

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2040-02-22T12:34:46.050
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 670674403290859904
 2Mass ID (if available) : 08071828+2049448

Uranus 2040-02-22T12:34:46 K14.77 G17.17 PgtRgt

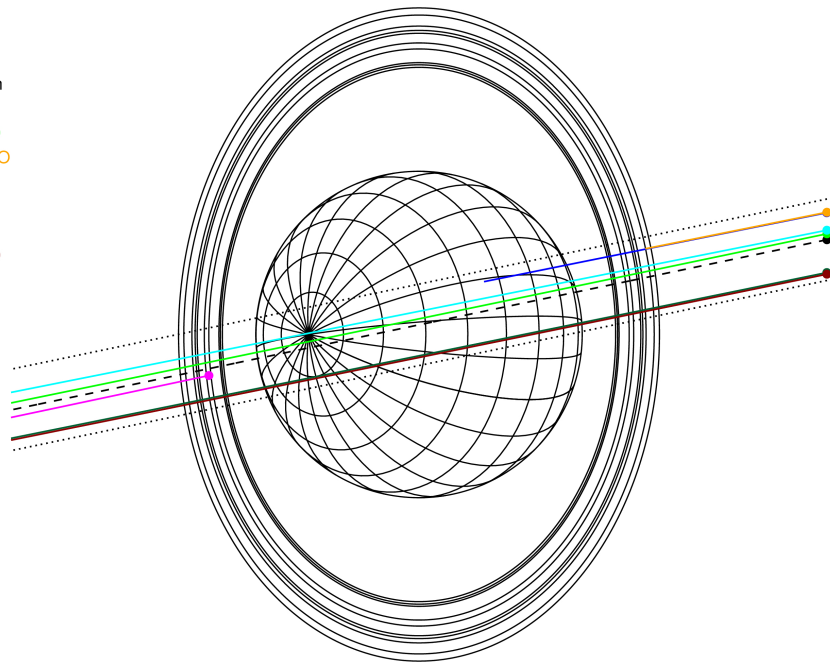
ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s

RUWE (>1.4 is poor) : 0.95
 K magnitude : 14.771
 G magnitude : 17.169
 RP magnitude : 16.208
 BP magnitude : 17.586
 DUPflag : 0
 Distance (au) : 17.750
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.32
 Sun-Target sep (deg) : 146.58
 Sun-Moon sep (deg) : 28.16
 B (ring opening deg) : 47.42
 PA of pole (deg) : 90.00



2040-02-22T12:34:46.0500 ex: 08 07 18.2254 d: +20 49 44.809 C/A 0.121" PA 191.77 deg v_sky -18.32 km/s D 17.75 AU
 Credit: Styled after SORA/Lucky Star

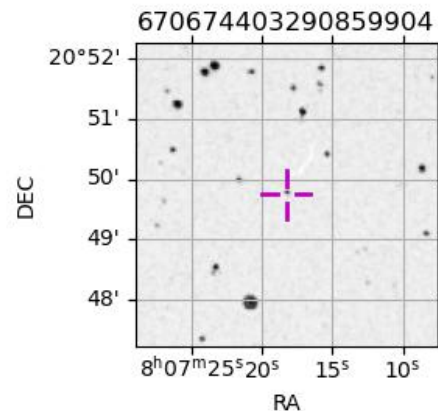
Earth
 PAL
 PMO
 KPNO
 IRTF
 KAV
 AAT
 MSO



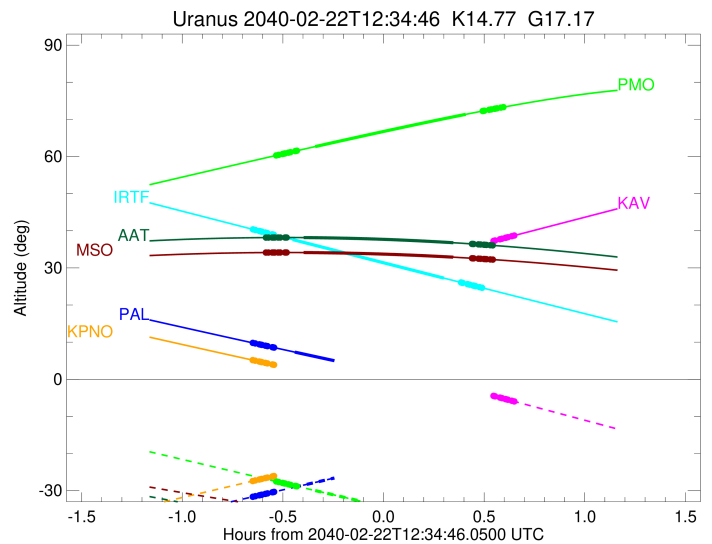
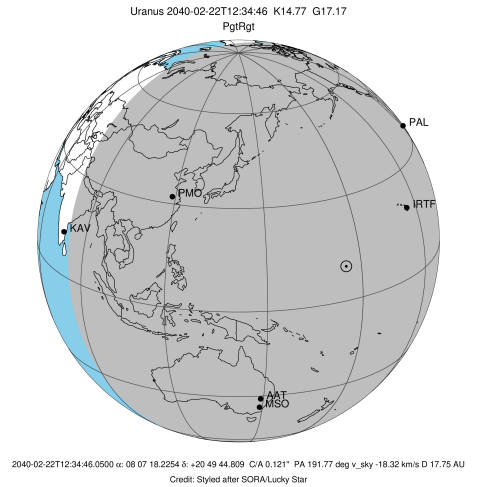
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+		FEB 22 11:55 - FEB 22 12:08	PinRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	FEB 22 12:02 - FEB 22 13:10	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4	++			FEB 22 11:55 - FEB 22 11:56	PnnRin
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	+++++	+ +	+++++	FEB 22 11:55 - FEB 22 13:04	PieRie
KAV	Kavalur Observatory	12.6	78.8			+++++	FEB 22 13:10 - FEB 22 13:13	PnnRne
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	+++++	+ +	+++++	FEB 22 11:59 - FEB 22 13:07	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	FEB 22 11:59 - FEB 22 13:07	PieRie

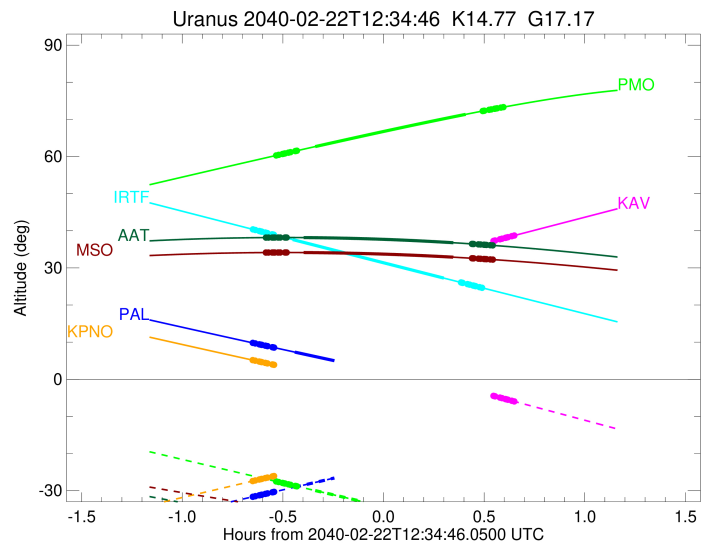
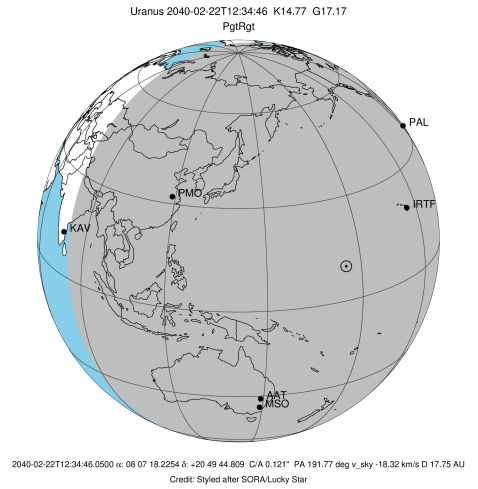


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2040-02-22T12:30:44.640
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 670674403290859904
 2Mass ID (if available) : 08071828+2049448
 ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 14.771
 G magnitude : 17.169
 RP magnitude : 16.208
 BP magnitude : 17.586
 DUPflag : 0
 Distance (au) : 17.750
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.32
 Sun-Target sep (deg) : 146.58
 Sun-Moon sep (deg) : 28.69
 B (ring opening deg) : 47.42
 PA of pole (deg) : 90.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.474
 C/A sky separation (km) : 6096.7
 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	2040-02-22T11:55:40.946		9.82	-31.68	51329.85	-24.44		
lambda	I	2040-02-22T11:56:34.318		9.64	-31.50	50026.71	-24.41		
delta	I	2040-02-22T11:57:45.067		9.41	-31.25	48300.35	-24.39		
gamma	I	2040-02-22T11:58:12.708		9.32	-31.16	47626.19	-24.39		
eta	I	2040-02-22T11:58:31.167		9.26	-31.09	47176.12	-24.38		
beta	I	2040-02-22T11:59:32.827		9.05	-30.88	45670.71	-24.36		
alpha	I	2040-02-22T12:00:11.004		8.93	-30.75	44752.42	-24.36		
4	I	2040-02-22T12:01:40.379		8.63	-30.44	42581.97	-24.33		
5	I	2040-02-22T12:01:56.584		8.58	-30.38	42170.56	-24.31		
6	I	2040-02-22T12:02:12.371		8.53	-30.33	41799.60	-24.31		
Uranus	I	2040-02-22T12:08:18.403		7.32	-29.06	25300.04		-37.70	-38.98
Uranus	E	2040-02-22T12:53:10.714	-1.35x	-19.69	-19.69	25243.60		42.53	43.84
6	E	2040-02-22T12:58:24.385	-2.33x	-18.59	-18.59	41867.44	24.17		
5	E	2040-02-22T12:58:41.179	-2.38x	-18.54	-18.54	42282.75	24.17		
4	E	2040-02-22T12:58:51.695	-2.41x	-18.50	-18.50	42548.25	24.18		
alpha	E	2040-02-22T13:00:20.511	-2.69x	-18.19	-18.19	44685.71	24.21		
beta	E	2040-02-22T13:01:00.618	-2.82x	-18.05	-18.05	45647.18	24.21		
eta	E	2040-02-22T13:02:03.675	-3.01x	-17.83	-17.83	47176.12	24.22		
gamma	E	2040-02-22T13:02:22.205	-3.07x	-17.76	-17.76	47624.97	24.22		
delta	E	2040-02-22T13:02:50.082	-3.16x	-17.67	-17.67	48300.35	24.23		
lambda	E	2040-02-22T13:04:01.313	-3.38x	-17.42	-17.42	50026.71	24.24		
epsilon	E	2040-02-22T13:04:43.738	-3.51x	-17.27	-17.27	51055.31	24.27		

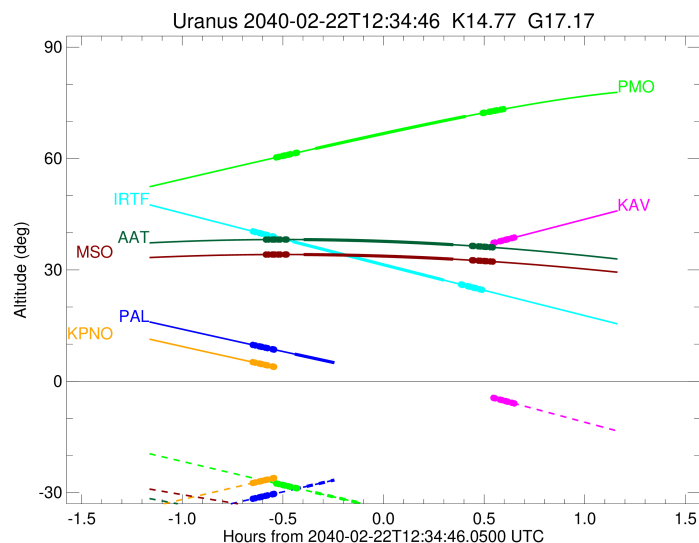
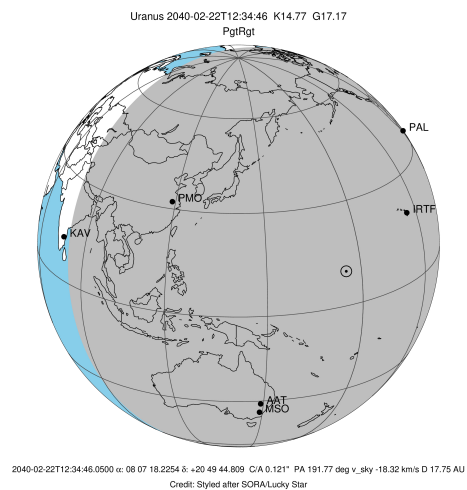
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2040-02-22T12:36:51.230
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 670674403290859904
 2Mass ID (if available) : 08071828+2049448
 ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 14.771
 G magnitude : 17.169
 RP magnitude : 16.208
 BP magnitude : 17.586
 DUPflag : 0
 Distance (au) : 17.750
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.32
 Sun-Target sep (deg) : 146.58
 Sun-Moon sep (deg) : 28.25
 B (ring opening deg) : 47.42
 PA of pole (deg) : 90.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.187
 C/A sky separation (km) : 2402.8
 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	2040-02-22T12:02:40.501		60.28	-27.51	51304.52	-25.08		
lambda	I	2040-02-22T12:03:31.468		60.45	-27.69	50026.71	-25.07		
delta	I	2040-02-22T12:04:40.330		60.69	-27.93	48300.35	-25.07		
gamma	I	2040-02-22T12:05:07.206		60.78	-28.02	47626.58	-25.07		
eta	I	2040-02-22T12:05:25.177		60.84	-28.09	47176.12	-25.07		
beta	I	2040-02-22T12:06:25.081		61.05	-28.30	45672.06	-25.06		
alpha	I	2040-02-22T12:07:02.218		61.17	-28.43	44752.37	-25.07		
4	I	2040-02-22T12:08:28.937		61.47	-28.73	42585.61	-25.07		
5	I	2040-02-22T12:08:44.696		61.52	-28.79	42174.82	-25.06		
6	I	2040-02-22T12:08:59.866		61.58	-28.84	41801.42	-25.06		
Uranus	I	2040-02-22T12:14:24.571		62.68	-29.98	25270.15		-40.27	-41.57
Uranus	E	2040-02-22T12:59:16.095		71.36	-39.34	25246.64		42.27	43.58
6	E	2040-02-22T13:04:20.652		72.26	-40.39	41870.08	25.09		
5	E	2040-02-22T13:04:37.246		72.30	-40.44	42288.47	25.09		
4	E	2040-02-22T13:04:47.209		72.33	-40.48	42551.89	25.10		
alpha	E	2040-02-22T13:06:12.589		72.58	-40.77	44685.09	25.10		
beta	E	2040-02-22T13:06:51.386		72.69	-40.90	45648.46	25.09		
eta	E	2040-02-22T13:07:52.167		72.86	-41.11	47176.12	25.10		
gamma	E	2040-02-22T13:08:10.067		72.91	-41.17	47625.40	25.10		
delta	E	2040-02-22T13:08:36.956		72.99	-41.26	48300.35	25.10		
lambda	E	2040-02-22T13:09:45.727		73.18	-41.49	50026.71	25.10		
epsilon	E	2040-02-22T13:10:25.513		73.29	-41.63	51025.56	25.12		

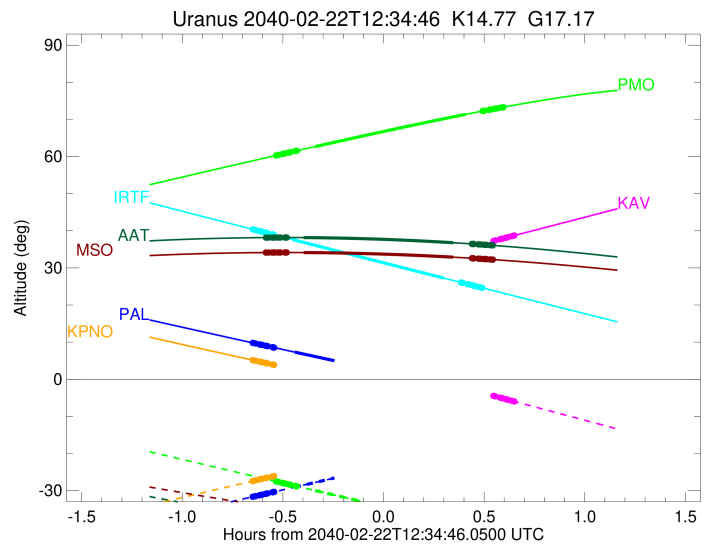
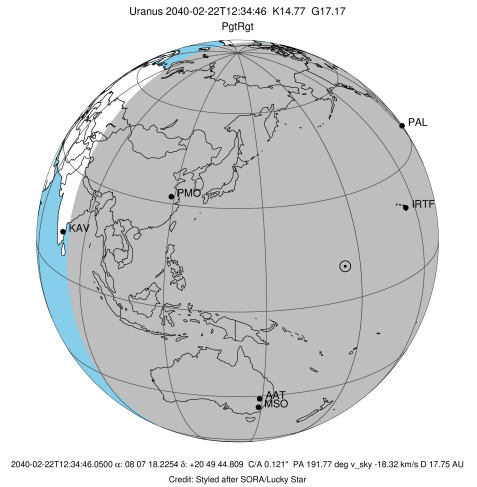
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2040-02-22T12:30:47.050
Event type            : PgtRgt
: Uranus occs: geocentric, topocentric
: 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        : 670674403290859904
2Mass ID (if available) : 08071828+2049448
ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s
RUWE (>1.4 is poor)  : 0.95
K magnitude            : 14.771
G magnitude            : 17.169
RP magnitude           : 16.208
BP magnitude           : 17.586
DUPflag               : 0
Distance (au)         : 17.750
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -18.32
Sun-Target sep (deg)  : 146.58
Sun-Moon sep (deg)    : 28.65
B (ring opening deg)  : 47.42
PA of pole (deg)      : 90.00
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.477
C/A sky separation (km) : 6144.8
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
    
```



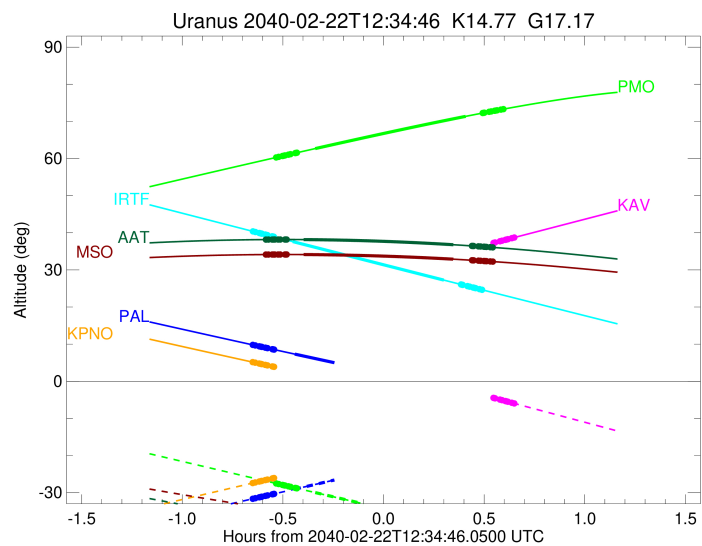
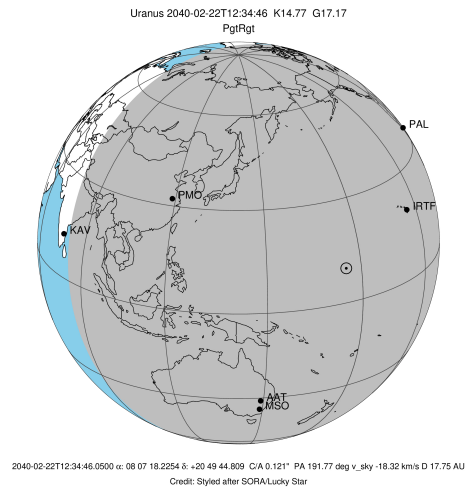
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2040-02-22T11:55:39.050		5.18	-27.44	51330.31	-24.39		
lambda	I	2040-02-22T11:56:32.554		5.00	-27.26	50026.71	-24.36		
delta	I	2040-02-22T11:57:43.453		4.77x	-27.01	48300.35	-24.34		
gamma	I	2040-02-22T11:58:11.153		4.68x	-26.91	47626.18	-24.33		
eta	I	2040-02-22T11:58:29.651		4.62x	-26.84	47176.12	-24.33		
beta	I	2040-02-22T11:59:31.445		4.41x	-26.62	45670.69	-24.31		
alpha	I	2040-02-22T12:00:09.703		4.29x	-26.49	44752.42	-24.30		
4	I	2040-02-22T12:01:39.273		3.99x	-26.17	42581.91	-24.27		
5	I	2040-02-22T12:01:55.511		3.94x	-26.11	42170.49	-24.26		
6	I	2040-02-22T12:02:11.336		3.88x	-26.06	41799.57	-24.26		
Uranus	I	2040-02-22T12:08:18.776		2.68x	-24.76	25300.61		-37.65	-38.93
Uranus	E	2040-02-22T12:53:15.092		-5.94x	-15.21	25243.64		42.53	43.84
6	E	2040-02-22T12:58:29.493		-6.91x	-14.10	41867.42	24.12		
5	E	2040-02-22T12:58:46.319		-6.97x	-14.04	42282.70	24.12		
4	E	2040-02-22T12:58:56.860		-7.00x	-14.00	42548.22	24.13		
alpha	E	2040-02-22T13:00:25.867		-7.27x	-13.68	44685.71	24.15		
beta	E	2040-02-22T13:01:06.058		-7.40x	-13.54	45647.17	24.16		
eta	E	2040-02-22T13:02:09.249		-7.59x	-13.32	47176.12	24.17		
gamma	E	2040-02-22T13:02:27.818		-7.65x	-13.25	47624.97	24.17		
delta	E	2040-02-22T13:02:55.753		-7.73x	-13.15	48300.35	24.18		
lambda	E	2040-02-22T13:04:07.134		-7.95x	-12.90	50026.71	24.19		
epsilon	E	2040-02-22T13:04:49.657		-8.08x	-12.75	51055.54	24.22		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2040-02-22T12:30:13.090
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 670674403290859904
 2Mass ID (if available) : 08071828+2049448
 ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 14.771
 G magnitude : 17.169
 RP magnitude : 16.208
 BP magnitude : 17.586
 DUPflag : 0
 Distance (au) : 17.750
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.32
 Sun-Target sep (deg) : 146.58
 Sun-Moon sep (deg) : 28.99
 B (ring opening deg) : 47.42
 PA of pole (deg) : 90.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.277
 C/A sky separation (km) : 3563.3
 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



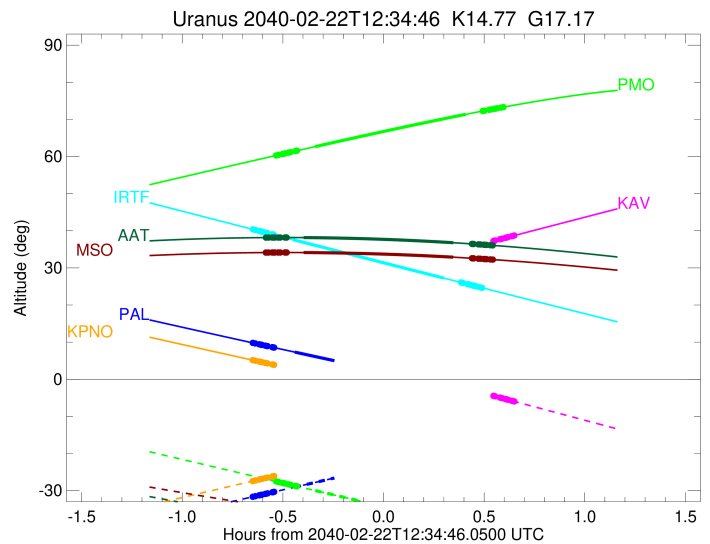
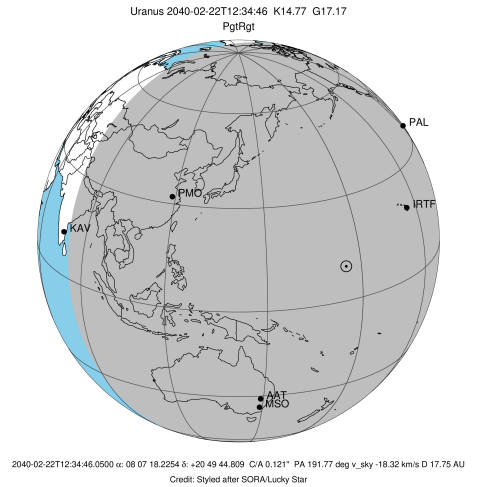
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2040-02-22T11:55:44.548		40.40	-68.42	51310.63	-24.92		
lambda	I	2040-02-22T11:56:36.097		40.20	-68.24	50026.71	-24.90		
delta	I	2040-02-22T11:57:45.431		39.93	-67.98	48300.35	-24.90		
gamma	I	2040-02-22T11:58:12.501		39.83	-67.89	47626.49	-24.89		
eta	I	2040-02-22T11:58:30.595		39.76	-67.82	47176.12	-24.89		
beta	I	2040-02-22T11:59:30.947		39.53	-67.60	45671.73	-24.88		
alpha	I	2040-02-22T12:00:08.351		39.38	-67.46	44752.40	-24.88		
4	I	2040-02-22T12:01:35.760		39.04	-67.15	42584.70	-24.87		
5	I	2040-02-22T12:01:51.636		38.98	-67.09	42173.70	-24.86		
6	I	2040-02-22T12:02:06.966		38.92	-67.03	41800.93	-24.86		
Uranus	I	2040-02-22T12:07:41.396		37.63	-65.80	25277.10		-39.68	-40.97
Uranus	E	2040-02-22T12:52:46.131		27.25	-55.55	25243.91		42.50	43.82
6	E	2040-02-22T12:57:52.686		26.08	-54.37	41869.16	24.71		
5	E	2040-02-22T12:58:09.378		26.01	-54.30	42286.44	24.71		
4	E	2040-02-22T12:58:19.550		25.98	-54.27	42550.55	24.72		
alpha	E	2040-02-22T12:59:46.307		25.65	-53.93	44685.29	24.73		
beta	E	2040-02-22T13:00:25.648		25.49	-53.78	45647.98	24.72		
eta	E	2040-02-22T13:01:27.367		25.26	-53.54	47176.12	24.73		
gamma	E	2040-02-22T13:01:45.530		25.19	-53.47	47625.24	24.73		
delta	E	2040-02-22T13:02:12.831		25.09	-53.36	48300.35	24.73		
lambda	E	2040-02-22T13:03:22.640		24.82	-53.09	50026.71	24.73		
epsilon	E	2040-02-22T13:04:03.475		24.66	-52.93	51036.61	24.75		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2040-02-22T12:39:41.470
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 670674403290859904
 2Mass ID (if available) : 08071828+2049448
 ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 14.771
 G magnitude : 17.169
 RP magnitude : 16.208
 BP magnitude : 17.586
 DUPflag : 0
 Distance (au) : 17.750
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.32
 Sun-Target sep (deg) : 146.58
 Sun-Moon sep (deg) : 27.69
 B (ring opening deg) : 47.42
 PA of pole (deg) : 90.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.045
 C/A sky separation (km) : 580.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.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	2040-02-22T12:05:20.645		22.70	10.42x	51292.72	-24.86		
lambda	I	2040-02-22T12:06:11.564		22.89	10.21x	50026.71	-24.86		
delta	I	2040-02-22T12:07:20.996		23.16	9.94x	48300.35	-24.86		
gamma	I	2040-02-22T12:07:48.086		23.27	9.83x	47626.77	-24.87		
eta	I	2040-02-22T12:08:06.209		23.34	9.76x	47176.12	-24.87		
beta	I	2040-02-22T12:09:06.574		23.58	9.52x	45672.65	-24.87		
alpha	I	2040-02-22T12:09:44.021		23.72	9.37x	44752.28	-24.87		
4	I	2040-02-22T12:11:11.379		24.06	9.02x	42587.26	-24.88		
5	I	2040-02-22T12:11:27.269		24.12	8.96x	42176.93	-24.87		
6	I	2040-02-22T12:11:42.483		24.18	8.90x	41802.35	-24.87		
Uranus	I	2040-02-22T12:16:59.343		25.42	7.64x	25259.71		-41.16	-42.47
Uranus	E	2040-02-22T13:02:20.901		36.04	-3.22x	25253.76		41.67	42.98
6	E	2040-02-22T13:07:33.504		37.26	-4.48x	41871.35	24.98		
5	E	2040-02-22T13:07:50.381		37.33	-4.54x	42291.29	24.98		
4	E	2040-02-22T13:08:00.309		37.37	-4.58x	42553.88	24.99		
alpha	E	2040-02-22T13:09:25.919		37.70	-4.93x	44684.87	24.99		
beta	E	2040-02-22T13:10:04.934		37.86	-5.08	45649.17	24.99		
eta	E	2040-02-22T13:11:05.940		38.09	-5.33	47176.12	24.99		
gamma	E	2040-02-22T13:11:23.926		38.16	-5.40	47625.63	24.99		
delta	E	2040-02-22T13:11:50.921		38.27	-5.51	48300.35	24.99		
lambda	E	2040-02-22T13:12:59.987		38.54	-5.79	50026.71	25.00		
epsilon	E	2040-02-22T13:13:39.319		38.69	-5.94	51009.96	25.00		

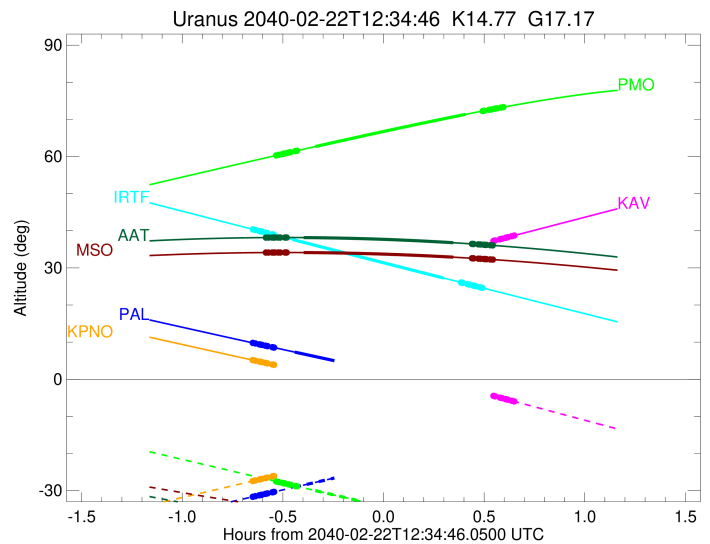
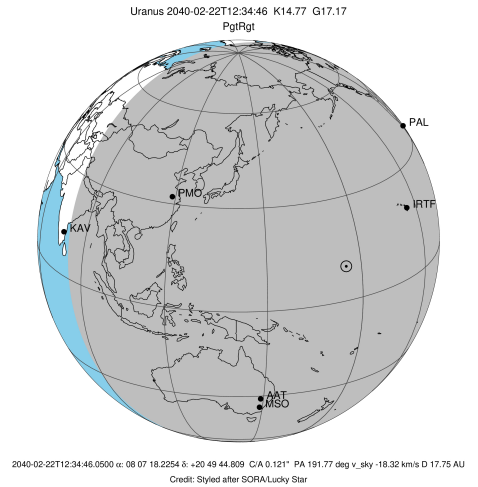
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2040-02-22T12:33:14.690
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 670674403290859904
 2Mass ID (if available) : 08071828+2049448
 ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 14.771
 G magnitude : 17.169
 RP magnitude : 16.208
 BP magnitude : 17.586
 DUPflag : 0
 Distance (au) : 17.750
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.32
 Sun-Target sep (deg) : 146.58
 Sun-Moon sep (deg) : 28.68
 B (ring opening deg) : 47.42
 PA of pole (deg) : 90.00
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.254
 C/A sky separation (km) : 3267.6
 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	2040-02-22T11:59:39.478		38.16	-37.13	51260.43	-25.10		
lambda	I	2040-02-22T12:00:28.602		38.17	-37.26	50026.71	-25.11		
delta	I	2040-02-22T12:01:37.354		38.17	-37.43	48300.35	-25.11		
gamma	I	2040-02-22T12:02:04.165		38.18	-37.49	47627.24	-25.11		
eta	I	2040-02-22T12:02:22.134		38.18	-37.54	47176.12	-25.10		
beta	I	2040-02-22T12:03:21.886		38.18	-37.68	45674.13	-25.10		
alpha	I	2040-02-22T12:03:59.035		38.18	-37.77	44751.83	-25.10		
4	I	2040-02-22T12:05:25.525		38.18	-37.99	42591.38	-25.10		
5	I	2040-02-22T12:05:41.301		38.18	-38.02	42182.72	-25.09		
6	I	2040-02-22T12:05:56.199		38.18	-38.06	41804.96	-25.08		
Uranus	I	2040-02-22T12:10:56.339		38.16	-38.78	25244.55		-42.45	-43.76
Uranus	E	2040-02-22T12:55:35.563		36.78	-44.28	25275.58		39.81	41.10
6	E	2040-02-22T13:01:08.688		36.46	-44.84	41873.40	25.05		
5	E	2040-02-22T13:01:25.882		36.44	-44.87	42295.92	25.05		
4	E	2040-02-22T13:01:35.673		36.43	-44.88	42557.45	25.06		
alpha	E	2040-02-22T13:03:00.824		36.35	-45.02	44684.64	25.06		
beta	E	2040-02-22T13:03:39.814		36.31	-45.08	45650.46	25.06		
eta	E	2040-02-22T13:04:40.589		36.24	-45.17	47176.12	25.06		
gamma	E	2040-02-22T13:04:58.539		36.22	-45.20	47626.02	25.07		
delta	E	2040-02-22T13:05:25.441		36.19	-45.24	48300.35	25.07		
lambda	E	2040-02-22T13:06:34.306		36.12	-45.35	50026.71	25.07		
epsilon	E	2040-02-22T13:07:12.496		36.08	-45.41	50984.18	25.06		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2040-02-22T12:33:13.630
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: 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       : 670674403290859904
2Mass ID (if available) : 08071828+2049448
ICRS Star Coord at Epoch: 08h 07m 18.22537s +20:49:44.80914s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 14.771
G magnitude           : 17.169
RP magnitude          : 16.208
BP magnitude          : 17.586
DUPflag              : 0
Distance (au)        : 17.750
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -18.32
Sun-Target sep (deg) : 146.58
Sun-Moon sep (deg)   : 28.66
B (ring opening deg) : 47.42
PA of pole (deg)     : 90.00
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.274
C/A sky separation (km) : 3533.3
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	2040-02-22T11:59:38.611		34.13	-34.16	51258.44	-25.07		
lambda	I	2040-02-22T12:00:27.721		34.14	-34.27	50026.71	-25.08		
delta	I	2040-02-22T12:01:36.565		34.14	-34.43	48300.35	-25.07		
gamma	I	2040-02-22T12:02:03.411		34.14	-34.49	47627.26	-25.07		
eta	I	2040-02-22T12:02:21.407		34.14	-34.53	47176.12	-25.07		
beta	I	2040-02-22T12:03:21.239		34.15	-34.67	45674.21	-25.06		
alpha	I	2040-02-22T12:03:58.443		34.15	-34.75	44751.79	-25.06		
4	I	2040-02-22T12:05:25.051		34.15	-34.94	42591.63	-25.06		
5	I	2040-02-22T12:05:40.851		34.15	-34.98	42183.10	-25.05		
6	I	2040-02-22T12:05:55.761		34.15	-35.01	41805.13	-25.05		
Uranus	I	2040-02-22T12:10:55.994		34.13	-35.67	25244.13		-42.49	-43.80
Uranus	E	2040-02-22T12:55:33.914		32.89	-40.69	25277.68		39.63	40.92
6	E	2040-02-22T13:01:09.631		32.60	-41.20	41873.54	25.01		
5	E	2040-02-22T13:01:26.877		32.58	-41.22	42296.26	25.02		
4	E	2040-02-22T13:01:36.675		32.57	-41.24	42557.73	25.03		
alpha	E	2040-02-22T13:03:01.928		32.49	-41.36	44684.64	25.03		
beta	E	2040-02-22T13:03:40.978		32.46	-41.41	45650.56	25.03		
eta	E	2040-02-22T13:04:41.829		32.40	-41.50	47176.12	25.03		
gamma	E	2040-02-22T13:04:59.804		32.38	-41.52	47626.05	25.03		
delta	E	2040-02-22T13:05:26.740		32.35	-41.56	48300.35	25.03		
lambda	E	2040-02-22T13:06:35.695		32.28	-41.66	50026.71	25.04		
epsilon	E	2040-02-22T13:07:13.852		32.25	-41.71	50982.16	25.03		