

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-09-24T16:43:42.780
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 866236530704665472
 2Mass ID (if available) : 07211376+2231513

ICRS Star Coord at Epoch: 07h 21m 13.77592s +22:31:50.97174s

RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.927
 G magnitude : 17.799
 RP magnitude : 16.809
 BP magnitude : 18.747
 DUPflag : 0
 Distance (au) : 19.050
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.17
 Sun-Target sep (deg) : 73.02
 Sun-Moon sep (deg) : 133.07
 B (ring opening deg) : 57.99
 PA of pole (deg) : 82.59

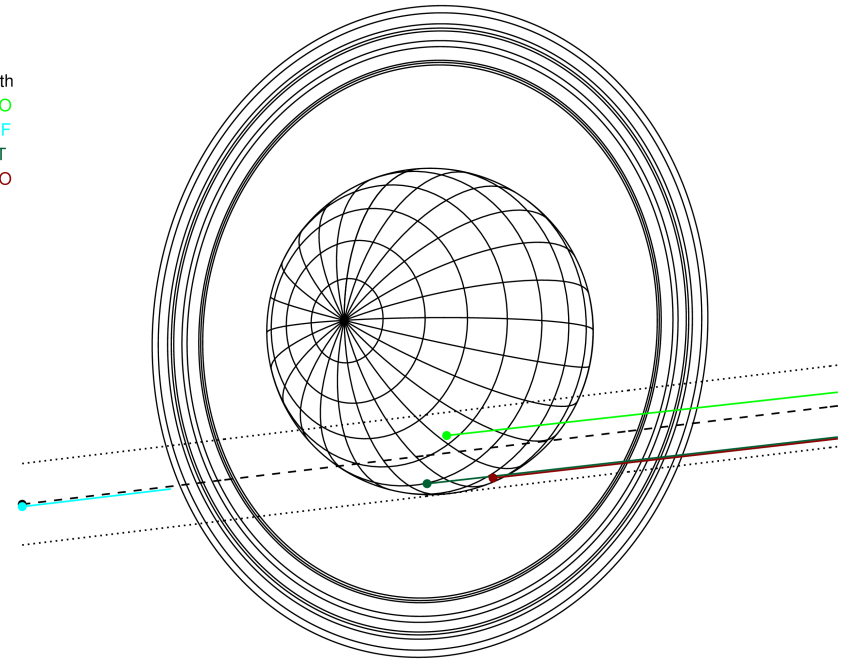
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-09-24T16:43:42.7800 α: 07 21 13.7759 β: +22 31 50.972 C/A 1.388° PA 6.88 deg v_sky +15.17 km/s D 19.05 AU
 Credit: Styled after SORA/Lucky Star

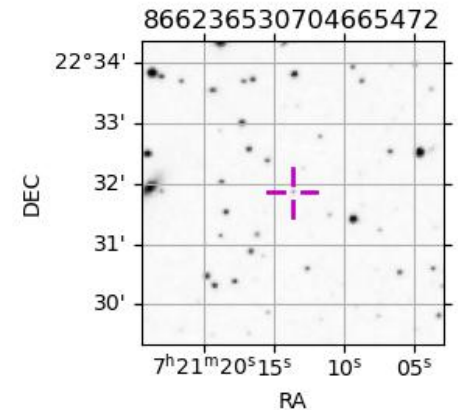
Uranus 2036-09-24T16:43:42 K14.93 G17.80 PgtRgt

Earth
 PMO
 IRTF
 AAT
 MSO

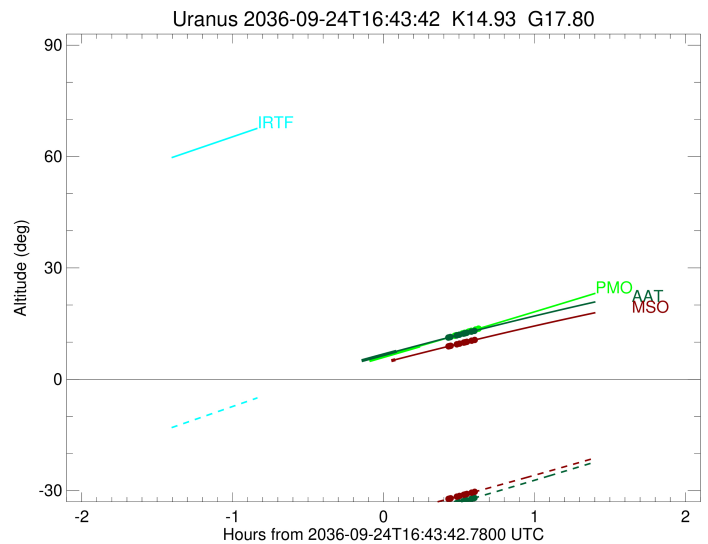
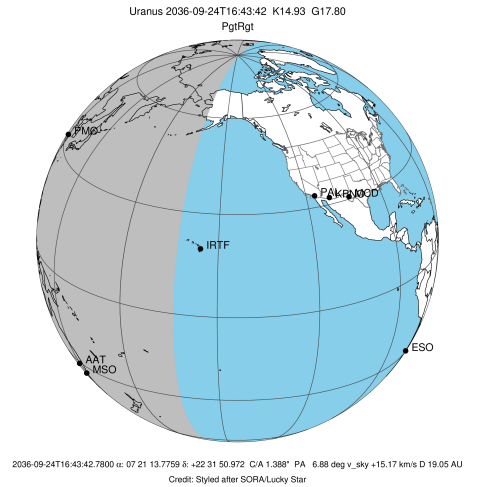


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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 24 16:58 - SEP 24 17:21	PneRne
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 24 16:48 - SEP 24 17:19	PneRne
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0		+	+++++++	SEP 24 16:48 - SEP 24 17:19	PneRne

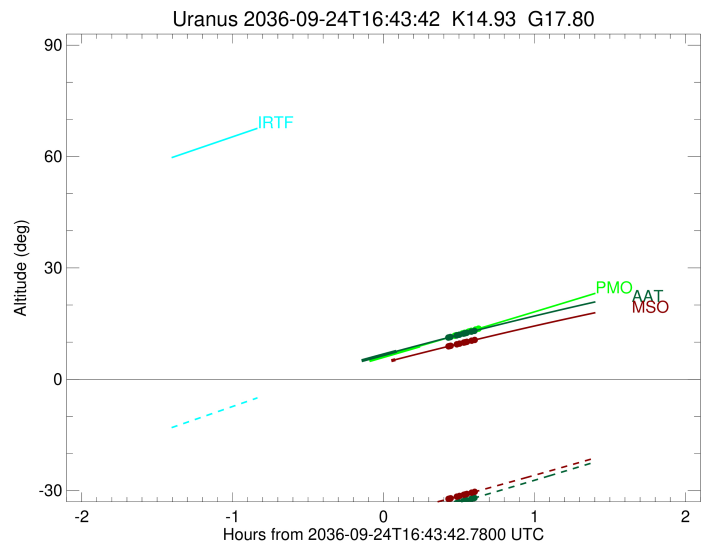
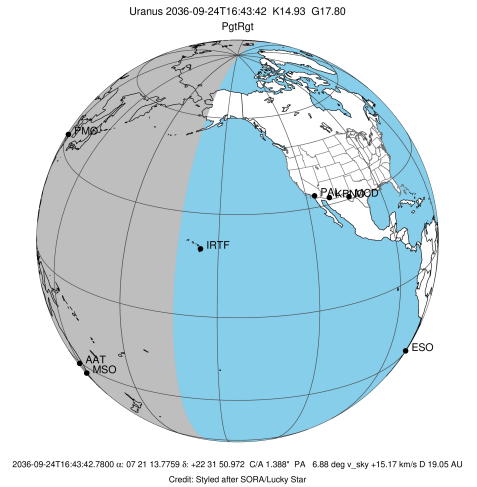


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-09-24T16:37:13.910
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 866236530704665472
 2Mass ID (if available) : 07211376+2231513
 ICRS Star Coord at Epoch: 07h 21m 13.77592s +22:31:50.97174s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.927
 G magnitude : 17.799
 RP magnitude : 16.809
 BP magnitude : 18.747
 DUPflag : 0
 Distance (au) : 19.050
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.17
 Sun-Target sep (deg) : 73.02
 Sun-Moon sep (deg) : 132.59
 B (ring opening deg) : 57.99
 PA of pole (deg) : 82.59
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.193
 C/A sky separation (km) : 16479.6
 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



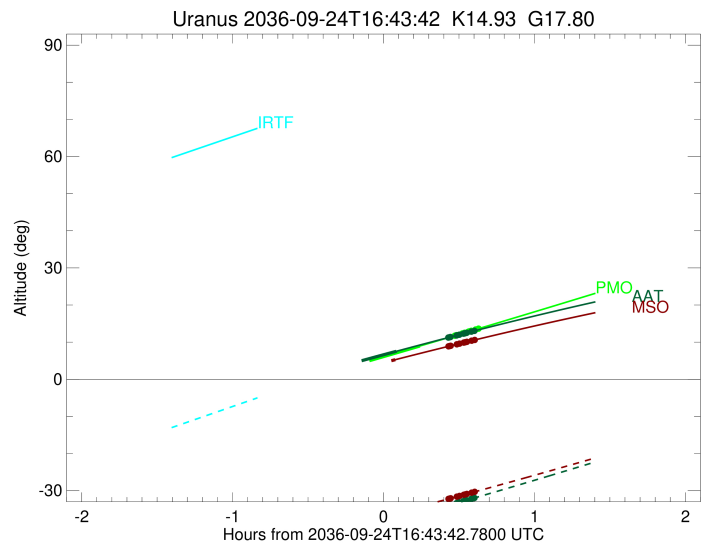
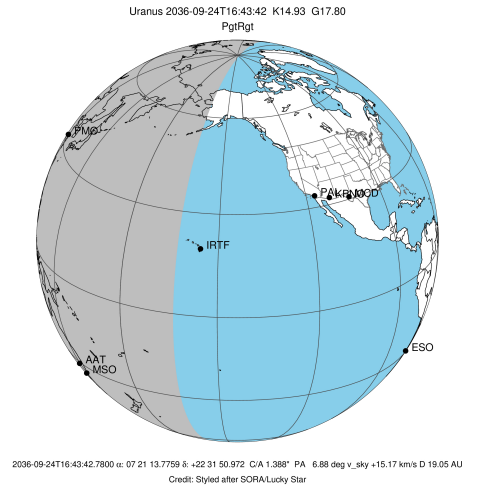
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-09-24T15:50:32.464	-4.05x	-58.95	51511.47	-16.92			
lambda	I	2036-09-24T15:52:00.256	-3.78x	-58.96	50026.71	-16.88			
delta	I	2036-09-24T15:53:42.767	-3.47x	-58.97	48300.35	-16.80			
gamma	I	2036-09-24T15:54:22.749	-3.34x	-58.97	47629.32	-16.77			
eta	I	2036-09-24T15:54:49.799	-3.26x	-58.98	47176.12	-16.74			
beta	I	2036-09-24T15:56:20.522	-2.98x	-58.98	45659.21	-16.66			
alpha	I	2036-09-24T15:57:15.257	-2.81x	-58.98	44745.59	-16.60			
4	I	2036-09-24T15:59:27.443	-2.39x	-58.97	42568.87	-16.47			
5	I	2036-09-24T15:59:46.656	-2.33x	-58.97	42267.71	-16.43			
6	I	2036-09-24T16:00:13.985	-2.25x	-58.97	41795.12	-16.40			
Uranus	I	2036-09-24T16:16:03.867	0.75x	-58.64	25412.48			18.09	18.89
Uranus	E	2036-09-24T16:58:11.263	8.96	-55.74	25224.33			-28.16	-29.27
6	E	2036-09-24T17:12:05.109	11.74	-54.23	41870.09	16.24			
5	E	2036-09-24T17:12:22.361	11.80	-54.19	42159.35	16.27			
4	E	2036-09-24T17:12:50.430	11.89	-54.14	42605.44	16.31			
alpha	E	2036-09-24T17:14:58.374	12.32	-53.88	44684.85	16.42			
beta	E	2036-09-24T17:15:58.587	12.52	-53.76	45676.14	16.48			
eta	E	2036-09-24T17:17:29.361	12.83	-53.57	47176.12	16.56			
gamma	E	2036-09-24T17:17:56.567	12.92	-53.52	47626.81	16.58			
delta	E	2036-09-24T17:18:37.161	13.05	-53.43	48300.35	16.61			
lambda	E	2036-09-24T17:20:20.885	13.40	-53.22	50026.71	16.68			
epsilon	E	2036-09-24T17:21:04.293	13.55	-53.12	50751.32	16.72			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-09-24T16:38:30.090
 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 : 866236530704665472
 2Mass ID (if available) : 07211376+2231513
 ICRS Star Coord at Epoch: 07h 21m 13.77592s +22:31:50.97174s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.927
 G magnitude : 17.799
 RP magnitude : 16.809
 BP magnitude : 18.747
 DUPflag : 0
 Distance (au) : 19.050
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.17
 Sun-Target sep (deg) : 73.02
 Sun-Moon sep (deg) : 132.65
 B (ring opening deg) : 57.99
 PA of pole (deg) : 82.59
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.710
 C/A sky separation (km) : 23632.1
 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	2036-09-24T15:53:34.192	-2.91x	-47.49	51478.76	-15.61			
lambda	I	2036-09-24T15:55:07.396	-2.60x	-47.24	50026.71	-15.51			
delta	I	2036-09-24T15:56:59.283	-2.24x	-46.95	48300.35	-15.34			
gamma	I	2036-09-24T15:57:43.076	-2.10x	-46.83	47630.00	-15.27			
eta	I	2036-09-24T15:58:12.848	-2.00x	-46.75	47176.12	-15.22			
beta	I	2036-09-24T15:59:52.750	-1.68x	-46.48	45662.78	-15.04			
alpha	I	2036-09-24T16:00:54.039	-1.48x	-46.32	44741.42	-14.91			
4	I	2036-09-24T16:03:20.990	-1.01x	-45.92	42577.66	-14.62			
5	I	2036-09-24T16:03:44.139	-0.93x	-45.86	42252.77	-14.54			
6	I	2036-09-24T16:04:14.036	-0.84x	-45.78	41797.06	-14.48			
Uranus	I	2036-09-24T16:27:43.102	3.63x	-41.77	25549.57			4.50	4.72
Uranus	E	2036-09-24T16:48:54.056	7.55	-37.91	25415.52			-17.89	-18.68
6	E	2036-09-24T17:09:28.297	11.23	-34.00	41864.23	14.35			
5	E	2036-09-24T17:09:48.382	11.29	-33.94	42155.66	14.41			
4	E	2036-09-24T17:10:20.392	11.38	-33.83	42610.46	14.49			
alpha	E	2036-09-24T17:12:43.167	11.80	-33.37	44686.09	14.77			
beta	E	2036-09-24T17:13:50.065	11.99	-33.15	45678.23	14.90			
eta	E	2036-09-24T17:15:30.033	12.28	-32.83	47176.12	15.07			
gamma	E	2036-09-24T17:15:59.956	12.37	-32.73	47627.67	15.12			
delta	E	2036-09-24T17:16:44.360	12.50	-32.59	48300.35	15.18			
lambda	E	2036-09-24T17:18:37.452	12.82	-32.22	50026.71	15.34			
epsilon	E	2036-09-24T17:19:25.652	12.96	-32.06	50767.86	15.43			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-09-24T16:38:48.060
 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 : 866236530704665472
 2Mass ID (if available) : 07211376+2231513
 ICRS Star Coord at Epoch: 07h 21m 13.77592s +22:31:50.97174s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.927
 G magnitude : 17.799
 RP magnitude : 16.809
 BP magnitude : 18.747
 DUPflag : 0
 Distance (au) : 19.050
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 15.17
 Sun-Target sep (deg) : 73.02
 Sun-Moon sep (deg) : 132.64
 B (ring opening deg) : 57.99
 PA of pole (deg) : 82.59
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.731
 C/A sky separation (km) : 23912.9
 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_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	2036-09-24T15:54:00.271	-4.54x	-44.62	51477.19	-15.56			
lambda	I	2036-09-24T15:55:33.670	-4.25x	-44.40	50026.71	-15.46			
delta	I	2036-09-24T15:57:25.945	-3.90x	-44.13	48300.35	-15.29			
gamma	I	2036-09-24T15:58:09.899	-3.76x	-44.02	47630.03	-15.21			
eta	I	2036-09-24T15:58:39.786	-3.67x	-43.95	47176.12	-15.16			
beta	I	2036-09-24T16:00:20.086	-3.36x	-43.71	45662.93	-14.98			
alpha	I	2036-09-24T16:01:21.668	-3.17x	-43.56	44741.23	-14.85			
4	I	2036-09-24T16:03:49.288	-2.72x	-43.19	42578.03	-14.54			
5	I	2036-09-24T16:04:12.623	-2.64x	-43.13	42252.10	-14.46			
6	I	2036-09-24T16:04:42.638	-2.55x	-43.06	41797.18	-14.40			
Uranus	I	2036-09-24T16:28:48.216	1.82x	-39.28	25552.98			3.60	3.77
Uranus	E	2036-09-24T16:48:24.415	5.28	-35.97	25427.25			-17.12	-17.88
6	E	2036-09-24T17:09:32.498	8.87	-32.23	41863.96	14.28			
5	E	2036-09-24T17:09:52.716	8.93	-32.16	42155.57	14.34			
4	E	2036-09-24T17:10:24.892	9.02	-32.07	42610.64	14.42			
alpha	E	2036-09-24T17:12:48.295	9.41	-31.63	44686.17	14.71			
beta	E	2036-09-24T17:13:55.463	9.60	-31.43	45678.30	14.84			
eta	E	2036-09-24T17:15:35.792	9.87	-31.12	47176.12	15.01			
gamma	E	2036-09-24T17:16:05.819	9.95	-31.03	47627.71	15.06			
delta	E	2036-09-24T17:16:50.367	10.08	-30.90	48300.35	15.13			
lambda	E	2036-09-24T17:18:43.800	10.39	-30.55	50026.71	15.30			
epsilon	E	2036-09-24T17:19:32.189	10.52	-30.40	50768.70	15.39			