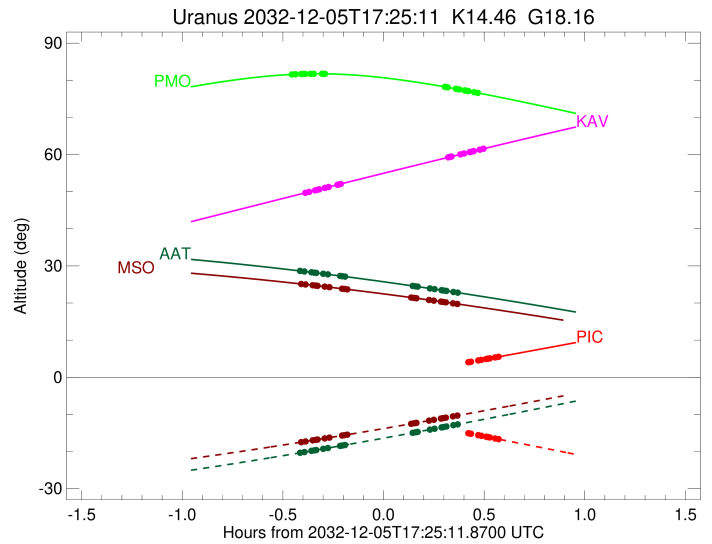
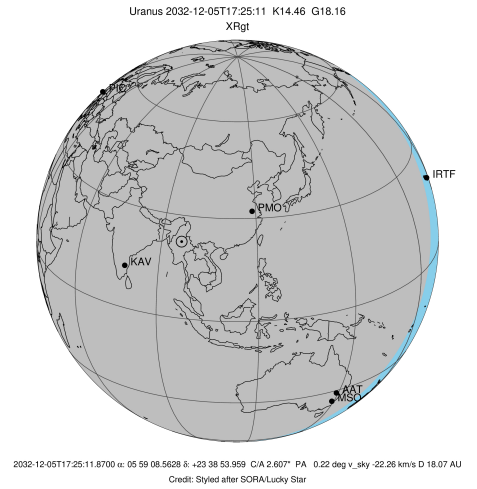



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-12-05T17:28:19.280
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      : 3424869735731250816
2Mass ID (if available) : 05590854+2338541
ICRS Star Coord at Epoch: 05h 59m 08.56279s +23:38:53.95880s
RUWE (>1.4 is poor) : 0.00
K magnitude         : 14.463
G magnitude         : 18.157
RP magnitude        : 16.787
BP magnitude        : 18.783
DUPflag            : 0
Distance (au)       : 18.074
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -22.26
Sun-Target sep (deg) : 163.87
Sun-Moon sep (deg)  : 159.76
B (ring opening deg) : 75.52
PA of pole (deg)    : 56.46
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.258
C/A sky separation (km) : 29604.3
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall11.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
  
```

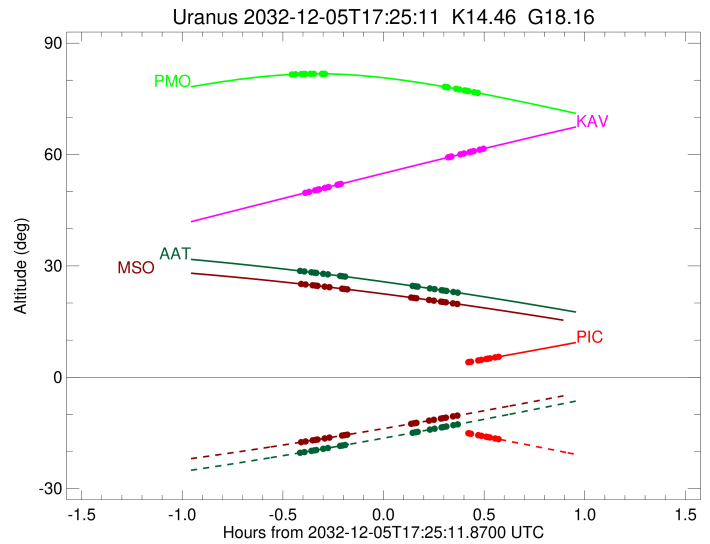
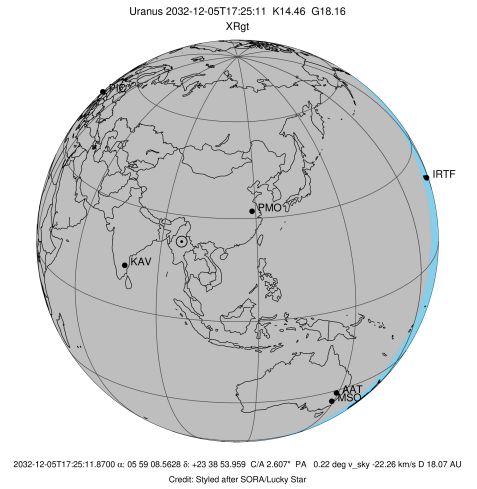


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-05T16:58:32.847	-3.94x	-6.18	50993.70	-18.19			
lambda	I	2032-12-05T16:59:25.983	-3.81x	-6.33	50026.71	-18.10			
delta	I	2032-12-05T17:01:02.305	-3.58x	-6.60	48300.35	-17.73			
gamma	I	2032-12-05T17:01:40.197	-3.49x	-6.70	47631.27	-17.58			
eta	I	2032-12-05T17:02:06.171	-3.42x	-6.78	47176.12	-17.47			
beta	I	2032-12-05T17:03:32.872	-3.21x	-7.02	45677.62	-17.07			
alpha	I	2032-12-05T17:04:28.309	-3.07x	-7.17	44740.62	-16.79			
4	I	2032-12-05T17:06:38.083	-2.75x	-7.53	42610.37	-16.10			
5	I	2032-12-05T17:06:58.878	-2.70x	-7.59	42263.07	-15.93			
6	I	2032-12-05T17:07:28.193	-2.63x	-7.68	41794.81	-15.78			

No planet occultations

6	E	2032-12-05T17:50:29.941	4.05x	-15.08	41838.53	15.82			
5	E	2032-12-05T17:50:50.042	4.11x	-15.14	42159.99	15.98			
4	E	2032-12-05T17:51:17.139	4.18x	-15.22	42593.48	16.15			
alpha	E	2032-12-05T17:53:24.233	4.52x	-15.59	44690.61	16.85			
beta	E	2032-12-05T17:54:20.631	4.68x	-15.76	45647.41	17.13			
eta	E	2032-12-05T17:55:48.836	4.92x	-16.02	47176.12	17.53			
gamma	E	2032-12-05T17:56:14.275	4.98x	-16.09	47623.47	17.64			
delta	E	2032-12-05T17:56:52.471	5.09	-16.21	48300.35	17.80			
lambda	E	2032-12-05T17:58:28.428	5.35	-16.49	50026.71	18.17			
epsilon	E	2032-12-05T17:59:12.879	5.47	-16.62	50838.20	18.27			

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-05T17:24:52.820
 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 : 3424869735731250816
 2Mass ID (if available) : 05590854+2338541
 ICRS Star Coord at Epoch: 05h 59m 08.56279s +23:38:53.95880s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.463
 G magnitude : 18.157
 RP magnitude : 16.787
 BP magnitude : 18.783
 DUPflag : 0
 Distance (au) : 18.074
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.26
 Sun-Target sep (deg) : 163.87
 Sun-Moon sep (deg) : 159.31
 B (ring opening deg) : 75.52
 PA of pole (deg) : 56.46
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.544
 C/A sky separation (km) : 33341.0
 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

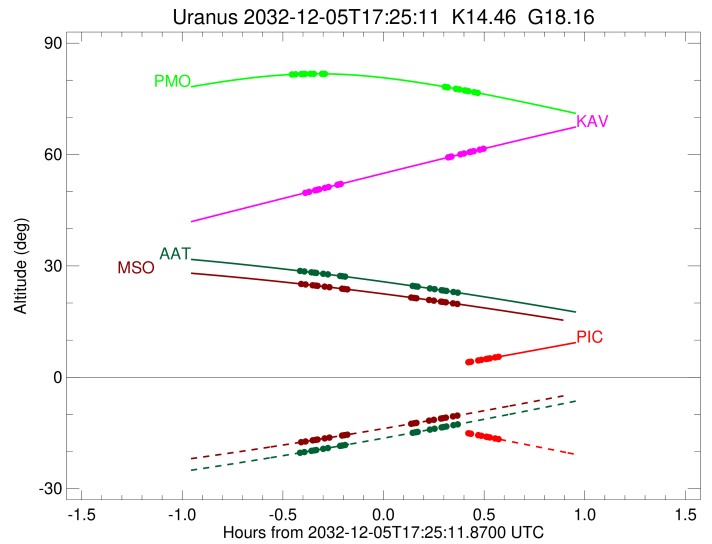
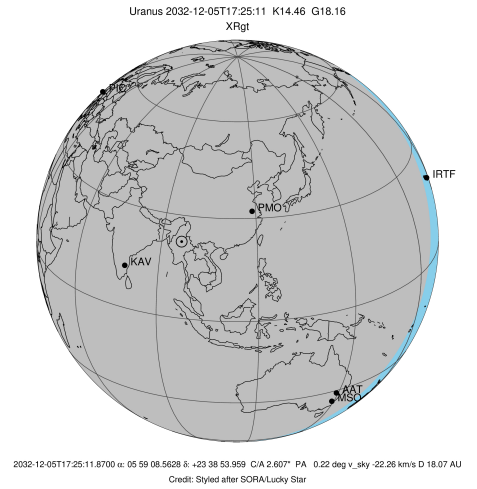


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-05T16:58:05.644		81.59	-73.25	50956.79	-17.27		
lambda	I	2032-12-05T16:58:59.559		81.62	-73.08	50026.71	-17.12		
delta	I	2032-12-05T17:00:41.926		81.68	-72.77	48300.35	-16.60		
gamma	I	2032-12-05T17:01:22.524		81.70	-72.64	47631.04	-16.37		
eta	I	2032-12-05T17:01:50.443		81.71	-72.56	47176.12	-16.21		
beta	I	2032-12-05T17:03:24.543		81.74	-72.26	45676.11	-15.64		
alpha	I	2032-12-05T17:04:25.439		81.75	-72.07	44737.21	-15.23		
4	I	2032-12-05T17:06:50.045		81.75	-71.62	42613.17	-14.19		
5	I	2032-12-05T17:07:14.667		81.75	-71.54	42252.13	-13.95		
6	I	2032-12-05T17:07:47.518		81.74	-71.43	41795.58	-13.71		

No planet occultations

6	E	2032-12-05T17:43:26.977		78.25	-64.33	41832.89	13.71		
5	E	2032-12-05T17:43:50.895		78.18	-64.25	42164.29	13.95		
4	E	2032-12-05T17:44:21.826		78.10	-64.14	42598.29	14.19		
alpha	E	2032-12-05T17:46:44.185		77.72	-63.66	44692.97	15.23		
beta	E	2032-12-05T17:47:46.196		77.55	-63.44	45649.08	15.64		
eta	E	2032-12-05T17:49:22.071		77.28	-63.11	47176.12	16.21		
gamma	E	2032-12-05T17:49:49.557		77.20	-63.02	47623.94	16.37		
delta	E	2032-12-05T17:50:30.590		77.09	-62.88	48300.35	16.60		
lambda	E	2032-12-05T17:52:12.961		76.80	-62.53	50026.71	17.12		
epsilon	E	2032-12-05T17:52:58.795		76.66	-62.37	50816.48	17.27		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-05T17:27:42.880
 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 : 3424869735731250816
 2Mass ID (if available) : 05590854+2338541
 ICRS Star Coord at Epoch: 05h 59m 08.56279s +23:38:53.95880s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.463
 G magnitude : 18.157
 RP magnitude : 16.787
 BP magnitude : 18.783
 DUPflag : 0
 Distance (au) : 18.074
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.26
 Sun-Target sep (deg) : 163.87
 Sun-Moon sep (deg) : 159.74
 B (ring opening deg) : 75.52
 PA of pole (deg) : 56.46
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.677
 C/A sky separation (km) : 35087.9
 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



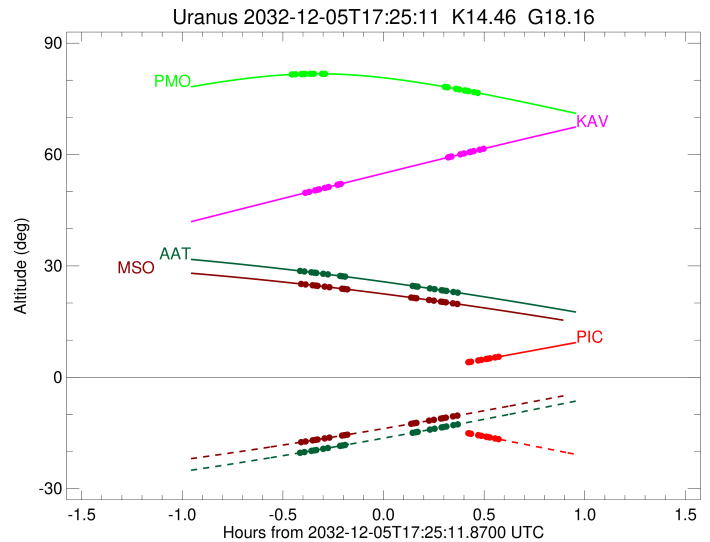
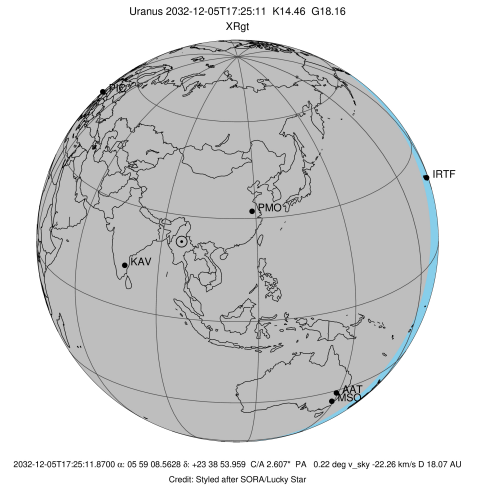
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-05T17:02:07.122		49.73	-65.63	50941.81	-16.48		
lambda	I	2032-12-05T17:03:02.758		49.94	-65.83	50026.71	-16.30		
delta	I	2032-12-05T17:04:50.635		50.35	-66.22	48300.35	-15.69		
gamma	I	2032-12-05T17:05:33.646		50.51	-66.37	47630.92	-15.43		
eta	I	2032-12-05T17:06:03.295		50.63	-66.48	47176.12	-15.25		
beta	I	2032-12-05T17:07:43.870		51.01	-66.84	45675.36	-14.57		
alpha	I	2032-12-05T17:08:49.514		51.25	-67.07	44735.56	-14.08		
4	I	2032-12-05T17:11:27.328		51.85	-67.63	42614.21	-12.83		
5	I	2032-12-05T17:11:55.146		51.95	-67.73	42246.75	-12.54		
6	I	2032-12-05T17:12:31.361		52.09	-67.86	41796.27	-12.25		

No planet occultations

6	E	2032-12-05T17:44:27.387		59.24	-74.26	41829.51	12.27		
5	E	2032-12-05T17:44:54.613		59.34	-74.34	42167.46	12.56		
4	E	2032-12-05T17:45:28.776		59.46	-74.44	42600.99	12.86		
alpha	E	2032-12-05T17:48:03.985		60.03	-74.91	44694.53	14.12		
beta	E	2032-12-05T17:49:10.594		60.28	-75.11	45650.14	14.60		
eta	E	2032-12-05T17:50:52.707		60.65	-75.40	47176.12	15.28		
gamma	E	2032-12-05T17:51:21.850		60.76	-75.49	47624.22	15.47		
delta	E	2032-12-05T17:52:05.185		60.91	-75.61	48300.35	15.73		
lambda	E	2032-12-05T17:53:52.775		61.31	-75.91	50026.71	16.35		
epsilon	E	2032-12-05T17:54:40.008		61.48	-76.05	50804.77	16.53		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-12-05T17:22:58.340
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      : 3424869735731250816
2Mass ID (if available) : 05590854+2338541
ICRS Star Coord at Epoch: 05h 59m 08.56279s +23:38:53.95880s
RUWE (>1.4 is poor) : 0.00
K magnitude         : 14.463
G magnitude         : 18.157
RP magnitude        : 16.787
BP magnitude        : 18.783
DUPflag            : 0
Distance (au)       : 18.074
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -22.26
Sun-Target sep (deg) : 163.87
Sun-Moon sep (deg)  : 158.53
B (ring opening deg) : 75.52
PA of pole (deg)    : 56.46
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.980
C/A sky separation (km) : 39061.7
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall11.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
  
```

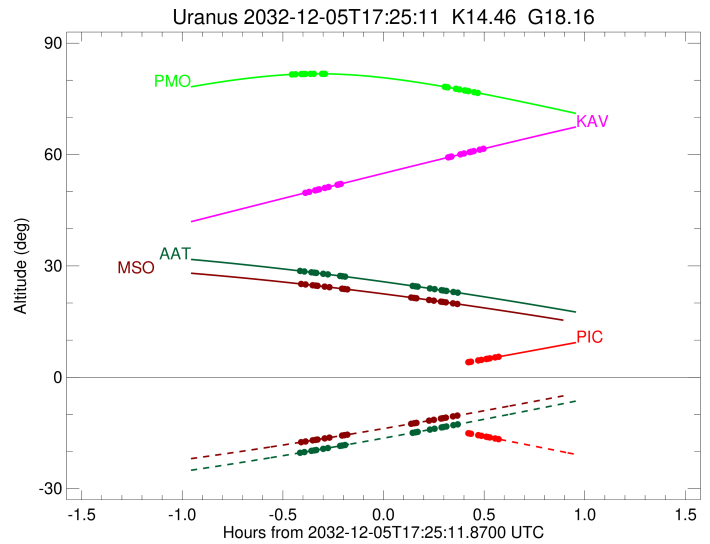
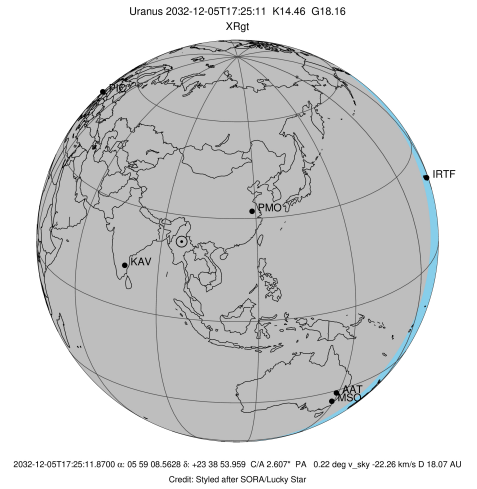


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-12-05T17:00:37.680		28.61	-20.30	50899.88	-14.49		
lambda	I	2032-12-05T17:01:38.285		28.50	-20.15	50026.71	-14.21		
delta	I	2032-12-05T17:03:43.587		28.27	-19.82	48300.35	-13.33		
gamma	I	2032-12-05T17:04:34.567		28.17	-19.69	47630.50	-12.94		
eta	I	2032-12-05T17:05:10.044		28.11	-19.60	47176.12	-12.67		
beta	I	2032-12-05T17:07:13.595		27.88	-19.28	45672.87	-11.63		
alpha	I	2032-12-05T17:08:37.320		27.72	-19.06	44730.22	-10.87		
4	I	2032-12-05T17:12:12.838		27.30	-18.50	42616.27	-8.73		
5	I	2032-12-05T17:12:56.929		27.22	-18.38	42229.22	-8.20		
6	I	2032-12-05T17:13:51.117		27.11	-18.24	41799.93	-7.64		

No planet occultations

6	E	2032-12-05T17:33:49.404		24.62	-14.98	41820.83	7.63		
5	E	2032-12-05T17:34:34.681		24.52	-14.85	42177.53	8.19		
4	E	2032-12-05T17:35:25.302		24.41	-14.71	42606.99	8.72		
alpha	E	2032-12-05T17:38:58.722		23.94	-14.11	44698.58	10.86		
beta	E	2032-12-05T17:40:23.652		23.74	-13.87	45652.71	11.62		
eta	E	2032-12-05T17:42:29.152		23.46	-13.51	47176.12	12.65		
gamma	E	2032-12-05T17:43:04.243		23.38	-13.41	47624.87	12.93		
delta	E	2032-12-05T17:43:55.734		23.26	-13.27	48300.35	13.31		
lambda	E	2032-12-05T17:46:01.234		22.98	-12.91	50026.71	14.19		
epsilon	E	2032-12-05T17:46:53.949		22.85	-12.76	50783.57	14.47		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-12-05T17:23:04.370
 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 : 3424869735731250816
 2Mass ID (if available) : 05590854+2338541
 ICRS Star Coord at Epoch: 05h 59m 08.56279s +23:38:53.95880s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 14.463
 G magnitude : 18.157
 RP magnitude : 16.787
 BP magnitude : 18.783
 DUPflag : 0
 Distance (au) : 18.074
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.26
 Sun-Target sep (deg) : 163.87
 Sun-Moon sep (deg) : 158.52
 B (ring opening deg) : 75.52
 PA of pole (deg) : 56.46
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.000
 C/A sky separation (km) : 39325.1
 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	2032-12-05T17:00:57.607		25.10	-17.44	50897.27	-14.33		
lambda	I	2032-12-05T17:01:58.729		25.00	-17.29	50026.71	-14.04		
delta	I	2032-12-05T17:04:05.687		24.78	-16.99	48300.35	-13.14		
gamma	I	2032-12-05T17:04:57.443		24.69	-16.86	47630.47	-12.74		
eta	I	2032-12-05T17:05:33.497		24.63	-16.77	47176.12	-12.46		
beta	I	2032-12-05T17:07:39.400		24.41	-16.47	45672.68	-11.39		
alpha	I	2032-12-05T17:09:05.081		24.26	-16.26	44729.82	-10.60		
4	I	2032-12-05T17:12:47.731		23.86	-15.71	42616.35	-8.36		
5	I	2032-12-05T17:13:34.117		23.78	-15.59	42227.78	-7.80		
6	I	2032-12-05T17:14:31.094		23.67	-15.45	41800.34	-7.20		

No planet occultations

6	E	2032-12-05T17:33:22.208		21.49	-12.55	41820.05	7.20		
5	E	2032-12-05T17:34:10.268		21.39	-12.42	42178.57	7.79		
4	E	2032-12-05T17:35:03.195		21.28	-12.28	42607.46	8.36		
alpha	E	2032-12-05T17:38:43.731		20.83	-11.70	44698.94	10.59		
beta	E	2032-12-05T17:40:10.613		20.64	-11.46	45652.93	11.38		
eta	E	2032-12-05T17:42:18.457		20.37	-11.12	47176.12	12.44		
gamma	E	2032-12-05T17:42:54.122		20.30	-11.03	47624.92	12.73		
delta	E	2032-12-05T17:43:46.386		20.19	-10.88	48300.35	13.12		
lambda	E	2032-12-05T17:45:53.532		19.92	-10.54	50026.71	14.02		
epsilon	E	2032-12-05T17:46:46.749		19.80	-10.40	50782.08	14.31		