

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-02-04T05:57:02.850  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3383339837223385216  
 2Mass ID (if available) : 06285706+2336240

Uranus 2035-02-04T05:57:02 K14.50 G16.58 PgtRgt

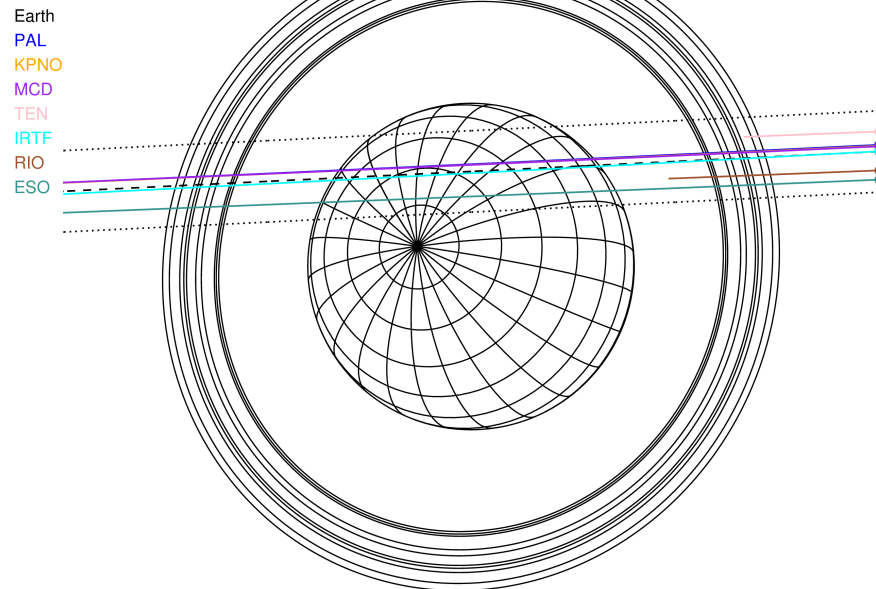
ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s

RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.498  
 G magnitude : 16.580  
 RP magnitude : 15.929  
 BP magnitude : 17.070  
 DUPflag : 0  
 Distance (au) : 18.098  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -17.04  
 Sun-Target sep (deg) : 141.88  
 Sun-Moon sep (deg) : 170.04  
 B (ring opening deg) : 69.43  
 PA of pole (deg) : 69.42

Uranus 2035-02-04T05:57:02 K14.50 G16.58  
 PgtRgt



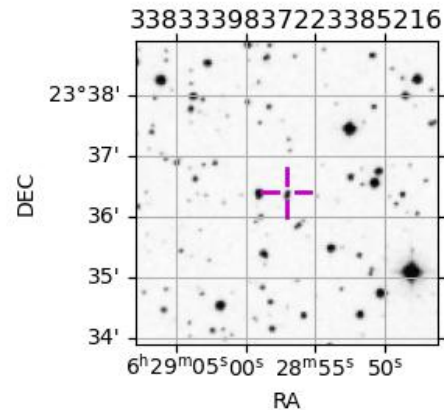
2035-02-04T05:57:02.8500 ex: 06 28 57.06305 ra: +23 36 23.982 C/A 1.140° PA 182.79 deg v\_sky -17.04 km/s D 18.10 AU  
 Credit: Styled after SORA/Lucky Star



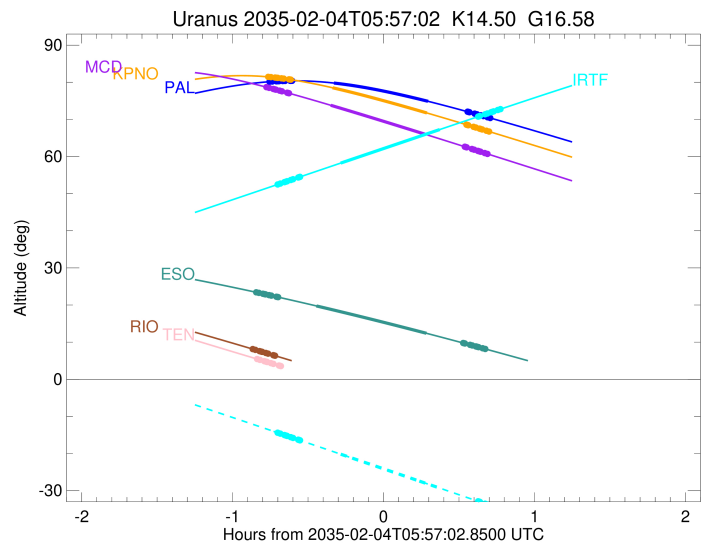
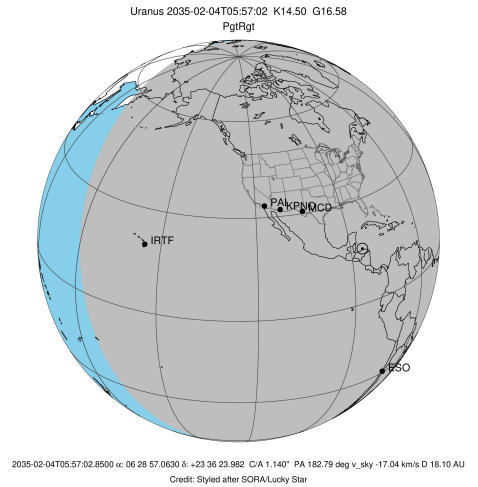
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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 04 05:11 - FEB 04 06:39	PieRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	FEB 04 05:11 - FEB 04 06:39	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	FEB 04 05:10 - FEB 04 06:38	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	++			FEB 04 05:06 - FEB 04 05:07	PnnRin
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	FEB 04 05:14 - FEB 04 06:43	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++			FEB 04 05:04 - FEB 04 05:13	PnnRin
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	FEB 04 05:06 - FEB 04 06:37	PieRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



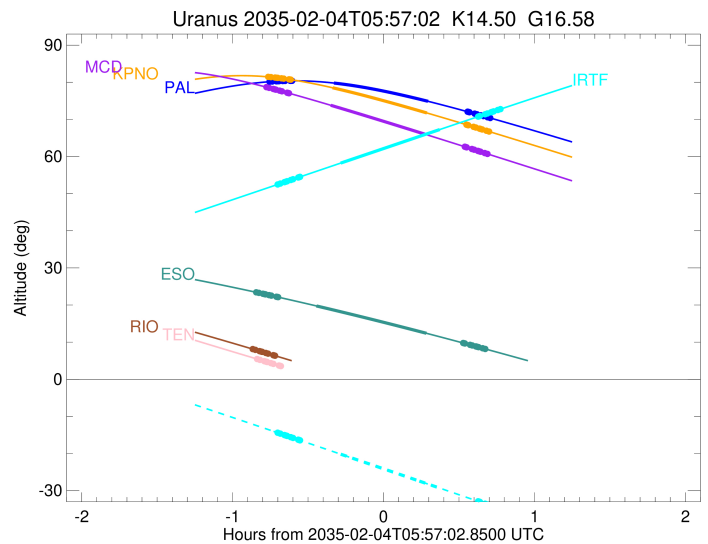
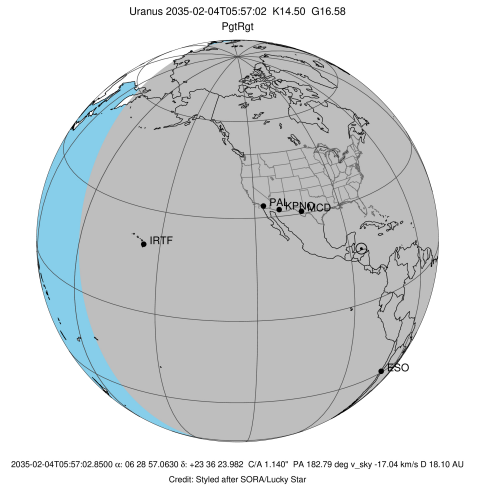
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-02-04T05:56:16.660  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PAL  
 Location : Palomar Mt (200")  
 Latitude (deg) : 33.35622  
 E. Longitude (deg) : 243.13601  
 Altitude (km) : 1.706  
 Gaia source ID : 3383339837223385216  
 2Mass ID (if available) : 06285706+2336240  
 ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.498  
 G magnitude : 16.580  
 RP magnitude : 15.929  
 BP magnitude : 17.070  
 DUPflag : 0  
 Distance (au) : 18.098  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -17.04  
 Sun-Target sep (deg) : 141.88  
 Sun-Moon sep (deg) : 170.36  
 B (ring opening deg) : 69.43  
 PA of pole (deg) : 69.42  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.219  
 C/A sky separation (km) : 15999.2  
 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	2035-02-04T05:11:32.155		80.14	-48.28	51370.93	-17.55		
lambda	I	2035-02-04T05:12:49.031		80.20	-48.54	50026.71	-17.46		
delta	I	2035-02-04T05:14:28.121		80.27	-48.88	48300.35	-17.38		
gamma	I	2035-02-04T05:15:06.953		80.29	-49.01	47625.91	-17.35		
eta	I	2035-02-04T05:15:32.890		80.31	-49.10	47176.12	-17.33		
beta	I	2035-02-04T05:17:01.449		80.34	-49.39	45645.87	-17.25		
alpha	I	2035-02-04T05:17:55.095		80.36	-49.58	44721.16	-17.19		
4	I	2035-02-04T05:20:03.294		80.39	-50.01	42529.39	-17.07		
5	I	2035-02-04T05:20:16.578		80.39	-50.05	42291.38	-17.03		
6	I	2035-02-04T05:20:45.329		80.40	-50.15	41805.22	-17.01		
Uranus	I	2035-02-04T05:37:21.873		79.79	-53.47	25444.81		-9.43	-9.87
Uranus	E	2035-02-04T06:14:45.465		74.88	-60.64	25085.94		19.70	20.55
6	E	2035-02-04T06:30:31.275		72.07	-63.45	41879.61	16.98		
5	E	2035-02-04T06:30:47.501		72.02	-63.50	42154.82	17.00		
4	E	2035-02-04T06:31:13.487		71.94	-63.57	42613.18	17.03		
alpha	E	2035-02-04T06:33:15.379		71.56	-63.92	44693.68	17.16		
beta	E	2035-02-04T06:34:12.606		71.38	-64.09	45681.23	17.22		
eta	E	2035-02-04T06:35:39.322		71.10	-64.33	47176.12	17.29		
gamma	E	2035-02-04T06:36:05.159		71.02	-64.40	47623.15	17.31		
delta	E	2035-02-04T06:36:44.239		70.90	-64.51	48300.35	17.34		
lambda	E	2035-02-04T06:38:23.564		70.59	-64.79	50026.71	17.42		
epsilon	E	2035-02-04T06:39:29.163		70.38	-64.97	51170.70	17.51		

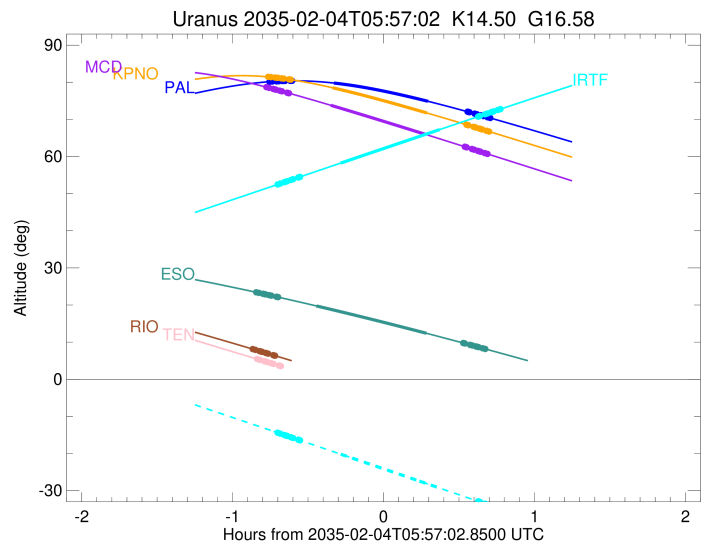
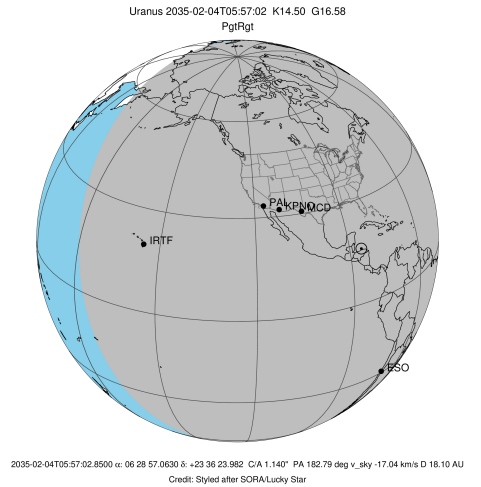
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-02-04T05:55:46.900
Event type           : PgtRgt
: 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       : 3383339837223385216
2Mass ID (if available) : 06285706+2336240
ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 14.498
G magnitude           : 16.580
RP magnitude          : 15.929
BP magnitude          : 17.070
DUPflag              : 0
Distance (au)         : 18.098
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -17.04
Sun-Target sep (deg) : 141.88
Sun-Moon sep (deg)   : 170.41
B (ring opening deg) : 69.43
PA of pole (deg)     : 69.42
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.212
C/A sky separation (km) : 15910.8
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
    
```



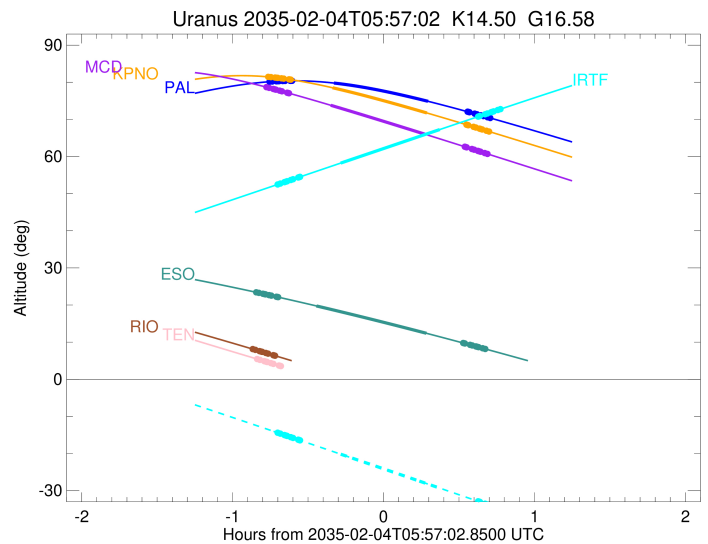
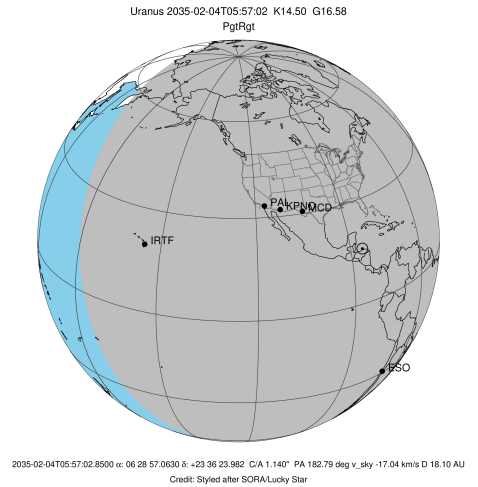
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-02-04T05:11:01.534		81.47	-52.82	51370.03	-17.57		
lambda	I	2035-02-04T05:12:18.284		81.39	-53.08	50026.71	-17.48		
delta	I	2035-02-04T05:13:57.275		81.27	-53.42	48300.35	-17.40		
gamma	I	2035-02-04T05:14:36.066		81.22	-53.55	47625.92	-17.37		
eta	I	2035-02-04T05:15:01.977		81.19	-53.64	47176.12	-17.35		
beta	I	2035-02-04T05:16:30.444		81.07	-53.94	45645.83	-17.27		
alpha	I	2035-02-04T05:17:24.022		80.99	-54.12	44721.25	-17.21		
4	I	2035-02-04T05:19:32.081		80.78	-54.55	42529.33	-17.07		
5	I	2035-02-04T05:19:45.332		80.76	-54.60	42291.55	-17.05		
6	I	2035-02-04T05:20:14.064		80.71	-54.69	41805.14	-17.03		
Uranus	I	2035-02-04T05:36:48.193		78.53	-58.01	25442.56		-9.52	-9.97
Uranus	E	2035-02-04T06:14:20.004		71.73	-65.08	25084.93		19.72	20.57
6	E	2035-02-04T06:30:04.268		68.57	-67.76	41879.62	16.99		
5	E	2035-02-04T06:30:20.485		68.51	-67.80	42154.82	17.01		
4	E	2035-02-04T06:30:46.457		68.43	-67.87	42613.20	17.04		
alpha	E	2035-02-04T06:32:48.288		68.01	-68.19	44693.71	17.16		
beta	E	2035-02-04T06:33:45.489		67.82	-68.35	45681.23	17.22		
eta	E	2035-02-04T06:35:12.174		67.52	-68.57	47176.12	17.30		
gamma	E	2035-02-04T06:35:38.003		67.43	-68.64	47623.15	17.32		
delta	E	2035-02-04T06:36:17.071		67.30	-68.74	48300.35	17.35		
lambda	E	2035-02-04T06:37:56.372		66.96	-68.99	50026.71	17.42		
epsilon	E	2035-02-04T06:39:01.932		66.73	-69.16	51170.25	17.51		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-02-04T05:55:05.010  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : 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 : 3383339837223385216  
 2Mass ID (if available) : 06285706+2336240  
 ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.498  
 G magnitude : 16.580  
 RP magnitude : 15.929  
 BP magnitude : 17.070  
 DUPflag : 0  
 Distance (au) : 18.098  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -17.04  
 Sun-Target sep (deg) : 141.88  
 Sun-Moon sep (deg) : 170.49  
 B (ring opening deg) : 69.43  
 PA of pole (deg) : 69.42  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.211  
 C/A sky separation (km) : 15891.6  
 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	2035-02-04T05:10:18.626		78.73	-59.24	51369.52	-17.57		
lambda	I	2035-02-04T05:11:35.337		78.50	-59.50	50026.71	-17.48		
delta	I	2035-02-04T05:13:14.318		78.20	-59.83	48300.35	-17.40		
gamma	I	2035-02-04T05:13:53.105		78.09	-59.96	47625.93	-17.37		
eta	I	2035-02-04T05:14:19.014		78.01	-60.04	47176.12	-17.35		
beta	I	2035-02-04T05:15:47.473		77.74	-60.34	45645.82	-17.27		
alpha	I	2035-02-04T05:16:41.042		77.57	-60.51	44721.31	-17.21		
4	I	2035-02-04T05:18:49.096		77.18	-60.94	42529.31	-17.09		
5	I	2035-02-04T05:19:02.337		77.14	-60.98	42291.64	-17.05		
6	I	2035-02-04T05:19:31.075		77.05	-61.08	41805.09	-17.03		
Uranus	I	2035-02-04T05:36:04.886		73.81	-64.29	25441.65		-9.56	-10.01
Uranus	E	2035-02-04T06:13:39.873		65.99	-70.82	25084.97		19.72	20.57
6	E	2035-02-04T06:29:24.653		62.63	-73.02	41879.62	16.97		
5	E	2035-02-04T06:29:40.883		62.57	-73.05	42154.83	16.99		
4	E	2035-02-04T06:30:06.876		62.48	-73.10	42613.19	17.03		
alpha	E	2035-02-04T06:32:08.811		62.04	-73.35	44693.70	17.15		
beta	E	2035-02-04T06:33:06.064		61.84	-73.46	45681.23	17.21		
eta	E	2035-02-04T06:34:32.828		61.53	-73.62	47176.12	17.28		
gamma	E	2035-02-04T06:34:58.681		61.44	-73.67	47623.15	17.30		
delta	E	2035-02-04T06:35:37.786		61.30	-73.74	48300.35	17.33		
lambda	E	2035-02-04T06:37:17.183		60.94	-73.92	50026.71	17.40		
epsilon	E	2035-02-04T06:38:22.823		60.71	-74.04	51170.50	17.49		

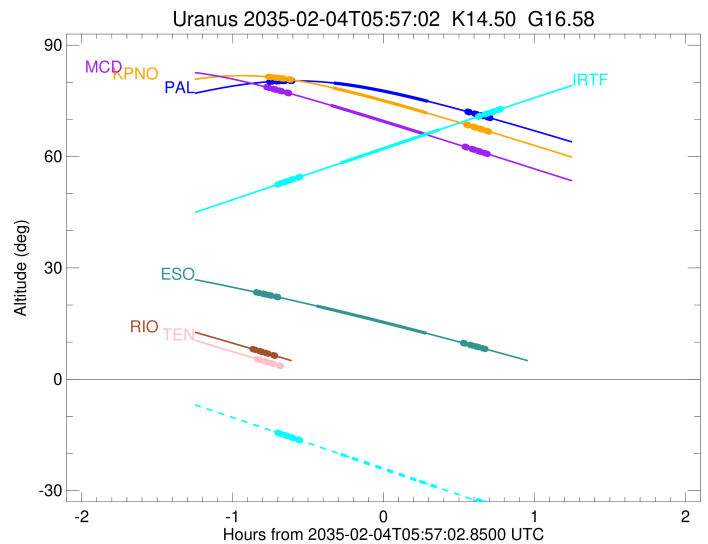
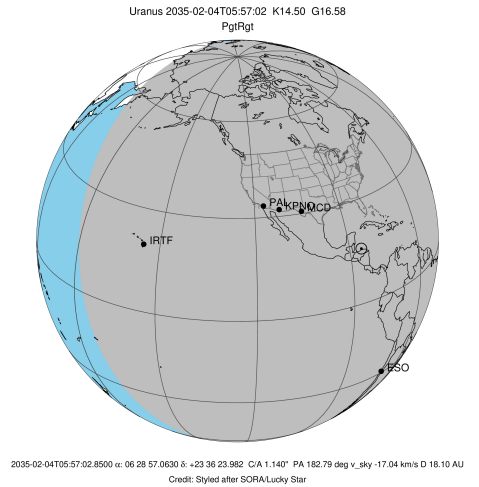
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-02-04T05:51:50.390  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : TEN  
 Location : Teide Obs./Tenerife  
 Latitude (deg) : 28.30050  
 E. Longitude (deg) : 343.48909  
 Altitude (km) : 2.395  
 Gaia source ID : 3383339837223385216  
 2Mass ID (if available) : 06285706+2336240  
 ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.498  
 G magnitude : 16.580  
 RP magnitude : 15.929  
 BP magnitude : 17.070  
 DUPflag : 0  
 Distance (au) : 18.098  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -17.04  
 Sun-Target sep (deg) : 141.88  
 Sun-Moon sep (deg) : 170.92  
 B (ring opening deg) : 69.43  
 PA of pole (deg) : 69.42  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.417  
 C/A sky separation (km) : 18595.1  
 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	2035-02-04T05:06:35.144		5.50	-36.65	51386.71	-16.78		
lambda	I	2035-02-04T05:07:56.575		5.22	-36.35	50026.71	-16.66		
delta	I	2035-02-04T05:09:40.492		4.87x	-35.96	48300.35	-16.56		
gamma	I	2035-02-04T05:10:21.289		4.74x	-35.81	47625.63	-16.52		
eta	I	2035-02-04T05:10:48.529		4.64x	-35.71	47176.12	-16.49		
beta	I	2035-02-04T05:12:21.668		4.33x	-35.37	45646.62	-16.38		
alpha	I	2035-02-04T05:13:18.393		4.14x	-35.16	44719.24	-16.30		
4	I	2035-02-04T05:15:33.663		3.69x	-34.67	42530.52	-16.12		
5	I	2035-02-04T05:15:48.085		3.64x	-34.61	42287.78	-16.08		
6	I	2035-02-04T05:16:18.214		3.54x	-34.50	41807.02	-16.05		
Uranus	I	2035-02-04T05:34:39.784		-0.11x	-30.46	25495.52		-7.01	-7.33
Uranus	E	2035-02-04T06:08:31.493		-6.65x	-23.02	25134.39		18.59	19.41
6	E	2035-02-04T06:25:57.120		-9.90x	-19.21	41879.25	15.92		
5	E	2035-02-04T06:26:14.429		-9.95x	-19.15	42155.03	15.94		
4	E	2035-02-04T06:26:42.058		-10.04x	-19.05	42611.82	15.99		
alpha	E	2035-02-04T06:28:51.651		-10.43x	-18.58	44692.16	16.16		
beta	E	2035-02-04T06:29:52.456		-10.62x	-18.36	45681.16	16.23		
eta	E	2035-02-04T06:31:24.337		-10.90x	-18.02	47176.12	16.33		
gamma	E	2035-02-04T06:31:51.666		-10.98x	-17.92	47622.88	16.36		
delta	E	2035-02-04T06:32:33.019		-11.11x	-17.77	48300.35	16.40		
lambda	E	2035-02-04T06:34:17.956		-11.43x	-17.39	50026.71	16.50		
epsilon	E	2035-02-04T06:35:28.614		-11.64x	-17.14	51194.59	16.61		

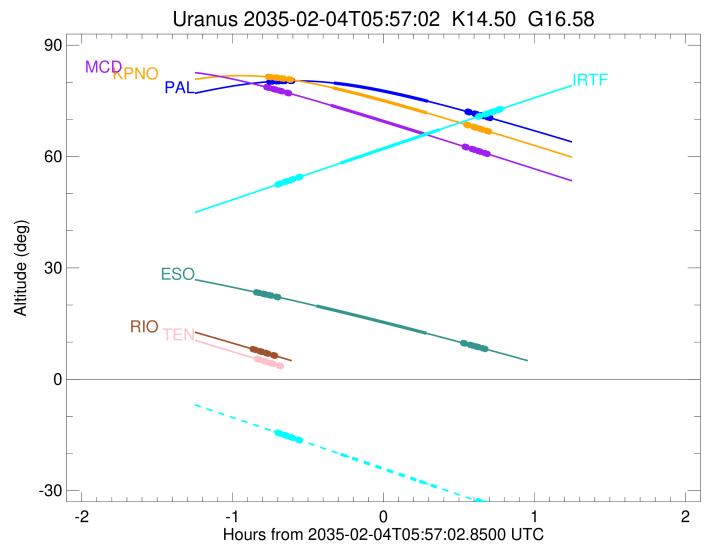
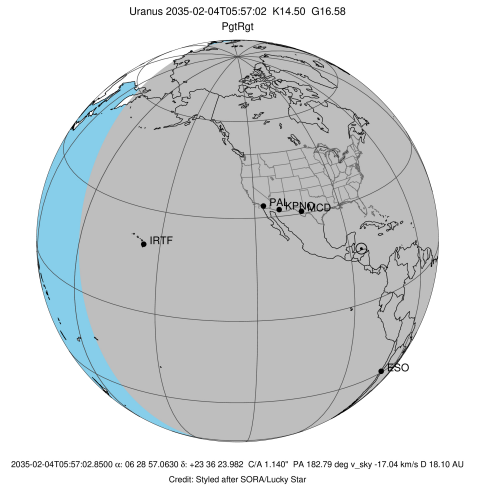
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-02-04T05:59:56.300
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      : 3383339837223385216
2Mass ID (if available) : 06285706+2336240
ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 14.498
G magnitude          : 16.580
RP magnitude         : 15.929
BP magnitude         : 17.070
DUPflag             : 0
Distance (au)       : 18.098
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -17.04
Sun-Target sep (deg) : 141.88
Sun-Moon sep (deg)  : 169.81
B (ring opening deg) : 69.43
PA of pole (deg)    : 69.42
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.111
C/A sky separation (km) : 14588.8
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_itrfr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```



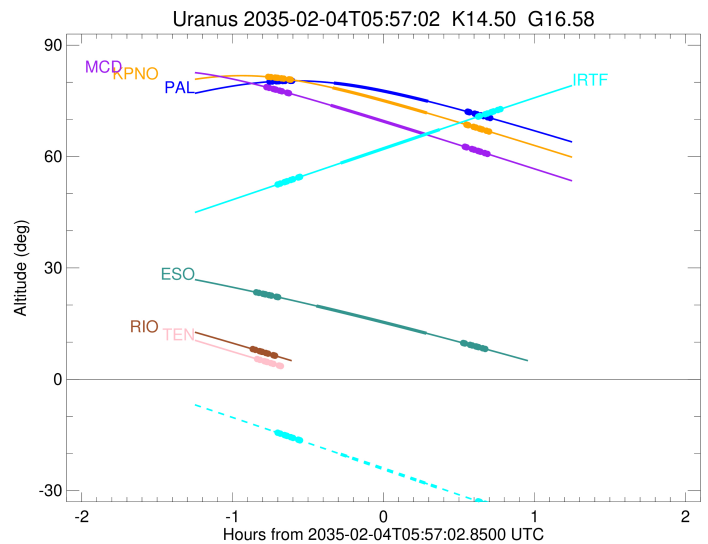
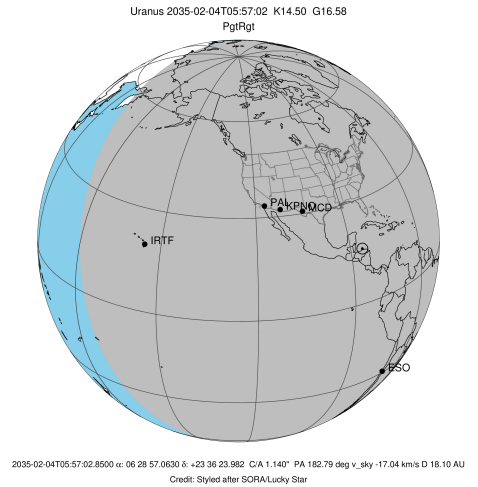
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-02-04T05:14:46.800		52.43	-14.36	51363.01	-17.65		
lambda	I	2035-02-04T05:16:02.743		52.73	-14.65	50026.71	-17.57		
delta	I	2035-02-04T05:17:41.136		53.10	-15.03	48300.35	-17.52		
gamma	I	2035-02-04T05:18:19.662		53.25	-15.17	47626.04	-17.49		
eta	I	2035-02-04T05:18:45.400		53.35	-15.27	47176.12	-17.47		
beta	I	2035-02-04T05:20:13.220		53.68	-15.61	45645.52	-17.41		
alpha	I	2035-02-04T05:21:06.282		53.89	-15.81	44722.10	-17.36		
4	I	2035-02-04T05:23:13.226		54.37	-16.30	42528.89	-17.26		
5	I	2035-02-04T05:23:26.202		54.42	-16.35	42293.08	-17.23		
6	I	2035-02-04T05:23:54.764		54.53	-16.46	41804.38	-17.22		
Uranus	I	2035-02-04T05:40:02.009		58.24	-20.18	25416.94		-10.54	-11.03
Uranus	E	2035-02-04T06:19:25.146		67.27	-29.32	25067.73		20.10	20.97
6	E	2035-02-04T06:34:42.441		70.77	-32.89	41879.72	17.26		
5	E	2035-02-04T06:34:58.413		70.83	-32.95	42154.90	17.28		
4	E	2035-02-04T06:35:23.997		70.92	-33.05	42613.85	17.31		
alpha	E	2035-02-04T06:37:24.034		71.38	-33.52	44694.62	17.42		
beta	E	2035-02-04T06:38:20.383		71.59	-33.74	45681.23	17.47		
eta	E	2035-02-04T06:39:45.894		71.92	-34.07	47176.12	17.53		
gamma	E	2035-02-04T06:40:11.392		72.01	-34.17	47623.31	17.55		
delta	E	2035-02-04T06:40:49.947		72.16	-34.32	48300.35	17.57		
lambda	E	2035-02-04T06:42:28.008		72.53	-34.70	50026.71	17.64		
epsilon	E	2035-02-04T06:43:32.007		72.77	-34.95	51156.58	17.71		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-02-04T05:51:07.100  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : 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 : 3383339837223385216  
 2Mass ID (if available) : 06285706+2336240  
 ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.498  
 G magnitude : 16.580  
 RP magnitude : 15.929  
 BP magnitude : 17.070  
 DUPflag : 0  
 Distance (au) : 18.098  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -17.04  
 Sun-Target sep (deg) : 141.88  
 Sun-Moon sep (deg) : 170.53  
 B (ring opening deg) : 69.43  
 PA of pole (deg) : 69.42  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.956  
 C/A sky separation (km) : 12552.7  
 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	2035-02-04T05:04:53.498		8.17	-41.43	51343.49	-17.66		
lambda	I	2035-02-04T05:06:08.257		7.92	-41.25	50026.71	-17.60		
delta	I	2035-02-04T05:07:46.494		7.59	-41.00	48300.35	-17.55		
gamma	I	2035-02-04T05:08:24.922		7.46	-40.91	47626.36	-17.53		
eta	I	2035-02-04T05:08:50.617		7.37	-40.85	47176.12	-17.52		
beta	I	2035-02-04T05:10:18.235		7.08	-40.63	45644.78	-17.47		
alpha	I	2035-02-04T05:11:10.935		6.90	-40.50	44724.19	-17.43		
4	I	2035-02-04T05:13:17.495		6.48	-40.18	42527.93	-17.35		
5	I	2035-02-04T05:13:30.089		6.43	-40.15	42296.56	-17.33		
6	I	2035-02-04T05:13:58.789		6.34	-40.07	41802.68	-17.32		
Uranus	I	2035-02-04T05:29:40.079	3.13x	-37.60	25364.88			-12.36	-12.93
Uranus	E	2035-02-04T06:12:16.498	-5.78x	-30.15	25054.07			20.40	21.28
6	E	2035-02-04T06:27:24.291	-9.01x	-27.30	41879.74		17.16		
5	E	2035-02-04T06:27:40.386	-9.07x	-27.25	42155.10		17.17		
4	E	2035-02-04T06:28:06.151	-9.16x	-27.17	42614.42		17.19		
alpha	E	2035-02-04T06:30:07.167	-9.59x	-26.78	44695.50		17.26		
beta	E	2035-02-04T06:31:03.999	-9.80x	-26.60	45681.20		17.30		
eta	E	2035-02-04T06:32:30.406	-10.11x	-26.32	47176.12		17.34		
gamma	E	2035-02-04T06:32:56.199	-10.20x	-26.24	47623.46		17.35		
delta	E	2035-02-04T06:33:35.195	-10.34x	-26.11	48300.35		17.37		
lambda	E	2035-02-04T06:35:14.486	-10.70x	-25.79	50026.71		17.41		
epsilon	E	2035-02-04T06:36:18.660	-10.93x	-25.58	51144.54		17.47		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-02-04T05:52:21.220  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : 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 : 3383339837223385216  
 2Mass ID (if available) : 06285706+2336240  
 ICRS Star Coord at Epoch: 06h 28m 57.06305s +23:36:23.98200s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.498  
 G magnitude : 16.580  
 RP magnitude : 15.929  
 BP magnitude : 17.070  
 DUPflag : 0  
 Distance (au) : 18.098  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -17.04  
 Sun-Target sep (deg) : 141.88  
 Sun-Moon sep (deg) : 170.31  
 B (ring opening deg) : 69.43  
 PA of pole (deg) : 69.42  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.835  
 C/A sky separation (km) : 10956.1  
 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	2035-02-04T05:06:17.520		23.45	-44.57	51332.62	-17.95		
lambda	I	2035-02-04T05:07:30.438		23.27	-44.56	50026.71	-17.90		
delta	I	2035-02-04T05:09:06.998		23.03	-44.53	48300.35	-17.86		
gamma	I	2035-02-04T05:09:44.741		22.94	-44.52	47626.53	-17.84		
eta	I	2035-02-04T05:10:09.989		22.88	-44.52	47176.12	-17.83		
beta	I	2035-02-04T05:11:36.032		22.66	-44.49	45644.39	-17.80		
alpha	I	2035-02-04T05:12:27.642		22.53	-44.47	44725.36	-17.77		
4	I	2035-02-04T05:14:31.810		22.22	-44.43	42527.46	-17.71		
5	I	2035-02-04T05:14:43.983		22.19	-44.43	42298.46	-17.69		
6	I	2035-02-04T05:15:12.250		22.12	-44.41	41801.76	-17.68		
Uranus	I	2035-02-04T05:30:20.870		19.76	-43.92	25330.27		-13.45	-14.07
Uranus	E	2035-02-04T06:14:06.189		12.39	-40.95	25047.50		20.54	21.43
6	E	2035-02-04T06:28:45.670		9.76	-39.50	41879.70	17.56		
5	E	2035-02-04T06:29:01.439		9.71	-39.47	42155.44	17.56		
4	E	2035-02-04T06:29:26.634		9.64	-39.42	42614.95	17.58		
alpha	E	2035-02-04T06:31:25.075		9.28	-39.21	44696.48	17.63		
beta	E	2035-02-04T06:32:20.672		9.11	-39.11	45681.15	17.66		
eta	E	2035-02-04T06:33:45.328		8.85	-38.95	47176.12	17.69		
gamma	E	2035-02-04T06:34:10.617		8.77	-38.91	47623.62	17.70		
delta	E	2035-02-04T06:34:48.835		8.66	-38.84	48300.35	17.71		
lambda	E	2035-02-04T06:36:26.211		8.36	-38.65	50026.71	17.74		
epsilon	E	2035-02-04T06:37:28.409		8.17	-38.54	51130.91	17.79		