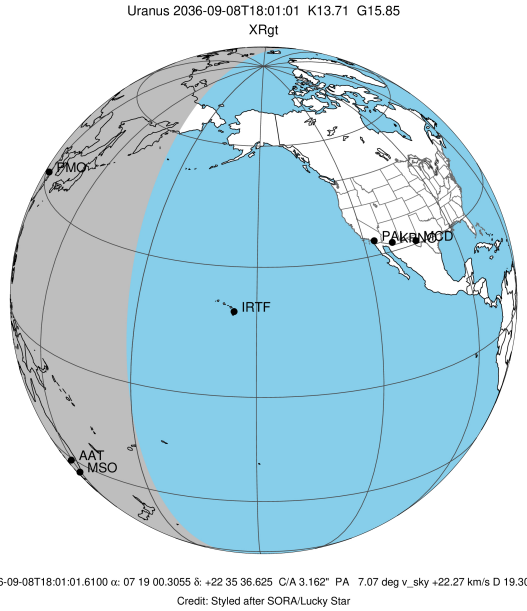
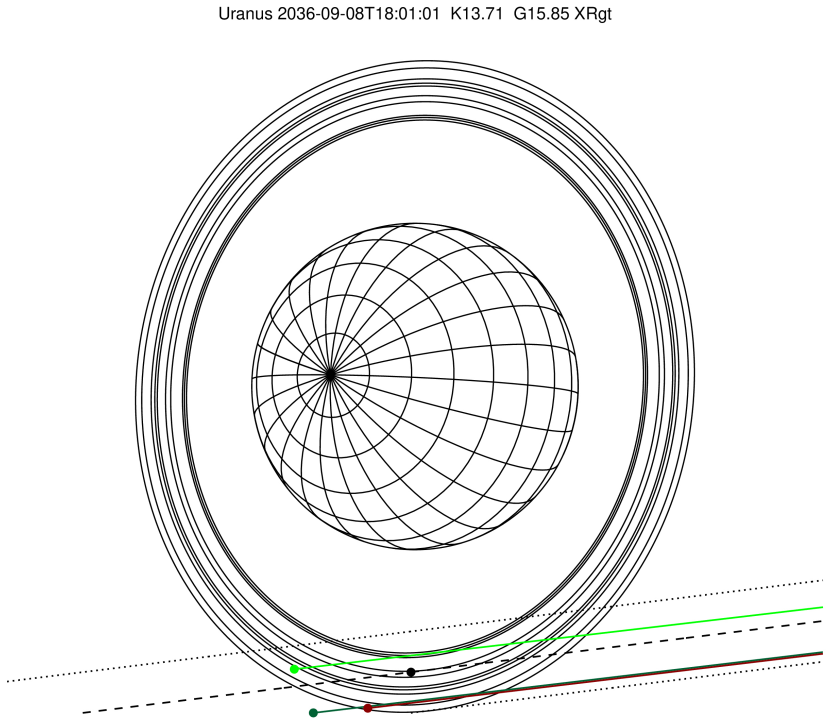
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 01:55:20 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-09-08T18:01:01.610
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Gaia source ID : 869228508002364544
2Mass ID (if available) : 07190038+2235370

ICRS Star Coord at Epoch: 07h 19m 00.30549s +22:35:36.62549s
RUWE (>1.4 is poor) : 1.12
K magnitude : 13.712
G magnitude : 15.851
RP magnitude : 15.195
BP magnitude : 16.346
DUPflag : 0
Distance (au) : 19.299
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 22.27
Sun-Target sep (deg) : 57.98
Sun-Moon sep (deg) : 88.65
B (ring opening deg) : 58.49
PA of pole (deg) : 82.16

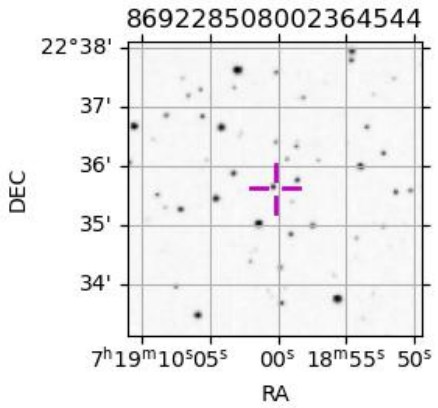
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon





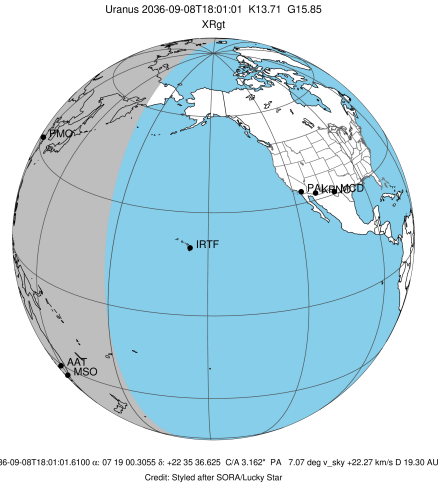
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

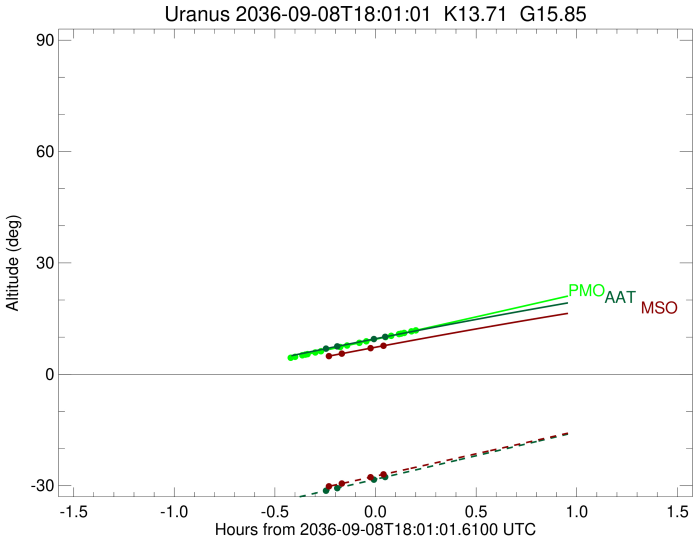
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++++		+++++++++	SEP 08 17:39 - SEP 08 18:12	PnnRie
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald 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 08 17:46 - SEP 08 18:03	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+		++	SEP 08 17:51 - SEP 08 18:02	PnnRie



Uranus_2036-09-08T18_01_01.6100_PMO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:21:00 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-09-08T17:56:29.760
Event type : XRgt
: No Uranus occs
: 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 : 869228508002364544
2Mass ID (if available) : 07190038+2235370
ICRS Star Coord at Epoch: 07h 19m 00.30549s +22:35:36.62549s
RUWE (>1.4 is poor) : 1.12
K magnitude : 13.712
G magnitude : 15.851
RP magnitude : 15.195
BP magnitude : 16.346
DUPflag : 0
Distance (au) : 19.299
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 22.27
Sun-Target sep (deg) : 57.98
Sun-Moon sep (deg) : 88.78
B (ring opening deg) : 58.49
PA of pole (deg) : 82.16
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.985
C/A sky separation (km) : 41776.2
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.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

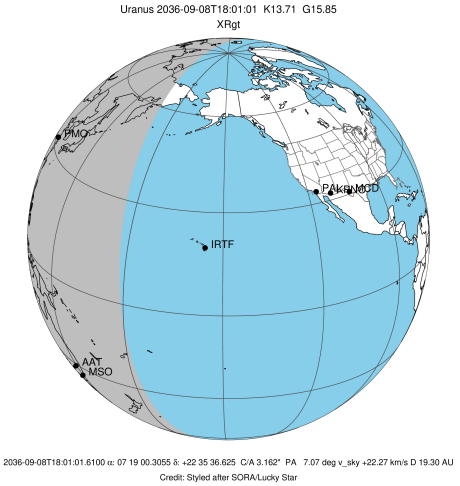
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-09-08T17:35:44.207		4.44x	-46.66	51177.85	-14.54		
lambda	I	2036-09-08T17:37:04.446		4.70x	-46.50	50026.71	-13.97		
delta	I	2036-09-08T17:39:13.979		5.12	-46.23	48300.35	-12.66		
gamma	I	2036-09-08T17:40:08.056		5.30	-46.12	47631.39	-12.07		
eta	I	2036-09-08T17:40:46.444		5.42	-46.04	47176.12	-11.64		
beta	I	2036-09-08T17:43:04.532		5.88	-45.74	45680.39	-9.99		
alpha	I	2036-09-08T17:44:49.647		6.22	-45.51	44700.98	-8.60		
4	I	2036-09-08T17:50:22.509		7.31	-44.78	42616.17	-3.79		
5	I	2036-09-08T17:54:06.810		8.05	-44.27	42160.74	-0.46		

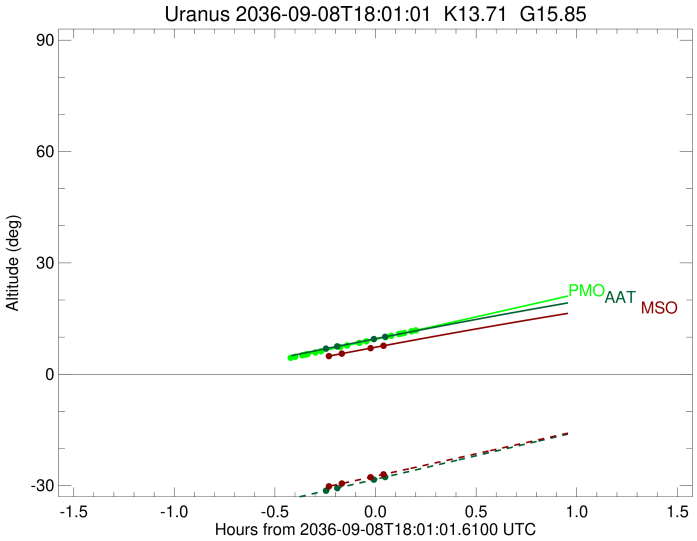
No planet occultations

5	E	2036-09-08T17:54:39.980		8.16	-44.19	42160.53	0.46		
4	E	2036-09-08T17:58:22.627		8.89	-43.67	42612.54	3.79		
alpha	E	2036-09-08T18:03:55.067		10.00	-42.87	44686.68	8.59		
beta	E	2036-09-08T18:05:42.254		10.35	-42.61	45678.77	9.97		
eta	E	2036-09-08T18:08:00.994		10.82	-42.27	47176.12	11.61		
gamma	E	2036-09-08T18:08:39.202		10.94	-42.17	47628.02	12.04		
delta	E	2036-09-08T18:09:33.708		11.13	-42.03	48300.35	12.63		
lambda	E	2036-09-08T18:11:43.632		11.56	-41.71	50026.71	13.93		
epsilon	E	2036-09-08T18:12:37.067		11.74	-41.57	50784.15	14.50		

Uranus_2036-09-08T18_01_01.6100_AAT.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:38:12 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-09-08T17:57:35.580
Event type : XRgt
: No Uranus occs
: 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 : 869228508002364544
2Mass ID (if available) : 07190038+2235370
ICRS Star Coord at Epoch: 07h 19m 00.30549s +22:35:36.62549s
RUWE (>1.4 is poor) : 1.12
K magnitude : 13.712
G magnitude : 15.851
RP magnitude : 15.195
BP magnitude : 16.346
DUPflag : 0
Distance (au) : 19.299
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 22.27
Sun-Target sep (deg) : 57.98
Sun-Moon sep (deg) : 88.79
B (ring opening deg) : 58.49
PA of pole (deg) : 82.16
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.492
C/A sky separation (km) : 48881.7
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.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

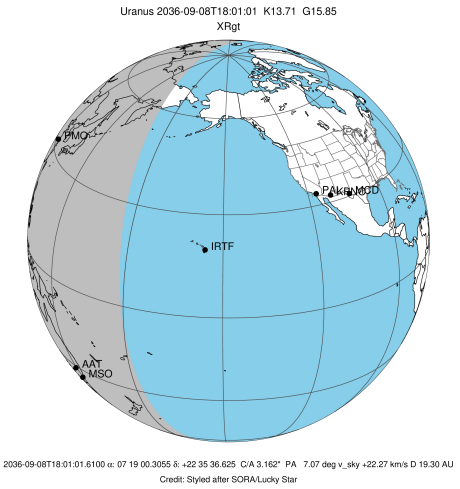
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-09-08T17:46:34.569		6.96	-31.31	51039.55	-6.41		
lambda	I	2036-09-08T17:49:40.481		7.53	-30.66	50026.71	-4.28		

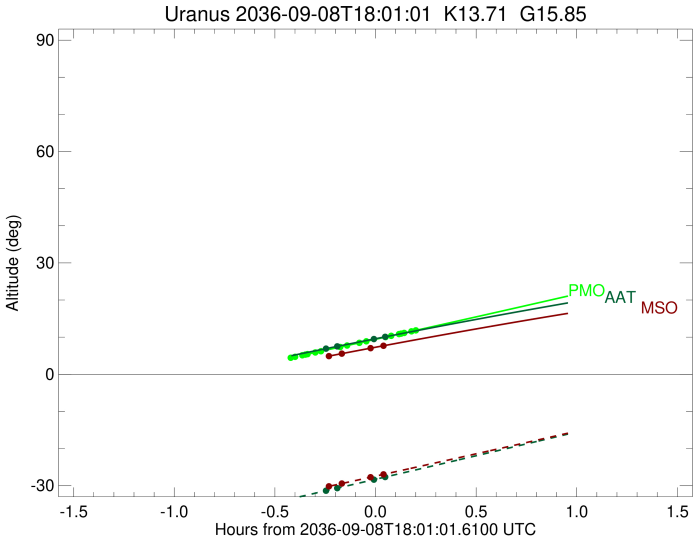
No planet occultations

lambda	E	2036-09-08T18:00:29.895	9.48	-28.40	50026.71	4.27		
epsilon	E	2036-09-08T18:03:08.763	9.95	-27.84	50864.48	6.40		

Uranus_2036-09-08T18_01_01.6100_MSO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:42:27 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-09-08T17:57:47.560
Event type : XRgt
: No Uranus occs
: 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 : 869228508002364544
2Mass ID (if available) : 07190038+2235370
ICRS Star Coord at Epoch: 07h 19m 00.30549s +22:35:36.62549s
RUWE (>1.4 is poor) : 1.12
K magnitude : 13.712
G magnitude : 15.851
RP magnitude : 15.195
BP magnitude : 16.346
DUPflag : 0
Distance (au) : 19.299
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : 22.27
Sun-Target sep (deg) : 57.98
Sun-Moon sep (deg) : 88.75
B (ring opening deg) : 58.49
PA of pole (deg) : 82.16
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.512
C/A sky separation (km) : 49154.8
NAIF SPICE kernels : RAJobs_U111+rgf15.spk
URKALLv1.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	2036-09-08T17:47:29.641	4.96x	-30.12	51030.65	-5.84			
lambda	I	2036-09-08T17:51:03.459	5.57	-29.42	50026.71	-3.33			

No planet occultations

lambda	E	2036-09-08T17:59:29.011	7.02	-27.75	50026.71	3.33			
epsilon	E	2036-09-08T18:02:35.791	7.54	-27.13	50871.05	5.84			