : 13.693
 RP magnitude : 13.032
 BP magnitude : 14.205
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.38
 Sun-Target sep (deg) : 131.65
 Sun-Moon sep (deg) : 135.66
 B (ring opening deg) : 65.49
 PA of pole (deg) : 74.87
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.697
 C/A sky separation (km) : 9168.5
 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



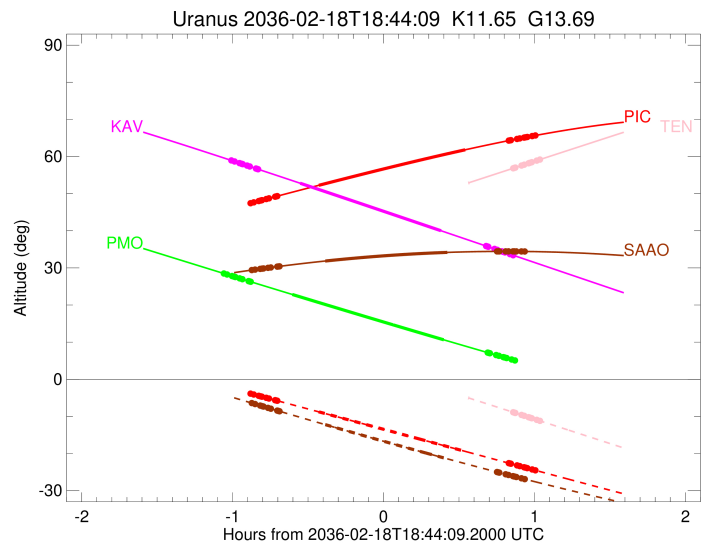
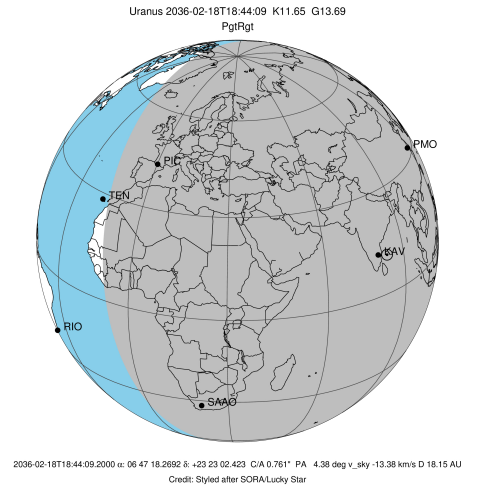
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-02-18T17:53:42.589		34.41	12.84x	50959.60	-14.55		
lambda	I	2036-02-18T17:54:46.787		34.65	12.62x	50026.71	-14.53		
delta	I	2036-02-18T17:56:45.690		35.08	12.21x	48300.35	-14.51		
gamma	I	2036-02-18T17:57:32.330		35.25	12.05x	47623.74	-14.50		
eta	I	2036-02-18T17:58:03.197		35.36	11.94x	47176.12	-14.50		
beta	I	2036-02-18T17:59:48.882		35.74	11.58x	45646.30	-14.48		
alpha	I	2036-02-18T18:00:51.960		35.97	11.36x	44737.10	-14.47		
4	I	2036-02-18T18:03:21.147		36.52	10.85x	42564.80	-14.43		
5	I	2036-02-18T18:03:42.599		36.59	10.77x	42253.60	-14.43		
6	I	2036-02-18T18:04:13.220		36.70	10.67x	41803.57	-14.42		
Uranus	I	2036-02-18T18:20:53.109		40.35	7.18x	25075.14		-24.50	-25.51
Uranus	E	2036-02-18T19:18:07.651		52.95	-5.06	25281.05		18.20	19.00
6	E	2036-02-18T19:35:44.423		56.84	-8.89	41856.55	14.52		
5	E	2036-02-18T19:36:11.540		56.94	-8.99	42250.98	14.54		
4	E	2036-02-18T19:36:32.178		57.02	-9.07	42558.15	14.52		
alpha	E	2036-02-18T19:38:57.781		57.56	-9.59	44690.10	14.58		
beta	E	2036-02-18T19:40:05.909		57.81	-9.84	45680.11	14.59		
eta	E	2036-02-18T19:41:48.417		58.18	-10.22	47176.12	14.61		
gamma	E	2036-02-18T19:42:19.494		58.30	-10.33	47630.37	14.62		
delta	E	2036-02-18T19:43:05.308		58.47	-10.50	48300.35	14.63		
lambda	E	2036-02-18T19:45:03.237		58.90	-10.92	50026.71	14.65		
epsilon	E	2036-02-18T19:46:40.343		59.26	-11.28	51450.00	14.68		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-02-18T18:38:49.570
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 3379615726916238464
 2Mass ID (if available) : 06471828+2323028
 ICRS Star Coord at Epoch: 06h 47m 18.26924s +23:23:02.42279s
 RUWE (>1.4 is poor) : 2.14
 K magnitude : 11.647
 G magnitude : 13.693
 RP magnitude : 13.032
 BP magnitude : 14.205
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.38
 Sun-Target sep (deg) : 131.65
 Sun-Moon sep (deg) : 136.56
 B (ring opening deg) : 65.49
 PA of pole (deg) : 74.87
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.778
 C/A sky separation (km) : 10246.0
 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_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	2036-02-18T17:43:53.429		58.90	-71.74	50973.47	-14.70		
lambda	I	2036-02-18T17:44:57.944		58.66	-72.00	50026.71	-14.67		
delta	I	2036-02-18T17:46:55.744		58.23	-72.48	48300.35	-14.64		
gamma	I	2036-02-18T17:47:41.961		58.05	-72.67	47623.93	-14.63		
eta	I	2036-02-18T17:48:12.578		57.94	-72.79	47176.12	-14.62		
beta	I	2036-02-18T17:49:57.370		57.55	-73.22	45646.87	-14.60		
alpha	I	2036-02-18T17:51:00.089		57.32	-73.47	44735.91	-14.58		
4	I	2036-02-18T17:53:28.305		56.76	-74.08	42562.88	-14.52		
5	I	2036-02-18T17:53:49.311		56.69	-74.16	42256.94	-14.52		
6	I	2036-02-18T17:54:20.004		56.57	-74.29	41802.48	-14.50		
Uranus	I	2036-02-18T18:11:00.284		52.81	-78.35	25078.71		-24.40	-25.41
Uranus	E	2036-02-18T19:07:01.897		40.01	-87.72	25294.39		17.74	18.52
6	E	2036-02-18T19:24:57.817		35.88	-83.46	41856.16	14.34		
5	E	2036-02-18T19:25:25.354		35.78	-83.35	42251.76	14.36		
4	E	2036-02-18T19:25:46.152		35.70	-83.27	42557.72	14.36		
alpha	E	2036-02-18T19:28:13.528		35.13	-82.67	44689.95	14.41		
beta	E	2036-02-18T19:29:22.481		34.87	-82.39	45680.16	14.42		
eta	E	2036-02-18T19:31:06.205		34.47	-81.97	47176.12	14.44		
gamma	E	2036-02-18T19:31:37.655		34.35	-81.85	47630.39	14.45		
delta	E	2036-02-18T19:32:24.012		34.17	-81.66	48300.35	14.46		
lambda	E	2036-02-18T19:34:23.350		33.71	-81.18	50026.71	14.48		
epsilon	E	2036-02-18T19:36:01.717		33.34	-80.78	51451.37	14.51		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-02-18T18:45:01.260
 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 : 3379615726916238464
 2Mass ID (if available) : 06471828+2323028
 ICRS Star Coord at Epoch: 06h 47m 18.26924s +23:23:02.42279s
 RUWE (>1.4 is poor) : 2.14
 K magnitude : 11.647
 G magnitude : 13.693
 RP magnitude : 13.032
 BP magnitude : 14.205
 DUPflag : 0
 Distance (au) : 18.147
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.38
 Sun-Target sep (deg) : 131.65
 Sun-Moon sep (deg) : 135.84
 B (ring opening deg) : 65.49
 PA of pole (deg) : 74.87
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.169
 C/A sky separation (km) : 15385.7
 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	2036-02-18T17:51:58.535		29.43	-6.45	51008.77	-14.28		
lambda	I	2036-02-18T17:53:07.549		29.54	-6.68	50026.71	-14.22		
delta	I	2036-02-18T17:55:09.223		29.73	-7.09	48300.35	-14.16		
gamma	I	2036-02-18T17:55:56.994		29.81	-7.25	47624.43	-14.14		
eta	I	2036-02-18T17:56:28.723		29.86	-7.35	47176.12	-14.12		
beta	I	2036-02-18T17:58:17.242		30.02	-7.72	45648.48	-14.07		
alpha	I	2036-02-18T17:59:22.715		30.12	-7.94	44732.57	-14.02		
4	I	2036-02-18T18:01:57.187		30.35	-8.45	42557.70	-13.92		
5	I	2036-02-18T18:02:18.229		30.38	-8.52	42265.95	-13.91		
6	I	2036-02-18T18:02:51.001		30.42	-8.63	41799.79	-13.88		
Uranus	I	2036-02-18T18:20:57.671		31.85	-12.21	25120.96		-23.21	-24.18
Uranus	E	2036-02-18T19:09:31.298		34.18	-21.43	25410.43		13.15	13.75
6	E	2036-02-18T19:29:17.794		34.45	-24.99	41850.64	13.88		
5	E	2036-02-18T19:29:47.541		34.45	-25.08	42262.49	13.92		
4	E	2036-02-18T19:30:07.758		34.45	-25.14	42551.90	13.92		
alpha	E	2036-02-18T19:32:39.821		34.45	-25.58	44687.80	14.03		
beta	E	2036-02-18T19:33:50.728		34.45	-25.79	45680.84	14.07		
eta	E	2036-02-18T19:35:36.825		34.45	-26.09	47176.12	14.13		
gamma	E	2036-02-18T19:36:08.987		34.45	-26.19	47630.77	14.14		
delta	E	2036-02-18T19:36:56.286		34.44	-26.32	48300.35	14.17		
lambda	E	2036-02-18T19:38:57.900		34.43	-26.67	50026.71	14.22		
epsilon	E	2036-02-18T19:40:39.960		34.42	-26.97	51480.43	14.29		