

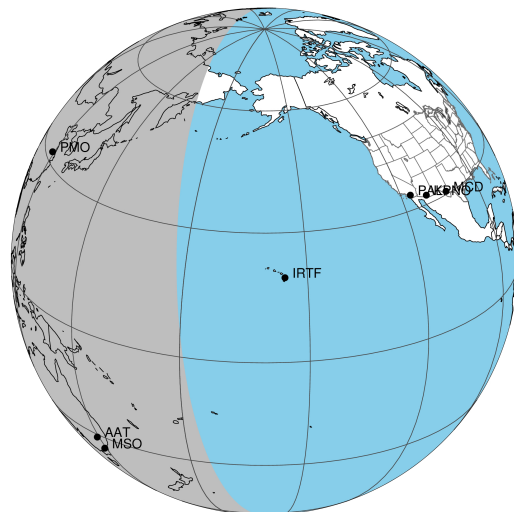
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-02T17:56:45.930
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424684433660980864
 2Mass ID (if available) : 06030555+2337074

Uranus 2032-09-02T17:56:45 K12.66 G16.22 PgtRgt

ICRS Star Coord at Epoch: 06h 03m 05.55578s +23:37:07.41223s

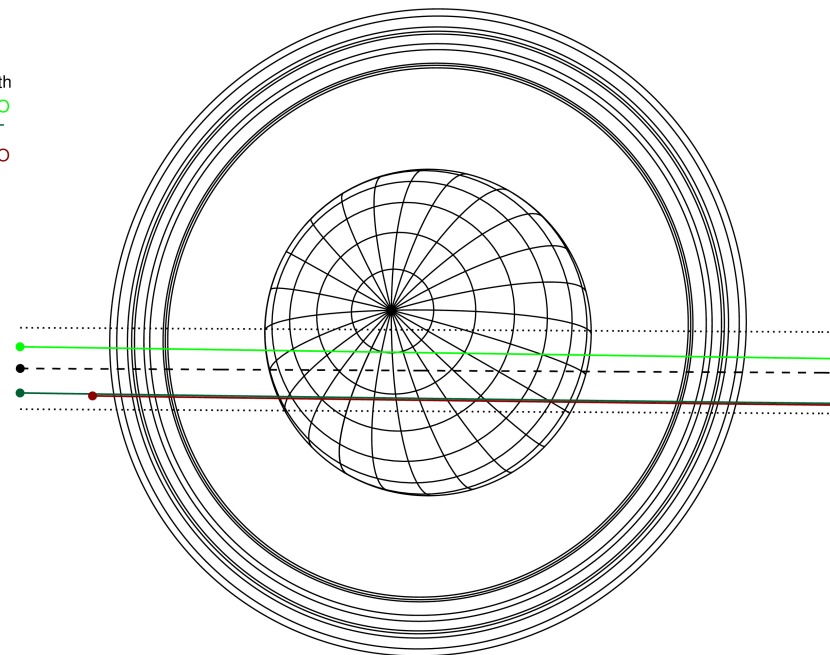
RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.665
 G magnitude : 16.223
 RP magnitude : 15.186
 BP magnitude : 17.315
 DUPflag : 0
 Distance (au) : 19.366
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.73
 Sun-Target sep (deg) : 69.65
 Sun-Moon sep (deg) : 46.74
 B (ring opening deg) : 74.77
 PA of pole (deg) : 58.77

Uranus 2032-09-02T17:56:45 K12.66 G16.22
 PgtRgt



2032-09-02T17:56:45.9300 ex: 06 03 05.5558 s: +23 37 07.412 C/A 0.421'' PA 359.69 deg v_sky +16.73 km/s D 19.37 AU
 Credit: Styled after SORA/Lucky Star

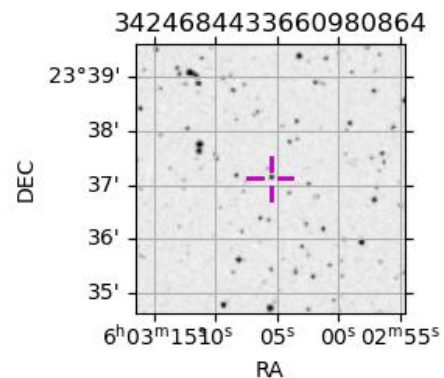
Earth
 PMO
 AAT
 MSO



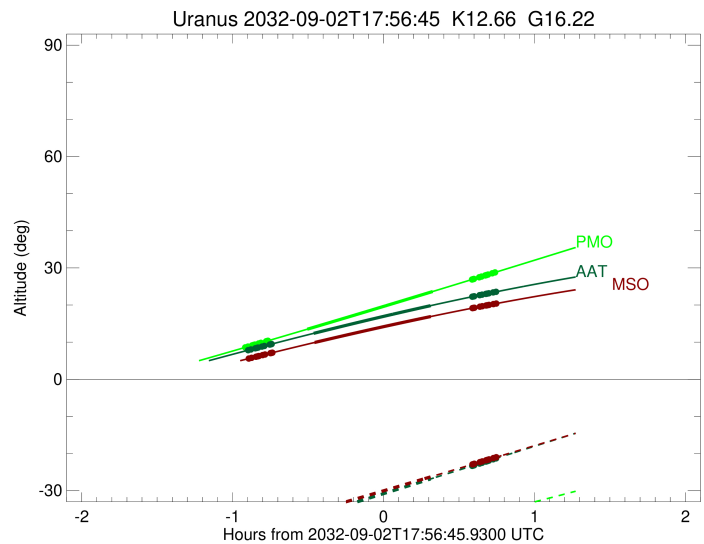
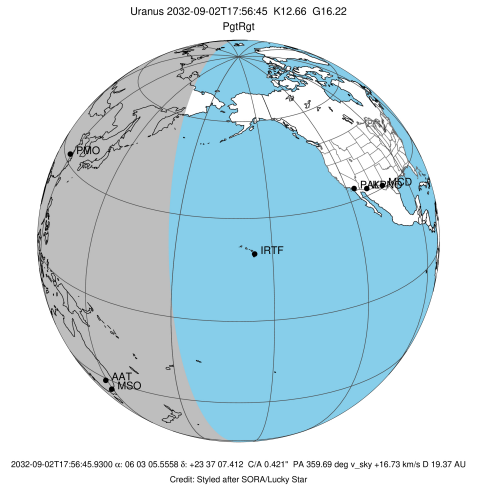
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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 02 17:02 - SEP 02 18:41	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 02 17:03 - SEP 02 18:41	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	SEP 02 17:03 - SEP 02 18:41	PieRie

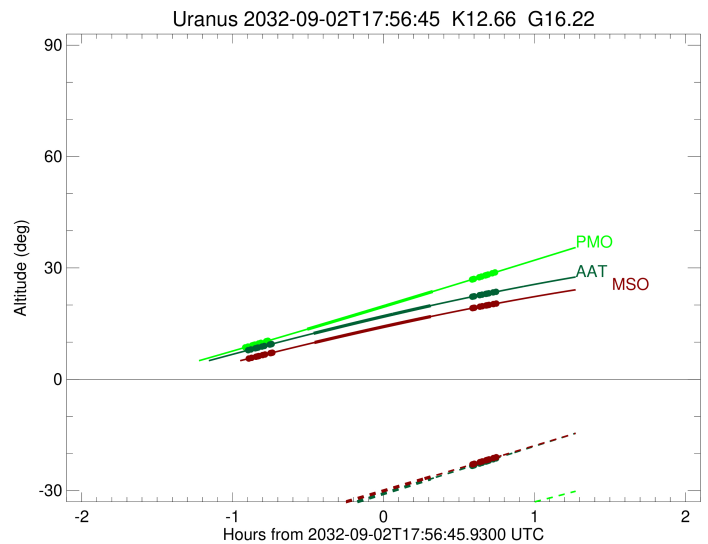
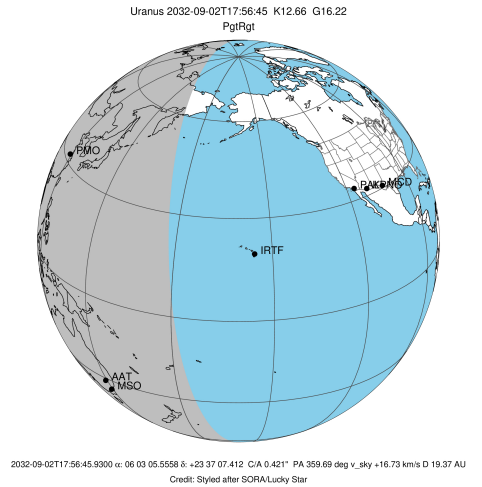


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-02T17:51:24.120
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3424684433660980864
 2Mass ID (if available) : 06030555+2337074
 ICRS Star Coord at Epoch: 06h 03m 05.55578s +23:37:07.41223s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.665
 G magnitude : 16.223
 RP magnitude : 15.186
 BP magnitude : 17.315
 DUPflag : 0
 Distance (au) : 19.367
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.73
 Sun-Target sep (deg) : 69.65
 Sun-Moon sep (deg) : 47.51
 B (ring opening deg) : 74.77
 PA of pole (deg) : 58.77
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.226
 C/A sky separation (km) : 3173.6
 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



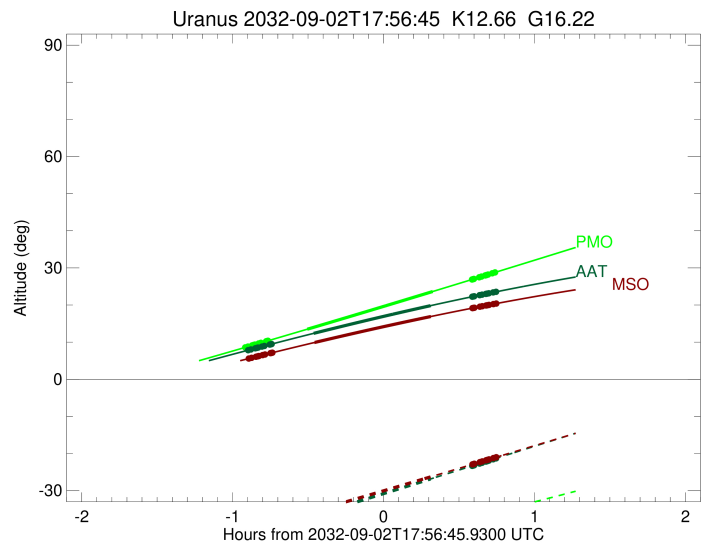
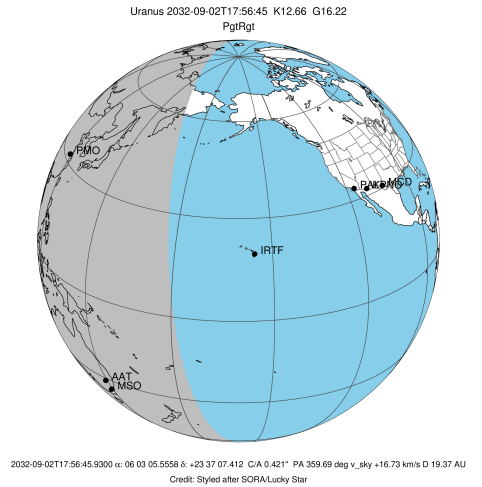
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-09-02T17:02:02.998		8.64	-48.23	50907.60	-17.21		
lambda	I	2032-09-02T17:02:54.220		8.80	-48.16	50026.71	-17.20		
delta	I	2032-09-02T17:04:34.632		9.13	-48.03	48300.35	-17.19		
gamma	I	2032-09-02T17:05:13.542		9.26	-47.98	47631.55	-17.19		
eta	I	2032-09-02T17:05:40.042		9.35	-47.94	47176.12	-17.19		
beta	I	2032-09-02T17:07:07.162		9.63	-47.82	45680.12	-17.18		
alpha	I	2032-09-02T17:08:01.138		9.81	-47.74	44750.29	-17.17		
4	I	2032-09-02T17:10:09.918		10.24	-47.55	42535.67	-17.16		
5	I	2032-09-02T17:10:25.217		10.29	-47.53	42287.22	-17.17		
6	I	2032-09-02T17:10:49.931		10.37	-47.49	41861.54	-17.17		
Uranus	I	2032-09-02T17:26:26.900		13.48	-45.97	25212.84		12.01	12.57
Uranus	E	2032-09-02T18:16:18.822		23.64	-39.54	25095.69		-13.98	-14.62
6	E	2032-09-02T18:31:56.215		26.87	-37.14	41818.59	17.00		
5	E	2032-09-02T18:32:16.943		26.94	-37.08	42173.97	17.00		
4	E	2032-09-02T18:32:43.046		27.04	-37.01	42602.08	16.99		
alpha	E	2032-09-02T18:34:45.411		27.46	-36.69	44685.37	16.99		
beta	E	2032-09-02T18:35:41.519		27.65	-36.54	45641.43	16.99		
eta	E	2032-09-02T18:37:11.882		27.97	-36.29	47176.12	16.99		
gamma	E	2032-09-02T18:37:38.058		28.06	-36.22	47620.96	16.99		
delta	E	2032-09-02T18:38:18.035		28.20	-36.12	48300.35	16.99		
lambda	E	2032-09-02T18:39:59.622		28.55	-35.84	50026.71	16.99		
epsilon	E	2032-09-02T18:41:22.017		28.84	-35.62	51426.89	17.00		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-02T17:52:24.920
 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 : 3424684433660980864
 2Mass ID (if available) : 06030555+2337074
 ICRS Star Coord at Epoch: 06h 03m 05.55578s +23:37:07.41223s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.665
 G magnitude : 16.223
 RP magnitude : 15.186
 BP magnitude : 17.315
 DUPflag : 0
 Distance (au) : 19.367
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.73
 Sun-Target sep (deg) : 69.65
 Sun-Moon sep (deg) : 47.29
 B (ring opening deg) : 74.77
 PA of pole (deg) : 58.77
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.736
 C/A sky separation (km) : 10338.1
 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	2032-09-02T17:03:08.808		7.86	-41.90	50956.84	-16.68		
lambda	I	2032-09-02T17:04:04.667		8.03	-41.72	50026.71	-16.64		
delta	I	2032-09-02T17:05:48.489		8.34	-41.37	48300.35	-16.61		
gamma	I	2032-09-02T17:06:28.773		8.46	-41.23	47631.40	-16.60		
eta	I	2032-09-02T17:06:56.208		8.54	-41.14	47176.12	-16.59		
beta	I	2032-09-02T17:08:26.594		8.80	-40.83	45678.80	-16.56		
alpha	I	2032-09-02T17:09:22.690		8.97	-40.64	44747.91	-16.54		
4	I	2032-09-02T17:11:36.776		9.36	-40.19	42531.36	-16.48		
5	I	2032-09-02T17:11:53.005		9.41	-40.13	42275.82	-16.47		
6	I	2032-09-02T17:12:17.819		9.48	-40.05	41867.29	-16.47		
Uranus	I	2032-09-02T17:29:01.126		12.37	-36.61	25371.36		8.77	9.18
Uranus	E	2032-09-02T18:15:28.693		19.83	-26.86	25019.85		-15.15	-15.83
6	E	2032-09-02T18:32:00.934		22.24	-23.34	41825.45	16.33		
5	E	2032-09-02T18:32:21.474		22.29	-23.26	42165.98	16.33		
4	E	2032-09-02T18:32:48.778		22.35	-23.17	42596.01	16.34		
alpha	E	2032-09-02T18:34:56.136		22.65	-22.71	44684.66	16.39		
beta	E	2032-09-02T18:35:54.324		22.78	-22.51	45641.07	16.41		
eta	E	2032-09-02T18:37:27.863		23.00	-22.17	47176.12	16.43		
gamma	E	2032-09-02T18:37:54.930		23.06	-22.08	47621.04	16.44		
delta	E	2032-09-02T18:38:36.231		23.16	-21.93	48300.35	16.45		
lambda	E	2032-09-02T18:40:21.078		23.40	-21.56	50026.71	16.48		
epsilon	E	2032-09-02T18:41:48.351		23.60	-21.25	51465.62	16.51		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-02T17:52:36.510
 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 : 3424684433660980864
 2Mass ID (if available) : 06030555+2337074
 ICRS Star Coord at Epoch: 06h 03m 05.55578s +23:37:07.41223s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.665
 G magnitude : 16.223
 RP magnitude : 15.186
 BP magnitude : 17.315
 DUPflag : 0
 Distance (au) : 19.367
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.73
 Sun-Target sep (deg) : 69.65
 Sun-Moon sep (deg) : 47.24
 B (ring opening deg) : 74.77
 PA of pole (deg) : 58.77
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.756
 C/A sky separation (km) : 10620.1
 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_itrff93_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	2032-09-02T17:03:24.941		5.62	-40.43	50959.00	-16.67		
lambda	I	2032-09-02T17:04:20.973		5.78	-40.26	50026.71	-16.63		
delta	I	2032-09-02T17:06:04.883		6.07	-39.93	48300.35	-16.60		
gamma	I	2032-09-02T17:06:45.205		6.18	-39.80	47631.39	-16.58		
eta	I	2032-09-02T17:07:12.665		6.26	-39.72	47176.12	-16.57		
beta	I	2032-09-02T17:08:43.145		6.51	-39.43	45678.74	-16.54		
alpha	I	2032-09-02T17:09:39.305		6.67	-39.25	44747.79	-16.52		
4	I	2032-09-02T17:11:53.557		7.04	-38.82	42531.20	-16.46		
5	I	2032-09-02T17:12:09.822		7.09	-38.77	42275.31	-16.45		
6	I	2032-09-02T17:12:34.627		7.16	-38.69	41867.52	-16.45		
Uranus	I	2032-09-02T17:29:20.897		9.90	-35.46	25377.81		8.62	9.02
Uranus	E	2032-09-02T18:15:31.296		16.90	-26.28	25018.58		-15.16	-15.85
6	E	2032-09-02T18:32:05.841		19.16	-22.93	41825.73	16.32		
5	E	2032-09-02T18:32:26.364		19.21	-22.86	42165.71	16.32		
4	E	2032-09-02T18:32:53.696		19.27	-22.76	42595.76	16.32		
alpha	E	2032-09-02T18:35:01.179		19.55	-22.33	44684.64	16.38		
beta	E	2032-09-02T18:35:59.410		19.67	-22.14	45641.06	16.40		
eta	E	2032-09-02T18:37:33.010		19.88	-21.82	47176.12	16.42		
gamma	E	2032-09-02T18:38:00.093		19.94	-21.73	47621.05	16.43		
delta	E	2032-09-02T18:38:41.416		20.02	-21.59	48300.35	16.44		
lambda	E	2032-09-02T18:40:26.312		20.25	-21.23	50026.71	16.47		
epsilon	E	2032-09-02T18:41:53.701		20.43	-20.93	51466.98	16.51		