

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-01T02:49:35.530  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 670882142268986368  
 2Mass ID (if available) : 08002967+2105545

ICRS Star Coord at Epoch: 08h 00m 29.64082s +21:05:54.36969s

RUWE (>1.4 is poor) : 1.11  
 K magnitude : 13.606  
 G magnitude : 15.587  
 RP magnitude : 14.950  
 BP magnitude : 16.061  
 DUPflag : 0  
 Distance (au) : 17.996  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -12.84  
 Sun-Target sep (deg) : 130.54  
 Sun-Moon sep (deg) : 168.07  
 B (ring opening deg) : 49.01  
 PA of pole (deg) : 89.07

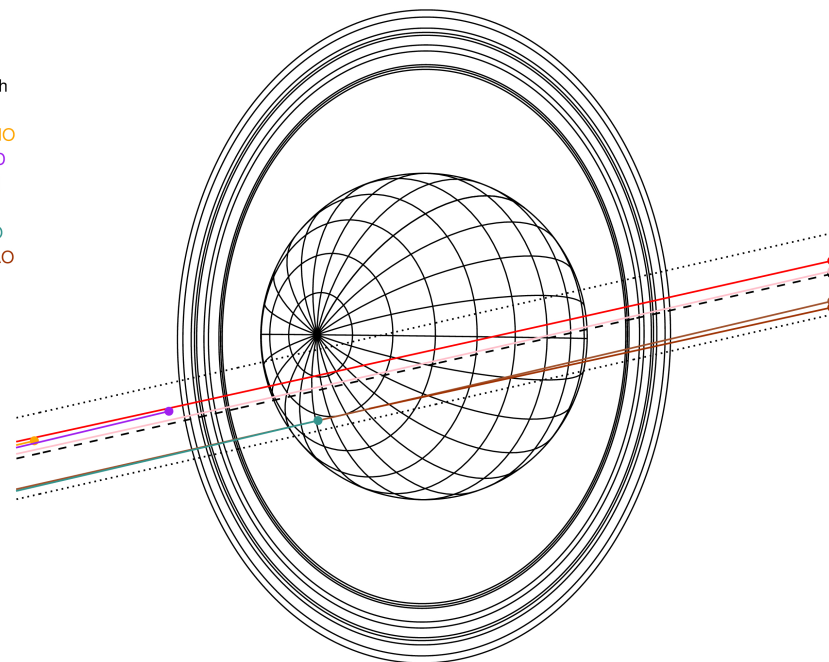
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2038-12-01T02:49:35.5300 α: 08 00 29.64082 s: +21 05 54.370 C/A 0.335° PA 12.76 deg v\_sky -12.84 km/s D 18.00 AU  
 Credit: Styled after SORA/Lucky Star

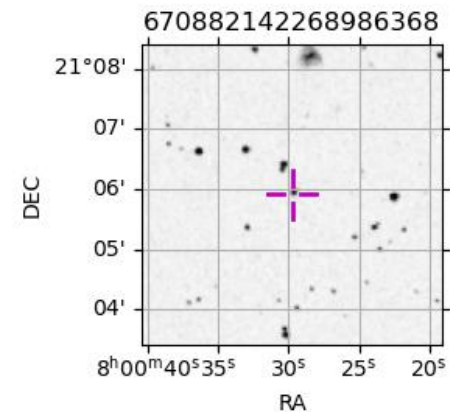
Uranus 2038-12-01T02:49:35 K13.61 G15.59 PgtRgt

Earth  
 PIC  
 KPNO  
 MCD  
 TEN  
 RIO  
 ESO  
 SAAO

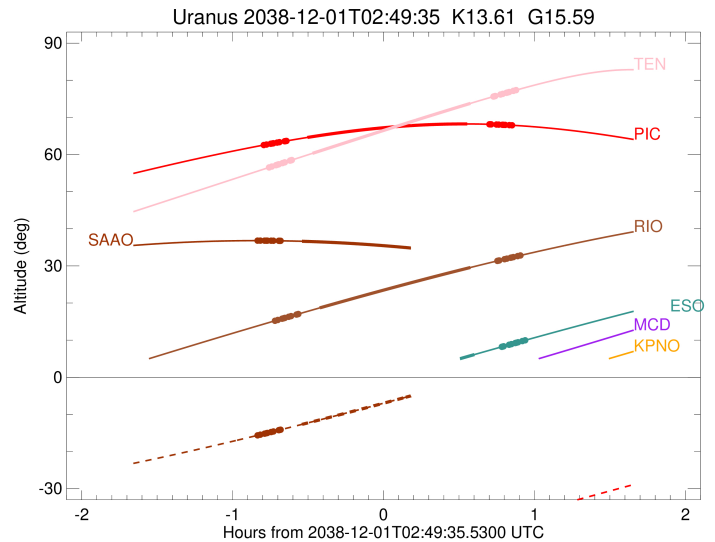
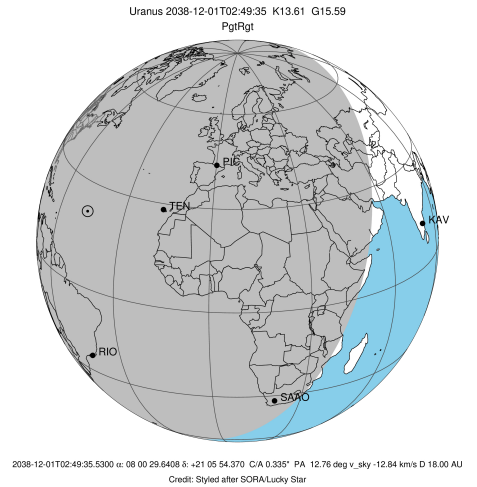


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	DEC 01 02:02 - DEC 01 03:41	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	+++++	+ +	+++++	DEC 01 02:04 - DEC 01 03:42	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	+++++	+ +	+++++	DEC 01 02:06 - DEC 01 03:44	PieRie
ESO	European Southern Obs	-29.3	289.3		+	+++++	DEC 01 03:25 - DEC 01 03:46	PneRne
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+		DEC 01 01:59 - DEC 01 02:17	PinRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



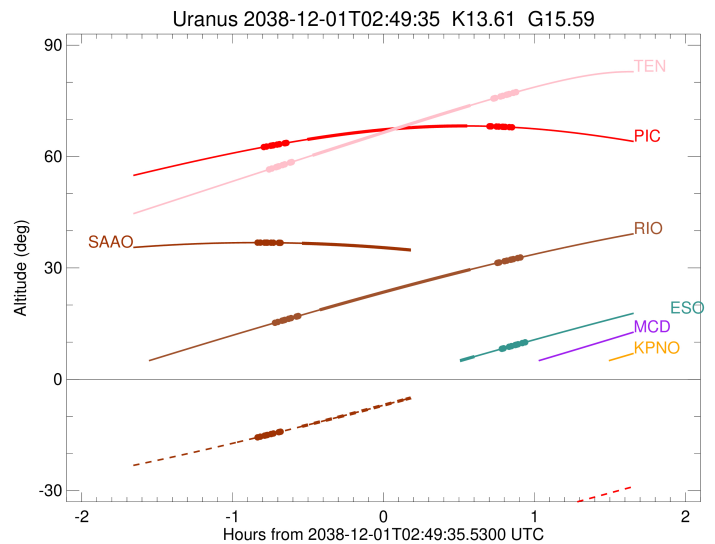
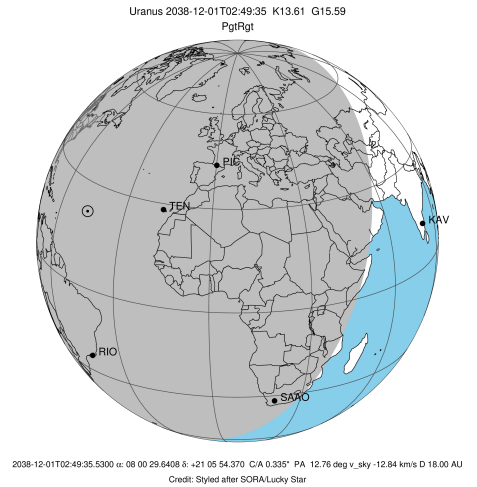
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-01T02:51:05.350  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 670882142268986368  
 2Mass ID (if available) : 08002967+2105545  
 ICRS Star Coord at Epoch: 08h 00m 29.64082s +21:05:54.36969s  
 RUWE (>1.4 is poor) : 1.11  
 K magnitude : 13.606  
 G magnitude : 15.587  
 RP magnitude : 14.950  
 BP magnitude : 16.061  
 DUPflag : 0  
 Distance (au) : 17.996  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -12.84  
 Sun-Target sep (deg) : 130.54  
 Sun-Moon sep (deg) : 168.33  
 B (ring opening deg) : 49.01  
 PA of pole (deg) : 89.07  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.181  
 C/A sky separation (km) : 2367.6  
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-12-01T02:02:24.442		62.61	-55.12	50743.51	-17.19		
lambda	I	2038-12-01T02:03:06.135		62.70	-55.01	50026.71	-17.19		
delta	I	2038-12-01T02:04:46.552		62.91	-54.73	48300.35	-17.19		
gamma	I	2038-12-01T02:05:26.022		62.99	-54.62	47621.80	-17.19		
eta	I	2038-12-01T02:05:51.947		63.04	-54.55	47176.12	-17.19		
beta	I	2038-12-01T02:07:20.707		63.22	-54.30	45651.95	-17.19		
alpha	I	2038-12-01T02:08:15.844		63.33	-54.15	44707.80	-17.19		
4	I	2038-12-01T02:10:22.985		63.59	-53.80	42531.56	-17.19		
5	I	2038-12-01T02:10:42.689		63.63	-53.74	42208.96	-17.20		
6	I	2038-12-01T02:11:00.263		63.66	-53.69	41858.77	-17.18		
Uranus	I	2038-12-01T02:19:17.938		64.60	-52.29	25233.29		-40.50	-41.81
Uranus	E	2038-12-01T03:22:53.196		68.24	-41.01	25260.63		38.40	39.69
6	E	2038-12-01T03:31:40.663		68.15	-39.41	41811.75	17.22		
5	E	2038-12-01T03:32:03.173		68.14	-39.34	42252.38	17.24		
4	E	2038-12-01T03:32:25.035		68.13	-39.27	42613.06	17.24		
alpha	E	2038-12-01T03:34:28.287		68.08	-38.90	44725.82	17.24		
beta	E	2038-12-01T03:35:23.108		68.06	-38.73	45668.46	17.24		
eta	E	2038-12-01T03:36:50.676		68.01	-38.47	47176.12	17.24		
gamma	E	2038-12-01T03:37:17.060		68.00	-38.39	47630.99	17.24		
delta	E	2038-12-01T03:37:55.882		67.98	-38.27	48300.35	17.24		
lambda	E	2038-12-01T03:39:36.000		67.92	-37.96	50026.71	17.24		
epsilon	E	2038-12-01T03:41:04.541		67.87	-37.69	51553.62	17.25		

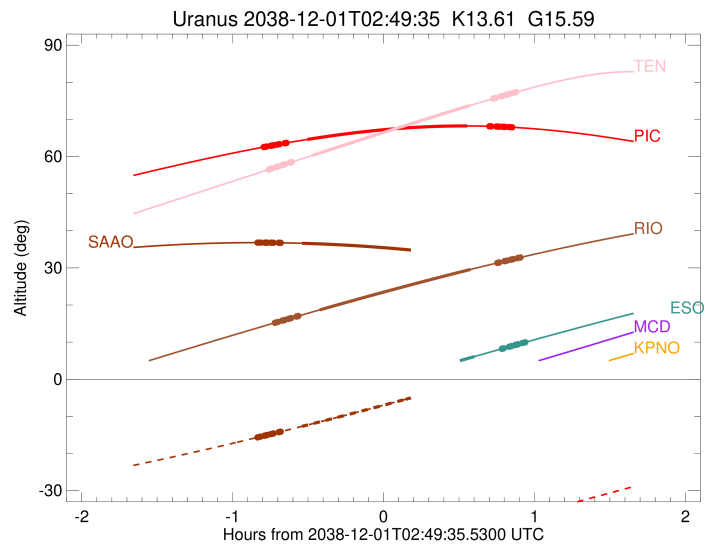
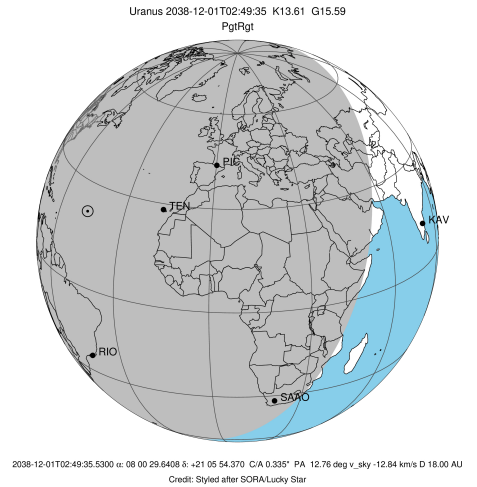
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-01T02:52:45.880  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : TEN  
 Location : Teide Obs./Tenerife  
 Latitude (deg) : 28.30050  
 E. Longitude (deg) : 343.48909  
 Altitude (km) : 2.395  
 Gaia source ID : 670882142268986368  
 2Mass ID (if available) : 08002967+2105545  
 ICRS Star Coord at Epoch: 08h 00m 29.64082s +21:05:54.36969s  
 RUWE (>1.4 is poor) : 1.11  
 K magnitude : 13.606  
 G magnitude : 15.587  
 RP magnitude : 14.950  
 BP magnitude : 16.061  
 DUPflag : 0  
 Distance (au) : 17.996  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -12.84  
 Sun-Target sep (deg) : 130.54  
 Sun-Moon sep (deg) : 168.59  
 B (ring opening deg) : 49.01  
 PA of pole (deg) : 89.07  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.315  
 C/A sky separation (km) : 4113.3  
 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\_itrf93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-12-01T02:04:31.622	56.62	-73.00	50743.73	-17.18		
lambda	I	2038-12-01T02:05:13.372	56.77	-72.85	50026.71	-17.17		
delta	I	2038-12-01T02:06:53.900	57.14	-72.50	48300.35	-17.17		
gamma	I	2038-12-01T02:07:33.411	57.28	-72.36	47621.91	-17.17		
eta	I	2038-12-01T02:07:59.374	57.38	-72.27	47176.12	-17.17		
beta	I	2038-12-01T02:09:28.281	57.71	-71.96	45651.31	-17.17		
alpha	I	2038-12-01T02:10:23.555	57.91	-71.76	44706.60	-17.17		
4	I	2038-12-01T02:12:30.720	58.38	-71.31	42532.45	-17.17		
5	I	2038-12-01T02:12:50.679	58.45	-71.24	42205.96	-17.17		
6	I	2038-12-01T02:13:08.308	58.51	-71.18	41857.27	-17.15		
Uranus	I	2038-12-01T02:21:21.280	60.32	-69.42	25228.62		-40.86	-42.16
Uranus	E	2038-12-01T03:24:10.306	73.79	-55.71	25276.28		37.18	38.46
6	E	2038-12-01T03:33:17.170	75.62	-53.70	41810.28	17.25		
5	E	2038-12-01T03:33:39.459	75.69	-53.62	42248.94	17.27		
4	E	2038-12-01T03:34:01.522	75.76	-53.53	42613.78	17.27		
alpha	E	2038-12-01T03:36:04.487	76.16	-53.08	44724.44	17.27		
beta	E	2038-12-01T03:36:59.205	76.34	-52.88	45667.70	17.27		
eta	E	2038-12-01T03:38:26.635	76.62	-52.56	47176.12	17.28		
gamma	E	2038-12-01T03:38:52.963	76.71	-52.46	47631.08	17.28		
delta	E	2038-12-01T03:39:31.688	76.83	-52.32	48300.35	17.28		
lambda	E	2038-12-01T03:41:11.552	77.15	-51.96	50026.71	17.29		
epsilon	E	2038-12-01T03:42:39.757	77.42	-51.63	51552.01	17.29		

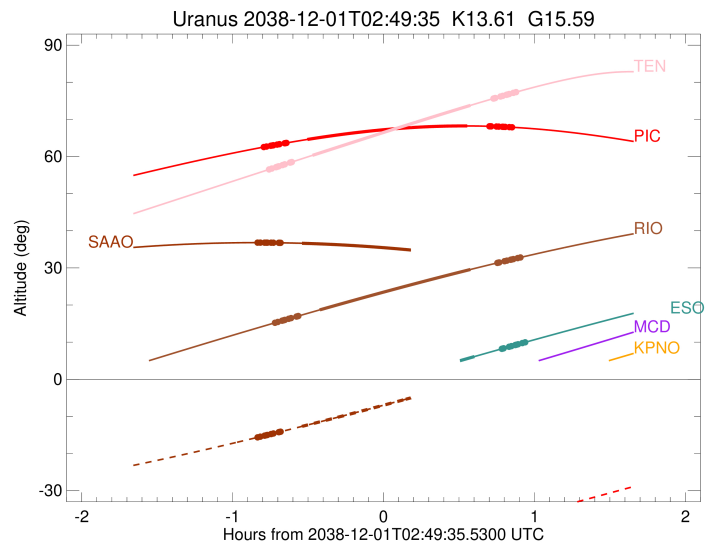
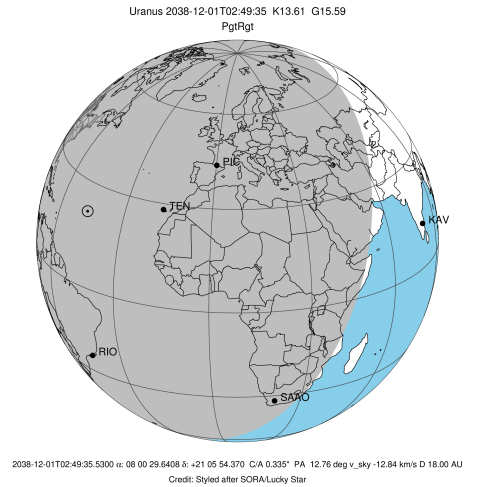
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-01T02:54:11.950  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : RIO  
 Location : Rio de Janeiro  
 Latitude (deg) : -22.89506  
 E. Longitude (deg) : 316.77708  
 Altitude (km) : 0.033  
 Gaia source ID : 670882142268986368  
 2Mass ID (if available) : 08002967+2105545  
 ICRS Star Coord at Epoch: 08h 00m 29.64082s +21:05:54.36969s  
 RUWE (>1.4 is poor) : 1.11  
 K magnitude : 13.606  
 G magnitude : 15.587  
 RP magnitude : 14.950  
 BP magnitude : 16.061  
 DUPflag : 0  
 Distance (au) : 17.996  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -12.84  
 Sun-Target sep (deg) : 130.54  
 Sun-Moon sep (deg) : 168.83  
 B (ring opening deg) : 49.01  
 PA of pole (deg) : 89.07  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.698  
 C/A sky separation (km) : 9112.6  
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

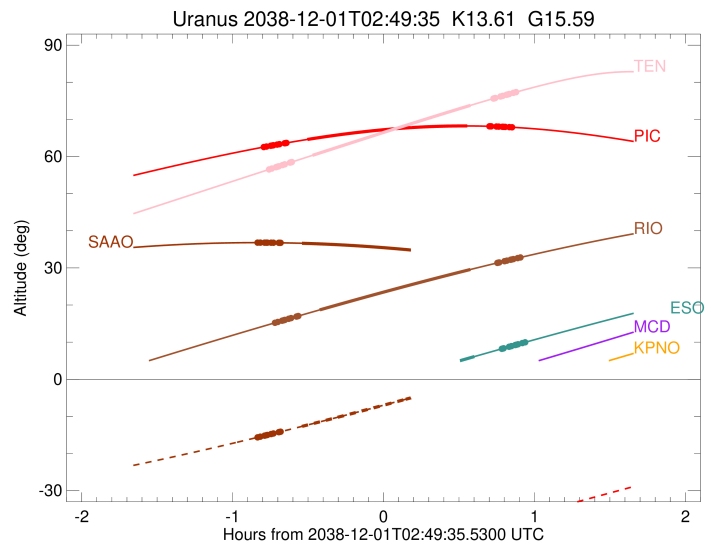
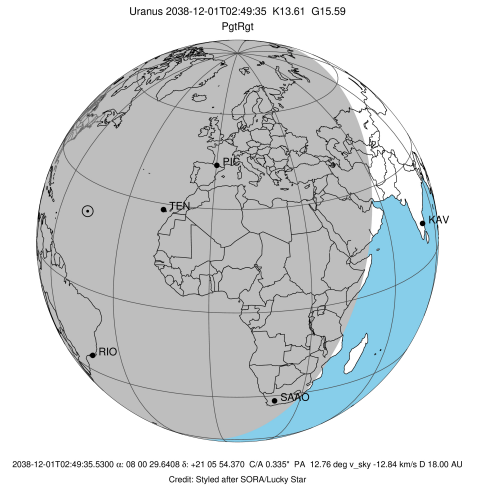
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2038-12-01T02:06:52.625		15.30	-44.65	50746.84	-16.79		
lambda	I	2038-12-01T02:07:35.539		15.44	-44.69	50026.71	-16.78		
delta	I	2038-12-01T02:09:18.492		15.78	-44.76	48300.35	-16.76		
gamma	I	2038-12-01T02:09:58.963		15.91	-44.79	47622.24	-16.75		
eta	I	2038-12-01T02:10:25.599		16.00	-44.81	47176.12	-16.75		
beta	I	2038-12-01T02:11:56.890		16.30	-44.87	45649.48	-16.73		
alpha	I	2038-12-01T02:12:53.810		16.48	-44.90	44703.18	-16.71		
4	I	2038-12-01T02:15:03.981		16.91	-44.98	42535.43	-16.69		
5	I	2038-12-01T02:15:25.175		16.98	-45.00	42197.42	-16.68		
6	I	2038-12-01T02:15:43.477		17.04	-45.01	41852.71	-16.65		
Uranus	I	2038-12-01T02:24:17.303		18.70	-45.25	25231.95		-40.60	-41.91
Uranus	E	2038-12-01T03:24:08.500		29.57	-44.27	25334.45		32.52	33.73
6	E	2038-12-01T03:34:49.823		31.34	-43.61	41806.32	16.82		
5	E	2038-12-01T03:35:12.165		31.40	-43.58	42238.88	16.85		
4	E	2038-12-01T03:35:35.417		31.47	-43.56	42615.40	16.86		
alpha	E	2038-12-01T03:37:41.005		31.80	-43.41	44720.42	16.89		
beta	E	2038-12-01T03:38:36.934		31.95	-43.34	45665.44	16.91		
eta	E	2038-12-01T03:40:06.328		32.19	-43.23	47176.12	16.94		
gamma	E	2038-12-01T03:40:33.197		32.26	-43.20	47631.30	16.94		
delta	E	2038-12-01T03:41:12.670		32.37	-43.15	48300.35	16.95		
lambda	E	2038-12-01T03:42:54.414		32.64	-43.02	50026.71	16.98		
epsilon	E	2038-12-01T03:44:23.742		32.87	-42.90	51544.43	16.99		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-01T02:55:23.610  
 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 : 670882142268986368  
 2Mass ID (if available) : 08002967+2105545  
 ICRS Star Coord at Epoch: 08h 00m 29.64082s +21:05:54.36969s  
 RUWE (>1.4 is poor) : 1.11  
 K magnitude : 13.606  
 G magnitude : 15.587  
 RP magnitude : 14.950  
 BP magnitude : 16.061  
 DUPflag : 0  
 Distance (au) : 17.996  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -12.84  
 Sun-Target sep (deg) : 130.54  
 Sun-Moon sep (deg) : 168.89  
 B (ring opening deg) : 49.01  
 PA of pole (deg) : 89.07  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.690  
 C/A sky separation (km) : 9005.6  
 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	2038-12-01T02:07:22.322	-9.63x	-28.37	50746.55	-16.54			
lambda	I	2038-12-01T02:08:05.849	-9.48x	-28.47	50026.71	-16.53			
delta	I	2038-12-01T02:09:50.310	-9.12x	-28.70	48300.35	-16.52			
gamma	I	2038-12-01T02:10:31.373	-8.98x	-28.79	47622.22	-16.51			
eta	I	2038-12-01T02:10:58.396	-8.89x	-28.85	47176.12	-16.51			
beta	I	2038-12-01T02:12:31.011	-8.57x	-29.06	45649.58	-16.49			
alpha	I	2038-12-01T02:13:28.747	-8.37x	-29.18	44703.37	-16.47			
4	I	2038-12-01T02:15:40.827	-7.92x	-29.47	42535.26	-16.45			
5	I	2038-12-01T02:16:02.291	-7.84x	-29.52	42197.86	-16.44			
6	I	2038-12-01T02:16:20.845	-7.78x	-29.56	41852.95	-16.42			
Uranus	I	2038-12-01T02:25:01.009	-6.00x	-30.66	25231.22			-40.66	-41.96
Uranus	E	2038-12-01T03:25:46.542	6.12	-36.68	25334.68			32.50	33.71
6	E	2038-12-01T03:36:35.884	8.20	-37.40	41806.28	16.62			
5	E	2038-12-01T03:36:58.488	8.27	-37.42	42238.76	16.65			
4	E	2038-12-01T03:37:22.027	8.34	-37.44	42615.42	16.66			
alpha	E	2038-12-01T03:39:29.118	8.75	-37.57	44720.37	16.69			
beta	E	2038-12-01T03:40:25.717	8.93	-37.62	45665.41	16.71			
eta	E	2038-12-01T03:41:56.182	9.21	-37.71	47176.12	16.74			
gamma	E	2038-12-01T03:42:23.372	9.30	-37.73	47631.30	16.74			
delta	E	2038-12-01T03:43:03.315	9.42	-37.77	48300.35	16.76			
lambda	E	2038-12-01T03:44:46.269	9.75	-37.86	50026.71	16.78			
epsilon	E	2038-12-01T03:46:16.644	10.03	-37.94	51544.23	16.80			

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2038-12-01T02:46:48.930  
 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 : 670882142268986368  
 2Mass ID (if available) : 08002967+2105545  
 ICRS Star Coord at Epoch: 08h 00m 29.64082s +21:05:54.36969s  
 RUWE (>1.4 is poor) : 1.11  
 K magnitude : 13.606  
 G magnitude : 15.587  
 RP magnitude : 14.950  
 BP magnitude : 16.061  
 DUPflag : 0  
 Distance (au) : 17.996  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -12.84  
 Sun-Target sep (deg) : 130.54  
 Sun-Moon sep (deg) : 168.01  
 B (ring opening deg) : 49.01  
 PA of pole (deg) : 89.07  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.707  
 C/A sky separation (km) : 9226.8  
 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	2038-12-01T01:59:56.525		36.80	-15.58	50747.49	-17.00		
lambda	I	2038-12-01T02:00:38.932		36.80	-15.46	50026.71	-16.99		
delta	I	2038-12-01T02:02:20.593		36.80	-15.18	48300.35	-16.97		
gamma	I	2038-12-01T02:03:00.561		36.80	-15.07	47622.28	-16.96		
eta	I	2038-12-01T02:03:26.872		36.80	-15.00	47176.12	-16.95		
beta	I	2038-12-01T02:04:57.064		36.79	-14.75	45649.28	-16.93		
alpha	I	2038-12-01T02:05:53.322		36.78	-14.60	44702.81	-16.91		
4	I	2038-12-01T02:08:01.907		36.76	-14.24	42535.77	-16.88		
5	I	2038-12-01T02:08:22.924		36.76	-14.18	42196.55	-16.87		
6	I	2038-12-01T02:08:41.040		36.76	-14.13	41852.21	-16.85		
Uranus	I	2038-12-01T02:17:11.237		36.63	-12.69	25233.50		-40.49	-41.79
Uranus	E	2038-12-01T03:16:35.399		33.67	-2.02x	25332.11		32.72	33.93
6	E	2038-12-01T03:27:12.765		32.78	-0.01x	41806.52	16.83		
5	E	2038-12-01T03:27:35.116		32.74	0.06x	42239.42	16.86		
4	E	2038-12-01T03:27:58.321		32.71	0.14x	42615.33	16.87		
alpha	E	2038-12-01T03:30:03.860		32.52	0.53x	44720.66	16.90		
beta	E	2038-12-01T03:30:59.771		32.44	0.71x	45665.58	16.91		
eta	E	2038-12-01T03:32:29.141		32.30	1.00x	47176.12	16.94		
gamma	E	2038-12-01T03:32:56.008		32.26	1.08x	47631.29	16.95		
delta	E	2038-12-01T03:33:35.482		32.19	1.21x	48300.35	16.95		
lambda	E	2038-12-01T03:35:17.241		32.03	1.53x	50026.71	16.98		
epsilon	E	2038-12-01T03:36:46.640		31.89	1.82x	51545.10	16.99		