

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-08T16:57:06.470
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3881514949310540416
 2Mass ID (if available) : 10022164+1251288

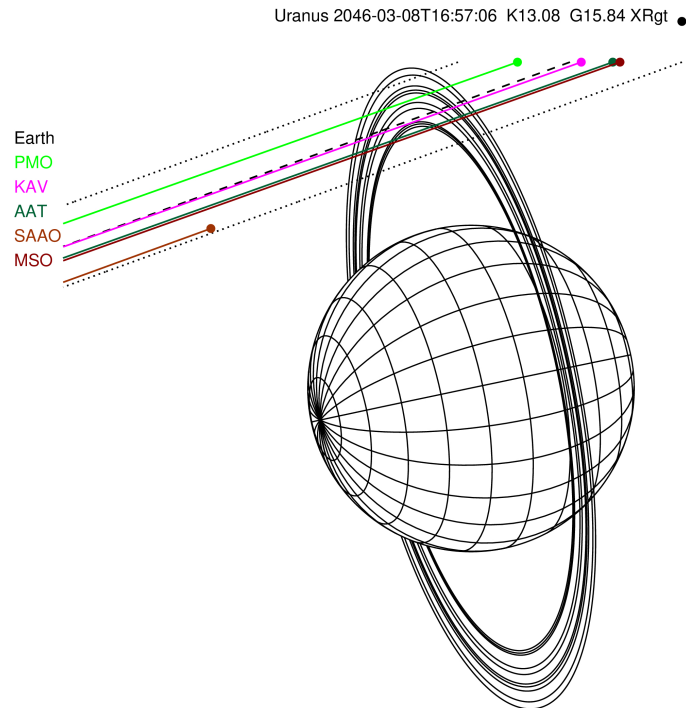
ICRS Star Coord at Epoch: 10h 02m 21.67031s +12:51:28.41914s

RUWE (>1.4 is poor) : 2.28
 K magnitude : 13.082
 G magnitude : 15.836
 RP magnitude : 14.888
 BP magnitude : 16.416
 DUPflag : 0
 Distance (au) : 17.397
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.35
 Sun-Target sep (deg) : 160.49
 Sun-Moon sep (deg) : 149.94
 B (ring opening deg) : 19.21
 PA of pole (deg) : 101.82

#	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

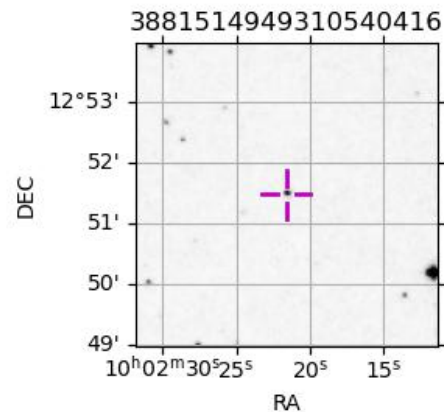


2046-03-08T16:57:06.4700 cc: 10 02 21.6703 s: +12 51 28.419 C/A 3.392° PA 199.99 deg v_sky -21.35 km/s D 17.40 AU
 Credit: Styled after SORA/Lucky Star



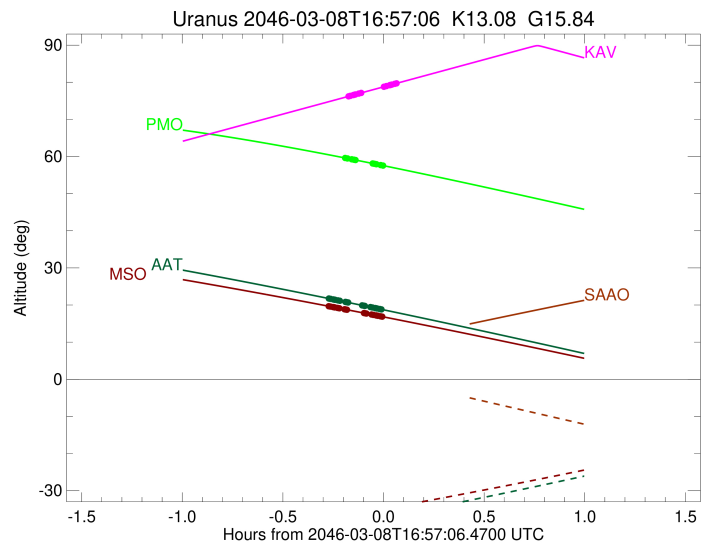
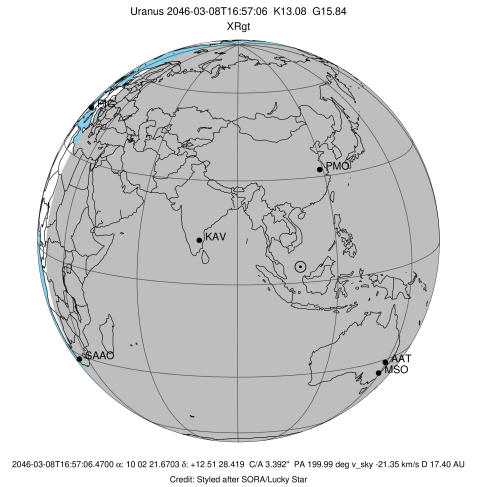
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
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	+++++		+++++	MAR 08 16:45 - MAR 08 16:57	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	+++++++		+++++++	MAR 08 16:46 - MAR 08 17:01	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	+++++++		+++++++	MAR 08 16:40 - MAR 08 16:56	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++++		+++++++	MAR 08 16:40 - MAR 08 16:56	PnnRie



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2046-03-08T16:55:34.900
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       : 3881514949310540416
2Mass ID (if available) : 10022164+1251288
ICRS Star Coord at Epoch: 10h 02m 21.67031s +12:51:28.41914s
RUWE (>1.4 is poor) : 2.28
K magnitude           : 13.082
G magnitude           : 15.836
RP magnitude          : 14.888
BP magnitude          : 16.416
DUPflag              : 0
Distance (au)        : 17.397
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -21.35
Sun-Target sep (deg) : 160.49
Sun-Moon sep (deg)   : 150.17
B (ring opening deg) : 19.21
PA of pole (deg)     : 101.82
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.624
C/A sky separation (km) : 45720.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
ural11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ural11.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



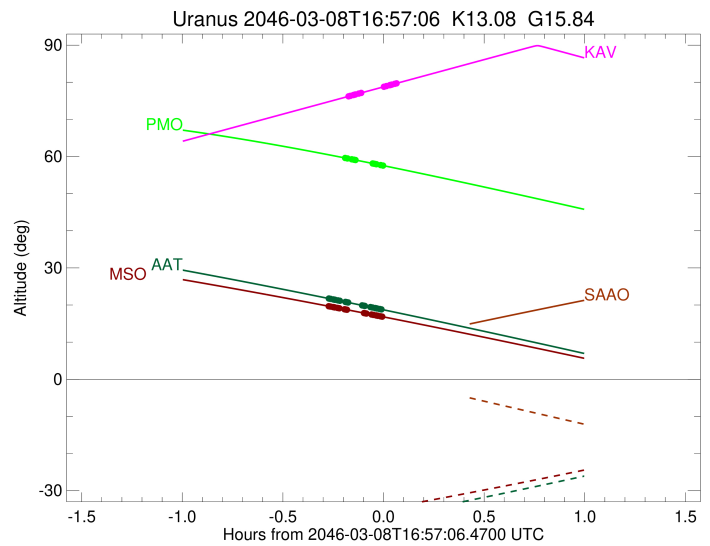
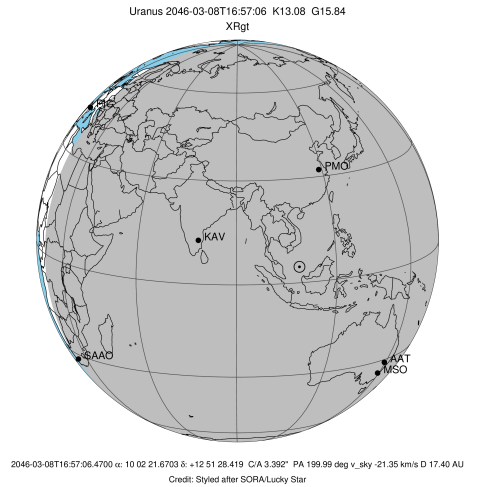
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-08T16:45:50.516		59.58	-61.81	50870.29	-27.94		
lambda	I	2046-03-08T16:46:22.364		59.49	-61.78	50026.71	-25.35		
delta	I	2046-03-08T16:47:39.245		59.26	-61.70	48300.35	-19.45		
gamma	I	2046-03-08T16:48:16.950		59.15	-61.66	47624.89	-16.35		
eta	I	2046-03-08T16:48:46.695		59.06	-61.63	47176.12	-13.81		

No planet occultations

eta	E	2046-03-08T16:53:51.854		58.14	-61.28	47176.12	13.81		
gamma	E	2046-03-08T16:54:21.769		58.04	-61.24	47627.55	16.36		
delta	E	2046-03-08T16:54:59.322		57.93	-61.19	48300.35	19.45		
lambda	E	2046-03-08T16:56:16.230		57.69	-61.09	50026.71	25.34		
epsilon	E	2046-03-08T16:56:59.873		57.56	-61.04	51200.09	27.94		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-08T16:57:48.210
 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 : 3881514949310540416
 2Mass ID (if available) : 10022164+1251288
 ICRS Star Coord at Epoch: 10h 02m 21.67031s +12:51:28.41914s
 RUWE (>1.4 is poor) : 2.28
 K magnitude : 13.082
 G magnitude : 15.836
 RP magnitude : 14.888
 BP magnitude : 16.416
 DUPflag : 0
 Distance (au) : 17.397
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.35
 Sun-Target sep (deg) : 160.49
 Sun-Moon sep (deg) : 150.51
 B (ring opening deg) : 19.21
 PA of pole (deg) : 101.82
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.355
 C/A sky separation (km) : 42328.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.bsp
 ural161.bsp
 vgr2.ural161.bsp
 peph.ural160.bsp
 earthstns_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



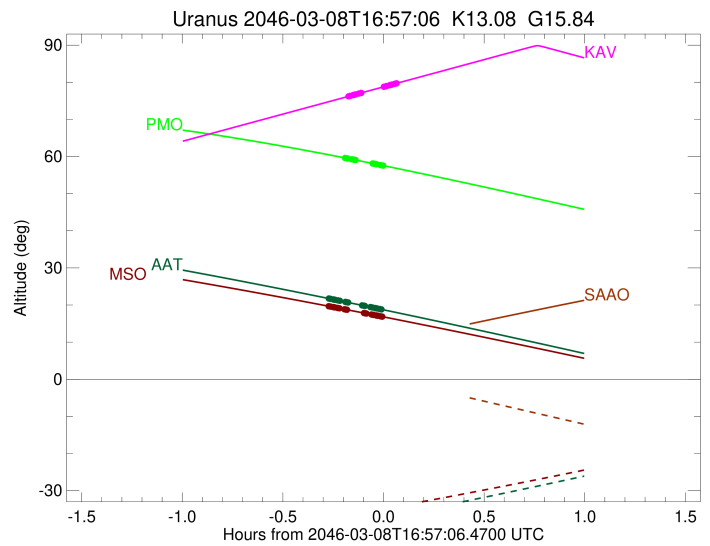
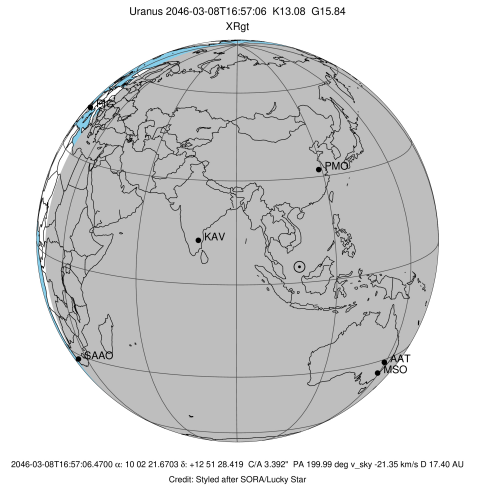
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-08T16:46:50.723		76.26	-57.34	50832.83	-35.90		
lambda	I	2046-03-08T16:47:13.803		76.35	-57.44	50026.71	-34.21		
delta	I	2046-03-08T16:48:06.946		76.57	-57.65	48300.35	-30.69		
gamma	I	2046-03-08T16:48:29.575		76.66	-57.74	47623.87	-29.08		
eta	I	2046-03-08T16:48:45.283		76.72	-57.80	47176.12	-27.92		
beta	I	2046-03-08T16:49:43.850		76.96	-58.03	45677.10	-23.34		
alpha	I	2046-03-08T16:50:27.526		77.14	-58.21	44727.18	-19.59		

No planet occultations

alpha	E	2046-03-08T16:57:13.973		78.80	-59.82	44744.31	19.60		
beta	E	2046-03-08T16:57:58.266		78.98	-60.00	45681.18	23.35		
eta	E	2046-03-08T16:58:56.337		79.21	-60.23	47176.12	27.93		
gamma	E	2046-03-08T16:59:12.204		79.28	-60.29	47628.58	29.10		
delta	E	2046-03-08T16:59:34.669		79.37	-60.38	48300.35	30.70		
lambda	E	2046-03-08T17:00:27.804		79.59	-60.59	50026.71	34.22		
epsilon	E	2046-03-08T17:01:02.603		79.73	-60.73	51254.64	35.91		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-08T16:52:29.200
 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 : 3881514949310540416
 2Mass ID (if available) : 10022164+1251288
 ICRS Star Coord at Epoch: 10h 02m 21.67031s +12:51:28.41914s
 RUWE (>1.4 is poor) : 2.28
 K magnitude : 13.082
 G magnitude : 15.836
 RP magnitude : 14.888
 BP magnitude : 16.416
 DUPflag : 0
 Distance (au) : 17.397
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.35
 Sun-Target sep (deg) : 160.49
 Sun-Moon sep (deg) : 149.36
 B (ring opening deg) : 19.21
 PA of pole (deg) : 101.82
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.226
 C/A sky separation (km) : 40705.0
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

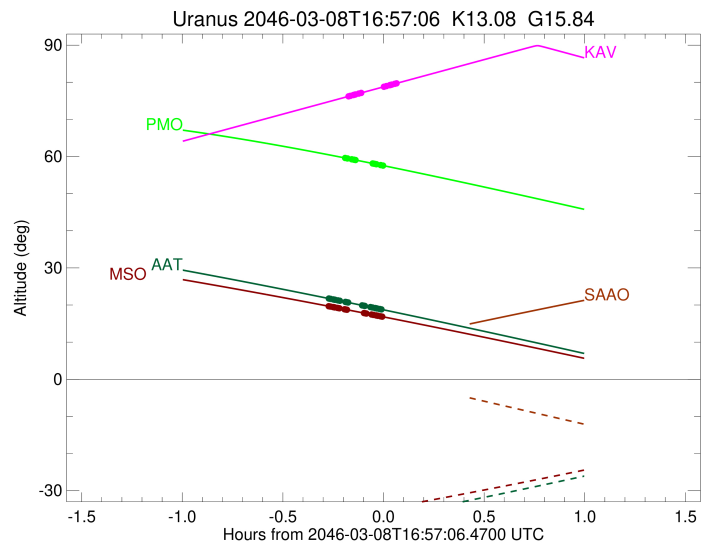
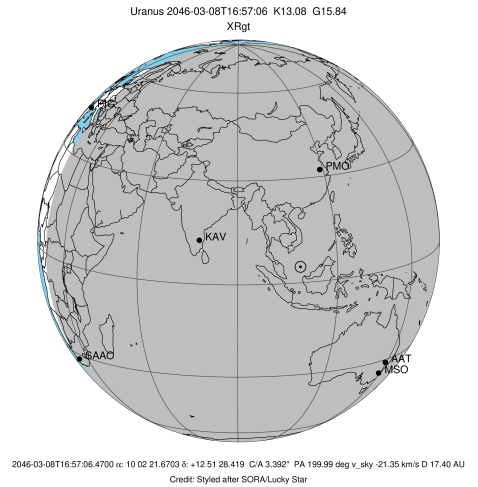


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-03-08T16:40:57.955		21.72	-40.00	50819.02	-38.52		
lambda	I	2046-03-08T16:41:18.969		21.66	-39.94	50026.71	-37.11		
delta	I	2046-03-08T16:42:07.340		21.51	-39.81	48300.35	-34.21		
gamma	I	2046-03-08T16:42:27.502		21.45	-39.75	47623.54	-32.91		
eta	I	2046-03-08T16:42:41.288		21.40	-39.71	47176.12	-31.99		
beta	I	2046-03-08T16:43:31.031		21.25	-39.57	45675.93	-28.48		
alpha	I	2046-03-08T16:44:05.542		21.14	-39.48	44723.68	-25.79		
4	I	2046-03-08T16:45:48.649		20.82	-39.19	42526.50	-16.93		
5	I	2046-03-08T16:46:05.852		20.77	-39.14	42252.53	-15.19		
6	I	2046-03-08T16:46:37.591		20.67	-39.05	41822.19	-12.42		

No planet occultations

6	E	2046-03-08T16:50:45.039		19.90	-38.35	41838.24	12.43		
5	E	2046-03-08T16:51:11.595		19.82	-38.27	42214.93	15.19		
4	E	2046-03-08T16:51:29.386		19.77	-38.22	42528.96	16.93		
alpha	E	2046-03-08T16:53:12.444		19.44	-37.92	44746.48	25.78		
beta	E	2046-03-08T16:53:47.556		19.33	-37.82	45680.96	28.46		
eta	E	2046-03-08T16:54:36.855		19.18	-37.68	47176.12	31.97		
gamma	E	2046-03-08T16:54:50.816		19.14	-37.64	47628.92	32.89		
delta	E	2046-03-08T16:55:10.833		19.07	-37.58	48300.35	34.19		
lambda	E	2046-03-08T16:55:59.251		18.92	-37.44	50026.71	37.08		
epsilon	E	2046-03-08T16:56:32.151		18.82	-37.35	51276.47	38.49		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-03-08T16:52:33.680
 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 : 3881514949310540416
 2Mass ID (if available) : 10022164+1251288
 ICRS Star Coord at Epoch: 10h 02m 21.67031s +12:51:28.41914s
 RUWE (>1.4 is poor) : 2.28
 K magnitude : 13.082
 G magnitude : 15.836
 RP magnitude : 14.888
 BP magnitude : 16.416
 DUPflag : 0
 Distance (au) : 17.397
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.35
 Sun-Target sep (deg) : 160.49
 Sun-Moon sep (deg) : 149.35
 B (ring opening deg) : 19.21
 PA of pole (deg) : 101.82
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.195
 C/A sky separation (km) : 40316.1
 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_itrf93_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	2046-03-08T16:40:55.801		19.65	-37.43	50816.06	-39.17		
lambda	I	2046-03-08T16:41:16.366		19.59	-37.38	50026.71	-37.82		
delta	I	2046-03-08T16:42:03.729		19.45	-37.26	48300.35	-35.03		
gamma	I	2046-03-08T16:42:23.397		19.40	-37.21	47623.46	-33.79		
eta	I	2046-03-08T16:42:36.810		19.36	-37.18	47176.12	-32.91		
beta	I	2046-03-08T16:43:24.963		19.22	-37.05	45675.67	-29.58		
alpha	I	2046-03-08T16:43:58.026		19.12	-36.97	44722.97	-27.05		
4	I	2046-03-08T16:45:33.783		18.84	-36.72	42526.76	-19.00		
5	I	2046-03-08T16:45:48.746		18.80	-36.68	42255.38	-17.48		
6	I	2046-03-08T16:46:16.003		18.72	-36.61	41820.47	-15.19		

No planet occultations

6	E	2046-03-08T16:51:18.797		17.83	-35.82	41840.11	15.20		
5	E	2046-03-08T16:51:40.881		17.77	-35.76	42212.09	17.48		
4	E	2046-03-08T16:51:56.451		17.72	-35.72	42529.53	19.00		
alpha	E	2046-03-08T16:53:32.165		17.44	-35.46	44746.89	27.04		
beta	E	2046-03-08T16:54:05.817		17.34	-35.37	45680.90	29.56		
eta	E	2046-03-08T16:54:53.527		17.20	-35.24	47176.12	32.89		
gamma	E	2046-03-08T16:55:07.114		17.16	-35.21	47628.99	33.77		
delta	E	2046-03-08T16:55:26.636		17.10	-35.16	48300.35	35.00		
lambda	E	2046-03-08T16:56:14.044		16.96	-35.03	50026.71	37.78		
epsilon	E	2046-03-08T16:56:46.499		16.86	-34.94	51281.42	39.13		