

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-09-26T18:10:32.730  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 866235843509891968  
 2Mass ID (if available) : 07212734+2231293

Uranus 2036-09-26T18:10:32 K13.23 G14.46 PgtRgt

ICRS Star Coord at Epoch: 07h 21m 27.34426s +22:31:29.23579s

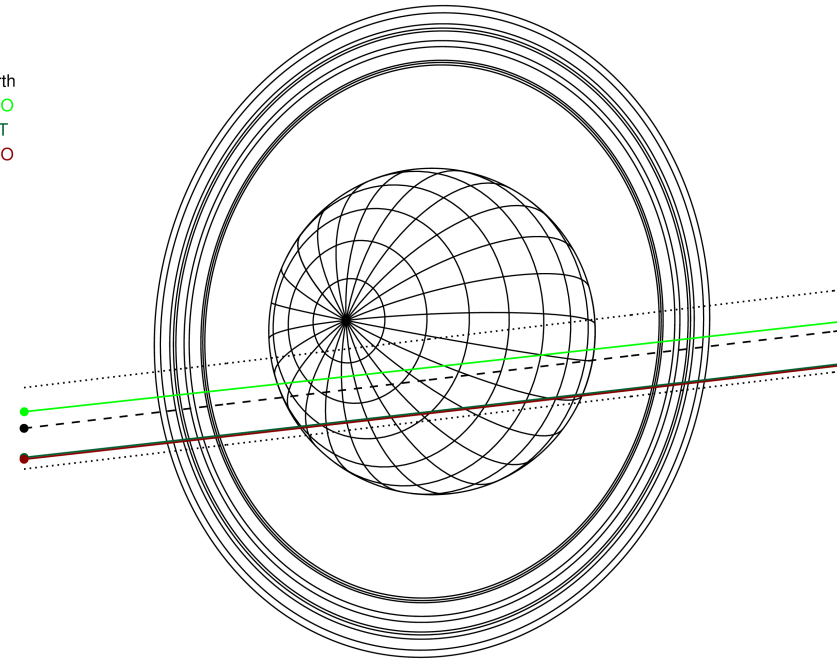
RUWE (>1.4 is poor) : 0.96  
 K magnitude : 13.232  
 G magnitude : 14.460  
 RP magnitude : 14.019  
 BP magnitude : 14.734  
 DUPflag : 0  
 Distance (au) : 19.016  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 14.18  
 Sun-Target sep (deg) : 74.98  
 Sun-Moon sep (deg) : 158.93  
 B (ring opening deg) : 57.94  
 PA of pole (deg) : 82.63

#	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



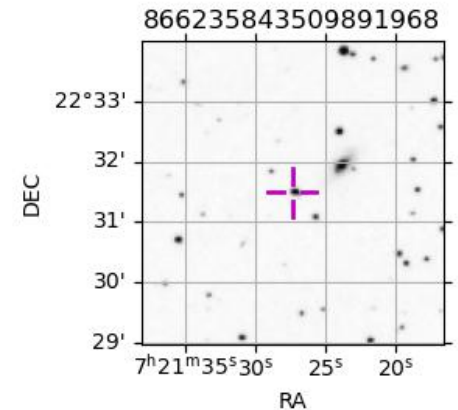
2036-09-26T18:10:32.7300 α: 07 21 27.3443 δ: +22 31 29.236 C/A 0.539° PA 6.82 deg v\_sky +14.18 km/s D 19.02 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PMO  
 AAT  
 MSO

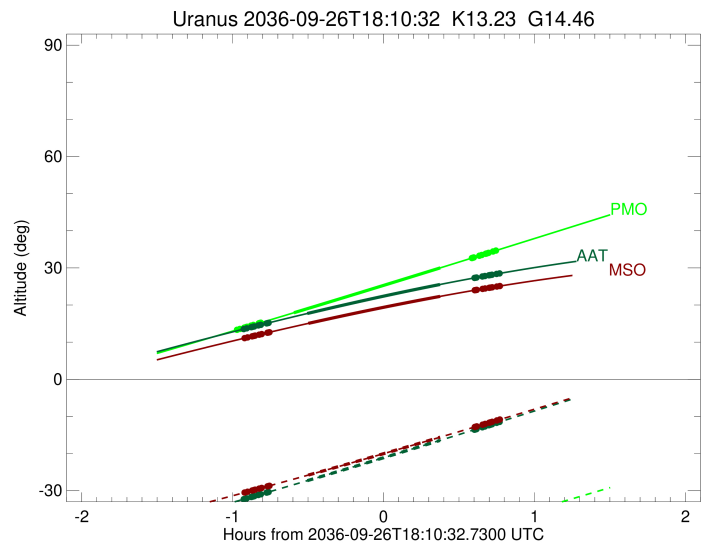
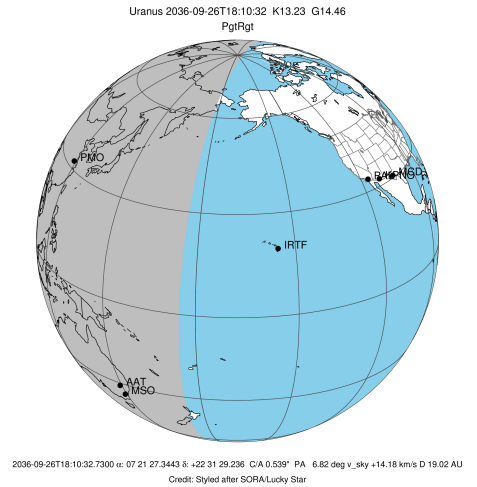


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	SEP 26 17:11 - SEP 26 18:54	PieRie
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					PnnRnn
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					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1	+++++	+ +	+++++	SEP 26 17:14 - SEP 26 18:56	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	SEP 26 17:14 - SEP 26 18:56	PieRie

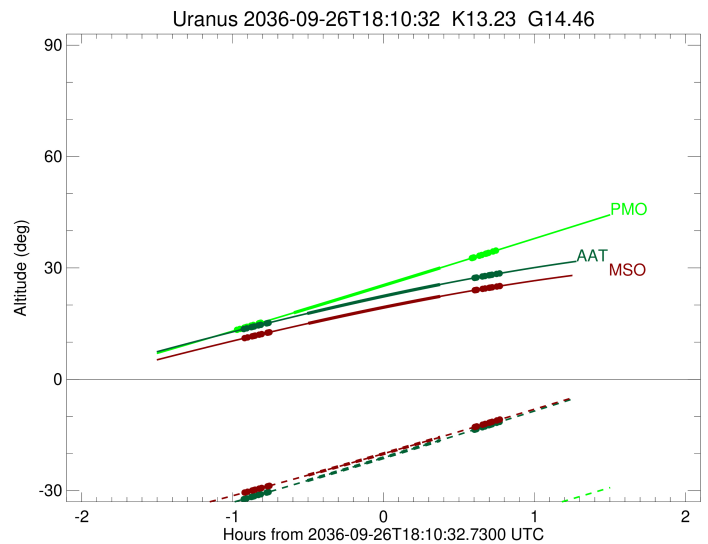
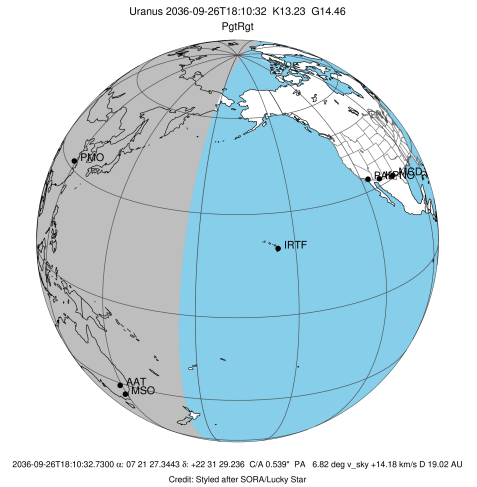


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-09-26T18:04:01.220  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PMO  
 Location : Purple Mtn Obs. Nanking  
 Latitude (deg) : 32.06667  
 E. Longitude (deg) : 118.82089  
 Altitude (km) : 0.364  
 Gaia source ID : 866235843509891968  
 2Mass ID (if available) : 07212734+2231293  
 ICRS Star Coord at Epoch: 07h 21m 27.34426s +22:31:29.23579s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 13.232  
 G magnitude : 14.460  
 RP magnitude : 14.019  
 BP magnitude : 14.734  
 DUPflag : 0  
 Distance (au) : 19.016  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 14.18  
 Sun-Target sep (deg) : 74.98  
 Sun-Moon sep (deg) : 158.40  
 B (ring opening deg) : 57.94  
 PA of pole (deg) : 82.63  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.403  
 C/A sky separation (km) : 5551.3  
 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



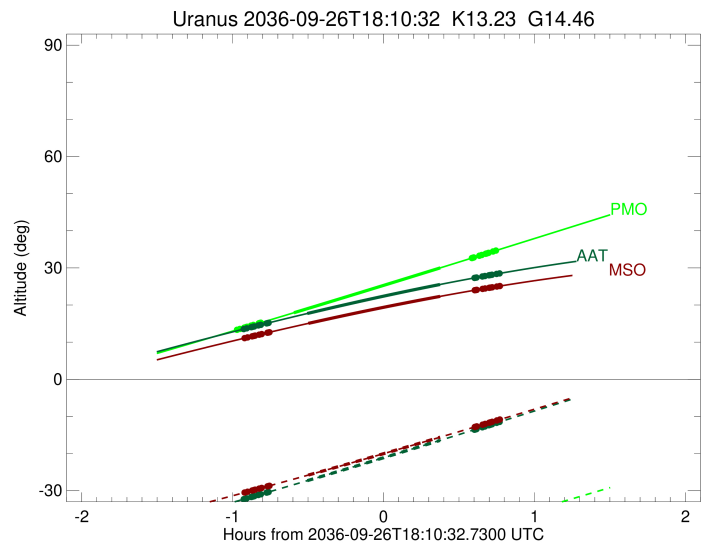
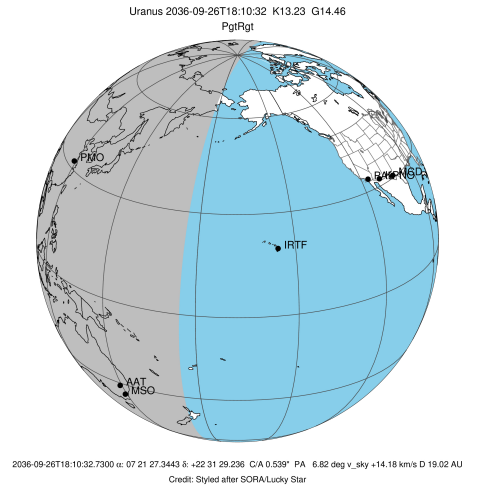
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-09-26T17:11:55.894		13.24	-54.85	51547.41	-16.48		
lambda	I	2036-09-26T17:13:28.170		13.55	-54.66	50026.71	-16.47		
delta	I	2036-09-26T17:15:12.996		13.91	-54.45	48300.35	-16.46		
gamma	I	2036-09-26T17:15:53.850		14.05	-54.36	47627.88	-16.46		
eta	I	2036-09-26T17:16:21.303		14.14	-54.30	47176.12	-16.45		
beta	I	2036-09-26T17:17:53.805		14.45	-54.11	45652.95	-16.44		
alpha	I	2036-09-26T17:18:48.495		14.64	-53.99	44750.79	-16.43		
4	I	2036-09-26T17:21:03.000		15.09	-53.71	42552.95	-16.42		
5	I	2036-09-26T17:21:19.913		15.15	-53.67	42291.91	-16.42		
6	I	2036-09-26T17:21:48.633		15.25	-53.61	41795.98	-16.41		
Uranus	I	2036-09-26T17:34:55.552		17.92	-51.80	25220.50		28.40	29.52
Uranus	E	2036-09-26T18:33:08.160		30.01	-42.21	25139.58		-32.05	-33.25
6	E	2036-09-26T18:45:41.299		32.65	-39.90	41874.28	16.21		
5	E	2036-09-26T18:45:58.016		32.71	-39.85	42165.14	16.22		
4	E	2036-09-26T18:46:25.775		32.81	-39.76	42599.73	16.22		
alpha	E	2036-09-26T18:48:35.144		33.26	-39.36	44684.67	16.22		
beta	E	2036-09-26T18:49:35.945		33.48	-39.17	45673.56	16.23		
eta	E	2036-09-26T18:51:08.436		33.80	-38.88	47176.12	16.23		
gamma	E	2036-09-26T18:51:36.140		33.90	-38.79	47625.88	16.24		
delta	E	2036-09-26T18:52:17.681		34.05	-38.66	48300.35	16.24		
lambda	E	2036-09-26T18:54:03.989		34.42	-38.32	50026.71	16.24		
epsilon	E	2036-09-26T18:54:48.129		34.58	-38.18	50743.63	16.24		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-09-26T18:06:42.060  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : AAT  
 Location : Siding Spring (AAT)  
 Latitude (deg) : -31.27703  
 E. Longitude (deg) : 149.06608  
 Altitude (km) : 1.164  
 Gaia source ID : 866235843509891968  
 2Mass ID (if available) : 07212734+2231293  
 ICRS Star Coord at Epoch: 07h 21m 27.34426s +22:31:29.23579s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 13.232  
 G magnitude : 14.460  
 RP magnitude : 14.019  
 BP magnitude : 14.734  
 DUPflag : 0  
 Distance (au) : 19.016  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 14.18  
 Sun-Target sep (deg) : 74.98  
 Sun-Moon sep (deg) : 158.51  
 B (ring opening deg) : 57.94  
 PA of pole (deg) : 82.63  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.902  
 C/A sky separation (km) : 12439.3  
 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	2036-09-26T17:14:36.543		13.45	-32.38	51532.22	-15.84		
lambda	I	2036-09-26T17:16:11.616		13.72	-32.07	50026.71	-15.82		
delta	I	2036-09-26T17:18:00.901		14.03	-31.72	48300.35	-15.78		
gamma	I	2036-09-26T17:18:43.505		14.15	-31.58	47628.63	-15.76		
eta	I	2036-09-26T17:19:12.234		14.24	-31.48	47176.12	-15.74		
beta	I	2036-09-26T17:20:48.803		14.51	-31.17	45655.96	-15.70		
alpha	I	2036-09-26T17:21:46.419		14.67	-30.98	44748.69	-15.67		
4	I	2036-09-26T17:24:06.980		15.06	-30.52	42560.25	-15.60		
5	I	2036-09-26T17:24:25.882		15.12	-30.46	42281.39	-15.59		
6	I	2036-09-26T17:24:55.481		15.20	-30.36	41794.84	-15.57		
Uranus	I	2036-09-26T17:40:14.552		17.72	-27.31	25334.04		22.73	23.69
Uranus	E	2036-09-26T18:33:00.425		25.53	-16.47	25169.43		-30.73	-31.91
6	E	2036-09-26T18:46:43.723		27.31	-13.59	41870.31	15.43		
5	E	2036-09-26T18:47:01.485		27.34	-13.53	42159.63	15.44		
4	E	2036-09-26T18:47:31.214		27.40	-13.43	42605.08	15.46		
alpha	E	2036-09-26T18:49:46.414		27.68	-12.95	44684.77	15.52		
beta	E	2036-09-26T18:50:50.123		27.81	-12.73	45675.80	15.55		
eta	E	2036-09-26T18:52:26.456		28.01	-12.39	47176.12	15.58		
gamma	E	2036-09-26T18:52:55.358		28.07	-12.29	47626.65	15.59		
delta	E	2036-09-26T18:53:38.540		28.15	-12.13	48300.35	15.61		
lambda	E	2036-09-26T18:55:29.010		28.37	-11.74	50026.71	15.65		
epsilon	E	2036-09-26T18:56:15.130		28.46	-11.58	50748.57	15.66		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-09-26T18:06:56.580  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : MSO  
 Location : Mt. Stromlo Observatory  
 Latitude (deg) : -35.32000  
 E. Longitude (deg) : 149.00833  
 Altitude (km) : 0.770  
 Gaia source ID : 866235843509891968  
 2Mass ID (if available) : 07212734+2231293  
 ICRS Star Coord at Epoch: 07h 21m 27.34426s +22:31:29.23579s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 13.232  
 G magnitude : 14.460  
 RP magnitude : 14.019  
 BP magnitude : 14.734  
 DUPflag : 0  
 Distance (au) : 19.016  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 14.18  
 Sun-Target sep (deg) : 74.98  
 Sun-Moon sep (deg) : 158.51  
 B (ring opening deg) : 57.94  
 PA of pole (deg) : 82.63  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.920  
 C/A sky separation (km) : 12694.7  
 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	2036-09-26T17:14:56.440		11.02	-30.59	51531.48	-15.83		
lambda	I	2036-09-26T17:16:31.527		11.27	-30.30	50026.71	-15.81		
delta	I	2036-09-26T17:18:20.891		11.57	-29.96	48300.35	-15.76		
gamma	I	2036-09-26T17:19:03.528		11.68	-29.83	47628.66	-15.74		
eta	I	2036-09-26T17:19:32.283		11.76	-29.74	47176.12	-15.73		
beta	I	2036-09-26T17:21:08.931		12.02	-29.45	45656.08	-15.69		
alpha	I	2036-09-26T17:22:06.619		12.17	-29.27	44748.60	-15.65		
4	I	2036-09-26T17:24:27.308		12.54	-28.84	42560.54	-15.59		
5	I	2036-09-26T17:24:46.276		12.59	-28.78	42280.95	-15.57		
6	I	2036-09-26T17:25:15.886		12.67	-28.69	41794.83	-15.55		
Uranus	I	2036-09-26T17:40:40.585		15.06	-25.80	25338.97		22.47	23.42
Uranus	E	2036-09-26T18:33:02.931		22.33	-15.61	25171.92		-30.62	-31.79
6	E	2036-09-26T18:46:49.420		23.99	-12.86	41870.14	15.41		
5	E	2036-09-26T18:47:07.211		24.02	-12.80	42159.46	15.43		
4	E	2036-09-26T18:47:36.984		24.08	-12.70	42605.27	15.45		
alpha	E	2036-09-26T18:49:52.277		24.34	-12.24	44684.79	15.51		
beta	E	2036-09-26T18:50:56.031		24.46	-12.03	45675.88	15.54		
eta	E	2036-09-26T18:52:32.410		24.64	-11.71	47176.12	15.58		
gamma	E	2036-09-26T18:53:01.326		24.69	-11.61	47626.68	15.59		
delta	E	2036-09-26T18:53:44.524		24.77	-11.47	48300.35	15.60		
lambda	E	2036-09-26T18:55:35.030		24.98	-11.09	50026.71	15.64		
epsilon	E	2036-09-26T18:56:21.181		25.06	-10.94	50748.90	15.66		