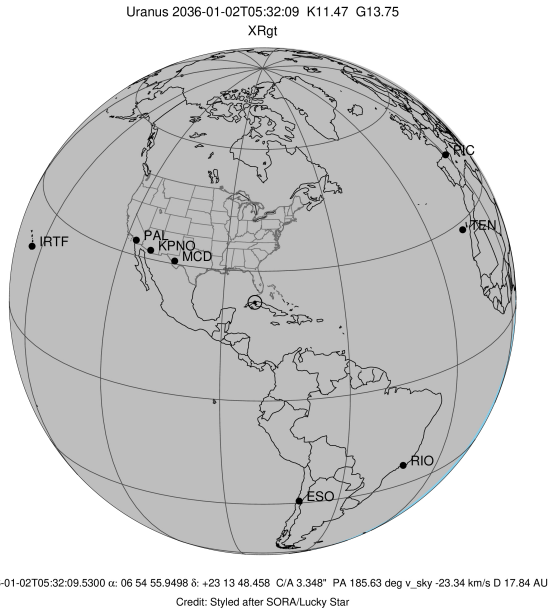
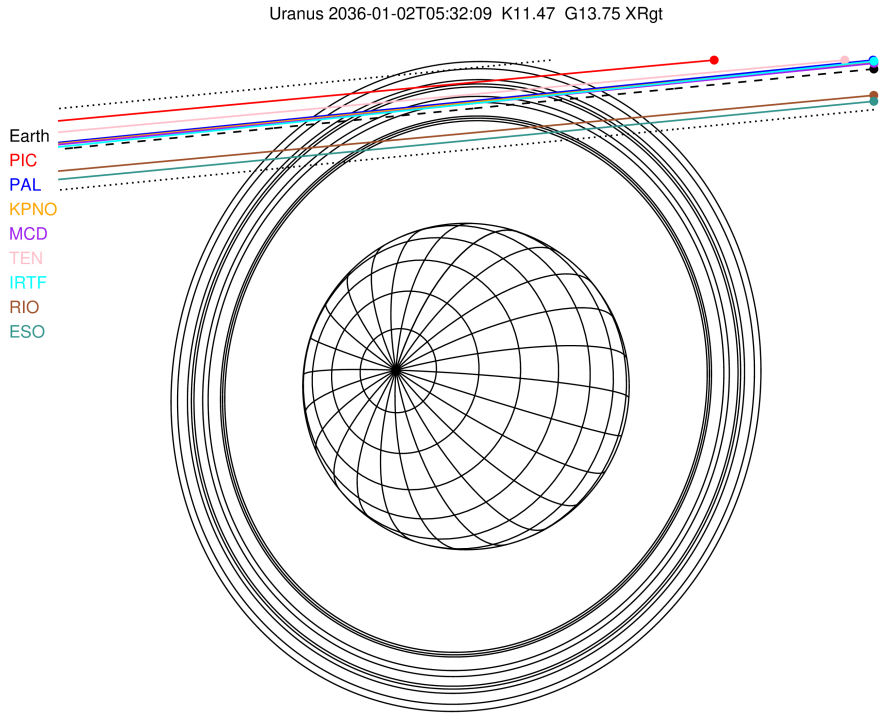
Stellar occultation prediction by rfrench@wellesley.edu Sun Jun 25 01:46:00 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:32:09.530
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Gaia source ID : 3380275605691487360
2Mass ID (if available) : 06545594+2313485

ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 142.54
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85

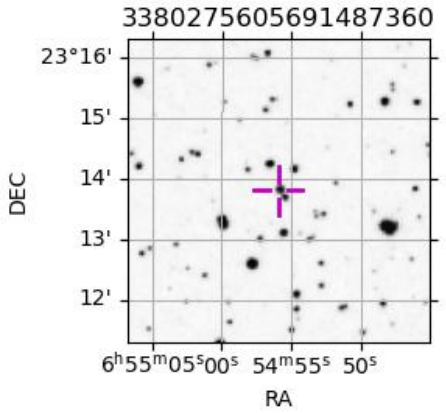
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon





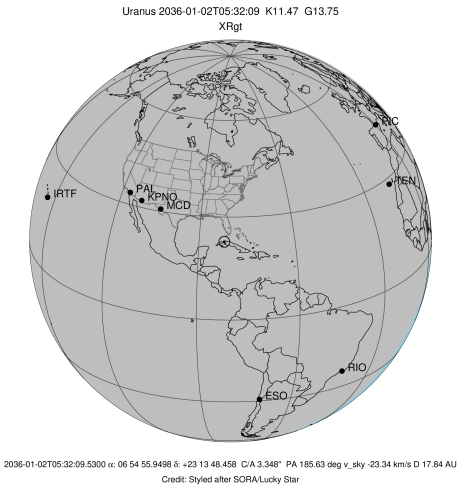
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

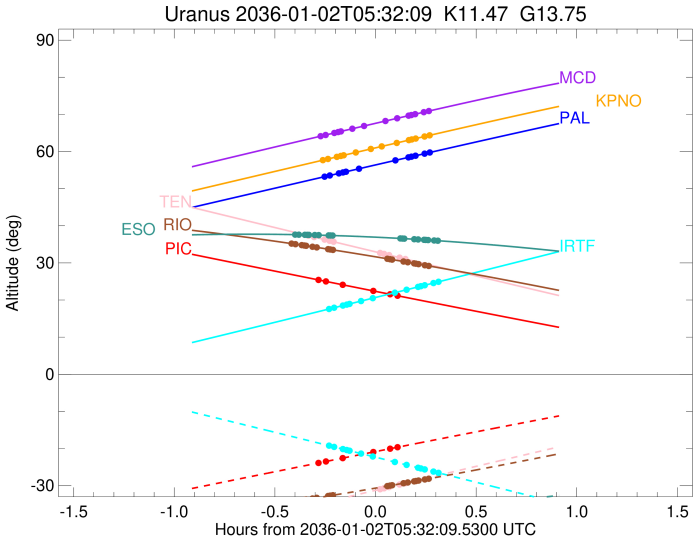
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++		+++	JAN 02 05:15 - JAN 02 05:39	PnnRie
PAL	Palomar Mt (200")	33.4	243.1	++++++		++++++	JAN 02 05:17 - JAN 02 05:48	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++++		+++++++	JAN 02 05:16 - JAN 02 05:48	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++++		+++++++	JAN 02 05:15 - JAN 02 05:48	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++		+++++	JAN 02 05:12 - JAN 02 05:41	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++++		+++++++	JAN 02 05:18 - JAN 02 05:51	PnnRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	++++++++++		++++++++++	JAN 02 05:07 - JAN 02 05:48	PnnRie
ESO	European Southern Obs	-29.3	289.3	++++++++++		++++++++++	JAN 02 05:08 - JAN 02 05:51	PnnRie
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



Uranus_2036-01-02T05_32_09.5300_PIC.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:16:40 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:28:57.380
Event type : XRgt
: No Uranus occs
: 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 : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 142.28
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.656
C/A sky separation (km) : 47313.3
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

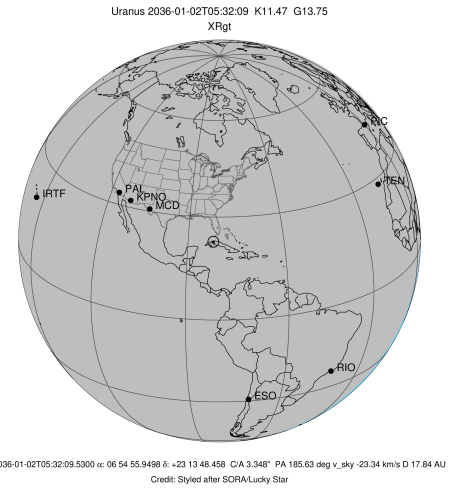
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-02T05:15:18.077		25.39	-23.87	51088.11	-9.31		
lambda	I	2036-01-02T05:17:24.688		25.01	-23.48	50026.71	-7.63		
delta	I	2036-01-02T05:22:27.066		24.09	-22.58	48300.35	-3.72		

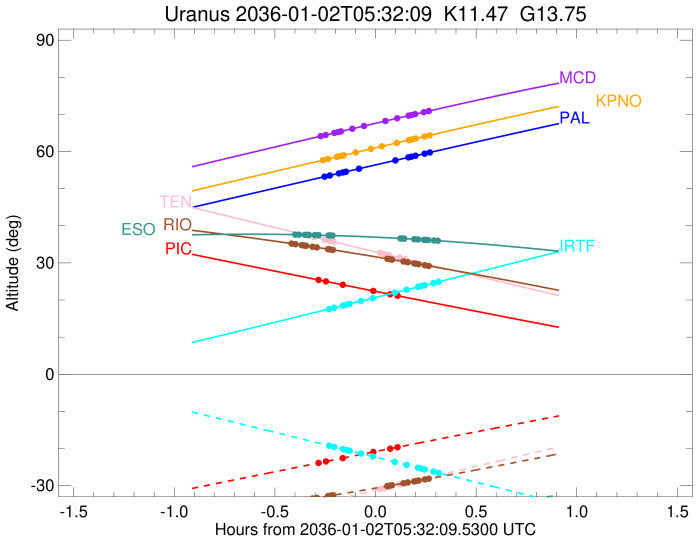
No planet occultations

delta	E	2036-01-02T05:31:26.746		22.46	-20.96	48300.35	3.72		
lambda	E	2036-01-02T05:36:29.399		21.55	-20.06	50026.71	7.62		
epsilon	E	2036-01-02T05:39:06.960		21.08	-19.59	51373.84	9.30		

Uranus_2036-01-02T05_32_09.5300_PAL.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:18:46 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:34:34.450
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code : PAL
Location : Palomar Mt (200")
Latitude (deg) : 33.35622
E. Longitude (deg) : 243.13601
Altitude (km) : 1.706
Gaia source ID : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 143.37
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.431
C/A sky separation (km) : 44402.5
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

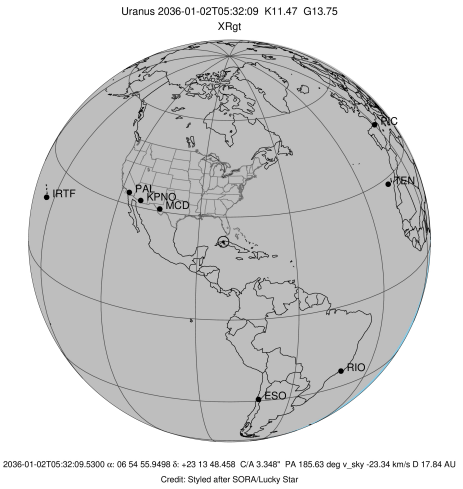
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-02T05:17:08.863		53.26	-54.75	51037.66	-12.60		
lambda	I	2036-01-02T05:18:33.256		53.56	-55.04	50026.71	-11.53		
delta	I	2036-01-02T05:21:16.086		54.12	-55.61	48300.35	-9.64		
gamma	I	2036-01-02T05:22:29.274		54.38	-55.86	47627.50	-8.74		
eta	I	2036-01-02T05:23:23.070		54.56	-56.04	47176.12	-8.04		
beta	I	2036-01-02T05:27:14.410		55.37	-56.84	45677.65	-4.87		

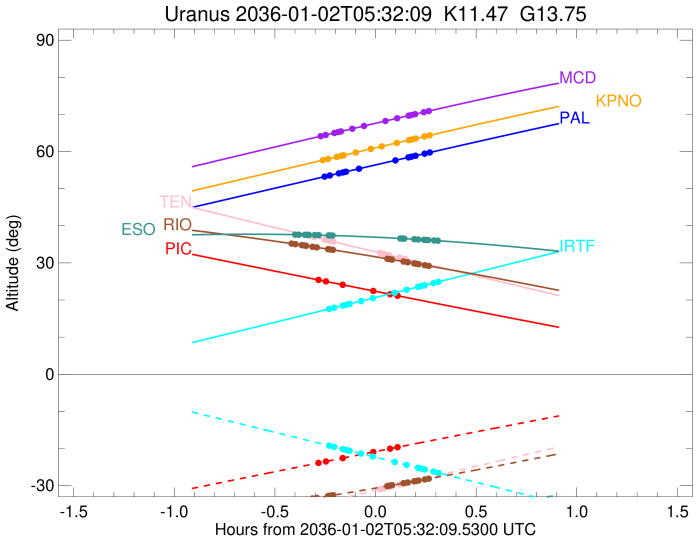
No planet occultations

beta	E	2036-01-02T05:38:06.538		57.63	-59.08	45680.70	4.87		
eta	E	2036-01-02T05:41:57.023		58.42	-59.87	47176.12	8.05		
gamma	E	2036-01-02T05:42:51.117		58.61	-60.06	47630.48	8.75		
delta	E	2036-01-02T05:44:03.899		58.86	-60.30	48300.35	9.65		
lambda	E	2036-01-02T05:46:46.558		59.42	-60.86	50026.71	11.54		
epsilon	E	2036-01-02T05:48:41.173		59.81	-61.25	51419.58	12.61		

Uranus_2036-01-02T05_32_09.5300_KPNO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:23:08 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:34:16.940
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code : KPNO
Location : Kitt Peak Natl Obs
Latitude (deg) : 31.96333
E. Longitude (deg) : 248.40000
Altitude (km) : 2.120
Gaia source ID : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 143.34
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.415
C/A sky separation (km) : 44188.0
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

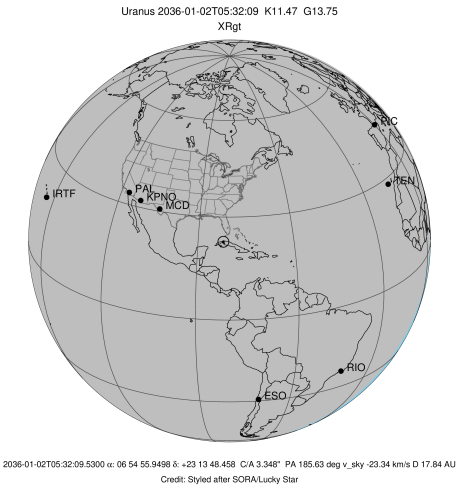
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-02T05:16:38.228		57.71	-59.23	51034.06	-12.81		
lambda	I	2036-01-02T05:18:00.751		58.00	-59.52	50026.71	-11.77		
delta	I	2036-01-02T05:20:39.523		58.56	-60.07	48300.35	-9.95		
gamma	I	2036-01-02T05:21:50.254		58.81	-60.32	47627.43	-9.08		
eta	I	2036-01-02T05:22:41.853		58.99	-60.50	47176.12	-8.41		
beta	I	2036-01-02T05:26:16.810		59.75	-61.25	45677.36	-5.49		
alpha	I	2036-01-02T05:31:20.605		60.82	-62.31	44690.31	-0.96		

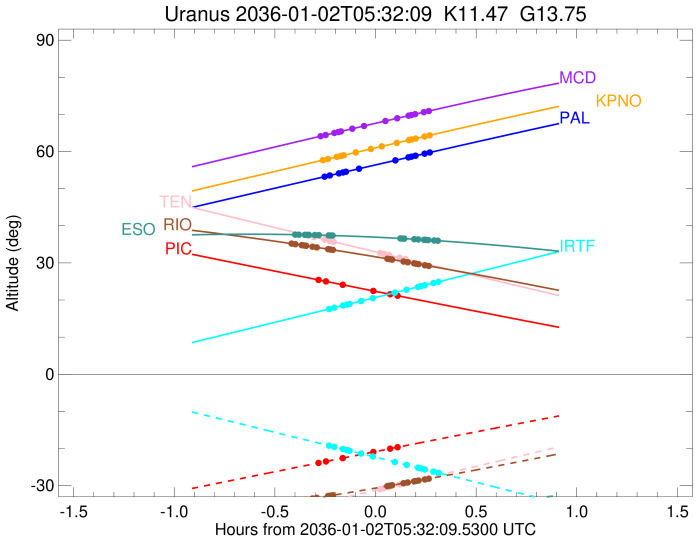
No planet occultations

alpha	E	2036-01-02T05:33:25.483		61.25	-62.74	44689.08	0.96		
beta	E	2036-01-02T05:38:30.791		62.32	-63.80	45680.80	5.49		
eta	E	2036-01-02T05:42:04.911		63.07	-64.53	47176.12	8.42		
gamma	E	2036-01-02T05:42:56.814		63.25	-64.71	47630.53	9.08		
delta	E	2036-01-02T05:44:07.147		63.49	-64.95	48300.35	9.96		
lambda	E	2036-01-02T05:46:45.769		64.04	-65.50	50026.71	11.78		
epsilon	E	2036-01-02T05:48:38.500		64.44	-65.88	51422.07	12.83		

Uranus_2036-01-02T05_32_09.5300_MCD.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:25:17 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:33:48.690
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code : MCD
Location : McDonald Obs. 2.7m
Latitude (deg) : 30.67158
E. Longitude (deg) : 255.97844
Altitude (km) : 2.075
Gaia source ID : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 143.30
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.399
C/A sky separation (km) : 43984.3
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

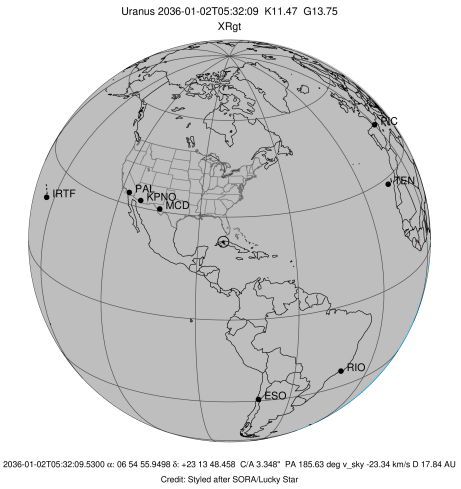
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-02T05:15:58.107		64.17	-65.70	51030.57	-13.01		
lambda	I	2036-01-02T05:17:18.912		64.46	-65.98	50026.71	-12.00		
delta	I	2036-01-02T05:19:54.050		65.01	-66.52	48300.35	-10.23		
gamma	I	2036-01-02T05:21:02.640		65.25	-66.76	47627.37	-9.39		
eta	I	2036-01-02T05:21:52.367		65.43	-66.94	47176.12	-8.76		
beta	I	2036-01-02T05:25:14.690		66.14	-67.64	45677.11	-6.02		
alpha	I	2036-01-02T05:28:59.679		66.93	-68.42	44691.36	-2.69		

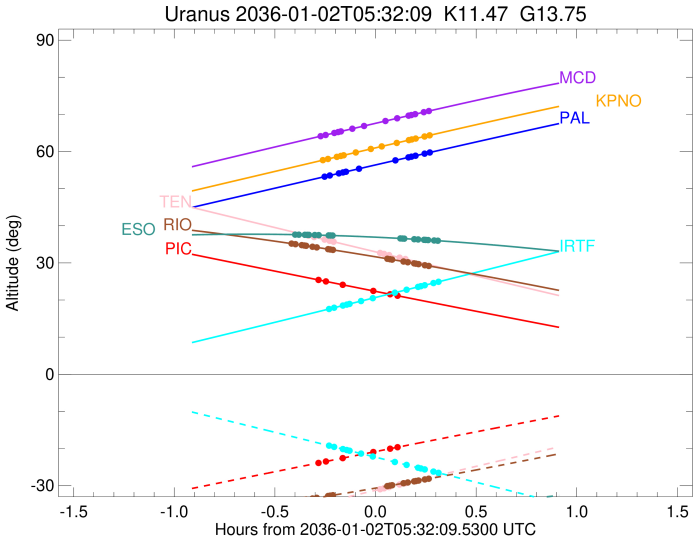
No planet occultations

alpha	E	2036-01-02T05:34:51.709		68.17	-69.64	44687.78	2.70		
beta	E	2036-01-02T05:38:38.234		68.96	-70.42	45680.88	6.03		
eta	E	2036-01-02T05:41:59.747		69.66	-71.10	47176.12	8.76		
gamma	E	2036-01-02T05:42:49.786		69.83	-71.27	47630.56	9.40		
delta	E	2036-01-02T05:43:57.992		70.06	-71.50	48300.35	10.24		
lambda	E	2036-01-02T05:46:33.015		70.60	-72.03	50026.71	12.01		
epsilon	E	2036-01-02T05:48:24.020		70.98	-72.40	51424.30	13.03		

Uranus_2036-01-02T05_32_09.5300_TEN.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:27:26 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:28:30.600
Event type : XRgt
: No Uranus occs
: 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 : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 142.30
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.514
C/A sky separation (km) : 45474.8
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

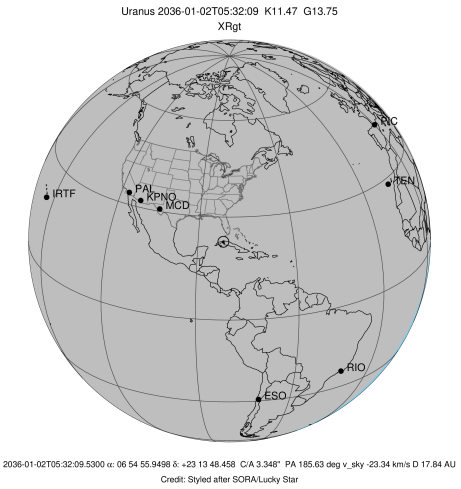
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-02T05:12:18.020		37.30	-35.57	51051.84	-11.51		
lambda	I	2036-01-02T05:13:52.803		36.96	-35.22	50026.71	-10.29		
delta	I	2036-01-02T05:17:00.959		36.28	-34.54	48300.35	-8.02		
gamma	I	2036-01-02T05:18:31.287		35.95	-34.22	47627.84	-6.86		
eta	I	2036-01-02T05:19:42.010		35.69	-33.96	47176.12	-5.91		

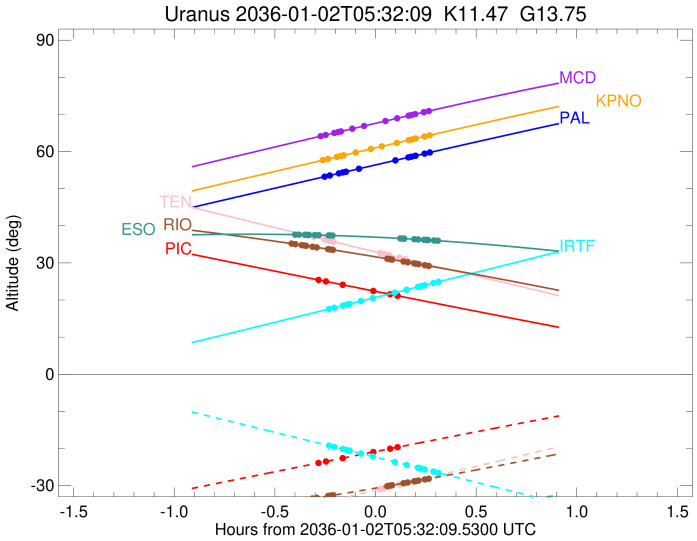
No planet occultations

eta	E	2036-01-02T05:33:29.748		32.69	-30.97	47176.12	5.91		
gamma	E	2036-01-02T05:34:40.890		32.43	-30.72	47630.20	6.85		
delta	E	2036-01-02T05:36:10.986		32.10	-30.39	48300.35	8.01		
lambda	E	2036-01-02T05:39:19.436		31.42	-29.71	50026.71	10.27		
epsilon	E	2036-01-02T05:41:25.016		30.97	-29.26	51403.13	11.49		

Uranus_2036-01-02T05_32_09.5300_IRTF.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:29:33 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:36:33.820
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code : IRTF
Location : Mauna Kea/IRTF
Latitude (deg) : 19.82622
E. Longitude (deg) : 204.52800
Altitude (km) : 4.168
Gaia source ID : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 143.40
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.397
C/A sky separation (km) : 43958.3
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

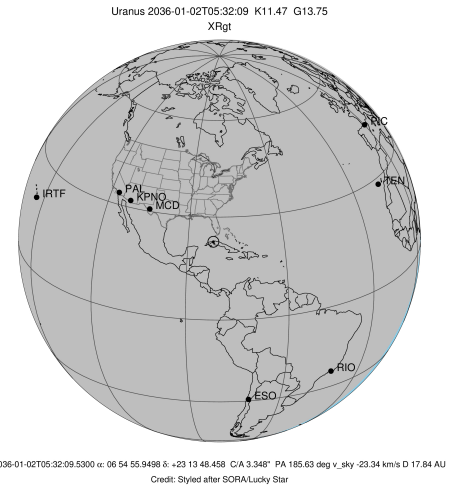
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-02T05:18:28.957		17.62	-19.27	51032.25	-12.88		
lambda	I	2036-01-02T05:19:50.743		17.93	-19.57	50026.71	-11.87		
delta	I	2036-01-02T05:22:27.451		18.51	-20.16	48300.35	-10.13		
gamma	I	2036-01-02T05:23:36.699		18.77	-20.42	47627.39	-9.30		
eta	I	2036-01-02T05:24:26.890		18.96	-20.60	47176.12	-8.68		
beta	I	2036-01-02T05:27:50.818		19.72	-21.36	45677.15	-5.98		
alpha	I	2036-01-02T05:31:35.936		20.56	-22.20	44691.31	-2.73		

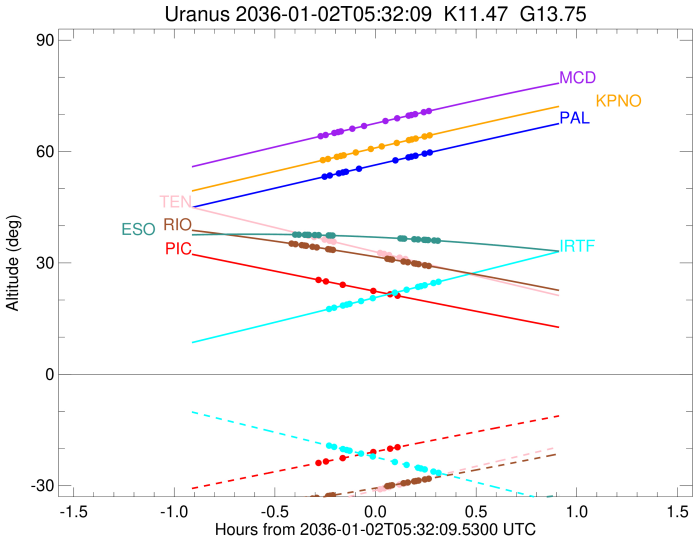
No planet occultations

alpha	E	2036-01-02T05:37:40.107		21.92	-23.57	44687.68	2.73		
beta	E	2036-01-02T05:41:26.646		22.77	-24.42	45680.90	5.99		
eta	E	2036-01-02T05:44:49.589		23.53	-25.18	47176.12	8.69		
gamma	E	2036-01-02T05:45:40.039		23.72	-25.37	47630.58	9.32		
delta	E	2036-01-02T05:46:48.819		23.98	-25.63	48300.35	10.15		
lambda	E	2036-01-02T05:49:25.196		24.57	-26.21	50026.71	11.90		
epsilon	E	2036-01-02T05:51:17.321		24.99	-26.63	51425.95	12.91		

Uranus_2036-01-02T05_32_09.5300_RIO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:33:45 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:29:13.680
Event type : XRgt
: No Uranus occs
: 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 : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 142.37
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.050
C/A sky separation (km) : 39464.8
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

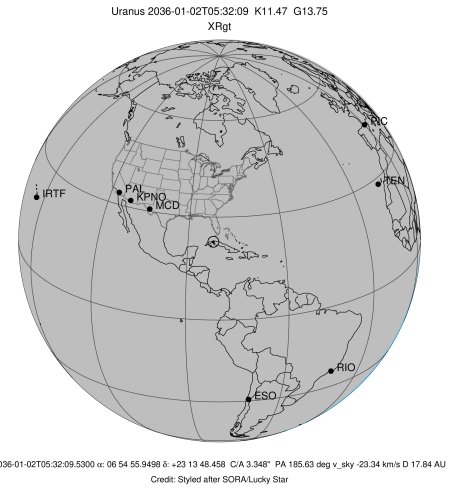
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-01-02T05:07:20.045		35.17	-34.32	50968.54	-16.44		
lambda	I	2036-01-02T05:08:18.738		35.04	-34.18	50026.71	-15.80		
delta	I	2036-01-02T05:10:11.668		34.79	-33.92	48300.35	-14.76		
gamma	I	2036-01-02T05:10:58.055		34.68	-33.81	47626.22	-14.30		
eta	I	2036-01-02T05:11:29.886		34.61	-33.74	47176.12	-13.98		
beta	I	2036-01-02T05:13:22.297		34.35	-33.47	45673.06	-12.76		
alpha	I	2036-01-02T05:14:41.453		34.17	-33.28	44700.57	-11.81		
4	I	2036-01-02T05:18:05.143		33.70	-32.79	42557.80	-9.11		
5	I	2036-01-02T05:18:38.937		33.62	-32.71	42257.73	-8.70		
6	I	2036-01-02T05:19:28.128		33.50	-32.59	41849.08	-7.90		

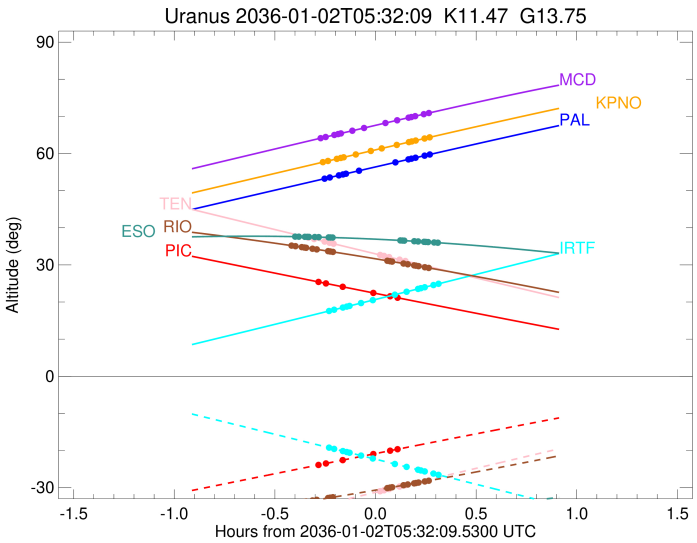
No planet occultations

6	E	2036-01-02T05:35:35.925		31.13	-30.13	41823.42	7.90		
5	E	2036-01-02T05:36:34.197		30.98	-29.98	42300.97	8.70		
4	E	2036-01-02T05:37:00.262		30.91	-29.91	42532.81	9.10		
alpha	E	2036-01-02T05:40:26.804		30.38	-29.37	44684.71	11.79		
beta	E	2036-01-02T05:41:47.726		30.17	-29.15	45681.16	12.74		
eta	E	2036-01-02T05:43:39.587		29.88	-28.85	47176.12	13.96		
gamma	E	2036-01-02T05:44:11.811		29.79	-28.76	47631.11	14.28		
delta	E	2036-01-02T05:44:57.934		29.67	-28.64	48300.35	14.74		
lambda	E	2036-01-02T05:46:51.067		29.37	-28.33	50026.71	15.77		
epsilon	E	2036-01-02T05:48:20.268		29.14	-28.09	51466.49	16.41		

Uranus_2036-01-02T05_32_09.5300_ESO.txt
Occultation predictions computed by rfrench@wellesley.edu Sun Jun 11 11:35:56 2023

target : Uranus
target radius (km) : 25559.00
C/A epoch : 2036-01-02T05:31:05.000
Event type : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code : ESO
Location : European Southern Obs. (3.6m)
Latitude (deg) : -29.26097
E. Longitude (deg) : 289.26831
Altitude (km) : 2.400
Gaia source ID : 3380275605691487360
2Mass ID (if available) : 06545594+2313485
ICRS Star Coord at Epoch: 06h 54m 55.94977s +23:13:48.45795s
RUWE (>1.4 is poor) : 1.04
K magnitude : 11.467
G magnitude : 13.755
RP magnitude : 13.051
BP magnitude : 14.312
DUPflag : 0
Distance (au) : 17.843
f0 (km) : 0.000
g0 (km) : 0.000
skyplane vel. (km/s) : -23.34
Sun-Target sep (deg) : 178.24
Sun-Moon sep (deg) : 142.69
B (ring opening deg) : 63.83
PA of pole (deg) : 76.85
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.961
C/A sky separation (km) : 38323.9
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	2036-01-02T05:08:24.034		37.61	-37.69	50956.93	-17.17		
lambda	I	2036-01-02T05:09:19.373		37.60	-37.67	50026.71	-16.59		
delta	I	2036-01-02T05:11:06.402		37.57	-37.63	48300.35	-15.66		
gamma	I	2036-01-02T05:11:50.034		37.55	-37.61	47626.01	-15.25		
eta	I	2036-01-02T05:12:19.815		37.54	-37.59	47176.12	-14.96		
beta	I	2036-01-02T05:14:04.037		37.51	-37.54	45672.29	-13.90		
alpha	I	2036-01-02T05:15:15.995		37.48	-37.50	44702.06	-13.07		
4	I	2036-01-02T05:18:14.192		37.41	-37.40	42560.77	-10.84		
5	I	2036-01-02T05:18:43.252		37.39	-37.39	42252.20	-10.52		
6	I	2036-01-02T05:19:22.267		37.37	-37.36	41852.22	-9.90		

No planet occultations

6	E	2036-01-02T05:39:29.095		36.60	-36.43	41820.13	9.90		
5	E	2036-01-02T05:40:17.098		36.56	-36.38	42304.26	10.52		
4	E	2036-01-02T05:40:38.451		36.54	-36.36	42531.16	10.84		
alpha	E	2036-01-02T05:43:39.298		36.38	-36.18	44684.62	13.07		
beta	E	2036-01-02T05:44:52.939		36.32	-36.10	45681.05	13.89		
eta	E	2036-01-02T05:46:36.501		36.22	-35.99	47176.12	14.96		
gamma	E	2036-01-02T05:47:06.637		36.19	-35.96	47631.20	15.25		
delta	E	2036-01-02T05:47:49.951		36.15	-35.91	48300.35	15.65		
lambda	E	2036-01-02T05:49:37.037		36.04	-35.80	50026.71	16.58		
epsilon	E	2036-01-02T05:51:02.686		35.96	-35.70	51475.75	17.16		