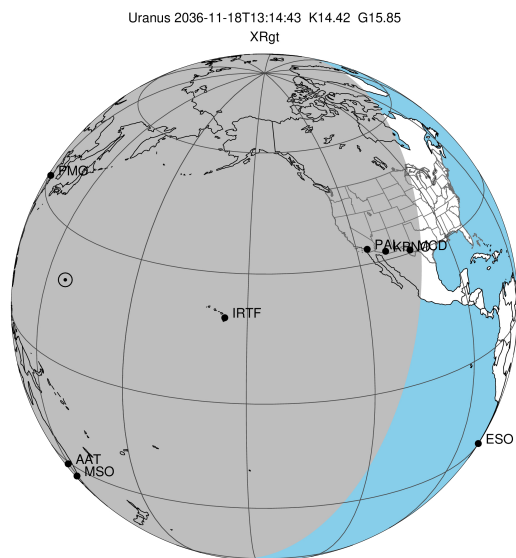


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-11-18T13:14:43.860
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 866234572199557632
 2Mass ID (if available) : 07215122+2232227

ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s

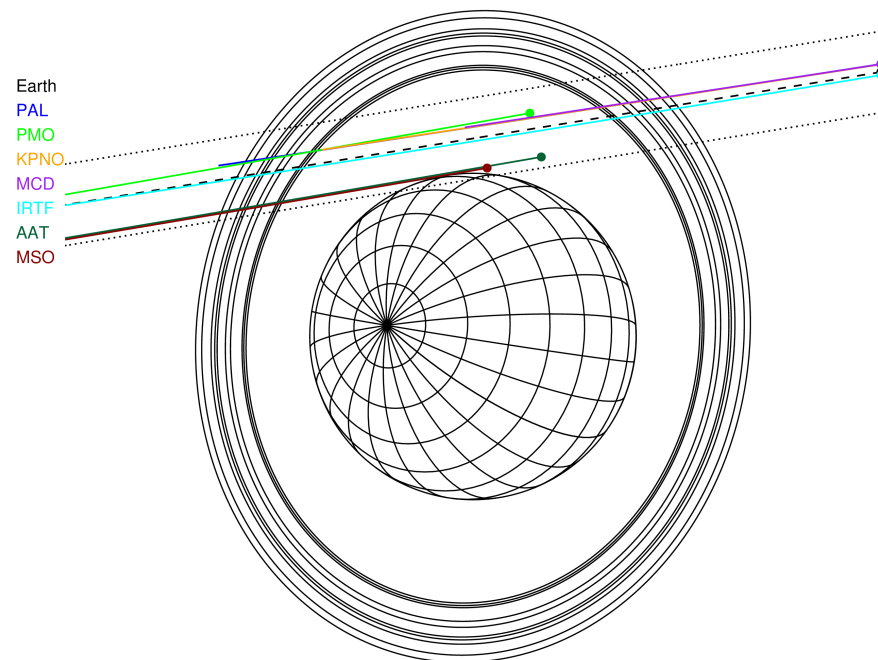
RUWE (>1.4 is poor) : 1.13
 K magnitude : 14.422
 G magnitude : 15.848
 RP magnitude : 15.377
 BP magnitude : 16.155
 DUPflag : 0
 Distance (au) : 18.155
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.64
 Sun-Target sep (deg) : 127.44
 Sun-Moon sep (deg) : 133.89
 B (ring opening deg) : 57.85
 PA of pole (deg) : 82.66

#	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



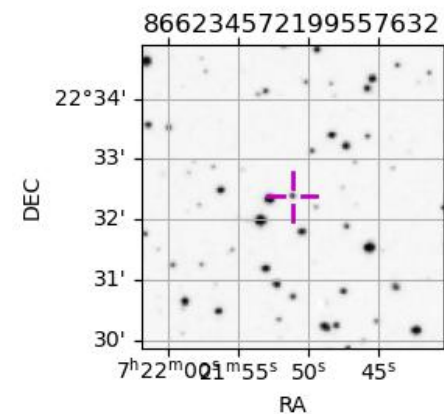
2036-11-18T13:14:43.8600 ra: 07 21 51.21371 s: +22 32 22.811 C/A 2.3377 PA 189.25 deg v_sky -11.64 km/s D 18.16 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2036-11-18T13:14:43 K14.42 G15.85 XRgt

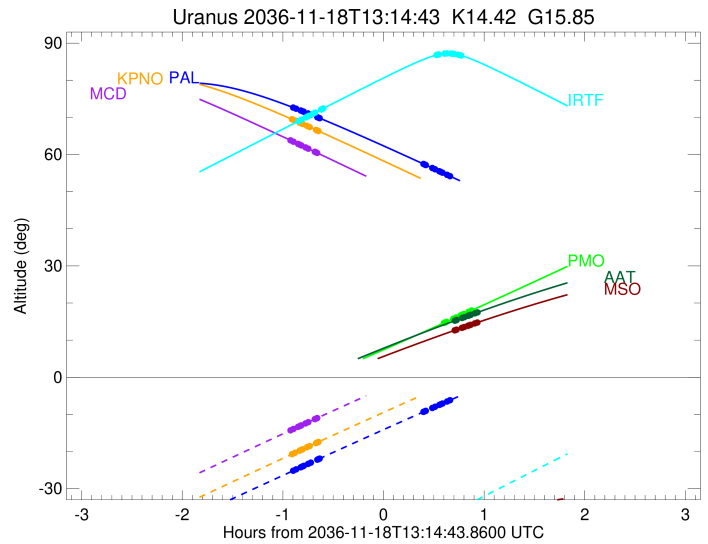
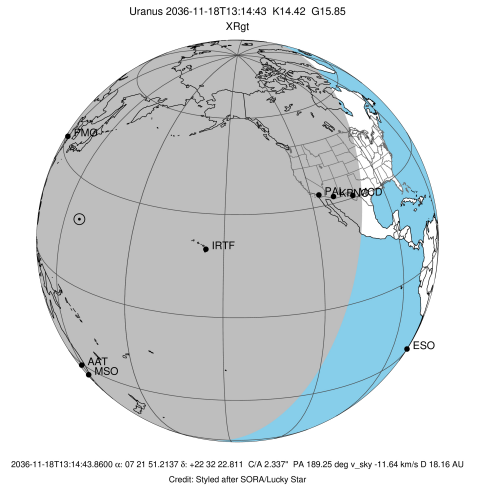


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	NOV 18 12:21 - NOV 18 13:54	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8			+++++	NOV 18 13:50 - NOV 18 14:07	PnnRne
KPNO	Kitt Peak Natl Obs	32.0	248.4			+++++	NOV 18 12:20 - NOV 18 12:36	PnnRin
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++			NOV 18 12:19 - NOV 18 12:35	PnnRin
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++		+++++	NOV 18 12:24 - NOV 18 14:00	PnnRie
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			+++++	NOV 18 13:57 - NOV 18 14:10	PnnRne
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0			+++++	NOV 18 13:57 - NOV 18 14:10	PnnRne



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-11-18T13:11:02.270
 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 : 866234572199557632
 2Mass ID (if available) : 07215122+2232227
 ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 14.422
 G magnitude : 15.848
 RP magnitude : 15.377
 BP magnitude : 16.155
 DUPflag : 0
 Distance (au) : 18.155
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.64
 Sun-Target sep (deg) : 127.44
 Sun-Moon sep (deg) : 134.76
 B (ring opening deg) : 57.85
 PA of pole (deg) : 82.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.463
 C/A sky separation (km) : 32426.6
 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



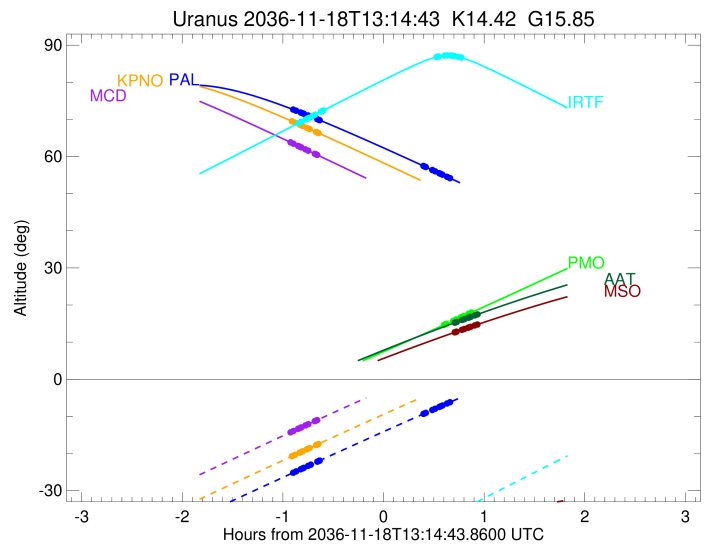
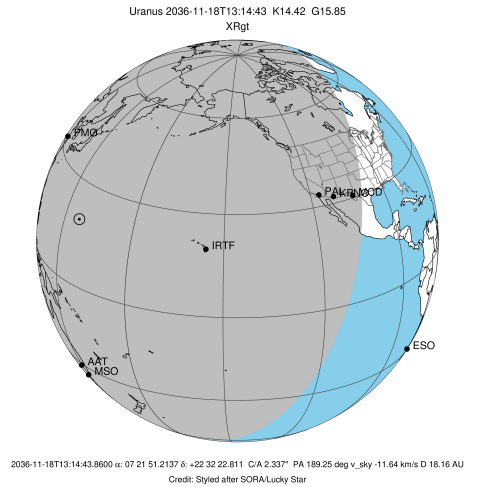
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-11-18T12:21:28.314		72.55	-25.05	50780.11	-10.67		
lambda	I	2036-11-18T12:22:39.094		72.34	-24.81	50026.71	-10.59		
delta	I	2036-11-18T12:25:24.448		71.85	-24.24	48300.35	-10.29		
gamma	I	2036-11-18T12:26:30.050		71.66	-24.01	47629.38	-10.16		
eta	I	2036-11-18T12:27:14.839		71.52	-23.85	47176.12	-10.08		
beta	I	2036-11-18T12:29:45.590		71.07	-23.34	45681.23	-9.76		
alpha	I	2036-11-18T12:31:27.548		70.76	-22.98	44699.29	-9.52		
4	I	2036-11-18T12:35:12.975		70.07	-22.21	42611.92	-8.95		
5	I	2036-11-18T12:36:00.322		69.92	-22.05	42184.26	-8.79		
6	I	2036-11-18T12:36:43.405		69.78	-21.90	41820.12	-8.70		

No planet occultations

6	E	2036-11-18T13:38:37.628		57.45	-9.31	41871.14	8.68		
5	E	2036-11-18T13:39:09.047		57.34	-9.21	42163.48	8.76		
4	E	2036-11-18T13:39:58.783		57.17	-9.04	42598.48	8.92		
alpha	E	2036-11-18T13:43:45.417		56.38	-8.29	44689.14	9.48		
beta	E	2036-11-18T13:45:26.288		56.04	-7.95	45661.95	9.72		
eta	E	2036-11-18T13:47:59.338		55.51	-7.45	47176.12	10.04		
gamma	E	2036-11-18T13:48:43.553		55.35	-7.30	47621.82	10.12		
delta	E	2036-11-18T13:49:50.161		55.12	-7.08	48300.35	10.25		
lambda	E	2036-11-18T13:52:36.194		54.55	-6.53	50026.71	10.54		
epsilon	E	2036-11-18T13:54:11.697		54.22	-6.22	51040.81	10.63		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2036-11-18T13:23:43.770
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      : 866234572199557632
2Mass ID (if available) : 07215122+2232227
ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s
RUWE (>1.4 is poor) : 1.13
K magnitude         : 14.422
G magnitude         : 15.848
RP magnitude        : 15.377
BP magnitude        : 16.155
DUPflag            : 0
Distance (au)       : 18.155
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -11.64
Sun-Target sep (deg) : 127.44
Sun-Moon sep (deg)  : 133.42
B (ring opening deg) : 57.85
PA of pole (deg)    : 82.66
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.499
C/A sky separation (km) : 32901.0
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```

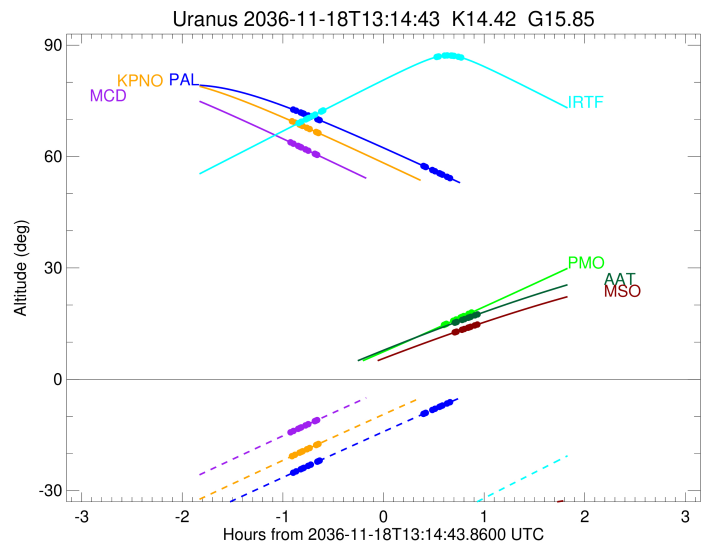
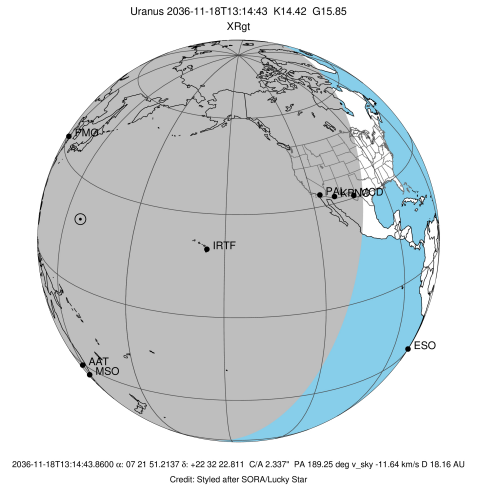


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-11-18T12:32:40.339	-0.73x	-44.24	50774.65	-10.13			
lambda	I	2036-11-18T12:33:54.362	-0.50x	-44.50	50026.71	-10.05			
delta	I	2036-11-18T12:36:48.681	0.06x	-45.11	48300.35	-9.75			
gamma	I	2036-11-18T12:37:57.919	0.28x	-45.36	47629.23	-9.63			
eta	I	2036-11-18T12:38:45.186	0.43x	-45.53	47176.12	-9.54			
beta	I	2036-11-18T12:41:24.499	0.93x	-46.09	45681.22	-9.22			
alpha	I	2036-11-18T12:43:12.531	1.28x	-46.47	44698.25	-8.98			
4	I	2036-11-18T12:47:11.615	2.04x	-47.31	42612.69	-8.41			
5	I	2036-11-18T12:48:02.466	2.20x	-47.49	42181.79	-8.25			
6	I	2036-11-18T12:48:47.765	2.35x	-47.65	41821.72	-8.16			

No planet occultations

6	E	2036-11-18T13:50:51.973	14.65	-60.55	41871.11	8.25
5	E	2036-11-18T13:51:24.985	14.76	-60.66	42163.46	8.35
4	E	2036-11-18T13:52:17.174	14.94	-60.83	42598.48	8.51
alpha	E	2036-11-18T13:56:14.056	15.74	-61.63	44689.17	9.10
beta	E	2036-11-18T13:57:59.062	16.10	-61.98	45661.89	9.35
eta	E	2036-11-18T14:00:38.004	16.64	-62.51	47176.12	9.68
gamma	E	2036-11-18T14:01:23.837	16.79	-62.66	47621.81	9.77
delta	E	2036-11-18T14:02:32.822	17.03	-62.89	48300.35	9.90
lambda	E	2036-11-18T14:05:24.473	17.61	-63.45	50026.71	10.21
epsilon	E	2036-11-18T14:07:03.267	17.95	-63.78	51043.30	10.30

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-11-18T13:10:20.590
 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 : 866234572199557632
 2Mass ID (if available) : 07215122+2232227
 ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 14.422
 G magnitude : 15.848
 RP magnitude : 15.377
 BP magnitude : 16.155
 DUPflag : 0
 Distance (au) : 18.155
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.64
 Sun-Target sep (deg) : 127.44
 Sun-Moon sep (deg) : 134.78
 B (ring opening deg) : 57.85
 PA of pole (deg) : 82.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.464
 C/A sky separation (km) : 32447.6
 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

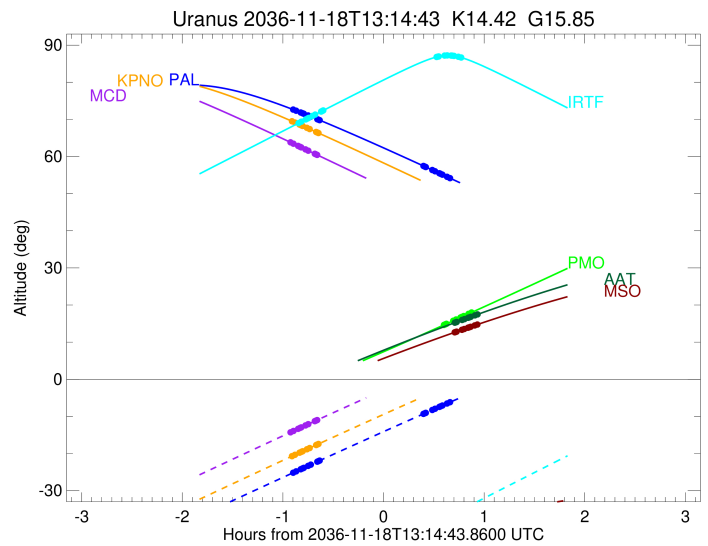
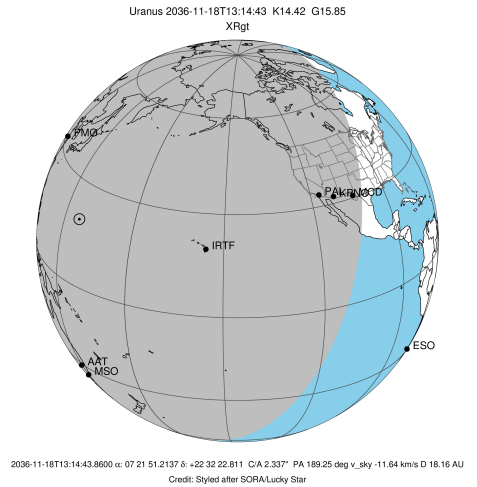


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-11-18T12:20:45.588		69.39	-20.59	50780.17	-10.66		
lambda	I	2036-11-18T12:21:56.444		69.15	-20.35	50026.71	-10.57		
delta	I	2036-11-18T12:24:41.975		68.61	-19.77	48300.35	-10.28		
gamma	I	2036-11-18T12:25:47.653		68.39	-19.54	47629.38	-10.15		
eta	I	2036-11-18T12:26:32.495		68.24	-19.39	47176.12	-10.06		
beta	I	2036-11-18T12:29:03.433		67.73	-18.87	45681.23	-9.74		
alpha	I	2036-11-18T12:30:45.526		67.39	-18.51	44699.29	-9.50		
4	I	2036-11-18T12:34:31.288		66.63	-17.73	42611.92	-8.93		
5	I	2036-11-18T12:35:18.711		66.47	-17.57	42184.27	-8.78		
6	I	2036-11-18T12:36:01.867		66.32	-17.42	41820.12	-8.69		

No planet occultations

6	E	2036-11-18T13:37:56.959		53.36	-4.80x	41871.10	8.66		
5	E	2036-11-18T13:38:28.452		53.25	-4.69x	42163.43	8.74		
4	E	2036-11-18T13:39:18.321		53.07	-4.52x	42598.53	8.90		
alpha	E	2036-11-18T13:43:05.475		52.27	-3.77x	44689.11	9.46		
beta	E	2036-11-18T13:44:46.578		51.91	-3.44x	45661.98	9.70		
eta	E	2036-11-18T13:47:19.962		51.37	-2.93x	47176.12	10.02		
gamma	E	2036-11-18T13:48:04.273		51.21	-2.78x	47621.82	10.10		
delta	E	2036-11-18T13:49:11.024		50.97	-2.56x	48300.35	10.23		
lambda	E	2036-11-18T13:51:57.413		50.38	-2.01x	50026.71	10.52		
epsilon	E	2036-11-18T13:53:33.075		50.04	-1.70x	51040.34	10.60		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-11-18T13:09:26.630
 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 : 866234572199557632
 2Mass ID (if available) : 07215122+2232227
 ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 14.422
 G magnitude : 15.848
 RP magnitude : 15.377
 BP magnitude : 16.155
 DUPflag : 0
 Distance (au) : 18.155
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.64
 Sun-Target sep (deg) : 127.44
 Sun-Moon sep (deg) : 134.81
 B (ring opening deg) : 57.85
 PA of pole (deg) : 82.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.474
 C/A sky separation (km) : 32571.4
 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

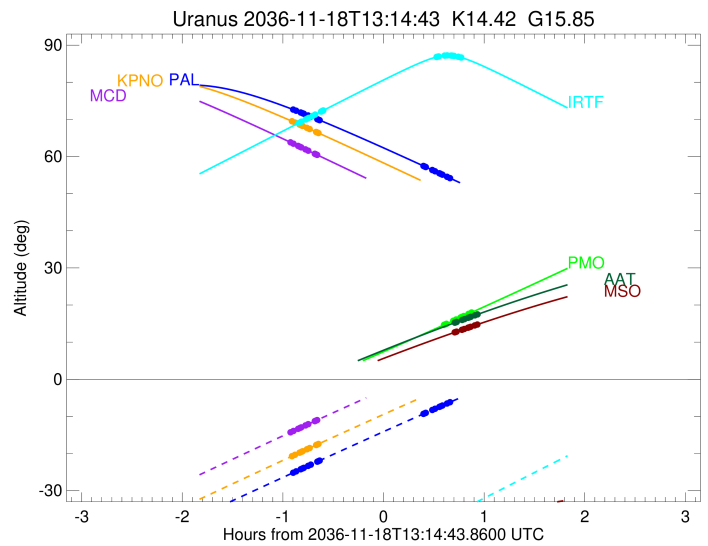
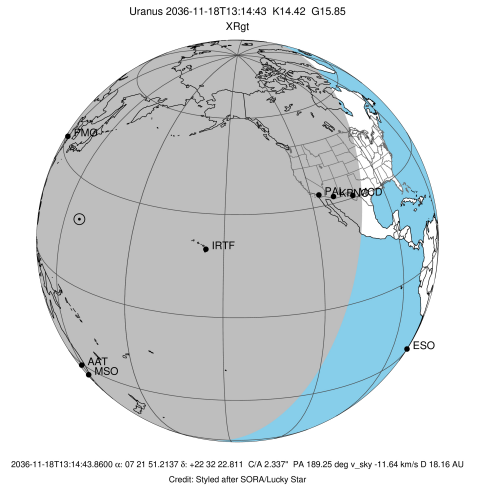


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-11-18T12:19:53.047		63.70	-14.17	50779.81	-10.62		
lambda	I	2036-11-18T12:21:04.178		63.45	-13.92	50026.71	-10.53		
delta	I	2036-11-18T12:23:50.479		62.86	-13.34	48300.35	-10.23		
gamma	I	2036-11-18T12:24:56.484		62.62	-13.12	47629.37	-10.10		
eta	I	2036-11-18T12:25:41.555		62.46	-12.96	47176.12	-10.01		
beta	I	2036-11-18T12:28:13.319		61.93	-12.43	45681.23	-9.69		
alpha	I	2036-11-18T12:29:56.030		61.56	-12.08	44699.21	-9.44		
4	I	2036-11-18T12:33:43.295		60.75	-11.29	42611.99	-8.87		
5	I	2036-11-18T12:34:31.112		60.58	-11.13	42184.04	-8.71		
6	I	2036-11-18T12:35:14.552		60.43	-10.98	41820.26	-8.62		

No planet occultations

6	E	2036-11-18T13:36:56.139		47.14	1.50x	41870.96	8.58		
5	E	2036-11-18T13:37:27.898		47.02	1.61x	42163.23	8.67		
4	E	2036-11-18T13:38:18.242		46.84	1.77x	42598.72	8.83		
alpha	E	2036-11-18T13:42:07.153		46.02	2.52x	44689.03	9.39		
beta	E	2036-11-18T13:43:48.998		45.65	2.85x	45662.07	9.63		
eta	E	2036-11-18T13:46:23.408		45.09	3.36x	47176.12	9.95		
gamma	E	2036-11-18T13:47:08.007		44.93	3.50x	47621.84	10.04		
delta	E	2036-11-18T13:48:15.180		44.69	3.72x	48300.35	10.16		
lambda	E	2036-11-18T13:51:02.580		44.09	4.26x	50026.71	10.46		
epsilon	E	2036-11-18T13:52:38.654		43.74	4.57x	51038.80	10.54		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-11-18T13:15:53.000
 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 : 866234572199557632
 2Mass ID (if available) : 07215122+2232227
 ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 14.422
 G magnitude : 15.848
 RP magnitude : 15.377
 BP magnitude : 16.155
 DUPflag : 0
 Distance (au) : 18.155
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.64
 Sun-Target sep (deg) : 127.44
 Sun-Moon sep (deg) : 134.46
 B (ring opening deg) : 57.85
 PA of pole (deg) : 82.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.292
 C/A sky separation (km) : 30174.3
 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

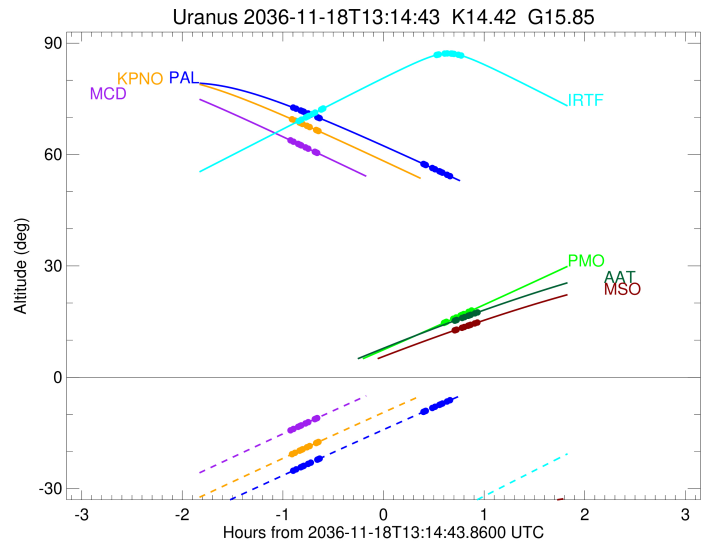
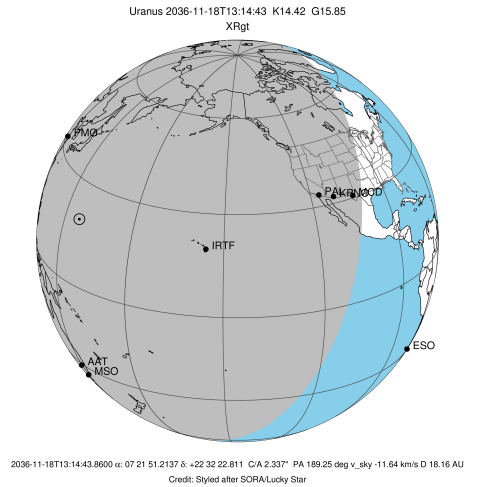


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-11-18T12:24:38.554		69.14	-57.66	50789.05	-11.21		
lambda	I	2036-11-18T12:25:46.654		69.40	-57.40	50026.71	-11.15		
delta	I	2036-11-18T12:28:23.214		70.01	-56.79	48300.35	-10.90		
gamma	I	2036-11-18T12:29:25.014		70.24	-56.55	47629.62	-10.80		
eta	I	2036-11-18T12:30:07.141		70.41	-56.38	47176.12	-10.73		
beta	I	2036-11-18T12:32:28.173		70.95	-55.83	45681.18	-10.46		
alpha	I	2036-11-18T12:34:02.702		71.31	-55.46	44701.15	-10.28		
4	I	2036-11-18T12:37:30.099		72.11	-54.65	42610.35	-9.82		
5	I	2036-11-18T12:38:12.380		72.27	-54.49	42189.06	-9.70		
6	I	2036-11-18T12:38:52.323		72.43	-54.33	41817.20	-9.63		

No planet occultations

6	E	2036-11-18T13:46:27.720		86.83	-38.58	41873.26	9.66		
5	E	2036-11-18T13:46:56.214		86.88	-38.47	42166.88	9.73		
4	E	2036-11-18T13:47:40.373		86.96	-38.30	42595.31	9.85		
alpha	E	2036-11-18T13:51:07.597		87.20	-37.50	44690.52	10.31		
beta	E	2036-11-18T13:52:40.360		87.24	-37.14	45660.47	10.51		
eta	E	2036-11-18T13:55:02.614		87.20	-36.59	47176.12	10.77		
gamma	E	2036-11-18T13:55:43.841		87.17	-36.43	47621.63	10.84		
delta	E	2036-11-18T13:56:46.134		87.11	-36.19	48300.35	10.95		
lambda	E	2036-11-18T13:59:22.049		86.88	-35.59	50026.71	11.19		
epsilon	E	2036-11-18T14:00:54.280		86.69	-35.23	51065.25	11.26		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-11-18T13:21:01.220
 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 : 866234572199557632
 2Mass ID (if available) : 07215122+2232227
 ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 14.422
 G magnitude : 15.848
 RP magnitude : 15.377
 BP magnitude : 16.155
 DUPflag : 0
 Distance (au) : 18.155
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.64
 Sun-Target sep (deg) : 127.44
 Sun-Moon sep (deg) : 133.49
 B (ring opening deg) : 57.85
 PA of pole (deg) : 82.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.966
 C/A sky separation (km) : 25886.9
 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

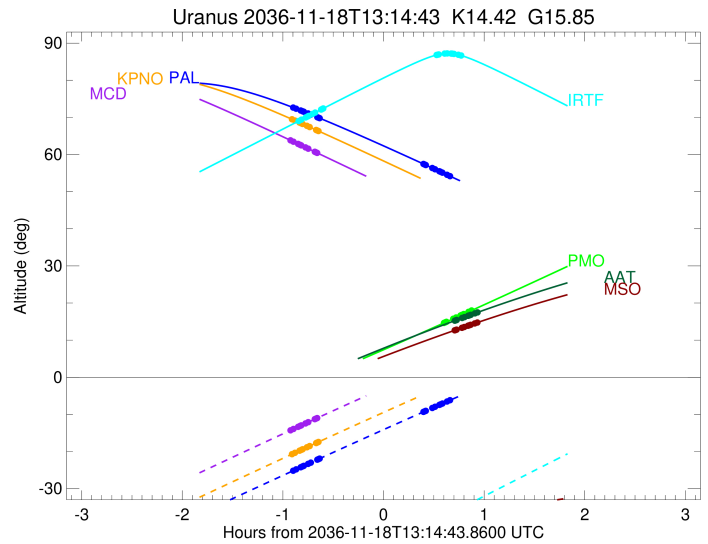
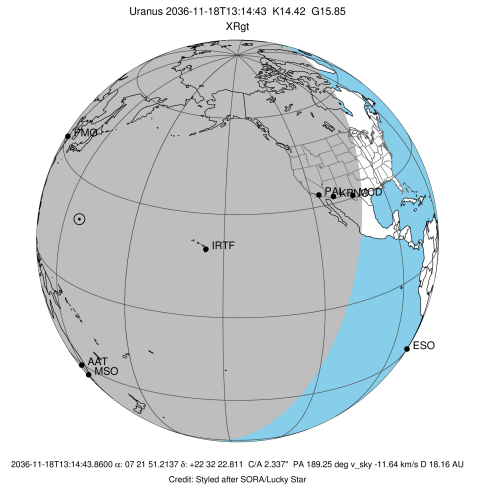


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-11-18T12:25:21.694	-1.47x	-35.63	50807.64	-11.70			
lambda	I	2036-11-18T12:26:28.433	-1.25x	-35.73	50026.71	-11.67			
delta	I	2036-11-18T12:28:57.370	-0.78x	-35.94	48300.35	-11.51			
gamma	I	2036-11-18T12:29:55.771	-0.59x	-36.02	47630.03	-11.44			
eta	I	2036-11-18T12:30:35.513	-0.46x	-36.08	47176.12	-11.40			
beta	I	2036-11-18T12:32:47.659	-0.04x	-36.26	45680.91	-11.23			
alpha	I	2036-11-18T12:34:15.115	0.24x	-36.38	44704.59	-11.10			
4	I	2036-11-18T12:37:25.769	0.85x	-36.63	42607.18	-10.82			
5	I	2036-11-18T12:38:02.826	0.97x	-36.68	42197.82	-10.73			
6	I	2036-11-18T12:38:40.241	1.09x	-36.72	41812.51	-10.70			

No planet occultations

6	E	2036-11-18T13:57:19.549	15.25	-39.42	41876.25	10.83			
5	E	2036-11-18T13:57:45.623	15.33	-39.41	42173.92	10.87			
4	E	2036-11-18T13:58:23.877	15.43	-39.40	42589.45	10.96			
alpha	E	2036-11-18T14:01:32.692	15.96	-39.36	44693.37	11.26			
beta	E	2036-11-18T14:02:57.501	16.19	-39.34	45657.84	11.39			
eta	E	2036-11-18T14:05:09.607	16.55	-39.31	47176.12	11.56			
gamma	E	2036-11-18T14:05:48.023	16.66	-39.29	47621.35	11.61			
delta	E	2036-11-18T14:06:46.305	16.82	-39.27	48300.35	11.69			
lambda	E	2036-11-18T14:09:12.957	17.21	-39.22	50026.71	11.85			
epsilon	E	2036-11-18T14:10:44.005	17.46	-39.18	51110.50	11.90			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-11-18T13:20:37.840
 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 : 866234572199557632
 2Mass ID (if available) : 07215122+2232227
 ICRS Star Coord at Epoch: 07h 21m 51.21371s +22:32:22.81092s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 14.422
 G magnitude : 15.848
 RP magnitude : 15.377
 BP magnitude : 16.155
 DUPflag : 0
 Distance (au) : 18.155
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.64
 Sun-Target sep (deg) : 127.44
 Sun-Moon sep (deg) : 133.48
 B (ring opening deg) : 57.85
 PA of pole (deg) : 82.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.946
 C/A sky separation (km) : 25626.8
 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_itrfr93_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	2036-11-18T12:24:46.360	-3.36x	-31.88	50809.05	-11.74			
lambda	I	2036-11-18T12:25:53.009	-3.15x	-31.97	50026.71	-11.71			
delta	I	2036-11-18T12:28:21.439	-2.69x	-32.16	48300.35	-11.55			
gamma	I	2036-11-18T12:29:19.623	-2.51x	-32.24	47630.05	-11.49			
eta	I	2036-11-18T12:29:59.216	-2.39x	-32.29	47176.12	-11.44			
beta	I	2036-11-18T12:32:10.824	-1.99x	-32.46	45680.88	-11.28			
alpha	I	2036-11-18T12:33:37.866	-1.72x	-32.56	44704.83	-11.16			
4	I	2036-11-18T12:36:47.600	-1.14x	-32.79	42606.95	-10.88			
5	I	2036-11-18T12:37:24.370	-1.03x	-32.84	42198.41	-10.80			
6	I	2036-11-18T12:38:01.659	-0.92x	-32.88	41812.22	-10.76			

No planet occultations

6	E	2036-11-18T13:57:15.338	12.66	-35.39	41876.38	10.89			
5	E	2036-11-18T13:57:41.313	12.72	-35.39	42174.32	10.92			
4	E	2036-11-18T13:58:19.294	12.82	-35.38	42589.13	11.01			
alpha	E	2036-11-18T14:01:27.272	13.32	-35.35	44693.53	11.30			
beta	E	2036-11-18T14:02:51.713	13.54	-35.33	45657.71	11.43			
eta	E	2036-11-18T14:05:03.350	13.88	-35.29	47176.12	11.60			
gamma	E	2036-11-18T14:05:41.637	13.98	-35.28	47621.33	11.65			
delta	E	2036-11-18T14:06:39.733	14.12	-35.27	48300.35	11.72			
lambda	E	2036-11-18T14:09:05.957	14.50	-35.22	50026.71	11.89			
epsilon	E	2036-11-18T14:10:36.962	14.73	-35.19	51112.83	11.93			