

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-31T23:25:01.620
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3379579473094955008
 2Mass ID (if available) : 06493941+2320271

Uranus 2036-01-31T23:25:01 K14.72 G16.39 PgtRgt

ICRS Star Coord at Epoch: 06h 49m 39.40477s +23:20:27.09241s

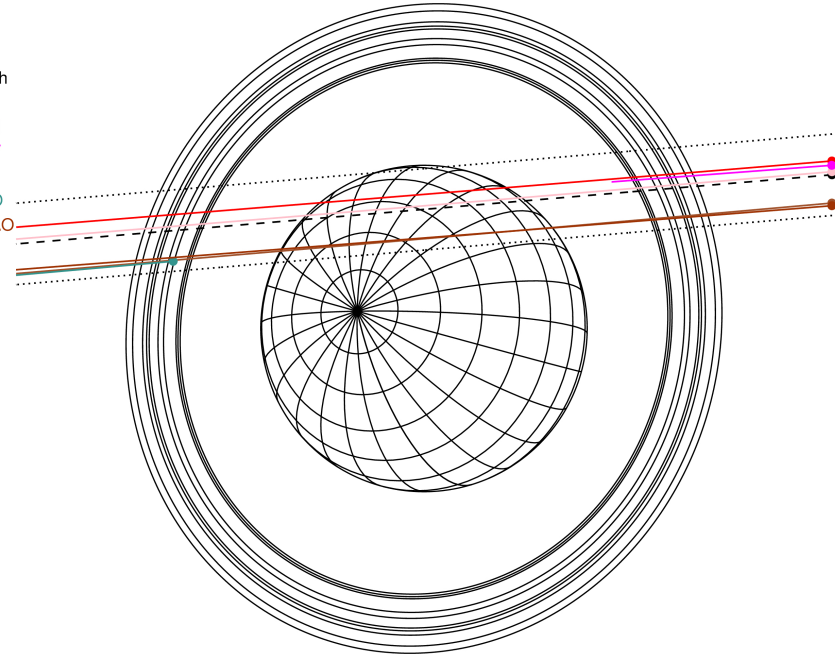
RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.725
 G magnitude : 16.391
 RP magnitude : 15.838
 BP magnitude : 16.782
 DUPflag : 0
 Distance (au) : 17.960
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 150.22
 Sun-Moon sep (deg) : 111.18
 B (ring opening deg) : 64.98
 PA of pole (deg) : 75.50

Uranus 2036-01-31T23:25:01 K14.72 G16.39
 PgtRgt



2036-01-31T23:25:01.6200 ra: 06 49 39.4048 s: +23 20 27.092 C/A 1.434° PA 184.84 deg v_sky -19.43 km/s D 17.96 AU
 Credit: Styled after SORA/Lucky Star

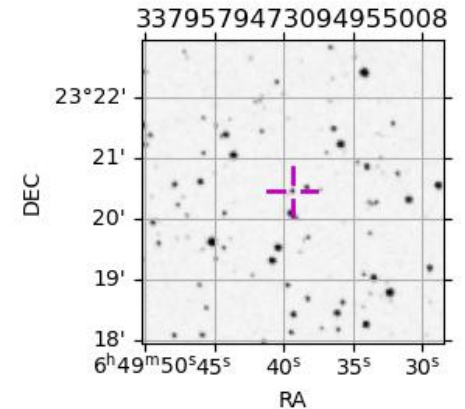
Earth
 PIC
 TEN
 KAV
 RIO
 ESO
 SAAO



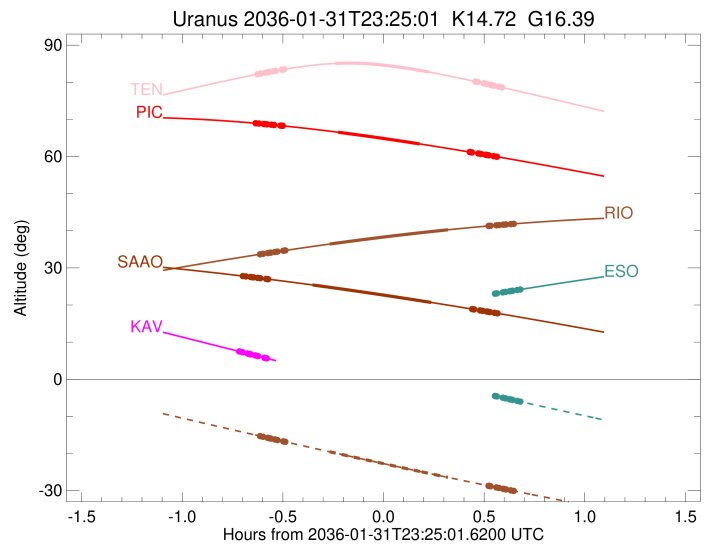
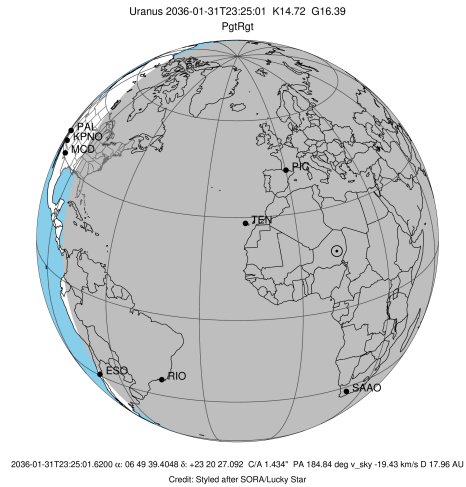
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	JAN 31 22:47 - JAN 31 23:59	PieRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	JAN 31 22:47 - FEB 01 00:00	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++			JAN 31 22:42 - JAN 31 22:50	PnnRin
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +	+++++	JAN 31 22:48 - FEB 01 00:04	PieRie
ESO	European Southern Obs	-29.3	289.3			+++++	FEB 01 00:01 - FEB 01 00:06	PnnRne
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+ +	+++++	JAN 31 22:43 - JAN 31 23:59	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

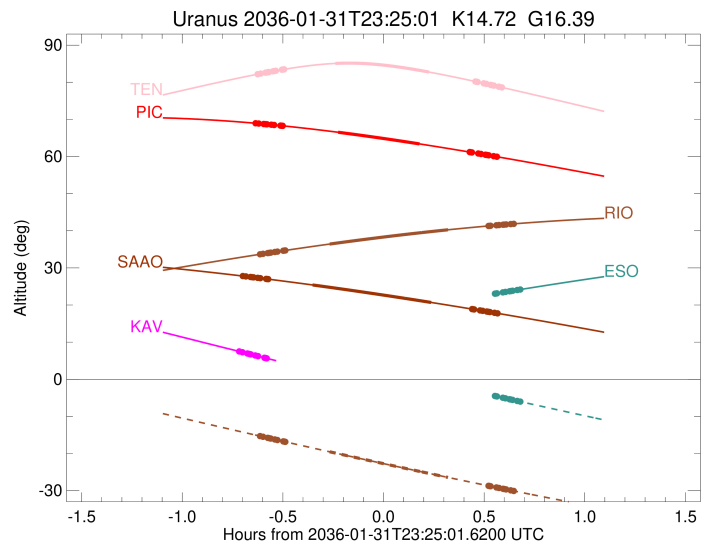
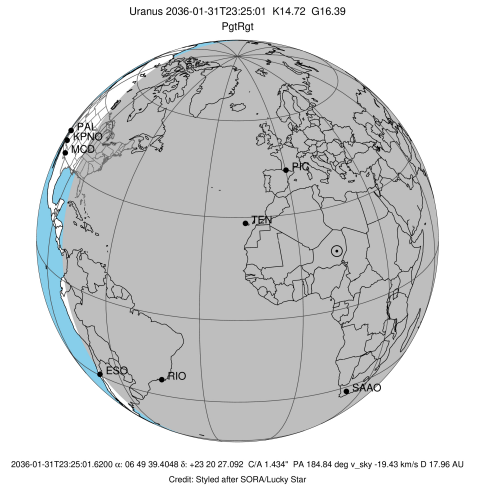


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-31T23:23:49.950
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3379579473094955008
 2Mass ID (if available) : 06493941+2320271
 ICRS Star Coord at Epoch: 06h 49m 39.40477s +23:20:27.09241s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.725
 G magnitude : 16.391
 RP magnitude : 15.838
 BP magnitude : 16.782
 DUPflag : 0
 Distance (au) : 17.960
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 150.22
 Sun-Moon sep (deg) : 111.87
 B (ring opening deg) : 64.98
 PA of pole (deg) : 75.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.607
 C/A sky separation (km) : 20935.6
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



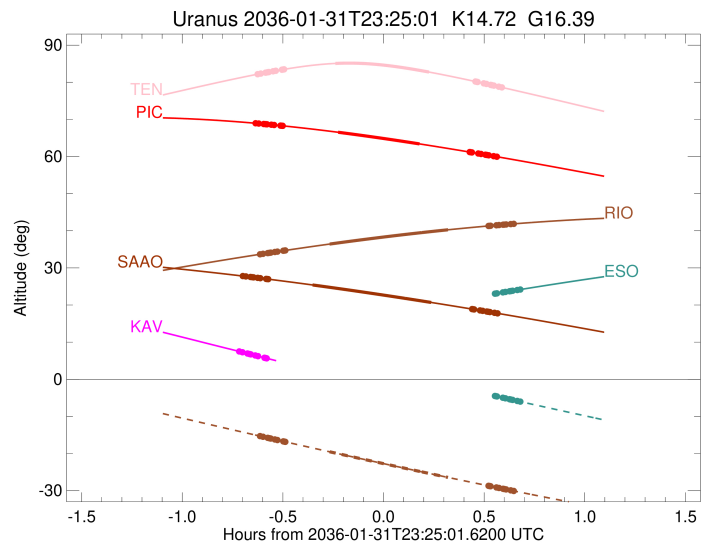
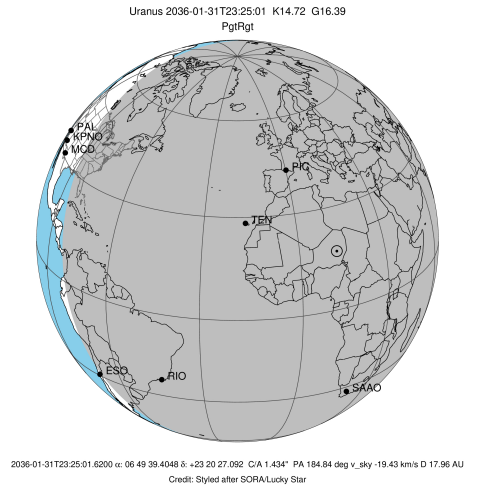
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-31T22:47:14.514		68.94	-58.72	50744.28	-19.63		
lambda	I	2036-01-31T22:47:51.117		68.89	-58.79	50026.71	-19.57		
delta	I	2036-01-31T22:49:19.665		68.77	-58.97	48300.35	-19.42		
gamma	I	2036-01-31T22:49:54.713		68.72	-59.04	47620.99	-19.35		
eta	I	2036-01-31T22:50:17.730		68.68	-59.09	47176.12	-19.30		
beta	I	2036-01-31T22:51:37.481		68.57	-59.25	45644.23	-19.14		
alpha	I	2036-01-31T22:52:24.488		68.50	-59.34	44749.97	-19.03		
4	I	2036-01-31T22:54:16.850		68.33	-59.56	42615.88	-18.74		
5	I	2036-01-31T22:54:41.370		68.30	-59.61	42157.05	-18.67		
6	I	2036-01-31T22:54:56.707		68.27	-59.64	41864.28	-18.63		
Uranus	I	2036-01-31T23:11:30.848		66.54	-61.40	25522.73		-6.59	-6.90
Uranus	E	2036-01-31T23:35:44.828		63.40	-63.34	25248.68		19.77	20.63
6	E	2036-01-31T23:50:44.082		61.20	-64.10	41852.65	18.60		
5	E	2036-01-31T23:51:04.858		61.15	-64.12	42257.21	18.63		
4	E	2036-01-31T23:51:21.591		61.11	-64.13	42555.45	18.71		
alpha	E	2036-01-31T23:53:14.423		60.82	-64.19	44690.62	18.99		
beta	E	2036-01-31T23:54:06.412		60.69	-64.22	45679.69	19.10		
eta	E	2036-01-31T23:55:24.518		60.49	-64.26	47176.12	19.26		
gamma	E	2036-01-31T23:55:48.054		60.43	-64.28	47629.95	19.31		
delta	E	2036-01-31T23:56:22.720		60.34	-64.29	48300.35	19.37		
lambda	E	2036-01-31T23:57:51.483		60.11	-64.33	50026.71	19.53		
epsilon	E	2036-01-31T23:59:01.306		59.92	-64.36	51393.92	19.58		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-31T23:24:49.170
 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 : 3379579473094955008
 2Mass ID (if available) : 06493941+2320271
 ICRS Star Coord at Epoch: 06h 49m 39.40477s +23:20:27.09241s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.725
 G magnitude : 16.391
 RP magnitude : 15.838
 BP magnitude : 16.782
 DUPflag : 0
 Distance (au) : 17.960
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 150.22
 Sun-Moon sep (deg) : 112.01
 B (ring opening deg) : 64.98
 PA of pole (deg) : 75.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.470
 C/A sky separation (km) : 19148.4
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



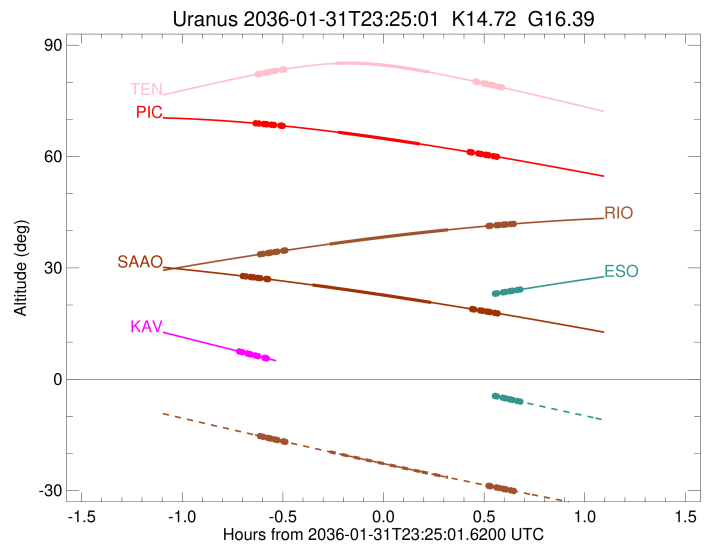
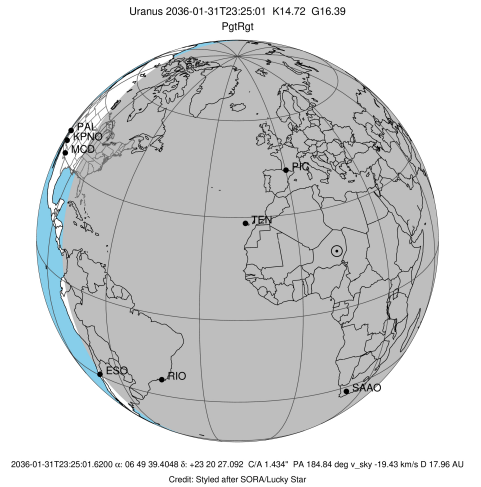
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-31T22:47:51.432		82.25	-53.59	50745.48	-20.03		
lambda	I	2036-01-31T22:48:27.341		82.35	-53.72	50026.71	-19.99		
delta	I	2036-01-31T22:49:53.969		82.60	-54.04	48300.35	-19.86		
gamma	I	2036-01-31T22:50:28.219		82.70	-54.16	47620.97	-19.81		
eta	I	2036-01-31T22:50:50.699		82.76	-54.24	47176.12	-19.77		
beta	I	2036-01-31T22:52:08.529		82.98	-54.52	45643.79	-19.64		
alpha	I	2036-01-31T22:52:54.276		83.10	-54.69	44750.50	-19.55		
4	I	2036-01-31T22:54:43.533		83.39	-55.08	42615.47	-19.31		
5	I	2036-01-31T22:55:07.279		83.45	-55.17	42158.02	-19.25		
6	I	2036-01-31T22:55:22.241		83.48	-55.22	41862.68	-19.22		
Uranus	I	2036-01-31T23:10:41.165		85.08	-58.53	25489.55		-9.14	-9.57
Uranus	E	2036-01-31T23:38:34.941		82.76	-64.43	25198.11		21.43	22.35
6	E	2036-01-31T23:52:26.546		80.20	-67.26	41850.63	19.20		
5	E	2036-01-31T23:52:46.963		80.14	-67.33	42261.03	19.23		
4	E	2036-01-31T23:53:02.858		80.09	-67.38	42553.37	19.29		
alpha	E	2036-01-31T23:54:52.436		79.72	-67.75	44689.76	19.53		
beta	E	2036-01-31T23:55:43.090		79.56	-67.92	45680.02	19.62		
eta	E	2036-01-31T23:56:59.178		79.30	-68.17	47176.12	19.75		
gamma	E	2036-01-31T23:57:22.142		79.22	-68.25	47630.11	19.79		
delta	E	2036-01-31T23:57:55.965		79.11	-68.36	48300.35	19.84		
lambda	E	2036-01-31T23:59:22.683		78.82	-68.65	50026.71	19.97		
epsilon	E	2036-02-01T00:00:31.615		78.58	-68.87	51406.56	20.01		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-31T23:19:41.930
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 3379579473094955008
 2Mass ID (if available) : 06493941+2320271
 ICRS Star Coord at Epoch: 06h 49m 39.40477s +23:20:27.09241s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.725
 G magnitude : 16.391
 RP magnitude : 15.838
 BP magnitude : 16.782
 DUPflag : 0
 Distance (au) : 17.960
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 150.22
 Sun-Moon sep (deg) : 110.84
 B (ring opening deg) : 64.98
 PA of pole (deg) : 75.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.588
 C/A sky separation (km) : 20678.3
 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



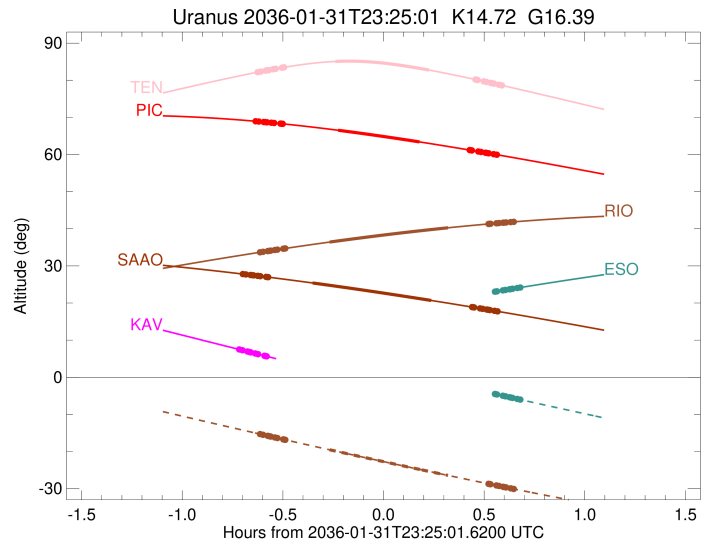
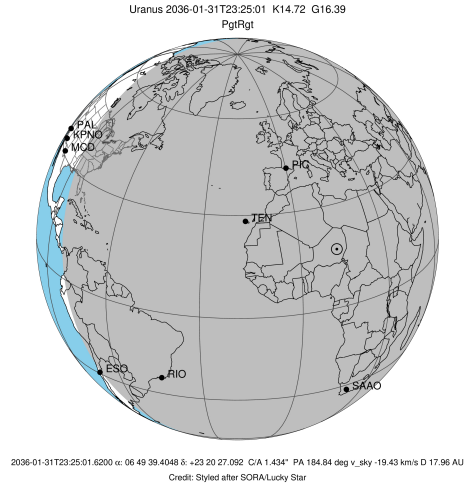
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-31T22:42:22.254		7.41	-35.76	50744.58	-19.36		
lambda	I	2036-01-31T22:42:59.383		7.27	-35.62	50026.71	-19.30		
delta	I	2036-01-31T22:44:29.159		6.93	-35.26	48300.35	-19.15		
gamma	I	2036-01-31T22:45:04.690		6.80	-35.12	47620.99	-19.09		
eta	I	2036-01-31T22:45:28.024		6.71	-35.03	47176.12	-19.04		
beta	I	2036-01-31T22:46:48.871		6.41	-34.71	45644.11	-18.88		
alpha	I	2036-01-31T22:47:36.499		6.23	-34.52	44750.13	-18.78		
4	I	2036-01-31T22:49:30.363		5.80	-34.06	42615.78	-18.50		
5	I	2036-01-31T22:49:55.192		5.71	-33.97	42157.29	-18.43		
6	I	2036-01-31T22:50:10.753		5.65	-33.90	41863.86	-18.40		
Uranus	I	2036-01-31T23:06:50.130	1.89x	-29.94	25516.70			-7.12	-7.45
Uranus	E	2036-01-31T23:32:10.410	-3.76x	-23.92	25242.93			19.97	20.83
6	E	2036-01-31T23:47:18.631	-7.11x	-20.33	41852.53		18.28		
5	E	2036-01-31T23:47:39.791	-7.19x	-20.25	42257.44		18.31		
4	E	2036-01-31T23:47:56.800	-7.25x	-20.18	42555.32		18.38		
alpha	E	2036-01-31T23:49:51.675	-7.67x	-19.73	44690.57		18.65		
beta	E	2036-01-31T23:50:44.631	-7.87x	-19.52	45679.70		18.75		
eta	E	2036-01-31T23:52:04.208	-8.16x	-19.20	47176.12		18.90		
gamma	E	2036-01-31T23:52:28.193	-8.25x	-19.11	47629.96		18.94		
delta	E	2036-01-31T23:53:03.524	-8.38x	-18.97	48300.35		19.00		
lambda	E	2036-01-31T23:54:34.012	-8.71x	-18.61	50026.71		19.15		
epsilon	E	2036-01-31T23:55:45.238	-8.97x	-18.33	51394.40		19.20		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-31T23:26:44.120
 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 : 3379579473094955008
 2Mass ID (if available) : 06493941+2320271
 ICRS Star Coord at Epoch: 06h 49m 39.40477s +23:20:27.09241s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.725
 G magnitude : 16.391
 RP magnitude : 15.838
 BP magnitude : 16.782
 DUPflag : 0
 Distance (au) : 17.960
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 150.22
 Sun-Moon sep (deg) : 111.82
 B (ring opening deg) : 64.98
 PA of pole (deg) : 75.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.075
 C/A sky separation (km) : 14004.0
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



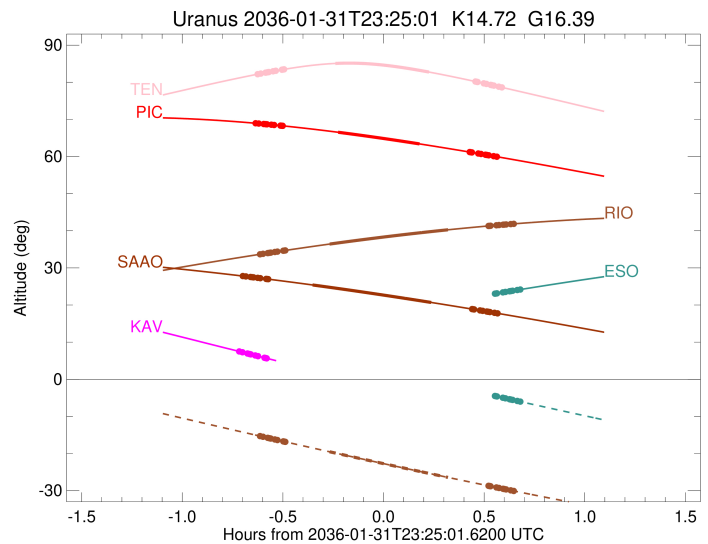
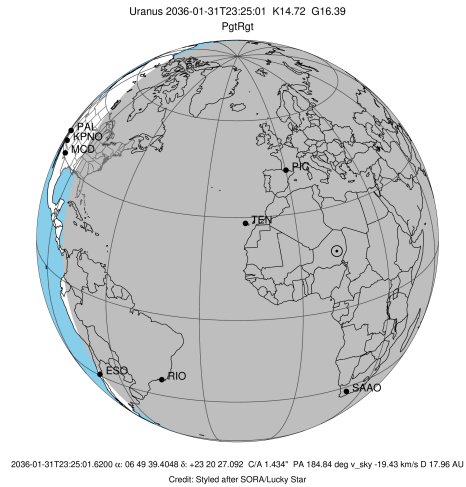
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-31T22:48:32.759		33.72	-15.38	50751.82	-20.76		
lambda	I	2036-01-31T22:49:07.695		33.80	-15.50	50026.71	-20.74		
delta	I	2036-01-31T22:50:31.051		33.99	-15.78	48300.35	-20.68		
gamma	I	2036-01-31T22:51:03.929		34.07	-15.90	47620.96	-20.65		
eta	I	2036-01-31T22:51:25.481		34.12	-15.97	47176.12	-20.63		
beta	I	2036-01-31T22:52:39.996		34.29	-16.22	45642.71	-20.56		
alpha	I	2036-01-31T22:53:23.524		34.39	-16.37	44751.63	-20.52		
4	I	2036-01-31T22:55:07.364		34.62	-16.73	42613.82	-20.40		
5	I	2036-01-31T22:55:29.659		34.67	-16.80	42161.60	-20.37		
6	I	2036-01-31T22:55:44.084		34.70	-16.85	41857.98	-20.35		
Uranus	I	2036-01-31T23:08:56.123		36.42	-19.53	25381.51		-14.76	-15.43
Uranus	E	2036-01-31T23:44:15.062		40.26	-26.44	25108.04		24.17	25.18
6	E	2036-01-31T23:56:20.835		41.30	-28.71	41844.92	20.39		
5	E	2036-01-31T23:56:40.851		41.33	-28.77	42271.19	20.40		
4	E	2036-01-31T23:56:55.023		41.35	-28.81	42547.88	20.43		
alpha	E	2036-01-31T23:58:38.880		41.48	-29.13	44687.69	20.56		
beta	E	2036-01-31T23:59:27.219		41.54	-29.28	45680.73	20.60		
eta	E	2036-02-01T00:00:39.772		41.63	-29.50	47176.12	20.65		
gamma	E	2036-02-01T00:01:01.745		41.66	-29.57	47630.53	20.69		
delta	E	2036-02-01T00:01:34.098		41.70	-29.67	48300.35	20.72		
lambda	E	2036-02-01T00:02:57.289		41.80	-29.92	50026.71	20.78		
epsilon	E	2036-02-01T00:04:05.195		41.88	-30.13	51439.81	20.80		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-31T23:28:27.430
 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 : 3379579473094955008
 2Mass ID (if available) : 06493941+2320271
 ICRS Star Coord at Epoch: 06h 49m 39.40477s +23:20:27.09241s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.725
 G magnitude : 16.391
 RP magnitude : 15.838
 BP magnitude : 16.782
 DUPflag : 0
 Distance (au) : 17.960
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 150.22
 Sun-Moon sep (deg) : 111.66
 B (ring opening deg) : 64.98
 PA of pole (deg) : 75.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.074
 C/A sky separation (km) : 13984.6
 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	2036-01-31T22:49:58.459		11.75	9.64x	50751.60	-20.60		
lambda	I	2036-01-31T22:50:33.661		11.86	9.52x	50026.71	-20.58		
delta	I	2036-01-31T22:51:57.675		12.11	9.22x	48300.35	-20.52		
gamma	I	2036-01-31T22:52:30.811		12.21	9.10x	47620.96	-20.49		
eta	I	2036-01-31T22:52:52.532		12.27	9.03x	47176.12	-20.47		
beta	I	2036-01-31T22:54:07.627		12.49	8.76x	45642.73	-20.41		
alpha	I	2036-01-31T22:54:51.496		12.62	8.61x	44751.61	-20.36		
4	I	2036-01-31T22:56:36.136		12.93	8.24x	42613.86	-20.24		
5	I	2036-01-31T22:56:58.607		13.00	8.16x	42161.52	-20.21		
6	I	2036-01-31T22:57:13.136		13.04	8.11x	41858.08	-20.20		
Uranus	I	2036-01-31T23:10:31.285		15.35	5.32x	25382.65		-14.71	-15.38
Uranus	E	2036-01-31T23:46:05.663		21.19	-2.03x	25107.04		24.20	25.21
6	E	2036-01-31T23:58:15.408		23.06	-4.50x	41844.76	20.27		
5	E	2036-01-31T23:58:35.558		23.11	-4.57x	42271.46	20.29		
4	E	2036-01-31T23:58:49.788		23.14	-4.62x	42547.74	20.32		
alpha	E	2036-02-01T00:00:34.233		23.40	-4.97x	44687.64	20.44		
beta	E	2036-02-01T00:01:22.847		23.52	-5.13	45680.75	20.49		
eta	E	2036-02-01T00:02:35.804		23.70	-5.38	47176.12	20.56		
gamma	E	2036-02-01T00:02:57.900		23.76	-5.45	47630.54	20.58		
delta	E	2036-02-01T00:03:30.431		23.84	-5.56	48300.35	20.60		
lambda	E	2036-02-01T00:04:54.081		24.04	-5.84	50026.71	20.67		
epsilon	E	2036-02-01T00:06:02.408		24.21	-6.07	51440.84	20.69		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-01-31T23:21:41.100
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : SAAO
 Location : So. Afr. Astro. Obs. (Sutherland)
 Latitude (deg) : -32.37953
 E. Longitude (deg) : 20.81070
 Altitude (km) : 1.768
 Gaia source ID : 3379579473094955008
 2Mass ID (if available) : 06493941+2320271
 ICRS Star Coord at Epoch: 06h 49m 39.40477s +23:20:27.09241s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.725
 G magnitude : 16.391
 RP magnitude : 15.838
 BP magnitude : 16.782
 DUPflag : 0
 Distance (au) : 17.960
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.42
 Sun-Target sep (deg) : 150.22
 Sun-Moon sep (deg) : 111.31
 B (ring opening deg) : 64.98
 PA of pole (deg) : 75.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.085
 C/A sky separation (km) : 14130.9
 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_itrf93_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	2036-01-31T22:43:25.202		27.77	-40.48	50752.23	-20.72		
lambda	I	2036-01-31T22:44:00.222		27.70	-40.49	50026.71	-20.70		
delta	I	2036-01-31T22:45:23.743		27.55	-40.49	48300.35	-20.63		
gamma	I	2036-01-31T22:45:56.691		27.49	-40.50	47620.96	-20.61		
eta	I	2036-01-31T22:46:18.290		27.45	-40.50	47176.12	-20.59		
beta	I	2036-01-31T22:47:32.978		27.31	-40.50	45642.68	-20.51		
alpha	I	2036-01-31T22:48:16.610		27.23	-40.51	44751.67	-20.47		
4	I	2036-01-31T22:50:00.727		27.04	-40.51	42613.76	-20.34		
5	I	2036-01-31T22:50:23.078		27.00	-40.51	42161.74	-20.31		
6	I	2036-01-31T22:50:37.555		26.97	-40.51	41857.82	-20.29		
Uranus	I	2036-01-31T23:03:52.814		25.40	-40.40	25380.54		-14.80	-15.47
Uranus	E	2036-01-31T23:39:14.158		20.69	-39.14	25111.26		24.08	25.08
6	E	2036-01-31T23:51:27.043		18.91	-38.39	41845.34	20.21		
5	E	2036-01-31T23:51:47.173		18.86	-38.36	42270.47	20.23		
4	E	2036-01-31T23:52:01.527		18.82	-38.35	42548.27	20.26		
alpha	E	2036-01-31T23:53:46.271		18.56	-38.23	44687.83	20.38		
beta	E	2036-01-31T23:54:35.016		18.43	-38.17	45680.69	20.42		
eta	E	2036-01-31T23:55:48.200		18.25	-38.08	47176.12	20.49		
gamma	E	2036-01-31T23:56:10.363		18.19	-38.05	47630.49	20.51		
delta	E	2036-01-31T23:56:42.999		18.11	-38.01	48300.35	20.54		
lambda	E	2036-01-31T23:58:06.920		17.90	-37.91	50026.71	20.60		
epsilon	E	2036-01-31T23:59:15.294		17.72	-37.83	51437.08	20.62		