

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:44:10.870
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484

Uranus 2032-10-18T07:44:10 K14.32 G16.57 PgtRgt

ICRS Star Coord at Epoch: 06h 05m 00.32510s +23:37:48.28523s

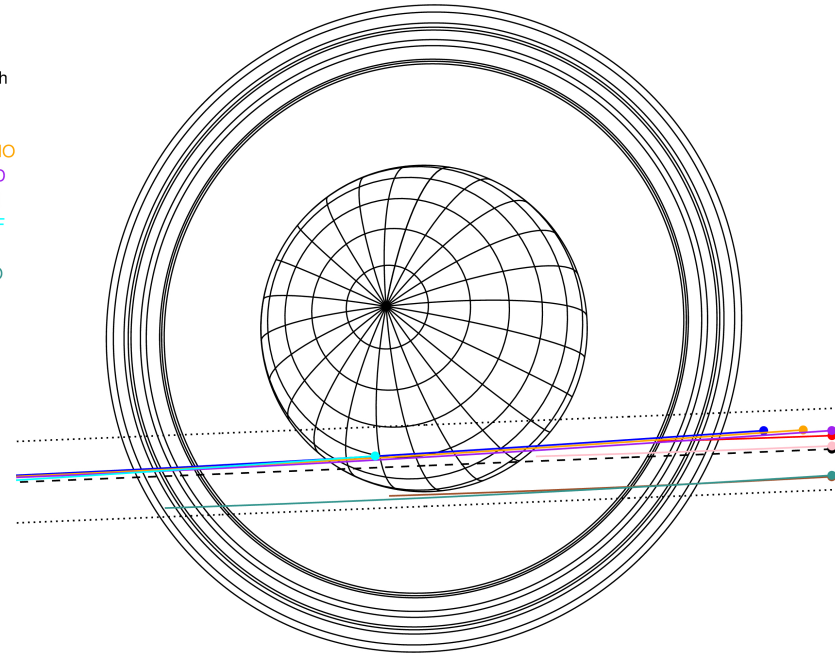
RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 72.52
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74

Uranus 2032-10-18T07:44:10 K14.32 G16.57
 PgtRgt



2032-10-18T07:44:10.8700 α: 06 05 00.3251 δ: +23 37 48.285 C/A 1.580° PA 2.33 deg v_sky - 5.69 km/s D 18.61 AU
 Credit: Styled after SORA/Lucky Star

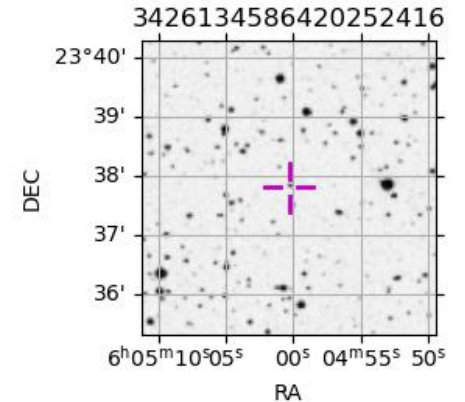
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO



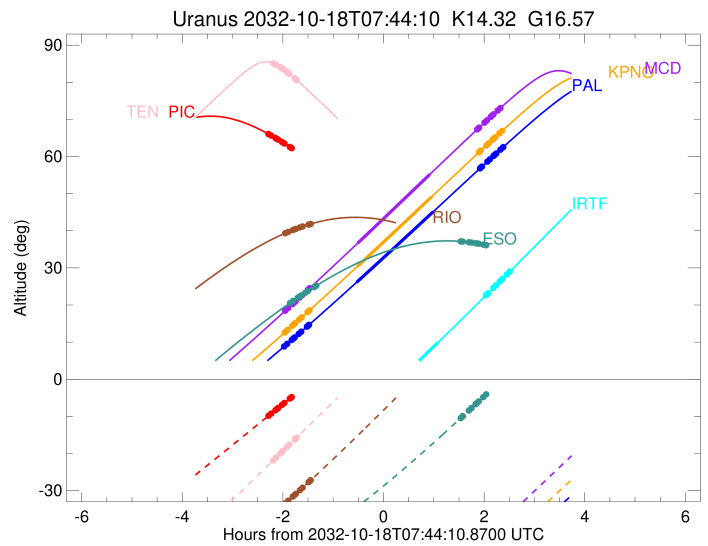
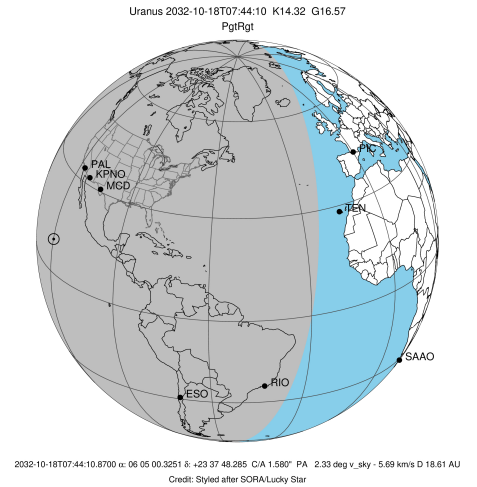
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++++			OCT 18 05:26 - OCT 18 05:53	PnnRin
PAL	Palomar Mt (200")	33.4	243.1	+++++++	+ +	+++++++	OCT 18 05:44 - OCT 18 10:05	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++++	+ +	+++++++	OCT 18 05:45 - OCT 18 10:04	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++++	+ +	+++++++	OCT 18 05:45 - OCT 18 10:02	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++++			OCT 18 05:31 - OCT 18 06:00	PnnRin
IRTF	Mauna Kea/IRTF	19.8	204.5		+	+++++++	OCT 18 08:48 - OCT 18 10:13	PneRne
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++++			OCT 18 05:46 - OCT 18 06:17	PnnRin
ESO	European Southern Obs	-29.3	289.3	+++++++		+++++++	OCT 18 05:51 - OCT 18 09:37	PnnRie
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

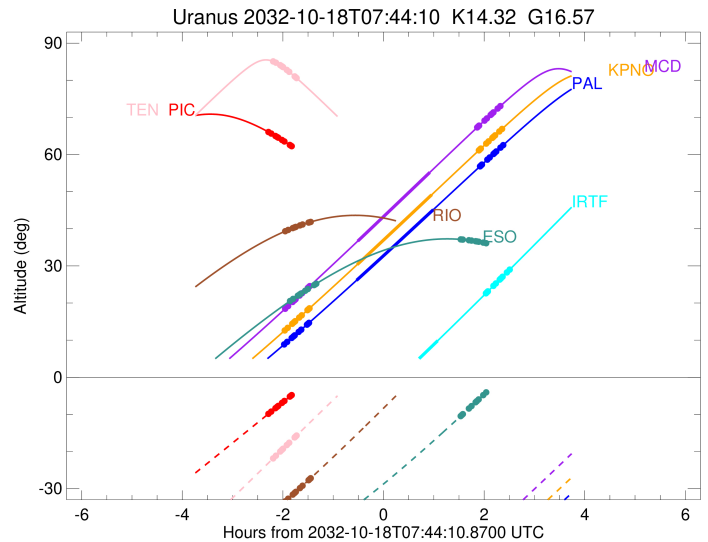
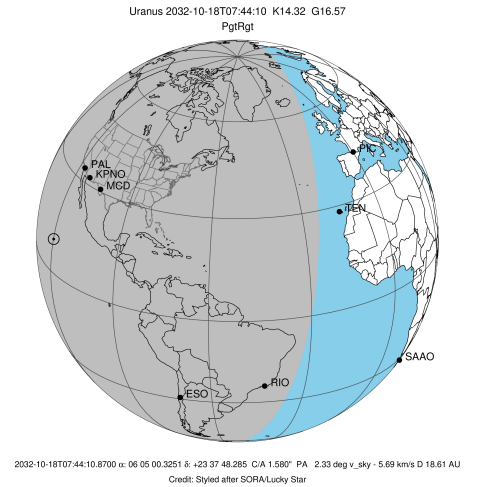


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:35:10.220
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32510s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 73.35
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.377
 C/A sky separation (km) : 18576.4
 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



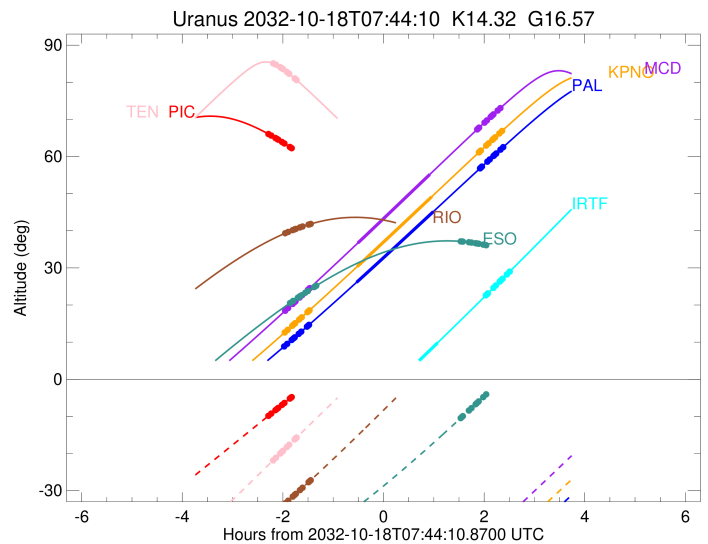
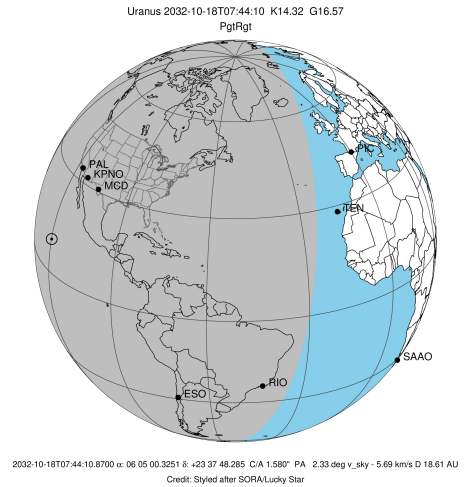
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-18T05:25:59.574		66.19	-10.03	51495.95	-5.69		
lambda	I	2032-10-18T05:30:17.769		65.65	-9.24	50026.71	-5.68		
delta	I	2032-10-18T05:35:22.787		64.99	-8.31	48300.35	-5.64		
gamma	I	2032-10-18T05:37:22.272		64.72	-7.95	47627.06	-5.63		
eta	I	2032-10-18T05:38:42.476		64.54	-7.71	47176.12	-5.62		
beta	I	2032-10-18T05:43:12.524		63.91	-6.89	45664.45	-5.58		
alpha	I	2032-10-18T05:46:00.095		63.52	-6.38	44727.79	-5.56		
4	I	2032-10-18T05:52:38.954		62.55	-5.17	42526.11	-5.49		
5	I	2032-10-18T05:53:28.840		62.43	-5.02	42250.18	-5.49		
6	I	2032-10-18T05:54:39.528		62.25	-4.81x	41874.10	-5.47		
Uranus	I	2032-10-18T06:47:48.470		53.57	4.67x	25057.32		-14.98	-15.65
Uranus	E	2032-10-18T08:24:50.065		36.01	20.46x	25535.11		3.19	3.34
6	E	2032-10-18T09:20:18.585		25.84	27.94x	41798.05	5.33		
5	E	2032-10-18T09:21:51.109		25.56	28.12x	42287.59	5.34		
4	E	2032-10-18T09:22:48.462		25.39	28.24x	42602.41	5.35		
alpha	E	2032-10-18T09:29:26.033		24.19	29.01x	44736.97	5.40		
beta	E	2032-10-18T09:32:19.019		23.67	29.34x	45673.60	5.42		
eta	E	2032-10-18T09:36:55.267		22.84	29.85x	47176.12	5.45		
gamma	E	2032-10-18T09:38:18.348		22.59	30.01x	47629.47	5.46		
delta	E	2032-10-18T09:40:21.066		22.22	30.23x	48300.35	5.47		
lambda	E	2032-10-18T09:45:35.712		21.28	30.78x	50026.71	5.50		
epsilon	E	2032-10-18T09:47:47.307		20.88	31.01x	50751.20	5.51		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:56:58.580
 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 : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32509s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 72.81
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.445
 C/A sky separation (km) : 19494.5
 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



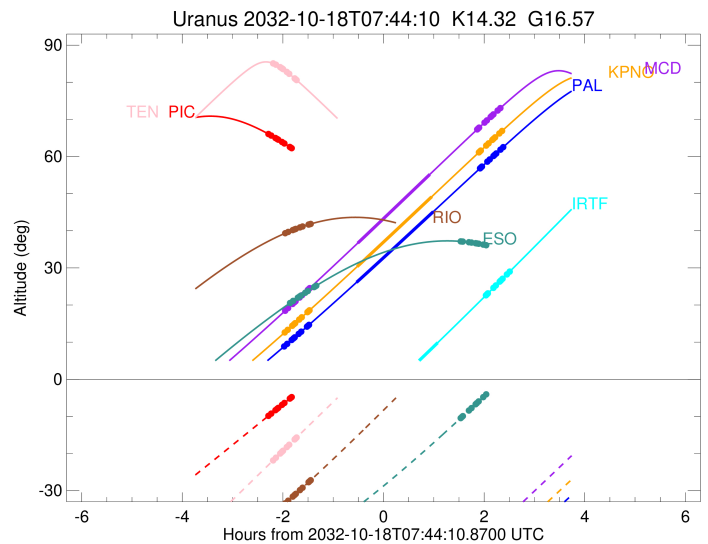
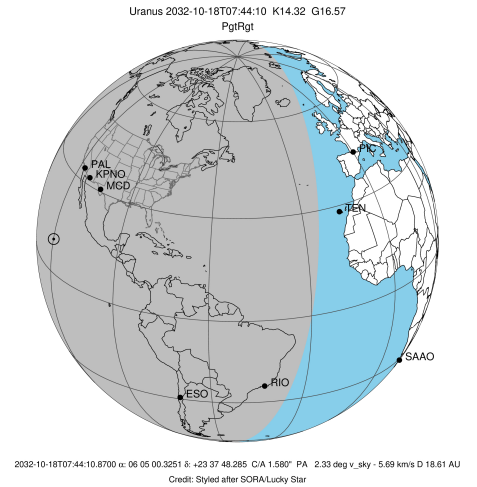
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-18T05:44:42.060		8.65	-55.94	51499.96	-5.32		
lambda	I	2032-10-18T05:49:18.865		9.54	-56.71	50026.71	-5.31		
delta	I	2032-10-18T05:54:44.591		10.60	-57.58	48300.35	-5.29		
gamma	I	2032-10-18T05:56:52.094		11.01	-57.92	47626.97	-5.28		
eta	I	2032-10-18T05:58:17.617		11.29	-58.14	47176.12	-5.27		
beta	I	2032-10-18T06:03:05.502		12.24	-58.88	45664.12	-5.24		
alpha	I	2032-10-18T06:06:04.009		12.82	-59.33	44727.28	-5.22		
4	I	2032-10-18T06:13:08.328		14.22	-60.36	42526.06	-5.16		
5	I	2032-10-18T06:14:01.526		14.40	-60.49	42249.08	-5.16		
6	I	2032-10-18T06:15:16.410		14.64	-60.66	41874.39	-5.14		
Uranus	I	2032-10-18T07:12:00.177		26.10	-66.19	25061.70		-14.91	-15.58
Uranus	E	2032-10-18T08:43:30.234		45.13	-61.54	25551.73		1.76	1.84
6	E	2032-10-18T09:39:10.327		56.79	-52.72	41799.17	5.46		
5	E	2032-10-18T09:40:40.867		57.10	-52.45	42291.32	5.48		
4	E	2032-10-18T09:41:35.756		57.29	-52.29	42600.27	5.49		
alpha	E	2032-10-18T09:48:02.707		58.63	-51.12	44738.69	5.57		
beta	E	2032-10-18T09:50:50.200		59.21	-50.60	45674.54	5.60		
eta	E	2032-10-18T09:55:17.116		60.13	-49.78	47176.12	5.65		
gamma	E	2032-10-18T09:56:37.352		60.41	-49.53	47629.72	5.66		
delta	E	2032-10-18T09:58:35.650		60.81	-49.16	48300.35	5.68		
lambda	E	2032-10-18T10:03:38.495		61.85	-48.21	50026.71	5.72		
epsilon	E	2032-10-18T10:05:45.812		62.29	-47.81	50756.36	5.74		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:56:28.990
 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 : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32509s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 72.88
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.466
 C/A sky separation (km) : 19788.5
 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_itrff93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



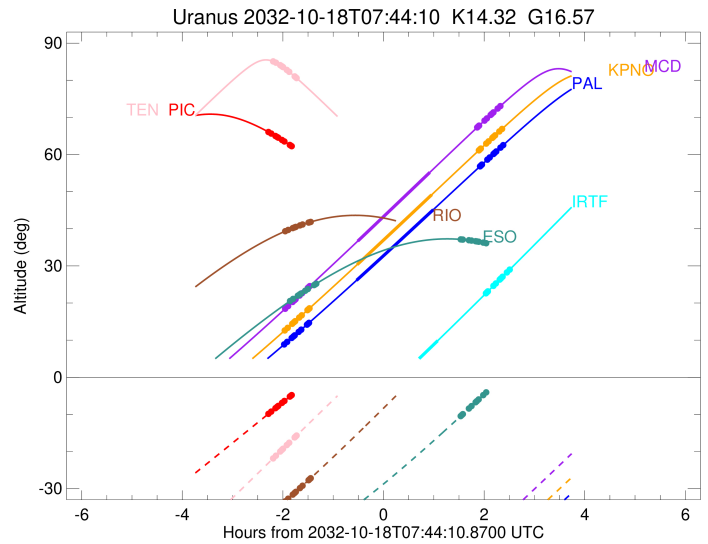
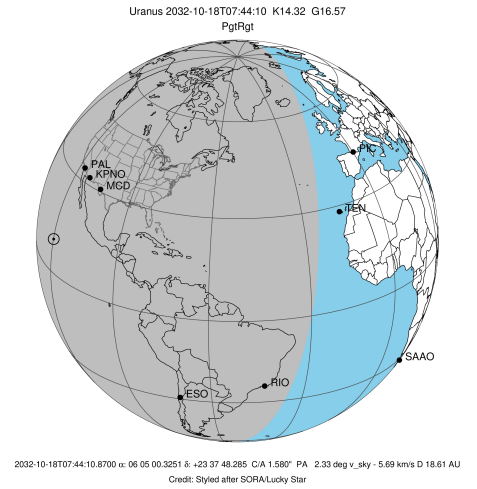
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-18T05:45:22.418		12.40	-60.34	51498.53	-5.34		
lambda	I	2032-10-18T05:49:57.970		13.32	-61.05	50026.71	-5.33		
delta	I	2032-10-18T05:55:22.601		14.41	-61.85	48300.35	-5.30		
gamma	I	2032-10-18T05:57:29.690		14.84	-62.15	47627.01	-5.29		
eta	I	2032-10-18T05:58:54.955		15.12	-62.35	47176.12	-5.28		
beta	I	2032-10-18T06:03:41.966		16.09	-63.01	45664.28	-5.25		
alpha	I	2032-10-18T06:06:39.965		16.69	-63.41	44727.54	-5.23		
4	I	2032-10-18T06:13:43.312		18.13	-64.29	42526.09	-5.18		
5	I	2032-10-18T06:14:36.300		18.31	-64.40	42249.77	-5.17		
6	I	2032-10-18T06:15:51.205		18.56	-64.55	41874.20	-5.15		
Uranus	I	2032-10-18T07:12:47.506		30.34	-68.05	25067.72		-14.81	-15.48
Uranus	E	2032-10-18T08:41:48.228		49.20	-59.71	25553.67		1.50	1.57
6	E	2032-10-18T09:37:48.511		61.09	-49.71	41799.30	5.46		
5	E	2032-10-18T09:39:19.144		61.41	-49.42	42291.69	5.48		
4	E	2032-10-18T09:40:13.969		61.60	-49.24	42600.04	5.49		
alpha	E	2032-10-18T09:46:41.130		62.96	-47.98	44738.85	5.57		
beta	E	2032-10-18T09:49:28.633		63.54	-47.43	45674.62	5.60		
eta	E	2032-10-18T09:53:55.527		64.47	-46.56	47176.12	5.65		
gamma	E	2032-10-18T09:55:15.755		64.75	-46.29	47629.74	5.66		
delta	E	2032-10-18T09:57:14.026		65.16	-45.90	48300.35	5.68		
lambda	E	2032-10-18T10:02:16.777		66.21	-44.89	50026.71	5.72		
epsilon	E	2032-10-18T10:04:24.126		66.65	-44.47	50756.84	5.75		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:55:30.050
 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 : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32509s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 72.98
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.491
 C/A sky separation (km) : 20125.4
 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



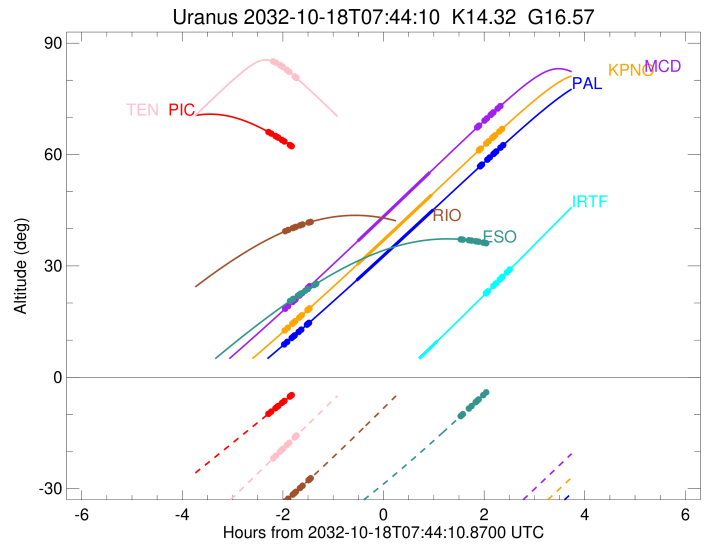
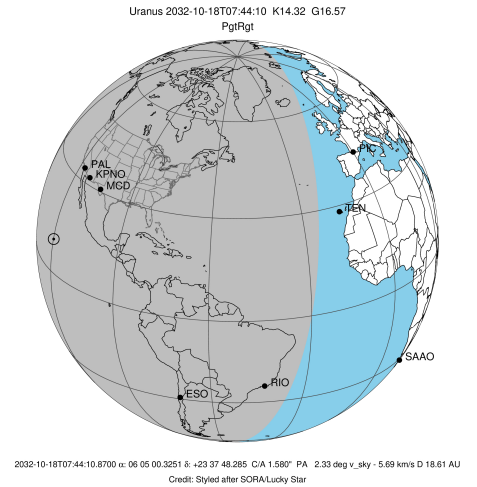
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-18T05:45:54.026		18.24	-65.65	51496.72	-5.37		
lambda	I	2032-10-18T05:50:27.624		19.18	-66.19	50026.71	-5.36		
delta	I	2032-10-18T05:55:50.439		20.30	-66.79	48300.35	-5.33		
gamma	I	2032-10-18T05:57:56.838		20.74	-67.01	47627.06	-5.32		
eta	I	2032-10-18T05:59:21.665		21.03	-67.15	47176.12	-5.31		
beta	I	2032-10-18T06:04:07.198		22.02	-67.60	45664.48	-5.28		
alpha	I	2032-10-18T06:07:04.322		22.64	-67.86	44727.87	-5.26		
4	I	2032-10-18T06:14:05.891		24.10	-68.39	42526.13	-5.20		
5	I	2032-10-18T06:14:58.550		24.29	-68.45	42250.62	-5.19		
6	I	2032-10-18T06:16:13.378		24.55	-68.53	41873.97	-5.17		
Uranus	I	2032-10-18T07:13:21.023		36.65	-68.03	25075.48		-14.69	-15.35
Uranus	E	2032-10-18T08:39:22.534		55.18	-55.63	25555.52		1.22	1.27
6	E	2032-10-18T09:35:46.878		67.27	-44.52	41799.43	5.45		
5	E	2032-10-18T09:37:17.624		67.59	-44.21	42292.07	5.48		
4	E	2032-10-18T09:38:12.395		67.79	-44.02	42599.82	5.48		
alpha	E	2032-10-18T09:44:39.839		69.14	-42.69	44739.01	5.57		
beta	E	2032-10-18T09:47:27.383		69.73	-42.11	45674.71	5.60		
eta	E	2032-10-18T09:51:54.302		70.66	-41.18	47176.12	5.65		
gamma	E	2032-10-18T09:53:14.538		70.93	-40.90	47629.76	5.66		
delta	E	2032-10-18T09:55:12.803		71.34	-40.49	48300.35	5.68		
lambda	E	2032-10-18T10:00:15.520		72.38	-39.44	50026.71	5.73		
epsilon	E	2032-10-18T10:02:22.928		72.81	-38.99	50757.32	5.75		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:36:20.090
 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 : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32510s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 73.48
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.517
 C/A sky separation (km) : 20472.0
 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



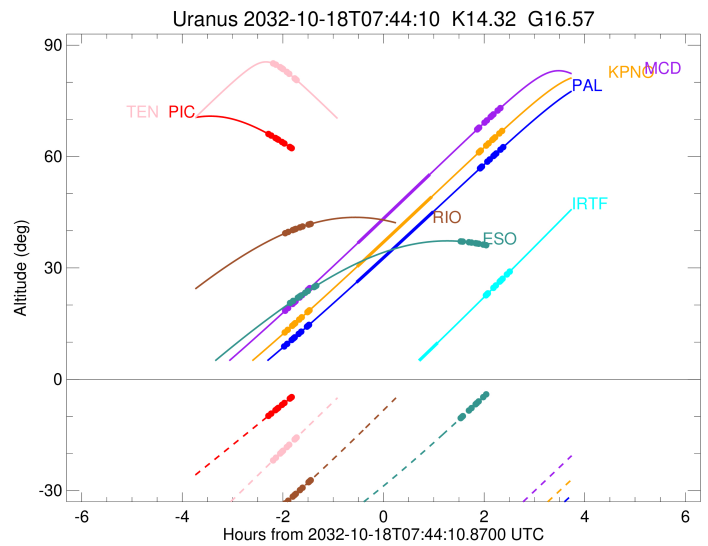
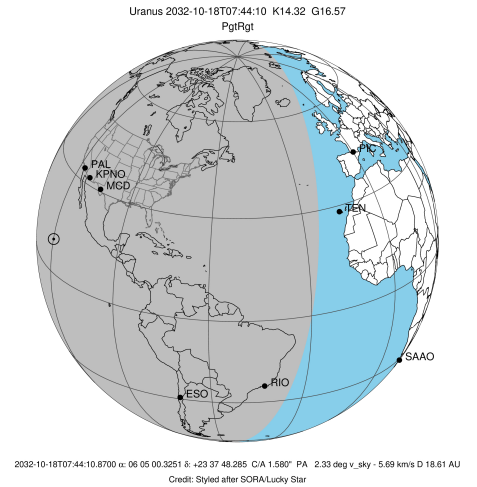
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-18T05:31:37.558		85.17	-22.06	51487.87	-5.67		
lambda	I	2032-10-18T05:35:55.335		84.74	-21.12	50026.71	-5.65		
delta	I	2032-10-18T05:41:01.870		84.07	-19.99	48300.35	-5.61		
gamma	I	2032-10-18T05:43:02.022		83.77	-19.55	47627.27	-5.59		
eta	I	2032-10-18T05:44:22.776		83.55	-19.25	47176.12	-5.58		
beta	I	2032-10-18T05:48:54.645		82.79	-18.25	45665.30	-5.54		
alpha	I	2032-10-18T05:51:43.517		82.28	-17.63	44729.24	-5.51		
4	I	2032-10-18T05:58:26.704		81.01	-16.15	42526.35	-5.43		
5	I	2032-10-18T05:59:16.690		80.85	-15.97	42253.96	-5.42		
6	I	2032-10-18T06:00:29.165		80.61	-15.70	41873.02	-5.40		
Uranus	I	2032-10-18T06:56:11.612		68.74	-3.50x	25096.32		-14.35	-15.00
Uranus	E	2032-10-18T08:18:48.824		50.51	14.12x	25554.24		1.42	1.49
6	E	2032-10-18T09:16:44.278		37.79	25.78x	41798.96	5.29		
5	E	2032-10-18T09:18:17.684		37.45	26.09x	42290.64	5.31		
4	E	2032-10-18T09:19:14.546		37.24	26.27x	42600.69	5.32		
alpha	E	2032-10-18T09:25:54.172		35.79	27.55x	44738.31	5.39		
beta	E	2032-10-18T09:28:47.376		35.16	28.10x	45674.32	5.42		
eta	E	2032-10-18T09:33:23.599		34.16	28.97x	47176.12	5.45		
gamma	E	2032-10-18T09:34:46.661		33.86	29.23x	47629.66	5.47		
delta	E	2032-10-18T09:36:49.202		33.42	29.61x	48300.35	5.48		
lambda	E	2032-10-18T09:42:03.143		32.28	30.59x	50026.71	5.52		
epsilon	E	2032-10-18T09:44:14.942		31.81	30.99x	50754.68	5.53		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T08:00:00.820
 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 : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32509s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 72.17
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.435
 C/A sky separation (km) : 19362.4
 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	2032-10-18T05:41:17.561	-28.09x	-25.39	51501.35	-5.08			
lambda	I	2032-10-18T05:46:07.817	-27.24x	-26.52	50026.71	-5.07			
delta	I	2032-10-18T05:51:49.058	-26.22x	-27.86	48300.35	-5.05			
gamma	I	2032-10-18T05:54:02.642	-25.82x	-28.39	47626.93	-5.04			
eta	I	2032-10-18T05:55:32.230	-25.55x	-28.74	47176.12	-5.03			
beta	I	2032-10-18T06:00:33.844	-24.64x	-29.92	45663.97	-5.00			
alpha	I	2032-10-18T06:03:40.861	-24.07x	-30.66	44727.01	-4.98			
4	I	2032-10-18T06:11:05.253	-22.70x	-32.40	42526.03	-4.93			
5	I	2032-10-18T06:12:01.070	-22.52x	-32.62	42248.39	-4.93			
6	I	2032-10-18T06:13:19.313	-22.28x	-32.93	41874.57	-4.91			
Uranus	I	2032-10-18T07:12:32.919	-10.63x	-46.84	25057.11			-14.98	-15.65
Uranus	E	2032-10-18T08:48:52.156	9.86	-68.75	25552.08			1.71	1.80
6	E	2032-10-18T09:46:11.241	22.58	-78.98	41799.33	5.32			
5	E	2032-10-18T09:47:44.340	22.93	-79.15	42291.81	5.34			
4	E	2032-10-18T09:48:40.614	23.14	-79.24	42599.97	5.34			
alpha	E	2032-10-18T09:55:18.170	24.63	-79.79	44738.93	5.43			
beta	E	2032-10-18T09:58:10.097	25.27	-79.96	45674.67	5.46			
eta	E	2032-10-18T10:02:43.948	26.30	-80.13	47176.12	5.50			
gamma	E	2032-10-18T10:04:06.252	26.61	-80.16	47629.76	5.52			
delta	E	2032-10-18T10:06:07.553	27.06	-80.18	48300.35	5.54			
lambda	E	2032-10-18T10:11:17.953	28.23	-80.13	50026.71	5.58			
epsilon	E	2032-10-18T10:13:28.561	28.72	-80.06	50757.37	5.61			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:41:46.290
 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 : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32510s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 73.22
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.929
 C/A sky separation (km) : 26026.4
 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

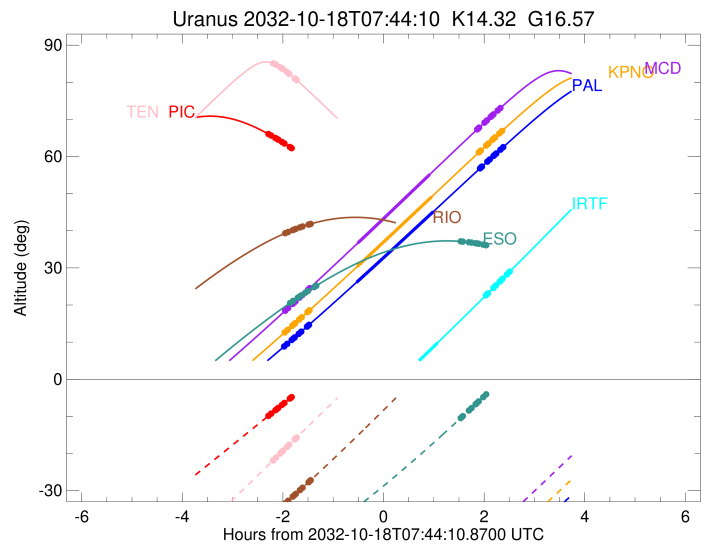
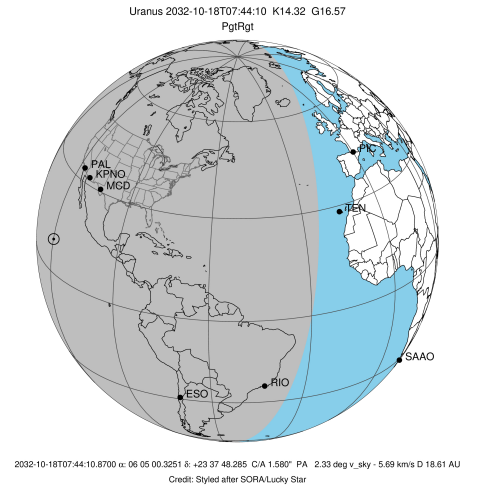


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-10-18T05:46:01.209		39.25	-33.61	51460.37	-5.31		
lambda	I	2032-10-18T05:50:31.773		39.69	-32.71	50026.71	-5.27		
delta	I	2032-10-18T05:56:01.321		40.19	-31.59	48300.35	-5.20		
gamma	I	2032-10-18T05:58:10.924		40.38	-31.16	47627.92	-5.17		
eta	I	2032-10-18T05:59:38.430		40.51	-30.86	47176.12	-5.15		
beta	I	2032-10-18T06:04:33.376		40.91	-29.85	45667.88	-5.08		
alpha	I	2032-10-18T06:07:37.550		41.15	-29.22	44733.55	-5.03		
4	I	2032-10-18T06:15:02.557		41.69	-27.68	42527.76	-4.89		
5	I	2032-10-18T06:15:56.577		41.75	-27.49	42265.43	-4.87		
6	I	2032-10-18T06:17:20.410		41.84	-27.20	41869.11	-4.84		

No planet occultations

6	E	2032-10-18T09:10:42.082		35.15	11.29x	41802.69	4.85		
5	E	2032-10-18T09:12:24.634		34.93	11.68x	42299.61	4.88		
4	E	2032-10-18T09:13:23.715		34.80	11.91x	42594.50	4.90		
alpha	E	2032-10-18T09:20:36.105		33.83	13.56x	44742.38	5.04		
beta	E	2032-10-18T09:23:40.560		33.40	14.27x	45676.48	5.09		
eta	E	2032-10-18T09:28:32.886		32.71	15.39x	47176.12	5.17		
gamma	E	2032-10-18T09:30:00.600		32.50	15.72x	47630.21	5.19		
delta	E	2032-10-18T09:32:09.406		32.19	16.22x	48300.35	5.22		
lambda	E	2032-10-18T09:37:38.013		31.39	17.48x	50026.71	5.29		
epsilon	E	2032-10-18T09:39:58.321		31.04	18.02x	50770.67	5.33		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-10-18T07:48:10.110
 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 : 3426134586420252416
 2Mass ID (if available) : 06050032+2337484
 ICRS Star Coord at Epoch: 06h 05m 00.32510s +23:37:48.28523s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.321
 G magnitude : 16.565
 RP magnitude : 15.842
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 18.606
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -5.70
 Sun-Target sep (deg) : 113.88
 Sun-Moon sep (deg) : 72.99
 B (ring opening deg) : 74.38
 PA of pole (deg) : 59.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.964
 C/A sky separation (km) : 26506.8
 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	2032-10-18T05:51:47.715		20.40	-46.14	51460.42	-5.17		
lambda	I	2032-10-18T05:56:25.535		21.12	-45.62	50026.71	-5.14		
delta	I	2032-10-18T06:02:03.938		21.99	-44.95	48300.35	-5.07		
gamma	I	2032-10-18T06:04:17.039		22.32	-44.68	47627.92	-5.04		
eta	I	2032-10-18T06:05:46.916		22.55	-44.49	47176.12	-5.02		
beta	I	2032-10-18T06:10:49.898		23.30	-43.85	45667.92	-4.94		
alpha	I	2032-10-18T06:13:59.142		23.77	-43.43	44733.62	-4.89		
4	I	2032-10-18T06:21:36.672		24.86	-42.40	42527.80	-4.75		
5	I	2032-10-18T06:22:32.208		24.99	-42.27	42265.69	-4.74		
6	I	2032-10-18T06:23:58.540		25.19	-42.07	41869.00	-4.70		

No planet occultations

6	E	2032-10-18T09:16:05.841		37.14	-10.50	41803.38	4.81		
5	E	2032-10-18T09:17:49.157		37.11	-10.14	42300.88	4.85		
4	E	2032-10-18T09:18:48.204		37.09	-9.93	42593.45	4.87		
alpha	E	2032-10-18T09:26:02.897		36.91	-8.42	44742.99	5.02		
beta	E	2032-10-18T09:29:07.817		36.82	-7.77	45676.80	5.08		
eta	E	2032-10-18T09:34:00.530		36.65	-6.74	47176.12	5.16		
gamma	E	2032-10-18T09:35:28.312		36.60	-6.43	47630.30	5.19		
delta	E	2032-10-18T09:37:37.111		36.52	-5.98	48300.35	5.22		
lambda	E	2032-10-18T09:43:05.398		36.28	-4.82x	50026.71	5.30		
epsilon	E	2032-10-18T09:45:26.082		36.17	-4.32x	50774.15	5.34		