

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:08:06.440
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496

ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s

RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 92.88
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06

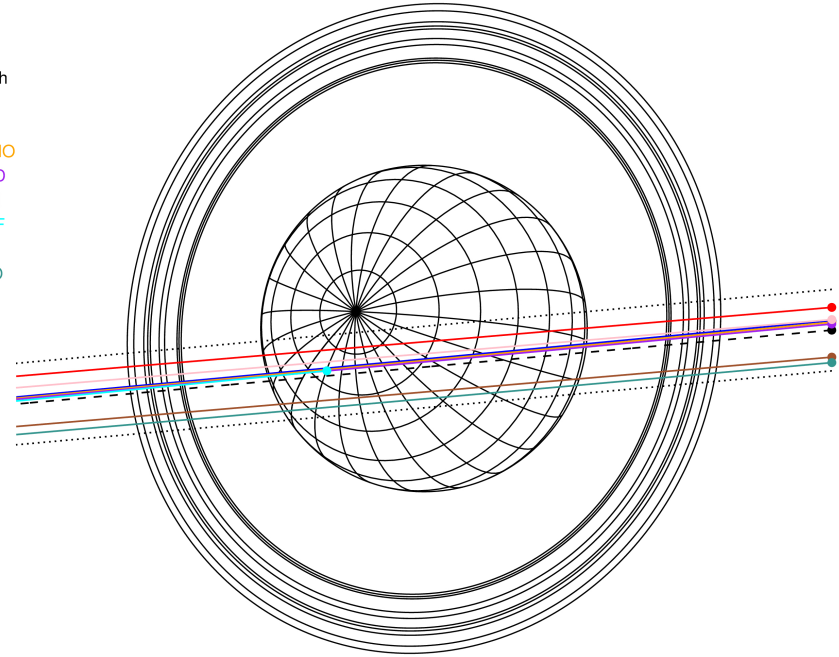
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-01-19T04:08:06.4400 α: 06 51 48.2261 δ: +23 17 49.476 C/A 0.457° PA 5.18 deg v_sky -22.16 km/s D 17.88 AU
 Credit: Styled after SORA/Lucky Star

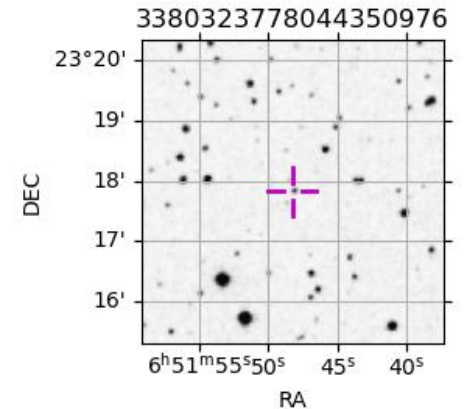
Uranus 2036-01-19T04:08:06 K14.55 G16.07 PgtRgt

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

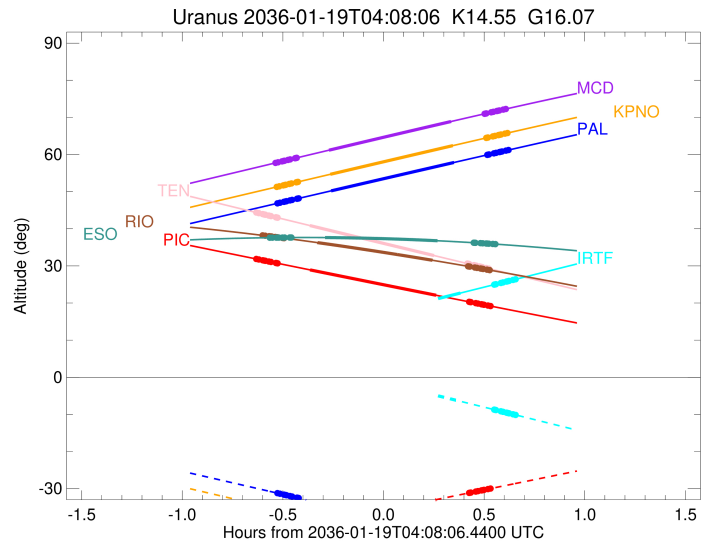
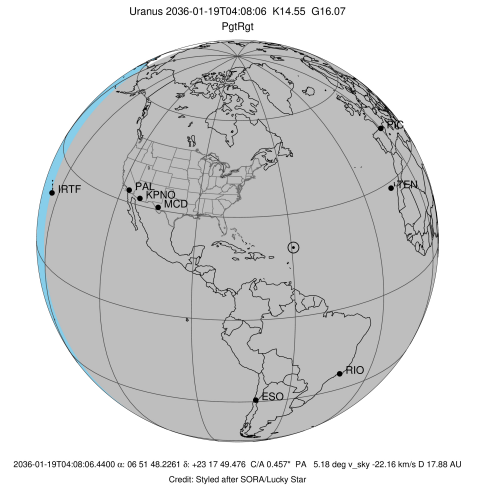


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	JAN 19 03:30 - JAN 19 04:40	PieRie
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	JAN 19 03:36 - JAN 19 04:45	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	JAN 19 03:36 - JAN 19 04:45	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	JAN 19 03:36 - JAN 19 04:44	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	JAN 19 03:30 - JAN 19 04:39	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5		+	+++++	JAN 19 04:31 - JAN 19 04:47	PneRne
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +	+++++	JAN 19 03:32 - JAN 19 04:40	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	JAN 19 03:34 - JAN 19 04:41	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

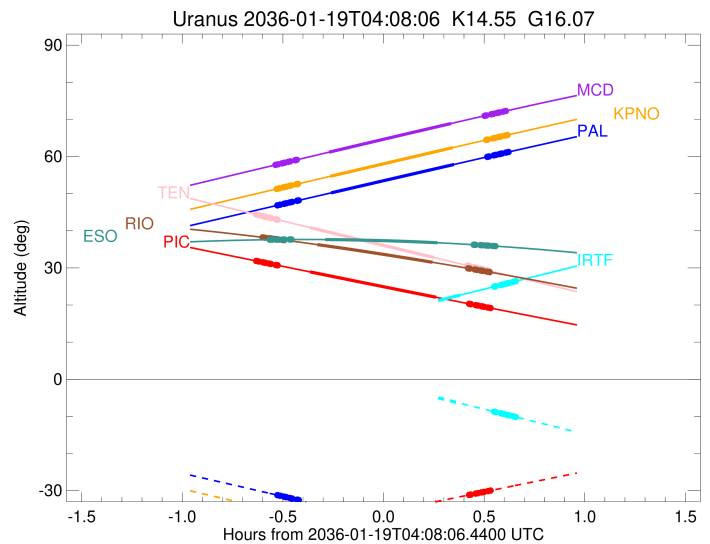
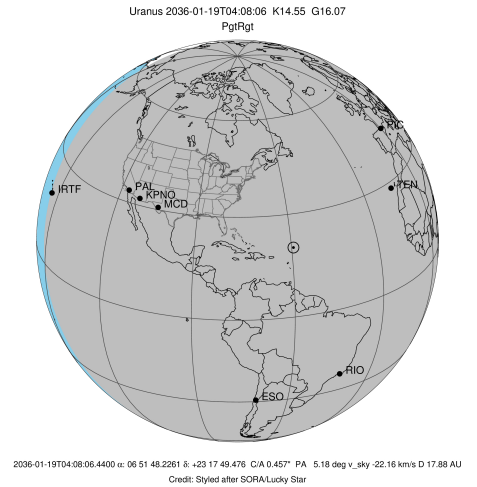


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:04:57.960
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.32
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.161
 C/A sky separation (km) : 2082.5
 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



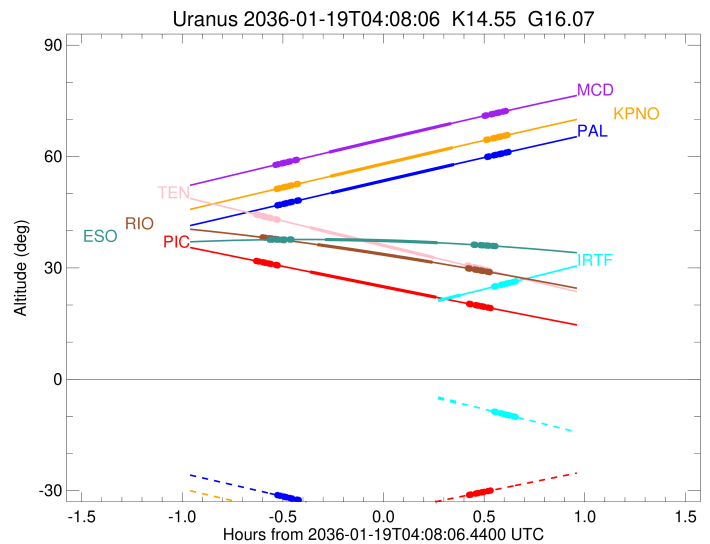
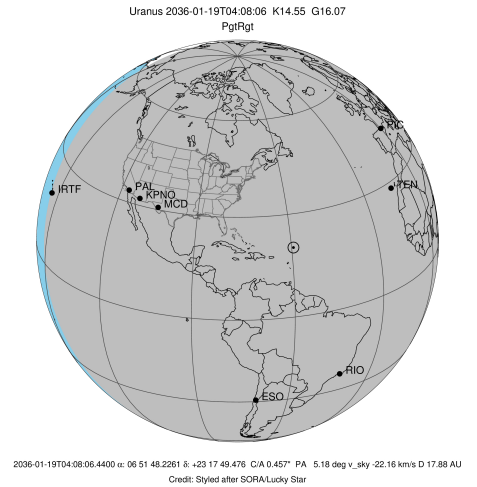
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-19T03:30:27.155		31.82	-42.68	50753.99	-24.42		
lambda	I	2036-01-19T03:30:56.942		31.73	-42.59	50026.71	-24.41		
delta	I	2036-01-19T03:32:07.658		31.51	-42.38	48300.35	-24.41		
gamma	I	2036-01-19T03:32:35.490		31.42	-42.29	47620.96	-24.41		
eta	I	2036-01-19T03:32:53.715		31.37	-42.24	47176.12	-24.41		
beta	I	2036-01-19T03:33:56.582		31.18	-42.05	45643.47	-24.40		
alpha	I	2036-01-19T03:34:33.198		31.06	-41.94	44750.59	-24.40		
4	I	2036-01-19T03:36:00.366		30.80	-41.68	42615.97	-24.39		
5	I	2036-01-19T03:36:19.830		30.74	-41.62	42156.68	-24.40		
6	I	2036-01-19T03:36:31.059		30.70	-41.59	41865.46	-24.39		
Uranus	I	2036-01-19T03:46:12.955		28.92	-39.83	25109.74		-24.68	-25.70
Uranus	E	2036-01-19T04:23:46.559		22.10	-32.97	25156.63		23.24	24.21
6	E	2036-01-19T04:33:36.685		20.33	-31.16	41806.00	24.29		
5	E	2036-01-19T04:33:56.920		20.27	-31.10	42314.69	24.30		
4	E	2036-01-19T04:34:06.208		20.24	-31.07	42526.03	24.29		
alpha	E	2036-01-19T04:35:34.803		19.98	-30.80	44687.60	24.30		
beta	E	2036-01-19T04:36:15.600		19.85	-30.67	45677.87	24.30		
eta	E	2036-01-19T04:37:17.330		19.67	-30.48	47176.12	24.30		
gamma	E	2036-01-19T04:37:36.073		19.61	-30.43	47631.56	24.30		
delta	E	2036-01-19T04:38:03.596		19.53	-30.34	48300.35	24.30		
lambda	E	2036-01-19T04:39:14.643		19.32	-30.13	50026.71	24.30		
epsilon	E	2036-01-19T04:40:17.363		19.13	-29.93	51550.77	24.30		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:10:44.950
 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 : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.61
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.368
 C/A sky separation (km) : 4767.4
 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



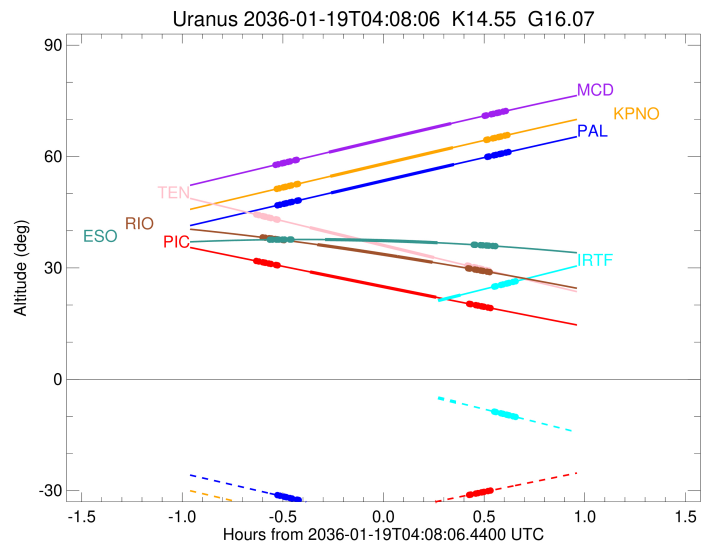
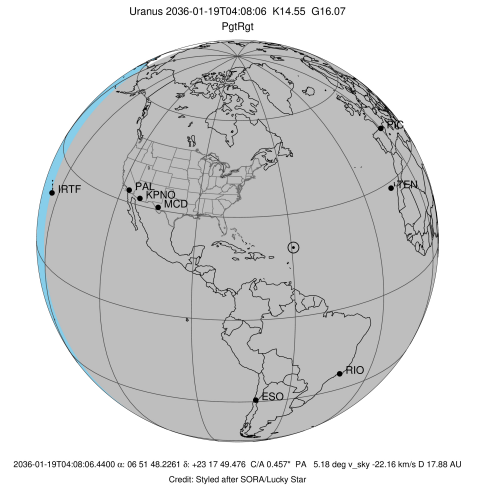
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-19T03:36:45.346		46.91	-31.27	50758.44	-24.48		
lambda	I	2036-01-19T03:37:15.244		47.02	-31.38	50026.71	-24.47		
delta	I	2036-01-19T03:38:25.797		47.26	-31.62	48300.35	-24.47		
gamma	I	2036-01-19T03:38:53.568		47.36	-31.72	47620.96	-24.46		
eta	I	2036-01-19T03:39:11.754		47.43	-31.78	47176.12	-24.46		
beta	I	2036-01-19T03:40:14.512		47.65	-32.00	45643.01	-24.45		
alpha	I	2036-01-19T03:40:51.009		47.77	-32.13	44751.12	-24.45		
4	I	2036-01-19T03:42:18.100		48.08	-32.43	42615.49	-24.43		
5	I	2036-01-19T03:42:37.494		48.15	-32.50	42157.76	-24.44		
6	I	2036-01-19T03:42:48.827		48.18	-32.53	41863.62	-24.42		
Uranus	I	2036-01-19T03:52:27.894		50.21	-34.55	25092.34		-25.20	-26.23
Uranus	E	2036-01-19T04:29:06.073		57.85	-42.21	25200.51		21.84	22.77
6	E	2036-01-19T04:39:01.797		59.91	-44.28	41803.98	24.48		
5	E	2036-01-19T04:39:21.993		59.98	-44.35	42315.17	24.50		
4	E	2036-01-19T04:39:31.143		60.01	-44.38	42525.93	24.49		
alpha	E	2036-01-19T04:40:59.022		60.31	-44.69	44688.64	24.51		
beta	E	2036-01-19T04:41:39.398		60.45	-44.83	45677.08	24.52		
eta	E	2036-01-19T04:42:40.598		60.66	-45.04	47176.12	24.53		
gamma	E	2036-01-19T04:42:59.164		60.72	-45.11	47631.51	24.53		
delta	E	2036-01-19T04:43:26.429		60.82	-45.20	48300.35	24.53		
lambda	E	2036-01-19T04:44:36.782		61.06	-45.45	50026.71	24.54		
epsilon	E	2036-01-19T04:45:38.988		61.27	-45.66	51553.71	24.55		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:10:28.670
 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 : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.65
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.385
 C/A sky separation (km) : 4995.5
 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



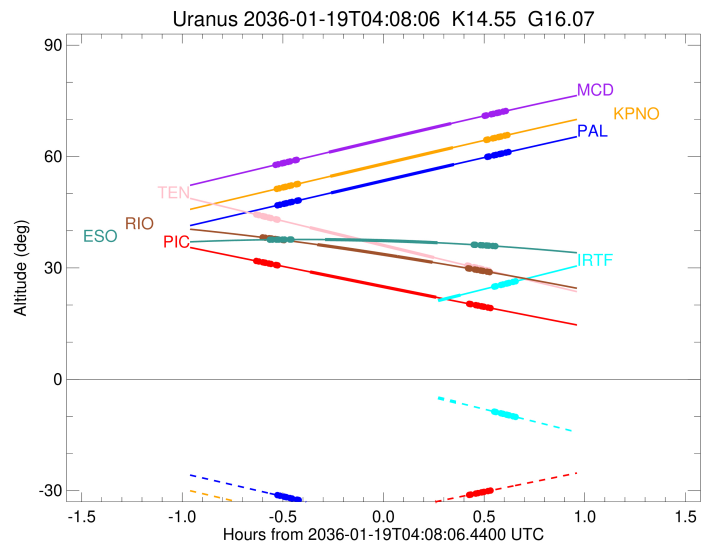
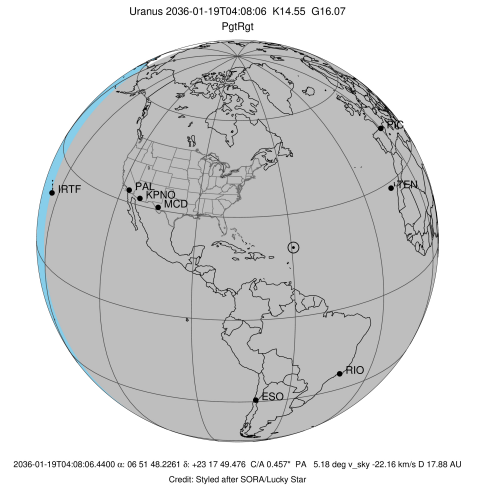
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-19T03:36:33.052		51.34	-35.55	50758.99	-24.50		
lambda	I	2036-01-19T03:37:02.947		51.44	-35.66	50026.71	-24.49		
delta	I	2036-01-19T03:38:13.441		51.69	-35.91	48300.35	-24.48		
gamma	I	2036-01-19T03:38:41.191		51.79	-36.00	47620.96	-24.48		
eta	I	2036-01-19T03:38:59.362		51.86	-36.07	47176.12	-24.48		
beta	I	2036-01-19T03:40:02.074		52.08	-36.29	45642.96	-24.47		
alpha	I	2036-01-19T03:40:38.539		52.21	-36.42	44751.17	-24.47		
4	I	2036-01-19T03:42:05.579		52.52	-36.73	42615.43	-24.44		
5	I	2036-01-19T03:42:24.955		52.59	-36.79	42157.89	-24.45		
6	I	2036-01-19T03:42:36.295		52.63	-36.83	41863.42	-24.43		
Uranus	I	2036-01-19T03:52:14.966		54.68	-38.88	25091.08		-25.23	-26.27
Uranus	E	2036-01-19T04:28:46.786		62.40	-46.64	25204.06		21.72	22.65
6	E	2036-01-19T04:38:43.172		64.47	-48.74	41803.84	24.49		
5	E	2036-01-19T04:39:03.369		64.54	-48.81	42315.19	24.50		
4	E	2036-01-19T04:39:12.511		64.57	-48.85	42525.93	24.50		
alpha	E	2036-01-19T04:40:40.358		64.88	-49.16	44688.71	24.52		
beta	E	2036-01-19T04:41:20.712		65.02	-49.30	45677.03	24.53		
eta	E	2036-01-19T04:42:21.887		65.23	-49.51	47176.12	24.54		
gamma	E	2036-01-19T04:42:40.444		65.29	-49.58	47631.51	24.54		
delta	E	2036-01-19T04:43:07.696		65.39	-49.67	48300.35	24.55		
lambda	E	2036-01-19T04:44:18.014		65.63	-49.92	50026.71	24.56		
epsilon	E	2036-01-19T04:45:20.193		65.84	-50.14	51553.85	24.57		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:10:01.880
 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 : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.71
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.403
 C/A sky separation (km) : 5220.7
 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



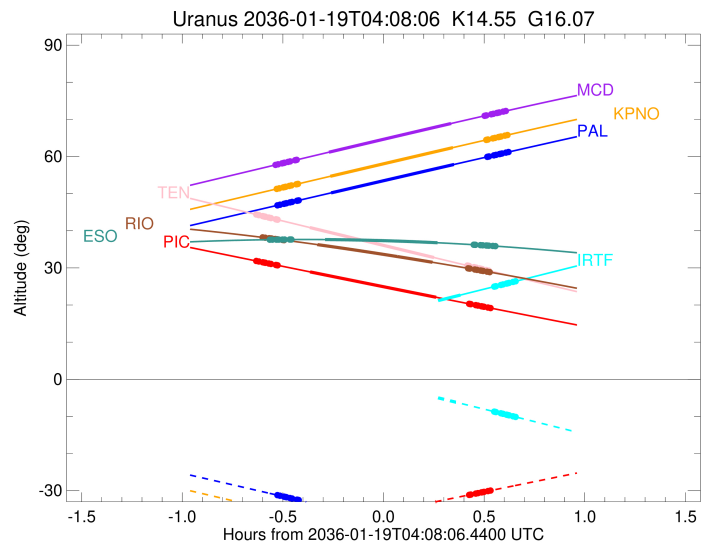
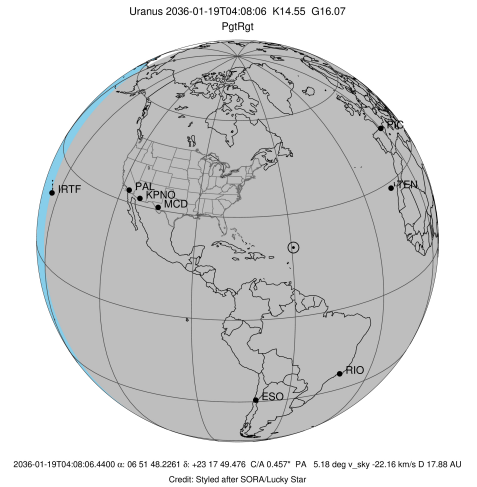
Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-19T03:36:10.755	57.80	-41.90	50759.58	-24.53		
lambda	I	2036-01-19T03:36:40.640	57.91	-42.01	50026.71	-24.52		
delta	I	2036-01-19T03:37:51.055	58.16	-42.26	48300.35	-24.51		
gamma	I	2036-01-19T03:38:18.774	58.26	-42.36	47620.96	-24.51		
eta	I	2036-01-19T03:38:36.927	58.33	-42.43	47176.12	-24.50		
beta	I	2036-01-19T03:39:39.575	58.55	-42.65	45642.91	-24.50		
alpha	I	2036-01-19T03:40:15.998	58.68	-42.78	44751.22	-24.49		
4	I	2036-01-19T03:41:42.963	59.00	-43.09	42615.37	-24.47		
5	I	2036-01-19T03:42:02.316	59.06	-43.16	42158.03	-24.47		
6	I	2036-01-19T03:42:13.660	59.11	-43.20	41863.21	-24.46		
Uranus	I	2036-01-19T03:51:51.807	61.17	-45.28	25089.87		-25.27	-26.31
Uranus	E	2036-01-19T04:28:16.738	68.90	-53.10	25207.47		21.61	22.53
6	E	2036-01-19T04:38:13.707	70.97	-55.23	41803.72	24.50		
5	E	2036-01-19T04:38:33.902	71.04	-55.30	42315.20	24.51		
4	E	2036-01-19T04:38:43.037	71.07	-55.33	42525.94	24.51		
alpha	E	2036-01-19T04:40:10.844	71.37	-55.64	44688.78	24.53		
beta	E	2036-01-19T04:40:51.173	71.51	-55.78	45676.98	24.54		
eta	E	2036-01-19T04:41:52.318	71.71	-56.00	47176.12	24.55		
gamma	E	2036-01-19T04:42:10.865	71.78	-56.07	47631.50	24.55		
delta	E	2036-01-19T04:42:38.101	71.87	-56.16	48300.35	24.56		
lambda	E	2036-01-19T04:43:48.379	72.11	-56.41	50026.71	24.57		
epsilon	E	2036-01-19T04:44:50.527	72.32	-56.63	51553.98	24.58		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:04:37.330
 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 : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.48
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.304
 C/A sky separation (km) : 3944.6
 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



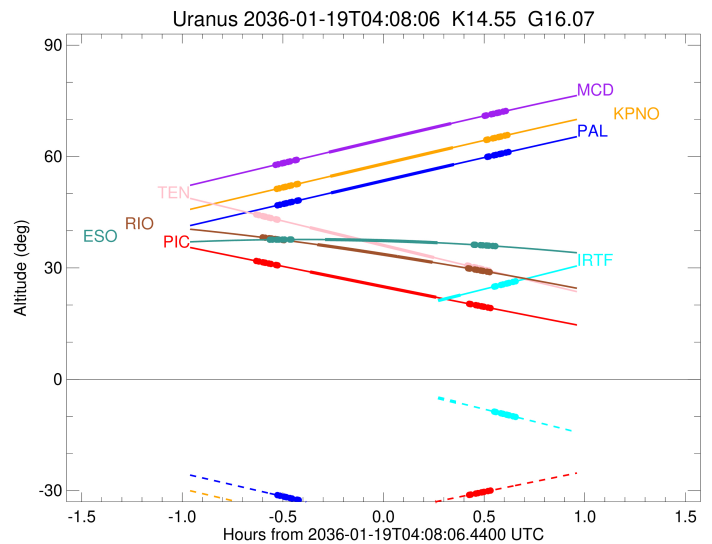
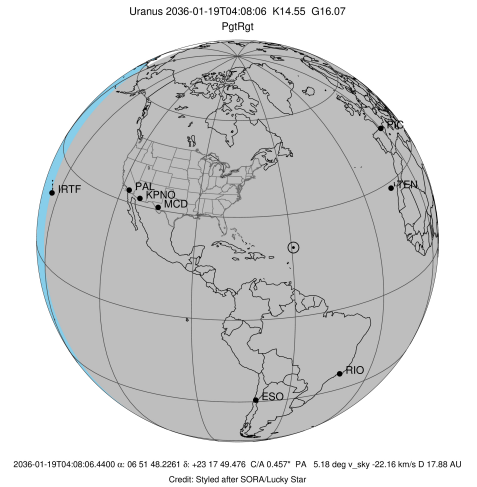
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-19T03:30:27.595		44.32	-58.60	50757.69	-24.51		
lambda	I	2036-01-19T03:30:57.430		44.21	-58.49	50026.71	-24.50		
delta	I	2036-01-19T03:32:07.909		43.95	-58.24	48300.35	-24.49		
gamma	I	2036-01-19T03:32:35.652		43.85	-58.13	47620.96	-24.49		
eta	I	2036-01-19T03:32:53.819		43.78	-58.07	47176.12	-24.48		
beta	I	2036-01-19T03:33:56.509		43.55	-57.84	45643.09	-24.48		
alpha	I	2036-01-19T03:34:32.978		43.42	-57.71	44751.03	-24.47		
4	I	2036-01-19T03:35:59.966		43.10	-57.39	42615.59	-24.45		
5	I	2036-01-19T03:36:19.350		43.03	-57.32	42157.53	-24.46		
6	I	2036-01-19T03:36:30.647		42.99	-57.28	41863.98	-24.45		
Uranus	I	2036-01-19T03:46:09.376		40.87	-55.16	25095.65		-25.10	-26.13
Uranus	E	2036-01-19T04:23:10.792		32.79	-47.00	25183.41		22.39	23.34
6	E	2036-01-19T04:33:05.633		30.64	-44.82	41804.75	24.34		
5	E	2036-01-19T04:33:25.896		30.57	-44.74	42315.03	24.36		
4	E	2036-01-19T04:33:35.121		30.53	-44.71	42525.94	24.35		
alpha	E	2036-01-19T04:35:03.506		30.21	-44.38	44688.20	24.36		
beta	E	2036-01-19T04:35:44.155		30.07	-44.23	45677.41	24.37		
eta	E	2036-01-19T04:36:45.728		29.85	-44.01	47176.12	24.37		
gamma	E	2036-01-19T04:37:04.415		29.78	-43.94	47631.53	24.37		
delta	E	2036-01-19T04:37:31.857		29.68	-43.84	48300.35	24.37		
lambda	E	2036-01-19T04:38:42.681		29.42	-43.58	50026.71	24.38		
epsilon	E	2036-01-19T04:39:45.276		29.20	-43.35	51552.68	24.38		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:12:34.650
 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 : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.11
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.394
 C/A sky separation (km) : 5110.1
 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



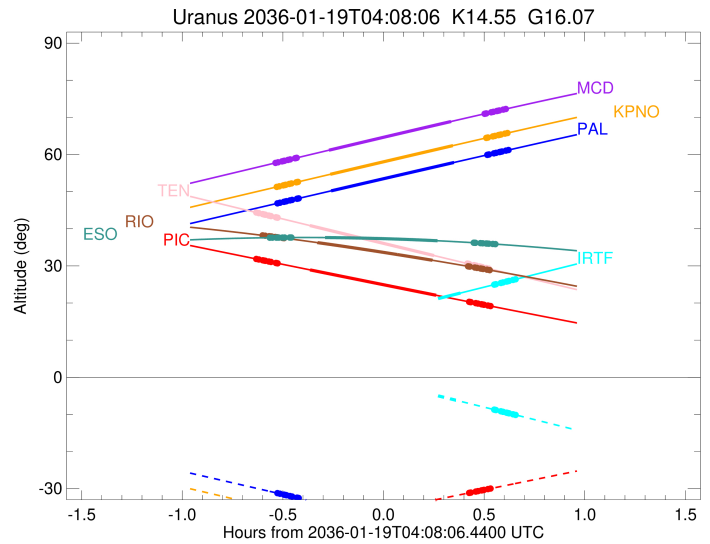
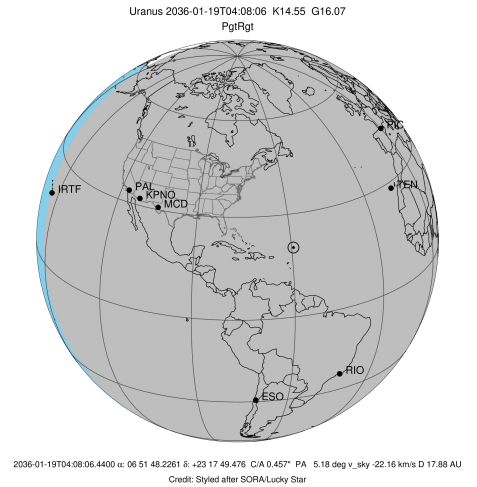
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-19T03:38:17.613		10.93	5.06x	50758.81	-24.21		
lambda	I	2036-01-19T03:38:47.855		11.05	4.95x	50026.71	-24.21		
delta	I	2036-01-19T03:39:59.186		11.31	4.70x	48300.35	-24.20		
gamma	I	2036-01-19T03:40:27.263		11.41	4.60x	47620.96	-24.20		
eta	I	2036-01-19T03:40:45.650		11.48	4.53x	47176.12	-24.19		
beta	I	2036-01-19T03:41:49.102		11.71	4.30x	45642.97	-24.18		
alpha	I	2036-01-19T03:42:25.999		11.85	4.17x	44751.16	-24.18		
4	I	2036-01-19T03:43:54.062		12.17	3.85x	42615.45	-24.16		
5	I	2036-01-19T03:44:13.668		12.24	3.78x	42157.86	-24.17		
6	I	2036-01-19T03:44:25.138		12.29	3.74x	41863.46	-24.15		
Uranus	I	2036-01-19T03:54:10.618		14.45	1.62x	25091.06		-25.24	-26.27
Uranus	E	2036-01-19T04:31:02.452		22.68	-6.48	25207.94		21.59	22.51
6	E	2036-01-19T04:41:05.423		24.95	-8.71	41803.65	24.26		
5	E	2036-01-19T04:41:25.820		25.02	-8.79	42315.21	24.28		
4	E	2036-01-19T04:41:35.043		25.06	-8.82	42525.94	24.27		
alpha	E	2036-01-19T04:43:03.709		25.39	-9.15	44688.83	24.30		
beta	E	2036-01-19T04:43:44.427		25.54	-9.30	45676.94	24.30		
eta	E	2036-01-19T04:44:46.167		25.78	-9.53	47176.12	24.32		
gamma	E	2036-01-19T04:45:04.893		25.85	-9.60	47631.50	24.32		
delta	E	2036-01-19T04:45:32.393		25.95	-9.71	48300.35	24.32		
lambda	E	2036-01-19T04:46:43.347		26.22	-9.97	50026.71	24.34		
epsilon	E	2036-01-19T04:47:46.094		26.45	-10.20	51554.08	24.35		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:05:27.920
 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 : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.43
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.765
 C/A sky separation (km) : 9919.8
 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_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	2036-01-19T03:32:19.767		38.19	-46.24	50772.88	-24.25		
lambda	I	2036-01-19T03:32:50.565		38.13	-46.22	50026.71	-24.22		
delta	I	2036-01-19T03:34:01.900		38.00	-46.17	48300.35	-24.18		
gamma	I	2036-01-19T03:34:30.003		37.94	-46.15	47621.03	-24.16		
eta	I	2036-01-19T03:34:48.419		37.91	-46.14	47176.12	-24.15		
beta	I	2036-01-19T03:35:52.048		37.79	-46.09	45642.08	-24.11		
alpha	I	2036-01-19T03:36:28.974		37.72	-46.06	44752.03	-24.09		
4	I	2036-01-19T03:37:57.648		37.54	-45.99	42613.82	-24.01		
5	I	2036-01-19T03:38:17.203		37.50	-45.98	42161.29	-24.01		
6	I	2036-01-19T03:38:29.102		37.48	-45.97	41858.92	-23.98		
Uranus	I	2036-01-19T03:48:24.629		36.27	-45.44	25085.36		-25.40	-26.44
Uranus	E	2036-01-19T04:22:42.091		31.52	-42.68	25291.62		18.68	19.50
6	E	2036-01-19T04:33:17.746		29.89	-41.57	41801.07	23.92		
5	E	2036-01-19T04:33:38.570		29.84	-41.53	42315.05	23.95		
4	E	2036-01-19T04:33:47.870		29.81	-41.51	42526.27	23.95		
alpha	E	2036-01-19T04:35:17.682		29.58	-41.34	44690.58	24.02		
beta	E	2036-01-19T04:35:58.745		29.47	-41.27	45675.68	24.04		
eta	E	2036-01-19T04:37:01.174		29.30	-41.15	47176.12	24.08		
gamma	E	2036-01-19T04:37:20.077		29.25	-41.11	47631.40	24.09		
delta	E	2036-01-19T04:37:47.838		29.18	-41.06	48300.35	24.10		
lambda	E	2036-01-19T04:38:59.404		28.99	-40.92	50026.71	24.14		
epsilon	E	2036-01-19T04:40:02.687		28.82	-40.80	51555.29	24.14		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-19T04:07:21.080
 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 : 3380323778044350976
 2Mass ID (if available) : 06514821+2317496
 ICRS Star Coord at Epoch: 06h 51m 48.22605s +23:17:49.47596s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.555
 G magnitude : 16.067
 RP magnitude : 15.539
 BP magnitude : 16.406
 DUPflag : 0
 Distance (au) : 17.877
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.16
 Sun-Target sep (deg) : 163.73
 Sun-Moon sep (deg) : 93.46
 B (ring opening deg) : 64.51
 PA of pole (deg) : 76.06
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.847
 C/A sky separation (km) : 10983.0
 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	2036-01-19T03:34:27.782		37.60	-36.95	50775.76	-24.16		
lambda	I	2036-01-19T03:34:58.820		37.61	-36.99	50026.71	-24.12		
delta	I	2036-01-19T03:36:10.449		37.62	-37.10	48300.35	-24.08		
gamma	I	2036-01-19T03:36:38.673		37.62	-37.14	47621.05	-24.06		
eta	I	2036-01-19T03:36:57.171		37.62	-37.16	47176.12	-24.05		
beta	I	2036-01-19T03:38:01.104		37.63	-37.25	45641.95	-24.00		
alpha	I	2036-01-19T03:38:38.199		37.64	-37.30	44752.14	-23.97		
4	I	2036-01-19T03:40:07.385		37.64	-37.42	42613.45	-23.88		
5	I	2036-01-19T03:40:27.010		37.65	-37.45	42162.05	-23.87		
6	I	2036-01-19T03:40:39.053		37.65	-37.47	41858.05	-23.84		
Uranus	I	2036-01-19T03:50:41.123		37.63	-38.22	25089.34		-25.29	-26.32
Uranus	E	2036-01-19T04:24:12.391		36.78	-39.99	25314.80		17.81	18.60
6	E	2036-01-19T04:34:58.272		36.24	-40.29	41800.44	23.82		
5	E	2036-01-19T04:35:19.207		36.23	-40.29	42314.85	23.86		
4	E	2036-01-19T04:35:28.537		36.22	-40.30	42526.45	23.86		
alpha	E	2036-01-19T04:36:58.654		36.13	-40.33	44691.12	23.95		
beta	E	2036-01-19T04:37:39.795		36.09	-40.34	45675.30	23.98		
eta	E	2036-01-19T04:38:42.389		36.03	-40.36	47176.12	24.03		
gamma	E	2036-01-19T04:39:01.331		36.01	-40.36	47631.36	24.04		
delta	E	2036-01-19T04:39:29.149		35.99	-40.37	48300.35	24.06		
lambda	E	2036-01-19T04:40:40.837		35.91	-40.39	50026.71	24.10		
epsilon	E	2036-01-19T04:41:44.198		35.85	-40.41	51555.10	24.14		