

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-12-18T19:33:29.660
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 612222922049168256
 2Mass ID (if available) : 08573281+1754202

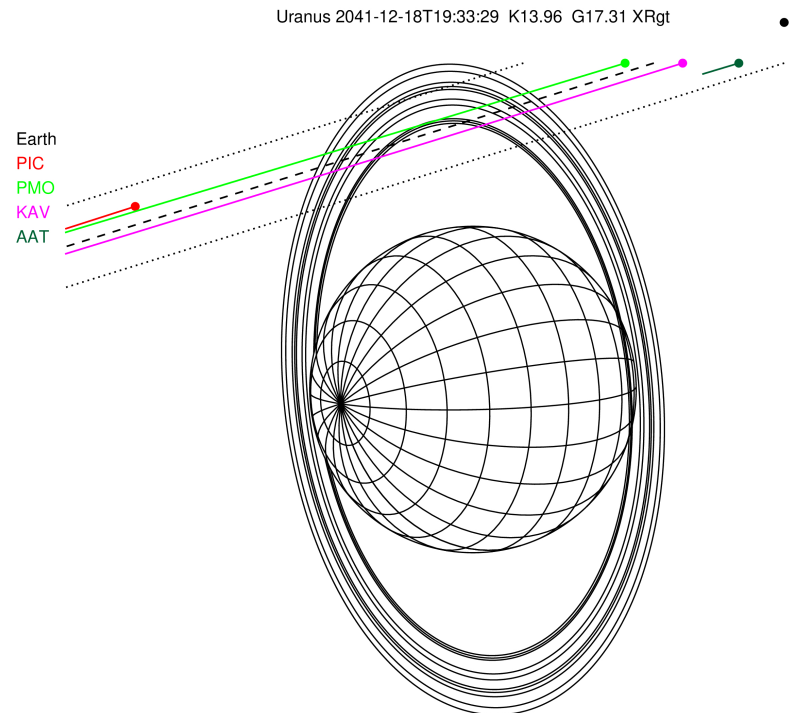
ICRS Star Coord at Epoch: 08h 57m 32.75212s +17:54:19.60903s

RUWE (>1.4 is poor) : 1.01
 K magnitude : 13.959
 G magnitude : 17.308
 RP magnitude : 16.233
 BP magnitude : 18.488
 DUPflag : 0
 Distance (au) : 17.782
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.42
 Sun-Target sep (deg) : 134.94
 Sun-Moon sep (deg) : 80.56
 B (ring opening deg) : 35.43
 PA of pole (deg) : 96.19

#	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

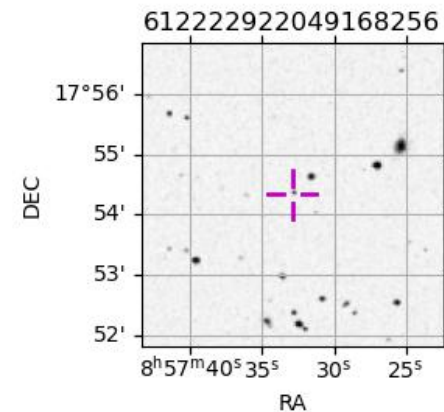


2041-12-18T19:33:29.6600 ra: 08 57 32.7521 s: +17 54 19.609 C/A 3.143° PA 197.34 deg v_sky -14.42 km/s D 17.78 AU
 Credit: Styled after SORA/Lucky Star

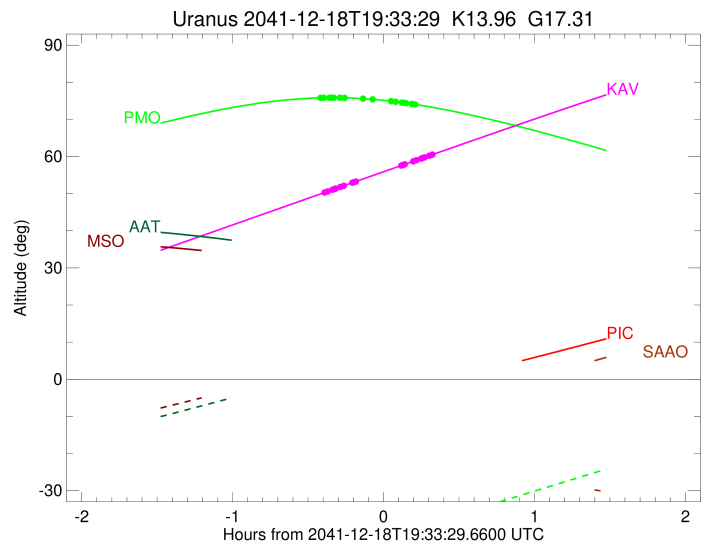
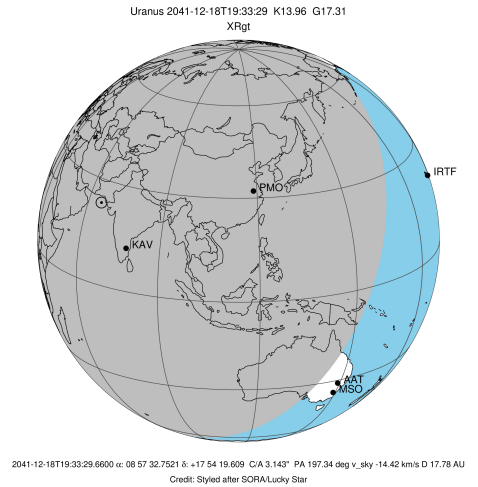


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
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	++++++		++++++	DEC 18 19:08 - DEC 18 19:45	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	++++++		++++++	DEC 18 19:10 - DEC 18 19:52	PnnRie
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 : 2041-12-18T19:33:06.350
 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 : 612222922049168256
 2Mass ID (if available) : 08573281+1754202
 ICRS Star Coord at Epoch: 08h 57m 32.75212s +17:54:19.60903s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 13.959
 G magnitude : 17.308
 RP magnitude : 16.233
 BP magnitude : 18.488
 DUPflag : 0
 Distance (au) : 17.782
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.42
 Sun-Target sep (deg) : 134.94
 Sun-Moon sep (deg) : 81.44
 B (ring opening deg) : 35.43
 PA of pole (deg) : 96.19
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.256
 C/A sky separation (km) : 41988.3
 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

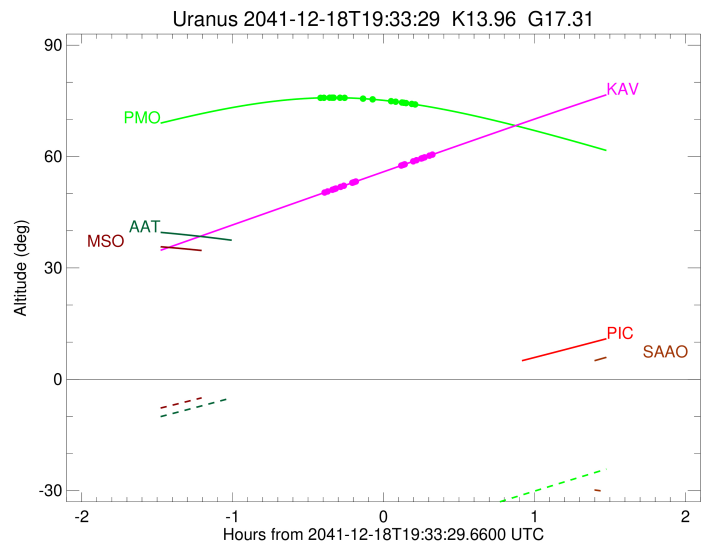
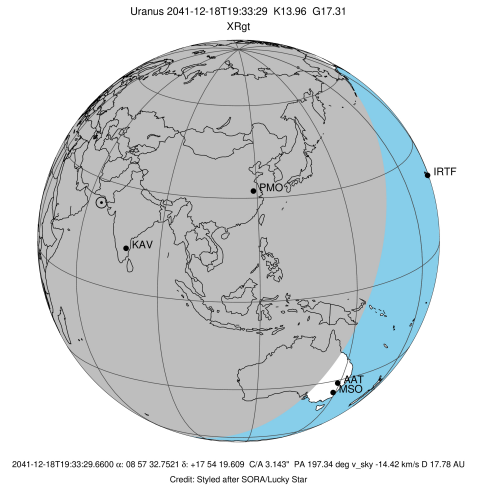


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-12-18T19:08:55.597		75.81	-47.97	50766.54	-13.76		
lambda	I	2041-12-18T19:09:50.116		75.83	-47.78	50026.71	-13.32		
delta	I	2041-12-18T19:12:06.320		75.85	-47.30	48300.35	-12.00		
gamma	I	2041-12-18T19:13:03.690		75.85	-47.09	47628.75	-11.40		
eta	I	2041-12-18T19:13:44.147		75.85	-46.95	47176.12	-10.97		
beta	I	2041-12-18T19:16:15.639		75.83	-46.41	45644.12	-9.23		
alpha	I	2041-12-18T19:18:01.598		75.81	-46.04	44739.36	-7.89		
4	I	2041-12-18T19:25:52.904		75.57	-44.37	42540.64	-1.28		

No planet occultations

4	E	2041-12-18T19:28:43.339		75.43	-43.77	42544.12	1.28		
alpha	E	2041-12-18T19:36:28.639		74.92	-42.13	44719.42	7.90		
beta	E	2041-12-18T19:38:17.602		74.77	-41.75	45655.91	9.23		
eta	E	2041-12-18T19:40:48.098		74.55	-41.21	47176.12	10.97		
gamma	E	2041-12-18T19:41:28.130		74.49	-41.07	47623.95	11.41		
delta	E	2041-12-18T19:42:25.913		74.40	-40.87	48300.35	12.01		
lambda	E	2041-12-18T19:44:42.097		74.18	-40.39	50026.71	13.33		
epsilon	E	2041-12-18T19:45:44.124		74.07	-40.17	50870.61	13.76		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-12-18T19:37:07.630
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 612222922049168256
 2Mass ID (if available) : 08573281+1754202
 ICRS Star Coord at Epoch: 08h 57m 32.75212s +17:54:19.60903s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 13.959
 G magnitude : 17.308
 RP magnitude : 16.233
 BP magnitude : 18.488
 DUPflag : 0
 Distance (au) : 17.782
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -14.42
 Sun-Target sep (deg) : 134.94
 Sun-Moon sep (deg) : 81.39
 B (ring opening deg) : 35.43
 PA of pole (deg) : 96.19
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.029
 C/A sky separation (km) : 39060.3
 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	2041-12-18T19:10:28.783		50.40	-77.10	50780.90	-15.73		
lambda	I	2041-12-18T19:11:17.110		50.60	-77.00	50026.71	-15.42		
delta	I	2041-12-18T19:13:12.624		51.06	-76.74	48300.35	-14.45		
gamma	I	2041-12-18T19:13:59.734		51.24	-76.64	47629.28	-14.03		
eta	I	2041-12-18T19:14:32.381		51.37	-76.56	47176.12	-13.73		
beta	I	2041-12-18T19:16:28.874		51.84	-76.29	45642.76	-12.58		
alpha	I	2041-12-18T19:17:43.194		52.13	-76.11	44743.45	-11.77		
4	I	2041-12-18T19:21:13.157		52.97	-75.58	42531.56	-9.28		
5	I	2041-12-18T19:21:50.189		53.11	-75.48	42181.64	-8.78		
6	I	2041-12-18T19:22:38.598		53.31	-75.36	41794.76	-8.15		

No planet occultations

6	E	2041-12-18T19:40:28.414		57.55	-72.25	41802.90	8.17		
5	E	2041-12-18T19:41:14.416		57.74	-72.11	42233.57	8.80		
4	E	2041-12-18T19:41:53.320		57.89	-71.99	42557.22	9.30		
alpha	E	2041-12-18T19:45:16.896		58.70	-71.34	44713.64	11.80		
beta	E	2041-12-18T19:46:34.103		59.00	-71.09	45658.89	12.61		
eta	E	2041-12-18T19:48:29.263		59.46	-70.72	47176.12	13.77		
gamma	E	2041-12-18T19:49:01.390		59.59	-70.62	47623.38	14.07		
delta	E	2041-12-18T19:49:48.769		59.78	-70.46	48300.35	14.50		
lambda	E	2041-12-18T19:51:43.887		60.23	-70.08	50026.71	15.47		
epsilon	E	2041-12-18T19:52:39.654		60.45	-69.90	50901.87	15.79		