

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-07T22:41:31.370
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425401383961555968
 2Mass ID (if available) : 06082862+2342003

Uranus 2034-02-07T22:41:31 K13.59 G16.18 PgtRgt

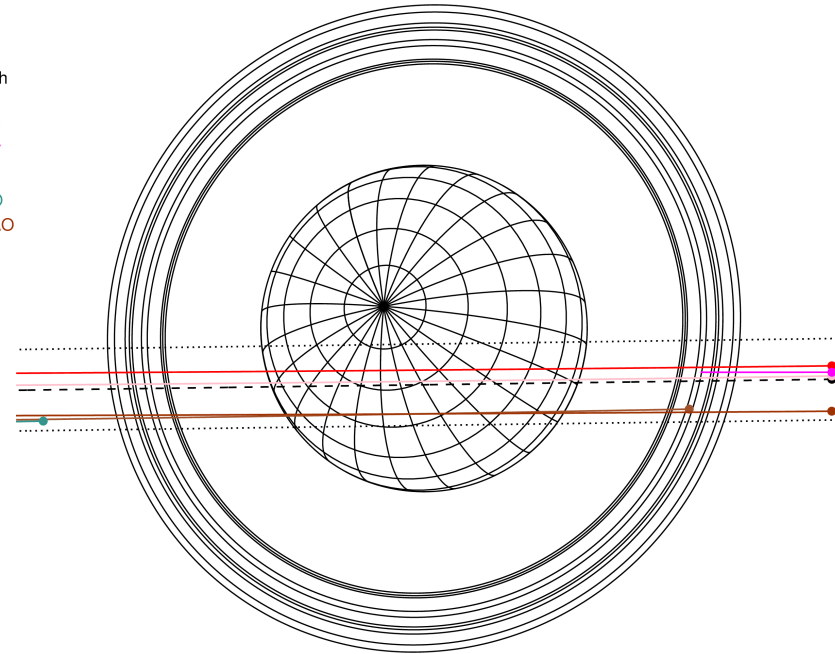
ICRS Star Coord at Epoch: 06h 08m 28.61916s +23:42:00.29213s

RUWE (>1.4 is poor) : 1.13
 K magnitude : 13.585
 G magnitude : 16.180
 RP magnitude : 15.379
 BP magnitude : 16.863
 DUPflag : 0
 Distance (au) : 18.257
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.01
 Sun-Target sep (deg) : 133.19
 Sun-Moon sep (deg) : 98.66
 B (ring opening deg) : 73.66
 PA of pole (deg) : 61.25



2034-02-07T22:41:31.3700 a: 06 08 28.6192 d: +23 42 00.292 C/A 0.659° PA 0.77 deg v_sky -14.01 km/s D 18.26 AU
 Credit: Styled after SORA/Lucky Star

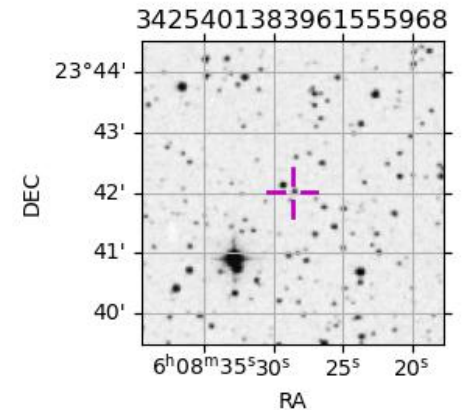
Earth
 PIC
 TEN
 KAV
 RIO
 ESO
 SAAO



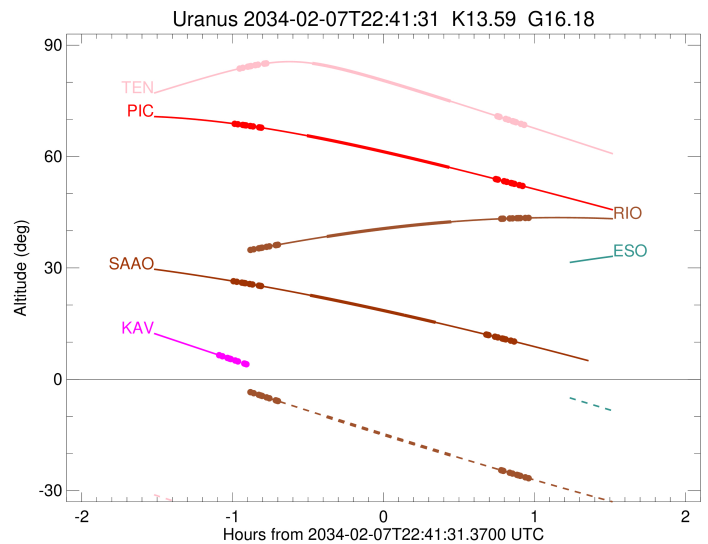
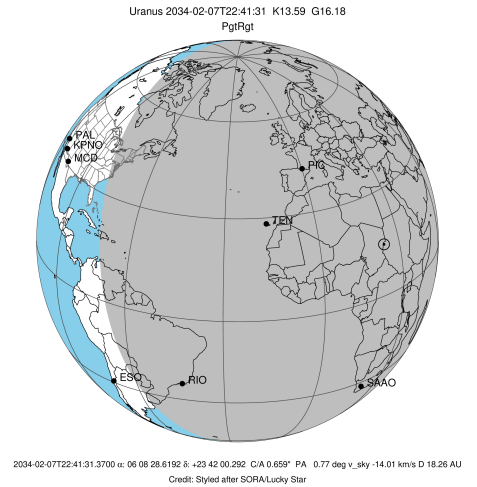
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	FEB 07 21:42 - FEB 07 23:36	PieRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
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 07 21:44 - FEB 07 23:37	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++			FEB 07 21:35 - FEB 07 21:42	PnnRin
RIO	Rio de Janeiro	-22.9	316.8	++++	+ +	+++++	FEB 07 21:56 - FEB 07 23:39	PieRie
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 07 21:41 - FEB 07 23:33	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

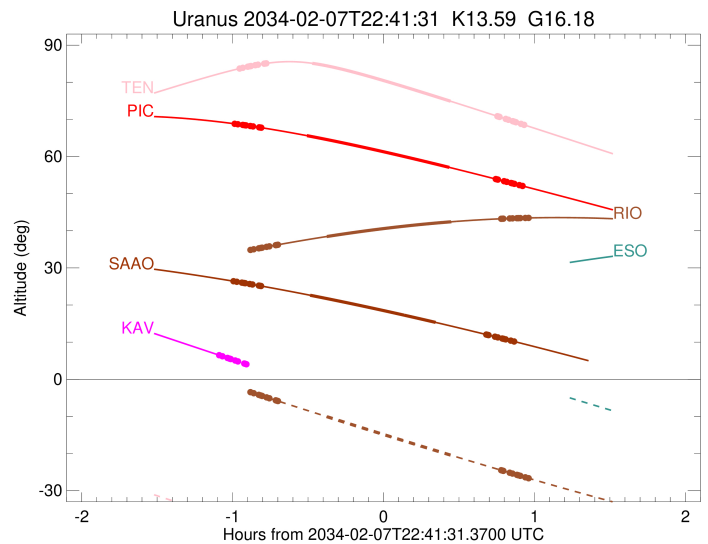
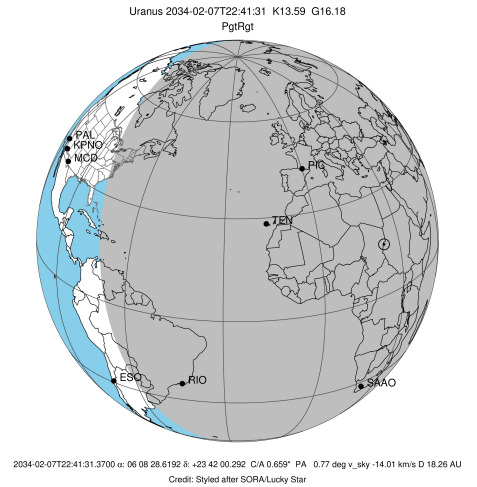


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-07T22:39:12.810
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3425401383961555968
 2Mass ID (if available) : 06082862+2342003
 ICRS Star Coord at Epoch: 06h 08m 28.61916s +23:42:00.29213s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 13.585
 G magnitude : 16.180
 RP magnitude : 15.379
 BP magnitude : 16.863
 DUPflag : 0
 Distance (au) : 18.257
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.01
 Sun-Target sep (deg) : 133.19
 Sun-Moon sep (deg) : 99.49
 B (ring opening deg) : 73.66
 PA of pole (deg) : 61.25
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.492
 C/A sky separation (km) : 6516.8
 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



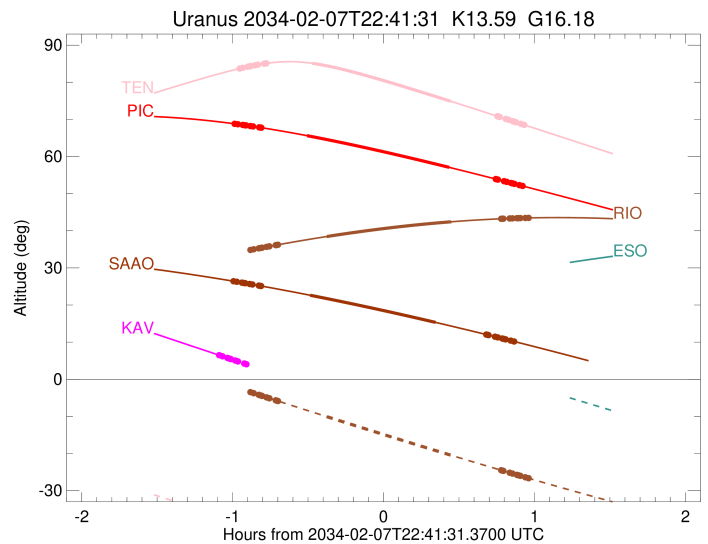
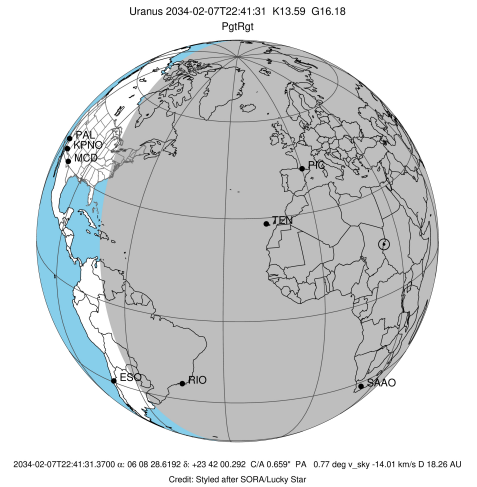
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-07T21:42:04.669		68.84	-47.42	51406.54	-14.71		
lambda	I	2034-02-07T21:43:38.601		68.70	-47.67	50026.71	-14.69		
delta	I	2034-02-07T21:45:36.199		68.52	-47.99	48300.35	-14.67		
gamma	I	2034-02-07T21:46:21.804		68.44	-48.11	47631.22	-14.67		
eta	I	2034-02-07T21:46:52.830		68.39	-48.19	47176.12	-14.67		
beta	I	2034-02-07T21:48:37.465		68.22	-48.46	45642.97	-14.66		
alpha	I	2034-02-07T21:49:41.607		68.11	-48.63	44698.88	-14.65		
4	I	2034-02-07T21:52:04.623		67.86	-49.01	42610.49	-14.63		
5	I	2034-02-07T21:52:31.785		67.82	-49.08	42219.69	-14.62		
6	I	2034-02-07T21:52:58.729		67.77	-49.15	41824.62	-14.63		
Uranus	I	2034-02-07T22:11:04.612		65.63	-51.88	25051.48		-15.83	-16.54
Uranus	E	2034-02-07T23:07:40.399		57.08	-58.91	25277.45		11.64	12.18
6	E	2034-02-07T23:26:08.819		53.93	-60.49	41861.62	14.54		
5	E	2034-02-07T23:26:33.829		53.86	-60.52	42225.47	14.54		
4	E	2034-02-07T23:26:56.107		53.80	-60.55	42540.61	14.55		
alpha	E	2034-02-07T23:29:27.799		53.36	-60.73	44745.25	14.56		
beta	E	2034-02-07T23:30:31.482		53.17	-60.80	45676.18	14.56		
eta	E	2034-02-07T23:32:14.508		52.87	-60.92	47176.12	14.57		
gamma	E	2034-02-07T23:32:45.036		52.79	-60.95	47620.98	14.57		
delta	E	2034-02-07T23:33:31.646		52.65	-61.00	48300.35	14.58		
lambda	E	2034-02-07T23:35:30.047		52.30	-61.12	50026.71	14.58		
epsilon	E	2034-02-07T23:36:35.027		52.11	-61.19	50974.50	14.60		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-07T22:40:29.770
 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 : 3425401383961555968
 2Mass ID (if available) : 06082862+2342003
 ICRS Star Coord at Epoch: 06h 08m 28.61916s +23:42:00.29213s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 13.585
 G magnitude : 16.180
 RP magnitude : 15.379
 BP magnitude : 16.863
 DUPflag : 0
 Distance (au) : 18.257
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.01
 Sun-Target sep (deg) : 133.19
 Sun-Moon sep (deg) : 99.56
 B (ring opening deg) : 73.66
 PA of pole (deg) : 61.25
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.625
 C/A sky separation (km) : 8275.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



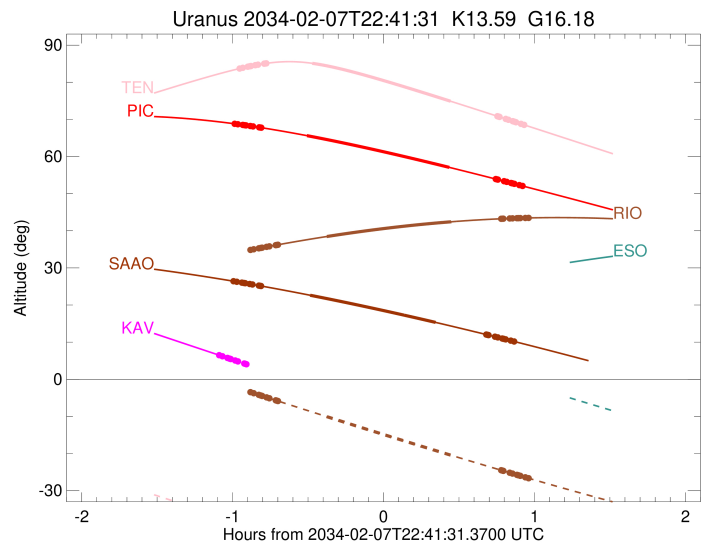
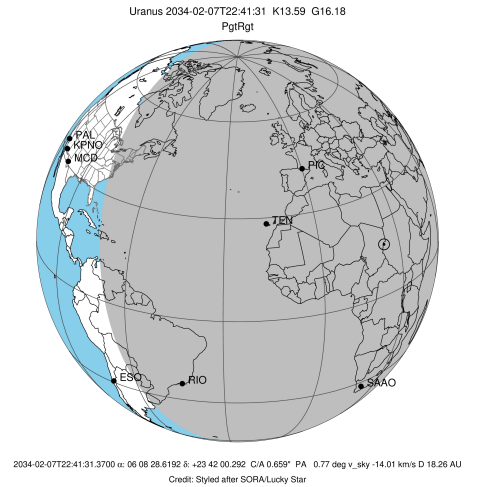
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-07T21:44:02.581		83.66	-38.54	51416.66	-14.71		
lambda	I	2034-02-07T21:45:37.231		83.91	-38.89	50026.71	-14.68		
delta	I	2034-02-07T21:47:34.900		84.20	-39.32	48300.35	-14.66		
gamma	I	2034-02-07T21:48:20.548		84.31	-39.49	47631.15	-14.66		
eta	I	2034-02-07T21:48:51.599		84.38	-39.60	47176.12	-14.65		
beta	I	2034-02-07T21:50:36.383		84.61	-39.99	45642.66	-14.63		
alpha	I	2034-02-07T21:51:40.527		84.75	-40.22	44699.94	-14.62		
4	I	2034-02-07T21:54:03.860		85.01	-40.75	42611.36	-14.60		
5	I	2034-02-07T21:54:31.330		85.06	-40.85	42216.52	-14.59		
6	I	2034-02-07T21:54:58.002		85.10	-40.94	41826.29	-14.59		
Uranus	I	2034-02-07T22:13:10.980		85.11	-44.94	25036.08		-16.08	-16.80
Uranus	E	2034-02-07T23:08:11.000		74.90	-56.82	25317.46		10.76	11.26
6	E	2034-02-07T23:26:48.555		70.86	-60.71	41863.17	14.54		
5	E	2034-02-07T23:27:13.226		70.77	-60.80	42221.93	14.54		
4	E	2034-02-07T23:27:35.855		70.69	-60.87	42542.12	14.55		
alpha	E	2034-02-07T23:30:07.400		70.13	-61.39	44746.10	14.57		
beta	E	2034-02-07T23:31:10.928		69.90	-61.61	45675.62	14.58		
eta	E	2034-02-07T23:32:53.844		69.53	-61.96	47176.12	14.60		
gamma	E	2034-02-07T23:33:24.317		69.41	-62.06	47620.96	14.60		
delta	E	2034-02-07T23:34:10.841		69.24	-62.22	48300.35	14.61		
lambda	E	2034-02-07T23:36:08.983		68.81	-62.62	50026.71	14.62		
epsilon	E	2034-02-07T23:37:14.729		68.57	-62.84	50988.11	14.64		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-07T22:34:26.740
 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 : 3425401383961555968
 2Mass ID (if available) : 06082862+2342003
 ICRS Star Coord at Epoch: 06h 08m 28.61916s +23:42:00.29213s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 13.585
 G magnitude : 16.180
 RP magnitude : 15.379
 BP magnitude : 16.863
 DUPflag : 0
 Distance (au) : 18.257
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.01
 Sun-Target sep (deg) : 133.19
 Sun-Moon sep (deg) : 98.66
 B (ring opening deg) : 73.66
 PA of pole (deg) : 61.25
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.520
 C/A sky separation (km) : 6886.7
 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_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	2034-02-07T21:35:54.102		6.56	-51.80	51411.71	-14.37		
lambda	I	2034-02-07T21:37:30.595		6.19	-51.41	50026.71	-14.35		
delta	I	2034-02-07T21:39:30.983		5.74	-50.93	48300.35	-14.33		
gamma	I	2034-02-07T21:40:17.682		5.57	-50.74	47631.19	-14.33		
eta	I	2034-02-07T21:40:49.452		5.45	-50.61	47176.12	-14.32		
beta	I	2034-02-07T21:42:36.636		5.04	-50.18	45642.82	-14.31		
alpha	I	2034-02-07T21:43:42.304		4.80x	-49.92	44699.36	-14.30		
4	I	2034-02-07T21:46:08.885		4.25x	-49.33	42610.88	-14.27		
5	I	2034-02-07T21:46:36.839		4.14x	-49.22	42218.29	-14.27		
6	I	2034-02-07T21:47:04.308		4.04x	-49.11	41825.35	-14.27		
Uranus	I	2034-02-07T22:05:39.487		-0.12x	-44.62	25045.70		-15.92	-16.64
Uranus	E	2034-02-07T23:03:39.560		-12.86x	-30.66	25281.59		11.55	12.08
6	E	2034-02-07T23:22:47.023		-16.96x	-26.07	41861.71	14.06		
5	E	2034-02-07T23:23:12.883		-17.05x	-25.97	42225.29	14.05		
4	E	2034-02-07T23:23:35.952		-17.13x	-25.88	42540.69	14.06		
alpha	E	2034-02-07T23:26:12.910		-17.68x	-25.25	44745.29	14.07		
beta	E	2034-02-07T23:27:18.803		-17.91x	-24.99	45676.15	14.07		
eta	E	2034-02-07T23:29:05.417		-18.29x	-24.56	47176.12	14.08		
gamma	E	2034-02-07T23:29:37.007		-18.40x	-24.43	47620.98	14.08		
delta	E	2034-02-07T23:30:25.243		-18.57x	-24.24	48300.35	14.09		
lambda	E	2034-02-07T23:32:27.775		-19.00x	-23.75	50026.71	14.09		
epsilon	E	2034-02-07T23:33:35.049		-19.24x	-23.48	50974.84	14.11		

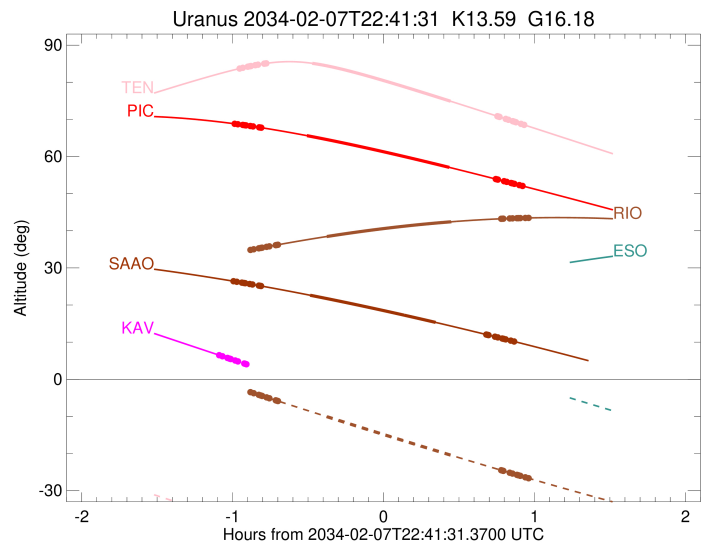
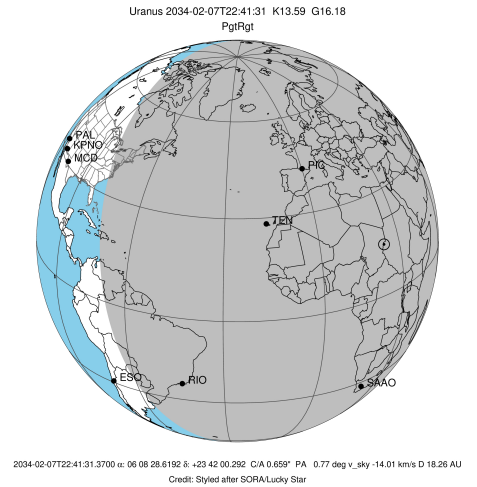
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-07T22:43:24.800
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 3425401383961555968
 2Mass ID (if available) : 06082862+2342003
 ICRS Star Coord at Epoch: 06h 08m 28.61916s +23:42:00.29213s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 13.585
 G magnitude : 16.180
 RP magnitude : 15.379
 BP magnitude : 16.863
 DUPflag : 0
 Distance (au) : 18.257
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.01
 Sun-Target sep (deg) : 133.19
 Sun-Moon sep (deg) : 99.20
 B (ring opening deg) : 73.66
 PA of pole (deg) : 61.25
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.009
 C/A sky separation (km) : 13360.1
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-07T21:48:18.138		34.80	-3.40x	51445.17	-14.35		
lambda	I	2034-02-07T21:49:57.268		35.02	-3.76x	50026.71	-14.29		
delta	I	2034-02-07T21:51:58.208		35.28	-4.20x	48300.35	-14.25		
gamma	I	2034-02-07T21:52:45.200		35.38	-4.38x	47630.90	-14.24		
eta	I	2034-02-07T21:53:17.156		35.45	-4.49x	47176.12	-14.23		
beta	I	2034-02-07T21:55:05.227		35.68	-4.89x	45641.90	-14.18		
alpha	I	2034-02-07T21:56:11.165		35.81	-5.13	44703.27	-14.16		
4	I	2034-02-07T21:58:39.613		36.12	-5.67	42613.60	-14.09		
5	I	2034-02-07T21:59:08.796		36.18	-5.77	42207.23	-14.06		
6	I	2034-02-07T21:59:35.419		36.24	-5.87	41831.38	-14.06		
Uranus	I	2034-02-07T22:18:56.843		38.45	-10.06	25020.92		-16.33	-17.06
Uranus	E	2034-02-07T23:08:25.727		42.42	-20.48	25432.01		7.75	8.12
6	E	2034-02-07T23:28:18.782		43.23	-24.50	41867.38	14.09		
5	E	2034-02-07T23:28:43.234		43.24	-24.59	42211.69	14.09		
4	E	2034-02-07T23:29:07.628		43.26	-24.67	42546.87	14.11		
alpha	E	2034-02-07T23:31:43.349		43.32	-25.18	44748.32	14.18		
beta	E	2034-02-07T23:32:48.325		43.35	-25.40	45673.83	14.21		
eta	E	2034-02-07T23:34:33.933		43.39	-25.75	47176.12	14.25		
gamma	E	2034-02-07T23:35:05.128		43.40	-25.85	47620.97	14.27		
delta	E	2034-02-07T23:35:52.722		43.41	-26.01	48300.35	14.28		
lambda	E	2034-02-07T23:37:53.413		43.45	-26.40	50026.71	14.32		
epsilon	E	2034-02-07T23:39:03.338		43.47	-26.63	51029.11	14.38		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-07T22:36:58.860
 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 : 3425401383961555968
 2Mass ID (if available) : 06082862+2342003
 ICRS Star Coord at Epoch: 06h 08m 28.61916s +23:42:00.29213s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 13.585
 G magnitude : 16.180
 RP magnitude : 15.379
 BP magnitude : 16.863
 DUPflag : 0
 Distance (au) : 18.257
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.01
 Sun-Target sep (deg) : 133.19
 Sun-Moon sep (deg) : 99.03
 B (ring opening deg) : 73.66
 PA of pole (deg) : 61.25
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.010
 C/A sky separation (km) : 13375.3
 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	2034-02-07T21:41:33.637		26.45	-39.91	51448.34	-14.32		
lambda	I	2034-02-07T21:43:13.198		26.26	-40.04	50026.71	-14.26		
delta	I	2034-02-07T21:45:14.422		26.03	-40.19	48300.35	-14.22		
gamma	I	2034-02-07T21:46:01.536		25.94	-40.25	47630.87	-14.20		
eta	I	2034-02-07T21:46:33.573		25.87	-40.29	47176.12	-14.19		
beta	I	2034-02-07T21:48:21.948		25.66	-40.42	45641.84	-14.14		
alpha	I	2034-02-07T21:49:28.054		25.53	-40.50	44703.62	-14.11		
4	I	2034-02-07T21:51:56.994		25.23	-40.68	42613.78	-14.04		
5	I	2034-02-07T21:52:26.337		25.17	-40.71	42206.38	-14.02		
6	I	2034-02-07T21:52:52.956		25.12	-40.74	41831.86	-14.01		
Uranus	I	2034-02-07T22:12:20.037		22.64	-41.85	25021.55		-16.32	-17.04
Uranus	E	2034-02-07T23:02:15.069		15.32	-42.67	25427.30		7.90	8.27
6	E	2034-02-07T23:22:23.710		12.04	-42.15	41867.08	13.89		
5	E	2034-02-07T23:22:48.592		11.97	-42.14	42212.46	13.89		
4	E	2034-02-07T23:23:13.261		11.91	-42.12	42546.48	13.91		
alpha	E	2034-02-07T23:25:51.298		11.47	-42.01	44748.16	13.98		
beta	E	2034-02-07T23:26:57.265		11.28	-41.97	45673.98	14.00		
eta	E	2034-02-07T23:28:44.457		10.98	-41.89	47176.12	14.04		
gamma	E	2034-02-07T23:29:16.128		10.89	-41.87	47620.96	14.05		
delta	E	2034-02-07T23:30:04.450		10.75	-41.83	48300.35	14.07		
lambda	E	2034-02-07T23:32:07.007		10.41	-41.73	50026.71	14.10		
epsilon	E	2034-02-07T23:33:17.751		10.21	-41.67	51025.22	14.15		