

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-03-22T08:18:41.880
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 630957844271171328
 2Mass ID (if available) : 09221253+1610245

Uranus 2044-03-22T08:18:41 K11.20 G13.37 PgtRgt

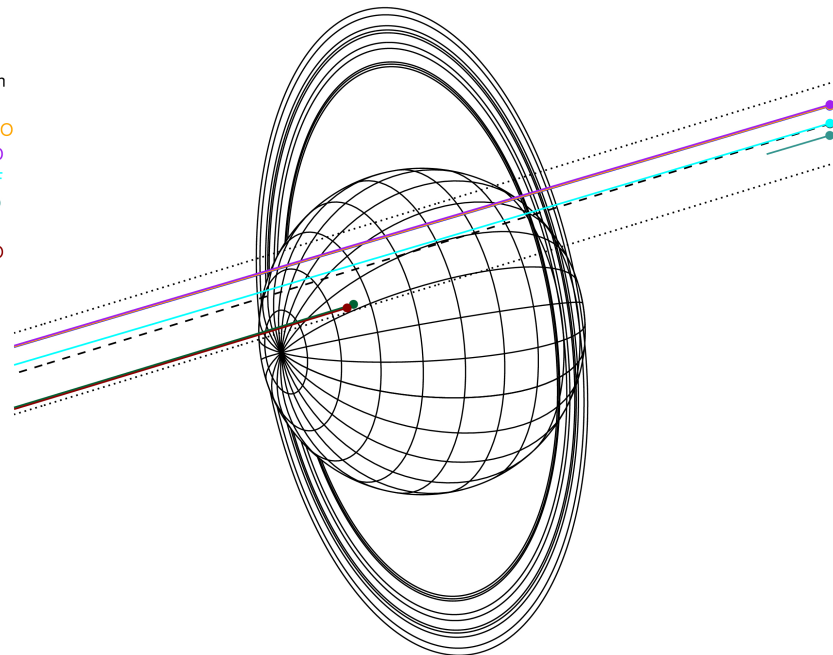
ICRS Star Coord at Epoch: 09h 22m 12.51840s +16:10:24.03335s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.197
 G magnitude : 13.373
 RP magnitude : 12.704
 BP magnitude : 13.884
 DUPflag : 0
 Distance (au) : 17.664
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.83
 Sun-Target sep (deg) : 136.13
 Sun-Moon sep (deg) : 140.71
 B (ring opening deg) : 29.36
 PA of pole (deg) : 98.60



2044-03-22T08:18:41.8800 ex: 09 22 12.5184 s: +16 10 24.033 C/A 0.969° PA 197.03 deg v_sky -14.83 km/s D 17.66 AU
 Credit: Styled after SORA/Lucky Star

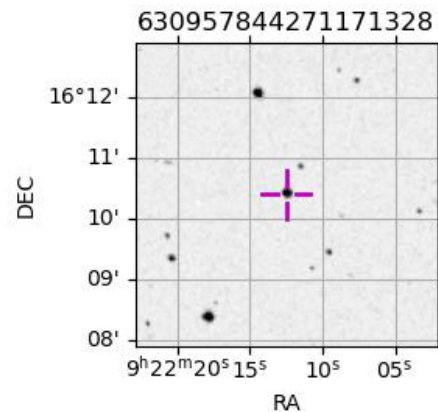
Earth
 PAL
 KPNO
 MCD
 IRTF
 ESO
 AAT
 MSO



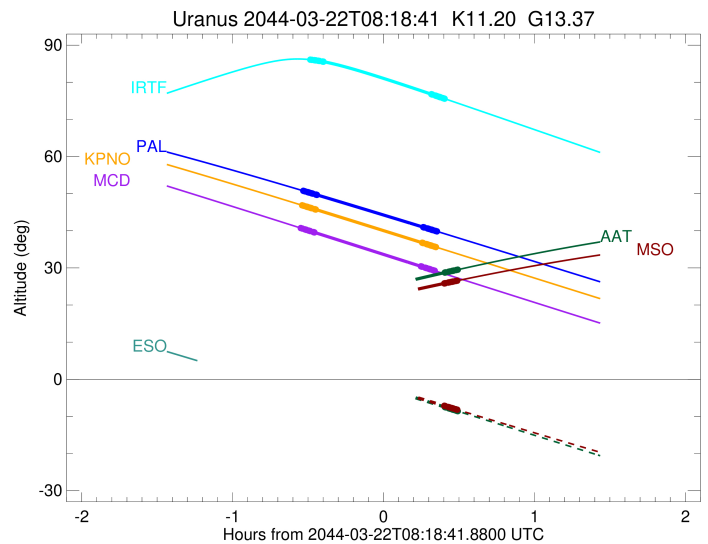
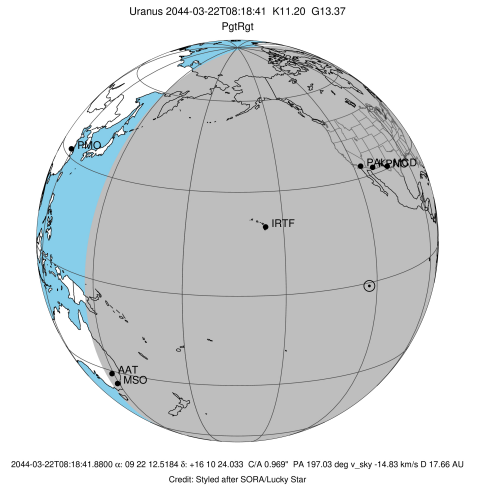
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	MAR 22 07:46 - MAR 22 08:39	PieRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	MAR 22 07:46 - MAR 22 08:39	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	MAR 22 07:45 - MAR 22 08:38	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	++	MAR 22 07:49 - MAR 22 08:42	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
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		+		MAR 22 08:48 - MAR 22 08:48	PneRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0		+		MAR 22 08:48 - MAR 22 08:48	PneRnn

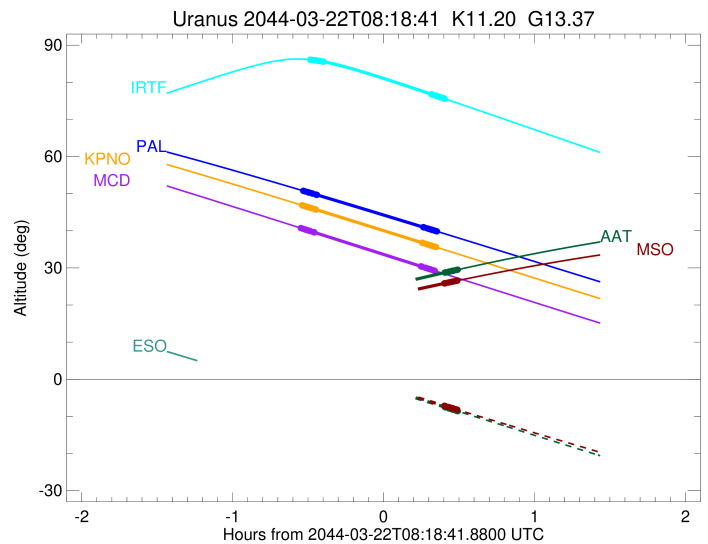
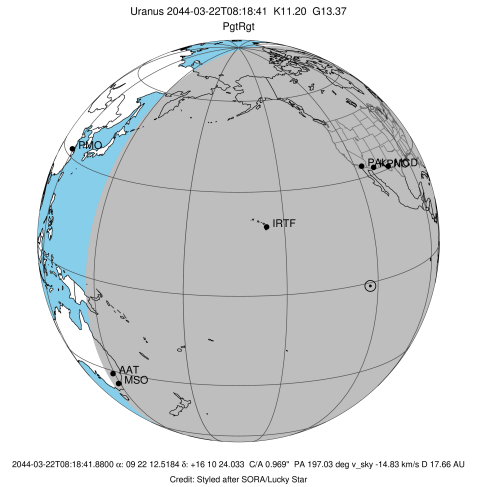


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-03-22T08:15:09.390
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 630957844271171328
 2Mass ID (if available) : 09221253+1610245
 ICRS Star Coord at Epoch: 09h 22m 12.51840s +16:10:24.03335s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.197
 G magnitude : 13.373
 RP magnitude : 12.704
 BP magnitude : 13.884
 DUPflag : 0
 Distance (au) : 17.664
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.83
 Sun-Target sep (deg) : 136.13
 Sun-Moon sep (deg) : 141.39
 B (ring opening deg) : 29.36
 PA of pole (deg) : 98.60
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.230
 C/A sky separation (km) : 15759.0
 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



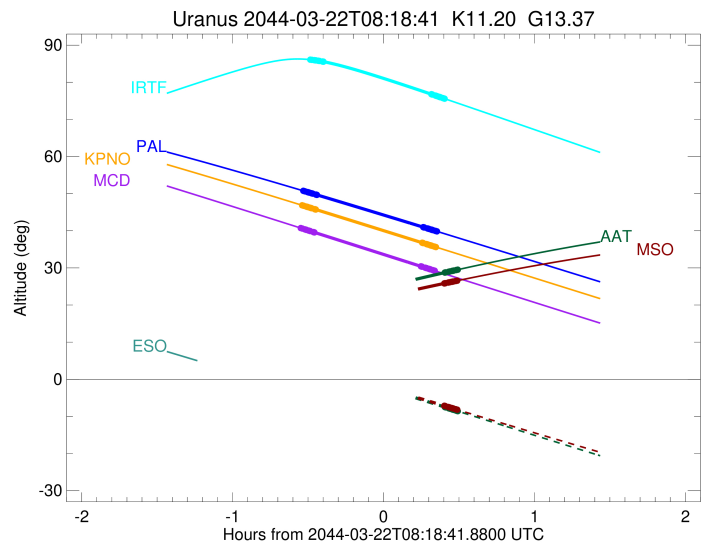
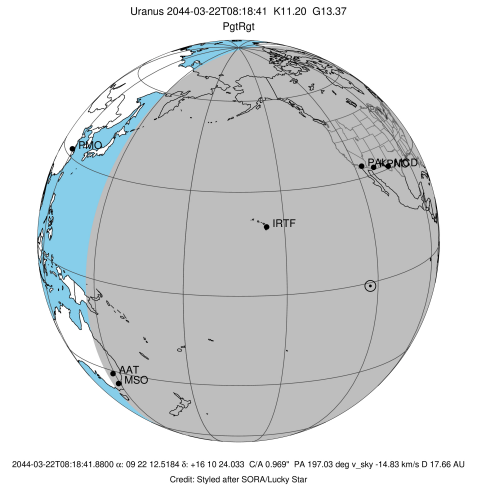
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2044-03-22T07:46:47.314		50.77	-55.85	51242.64	-29.01		
lambda	I	2044-03-22T07:47:29.184		50.63	-55.86	50026.71	-29.00		
delta	I	2044-03-22T07:48:28.835		50.43	-55.86	48300.35	-28.88		
gamma	I	2044-03-22T07:48:52.018		50.35	-55.87	47631.44	-28.83		
eta	I	2044-03-22T07:49:07.821		50.30	-55.87	47176.12	-28.79		
beta	I	2044-03-22T07:50:00.414		50.12	-55.88	45667.40	-28.67		
alpha	I	2044-03-22T07:50:32.971		50.01	-55.88	44752.41	-28.60		
4	I	2044-03-22T07:51:51.581		49.74	-55.89	42525.94	-28.37		
5	I	2044-03-22T07:52:01.602		49.71	-55.89	42176.73	-28.30		
6	I	2044-03-22T07:52:13.615		49.67	-55.89	41878.99	-28.31		
Uranus	I	2044-03-22T07:53:00.907		49.51	-55.89	25491.42		-37.24	-38.51
Uranus	E	2044-03-22T08:37:17.791		40.39	-54.39	25454.93		48.74	50.04
6	E	2044-03-22T08:34:24.985	b	40.99	-54.58	41801.96	28.18		
5	E	2044-03-22T08:34:42.013	b	40.94	-54.56	42238.02	28.17		
4	E	2044-03-22T08:34:55.199	b	40.89	-54.55	42603.17	28.25		
alpha	E	2044-03-22T08:36:08.803	b	40.63	-54.47	44693.97	28.46		
beta	E	2044-03-22T08:36:43.553	b	40.51	-54.43	45668.86	28.53		
eta	E	2044-03-22T08:37:36.195		40.33	-54.37	47176.12	28.65		
gamma	E	2044-03-22T08:37:51.732		40.28	-54.35	47621.49	28.68		
delta	E	2044-03-22T08:38:15.381		40.20	-54.32	48300.35	28.73		
lambda	E	2044-03-22T08:39:15.347		39.99	-54.25	50026.71	28.85		
epsilon	E	2044-03-22T08:39:43.413		39.89	-54.22	50836.98	28.85		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-03-22T08:14:43.930
 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 : 630957844271171328
 2Mass ID (if available) : 09221253+1610245
 ICRS Star Coord at Epoch: 09h 22m 12.51840s +16:10:24.03335s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.197
 G magnitude : 13.373
 RP magnitude : 12.704
 BP magnitude : 13.884
 DUPflag : 0
 Distance (au) : 17.664
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.83
 Sun-Target sep (deg) : 136.13
 Sun-Moon sep (deg) : 141.40
 B (ring opening deg) : 29.36
 PA of pole (deg) : 98.60
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.236
 C/A sky separation (km) : 15833.8
 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



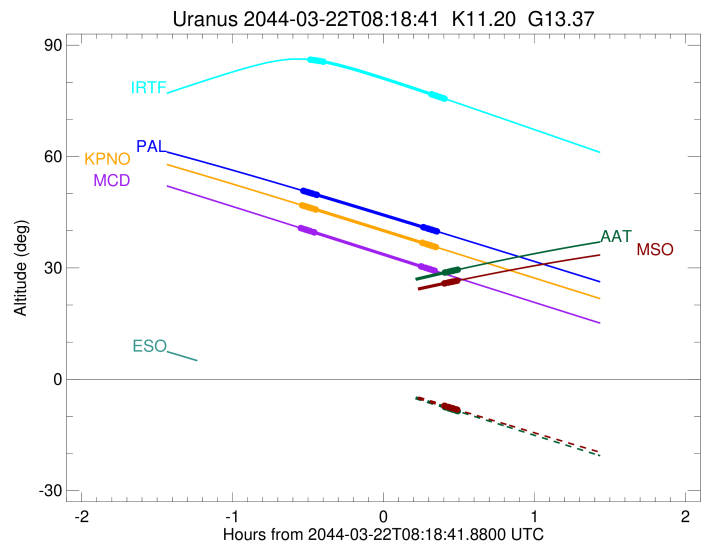
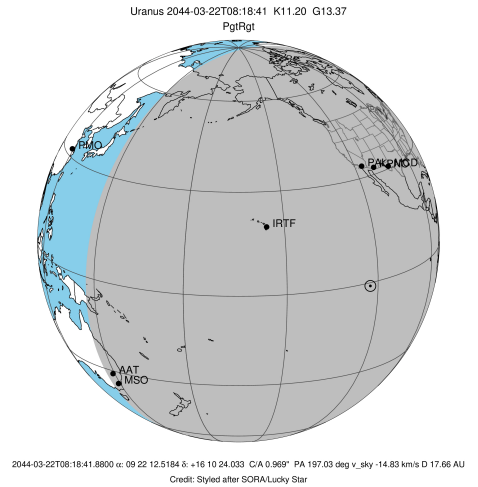
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2044-03-22T07:46:19.711		46.87	-57.13	51242.04	-28.95		
lambda	I	2044-03-22T07:47:01.639		46.72	-57.11	50026.71	-28.95		
delta	I	2044-03-22T07:48:01.403		46.52	-57.09	48300.35	-28.82		
gamma	I	2044-03-22T07:48:24.630		46.43	-57.08	47631.43	-28.77		
eta	I	2044-03-22T07:48:40.465		46.38	-57.07	47176.12	-28.74		
beta	I	2044-03-22T07:49:33.161		46.20	-57.05	45667.44	-28.61		
alpha	I	2044-03-22T07:50:05.785		46.08	-57.03	44752.41	-28.54		
4	I	2044-03-22T07:51:24.561		45.81	-56.99	42525.94	-28.31		
5	I	2044-03-22T07:51:34.605		45.77	-56.98	42176.63	-28.23		
6	I	2044-03-22T07:51:46.639		45.73	-56.98	41878.97	-28.25		
Uranus	I	2044-03-22T07:52:37.290		45.55	-56.95	25491.93		-37.07	-38.35
Uranus	E	2044-03-22T08:36:50.662		36.19	-53.95	25455.38		48.60	49.89
6	E	2044-03-22T08:33:59.935	b	36.79	-54.22	41802.01	28.11		
5	E	2044-03-22T08:34:16.996	b	36.73	-54.20	42237.87	28.10		
4	E	2044-03-22T08:34:30.226	b	36.69	-54.17	42603.12	28.18		
alpha	E	2044-03-22T08:35:44.013	b	36.43	-54.05	44694.02	28.39		
beta	E	2044-03-22T08:36:18.846	b	36.30	-54.00	45668.89	28.46		
eta	E	2044-03-22T08:37:11.610		36.12	-53.91	47176.12	28.58		
gamma	E	2044-03-22T08:37:27.184		36.06	-53.88	47621.49	28.61		
delta	E	2044-03-22T08:37:50.888		35.98	-53.84	48300.35	28.66		
lambda	E	2044-03-22T08:38:50.993		35.76	-53.74	50026.71	28.78		
epsilon	E	2044-03-22T08:39:19.109		35.66	-53.70	50836.58	28.78		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-03-22T08:14:14.560
 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 : 630957844271171328
 2Mass ID (if available) : 09221253+1610245
 ICRS Star Coord at Epoch: 09h 22m 12.51840s +16:10:24.03335s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.197
 G magnitude : 13.373
 RP magnitude : 12.704
 BP magnitude : 13.884
 DUPflag : 0
 Distance (au) : 17.664
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.83
 Sun-Target sep (deg) : 136.13
 Sun-Moon sep (deg) : 141.39
 B (ring opening deg) : 29.36
 PA of pole (deg) : 98.60
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.249
 C/A sky separation (km) : 16001.2
 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



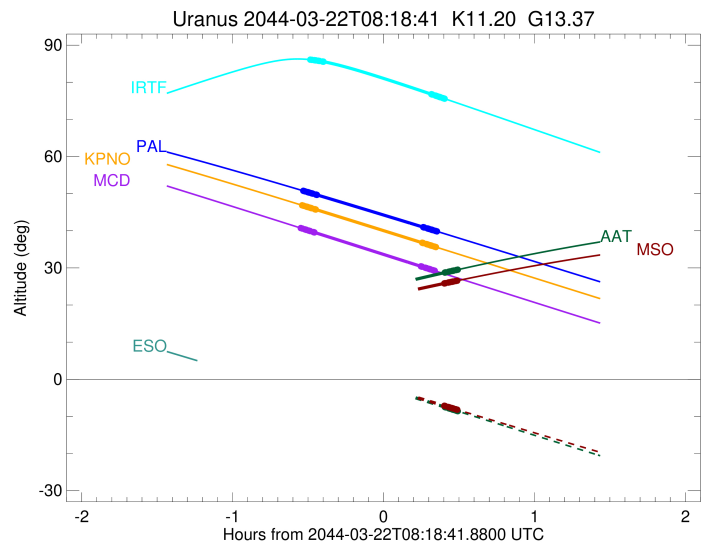
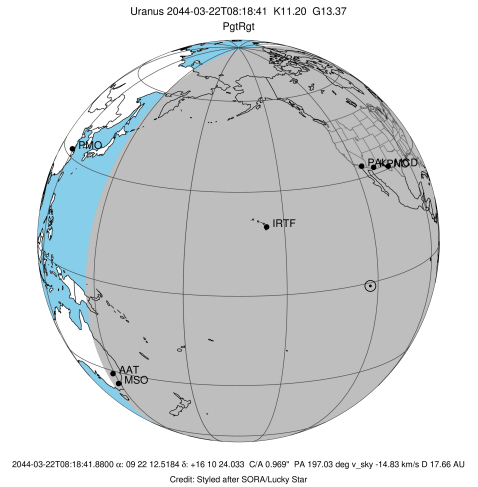
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2044-03-22T07:45:46.553		40.74	-56.94	51240.65	-28.85		
lambda	I	2044-03-22T07:46:28.583		40.59	-56.89	50026.71	-28.84		
delta	I	2044-03-22T07:47:28.567		40.37	-56.81	48300.35	-28.72		
gamma	I	2044-03-22T07:47:51.882		40.29	-56.78	47631.43	-28.66		
eta	I	2044-03-22T07:48:07.777		40.23	-56.76	47176.12	-28.63		
beta	I	2044-03-22T07:49:00.675		40.04	-56.69	45667.51	-28.50		
alpha	I	2044-03-22T07:49:33.430		39.92	-56.65	44752.42	-28.42		
4	I	2044-03-22T07:50:52.532		39.64	-56.54	42525.94	-28.19		
5	I	2044-03-22T07:51:02.620		39.60	-56.53	42176.39	-28.11		
6	I	2044-03-22T07:51:14.692		39.56	-56.51	41878.94	-28.13		
Uranus	I	2044-03-22T07:52:13.229		39.35	-56.43	25493.11		-36.69	-37.96
Uranus	E	2044-03-22T08:36:16.177		29.84	-51.48	25456.38		48.28	49.58
6	E	2044-03-22T08:33:30.212	b	30.44	-51.85	41802.11	27.98		
5	E	2044-03-22T08:33:47.332	b	30.38	-51.81	42237.53	27.97		
4	E	2044-03-22T08:34:00.646	b	30.33	-51.78	42602.98	28.05		
alpha	E	2044-03-22T08:35:14.773	b	30.06	-51.62	44694.11	28.27		
beta	E	2044-03-22T08:35:49.756	b	29.94	-51.54	45668.96	28.34		
eta	E	2044-03-22T08:36:42.746		29.75	-51.41	47176.12	28.46		
gamma	E	2044-03-22T08:36:58.387		29.69	-51.38	47621.50	28.49		
delta	E	2044-03-22T08:37:22.191		29.60	-51.32	48300.35	28.54		
lambda	E	2044-03-22T08:38:22.547		29.39	-51.18	50026.71	28.66		
epsilon	E	2044-03-22T08:38:50.748		29.29	-51.12	50835.71	28.66		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-03-22T08:17:46.170
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 630957844271171328
 2Mass ID (if available) : 09221253+1610245
 ICRS Star Coord at Epoch: 09h 22m 12.51840s +16:10:24.03335s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.197
 G magnitude : 13.373
 RP magnitude : 12.704
 BP magnitude : 13.884
 DUPflag : 0
 Distance (au) : 17.664
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.83
 Sun-Target sep (deg) : 136.13
 Sun-Moon sep (deg) : 141.34
 B (ring opening deg) : 29.36
 PA of pole (deg) : 98.60
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.019
 C/A sky separation (km) : 13054.8
 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



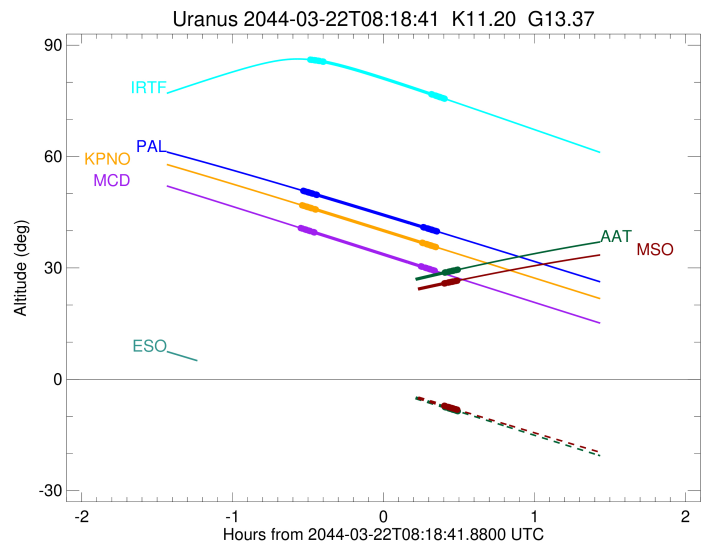
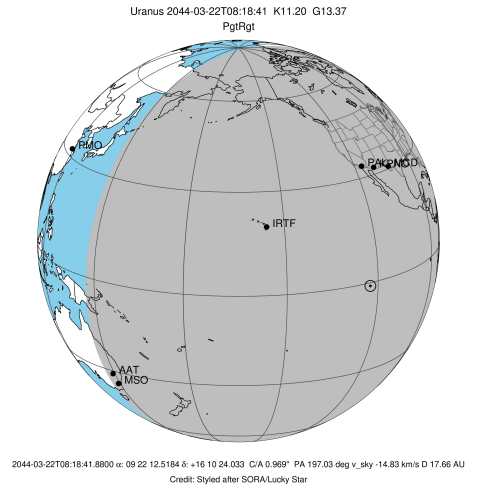
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2044-03-22T07:49:33.385		86.10	-45.92	51264.27	-29.78		
lambda	I	2044-03-22T07:50:14.889		86.04	-46.07	50026.71	-29.79		
delta	I	2044-03-22T07:51:12.917		85.96	-46.28	48300.35	-29.71		
gamma	I	2044-03-22T07:51:35.444		85.92	-46.36	47631.50	-29.67		
eta	I	2044-03-22T07:51:50.796		85.90	-46.41	47176.12	-29.65		
beta	I	2044-03-22T07:52:41.859		85.81	-46.60	45666.20	-29.57		
alpha	I	2044-03-22T07:53:13.395		85.75	-46.71	44752.26	-29.52		
4	I	2044-03-22T07:54:29.395	b	85.59	-46.98	42526.11	-29.37		
5	I	2044-03-22T07:54:39.067	b	85.57	-47.02	42180.63	-29.31		
6	I	2044-03-22T07:54:50.860	b	85.55	-47.06	41879.44	-29.33		
Uranus	I	2044-03-22T07:53:51.834		85.67	-46.85	25473.78		-42.83	-44.15
Uranus	E	2044-03-22T08:41:39.486		75.89	-56.65	25440.57		53.35	54.59
6	E	2044-03-22T08:37:38.646	b	76.81	-55.87	41800.40	29.28		
5	E	2044-03-22T08:37:55.357	b	76.75	-55.92	42243.53	29.25		
4	E	2044-03-22T08:38:07.694	b	76.70	-55.96	42605.29	29.31		
alpha	E	2044-03-22T08:39:18.643	b	76.43	-56.19	44692.52	29.46		
beta	E	2044-03-22T08:39:52.267	b	76.30	-56.30	45667.68	29.51		
eta	E	2044-03-22T08:40:43.257	b	76.11	-56.47	47176.12	29.59		
gamma	E	2044-03-22T08:40:58.300	b	76.05	-56.51	47621.36	29.61		
delta	E	2044-03-22T08:41:21.219	b	75.96	-56.59	48300.35	29.64		
lambda	E	2044-03-22T08:42:19.379	b	75.74	-56.77	50026.71	29.72		
epsilon	E	2044-03-22T08:42:47.126	b	75.63	-56.86	50851.92	29.71		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-03-22T08:21:31.590
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 630957844271171328
 2Mass ID (if available) : 09221253+1610245
 ICRS Star Coord at Epoch: 09h 22m 12.51840s +16:10:24.03335s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.197
 G magnitude : 13.373
 RP magnitude : 12.704
 BP magnitude : 13.884
 DUPflag : 0
 Distance (au) : 17.664
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.83
 Sun-Target sep (deg) : 136.13
 Sun-Moon sep (deg) : 140.74
 B (ring opening deg) : 29.36
 PA of pole (deg) : 98.60
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.562
 C/A sky separation (km) : 7203.2
 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	2044-03-22T07:52:57.674		20.42	3.24x	51307.49	-30.16		
lambda	I	2044-03-22T07:53:40.103		20.54	3.09x	50026.71	-30.18		
delta	I	2044-03-22T07:54:37.329	b	20.71	2.88x	48300.35	-30.16		
gamma	I	2044-03-22T07:54:59.510	b	20.78	2.81x	47631.57	-30.15		
eta	I	2044-03-22T07:55:14.620	b	20.82	2.75x	47176.12	-30.14		
beta	I	2044-03-22T07:56:04.862	b	20.97	2.57x	45663.68	-30.12		
alpha	I	2044-03-22T07:56:35.765	b	21.06	2.46x	44751.54	-30.11		
4	I	2044-03-22T07:57:50.002	b	21.28	2.20x	42527.10	-30.07		
5	I	2044-03-22T07:57:59.518	b	21.30	2.16x	42189.35	-30.03		
6	I	2044-03-22T07:58:11.428	b	21.34	2.12x	41879.74	-30.07		
Uranus	I	2044-03-22T07:54:36.210		20.71	2.89x	25443.95		-52.24	-53.50
Uranus	E	2044-03-22T08:48:23.011		29.55	-8.63	25422.13		59.65	60.77
6	E	2044-03-22T08:42:59.597	b	28.73	-7.47	41797.65	30.14		
5	E	2044-03-22T08:43:16.419	b	28.77	-7.53	42255.22	30.11		
4	E	2044-03-22T08:43:27.611	b	28.80	-7.57	42609.31	30.15		
alpha	E	2044-03-22T08:44:36.617	b	28.97	-7.82	44689.74	30.19		
beta	E	2044-03-22T08:45:09.498	b	29.06	-7.94	45665.02	30.20		
eta	E	2044-03-22T08:45:59.480	b	29.18	-8.11	47176.12	30.23		
gamma	E	2044-03-22T08:46:14.200	b	29.22	-8.17	47621.13	30.23		
delta	E	2044-03-22T08:46:36.661	b	29.28	-8.25	48300.35	30.25		
lambda	E	2044-03-22T08:47:33.713	b	29.42	-8.45	50026.71	30.27		
epsilon	E	2044-03-22T08:48:02.150	b	29.49	-8.55	50887.77	30.26		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2044-03-22T08:21:14.480
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 630957844271171328
 2Mass ID (if available) : 09221253+1610245
 ICRS Star Coord at Epoch: 09h 22m 12.51840s +16:10:24.03335s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.197
 G magnitude : 13.373
 RP magnitude : 12.704
 BP magnitude : 13.884
 DUPflag : 0
 Distance (au) : 17.664
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.83
 Sun-Target sep (deg) : 136.13
 Sun-Moon sep (deg) : 140.75
 B (ring opening deg) : 29.36
 PA of pole (deg) : 98.60
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.543
 C/A sky separation (km) : 6956.6
 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_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	2044-03-22T07:52:39.728		18.01	3.13x	51309.33	-30.16		
lambda	I	2044-03-22T07:53:22.222		18.13	2.98x	50026.71	-30.18		
delta	I	2044-03-22T07:54:19.452	b	18.28	2.79x	48300.35	-30.15		
gamma	I	2044-03-22T07:54:41.634	b	18.35	2.71x	47631.57	-30.15		
eta	I	2044-03-22T07:54:56.744	b	18.39	2.66x	47176.12	-30.14		
beta	I	2044-03-22T07:55:46.986	b	18.53	2.49x	45663.57	-30.12		
alpha	I	2044-03-22T07:56:17.886	b	18.61	2.38x	44751.50	-30.11		
4	I	2044-03-22T07:57:32.106	b	18.82	2.13x	42527.16	-30.08		
5	I	2044-03-22T07:57:41.626	b	18.84	2.10x	42189.74	-30.04		
6	I	2044-03-22T07:57:53.551	b	18.87	2.06x	41879.73	-30.07		
Uranus	I	2044-03-22T07:54:13.048		18.27	2.81x	25442.89		-52.59	-53.84
Uranus	E	2044-03-22T08:48:12.121		26.58	-8.23	25421.75		59.78	60.90
6	E	2044-03-22T08:42:46.907	b	25.81	-7.12	41797.56	30.14		
5	E	2044-03-22T08:43:03.749	b	25.85	-7.18	42255.68	30.11		
4	E	2044-03-22T08:43:14.907	b	25.88	-7.22	42609.45	30.15		
alpha	E	2044-03-22T08:44:23.912	b	26.04	-7.45	44689.64	30.19		
beta	E	2044-03-22T08:44:56.797	b	26.12	-7.57	45664.91	30.20		
eta	E	2044-03-22T08:45:46.790	b	26.24	-7.74	47176.12	30.22		
gamma	E	2044-03-22T08:46:01.513	b	26.27	-7.79	47621.13	30.23		
delta	E	2044-03-22T08:46:23.978	b	26.33	-7.86	48300.35	30.24		
lambda	E	2044-03-22T08:47:21.043	b	26.46	-8.06	50026.71	30.27		
epsilon	E	2044-03-22T08:47:49.539	b	26.53	-8.15	50889.30	30.25		