

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-02T05:06:54.950  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 866233541407406208  
 2Mass ID (if available) : 07215891+2230383

ICRS Star Coord at Epoch: 07h 21m 58.92434s +22:30:38.27655s

RUWE (>1.4 is poor) : 0.99  
 K magnitude : 12.732  
 G magnitude : 14.085  
 RP magnitude : 13.602  
 BP magnitude : 14.401  
 DUPflag : 0  
 Distance (au) : 18.924  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 11.53  
 Sun-Target sep (deg) : 80.22  
 Sun-Moon sep (deg) : 135.81  
 B (ring opening deg) : 57.82  
 PA of pole (deg) : 82.73

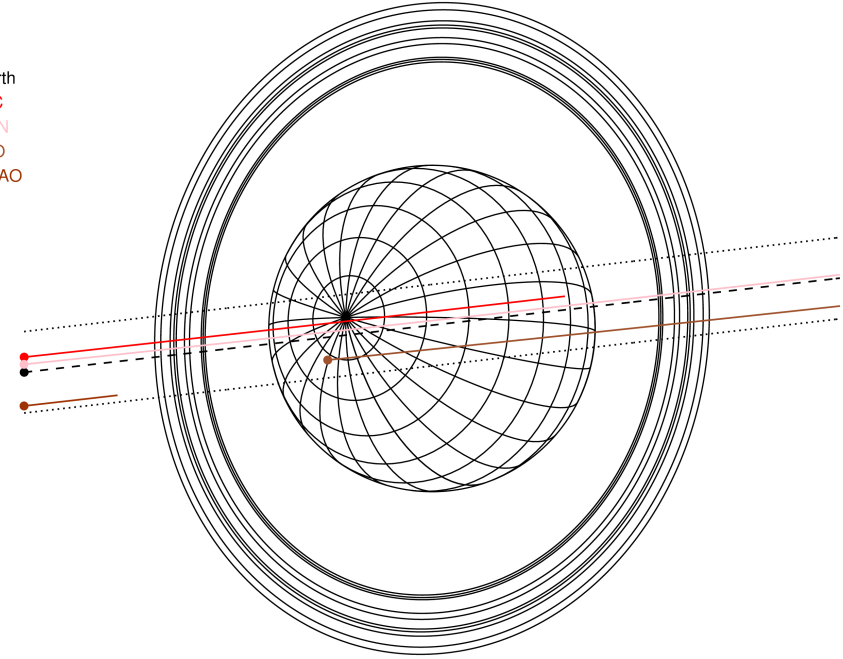
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-10-02T05:06:54.9500 ex: 07 21 58.9243 s: +22 30 38.277 C/A 0.039° PA 186.61 deg v\_sky +11.53 km/s D 18.92 AU  
 Credit: Styled after SORA/Lucky Star

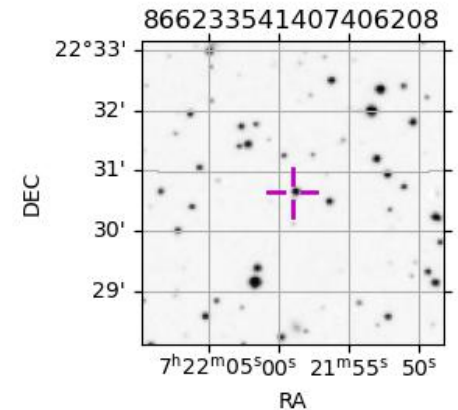
Uranus 2036-10-02T05:06:54 K12.73 G14.09 PgtRgt

Earth  
 PIC  
 TEN  
 RIO  
 SAAO

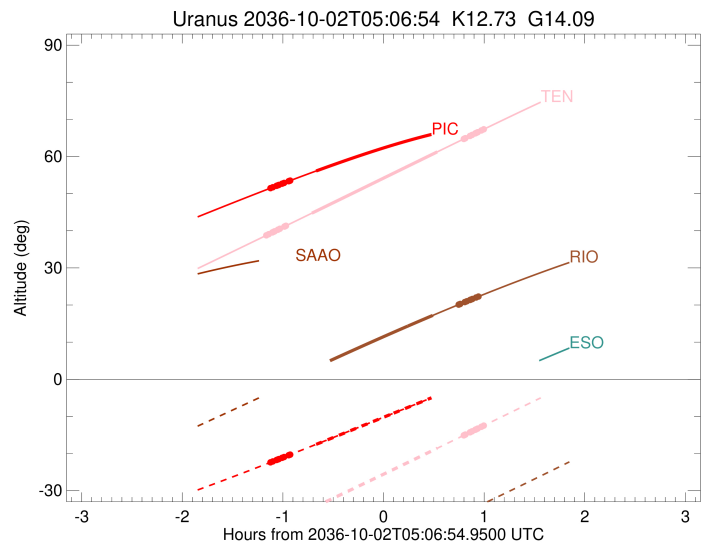
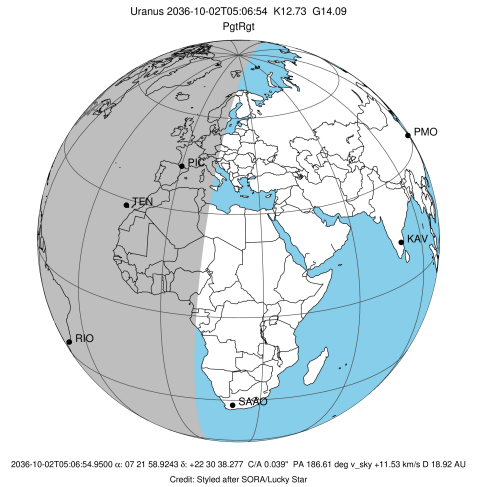


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++++	+		OCT 02 03:59 - OCT 02 04:26	PinRin
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	+++++++	+ +	+++++++	OCT 02 03:56 - OCT 02 06:06	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		+	+++++++	OCT 02 05:36 - OCT 02 06:03	PneRne
ESO	European Southern Obs	-29.3	289.3					PnnRnn
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

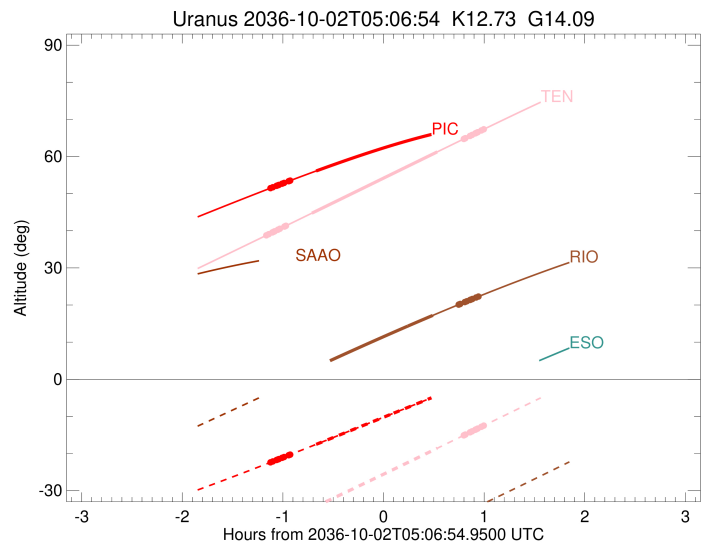
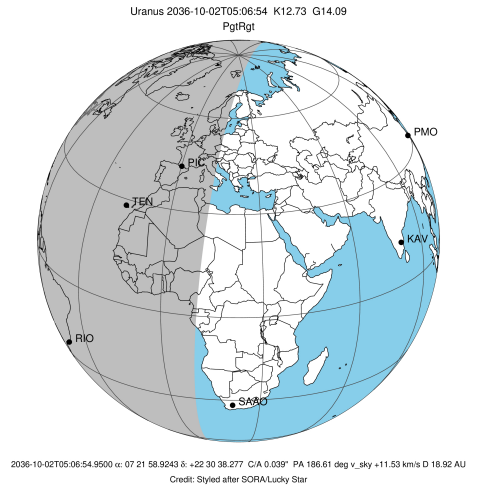


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-02T05:03:50.850  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 866233541407406208  
 2Mass ID (if available) : 07215891+2230383  
 ICRS Star Coord at Epoch: 07h 21m 58.92434s +22:30:38.27655s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 12.732  
 G magnitude : 14.085  
 RP magnitude : 13.602  
 BP magnitude : 14.401  
 DUPflag : 0  
 Distance (au) : 18.924  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 11.53  
 Sun-Target sep (deg) : 80.22  
 Sun-Moon sep (deg) : 136.57  
 B (ring opening deg) : 57.82  
 PA of pole (deg) : 82.73  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.192  
 C/A sky separation (km) : 2634.8  
 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



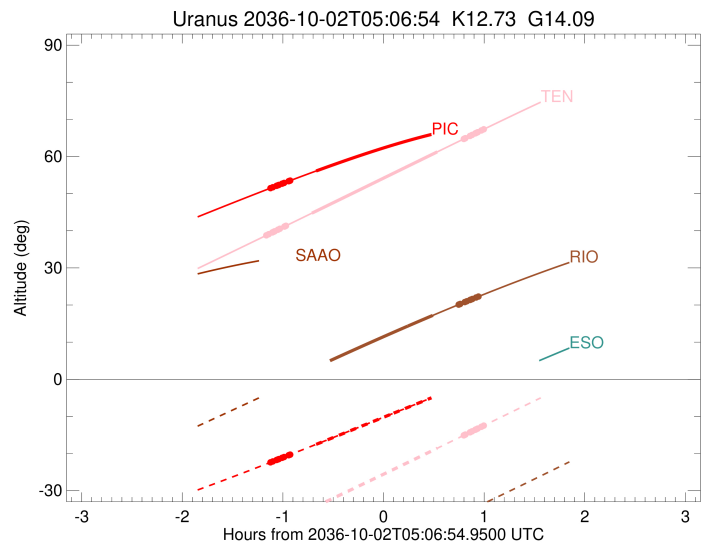
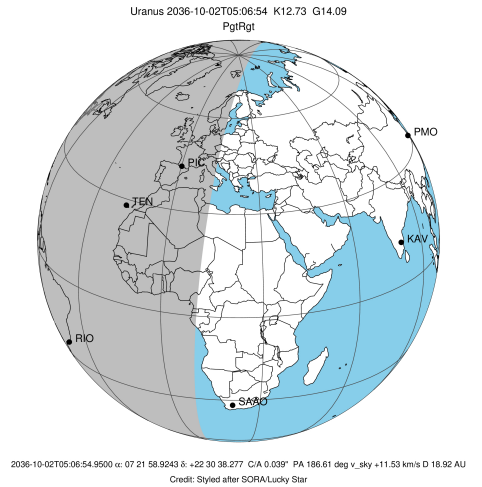
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-10-02T03:59:01.544		51.40	-22.47	51553.53	-13.20		
lambda	I	2036-10-02T04:00:57.220		51.74	-22.13	50026.71	-13.20		
delta	I	2036-10-02T04:03:08.061		52.11	-21.74	48300.35	-13.19		
gamma	I	2036-10-02T04:03:59.174		52.26	-21.59	47626.11	-13.19		
eta	I	2036-10-02T04:04:33.293		52.36	-21.49	47176.12	-13.19		
beta	I	2036-10-02T04:06:29.133		52.69	-21.15	45646.84	-13.18		
alpha	I	2036-10-02T04:07:36.729		52.89	-20.95	44752.32	-13.18		
4	I	2036-10-02T04:10:25.701		53.37	-20.45	42537.05	-13.17		
5	I	2036-10-02T04:10:44.213		53.42	-20.40	42310.82	-13.18		
6	I	2036-10-02T04:11:20.561		53.53	-20.29	41804.74	-13.17		
Uranus	I	2036-10-02T04:26:43.860		56.11	-17.54	25147.94		31.85	33.05
Uranus	E	2036-10-02T05:41:07.877		66.56	-3.97x	25187.75		-30.06	-31.22
6	E	2036-10-02T05:57:11.619		68.04	-1.02x	41872.90	13.06		
5	E	2036-10-02T05:57:31.644		68.06	-0.96x	42163.07	13.07		
4	E	2036-10-02T05:58:06.546		68.11	-0.86x	42601.46	13.06		
alpha	E	2036-10-02T06:00:46.808		68.31	-0.37x	44684.64	13.06		
beta	E	2036-10-02T06:02:02.245		68.40	-0.14x	45673.71	13.06		
eta	E	2036-10-02T06:03:57.119		68.53	0.21x	47176.12	13.06		
gamma	E	2036-10-02T06:04:31.547		68.57	0.32x	47625.83	13.06		
delta	E	2036-10-02T06:05:23.185		68.63	0.47x	48300.35	13.06		
lambda	E	2036-10-02T06:07:35.344		68.77	0.88x	50026.71	13.06		
epsilon	E	2036-10-02T06:08:30.219		68.82	1.04x	50743.54	13.06		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-02T05:01:28.220  
 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 : 866233541407406208  
 2Mass ID (if available) : 07215891+2230383  
 ICRS Star Coord at Epoch: 07h 21m 58.92434s +22:30:38.27655s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 12.732  
 G magnitude : 14.085  
 RP magnitude : 13.602  
 BP magnitude : 14.401  
 DUPflag : 0  
 Distance (au) : 18.924  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 11.53  
 Sun-Target sep (deg) : 80.22  
 Sun-Moon sep (deg) : 136.69  
 B (ring opening deg) : 57.82  
 PA of pole (deg) : 82.73  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.089  
 C/A sky separation (km) : 1222.4  
 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\_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	2036-10-02T03:56:32.709		38.66	-40.52	51554.32	-13.26		
lambda	I	2036-10-02T03:58:27.945		39.08	-40.13	50026.71	-13.25		
delta	I	2036-10-02T04:00:38.224		39.56	-39.68	48300.35	-13.25		
gamma	I	2036-10-02T04:01:29.108		39.75	-39.50	47626.25	-13.25		
eta	I	2036-10-02T04:02:03.091		39.87	-39.39	47176.12	-13.25		
beta	I	2036-10-02T04:03:58.405		40.29	-38.99	45647.23	-13.24		
alpha	I	2036-10-02T04:05:05.731		40.54	-38.75	44752.39	-13.24		
4	I	2036-10-02T04:07:53.897		41.15	-38.17	42537.94	-13.23		
5	I	2036-10-02T04:08:12.461		41.22	-38.11	42310.00	-13.24		
6	I	2036-10-02T04:08:48.622		41.35	-37.98	41803.93	-13.23		
Uranus	I	2036-10-02T04:24:12.414		44.74	-34.75	25154.62		31.55	32.74
Uranus	E	2036-10-02T05:38:56.489		61.25	-18.59	25173.08		-30.73	-31.90
6	E	2036-10-02T05:54:49.637		64.74	-15.10	41872.01	13.04		
5	E	2036-10-02T05:55:09.679		64.82	-15.03	42161.80	13.05		
4	E	2036-10-02T05:55:44.824		64.94	-14.90	42602.70	13.04		
alpha	E	2036-10-02T05:58:25.246		65.53	-14.31	44684.61	13.04		
beta	E	2036-10-02T05:59:40.852		65.81	-14.03	45674.24	13.04		
eta	E	2036-10-02T06:01:35.888		66.23	-13.61	47176.12	13.04		
gamma	E	2036-10-02T06:02:10.394		66.35	-13.48	47626.00	13.04		
delta	E	2036-10-02T06:03:02.117		66.54	-13.29	48300.35	13.04		
lambda	E	2036-10-02T06:05:14.548		67.02	-12.81	50026.71	13.03		
epsilon	E	2036-10-02T06:06:09.547		67.22	-12.61	50743.59	13.03		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-10-02T04:59:34.750  
 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 : 866233541407406208  
 2Mass ID (if available) : 07215891+2230383  
 ICRS Star Coord at Epoch: 07h 21m 58.92434s +22:30:38.27655s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 12.732  
 G magnitude : 14.085  
 RP magnitude : 13.602  
 BP magnitude : 14.401  
 DUPflag : 0  
 Distance (au) : 18.924  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 11.53  
 Sun-Target sep (deg) : 80.22  
 Sun-Moon sep (deg) : 136.44  
 B (ring opening deg) : 57.82  
 PA of pole (deg) : 82.73  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.236  
 C/A sky separation (km) : 3234.2  
 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\_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	2036-10-02T03:55:16.282	-3.34x	-58.01	51555.25	-13.44			
lambda	I	2036-10-02T03:57:10.015	-2.93x	-57.75	50026.71	-13.44			
delta	I	2036-10-02T03:59:18.539	-2.48x	-57.45	48300.35	-13.43			
gamma	I	2036-10-02T04:00:08.710	-2.30x	-57.33	47626.73	-13.43			
eta	I	2036-10-02T04:00:42.278	-2.18x	-57.25	47176.12	-13.42			
beta	I	2036-10-02T04:02:35.961	-1.78x	-56.98	45648.65	-13.42			
alpha	I	2036-10-02T04:03:42.501	-1.55x	-56.82	44752.40	-13.41			
4	I	2036-10-02T04:06:28.193	-0.96x	-56.41	42541.22	-13.40			
5	I	2036-10-02T04:06:47.002	-0.90x	-56.36	42306.70	-13.40			
6	I	2036-10-02T04:07:22.579	-0.77x	-56.27	41801.39	-13.39			
Uranus	I	2036-10-02T04:23:01.279	2.51x	-53.79	25190.95			29.91	31.07
Uranus	E	2036-10-02T05:36:18.655	17.21	-39.88	25144.81			-31.99	-33.19
6	E	2036-10-02T05:51:45.041	20.12	-36.65	41869.03	13.14			
5	E	2036-10-02T05:52:05.022	20.18	-36.58	42158.61	13.15			
4	E	2036-10-02T05:52:40.404	20.29	-36.46	42606.12	13.15			
alpha	E	2036-10-02T05:55:19.448	20.78	-35.89	44684.79	13.14			
beta	E	2036-10-02T05:56:34.602	21.01	-35.63	45675.75	13.14			
eta	E	2036-10-02T05:58:28.653	21.36	-35.22	47176.12	13.14			
gamma	E	2036-10-02T05:59:02.935	21.46	-35.10	47626.53	13.14			
delta	E	2036-10-02T05:59:54.222	21.62	-34.92	48300.35	13.14			
lambda	E	2036-10-02T06:02:05.638	22.02	-34.45	50026.71	13.14			
epsilon	E	2036-10-02T06:03:00.406	22.19	-34.26	50746.08	13.14			