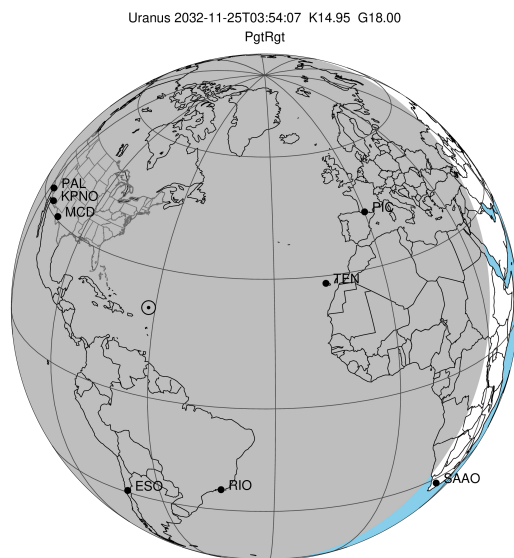


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-25T03:54:07.740
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424859079913443712
 2Mass ID (if available) : 06005618+2338476

ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s

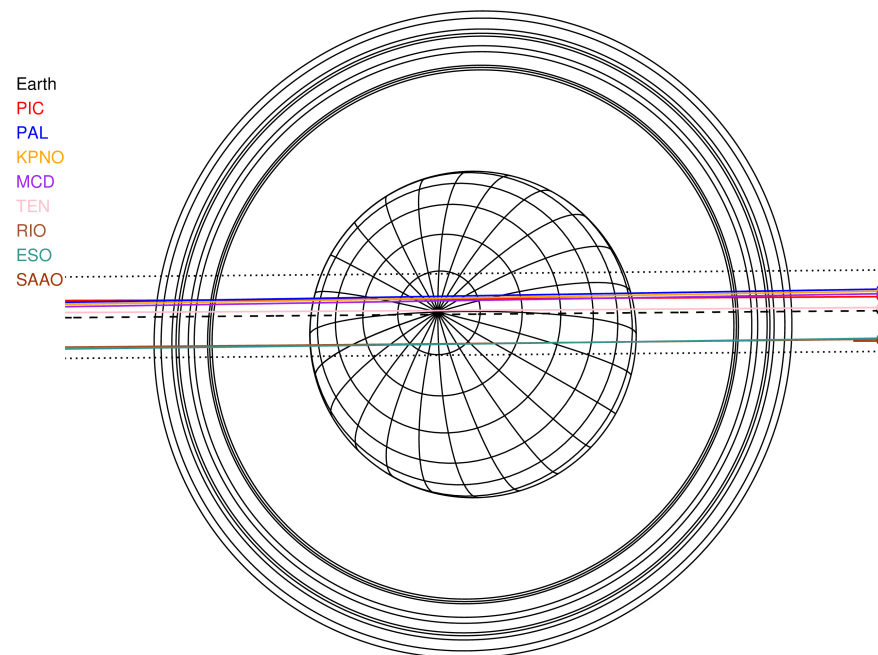
RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.952
 G magnitude : 18.003
 RP magnitude : 17.080
 BP magnitude : 18.806
 DUPflag : 0
 Distance (au) : 18.141
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.11
 Sun-Target sep (deg) : 152.76
 Sun-Moon sep (deg) : 65.15
 B (ring opening deg) : 75.17
 PA of pole (deg) : 57.50

#	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



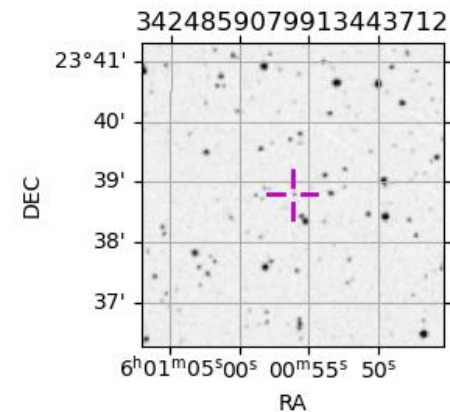
2032-11-25T03:54:07.7400 ra: 06 00 56.1880 s: +23 38 47.701 C/A 0.249° PA 180.49 deg v_sky -20.11 km/s D 18.14 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2032-11-25T03:54:07 K14.95 G18.00 PgtRgt

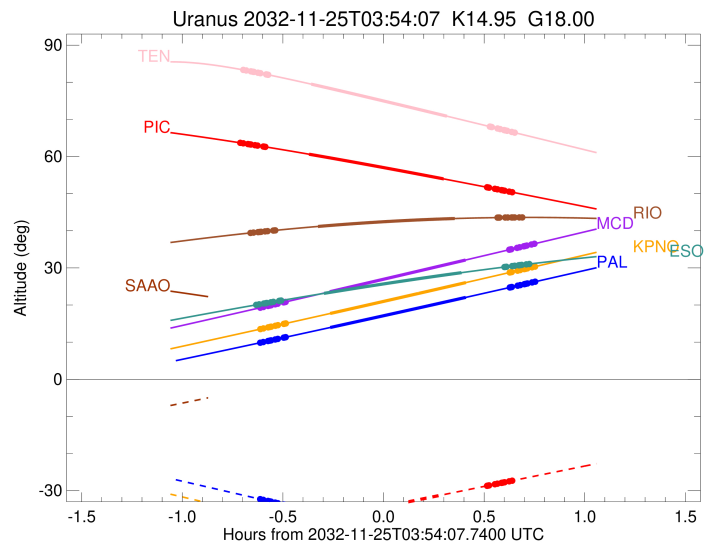
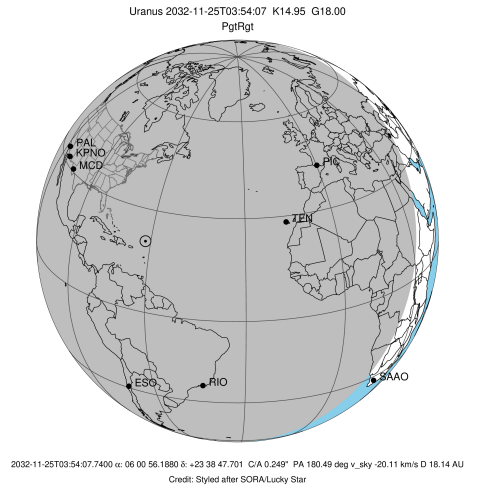


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	NOV 25 03:11 - NOV 25 04:32	PieRie
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	NOV 25 03:17 - NOV 25 04:39	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	NOV 25 03:17 - NOV 25 04:39	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	NOV 25 03:17 - NOV 25 04:39	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	NOV 25 03:12 - NOV 25 04:33	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +	+++++	NOV 25 03:14 - NOV 25 04:35	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	NOV 25 03:16 - NOV 25 04:37	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

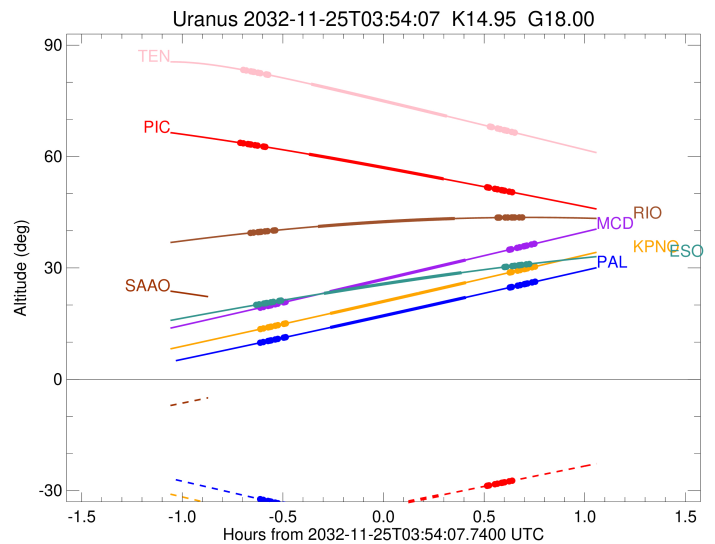
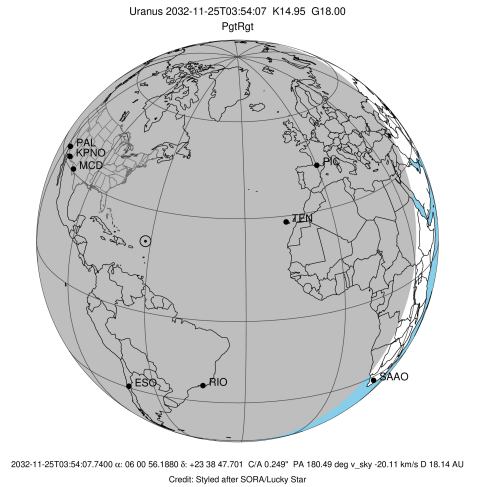


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-25T03:52:04.570
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3424859079913443712
 2Mass ID (if available) : 06005618+2338476
 ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.952
 G magnitude : 18.003
 RP magnitude : 17.080
 BP magnitude : 18.806
 DUPflag : 0
 Distance (au) : 18.141
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.11
 Sun-Target sep (deg) : 152.76
 Sun-Moon sep (deg) : 65.70
 B (ring opening deg) : 75.17
 PA of pole (deg) : 57.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.424
 C/A sky separation (km) : 5581.3
 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



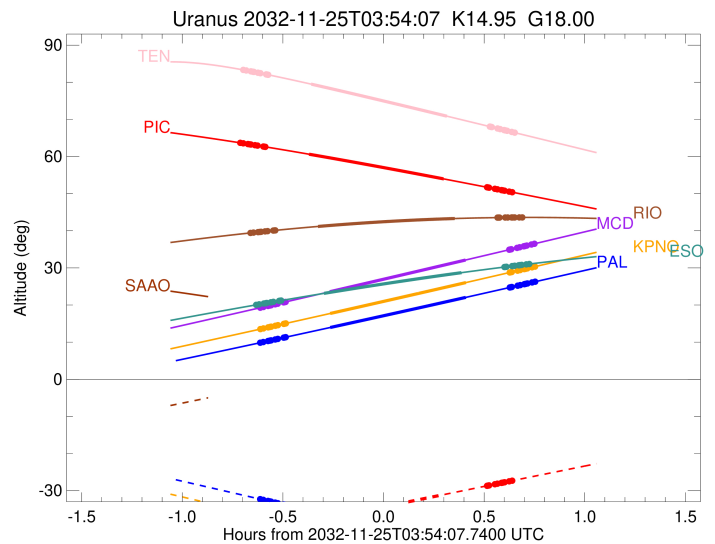
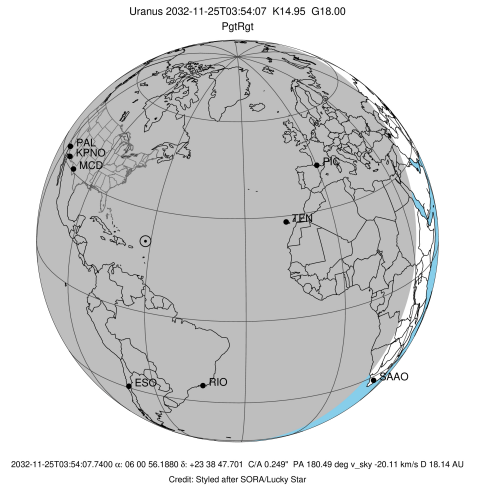
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-11-25T03:11:15.108		63.72	-42.17	51374.62	-20.80		
lambda	I	2032-11-25T03:12:19.954		63.56	-41.98	50026.71	-20.78		
delta	I	2032-11-25T03:13:43.044		63.36	-41.73	48300.35	-20.77		
gamma	I	2032-11-25T03:14:15.317		63.29	-41.63	47630.07	-20.77		
eta	I	2032-11-25T03:14:37.178		63.23	-41.57	47176.12	-20.76		
beta	I	2032-11-25T03:15:49.318		63.06	-41.35	45677.76	-20.75		
alpha	I	2032-11-25T03:16:34.166		62.95	-41.21	44749.82	-20.75		
4	I	2032-11-25T03:18:20.076		62.69	-40.89	42556.04	-20.73		
5	I	2032-11-25T03:18:31.379		62.66	-40.86	42313.75	-20.72		
6	I	2032-11-25T03:18:54.517		62.61	-40.79	41829.23	-20.72		
Uranus	I	2032-11-25T03:31:56.083		60.63	-38.42	25286.14		-10.33	-10.80
Uranus	E	2032-11-25T04:12:03.111		53.98	-31.08	25073.41		13.92	14.56
6	E	2032-11-25T04:25:01.341		51.72	-28.70	41856.16	20.68		
5	E	2032-11-25T04:25:15.596		51.67	-28.65	42155.06	20.68		
4	E	2032-11-25T04:25:35.287		51.62	-28.59	42574.49	20.68		
alpha	E	2032-11-25T04:27:17.467		51.31	-28.28	44684.94	20.70		
beta	E	2032-11-25T04:28:03.823		51.18	-28.14	45642.25	20.71		
eta	E	2032-11-25T04:29:17.834		50.96	-27.91	47176.12	20.72		
gamma	E	2032-11-25T04:29:39.340		50.90	-27.85	47621.69	20.72		
delta	E	2032-11-25T04:30:12.090		50.80	-27.75	48300.35	20.72		
lambda	E	2032-11-25T04:31:35.375		50.55	-27.49	50026.71	20.73		
epsilon	E	2032-11-25T04:32:22.274		50.41	-27.35	50999.17	20.75		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-25T03:58:35.190
 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 : 3424859079913443712
 2Mass ID (if available) : 06005618+2338476
 ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.952
 G magnitude : 18.003
 RP magnitude : 17.080
 BP magnitude : 18.806
 DUPflag : 0
 Distance (au) : 18.141
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.11
 Sun-Target sep (deg) : 152.76
 Sun-Moon sep (deg) : 65.71
 B (ring opening deg) : 75.17
 PA of pole (deg) : 57.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.461
 C/A sky separation (km) : 6061.4
 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



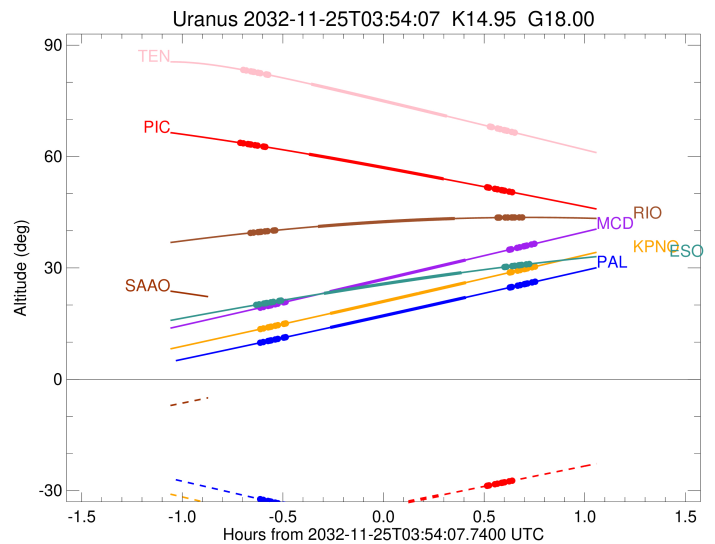
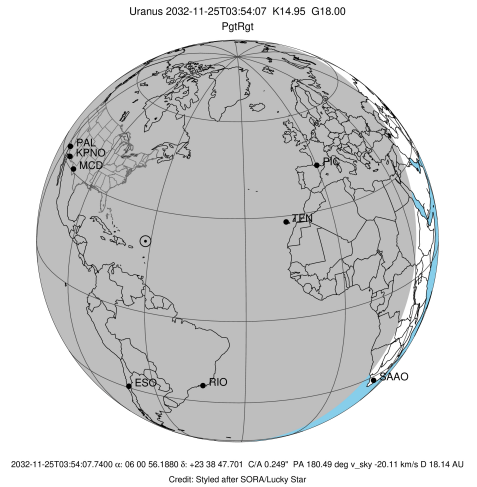
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-11-25T03:17:11.142		9.81	-32.26	51381.43	-20.43		
lambda	I	2032-11-25T03:18:17.507		10.03	-32.49	50026.71	-20.41		
delta	I	2032-11-25T03:19:42.110		10.30	-32.78	48300.35	-20.40		
gamma	I	2032-11-25T03:20:14.972		10.41	-32.89	47629.99	-20.40		
eta	I	2032-11-25T03:20:37.225		10.48	-32.97	47176.12	-20.39		
beta	I	2032-11-25T03:21:50.685		10.72	-33.23	45677.51	-20.38		
alpha	I	2032-11-25T03:22:36.344		10.87	-33.39	44749.53	-20.38		
4	I	2032-11-25T03:24:24.188		11.22	-33.76	42555.09	-20.36		
5	I	2032-11-25T03:24:35.685		11.26	-33.80	42313.38	-20.35		
6	I	2032-11-25T03:24:59.173		11.33	-33.88	41830.17	-20.35		
Uranus	I	2032-11-25T03:38:15.581		13.95	-36.66	25302.85		-10.00	-10.46
Uranus	E	2032-11-25T04:18:40.675		22.06	-45.11	25070.65		13.97	14.60
6	E	2032-11-25T04:31:47.908		24.73	-47.85	41856.17	20.48		
5	E	2032-11-25T04:32:02.301		24.78	-47.90	42155.06	20.48		
4	E	2032-11-25T04:32:22.181		24.85	-47.97	42574.48	20.49		
alpha	E	2032-11-25T04:34:05.324		25.20	-48.33	44684.94	20.51		
beta	E	2032-11-25T04:34:52.103		25.36	-48.49	45642.25	20.52		
eta	E	2032-11-25T04:36:06.775		25.61	-48.75	47176.12	20.54		
gamma	E	2032-11-25T04:36:28.470		25.69	-48.82	47621.70	20.54		
delta	E	2032-11-25T04:37:01.505		25.80	-48.94	48300.35	20.55		
lambda	E	2032-11-25T04:38:25.497		26.09	-49.23	50026.71	20.56		
epsilon	E	2032-11-25T04:39:12.751		26.25	-49.39	50998.49	20.59		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-25T03:58:34.990
 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 : 3424859079913443712
 2Mass ID (if available) : 06005618+2338476
 ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.952
 G magnitude : 18.003
 RP magnitude : 17.080
 BP magnitude : 18.806
 DUPflag : 0
 Distance (au) : 18.141
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.11
 Sun-Target sep (deg) : 152.76
 Sun-Moon sep (deg) : 65.76
 B (ring opening deg) : 75.17
 PA of pole (deg) : 57.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.436
 C/A sky separation (km) : 5741.6
 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_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



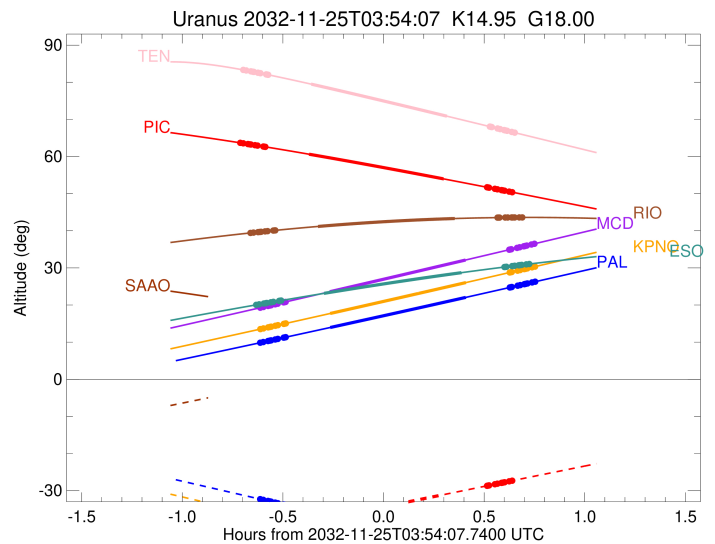
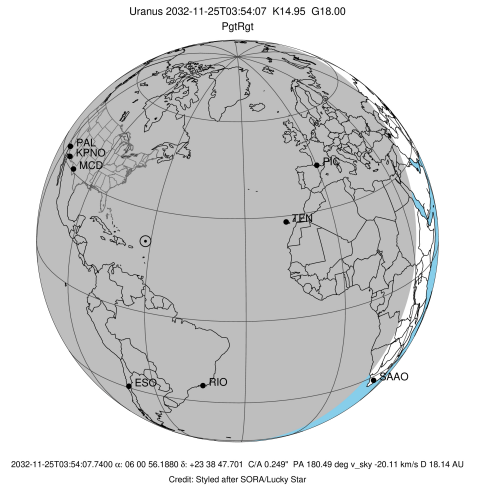
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-11-25T03:17:14.198		13.48	-36.59	51379.32	-20.48		
lambda	I	2032-11-25T03:18:20.291		13.70	-36.82	50026.71	-20.46		
delta	I	2032-11-25T03:19:44.673		13.98	-37.12	48300.35	-20.45		
gamma	I	2032-11-25T03:20:17.448		14.09	-37.24	47630.02	-20.45		
eta	I	2032-11-25T03:20:39.643		14.17	-37.32	47176.12	-20.45		
beta	I	2032-11-25T03:21:52.899		14.41	-37.58	45677.60	-20.44		
alpha	I	2032-11-25T03:22:38.432		14.57	-37.74	44749.63	-20.43		
4	I	2032-11-25T03:24:25.962		14.93	-38.12	42555.42	-20.42		
5	I	2032-11-25T03:24:37.429		14.97	-38.16	42313.51	-20.41		
6	I	2032-11-25T03:25:00.872		15.04	-38.24	41829.85	-20.41		
Uranus	I	2032-11-25T03:38:14.149		17.72	-41.05	25295.77		-10.14	-10.61
Uranus	E	2032-11-25T04:18:42.347		26.05	-49.64	25075.11		13.90	14.53
6	E	2032-11-25T04:31:46.821		28.77	-52.40	41855.88	20.54		
5	E	2032-11-25T04:32:01.182		28.82	-52.45	42155.02	20.54		
4	E	2032-11-25T04:32:21.029		28.89	-52.52	42574.82	20.55		
alpha	E	2032-11-25T04:34:03.863		29.25	-52.89	44684.97	20.57		
beta	E	2032-11-25T04:34:50.516		29.41	-53.05	45642.30	20.58		
eta	E	2032-11-25T04:36:04.985		29.67	-53.31	47176.12	20.59		
gamma	E	2032-11-25T04:36:26.623		29.75	-53.39	47621.72	20.59		
delta	E	2032-11-25T04:36:59.569		29.86	-53.50	48300.35	20.60		
lambda	E	2032-11-25T04:38:23.344		30.16	-53.80	50026.71	20.61		
epsilon	E	2032-11-25T04:39:10.364		30.32	-53.96	50996.14	20.64		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-25T03:58:28.400
 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 : 3424859079913443712
 2Mass ID (if available) : 06005618+2338476
 ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.952
 G magnitude : 18.003
 RP magnitude : 17.080
 BP magnitude : 18.806
 DUPflag : 0
 Distance (au) : 18.141
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.11
 Sun-Target sep (deg) : 152.76
 Sun-Moon sep (deg) : 65.83
 B (ring opening deg) : 75.17
 PA of pole (deg) : 57.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.406
 C/A sky separation (km) : 5345.6
 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	2032-11-25T03:17:12.693		19.24	-43.02	51376.64	-20.55		
lambda	I	2032-11-25T03:18:18.423		19.46	-43.25	50026.71	-20.54		
delta	I	2032-11-25T03:19:42.505		19.75	-43.55	48300.35	-20.53		
gamma	I	2032-11-25T03:20:15.159		19.87	-43.67	47630.05	-20.53		
eta	I	2032-11-25T03:20:37.275		19.94	-43.75	47176.12	-20.52		
beta	I	2032-11-25T03:21:50.257		20.19	-44.01	45677.70	-20.52		
alpha	I	2032-11-25T03:22:35.619		20.35	-44.18	44749.75	-20.51		
4	I	2032-11-25T03:24:22.727		20.72	-44.56	42555.83	-20.50		
5	I	2032-11-25T03:24:34.154		20.76	-44.60	42313.67	-20.49		
6	I	2032-11-25T03:24:57.534		20.84	-44.69	41829.44	-20.49		
Uranus	I	2032-11-25T03:38:06.767		23.58	-47.52	25286.93		-10.31	-10.79
Uranus	E	2032-11-25T04:18:37.404		32.13	-56.21	25080.74		13.81	14.44
6	E	2032-11-25T04:31:38.383		34.90	-58.98	41855.52	20.61		
5	E	2032-11-25T04:31:52.703		34.95	-59.03	42154.97	20.62		
4	E	2032-11-25T04:32:12.504		35.02	-59.10	42575.24	20.62		
alpha	E	2032-11-25T04:33:54.942		35.39	-59.46	44685.02	20.64		
beta	E	2032-11-25T04:34:41.429		35.55	-59.62	45642.36	20.65		
eta	E	2032-11-25T04:35:55.633		35.81	-59.89	47176.12	20.66		
gamma	E	2032-11-25T04:36:17.197		35.89	-59.96	47621.74	20.67		
delta	E	2032-11-25T04:36:50.030		36.01	-60.08	48300.35	20.67		
lambda	E	2032-11-25T04:38:13.521		36.31	-60.37	50026.71	20.68		
epsilon	E	2032-11-25T04:39:00.247		36.47	-60.54	50993.30	20.71		

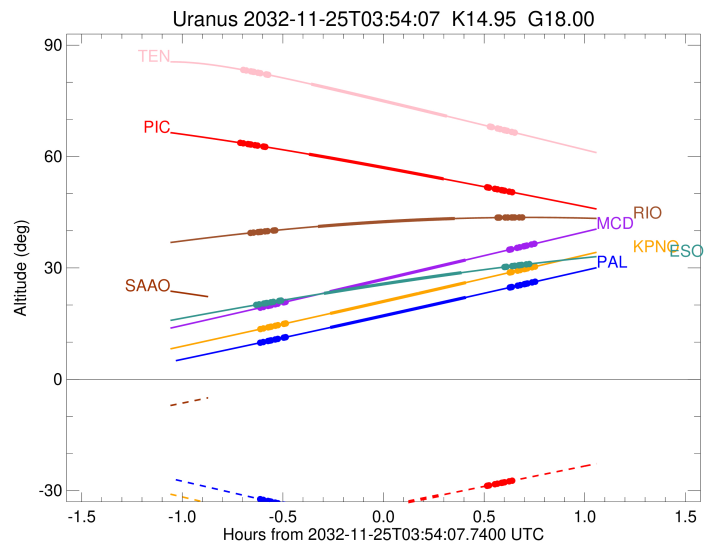
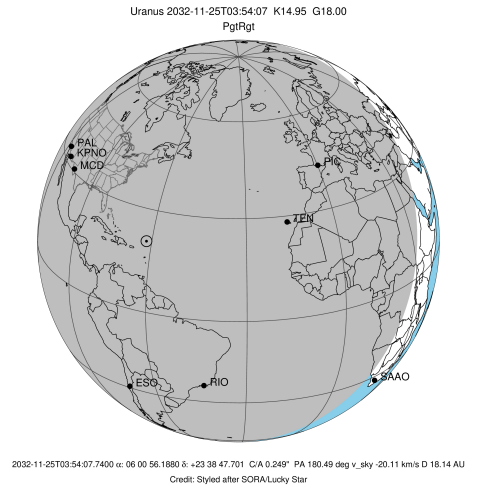
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-25T03:52:52.260
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3424859079913443712
 2Mass ID (if available) : 06005618+2338476
 ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.952
 G magnitude : 18.003
 RP magnitude : 17.080
 BP magnitude : 18.806
 DUPflag : 0
 Distance (au) : 18.141
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.11
 Sun-Target sep (deg) : 152.76
 Sun-Moon sep (deg) : 65.86
 B (ring opening deg) : 75.17
 PA of pole (deg) : 57.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.287
 C/A sky separation (km) : 3780.7
 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	2032-11-25T03:12:09.830		83.36	-57.62	51362.95	-20.96		
lambda	I	2032-11-25T03:13:13.615		83.18	-57.39	50026.71	-20.95		
delta	I	2032-11-25T03:14:36.038		82.95	-57.08	48300.35	-20.94		
gamma	I	2032-11-25T03:15:08.039		82.85	-56.97	47630.20	-20.94		
eta	I	2032-11-25T03:15:29.724		82.79	-56.89	47176.12	-20.94		
beta	I	2032-11-25T03:16:41.230		82.58	-56.63	45678.18	-20.93		
alpha	I	2032-11-25T03:17:25.683		82.45	-56.46	44750.31	-20.93		
4	I	2032-11-25T03:19:10.581		82.12	-56.08	42557.82	-20.92		
5	I	2032-11-25T03:19:21.804		82.09	-56.04	42314.32	-20.92		
6	I	2032-11-25T03:19:44.838		82.02	-55.95	41827.48	-20.92		
Uranus	I	2032-11-25T03:32:35.189		79.50	-53.13	25247.55		-11.05	-11.56
Uranus	E	2032-11-25T04:13:02.502		70.87	-44.22	25101.09		13.50	14.12
6	E	2032-11-25T04:25:50.910		68.06	-41.40	41854.43	20.89		
5	E	2032-11-25T04:26:05.077		68.01	-41.35	42154.87	20.90		
4	E	2032-11-25T04:26:24.699		67.94	-41.27	42576.48	20.90		
alpha	E	2032-11-25T04:28:05.746		67.57	-40.90	44685.17	20.91		
beta	E	2032-11-25T04:28:51.651		67.40	-40.74	45642.54	20.91		
eta	E	2032-11-25T04:30:04.936		67.13	-40.47	47176.12	20.92		
gamma	E	2032-11-25T04:30:26.243		67.05	-40.39	47621.80	20.92		
delta	E	2032-11-25T04:30:58.681		66.93	-40.27	48300.35	20.92		
lambda	E	2032-11-25T04:32:21.198		66.63	-39.97	50026.71	20.92		
epsilon	E	2032-11-25T04:33:07.015		66.46	-39.80	50985.41	20.94		

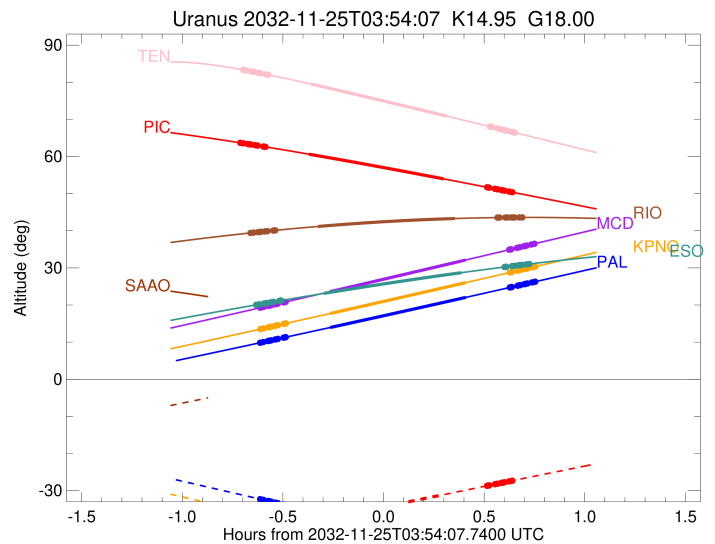
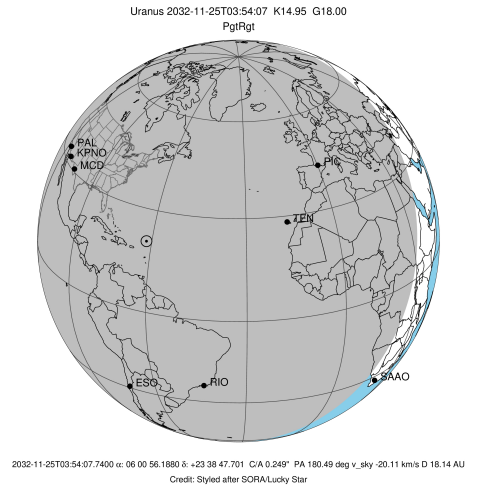
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-11-25T03:54:58.450
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      : 3424859079913443712
2Mass ID (if available) : 06005618+2338476
ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.952
G magnitude          : 18.003
RP magnitude         : 17.080
BP magnitude         : 18.806
DUPflag             : 0
Distance (au)       : 18.141
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -20.11
Sun-Target sep (deg) : 152.76
Sun-Moon sep (deg)  : 65.75
B (ring opening deg) : 75.17
PA of pole (deg)    : 57.50
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.107
C/A sky separation (km) : 1409.4
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.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	2032-11-25T03:14:20.363		39.41	-45.61	51327.81	-20.99		
lambda	I	2032-11-25T03:15:22.346		39.51	-45.56	50026.71	-20.99		
delta	I	2032-11-25T03:16:44.588		39.64	-45.50	48300.35	-20.99		
gamma	I	2032-11-25T03:17:16.496		39.69	-45.47	47630.56	-20.99		
eta	I	2032-11-25T03:17:38.145		39.72	-45.45	47176.12	-20.99		
beta	I	2032-11-25T03:18:49.411		39.84	-45.39	45679.26	-20.99		
alpha	I	2032-11-25T03:19:33.734		39.90	-45.35	44751.45	-20.99		
4	I	2032-11-25T03:21:18.147		40.06	-45.26	42563.09	-20.99		
5	I	2032-11-25T03:21:29.450		40.08	-45.25	42315.21	-20.99		
6	I	2032-11-25T03:21:52.702		40.11	-45.23	41822.52	-20.98		
Uranus	I	2032-11-25T03:34:35.527		41.17	-44.42	25144.26		-12.82	-13.41
Uranus	E	2032-11-25T04:15:23.439		43.30	-40.58	25199.10		11.91	12.46
6	E	2032-11-25T04:28:07.967		43.55	-39.04	41849.29	21.02		
5	E	2032-11-25T04:28:22.282		43.55	-39.01	42155.19	21.02		
4	E	2032-11-25T04:28:42.134		43.56	-38.97	42582.13	21.03		
alpha	E	2032-11-25T04:30:22.332		43.57	-38.76	44686.14	21.03		
beta	E	2032-11-25T04:31:07.985		43.58	-38.66	45643.57	21.03		
eta	E	2032-11-25T04:32:20.815		43.59	-38.50	47176.12	21.03		
gamma	E	2032-11-25T04:32:42.024		43.59	-38.46	47622.16	21.03		
delta	E	2032-11-25T04:33:14.269		43.59	-38.39	48300.35	21.03		
lambda	E	2032-11-25T04:34:36.348		43.60	-38.21	50026.71	21.03		
epsilon	E	2032-11-25T04:35:20.101		43.60	-38.11	50947.02	21.03		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-11-25T03:56:53.560
 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 : 3424859079913443712
 2Mass ID (if available) : 06005618+2338476
 ICRS Star Coord at Epoch: 06h 00m 56.18804s +23:38:47.70085s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.952
 G magnitude : 18.003
 RP magnitude : 17.080
 BP magnitude : 18.806
 DUPflag : 0
 Distance (au) : 18.141
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.11
 Sun-Target sep (deg) : 152.76
 Sun-Moon sep (deg) : 65.68
 B (ring opening deg) : 75.17
 PA of pole (deg) : 57.50
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.112
 C/A sky separation (km) : 1471.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-11-25T03:16:01.916		20.02	-36.99	51328.51	-20.85		
lambda	I	2032-11-25T03:17:04.325		20.19	-37.08	50026.71	-20.86		
delta	I	2032-11-25T03:18:27.085		20.40	-37.19	48300.35	-20.86		
gamma	I	2032-11-25T03:18:59.193		20.49	-37.23	47630.55	-20.86		
eta	I	2032-11-25T03:19:20.977		20.54	-37.26	47176.12	-20.86		
beta	I	2032-11-25T03:20:32.688		20.73	-37.35	45679.24	-20.86		
alpha	I	2032-11-25T03:21:17.286		20.85	-37.40	44751.43	-20.86		
4	I	2032-11-25T03:23:02.344		21.12	-37.54	42563.02	-20.87		
5	I	2032-11-25T03:23:13.715		21.15	-37.55	42315.21	-20.86		
6	I	2032-11-25T03:23:37.106		21.21	-37.58	41822.58	-20.86		
Uranus	I	2032-11-25T03:36:24.471		23.15	-38.43	25144.65		-12.82	-13.40
Uranus	E	2032-11-25T04:17:23.937		28.72	-39.98	25202.16		11.86	12.40
6	E	2032-11-25T04:30:11.580		30.23	-40.06	41849.09	20.94		
5	E	2032-11-25T04:30:25.959		30.26	-40.06	42155.23	20.95		
4	E	2032-11-25T04:30:45.896		30.30	-40.06	42582.34	20.95		
alpha	E	2032-11-25T04:32:26.450		30.48	-40.06	44686.19	20.95		
beta	E	2032-11-25T04:33:12.266		30.57	-40.06	45643.62	20.95		
eta	E	2032-11-25T04:34:25.354		30.70	-40.05	47176.12	20.96		
gamma	E	2032-11-25T04:34:46.637		30.74	-40.05	47622.18	20.96		
delta	E	2032-11-25T04:35:18.995		30.80	-40.05	48300.35	20.96		
lambda	E	2032-11-25T04:36:41.357		30.95	-40.04	50026.71	20.96		
epsilon	E	2032-11-25T04:37:25.182		31.03	-40.03	50945.39	20.96		