

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2033-04-11T21:21:30.070
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3427673245565272704
 2Mass ID (if available) : 05500682+2338039

Uranus 2033-04-11T21:21:30 K14.78 G17.88 PgtRgt

ICRS Star Coord at Epoch: 05h 50m 06.89412s +23:38:02.11305s

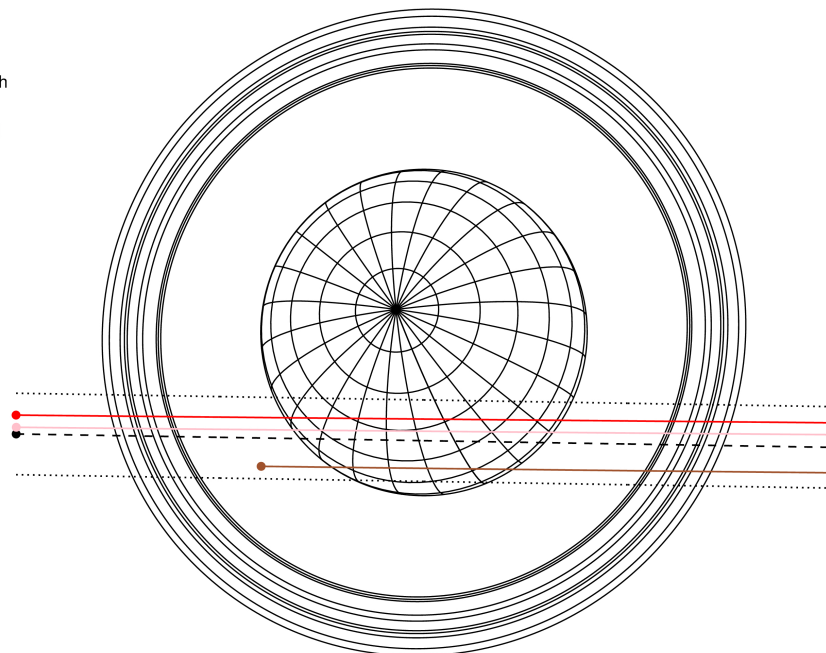
RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.776
 G magnitude : 17.883
 RP magnitude : 16.956
 BP magnitude : 18.792
 DUPflag : 0
 Distance (au) : 19.387
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.52
 Sun-Target sep (deg) : 65.90
 Sun-Moon sep (deg) : 82.44
 B (ring opening deg) : 77.19
 PA of pole (deg) : 50.53
 # a(km) ring

Uranus 2033-04-11T21:21:30 K14.78 G17.88
 PgtRgt



2033-04-11T21:21:30.0700 ex: 05 50 06.8941 8: +23 38 02.113 C/A 1.198° PA 359.06 deg v_sky +18.52 km/s D 19.39 AU
 Credit: Styled after SORA/Lucky Star

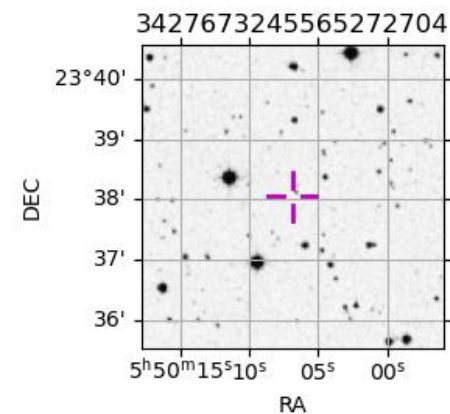
Earth
 PIC
 TEN
 RIO



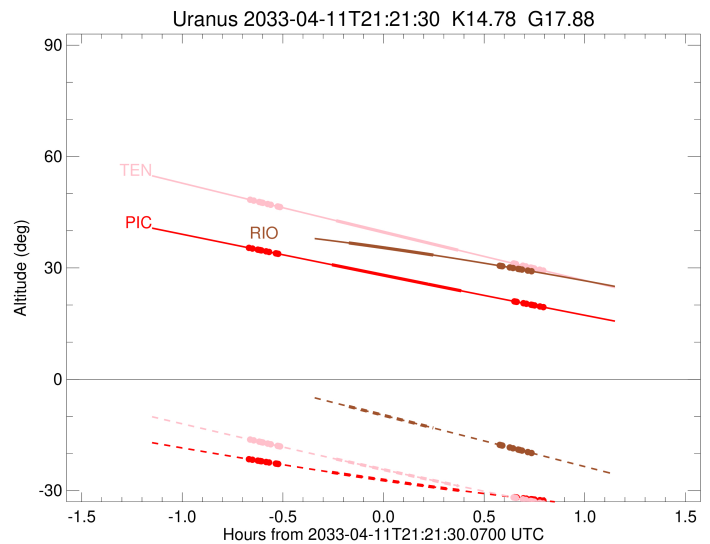
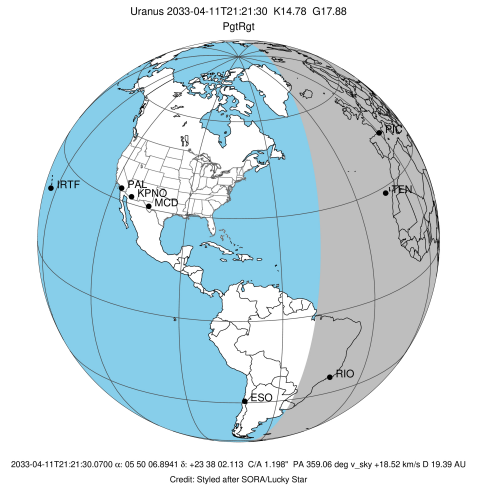
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	APR 11 20:41 - APR 11 22:09	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	+++++	+ +	+++++	APR 11 20:41 - APR 11 22:09	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		+ +	+++++	APR 11 21:11 - APR 11 22:05	PieRne
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					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

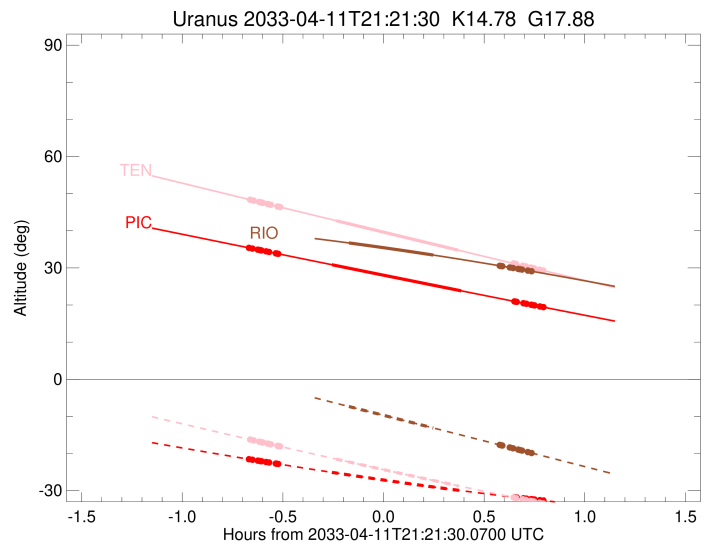
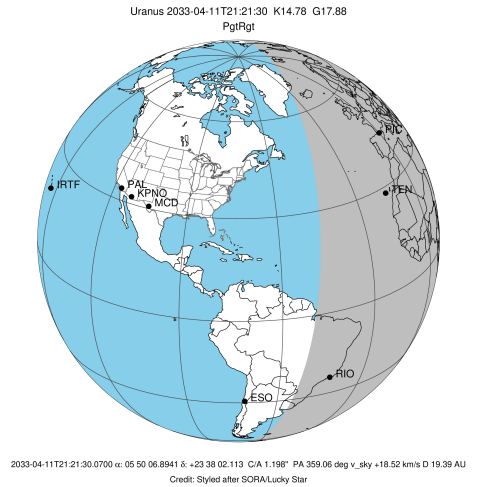


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2033-04-11T21:25:40.380
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3427673245565272704
 2Mass ID (if available) : 05500682+2338039
 ICRS Star Coord at Epoch: 05h 50m 06.89412s +23:38:02.11304s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.776
 G magnitude : 17.883
 RP magnitude : 16.956
 BP magnitude : 18.792
 DUPflag : 0
 Distance (au) : 19.387
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.52
 Sun-Target sep (deg) : 65.90
 Sun-Moon sep (deg) : 82.78
 B (ring opening deg) : 77.19
 PA of pole (deg) : 50.53
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.964
 C/A sky separation (km) : 13555.7
 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



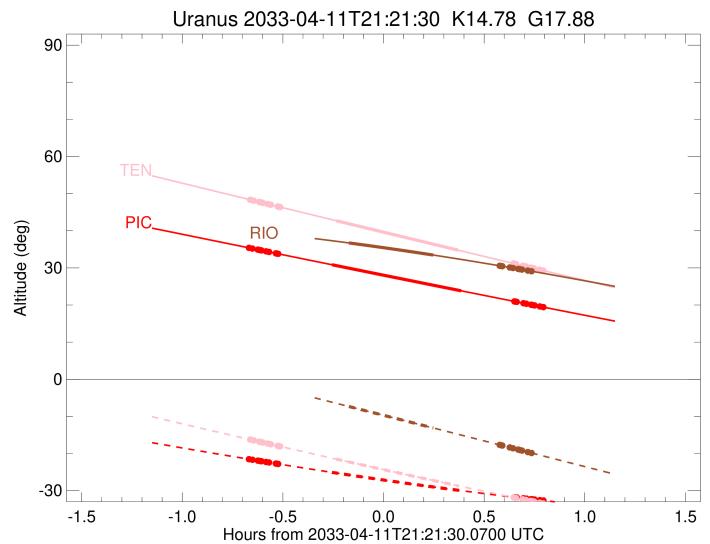
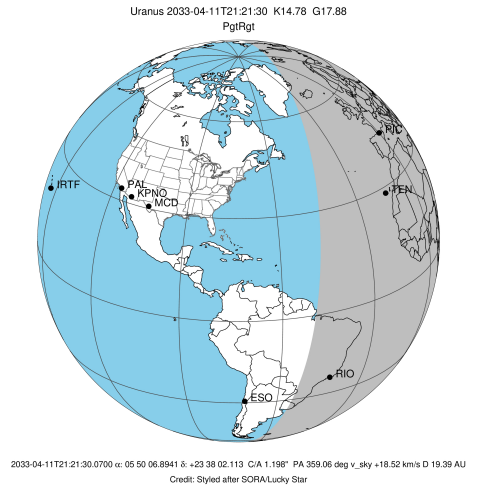
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2033-04-11T20:41:10.677		35.44	-21.50	51384.07	-17.99		
lambda	I	2033-04-11T20:42:26.349		35.21	-21.69	50026.71	-17.92		
delta	I	2033-04-11T20:44:02.826		34.91	-21.93	48300.35	-17.87		
gamma	I	2033-04-11T20:44:40.278		34.80	-22.02	47631.54	-17.85		
eta	I	2033-04-11T20:45:05.807		34.72	-22.08	47176.12	-17.83		
beta	I	2033-04-11T20:46:30.234		34.46	-22.29	45672.68	-17.78		
alpha	I	2033-04-11T20:47:23.881		34.29	-22.42	44719.95	-17.75		
4	I	2033-04-11T20:49:24.030		33.93	-22.71	42595.97	-17.66		
5	I	2033-04-11T20:49:48.718		33.85	-22.77	42157.44	-17.63		
6	I	2033-04-11T20:50:05.895		33.80	-22.81	41851.47	-17.61		
Uranus	I	2033-04-11T21:06:07.149		30.85	-25.08	25498.46		4.13	4.33
Uranus	E	2033-04-11T21:44:39.937		23.83	-30.00	25008.26		-12.74	-13.32
6	E	2033-04-11T22:00:29.126		20.98	-31.77	41801.21	17.72		
5	E	2033-04-11T22:00:57.547		20.90	-31.82	42308.71	17.75		
4	E	2033-04-11T22:01:11.884		20.85	-31.84	42574.77	17.78		
alpha	E	2033-04-11T22:03:13.588		20.49	-32.06	44737.11	17.87		
beta	E	2033-04-11T22:04:05.130		20.34	-32.15	45661.10	17.91		
eta	E	2033-04-11T22:05:29.596		20.09	-32.29	47176.12	17.97		
gamma	E	2033-04-11T22:05:54.412		20.01	-32.33	47622.22	17.99		
delta	E	2033-04-11T22:06:32.092		19.90	-32.40	48300.35	18.01		
lambda	E	2033-04-11T22:08:07.802		19.61	-32.56	50026.71	18.07		
epsilon	E	2033-04-11T22:09:07.900		19.44	-32.66	51113.41	18.14		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2033-04-11T21:25:52.910
 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 : 3427673245565272704
 2Mass ID (if available) : 05500682+2338039
 ICRS Star Coord at Epoch: 05h 50m 06.89412s +23:38:02.11304s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.776
 G magnitude : 17.883
 RP magnitude : 16.956
 BP magnitude : 18.792
 DUPflag : 0
 Distance (au) : 19.387
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.52
 Sun-Target sep (deg) : 65.90
 Sun-Moon sep (deg) : 82.92
 B (ring opening deg) : 77.19
 PA of pole (deg) : 50.53
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.100
 C/A sky separation (km) : 15463.4
 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	2033-04-11T20:41:31.863		48.41	-16.20	51396.89	-17.66		
lambda	I	2033-04-11T20:42:49.719		48.12	-16.47	50026.71	-17.57		
delta	I	2033-04-11T20:44:28.134		47.76	-16.81	48300.35	-17.51		
gamma	I	2033-04-11T20:45:06.365		47.62	-16.94	47631.56	-17.48		
eta	I	2033-04-11T20:45:32.436		47.52	-17.03	47176.12	-17.46		
beta	I	2033-04-11T20:46:58.667		47.21	-17.33	45673.41	-17.39		
alpha	I	2033-04-11T20:47:53.492		47.01	-17.52	44721.50	-17.35		
4	I	2033-04-11T20:49:56.500		46.55	-17.94	42597.78	-17.23		
5	I	2033-04-11T20:50:21.883		46.46	-18.03	42158.52	-17.19		
6	I	2033-04-11T20:50:39.691		46.40	-18.09	41849.48	-17.16		
Uranus	I	2033-04-11T21:07:21.863		42.73	-21.50	25526.43		3.03	3.17
Uranus	E	2033-04-11T21:43:45.727		34.78	-28.70	25002.24		-12.81	-13.40
6	E	2033-04-11T22:00:14.747		31.20	-31.82	41800.16	17.28		
5	E	2033-04-11T22:00:43.867		31.10	-31.91	42307.10	17.32		
4	E	2033-04-11T22:00:58.752		31.05	-31.95	42576.92	17.35		
alpha	E	2033-04-11T22:03:03.313		30.60	-32.34	44738.37	17.48		
beta	E	2033-04-11T22:03:55.984		30.41	-32.50	45661.99	17.52		
eta	E	2033-04-11T22:05:22.224		30.10	-32.77	47176.12	17.60		
gamma	E	2033-04-11T22:05:47.566		30.01	-32.85	47622.36	17.62		
delta	E	2033-04-11T22:06:26.011		29.87	-32.96	48300.35	17.65		
lambda	E	2033-04-11T22:08:03.612		29.52	-33.26	50026.71	17.72		
epsilon	E	2033-04-11T22:09:05.731		29.29	-33.45	51129.05	17.81		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2033-04-11T21:24:11.910
 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 : 3427673245565272704
 2Mass ID (if available) : 05500682+2338039
 ICRS Star Coord at Epoch: 05h 50m 06.89412s +23:38:02.11304s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.776
 G magnitude : 17.883
 RP magnitude : 16.956
 BP magnitude : 18.792
 DUPflag : 0
 Distance (au) : 19.387
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 18.52
 Sun-Target sep (deg) : 65.90
 Sun-Moon sep (deg) : 82.90
 B (ring opening deg) : 77.19
 PA of pole (deg) : 50.53
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.513
 C/A sky separation (km) : 21273.7
 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	2033-04-11T20:41:24.432		39.89	-0.53x	51433.53	-16.74		
lambda	I	2033-04-11T20:42:48.956		39.76	-0.85x	50026.71	-16.59		
delta	I	2033-04-11T20:44:33.416		39.60	-1.25x	48300.35	-16.46		
gamma	I	2033-04-11T20:45:14.123		39.53	-1.40x	47631.57	-16.40		
eta	I	2033-04-11T20:45:41.929		39.49	-1.51x	47176.12	-16.36		
beta	I	2033-04-11T20:47:14.042		39.34	-1.86x	45675.47	-16.22		
alpha	I	2033-04-11T20:48:12.773		39.24	-2.08x	44726.23	-16.12		
4	I	2033-04-11T20:50:25.569		39.02	-2.59x	42602.98	-15.88		
5	I	2033-04-11T20:50:53.269		38.97	-2.69x	42163.04	-15.82		
6	I	2033-04-11T20:51:13.383		38.94	-2.77x	41843.10	-15.76		
Uranus	I	2033-04-11T21:11:11.215		36.73	-7.34	25554.40		-1.14	-1.19
Uranus	E	2033-04-11T21:36:21.735		33.46	-13.12	25061.17		-12.08	-12.64
6	E	2033-04-11T21:56:06.197		30.58	-17.67	41797.33	15.83		
5	E	2033-04-11T21:56:37.777		30.50	-17.79	42300.68	15.89		
4	E	2033-04-11T21:56:54.743		30.46	-17.85	42583.83	15.95		
alpha	E	2033-04-11T21:59:09.486		30.11	-18.37	44742.18	16.20		
beta	E	2033-04-11T22:00:06.118		29.97	-18.59	45664.85	16.30		
eta	E	2033-04-11T22:01:38.455		29.73	-18.94	47176.12	16.44		
gamma	E	2033-04-11T22:02:05.588		29.66	-19.05	47622.89	16.49		
delta	E	2033-04-11T22:02:46.607		29.55	-19.20	48300.35	16.55		
lambda	E	2033-04-11T22:04:30.498		29.28	-19.60	50026.71	16.69		
epsilon	E	2033-04-11T22:05:39.429		29.10	-19.87	51179.90	16.83		