

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-05T11:39:01.530
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3404539044177497472
 2Mass ID (if available) : 05334372+2327274

ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s

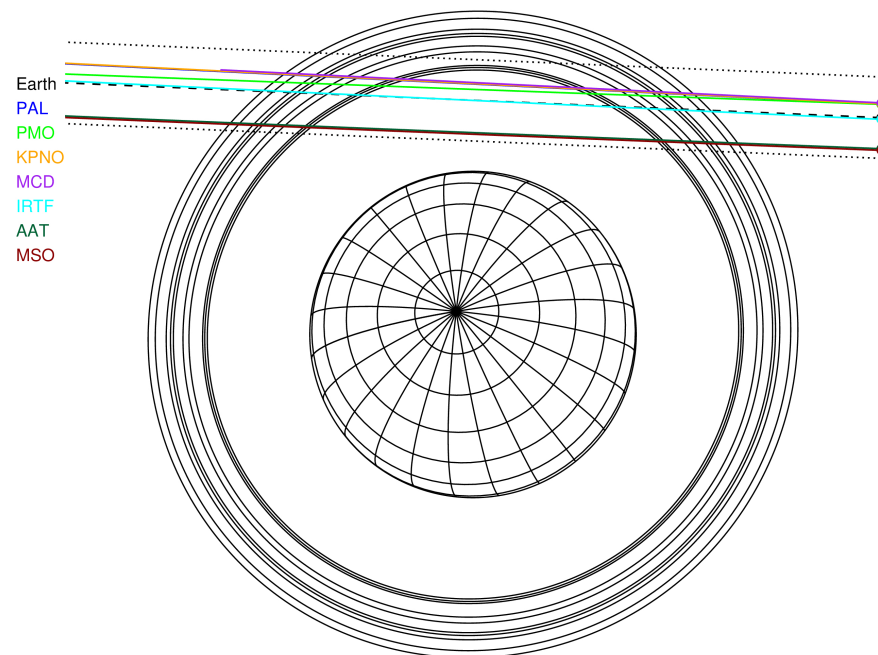
RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.463
 G magnitude : 15.842
 RP magnitude : 15.068
 BP magnitude : 16.470
 DUPflag : 0
 Distance (au) : 18.158
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.61
 Sun-Target sep (deg) : 159.75
 Sun-Moon sep (deg) : 105.25
 B (ring opening deg) : 79.91
 PA of pole (deg) : 35.96

#	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



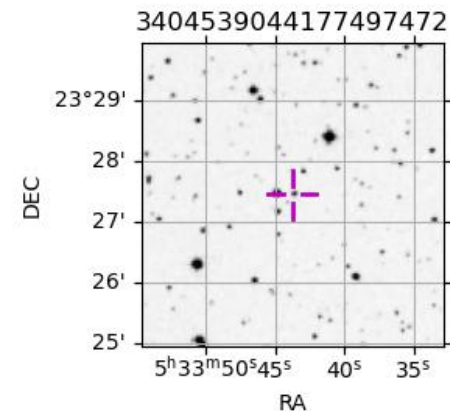
2032-01-05T11:39:01.5300 ra: 05 33 43.72533 s: +23 27 27.308 C/A 2.789° PA 177.56 deg v_sky -21.61 km/s D 18.16 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2032-01-05T11:39:01 K13.46 G15.84 XRgt

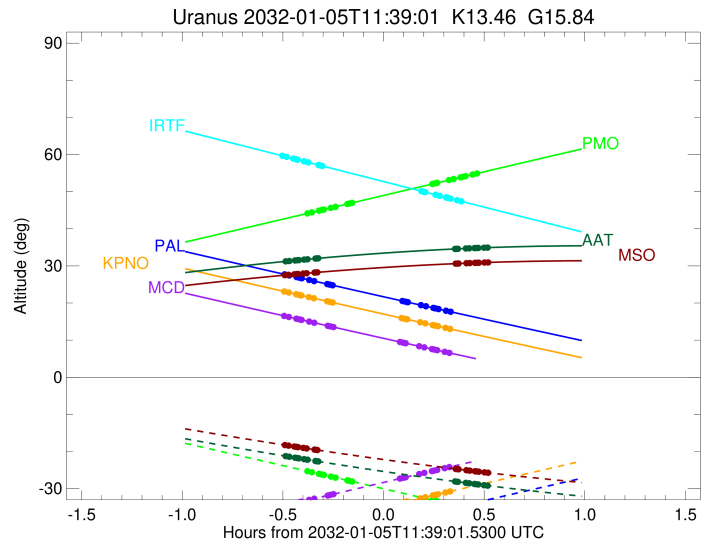
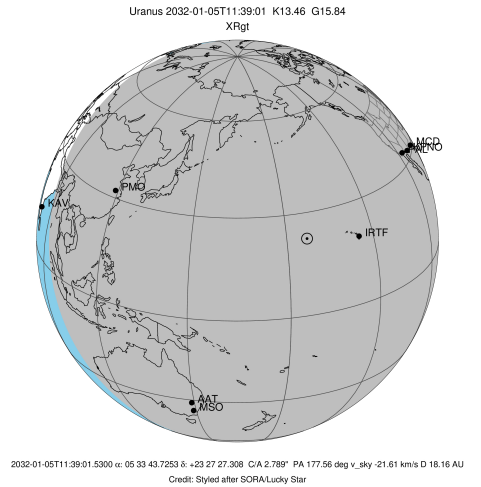


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++		+++++	JAN 05 11:09 - JAN 05 11:58	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++		+++++	JAN 05 11:16 - JAN 05 12:06	PnnRie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++		+++++	JAN 05 11:09 - JAN 05 11:58	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++		+++++	JAN 05 11:09 - JAN 05 11:58	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++		+++++	JAN 05 11:08 - JAN 05 12:01	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	+++++		+++++	JAN 05 11:09 - JAN 05 12:09	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	JAN 05 11:09 - JAN 05 12:09	PnnRie



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-05T11:34:43.310
 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 : 3404539044177497472
 2Mass ID (if available) : 05334372+2327274
 ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.463
 G magnitude : 15.842
 RP magnitude : 15.068
 BP magnitude : 16.470
 DUPflag : 0
 Distance (au) : 18.158
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.61
 Sun-Target sep (deg) : 159.75
 Sun-Moon sep (deg) : 105.79
 B (ring opening deg) : 79.91
 PA of pole (deg) : 35.96
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.975
 C/A sky separation (km) : 39184.6
 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_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

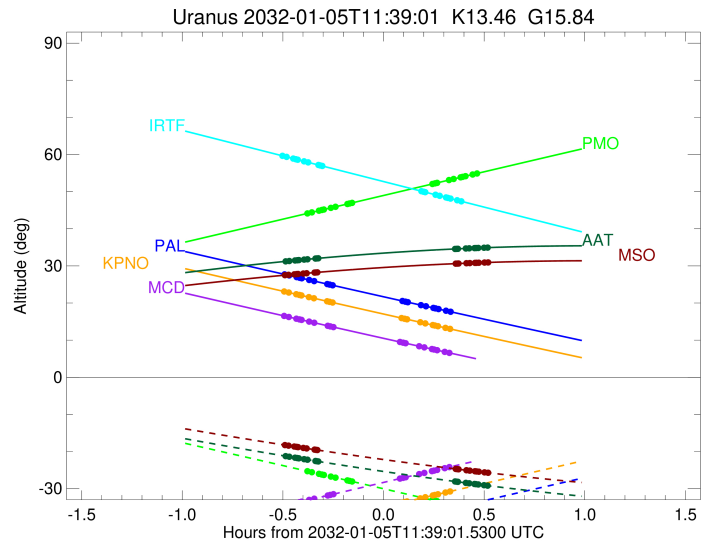
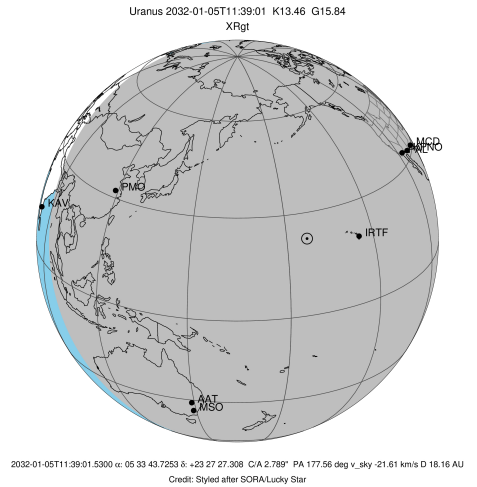


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-05T11:09:23.518		27.75	-45.68	51281.79	-13.79		
lambda	I	2032-01-05T11:10:55.446		27.43	-45.36	50026.71	-13.38		
delta	I	2032-01-05T11:13:08.556		26.98	-44.89	48300.35	-12.54		
gamma	I	2032-01-05T11:14:02.879		26.79	-44.70	47629.07	-12.17		
eta	I	2032-01-05T11:14:40.503		26.66	-44.57	47176.12	-11.91		
beta	I	2032-01-05T11:16:51.558		26.21	-44.12	45679.19	-10.92		
alpha	I	2032-01-05T11:18:21.182		25.91	-43.80	44731.94	-10.18		
4	I	2032-01-05T11:22:14.937		25.11	-42.99	42589.17	-8.10		
5	I	2032-01-05T11:23:08.749		24.93	-42.80	42173.70	-7.57		
6	I	2032-01-05T11:23:58.658		24.76	-42.63	41805.18	-7.03		

No planet occultations

6	E	2032-01-05T11:44:31.176		20.57	-38.33	41794.83	7.02		
5	E	2032-01-05T11:45:29.224		20.38	-38.13	42221.99	7.56		
4	E	2032-01-05T11:46:20.370		20.21	-37.95	42612.89	8.09		
alpha	E	2032-01-05T11:50:08.331		19.44	-37.16	44700.48	10.15		
beta	E	2032-01-05T11:51:39.867		19.13	-36.84	45662.57	10.89		
eta	E	2032-01-05T11:53:52.798		18.68	-36.38	47176.12	11.87		
gamma	E	2032-01-05T11:54:30.748		18.56	-36.25	47631.51	12.13		
delta	E	2032-01-05T11:55:25.058		18.37	-36.06	48300.35	12.50		
lambda	E	2032-01-05T11:57:38.663		17.93	-35.60	50026.71	13.33		
epsilon	E	2032-01-05T11:58:36.043		17.73	-35.40	50801.27	13.73		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-05T11:42:05.320
 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 : 3404539044177497472
 2Mass ID (if available) : 05334372+2327274
 ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.463
 G magnitude : 15.842
 RP magnitude : 15.068
 BP magnitude : 16.470
 DUPflag : 0
 Distance (au) : 18.158
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.61
 Sun-Target sep (deg) : 159.75
 Sun-Moon sep (deg) : 105.77
 B (ring opening deg) : 79.91
 PA of pole (deg) : 35.96
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.913
 C/A sky separation (km) : 38361.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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



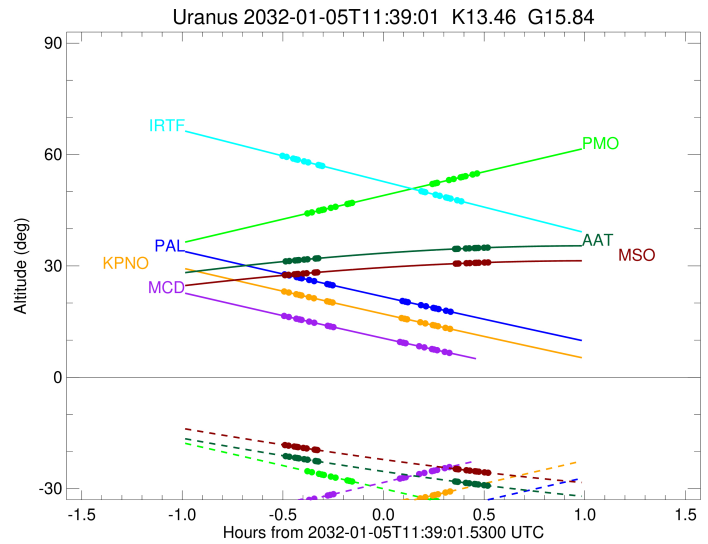
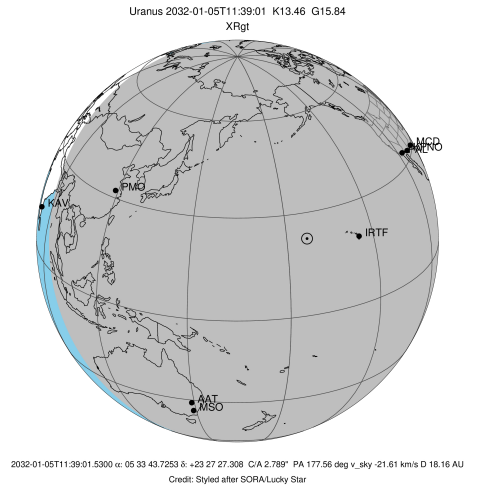
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-05T11:16:11.709		44.11	-25.27	51286.62	-14.28		
lambda	I	2032-01-05T11:17:40.694		44.43	-25.58	50026.71	-13.91		
delta	I	2032-01-05T11:19:48.339		44.88	-26.02	48300.35	-13.13		
gamma	I	2032-01-05T11:20:40.144		45.06	-26.20	47628.99	-12.79		
eta	I	2032-01-05T11:21:15.897		45.19	-26.33	47176.12	-12.54		
beta	I	2032-01-05T11:23:19.555		45.63	-26.75	45679.39	-11.64		
alpha	I	2032-01-05T11:24:43.104		45.92	-27.04	44732.74	-10.98		
4	I	2032-01-05T11:28:15.766		46.68	-27.78	42587.62	-9.15		
5	I	2032-01-05T11:29:03.007		46.85	-27.95	42171.67	-8.70		
6	I	2032-01-05T11:29:45.650		47.00	-28.09	41806.45	-8.24		

No planet occultations

6	E	2032-01-05T11:53:29.222		52.05	-33.06	41794.75	8.26		
5	E	2032-01-05T11:54:19.796		52.23	-33.24	42227.14	8.71		
4	E	2032-01-05T11:55:04.121		52.38	-33.40	42613.91	9.16		
alpha	E	2032-01-05T11:58:30.223		53.11	-34.12	44699.06	11.00		
beta	E	2032-01-05T11:59:55.251		53.41	-34.42	45661.62	11.67		
eta	E	2032-01-05T12:02:00.132		53.86	-34.86	47176.12	12.57		
gamma	E	2032-01-05T12:02:36.002		53.98	-34.98	47631.46	12.82		
delta	E	2032-01-05T12:03:27.500		54.17	-35.16	48300.35	13.16		
lambda	E	2032-01-05T12:05:34.843		54.62	-35.61	50026.71	13.94		
epsilon	E	2032-01-05T12:06:29.249		54.81	-35.80	50793.75	14.32		

```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2032-01-05T11:34:34.940
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        : 3404539044177497472
2Mass ID (if available) : 05334372+2327274
ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s
RUWE (>1.4 is poor)  : 0.95
K magnitude           : 13.463
G magnitude           : 15.842
RP magnitude          : 15.068
BP magnitude          : 16.470
DUPflag              : 0
Distance (au)         : 18.158
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -21.61
Sun-Target sep (deg)  : 159.75
Sun-Moon sep (deg)    : 105.73
B (ring opening deg) : 79.91
PA of pole (deg)     : 35.96
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.980
C/A sky separation (km) : 39245.9
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
    
```

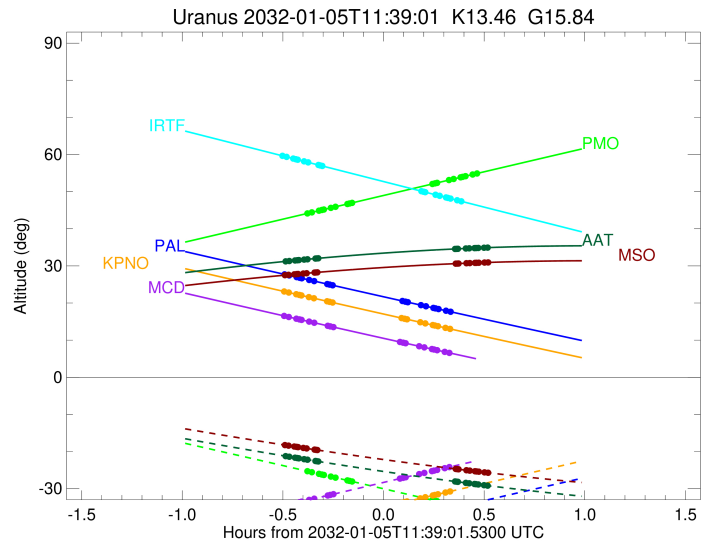
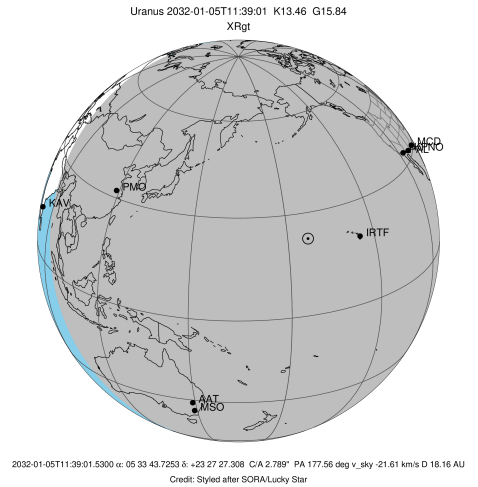


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-05T11:09:16.199		23.14	-41.23	51281.18	-13.74		
lambda	I	2032-01-05T11:10:48.449		22.82	-40.91	50026.71	-13.33		
delta	I	2032-01-05T11:13:02.148		22.36	-40.43	48300.35	-12.48		
gamma	I	2032-01-05T11:13:56.735		22.17	-40.24	47629.08	-12.11		
eta	I	2032-01-05T11:14:34.554		22.04	-40.11	47176.12	-11.84		
beta	I	2032-01-05T11:16:46.363		21.59	-39.64	45679.17	-10.85		
alpha	I	2032-01-05T11:18:16.596		21.28	-39.32	44731.86	-10.11		
4	I	2032-01-05T11:22:12.447		20.47	-38.49	42589.32	-8.01		
5	I	2032-01-05T11:23:06.923		20.29	-38.30	42173.90	-7.47		
6	I	2032-01-05T11:23:57.586		20.11	-38.12	41805.06	-6.92		

No planet occultations

6	E	2032-01-05T11:44:15.322		15.98	-33.83	41794.84	6.91		
5	E	2032-01-05T11:45:14.140		15.78	-33.63	42221.63	7.46		
4	E	2032-01-05T11:46:05.953		15.60	-33.45	42612.82	7.99		
alpha	E	2032-01-05T11:49:56.018		14.83	-32.64	44700.57	10.08		
beta	E	2032-01-05T11:51:28.175		14.52	-32.32	45662.63	10.82		
eta	E	2032-01-05T11:53:41.878		14.07	-31.85	47176.12	11.80		
gamma	E	2032-01-05T11:54:20.027		13.94	-31.71	47631.51	12.07		
delta	E	2032-01-05T11:55:14.608		13.76	-31.52	48300.35	12.44		
lambda	E	2032-01-05T11:57:28.820		13.31	-31.05	50026.71	13.28		
epsilon	E	2032-01-05T11:58:26.473		13.12	-30.85	50801.72	13.68		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-05T11:34:28.650
 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 : 3404539044177497472
 2Mass ID (if available) : 05334372+2327274
 ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.463
 G magnitude : 15.842
 RP magnitude : 15.068
 BP magnitude : 16.470
 DUPflag : 0
 Distance (au) : 18.158
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.61
 Sun-Target sep (deg) : 159.75
 Sun-Moon sep (deg) : 105.63
 B (ring opening deg) : 79.91
 PA of pole (deg) : 35.96
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.993
 C/A sky separation (km) : 39412.8
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

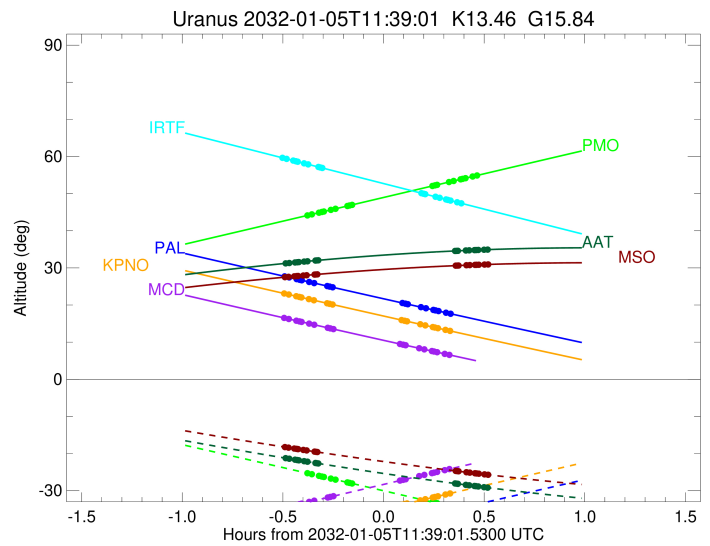
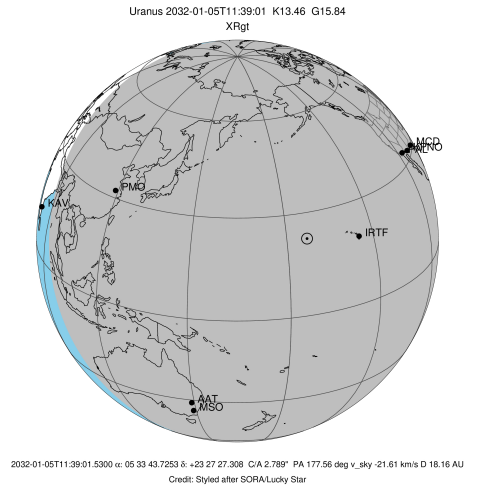


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-05T11:09:15.711		16.55	-34.65	51279.29	-13.61		
lambda	I	2032-01-05T11:10:48.672		16.23	-34.32	50026.71	-13.20		
delta	I	2032-01-05T11:13:03.768		15.77	-33.84	48300.35	-12.34		
gamma	I	2032-01-05T11:13:58.994		15.58	-33.65	47629.11	-11.97		
eta	I	2032-01-05T11:14:37.286		15.45	-33.51	47176.12	-11.69		
beta	I	2032-01-05T11:16:50.966		15.00	-33.04	45679.11	-10.68		
alpha	I	2032-01-05T11:18:22.748		14.68	-32.71	44731.61	-9.92		
4	I	2032-01-05T11:22:24.139		13.86	-31.86	42589.76	-7.77		
5	I	2032-01-05T11:23:20.441		13.67	-31.66	42174.51	-7.21		
6	I	2032-01-05T11:24:13.231		13.49	-31.47	41804.72	-6.64		

No planet occultations

6	E	2032-01-05T11:43:46.678		9.54	-27.33	41794.88	6.63		
5	E	2032-01-05T11:44:47.646		9.33	-27.11	42220.68	7.20		
4	E	2032-01-05T11:45:41.287		9.15	-26.92	42612.61	7.75		
alpha	E	2032-01-05T11:49:36.891		8.37	-26.10	44700.81	9.90		
beta	E	2032-01-05T11:51:10.610		8.06	-25.77	45662.79	10.65		
eta	E	2032-01-05T11:53:26.201		7.61	-25.29	47176.12	11.65		
gamma	E	2032-01-05T11:54:04.829		7.48	-25.16	47631.51	11.92		
delta	E	2032-01-05T11:55:00.053		7.29	-24.96	48300.35	12.30		
lambda	E	2032-01-05T11:57:15.679		6.85	-24.49	50026.71	13.15		
epsilon	E	2032-01-05T11:58:13.962		6.65	-24.28	50802.87	13.56		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-05T11:35:58.110
 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 : 3404539044177497472
 2Mass ID (if available) : 05334372+2327274
 ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.463
 G magnitude : 15.842
 RP magnitude : 15.068
 BP magnitude : 16.470
 DUPflag : 0
 Distance (au) : 18.158
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.61
 Sun-Target sep (deg) : 159.75
 Sun-Moon sep (deg) : 106.12
 B (ring opening deg) : 79.91
 PA of pole (deg) : 35.96
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.781
 C/A sky separation (km) : 36620.6
 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

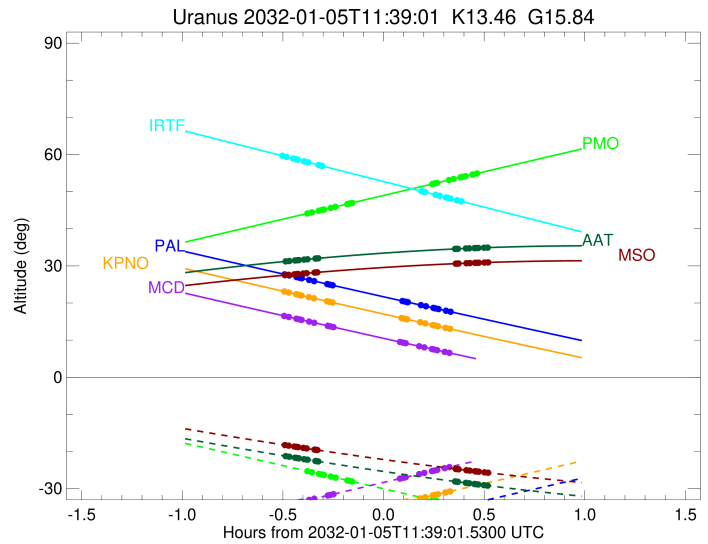
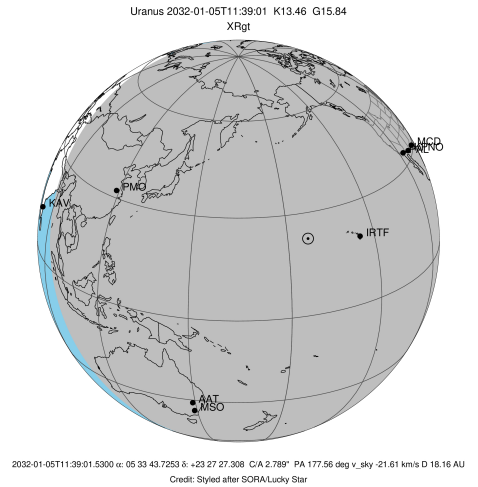


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-05T11:08:44.358		59.69	-79.85	51309.79	-15.22		
lambda	I	2032-01-05T11:10:09.221		59.36	-79.54	50026.71	-14.90		
delta	I	2032-01-05T11:12:07.721		58.91	-79.10	48300.35	-14.23		
gamma	I	2032-01-05T11:12:55.414		58.73	-78.92	47628.66	-13.94		
eta	I	2032-01-05T11:13:28.124		58.60	-78.79	47176.12	-13.73		
beta	I	2032-01-05T11:15:20.089		58.17	-78.37	45679.99	-12.98		
alpha	I	2032-01-05T11:16:34.352		57.89	-78.10	44735.27	-12.43		
4	I	2032-01-05T11:19:37.944		57.18	-77.40	42583.30	-10.98		
5	I	2032-01-05T11:20:16.873		57.04	-77.26	42166.87	-10.63		
6	I	2032-01-05T11:20:50.665		56.91	-77.13	41809.85	-10.29		

No planet occultations

6	E	2032-01-05T11:50:13.381		50.15	-70.41	41794.95	10.28		
5	E	2032-01-05T11:50:55.179		49.99	-70.25	42233.96	10.61		
4	E	2032-01-05T11:51:31.382		49.86	-70.11	42615.00	10.96		
alpha	E	2032-01-05T11:54:29.123		49.17	-69.43	44697.31	12.40		
beta	E	2032-01-05T11:55:45.196		48.88	-69.14	45660.44	12.95		
eta	E	2032-01-05T11:57:38.906		48.45	-68.70	47176.12	13.70		
gamma	E	2032-01-05T11:58:11.902		48.32	-68.58	47631.40	13.90		
delta	E	2032-01-05T11:58:59.530		48.14	-68.39	48300.35	14.19		
lambda	E	2032-01-05T12:00:58.379		47.69	-67.94	50026.71	14.85		
epsilon	E	2032-01-05T12:01:49.045		47.49	-67.74	50785.92	15.17		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-05T11:40:20.440
 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 : 3404539044177497472
 2Mass ID (if available) : 05334372+2327274
 ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.463
 G magnitude : 15.842
 RP magnitude : 15.068
 BP magnitude : 16.470
 DUPflag : 0
 Distance (au) : 18.158
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.61
 Sun-Target sep (deg) : 159.75
 Sun-Moon sep (deg) : 105.69
 B (ring opening deg) : 79.91
 PA of pole (deg) : 35.96
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.399
 C/A sky separation (km) : 31590.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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

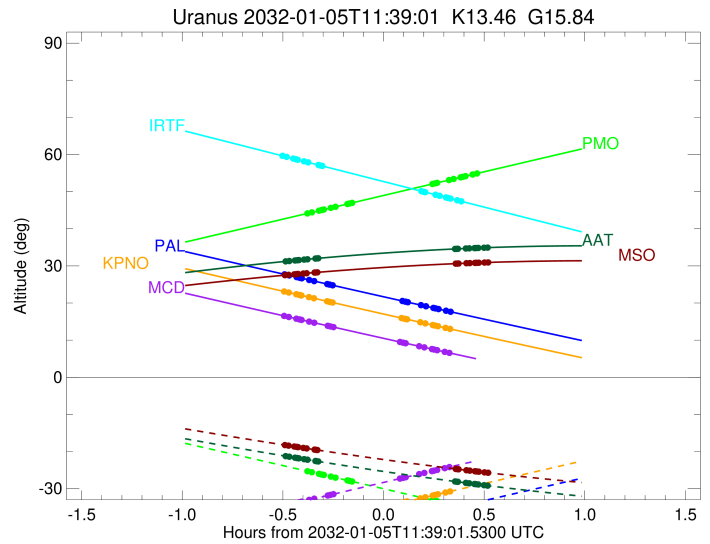
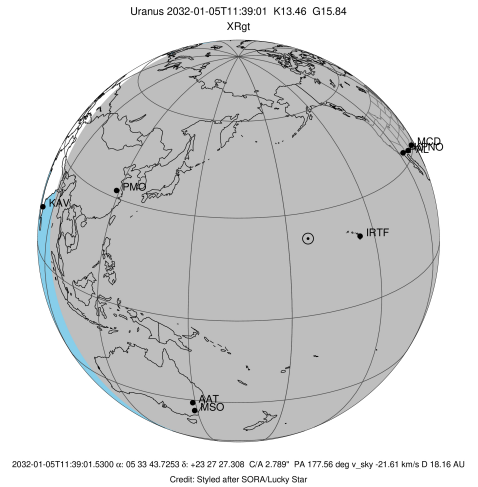


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-05T11:09:39.806		31.20	-21.22	51356.06	-17.23		
lambda	I	2032-01-05T11:10:57.188		31.32	-21.41	50026.71	-17.03		
delta	I	2032-01-05T11:12:39.836		31.47	-21.67	48300.35	-16.60		
gamma	I	2032-01-05T11:13:20.567		31.53	-21.77	47627.94	-16.42		
eta	I	2032-01-05T11:13:48.199		31.57	-21.84	47176.12	-16.29		
beta	I	2032-01-05T11:15:21.309		31.70	-22.06	45680.87	-15.82		
alpha	I	2032-01-05T11:16:21.356		31.78	-22.21	44740.08	-15.49		
4	I	2032-01-05T11:18:44.947		31.98	-22.56	42574.48	-14.66		
5	I	2032-01-05T11:19:13.561		32.02	-22.63	42159.72	-14.46		
6	I	2032-01-05T11:19:37.266		32.05	-22.68	41817.23	-14.28		

No planet occultations

6	E	2032-01-05T12:00:17.525		34.56	-28.06	41796.92	14.29		
5	E	2032-01-05T12:00:49.124		34.59	-28.12	42251.30	14.47		
4	E	2032-01-05T12:01:14.787		34.60	-28.17	42616.51	14.67		
alpha	E	2032-01-05T12:03:32.113		34.69	-28.44	44692.79	15.50		
beta	E	2032-01-05T12:04:33.723		34.73	-28.56	45656.91	15.84		
eta	E	2032-01-05T12:06:08.224		34.79	-28.74	47176.12	16.30		
gamma	E	2032-01-05T12:06:36.025		34.81	-28.80	47631.11	16.43		
delta	E	2032-01-05T12:07:16.526		34.83	-28.88	48300.35	16.61		
lambda	E	2032-01-05T12:08:59.078		34.89	-29.07	50026.71	17.05		
epsilon	E	2032-01-05T12:09:42.120		34.91	-29.15	50764.05	17.25		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-05T11:40:18.000
 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 : 3404539044177497472
 2Mass ID (if available) : 05334372+2327274
 ICRS Star Coord at Epoch: 05h 33m 43.72533s +23:27:27.30796s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.463
 G magnitude : 15.842
 RP magnitude : 15.068
 BP magnitude : 16.470
 DUPflag : 0
 Distance (au) : 18.158
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.61
 Sun-Target sep (deg) : 159.75
 Sun-Moon sep (deg) : 105.64
 B (ring opening deg) : 79.91
 PA of pole (deg) : 35.96
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.380
 C/A sky separation (km) : 31340.3
 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	2032-01-05T11:09:26.952		27.49	-18.25	51358.31	-17.30		
lambda	I	2032-01-05T11:10:44.124		27.59	-18.43	50026.71	-17.11		
delta	I	2032-01-05T11:12:26.267		27.73	-18.66	48300.35	-16.69		
gamma	I	2032-01-05T11:13:06.780		27.78	-18.76	47627.90	-16.51		
eta	I	2032-01-05T11:13:34.252		27.82	-18.82	47176.12	-16.38		
beta	I	2032-01-05T11:15:06.781		27.94	-19.03	45680.90	-15.93		
alpha	I	2032-01-05T11:16:06.399		28.02	-19.17	44740.29	-15.61		
4	I	2032-01-05T11:18:28.858		28.20	-19.49	42574.07	-14.79		
5	I	2032-01-05T11:18:57.186		28.24	-19.56	42159.47	-14.60		
6	I	2032-01-05T11:19:20.622		28.26	-19.61	41817.59	-14.42		

No planet occultations

6	E	2032-01-05T12:00:29.627		30.60	-24.69	41797.05	14.43		
5	E	2032-01-05T12:01:00.963		30.62	-24.74	42252.01	14.61		
4	E	2032-01-05T12:01:26.335		30.64	-24.79	42616.52	14.80		
alpha	E	2032-01-05T12:03:42.531		30.72	-25.04	44692.61	15.62		
beta	E	2032-01-05T12:04:43.716		30.76	-25.15	45656.76	15.94		
eta	E	2032-01-05T12:06:17.642		30.81	-25.32	47176.12	16.40		
gamma	E	2032-01-05T12:06:45.284		30.83	-25.36	47631.10	16.52		
delta	E	2032-01-05T12:07:25.569		30.85	-25.44	48300.35	16.70		
lambda	E	2032-01-05T12:09:07.621		30.90	-25.62	50026.71	17.12		
epsilon	E	2032-01-05T12:09:50.427		30.92	-25.69	50763.26	17.32		