

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-02-06T00:52:40.040  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3425389766075646976  
 2Mass ID (if available) : 06084166+2342011

ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s

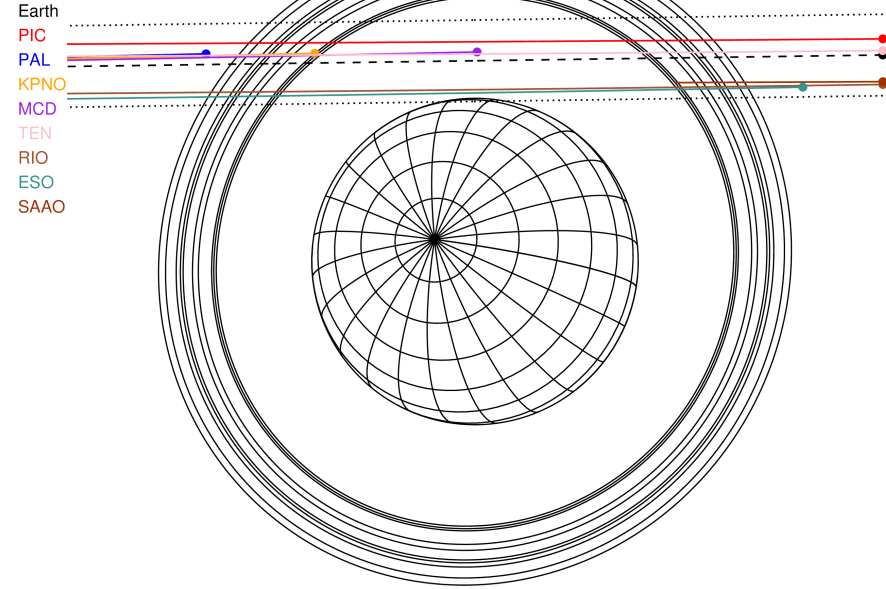
RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.181  
 G magnitude : 16.669  
 RP magnitude : 15.871  
 BP magnitude : 17.261  
 DUPflag : 0  
 Distance (au) : 18.234  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -14.74  
 Sun-Target sep (deg) : 135.17  
 Sun-Moon sep (deg) : 75.45  
 B (ring opening deg) : 73.61  
 PA of pole (deg) : 61.35

#	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



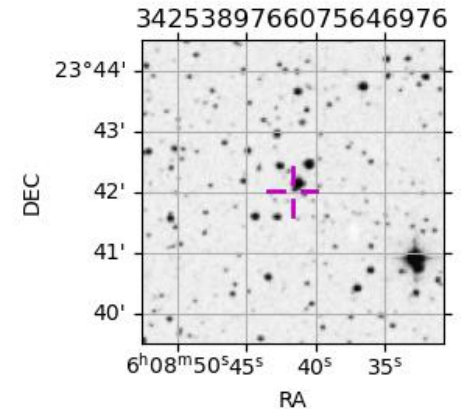
2034-02-06T00:52:40.0400 ra: 06 08 41.6697 s: +23 42 00.858 C/A 2.384 PA 180.81 deg v\_sky -14.75 km/s D 18.23 AU  
 Credit: Styled after SORA/Lucky Star

Uranus 2034-02-06T00:52:40 K14.18 G16.67 XRgt

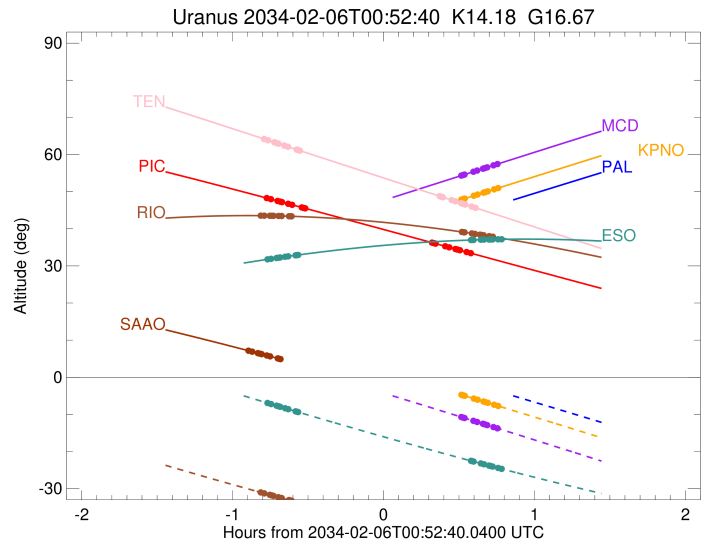
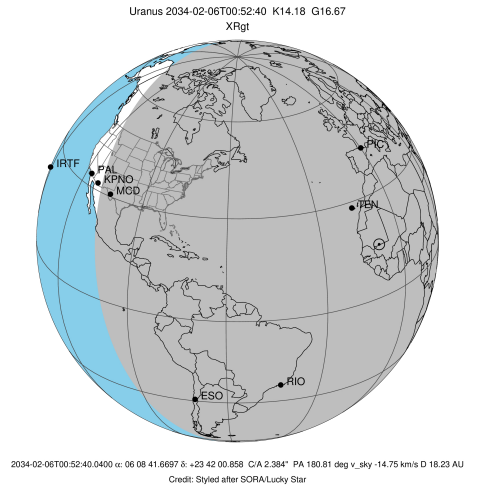


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	FEB 06 00:06 - FEB 06 01:26	PnnRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			+++++	FEB 06 01:28 - FEB 06 01:37	PnnRne
MCD	McDonald Obs. 2.7m	30.7	256.0			+++++	FEB 06 01:23 - FEB 06 01:37	PnnRne
TEN	Teide Obs./Tenerife	28.3	343.5	+++++		+++++	FEB 06 00:05 - FEB 06 01:28	PnnRie
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	+++++		+++++	FEB 06 00:03 - FEB 06 01:35	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	FEB 06 00:06 - FEB 06 01:39	PnnRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++			FEB 05 23:59 - FEB 06 00:11	PnnRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-02-06T00:48:03.200  
 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 : 3425389766075646976  
 2Mass ID (if available) : 06084166+2342011  
 ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.181  
 G magnitude : 16.669  
 RP magnitude : 15.871  
 BP magnitude : 17.261  
 DUPflag : 0  
 Distance (au) : 18.234  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -14.74  
 Sun-Target sep (deg) : 135.17  
 Sun-Moon sep (deg) : 75.89  
 B (ring opening deg) : 73.61  
 PA of pole (deg) : 61.35  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.602  
 C/A sky separation (km) : 34405.7  
 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



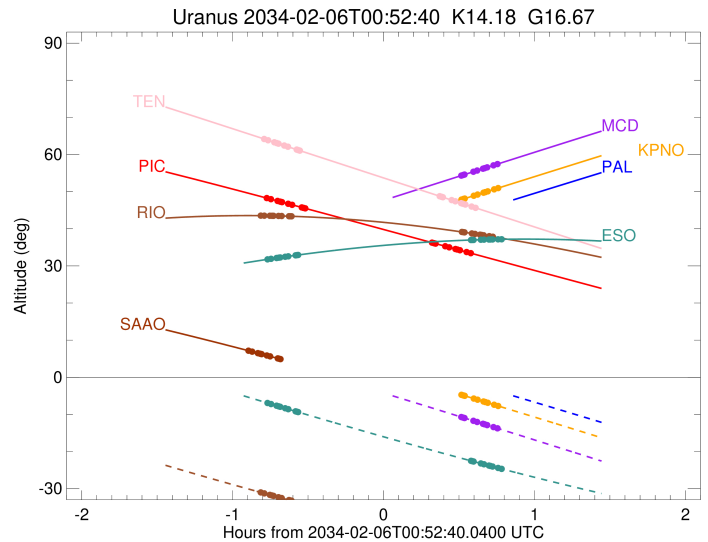
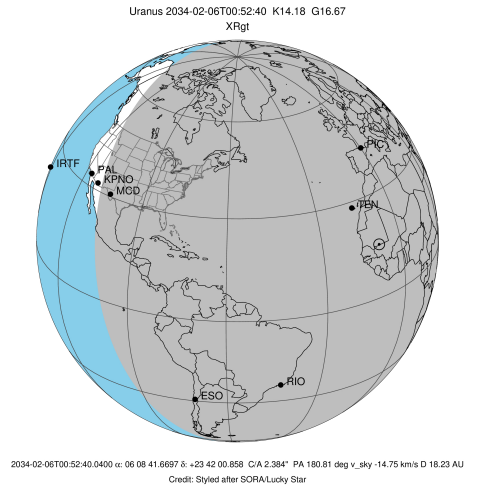
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-06T00:06:24.908		48.24	-62.87	51055.32	-11.27		
lambda	I	2034-02-06T00:07:56.379		47.97	-62.89	50026.71	-11.14		
delta	I	2034-02-06T00:10:34.031		47.49	-62.91	48300.35	-10.75		
gamma	I	2034-02-06T00:11:36.801		47.31	-62.91	47630.52	-10.59		
eta	I	2034-02-06T00:12:19.958		47.18	-62.91	47176.12	-10.47		
beta	I	2034-02-06T00:14:47.780		46.73	-62.91	45659.98	-10.04		
alpha	I	2034-02-06T00:16:26.342		46.43	-62.90	44685.01	-9.73		
4	I	2034-02-06T00:20:13.338		45.75	-62.87	42564.64	-8.92		
5	I	2034-02-06T00:20:43.020		45.66	-62.86	42303.11	-8.84		
6	I	2034-02-06T00:21:41.397		45.48	-62.85	41794.79	-8.60		

No planet occultations

6	E	2034-02-06T01:11:53.706		36.27	-60.15	41819.25	8.55		
5	E	2034-02-06T01:12:48.712		36.11	-60.06	42298.57	8.79		
4	E	2034-02-06T01:13:13.873		36.03	-60.02	42526.81	8.87		
alpha	E	2034-02-06T01:17:10.598		35.30	-59.65	44716.52	9.67		
beta	E	2034-02-06T01:18:48.412		35.00	-59.49	45680.76	9.98		
eta	E	2034-02-06T01:21:15.153		34.55	-59.25	47176.12	10.40		
gamma	E	2034-02-06T01:21:57.935		34.42	-59.18	47623.38	10.51		
delta	E	2034-02-06T01:23:01.837		34.22	-59.07	48300.35	10.68		
lambda	E	2034-02-06T01:25:40.687		33.74	-58.79	50026.71	11.05		
epsilon	E	2034-02-06T01:26:46.632		33.54	-58.68	50760.49	11.18		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-02-06T00:57:56.290
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      : 3425389766075646976
2Mass ID (if available) : 06084166+2342011
ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s
RUWE (>1.4 is poor) : 0.97
K magnitude         : 14.181
G magnitude         : 16.669
RP magnitude        : 15.871
BP magnitude        : 17.261
DUPflag            : 0
Distance (au)       : 18.234
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -14.74
Sun-Target sep (deg) : 135.17
Sun-Moon sep (deg)  : 76.20
B (ring opening deg) : 73.61
PA of pole (deg)    : 61.35
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.506
C/A sky separation (km) : 33141.2
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_itrfr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```

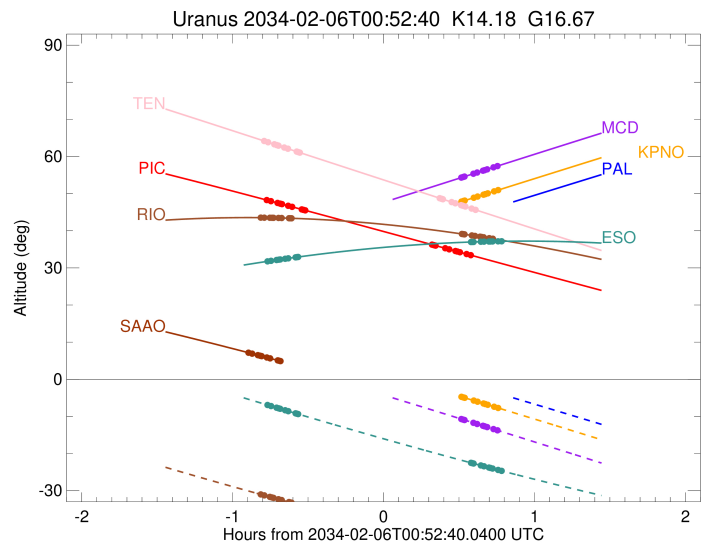
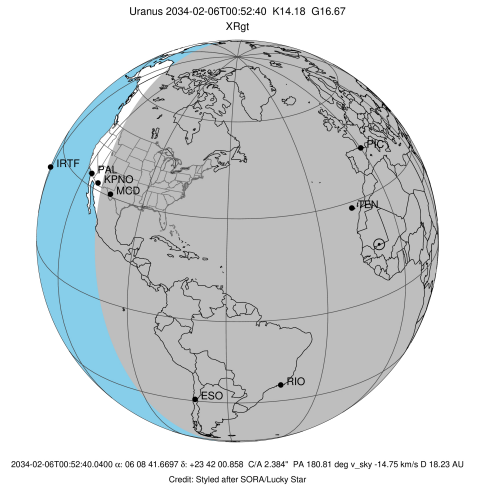


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-06T00:15:02.477		33.30	8.94x	51062.27	-11.55		
lambda	I	2034-02-06T00:16:32.198		33.62	8.66x	50026.71	-11.45		
delta	I	2034-02-06T00:19:05.222		34.16	8.16x	48300.35	-11.11		
gamma	I	2034-02-06T00:20:05.912		34.37	7.97x	47630.59	-10.96		
eta	I	2034-02-06T00:20:47.565		34.52	7.83x	47176.12	-10.86		
beta	I	2034-02-06T00:23:09.689		35.02	7.37x	45659.46	-10.49		
alpha	I	2034-02-06T00:24:43.807		35.35	7.07x	44684.88	-10.21		
4	I	2034-02-06T00:28:18.348		36.10	6.37x	42566.17	-9.51		
5	I	2034-02-06T00:28:46.539		36.20	6.28x	42301.60	-9.44		
6	I	2034-02-06T00:29:40.869		36.39	6.10x	41794.88	-9.23		

No planet occultations

6	E	2034-02-06T01:23:36.360	47.84	-4.72x	41821.88	9.27
5	E	2034-02-06T01:24:26.595	48.02	-4.89x	42295.23	9.48
4	E	2034-02-06T01:24:50.318	48.11	-4.97x	42526.33	9.55
alpha	E	2034-02-06T01:28:32.175	48.89	-5.73	44718.52	10.26
beta	E	2034-02-06T01:30:04.383	49.22	-6.05	45680.97	10.54
eta	E	2034-02-06T01:32:23.719	49.72	-6.52	47176.12	10.92
gamma	E	2034-02-06T01:33:04.465	49.86	-6.66	47623.15	11.02
delta	E	2034-02-06T01:34:05.485	50.08	-6.87	48300.35	11.17
lambda	E	2034-02-06T01:36:37.595	50.62	-7.40	50026.71	11.52
epsilon	E	2034-02-06T01:37:41.441	50.84	-7.62	50766.58	11.63

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-02-06T00:57:26.600  
 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 : 3425389766075646976  
 2Mass ID (if available) : 06084166+2342011  
 ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.181  
 G magnitude : 16.669  
 RP magnitude : 15.871  
 BP magnitude : 17.261  
 DUPflag : 0  
 Distance (au) : 18.234  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -14.74  
 Sun-Target sep (deg) : 135.17  
 Sun-Moon sep (deg) : 76.25  
 B (ring opening deg) : 73.61  
 PA of pole (deg) : 61.35  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.480  
 C/A sky separation (km) : 32799.1  
 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

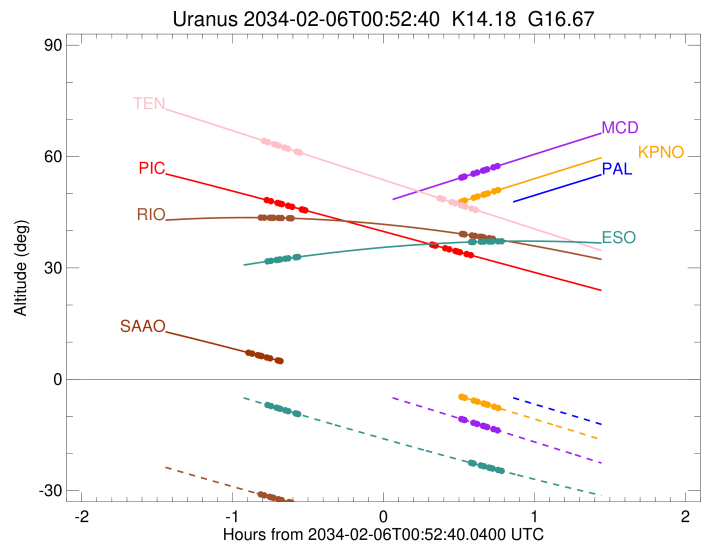
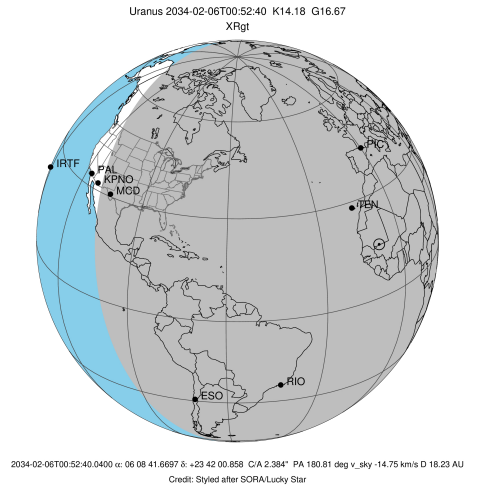


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-06T00:14:22.113		39.41	3.59x	51066.13	-11.68		
lambda	I	2034-02-06T00:15:51.157		39.72	3.29x	50026.71	-11.58		
delta	I	2034-02-06T00:18:22.340		40.27	2.78x	48300.35	-11.25		
gamma	I	2034-02-06T00:19:22.247		40.48	2.58x	47630.62	-11.11		
eta	I	2034-02-06T00:20:03.349		40.63	2.44x	47176.12	-11.01		
beta	I	2034-02-06T00:22:23.480		41.13	1.96x	45659.22	-10.65		
alpha	I	2034-02-06T00:23:56.116		41.46	1.65x	44684.83	-10.38		
4	I	2034-02-06T00:27:26.797		42.21	0.94x	42566.79	-9.70		
5	I	2034-02-06T00:27:54.585		42.31	0.84x	42300.96	-9.63		
6	I	2034-02-06T00:28:47.732		42.50	0.66x	41794.93	-9.43		

No planet occultations

6	E	2034-02-06T01:23:32.613		54.32	-10.70	41822.39	9.47		
5	E	2034-02-06T01:24:21.718		54.49	-10.88	42294.57	9.67		
4	E	2034-02-06T01:24:45.058		54.58	-10.96	42526.26	9.74		
alpha	E	2034-02-06T01:28:23.143		55.36	-11.72	44718.88	10.42		
beta	E	2034-02-06T01:29:53.936		55.69	-12.04	45681.00	10.70		
eta	E	2034-02-06T01:32:11.372		56.18	-12.53	47176.12	11.06		
gamma	E	2034-02-06T01:32:51.597		56.33	-12.67	47623.11	11.16		
delta	E	2034-02-06T01:33:51.872		56.54	-12.88	48300.35	11.31		
lambda	E	2034-02-06T01:36:22.250		57.08	-13.41	50026.71	11.65		
epsilon	E	2034-02-06T01:37:25.513		57.31	-13.64	50767.69	11.75		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-02-06T00:48:24.460  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : TEN  
 Location : Teide Obs./Tenerife  
 Latitude (deg) : 28.30050  
 E. Longitude (deg) : 343.48909  
 Altitude (km) : 2.395  
 Gaia source ID : 3425389766075646976  
 2Mass ID (if available) : 06084166+2342011  
 ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.181  
 G magnitude : 16.669  
 RP magnitude : 15.871  
 BP magnitude : 17.261  
 DUPflag : 0  
 Distance (au) : 18.234  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -14.74  
 Sun-Target sep (deg) : 135.17  
 Sun-Moon sep (deg) : 76.05  
 B (ring opening deg) : 73.61  
 PA of pole (deg) : 61.35  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.458  
 C/A sky separation (km) : 32500.6  
 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

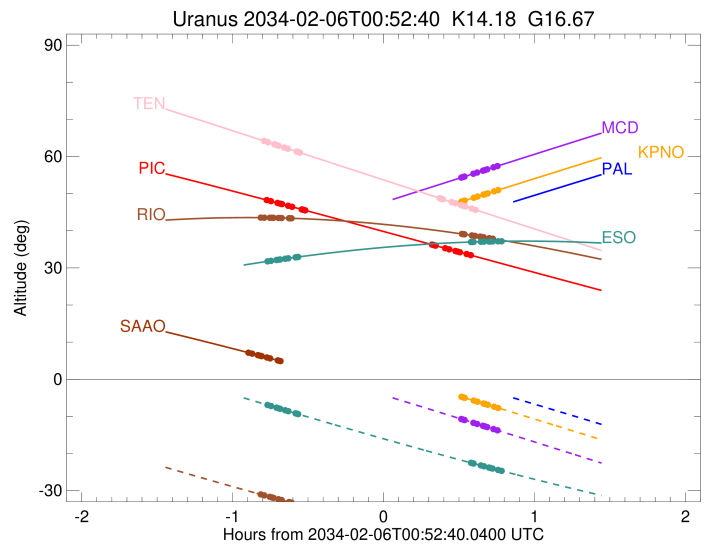
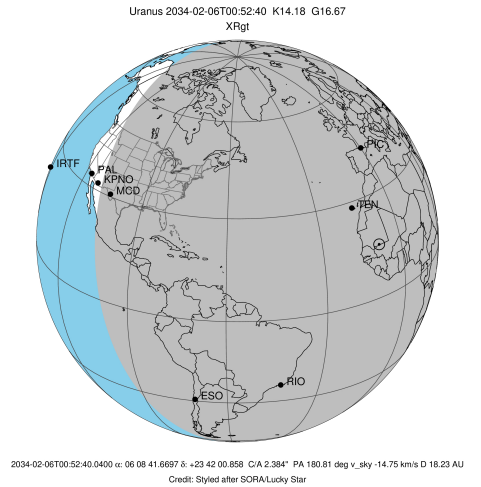


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-06T00:05:21.049		64.16	-68.72	51075.02	-11.89		
lambda	I	2034-02-06T00:06:49.335		63.84	-68.99	50026.71	-11.78		
delta	I	2034-02-06T00:09:17.904		63.29	-69.45	48300.35	-11.45		
gamma	I	2034-02-06T00:10:16.741		63.08	-69.63	47630.69	-11.31		
eta	I	2034-02-06T00:10:57.109		62.93	-69.75	47176.12	-11.21		
beta	I	2034-02-06T00:13:14.684		62.42	-70.17	45658.74	-10.85		
alpha	I	2034-02-06T00:14:45.475		62.09	-70.44	44684.75	-10.59		
4	I	2034-02-06T00:18:11.625		61.33	-71.04	42567.96	-9.92		
5	I	2034-02-06T00:18:39.072		61.23	-71.12	42299.75	-9.85		
6	I	2034-02-06T00:19:30.869		61.03	-71.27	41795.05	-9.66		

No planet occultations

6	E	2034-02-06T01:14:57.323		48.79	-77.46	41822.32	9.61		
5	E	2034-02-06T01:15:45.757		48.61	-77.47	42294.68	9.80		
4	E	2034-02-06T01:16:08.773		48.53	-77.48	42526.27	9.86		
alpha	E	2034-02-06T01:19:44.399		47.73	-77.51	44718.76	10.52		
beta	E	2034-02-06T01:21:14.399		47.40	-77.51	45680.99	10.78		
eta	E	2034-02-06T01:23:30.816		46.90	-77.48	47176.12	11.14		
gamma	E	2034-02-06T01:24:10.785		46.76	-77.47	47623.13	11.23		
delta	E	2034-02-06T01:25:10.704		46.54	-77.45	48300.35	11.37		
lambda	E	2034-02-06T01:27:40.354		45.99	-77.38	50026.71	11.69		
epsilon	E	2034-02-06T01:28:43.301		45.76	-77.34	50766.88	11.79		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-02-06T00:50:58.790  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : RIO  
 Location : Rio de Janeiro  
 Latitude (deg) : -22.89506  
 E. Longitude (deg) : 316.77708  
 Altitude (km) : 0.033  
 Gaia source ID : 3425389766075646976  
 2Mass ID (if available) : 06084166+2342011  
 ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.181  
 G magnitude : 16.669  
 RP magnitude : 15.871  
 BP magnitude : 17.261  
 DUPflag : 0  
 Distance (au) : 18.234  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -14.74  
 Sun-Target sep (deg) : 135.17  
 Sun-Moon sep (deg) : 75.99  
 B (ring opening deg) : 73.61  
 PA of pole (deg) : 61.35  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.034  
 C/A sky separation (km) : 26901.2  
 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

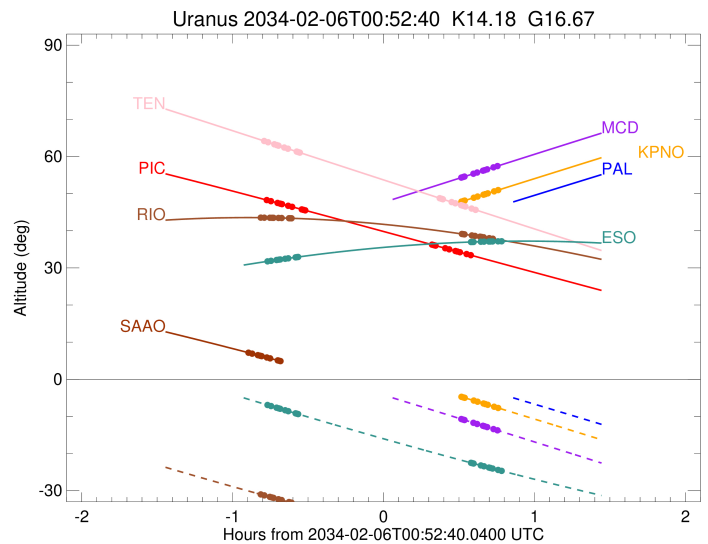
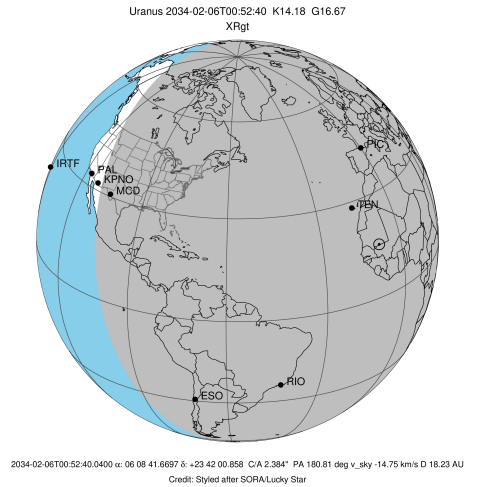


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-06T00:03:55.371		43.54	-31.03	51128.60	-13.22		
lambda	I	2034-02-06T00:05:18.677		43.53	-31.28	50026.71	-13.17		
delta	I	2034-02-06T00:07:30.781		43.51	-31.69	48300.35	-12.96		
gamma	I	2034-02-06T00:08:22.573		43.50	-31.85	47631.08	-12.88		
eta	I	2034-02-06T00:08:57.980		43.49	-31.96	47176.12	-12.82		
beta	I	2034-02-06T00:10:57.638		43.46	-32.32	45655.59	-12.60		
alpha	I	2034-02-06T00:12:15.029		43.44	-32.56	44684.72	-12.45		
4	I	2034-02-06T00:15:06.958		43.38	-33.08	42576.28	-12.06		
5	I	2034-02-06T00:15:31.213		43.38	-33.15	42289.86	-12.03		
6	I	2034-02-06T00:16:12.454		43.36	-33.27	41796.79	-11.91		

No planet occultations

6	E	2034-02-06T01:23:48.593		39.15	-44.07	41830.48	11.88		
5	E	2034-02-06T01:24:26.340		39.08	-44.15	42283.20	11.99		
4	E	2034-02-06T01:24:46.339		39.05	-44.20	42526.04	12.02		
alpha	E	2034-02-06T01:27:46.913		38.74	-44.59	44724.65	12.40		
beta	E	2034-02-06T01:29:03.236		38.61	-44.76	45681.23	12.56		
eta	E	2034-02-06T01:31:01.284		38.41	-45.01	47176.12	12.77		
gamma	E	2034-02-06T01:31:36.153		38.34	-45.09	47622.50	12.83		
delta	E	2034-02-06T01:32:28.806		38.25	-45.20	48300.35	12.92		
lambda	E	2034-02-06T01:34:41.420		38.01	-45.47	50026.71	13.12		
epsilon	E	2034-02-06T01:35:39.419		37.90	-45.59	50789.78	13.17		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2034-02-06T00:54:06.870  
 Event type : XRgt  
 : No Uranus occs  
 : Ring occs: geocentric, topocentric  
 Observer code : ESO  
 Location : European Southern Obs. (3.6m)  
 Latitude (deg) : -29.26097  
 E. Longitude (deg) : 289.26831  
 Altitude (km) : 2.400  
 Gaia source ID : 3425389766075646976  
 2Mass ID (if available) : 06084166+2342011  
 ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 14.181  
 G magnitude : 16.669  
 RP magnitude : 15.871  
 BP magnitude : 17.261  
 DUPflag : 0  
 Distance (au) : 18.234  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -14.74  
 Sun-Target sep (deg) : 135.17  
 Sun-Moon sep (deg) : 76.01  
 B (ring opening deg) : 73.61  
 PA of pole (deg) : 61.35  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.996  
 C/A sky separation (km) : 26399.1  
 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



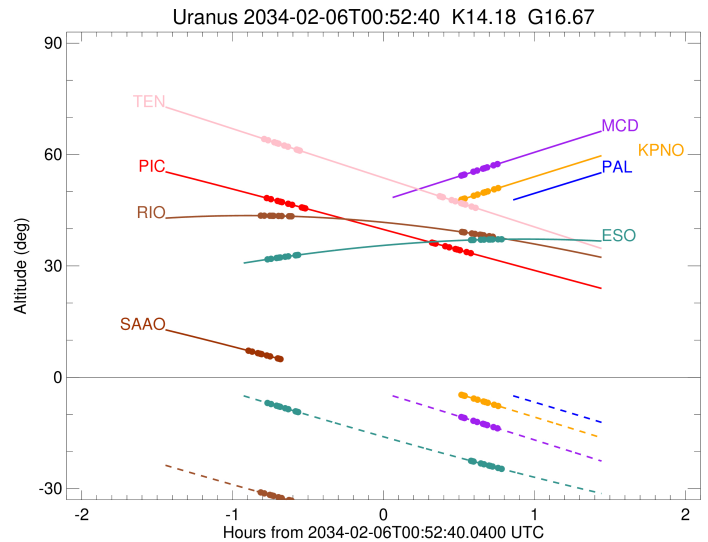
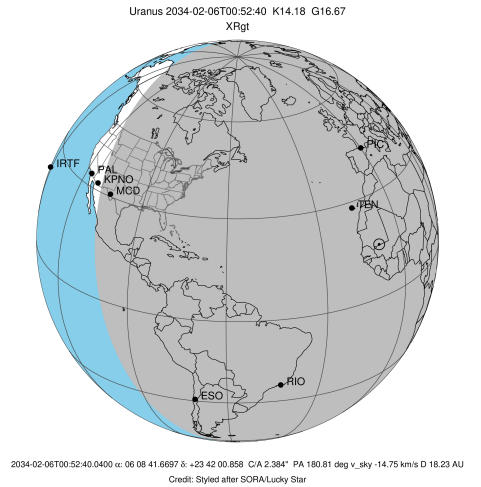
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-06T00:06:35.630		31.77	-6.94	51131.31	-13.26		
lambda	I	2034-02-06T00:07:58.878		31.91	-7.22	50026.71	-13.21		
delta	I	2034-02-06T00:10:10.477		32.13	-7.66	48300.35	-13.02		
gamma	I	2034-02-06T00:11:02.034		32.21	-7.83	47631.10	-12.94		
eta	I	2034-02-06T00:11:37.272		32.27	-7.95	47176.12	-12.88		
beta	I	2034-02-06T00:13:36.287		32.46	-8.35	45655.42	-12.68		
alpha	I	2034-02-06T00:14:53.165		32.58	-8.61	44684.74	-12.53		
4	I	2034-02-06T00:17:43.736		32.85	-9.18	42576.74	-12.16		
5	I	2034-02-06T00:18:07.875		32.89	-9.26	42289.24	-12.14		
6	I	2034-02-06T00:18:48.671		32.95	-9.40	41796.93	-12.03		

No planet occultations

6	E	2034-02-06T01:27:25.972		36.97	-22.51	41831.35	12.04		
5	E	2034-02-06T01:28:03.048		36.98	-22.62	42281.89	12.15		
4	E	2034-02-06T01:28:22.932		36.99	-22.68	42526.11	12.17		
alpha	E	2034-02-06T01:31:21.428		37.05	-23.21	44725.29	12.54		
beta	E	2034-02-06T01:32:36.883		37.07	-23.44	45681.22	12.69		
eta	E	2034-02-06T01:34:33.760		37.11	-23.78	47176.12	12.90		
gamma	E	2034-02-06T01:35:08.295		37.11	-23.88	47622.43	12.95		
delta	E	2034-02-06T01:36:00.470		37.13	-24.04	48300.35	13.03		
lambda	E	2034-02-06T01:38:11.933		37.15	-24.43	50026.71	13.23		
epsilon	E	2034-02-06T01:39:09.692		37.17	-24.60	50792.94	13.27		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-02-06T00:46:21.160
Event type          : XRgt
: No Uranus occs
: Ring occs: geocentric, topocentric
Observer code       : SAAO
Location            : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)      : -32.37953
E. Longitude (deg)  : 20.81070
Altitude (km)       : 1.768
Gaia source ID      : 3425389766075646976
2Mass ID (if available) : 06084166+2342011
ICRS Star Coord at Epoch: 06h 08m 41.66969s +23:42:00.85788s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.181
G magnitude          : 16.669
RP magnitude         : 15.871
BP magnitude         : 17.261
DUPflag             : 0
Distance (au)       : 18.234
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -14.74
Sun-Target sep (deg) : 135.17
Sun-Moon sep (deg)  : 75.21
B (ring opening deg) : 73.61
PA of pole (deg)    : 61.35
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.109
C/A sky separation (km) : 27893.9
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	2034-02-05T23:59:02.436		7.15	-39.42	51122.42	-12.80		
lambda	I	2034-02-06T00:00:28.026		6.90	-39.31	50026.71	-12.74		
delta	I	2034-02-06T00:02:44.723		6.49	-39.12	48300.35	-12.52		
gamma	I	2034-02-06T00:03:38.394		6.34	-39.05	47631.04	-12.42		
eta	I	2034-02-06T00:04:15.108		6.23	-39.00	47176.12	-12.36		
beta	I	2034-02-06T00:06:19.331		5.86	-38.83	45655.97	-12.12		
alpha	I	2034-02-06T00:07:39.895		5.62	-38.71	44684.67	-11.95		
4	I	2034-02-06T00:10:39.374		5.08	-38.45	42575.24	-11.53		
5	I	2034-02-06T00:11:04.514		5.01	-38.42	42291.22	-11.50		
6	I	2034-02-06T00:11:47.840		4.88x	-38.35	41796.48	-11.37		

No planet occultations

6	E	2034-02-06T01:18:57.725		-7.75x	-30.43	41828.88	11.27		
5	E	2034-02-06T01:19:37.828		-7.88x	-30.34	42285.58	11.39		
4	E	2034-02-06T01:19:58.610		-7.95x	-30.29	42525.95	11.43		
alpha	E	2034-02-06T01:23:08.131		-8.56x	-29.83	44723.49	11.83		
beta	E	2034-02-06T01:24:28.178		-8.83x	-29.64	45681.23	12.00		
eta	E	2034-02-06T01:26:31.616		-9.23x	-29.34	47176.12	12.23		
gamma	E	2034-02-06T01:27:08.046		-9.35x	-29.25	47622.62	12.29		
delta	E	2034-02-06T01:28:03.000		-9.53x	-29.12	48300.35	12.38		
lambda	E	2034-02-06T01:30:21.275		-9.98x	-28.77	50026.71	12.59		
epsilon	E	2034-02-06T01:31:21.259		-10.18x	-28.63	50784.38	12.64		