

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:22:07.040
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 611301080332027264
 2Mass ID (if available) : 09040314+1729435

ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s

RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 116.78
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84

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

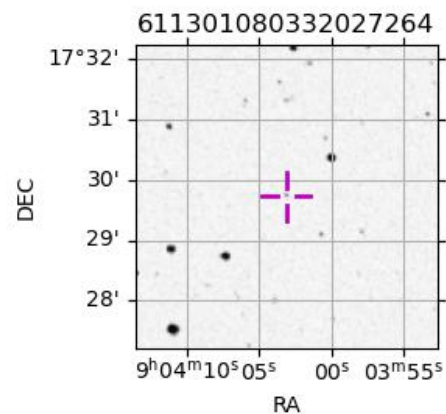
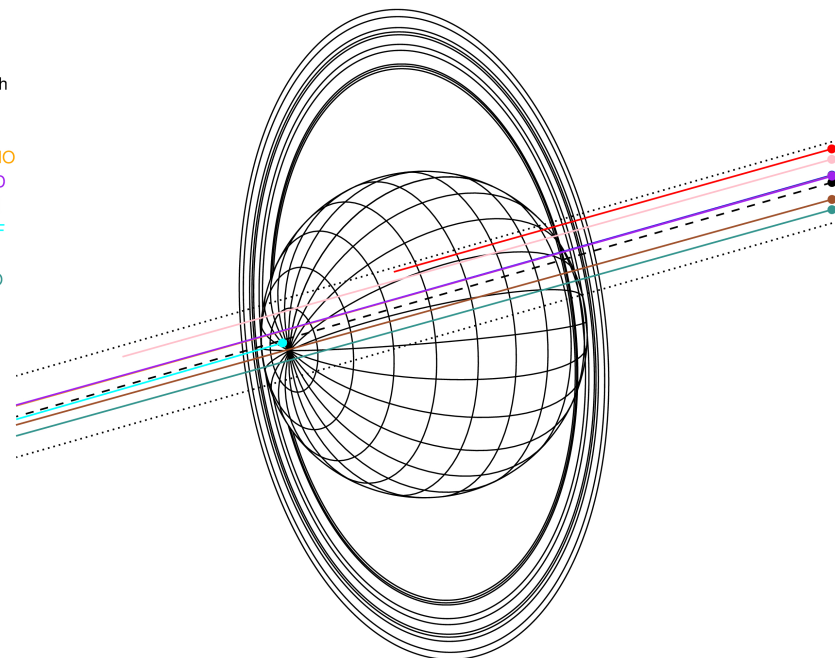
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++++	+		MAR 13 03:49 - MAR 13 03:55	PinRin
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	MAR 13 03:55 - MAR 13 04:51	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	MAR 13 03:55 - MAR 13 04:50	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	MAR 13 03:54 - MAR 13 04:50	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++++	+ +	+++++	MAR 13 03:48 - MAR 13 04:44	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5		+	+++++	MAR 13 04:51 - MAR 13 04:54	PneRne
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +	+++++	MAR 13 03:48 - MAR 13 04:44	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	MAR 13 03:50 - MAR 13 04:46	PieRie
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



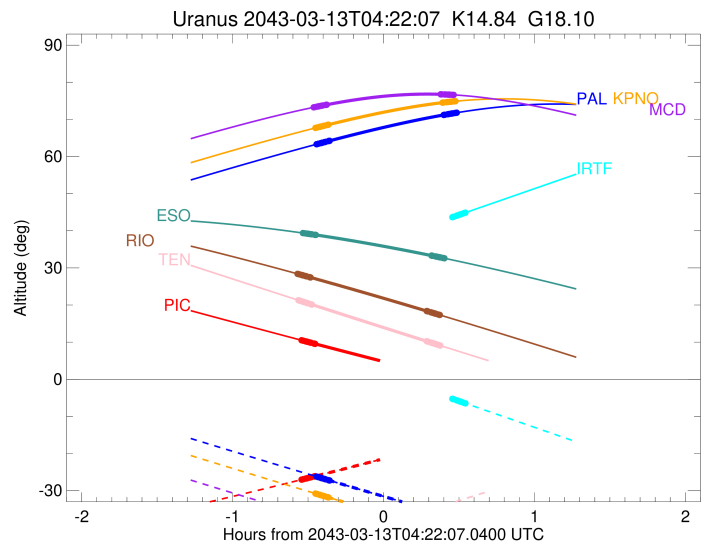
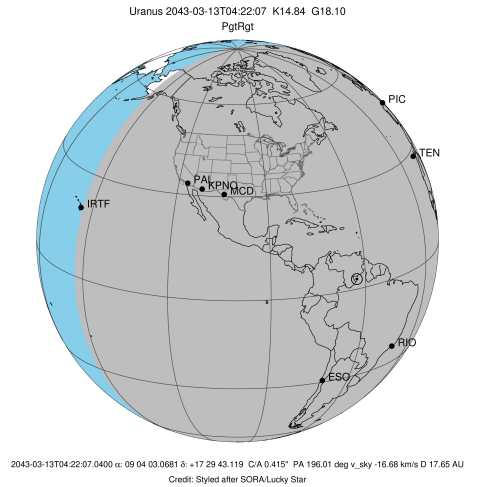
2043-03-13T04:22:07.0400 cc: 09 04 03.068119 C/A 0.415° PA 196.01 deg v_sky -16.68 km/s D 17.65 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2043-03-13T04:22:07 K14.84 G18.10 PgtRgt

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

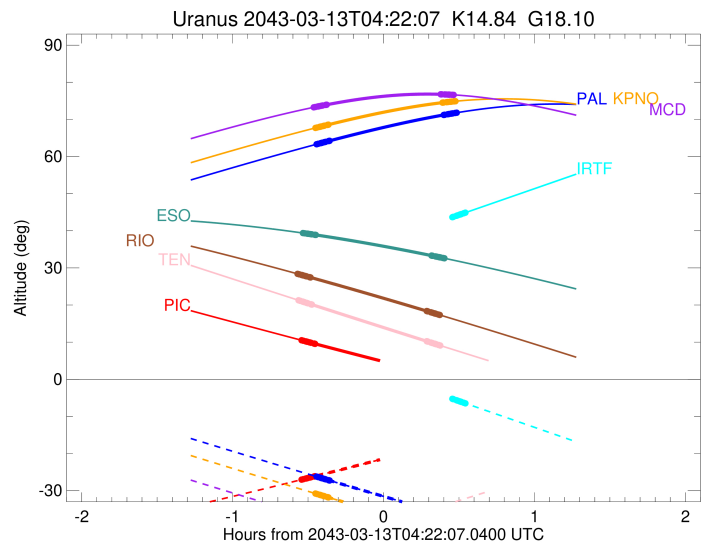
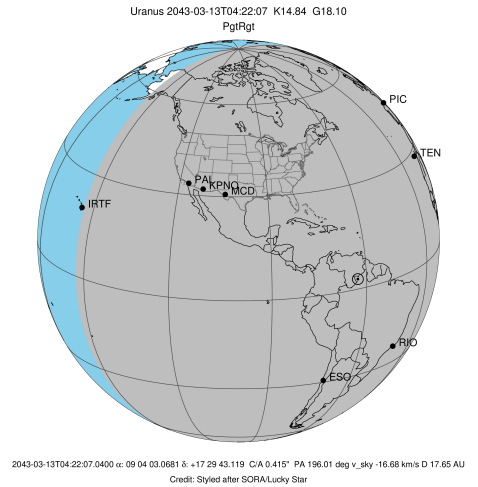


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:18:50.400
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 116.64
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.837
 C/A sky separation (km) : 10718.9
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



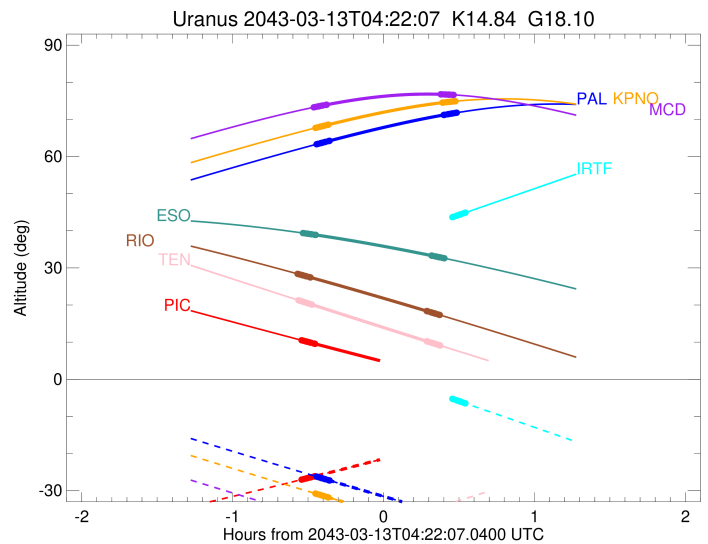
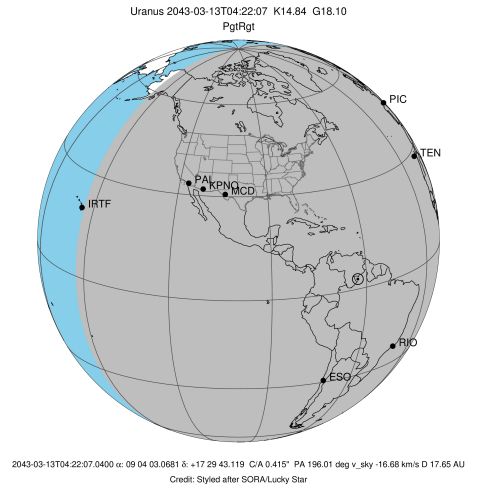
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-03-13T03:49:44.277		10.47	-27.00	50847.57	-28.99		
lambda	I	2043-03-13T03:50:12.638		10.39	-26.92	50026.71	-28.93		
delta	I	2043-03-13T03:51:12.369		10.21	-26.75	48300.35	-28.87		
gamma	I	2043-03-13T03:51:35.620		10.14	-26.68	47629.25	-28.85		
eta	I	2043-03-13T03:51:51.330		10.09	-26.64	47176.12	-28.84		
beta	I	2043-03-13T03:52:43.272		9.94	-26.49	45677.32	-28.78		
alpha	I	2043-03-13T03:53:16.470		9.84	-26.40	44717.70	-28.73		
4	I	2043-03-13T03:54:31.385		9.62	-26.19	42589.29	-28.65		
5	I	2043-03-13T03:54:39.603		9.59	-26.16	42284.57	-28.58		
6	I	2043-03-13T03:54:54.868		9.55	-26.12	41869.77	-28.60		
Uranus	I	2043-03-13T03:55:42.300		9.41	-25.98	25434.11		-43.65	-44.96
Uranus	E	2043-03-13T04:41:58.891		1.34x	-17.87	25392.38		52.96	54.21
6	E	2043-03-13T04:40:27.731	b	1.60x	-18.14	41822.73	28.46		
5	E	2043-03-13T04:40:41.530	b	1.56x	-18.10	42160.66	28.44		
4	E	2043-03-13T04:40:51.659	b	1.54x	-18.07	42535.03	28.51		
alpha	E	2043-03-13T04:42:09.094		1.32x	-17.84	44703.26	28.58		
beta	E	2043-03-13T04:42:41.930		1.22x	-17.74	45652.27	28.63		
eta	E	2043-03-13T04:43:34.948		1.07x	-17.58	47176.12	28.68		
gamma	E	2043-03-13T04:43:50.615		1.03x	-17.54	47625.54	28.69		
delta	E	2043-03-13T04:44:14.124		0.96x	-17.47	48300.35	28.71		
lambda	E	2043-03-13T04:45:14.192		0.79x	-17.29	50026.71	28.76		
epsilon	E	2043-03-13T04:46:06.608		0.64x	-17.13	51535.48	28.82		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:24:04.080
 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 : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 117.76
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.513
 C/A sky separation (km) : 6565.9
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



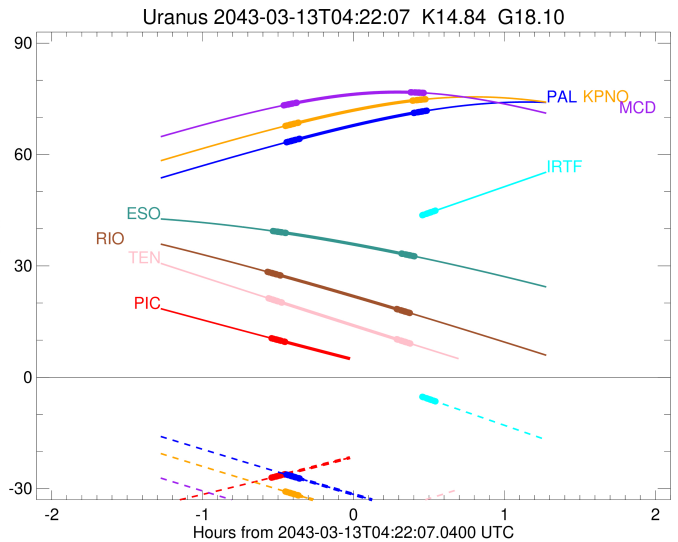
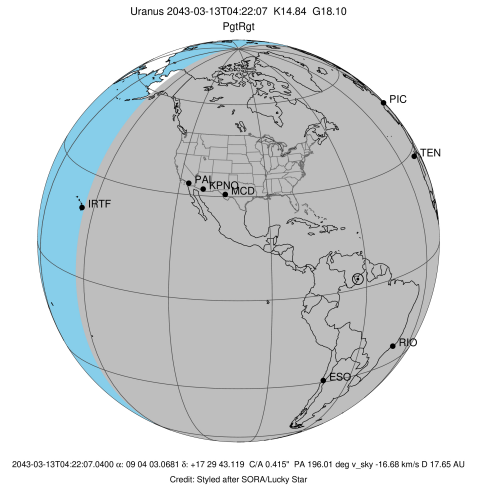
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-03-13T03:55:43.369		63.35	-26.27	50826.28	-30.08		
lambda	I	2043-03-13T03:56:09.972		63.43	-26.36	50026.71	-30.05		
delta	I	2043-03-13T03:57:07.438		63.60	-26.55	48300.35	-30.03		
gamma	I	2043-03-13T03:57:29.801		63.67	-26.63	47628.85	-30.02		
eta	I	2043-03-13T03:57:44.882		63.71	-26.68	47176.12	-30.02		
beta	I	2043-03-13T03:58:34.769		63.86	-26.84	45676.15	-29.99		
alpha	I	2043-03-13T03:59:06.423		63.96	-26.95	44720.92	-29.97		
4	I	2043-03-13T04:00:18.300	b	64.17	-27.19	42593.35	-29.96		
5	I	2043-03-13T04:00:25.879	b	64.19	-27.22	42290.66	-29.89		
6	I	2043-03-13T04:00:41.027	b	64.24	-27.27	41866.82	-29.92		
Uranus	I	2043-03-13T04:00:04.017		64.13	-27.14	25408.13		-49.39	-50.68
Uranus	E	2043-03-13T04:48:02.249		71.44	-36.58	25380.72		55.68	56.89
6	E	2043-03-13T04:46:01.456	b	71.20	-36.20	41818.72	29.93		
5	E	2043-03-13T04:46:14.666	b	71.23	-36.24	42164.07	29.90		
4	E	2043-03-13T04:46:24.280	b	71.25	-36.27	42537.94	29.96		
alpha	E	2043-03-13T04:47:37.937	b	71.39	-36.51	44706.21	29.98		
beta	E	2043-03-13T04:48:09.121		71.45	-36.61	45650.63	30.00		
eta	E	2043-03-13T04:48:59.794		71.55	-36.77	47176.12	30.03		
gamma	E	2043-03-13T04:49:14.744		71.58	-36.81	47625.08	30.03		
delta	E	2043-03-13T04:49:37.224		71.62	-36.89	48300.35	30.04		
lambda	E	2043-03-13T04:50:34.667		71.73	-37.07	50026.71	30.06		
epsilon	E	2043-03-13T04:51:24.448		71.82	-37.23	51523.78	30.09		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:23:34.970
 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 : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 117.75
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.509
 C/A sky separation (km) : 6514.7
 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



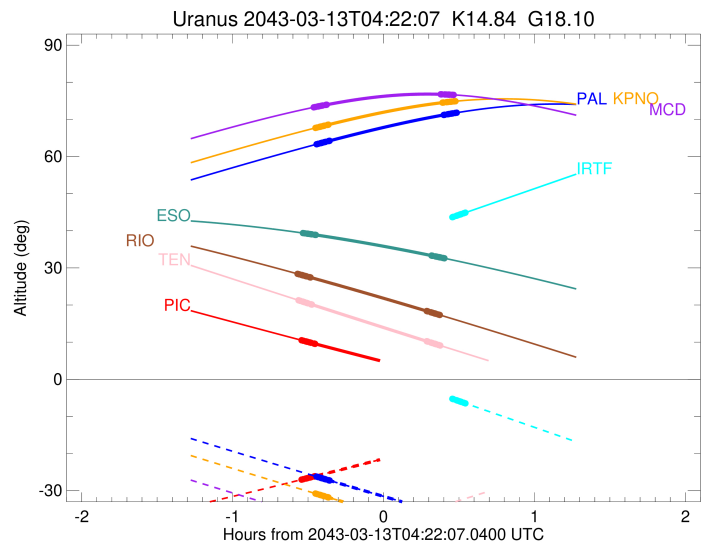
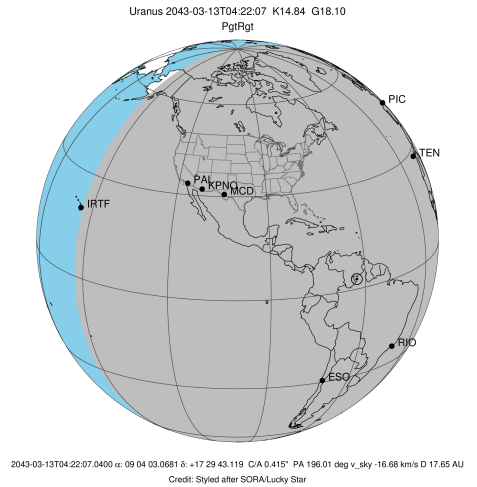
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-03-13T03:55:16.054		67.74	-30.82	50825.92	-30.11		
lambda	I	2043-03-13T03:55:42.615		67.82	-30.91	50026.71	-30.09		
delta	I	2043-03-13T03:56:40.016		67.98	-31.11	48300.35	-30.07		
gamma	I	2043-03-13T03:57:02.355		68.05	-31.18	47628.84	-30.06		
eta	I	2043-03-13T03:57:17.419		68.09	-31.23	47176.12	-30.05		
beta	I	2043-03-13T03:58:07.250		68.23	-31.40	45676.13	-30.03		
alpha	I	2043-03-13T03:58:38.864		68.32	-31.51	44720.97	-30.00		
4	I	2043-03-13T03:59:50.663	b	68.52	-31.75	42593.41	-29.99		
5	I	2043-03-13T03:59:58.229	b	68.54	-31.78	42290.76	-29.92		
6	I	2043-03-13T04:00:13.368	b	68.58	-31.83	41866.77	-29.96		
Uranus	I	2043-03-13T03:59:35.230		68.48	-31.70	25407.75		-49.48	-50.77
Uranus	E	2043-03-13T04:47:33.130		74.67	-41.09	25380.67		55.69	56.90
6	E	2043-03-13T04:45:32.283	b	74.52	-40.71	41818.69	29.95		
5	E	2043-03-13T04:45:45.484	b	74.54	-40.76	42164.11	29.92		
4	E	2043-03-13T04:45:55.091	b	74.55	-40.79	42537.97	29.99		
alpha	E	2043-03-13T04:47:08.692	b	74.64	-41.02	44706.24	30.00		
beta	E	2043-03-13T04:47:39.853		74.68	-41.12	45650.61	30.03		
eta	E	2043-03-13T04:48:30.491		74.74	-41.27	47176.12	30.05		
gamma	E	2043-03-13T04:48:45.431		74.76	-41.32	47625.07	30.06		
delta	E	2043-03-13T04:49:07.896		74.79	-41.39	48300.35	30.06		
lambda	E	2043-03-13T04:50:05.299		74.85	-41.57	50026.71	30.08		
epsilon	E	2043-03-13T04:50:55.045		74.91	-41.73	51523.68	30.11		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:22:52.180
 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 : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 117.71
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.511
 C/A sky separation (km) : 6545.4
 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



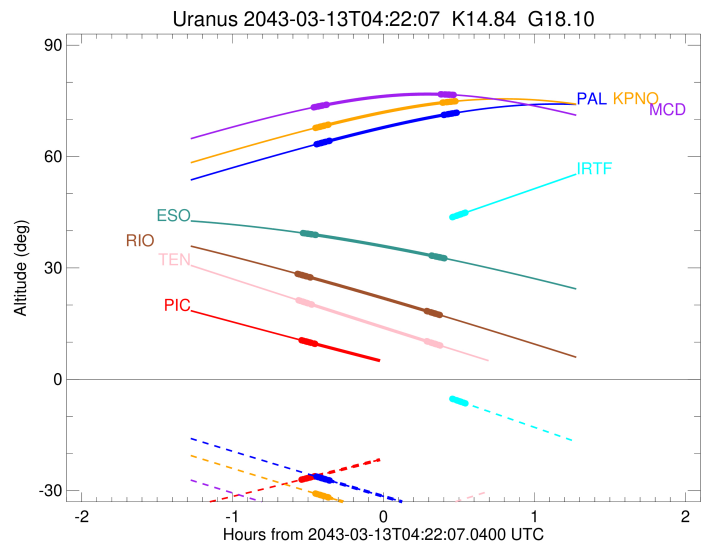
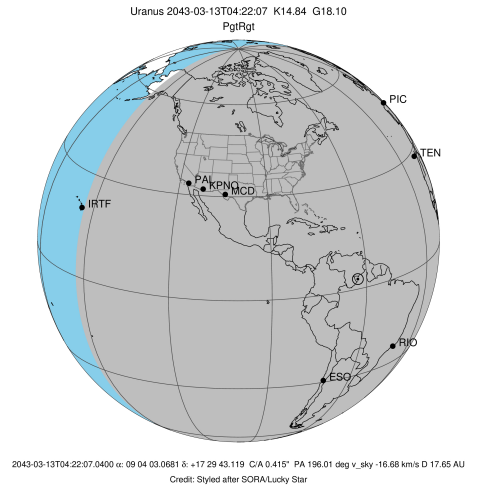
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-03-13T03:54:34.764		73.29	-37.23	50825.92	-30.14		
lambda	I	2043-03-13T03:55:01.302		73.35	-37.32	50026.71	-30.11		
delta	I	2043-03-13T03:55:58.655		73.48	-37.51	48300.35	-30.09		
gamma	I	2043-03-13T03:56:20.975		73.53	-37.58	47628.84	-30.08		
eta	I	2043-03-13T03:56:36.027		73.57	-37.63	47176.12	-30.08		
beta	I	2043-03-13T03:57:25.818		73.68	-37.80	45676.13	-30.05		
alpha	I	2043-03-13T03:57:57.407		73.75	-37.90	44720.97	-30.03		
4	I	2043-03-13T03:59:09.149	b	73.91	-38.14	42593.41	-30.01		
5	I	2043-03-13T03:59:16.709	b	73.92	-38.16	42290.75	-29.95		
6	I	2043-03-13T03:59:31.837	b	73.96	-38.21	41866.77	-29.98		
Uranus	I	2043-03-13T03:58:53.801		73.87	-38.09	25407.77		-49.47	-50.76
Uranus	E	2043-03-13T04:46:49.420		76.72	-47.21	25380.76		55.67	56.88
6	E	2043-03-13T04:44:48.839	b	76.77	-46.85	41818.74	29.96		
5	E	2043-03-13T04:45:02.037	b	76.76	-46.89	42164.06	29.93		
4	E	2043-03-13T04:45:11.641	b	76.76	-46.92	42537.93	29.99		
alpha	E	2043-03-13T04:46:25.231	b	76.73	-47.14	44706.20	30.01		
beta	E	2043-03-13T04:46:56.389		76.71	-47.23	45650.63	30.03		
eta	E	2043-03-13T04:47:47.018		76.69	-47.38	47176.12	30.05		
gamma	E	2043-03-13T04:48:01.955		76.68	-47.43	47625.08	30.06		
delta	E	2043-03-13T04:48:24.416		76.67	-47.49	48300.35	30.07		
lambda	E	2043-03-13T04:49:21.811		76.63	-47.67	50026.71	30.09		
epsilon	E	2043-03-13T04:50:11.555		76.60	-47.81	51523.86	30.12		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:17:26.110
 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 : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 116.68
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.730
 C/A sky separation (km) : 9341.3
 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



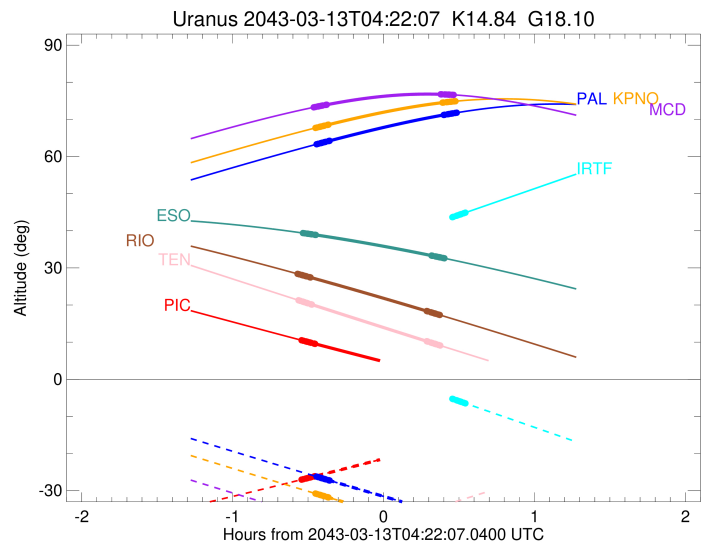
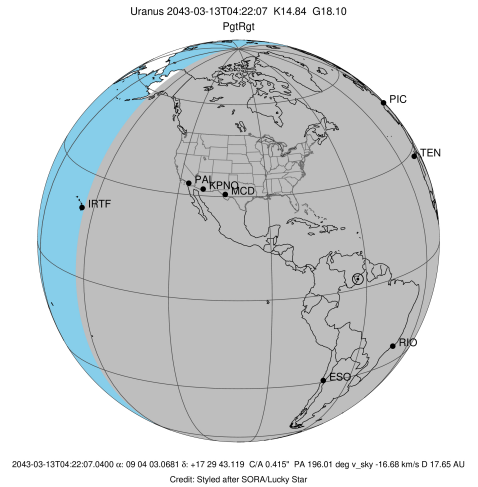
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-03-13T03:48:32.360		21.23	-45.73	50839.72	-29.35		
lambda	I	2043-03-13T03:49:00.100		21.13	-45.64	50026.71	-29.30		
delta	I	2043-03-13T03:49:59.065		20.92	-45.45	48300.35	-29.26		
gamma	I	2043-03-13T03:50:22.016		20.84	-45.38	47629.11	-29.24		
eta	I	2043-03-13T03:50:37.513		20.78	-45.32	47176.12	-29.22		
beta	I	2043-03-13T03:51:28.758		20.59	-45.16	45676.92	-29.18		
alpha	I	2043-03-13T03:52:01.428		20.47	-45.05	44718.84	-29.14		
4	I	2043-03-13T03:53:15.312		20.21	-44.81	42590.74	-29.08		
5	I	2043-03-13T03:53:23.299		20.18	-44.78	42286.78	-29.01		
6	I	2043-03-13T03:53:38.537		20.12	-44.73	41868.76	-29.04		
Uranus	I	2043-03-13T03:53:52.044		20.07	-44.69	25424.15		-45.84	-47.15
Uranus	E	2043-03-13T04:41:01.737		9.87	-35.04	25387.55		54.08	55.31
6	E	2043-03-13T04:39:17.165	b	10.25	-35.40	41821.43	28.87		
5	E	2043-03-13T04:39:30.799	b	10.20	-35.35	42161.67	28.84		
4	E	2043-03-13T04:39:40.773	b	10.16	-35.32	42535.92	28.91		
alpha	E	2043-03-13T04:40:57.127	b	9.89	-35.05	44704.18	28.96		
beta	E	2043-03-13T04:41:29.493		9.77	-34.94	45651.74	29.00		
eta	E	2043-03-13T04:42:21.862		9.59	-34.76	47176.12	29.04		
gamma	E	2043-03-13T04:42:37.331		9.53	-34.70	47625.39	29.05		
delta	E	2043-03-13T04:43:00.559		9.45	-34.62	48300.35	29.07		
lambda	E	2043-03-13T04:43:59.917		9.24	-34.41	50026.71	29.10		
epsilon	E	2043-03-13T04:44:51.618		9.05	-34.23	51532.09	29.15		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:27:06.440
 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 : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 117.69
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.380
 C/A sky separation (km) : 4869.0
 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



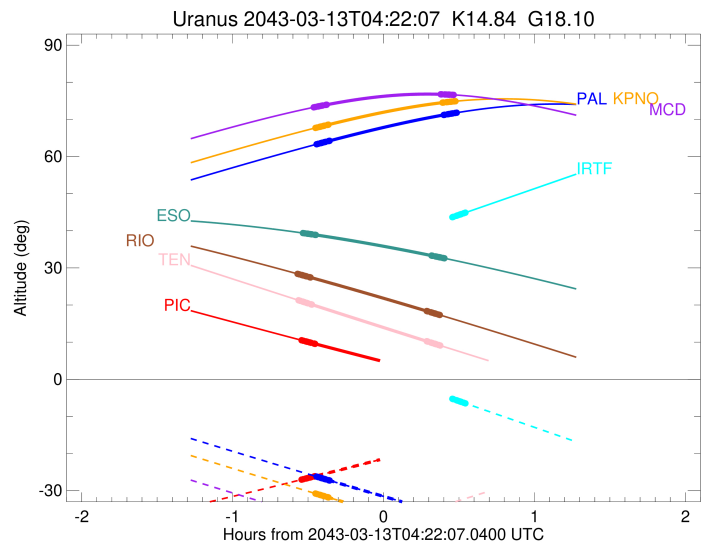
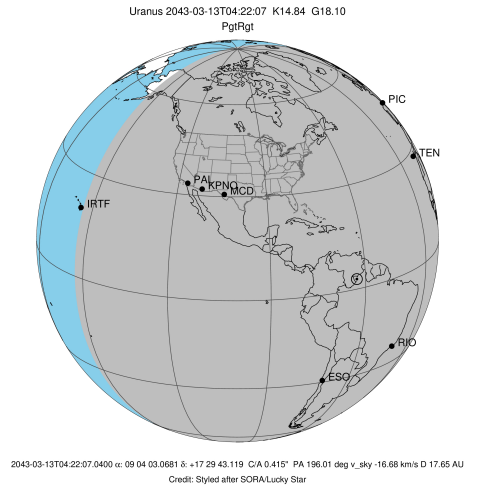
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-03-13T03:58:36.983		31.74	6.68x	50819.02	-29.95		
lambda	I	2043-03-13T03:59:03.453		31.85	6.58x	50026.71	-29.93		
delta	I	2043-03-13T04:00:01.141		32.07	6.36x	48300.35	-29.92		
gamma	I	2043-03-13T04:00:23.590		32.16	6.27x	47628.69	-29.92		
eta	I	2043-03-13T04:00:38.719		32.22	6.21x	47176.12	-29.91		
beta	I	2043-03-13T04:01:28.779		32.41	6.01x	45675.68	-29.90		
alpha	I	2043-03-13T04:02:00.458		32.54	5.89x	44722.10	-29.89		
4	I	2043-03-13T04:03:12.572	b	32.82	5.61x	42594.80	-29.89		
5	I	2043-03-13T04:03:20.077	b	32.85	5.58x	42292.79	-29.83		
6	I	2043-03-13T04:03:35.461	b	32.91	5.52x	41865.64	-29.86		
Uranus	I	2043-03-13T04:02:34.555		32.67	5.76x	25400.34		-51.14	-52.41
Uranus	E	2043-03-13T04:51:34.541		44.15	-5.75	25378.90		56.12	57.32
6	E	2043-03-13T04:49:28.588	b	43.66	-5.26	41817.04	29.96		
5	E	2043-03-13T04:49:41.819	b	43.71	-5.31	42165.79	29.92		
4	E	2043-03-13T04:49:51.430	b	43.75	-5.35	42539.32	29.99		
alpha	E	2043-03-13T04:51:04.995	b	44.03	-5.64	44707.55	29.99		
beta	E	2043-03-13T04:51:36.115		44.16	-5.76	45649.93	30.01		
eta	E	2043-03-13T04:52:26.815		44.35	-5.96	47176.12	30.03		
gamma	E	2043-03-13T04:52:41.760		44.41	-6.02	47624.87	30.03		
delta	E	2043-03-13T04:53:04.252		44.50	-6.11	48300.35	30.04		
lambda	E	2043-03-13T04:54:01.715		44.73	-6.33	50026.71	30.05		
epsilon	E	2043-03-13T04:54:51.324		44.92	-6.53	51517.73	30.07		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:16:31.550
 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 : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 116.71
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.264
 C/A sky separation (km) : 3375.8
 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	2043-03-13T03:48:09.880		28.36	-61.94	50810.62	-30.10		
lambda	I	2043-03-13T03:48:35.937		28.28	-61.90	50026.71	-30.08		
delta	I	2043-03-13T03:49:33.334		28.10	-61.80	48300.35	-30.07		
gamma	I	2043-03-13T03:49:55.676		28.03	-61.76	47628.51	-30.07		
eta	I	2043-03-13T03:50:10.721		27.98	-61.74	47176.12	-30.07		
beta	I	2043-03-13T03:51:00.538		27.83	-61.65	45675.11	-30.05		
alpha	I	2043-03-13T03:51:31.975		27.73	-61.60	44723.48	-30.04		
4	I	2043-03-13T03:52:43.775	b	27.50	-61.48	42596.42	-30.05		
5	I	2043-03-13T03:52:51.147	b	27.48	-61.46	42295.12	-29.99		
6	I	2043-03-13T03:53:06.678	b	27.43	-61.44	41864.25	-30.02		
Uranus	I	2043-03-13T03:51:43.111		27.69	-61.58	25392.68		-52.89	-54.14
Uranus	E	2043-03-13T04:41:23.093		17.96	-54.71	25378.77		56.15	57.35
6	E	2043-03-13T04:39:16.361	b	18.38	-55.06	41815.91	29.87		
5	E	2043-03-13T04:39:29.652	b	18.34	-55.03	42167.04	29.83		
4	E	2043-03-13T04:39:39.301	b	18.31	-55.00	42540.29	29.89		
alpha	E	2043-03-13T04:40:53.081	b	18.06	-54.80	44708.45	29.88		
beta	E	2043-03-13T04:41:24.284		17.95	-54.71	45649.48	29.89		
eta	E	2043-03-13T04:42:15.211		17.78	-54.57	47176.12	29.90		
gamma	E	2043-03-13T04:42:30.217		17.73	-54.53	47624.74	29.90		
delta	E	2043-03-13T04:42:52.813		17.65	-54.46	48300.35	29.90		
lambda	E	2043-03-13T04:43:50.548		17.45	-54.30	50026.71	29.90		
epsilon	E	2043-03-13T04:44:40.269		17.29	-54.16	51513.62	29.91		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-03-13T04:18:21.690
 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 : 611301080332027264
 2Mass ID (if available) : 09040314+1729435
 ICRS Star Coord at Epoch: 09h 04m 03.06812s +17:29:43.11884s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 14.841
 G magnitude : 18.102
 RP magnitude : 17.067
 BP magnitude : 19.249
 DUPflag : 0
 Distance (au) : 17.648
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -16.68
 Sun-Target sep (deg) : 141.44
 Sun-Moon sep (deg) : 117.03
 B (ring opening deg) : 33.84
 PA of pole (deg) : 96.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.136
 C/A sky separation (km) : 1736.5
 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	2043-03-13T03:50:18.400		39.37	-54.63	50803.70	-30.32		
lambda	I	2043-03-13T03:50:44.034		39.33	-54.67	50026.71	-30.31		
delta	I	2043-03-13T03:51:40.994		39.23	-54.77	48300.35	-30.31		
gamma	I	2043-03-13T03:52:03.169		39.20	-54.80	47628.34	-30.30		
eta	I	2043-03-13T03:52:18.092		39.17	-54.83	47176.12	-30.30		
beta	I	2043-03-13T03:53:07.528		39.09	-54.91	45674.59	-30.30		
alpha	I	2043-03-13T03:53:38.642	b	39.04	-54.96	44724.69	-30.29		
4	I	2043-03-13T03:54:49.906	b	38.92	-55.07	42597.85	-30.30		
5	I	2043-03-13T03:54:57.143	b	38.91	-55.08	42297.12	-30.24		
6	I	2043-03-13T03:55:12.742	b	38.88	-55.11	41862.95	-30.27		
Uranus	I	2043-03-13T03:53:33.750		39.05	-54.95	25387.19		-54.16	-55.39
Uranus	E	2043-03-13T04:43:11.718		33.04	-57.85	25379.93		55.87	57.08
6	E	2043-03-13T04:41:09.633	b	33.32	-57.82	41814.46	30.18		
5	E	2043-03-13T04:41:22.812	b	33.29	-57.82	42168.77	30.15		
4	E	2043-03-13T04:41:32.378	b	33.27	-57.82	42541.61	30.21		
alpha	E	2043-03-13T04:42:45.352	b	33.10	-57.85	44709.66	30.19		
beta	E	2043-03-13T04:43:16.192		33.03	-57.86	45648.89	30.19		
eta	E	2043-03-13T04:44:06.637		32.91	-57.87	47176.12	30.20		
gamma	E	2043-03-13T04:44:21.487		32.87	-57.87	47624.56	30.20		
delta	E	2043-03-13T04:44:43.866		32.82	-57.88	48300.35	30.20		
lambda	E	2043-03-13T04:45:41.033		32.69	-57.89	50026.71	30.20		
epsilon	E	2043-03-13T04:46:30.070		32.57	-57.90	51507.57	30.20		