

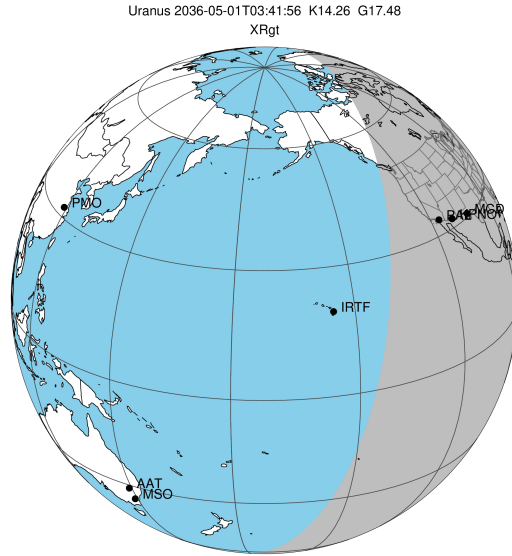
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-05-01T03:41:56.080  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3379579163857292544  
 2Mass ID (if available) : 06491823+2319597

ICRS Star Coord at Epoch: 06h 49m 18.26699s +23:19:59.30137s

RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.260  
 G magnitude : 17.479  
 RP magnitude : 16.449  
 BP magnitude : 18.594  
 DUPflag : 0  
 Distance (au) : 19.283  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 21.14  
 Sun-Target sep (deg) : 60.45  
 Sun-Moon sep (deg) : 4.04  
 B (ring opening deg) : 65.06  
 PA of pole (deg) : 75.43

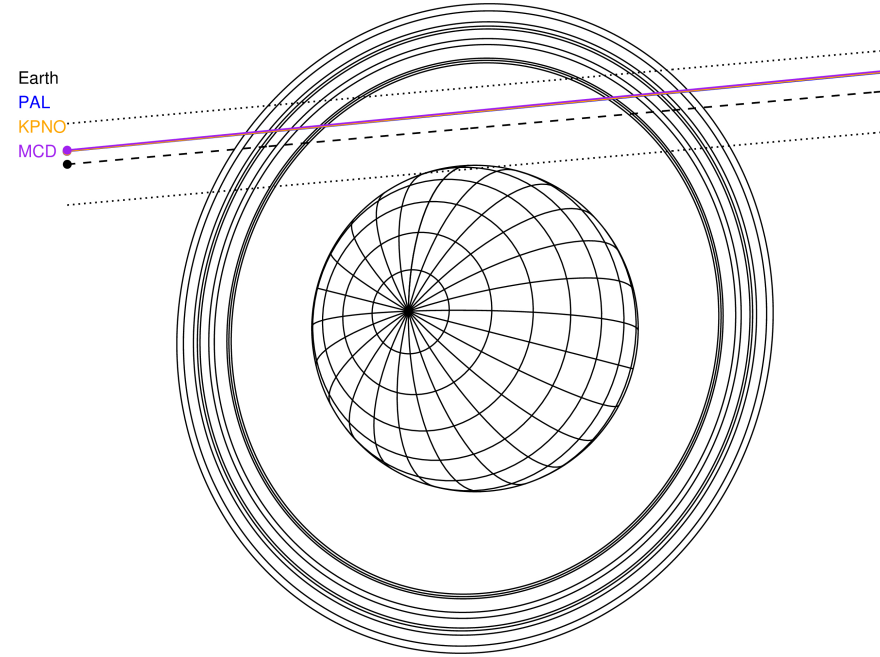
# a(km) ring

- 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



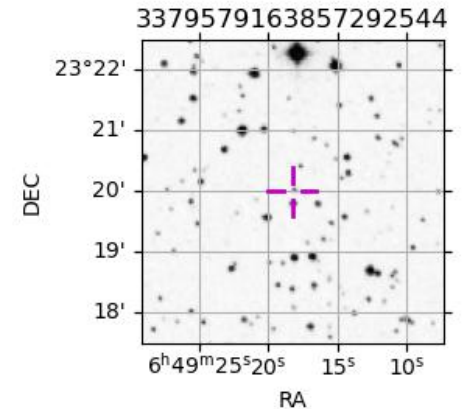
2036-05-01T03:41:56.0800 ex: 06 49 18.2670 s: +23 19 59.301 C/A 2.246° PA 185.11 deg v\_sky +21.14 km/s D 19.28 AU  
 Credit: Styled after SORA/Lucky Star

Uranus 2036-05-01T03:41:56 K14.26 G17.48 XRgt

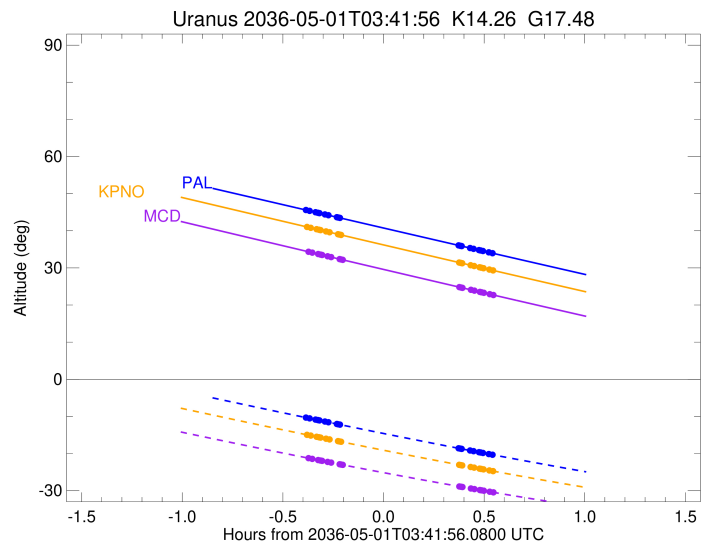
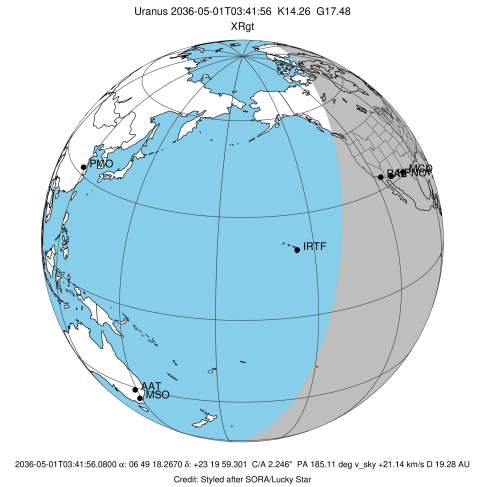


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	MAY 01 03:19 - MAY 01 04:14	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	MAY 01 03:19 - MAY 01 04:14	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	MAY 01 03:19 - MAY 01 04:14	PnnRie
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					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-05-01T03:45:04.770  
 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 : 3379579163857292544  
 2Mass ID (if available) : 06491823+2319597  
 ICRS Star Coord at Epoch: 06h 49m 18.26699s +23:19:59.30137s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.260  
 G magnitude : 17.479  
 RP magnitude : 16.449  
 BP magnitude : 18.594  
 DUPflag : 0  
 Distance (au) : 19.283  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 21.14  
 Sun-Target sep (deg) : 60.45  
 Sun-Moon sep (deg) : 4.17  
 B (ring opening deg) : 65.06  
 PA of pole (deg) : 75.43  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.412  
 C/A sky separation (km) : 33728.7  
 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

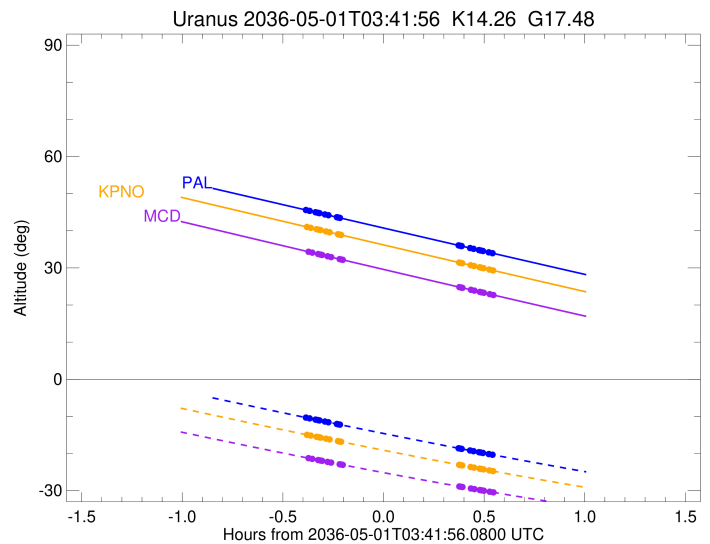
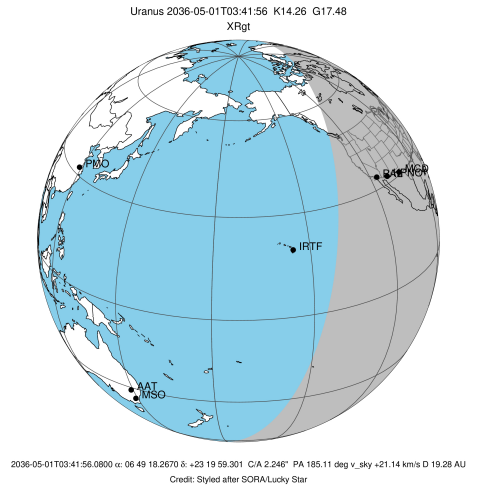


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-05-01T03:19:12.610		45.51	-10.40	50753.04	-16.91		
lambda	I	2036-05-01T03:19:55.893		45.36	-10.54	50026.71	-16.68		
delta	I	2036-05-01T03:21:41.058		44.99	-10.86	48300.35	-16.14		
gamma	I	2036-05-01T03:22:23.355		44.84	-11.00	47622.35	-15.91		
eta	I	2036-05-01T03:22:51.537		44.75	-11.08	47176.12	-15.75		
beta	I	2036-05-01T03:24:30.357		44.40	-11.39	45647.08	-15.16		
alpha	I	2036-05-01T03:25:31.697		44.19	-11.58	44728.86	-14.74		
4	I	2036-05-01T03:28:06.974		43.64	-12.06	42533.45	-13.62		
5	I	2036-05-01T03:28:23.156		43.59	-12.11	42309.12	-13.52		
6	I	2036-05-01T03:29:02.403		43.45	-12.23	41798.34	-13.20		

No planet occultations

6	E	2036-05-01T04:04:18.843		36.07	-18.59	41840.56	13.24		
5	E	2036-05-01T04:04:51.740		35.95	-18.68	42286.41	13.56		
4	E	2036-05-01T04:05:10.481		35.89	-18.74	42536.49	13.66		
alpha	E	2036-05-01T04:07:41.689		35.36	-19.18	44688.35	14.79		
beta	E	2036-05-01T04:08:47.253		35.14	-19.37	45673.78	15.22		
eta	E	2036-05-01T04:10:23.996		34.80	-19.64	47176.12	15.82		
gamma	E	2036-05-01T04:10:52.529		34.70	-19.73	47629.75	15.98		
delta	E	2036-05-01T04:11:34.189		34.56	-19.85	48300.35	16.21		
lambda	E	2036-05-01T04:13:18.902		34.19	-20.14	50026.71	16.75		
epsilon	E	2036-05-01T04:14:32.729		33.94	-20.36	51276.49	16.99		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-05-01T03:45:19.630  
 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 : 3379579163857292544  
 2Mass ID (if available) : 06491823+2319597  
 ICRS Star Coord at Epoch: 06h 49m 18.26699s +23:19:59.30137s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.260  
 G magnitude : 17.479  
 RP magnitude : 16.449  
 BP magnitude : 18.594  
 DUPflag : 0  
 Distance (au) : 19.283  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 21.14  
 Sun-Target sep (deg) : 60.45  
 Sun-Moon sep (deg) : 4.16  
 B (ring opening deg) : 65.06  
 PA of pole (deg) : 75.43  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.416  
 C/A sky separation (km) : 33791.9  
 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

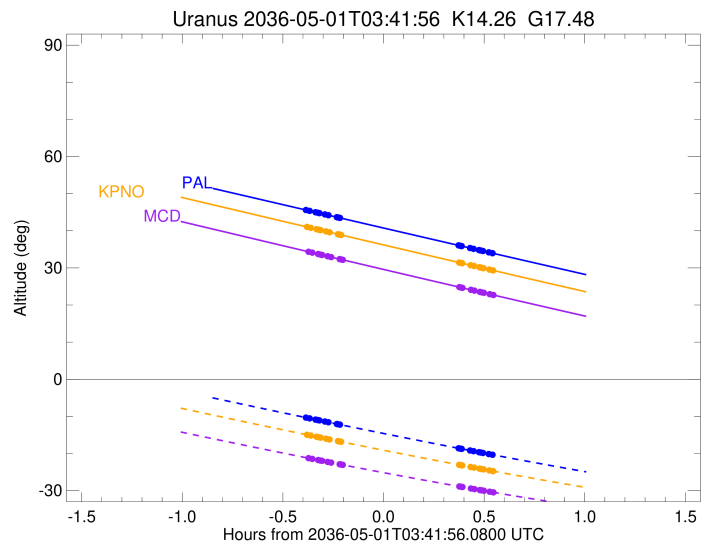
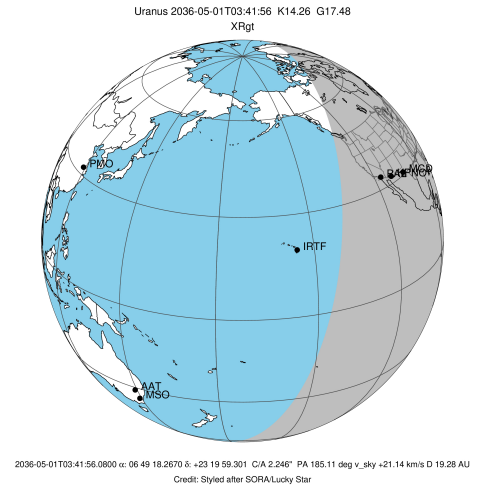


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-05-01T03:19:32.255		40.95	-15.04	50753.16	-16.90		
lambda	I	2036-05-01T03:20:15.563		40.79	-15.17	50026.71	-16.67		
delta	I	2036-05-01T03:22:00.786		40.42	-15.50	48300.35	-16.13		
gamma	I	2036-05-01T03:22:43.112		40.27	-15.63	47622.35	-15.90		
eta	I	2036-05-01T03:23:11.318		40.17	-15.71	47176.12	-15.74		
beta	I	2036-05-01T03:24:50.236		39.82	-16.02	45647.10	-15.14		
alpha	I	2036-05-01T03:25:51.661		39.60	-16.21	44728.80	-14.72		
4	I	2036-05-01T03:28:27.209		39.05	-16.68	42533.39	-13.59		
5	I	2036-05-01T03:28:43.416		39.00	-16.73	42309.19	-13.49		
6	I	2036-05-01T03:29:22.760		38.86	-16.85	41798.38	-13.16		

No planet occultations

6	E	2036-05-01T04:04:28.400		31.45	-23.05	41840.44	13.21		
5	E	2036-05-01T04:05:01.396		31.33	-23.14	42286.58	13.53		
4	E	2036-05-01T04:05:20.154		31.27	-23.19	42536.41	13.64		
alpha	E	2036-05-01T04:07:51.610		30.74	-23.62	44688.39	14.77		
beta	E	2036-05-01T04:08:57.241		30.51	-23.80	45673.74	15.20		
eta	E	2036-05-01T04:10:34.064		30.17	-24.07	47176.12	15.81		
gamma	E	2036-05-01T04:11:02.613		30.07	-24.15	47629.74	15.97		
delta	E	2036-05-01T04:11:44.295		29.92	-24.27	48300.35	16.20		
lambda	E	2036-05-01T04:13:29.042		29.56	-24.56	50026.71	16.75		
epsilon	E	2036-05-01T04:14:42.833		29.30	-24.76	51275.74	16.98		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-05-01T03:45:35.990  
 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 : 3379579163857292544  
 2Mass ID (if available) : 06491823+2319597  
 ICRS Star Coord at Epoch: 06h 49m 18.26699s +23:19:59.30137s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 14.260  
 G magnitude : 17.479  
 RP magnitude : 16.449  
 BP magnitude : 18.594  
 DUPflag : 0  
 Distance (au) : 19.283  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 21.14  
 Sun-Target sep (deg) : 60.45  
 Sun-Moon sep (deg) : 4.16  
 B (ring opening deg) : 65.06  
 PA of pole (deg) : 75.43  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.428  
 C/A sky separation (km) : 33962.5  
 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	2036-05-01T03:19:59.289		34.26	-21.32	50753.54	-16.87		
lambda	I	2036-05-01T03:20:42.720		34.10	-21.45	50026.71	-16.63		
delta	I	2036-05-01T03:22:28.230		33.73	-21.77	48300.35	-16.08		
gamma	I	2036-05-01T03:23:10.692		33.58	-21.89	47622.37	-15.85		
eta	I	2036-05-01T03:23:38.996		33.48	-21.98	47176.12	-15.68		
beta	I	2036-05-01T03:25:18.306		33.13	-22.27	45647.18	-15.08		
alpha	I	2036-05-01T03:26:20.043		32.91	-22.45	44728.61	-14.64		
4	I	2036-05-01T03:28:56.534		32.35	-22.91	42533.23	-13.49		
5	I	2036-05-01T03:29:12.830		32.29	-22.96	42309.39	-13.39		
6	I	2036-05-01T03:29:52.491		32.15	-23.07	41798.50	-13.06		

No planet occultations

6	E	2036-05-01T04:04:31.998		24.82	-28.88	41840.12	13.10		
5	E	2036-05-01T04:05:05.314		24.71	-28.96	42287.03	13.43		
4	E	2036-05-01T04:05:24.152		24.64	-29.01	42536.20	13.54		
alpha	E	2036-05-01T04:07:56.527		24.11	-29.41	44688.48	14.70		
beta	E	2036-05-01T04:09:02.449		23.88	-29.59	45673.65	15.14		
eta	E	2036-05-01T04:10:39.645		23.54	-29.84	47176.12	15.75		
gamma	E	2036-05-01T04:11:08.286		23.44	-29.91	47629.72	15.92		
delta	E	2036-05-01T04:11:50.094		23.29	-30.02	48300.35	16.16		
lambda	E	2036-05-01T04:13:35.102		22.93	-30.29	50026.71	16.71		
epsilon	E	2036-05-01T04:14:48.932		22.67	-30.48	51273.90	16.95		