

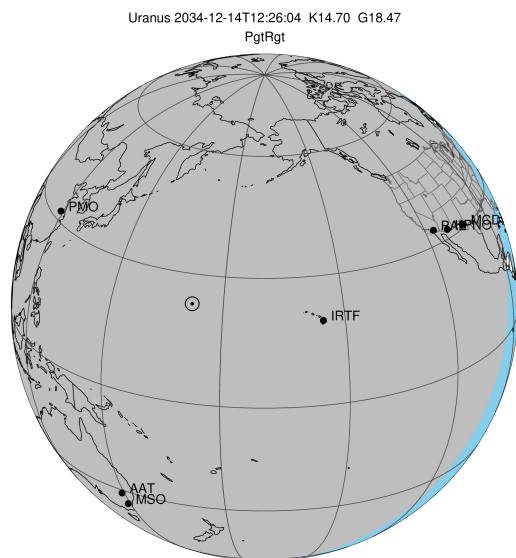
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T12:26:04.280
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3382409272430314752
 2Mass ID (if available) : 06375897+2328536

Uranus 2034-12-14T12:26:04 K14.70 G18.47 PgtRgt

ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s

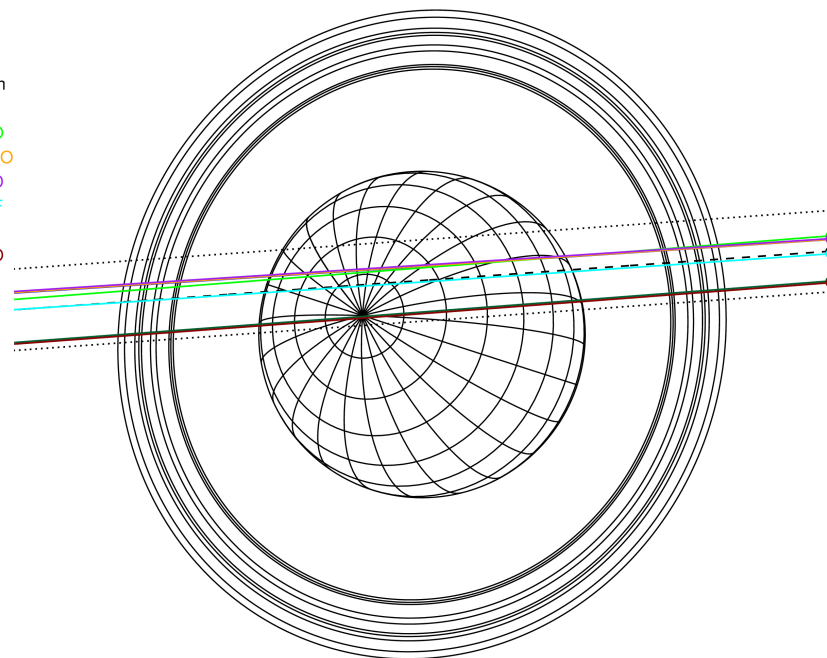
RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.703
 G magnitude : 18.466
 RP magnitude : 17.275
 BP magnitude : 19.886
 DUPflag : 0
 Distance (au) : 17.946
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.14
 Sun-Target sep (deg) : 163.39
 Sun-Moon sep (deg) : 155.74
 B (ring opening deg) : 67.51
 PA of pole (deg) : 72.34

#	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



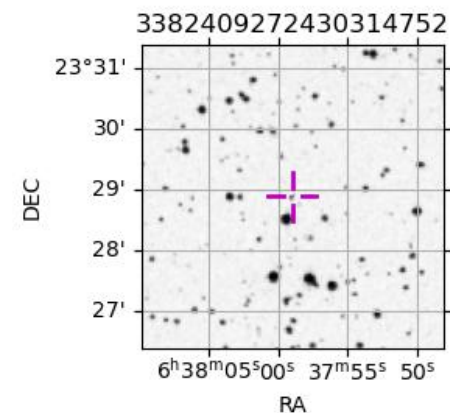
2034-12-14T12:26:04.2800 ra: 06 37 58.9734 s: +23 28 53.252 C/A 0.656° PA 184.11 deg v_sky -22.14 km/s D 17.95 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 AAT
 MSO

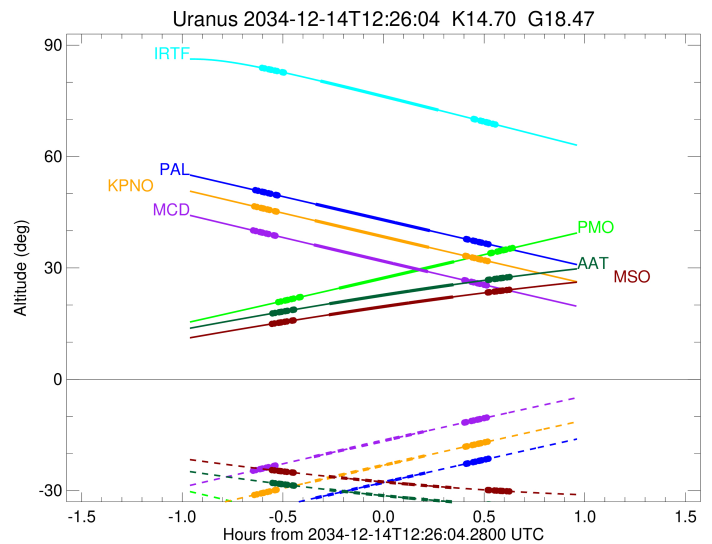
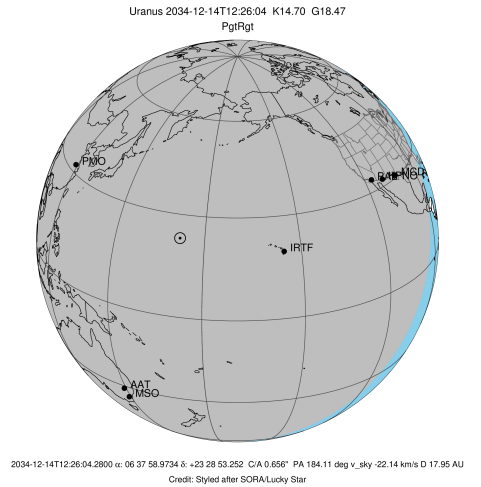


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	DEC 14 11:47 - DEC 14 12:57	PieRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	DEC 14 11:54 - DEC 14 13:04	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	DEC 14 11:47 - DEC 14 12:56	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	DEC 14 11:46 - DEC 14 12:56	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	DEC 14 11:49 - DEC 14 12:59	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
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	+++++	+ +	+++++	DEC 14 11:52 - DEC 14 13:03	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	DEC 14 11:52 - DEC 14 13:03	PieRie

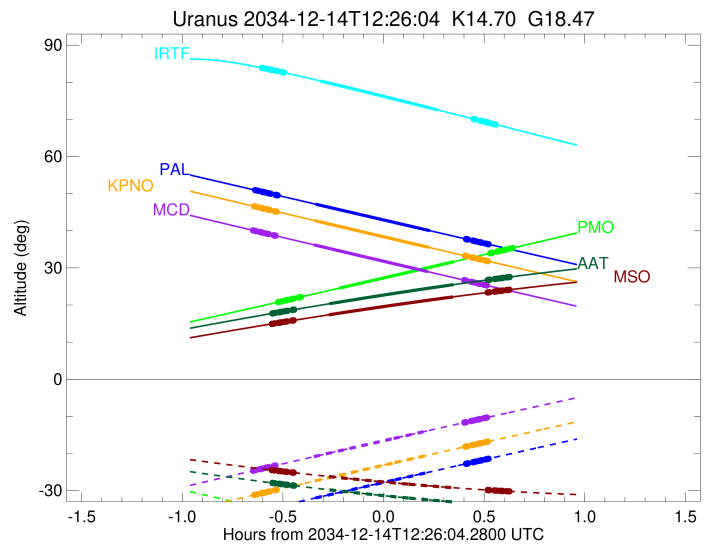
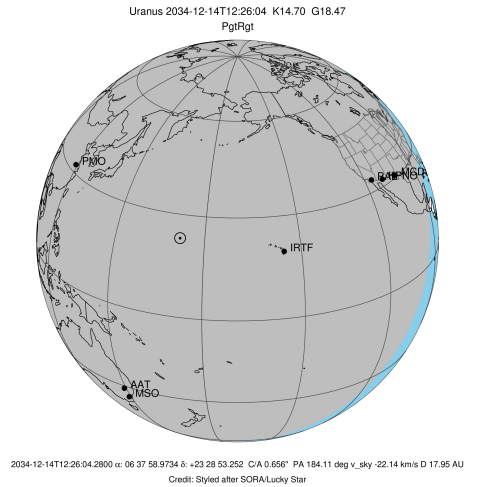


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T12:22:58.110
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3382409272430314752
 2Mass ID (if available) : 06375897+2328536
 ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.703
 G magnitude : 18.466
 RP magnitude : 17.275
 BP magnitude : 19.886
 DUPflag : 0
 Distance (au) : 17.946
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.14
 Sun-Target sep (deg) : 163.39
 Sun-Moon sep (deg) : 155.51
 B (ring opening deg) : 67.51
 PA of pole (deg) : 72.34
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.817
 C/A sky separation (km) : 10640.3
 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	2034-12-14T11:47:33.570		51.00	-35.76	51551.45	-23.48		
lambda	I	2034-12-14T11:48:38.544		50.78	-35.53	50026.71	-23.45		
delta	I	2034-12-14T11:49:52.233		50.52	-35.28	48300.35	-23.41		
gamma	I	2034-12-14T11:50:21.271		50.42	-35.18	47620.96	-23.39		
eta	I	2034-12-14T11:50:40.296		50.35	-35.11	47176.12	-23.38		
beta	I	2034-12-14T11:51:44.514		50.13	-34.89	45676.21	-23.33		
alpha	I	2034-12-14T11:52:26.860		49.98	-34.74	44685.28	-23.30		
4	I	2034-12-14T11:53:55.882		49.67	-34.43	42610.23	-23.22		
5	I	2034-12-14T11:54:15.860		49.60	-34.36	42155.02	-23.21		
6	I	2034-12-14T11:54:27.542		49.56	-34.32	41879.66	-23.20		
Uranus	I	2034-12-14T12:05:51.695		47.16	-31.96	25316.60		-15.33	-16.02
Uranus	E	2034-12-14T12:39:52.931		40.03	-24.97	25061.61		22.43	23.38
6	E	2034-12-14T12:50:39.333		37.78	-22.77	41801.84	23.12		
5	E	2034-12-14T12:51:00.774		37.70	-22.70	42301.75	23.13		
4	E	2034-12-14T12:51:12.186		37.66	-22.66	42548.55	23.15		
alpha	E	2034-12-14T12:52:46.956		37.33	-22.34	44751.03	23.22		
beta	E	2034-12-14T12:53:25.715		37.20	-22.21	45653.85	23.25		
eta	E	2034-12-14T12:54:31.090		36.97	-21.99	47176.12	23.29		
gamma	E	2034-12-14T12:54:50.613		36.90	-21.92	47630.94	23.30		
delta	E	2034-12-14T12:55:19.328		36.80	-21.82	48300.35	23.32		
lambda	E	2034-12-14T12:56:33.294		36.55	-21.57	50026.71	23.36		
epsilon	E	2034-12-14T12:57:04.675		36.44	-21.47	50760.00	23.39		

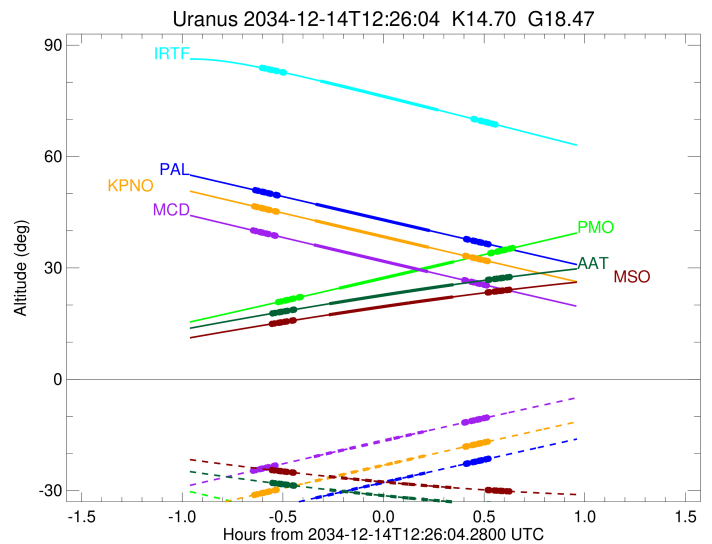
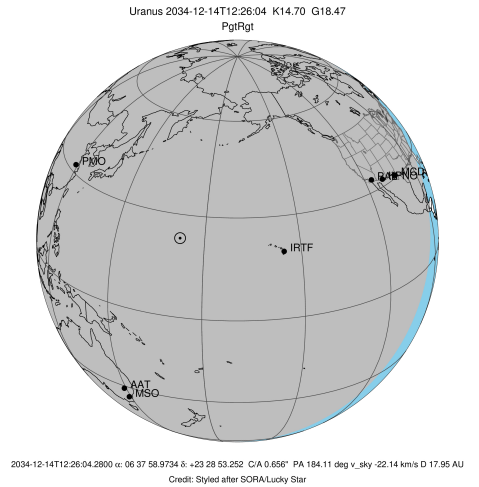
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T12:30:04.820
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3382409272430314752
 2Mass ID (if available) : 06375897+2328536
 ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.703
 G magnitude : 18.466
 RP magnitude : 17.275
 BP magnitude : 19.886
 DUPflag : 0
 Distance (au) : 17.946
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.14
 Sun-Target sep (deg) : 163.39
 Sun-Moon sep (deg) : 156.63
 B (ring opening deg) : 67.51
 PA of pole (deg) : 72.34
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.800
 C/A sky separation (km) : 10409.8
 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	2034-12-14T11:54:23.653		20.73	-35.72	51551.04	-23.29		
lambda	I	2034-12-14T11:55:29.138		20.95	-35.95	50026.71	-23.26		
delta	I	2034-12-14T11:56:43.410		21.21	-36.21	48300.35	-23.22		
gamma	I	2034-12-14T11:57:12.673		21.31	-36.31	47620.96	-23.21		
eta	I	2034-12-14T11:57:31.844		21.37	-36.38	47176.12	-23.20		
beta	I	2034-12-14T11:58:36.541		21.59	-36.61	45676.30	-23.16		
alpha	I	2034-12-14T11:59:19.200		21.74	-36.76	44685.33	-23.13		
4	I	2034-12-14T12:00:48.850		22.05	-37.07	42610.37	-23.06		
5	I	2034-12-14T12:01:08.967		22.12	-37.14	42154.99	-23.05		
6	I	2034-12-14T12:01:20.727		22.16	-37.18	41879.67	-23.04		
Uranus	I	2034-12-14T12:12:48.507		24.53	-39.60	25317.80		-15.29	-15.98
Uranus	E	2034-12-14T12:47:07.085		31.68	-46.87	25060.44		22.46	23.41
6	E	2034-12-14T12:57:52.717		33.94	-49.16	41801.44	23.14		
5	E	2034-12-14T12:58:14.189		34.02	-49.23	42302.50	23.15		
4	E	2034-12-14T12:58:25.523		34.06	-49.27	42547.89	23.17		
alpha	E	2034-12-14T13:00:00.252		34.39	-49.61	44751.19	23.24		
beta	E	2034-12-14T13:00:38.955		34.53	-49.74	45653.54	23.27		
eta	E	2034-12-14T13:01:44.284		34.76	-49.97	47176.12	23.31		
gamma	E	2034-12-14T13:02:03.790		34.83	-50.04	47630.98	23.33		
delta	E	2034-12-14T13:02:32.476		34.93	-50.14	48300.35	23.34		
lambda	E	2034-12-14T13:03:46.365		35.19	-50.41	50026.71	23.39		
epsilon	E	2034-12-14T13:04:17.635		35.30	-50.52	50758.23	23.41		

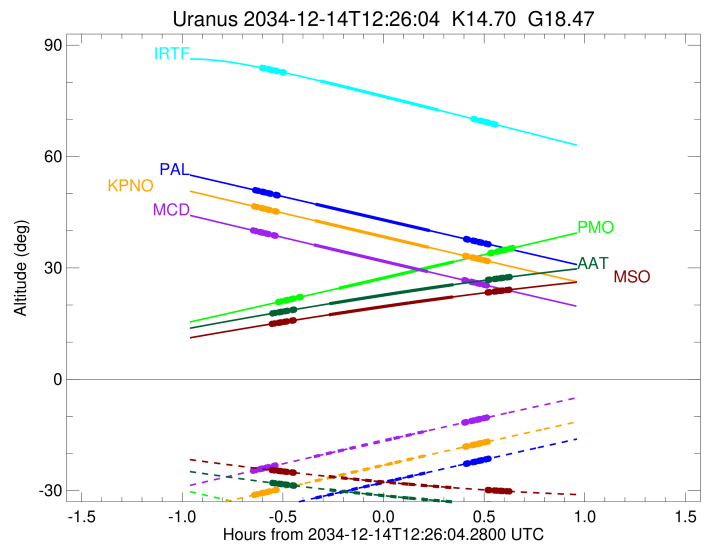
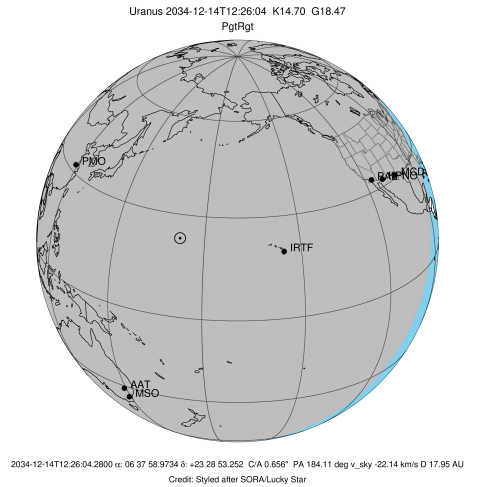
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-12-14T12:22:42.220
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      : 3382409272430314752
2Mass ID (if available) : 06375897+2328536
ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s
RUWE (>1.4 is poor) : 1.04
K magnitude         : 14.703
G magnitude         : 18.466
RP magnitude        : 17.275
BP magnitude        : 19.886
DUPflag            : 0
Distance (au)       : 17.946
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -22.14
Sun-Target sep (deg) : 163.39
Sun-Moon sep (deg)  : 155.44
B (ring opening deg) : 67.51
PA of pole (deg)    : 72.34
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.821
C/A sky separation (km) : 10686.5
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	2034-12-14T11:47:15.751	46.64	-31.23	51551.42	-23.45		
lambda	I	2034-12-14T11:48:20.800	46.41	-31.00	50026.71	-23.42		
delta	I	2034-12-14T11:49:34.577	46.15	-30.75	48300.35	-23.38		
gamma	I	2034-12-14T11:50:03.650	46.05	-30.64	47620.96	-23.36		
eta	I	2034-12-14T11:50:22.699	45.98	-30.58	47176.12	-23.35		
beta	I	2034-12-14T11:51:26.995	45.75	-30.35	45676.22	-23.30		
alpha	I	2034-12-14T11:52:09.395	45.60	-30.21	44685.29	-23.27		
4	I	2034-12-14T11:53:38.530	45.28	-29.90	42610.25	-23.19		
5	I	2034-12-14T11:53:58.534	45.21	-29.83	42155.02	-23.18		
6	I	2034-12-14T11:54:10.231	45.17	-29.78	41879.66	-23.17		
Uranus	I	2034-12-14T12:05:35.564	42.74	-27.40	25317.41		-15.30	-15.99
Uranus	E	2034-12-14T12:39:37.317	35.53	-20.38	25061.77		22.43	23.38
6	E	2034-12-14T12:50:24.881	33.25	-18.17	41801.87	23.09		
5	E	2034-12-14T12:50:46.353	33.17	-18.10	42301.69	23.10		
4	E	2034-12-14T12:50:57.789	33.13	-18.06	42548.61	23.11		
alpha	E	2034-12-14T12:52:32.706	32.80	-17.74	44751.02	23.18		
beta	E	2034-12-14T12:53:11.528	32.67	-17.61	45653.87	23.21		
eta	E	2034-12-14T12:54:17.003	32.44	-17.38	47176.12	23.26		
gamma	E	2034-12-14T12:54:36.556	32.37	-17.32	47630.94	23.27		
delta	E	2034-12-14T12:55:05.316	32.27	-17.22	48300.35	23.28		
lambda	E	2034-12-14T12:56:19.395	32.01	-16.97	50026.71	23.32		
epsilon	E	2034-12-14T12:56:50.830	31.90	-16.86	50760.15	23.35		

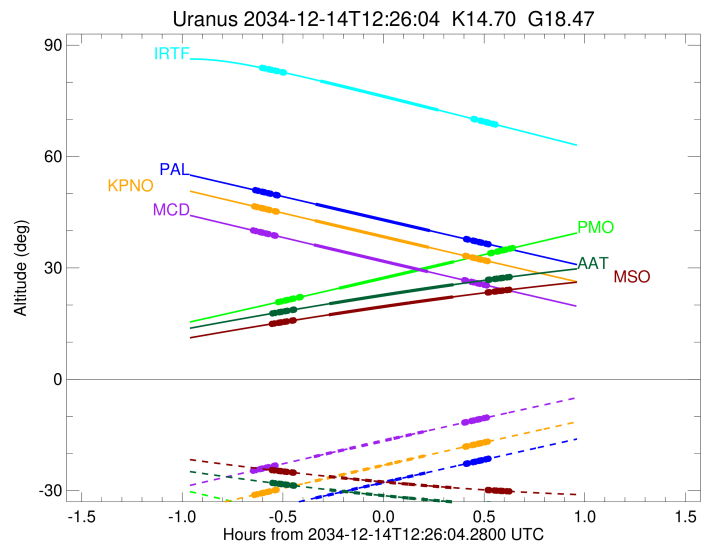
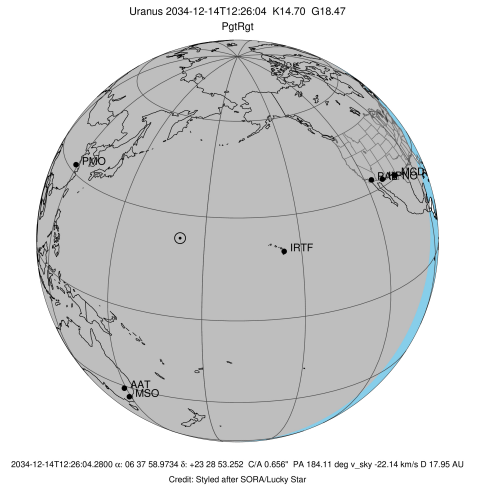
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T12:22:23.910
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3382409272430314752
 2Mass ID (if available) : 06375897+2328536
 ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.703
 G magnitude : 18.466
 RP magnitude : 17.275
 BP magnitude : 19.886
 DUPflag : 0
 Distance (au) : 17.946
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.14
 Sun-Target sep (deg) : 163.39
 Sun-Moon sep (deg) : 155.36
 B (ring opening deg) : 67.51
 PA of pole (deg) : 72.34
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.833
 C/A sky separation (km) : 10839.0
 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	2034-12-14T11:46:54.603		40.16	-24.69	51551.26	-23.40		
lambda	I	2034-12-14T11:47:59.802		39.93	-24.47	50026.71	-23.36		
delta	I	2034-12-14T11:49:13.760		39.66	-24.21	48300.35	-23.32		
gamma	I	2034-12-14T11:49:42.906		39.56	-24.11	47620.96	-23.30		
eta	I	2034-12-14T11:50:02.003		39.49	-24.04	47176.12	-23.29		
beta	I	2034-12-14T11:51:06.462		39.26	-23.81	45676.26	-23.24		
alpha	I	2034-12-14T11:51:48.974		39.11	-23.67	44685.31	-23.21		
4	I	2034-12-14T11:53:18.348		38.79	-23.36	42610.33	-23.13		
5	I	2034-12-14T11:53:38.408		38.72	-23.29	42155.00	-23.11		
6	I	2034-12-14T11:53:50.137		38.68	-23.25	41879.67	-23.10		
Uranus	I	2034-12-14T12:05:18.336		36.22	-20.86	25320.49		-15.20	-15.89
Uranus	E	2034-12-14T12:39:17.826		28.99	-13.87	25062.26		22.42	23.37
6	E	2034-12-14T12:50:07.885		26.70	-11.67	41801.97	23.01		
5	E	2034-12-14T12:50:29.412		26.62	-11.60	42301.50	23.03		
4	E	2034-12-14T12:50:40.900		26.58	-11.56	42548.77	23.04		
alpha	E	2034-12-14T12:52:16.098		26.25	-11.24	44750.98	23.11		
beta	E	2034-12-14T12:52:55.042		26.11	-11.11	45653.94	23.15		
eta	E	2034-12-14T12:54:00.706		25.88	-10.89	47176.12	23.19		
gamma	E	2034-12-14T12:54:20.316		25.81	-10.82	47630.93	23.20		
delta	E	2034-12-14T12:54:49.160		25.71	-10.72	48300.35	23.22		
lambda	E	2034-12-14T12:56:03.450		25.45	-10.48	50026.71	23.26		
epsilon	E	2034-12-14T12:56:34.991		25.34	-10.37	50760.54	23.29		

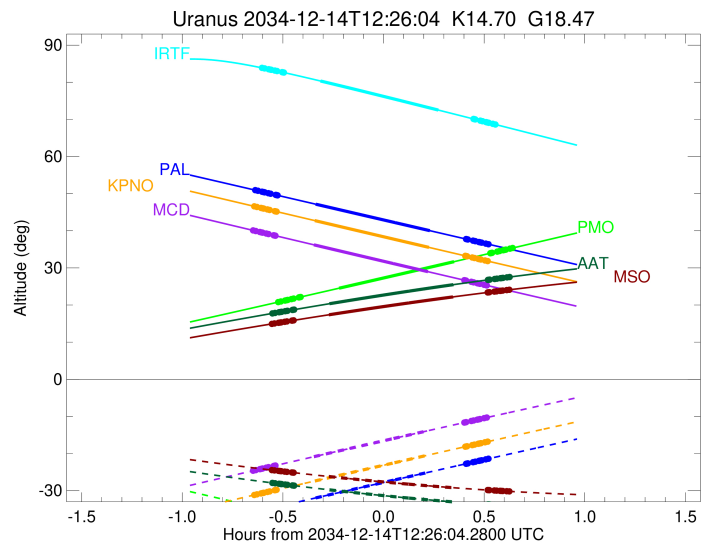
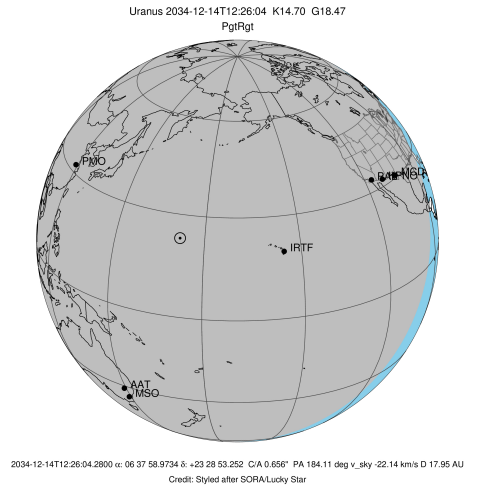
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-12-14T12:24:56.460
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       : 3382409272430314752
2Mass ID (if available) : 06375897+2328536
ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s
RUWE (>1.4 is poor) : 1.04
K magnitude           : 14.703
G magnitude           : 18.466
RP magnitude          : 17.275
BP magnitude          : 19.886
DUPflag               : 0
Distance (au)         : 17.946
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -22.14
Sun-Target sep (deg) : 163.39
Sun-Moon sep (deg)   : 155.90
B (ring opening deg) : 67.51
PA of pole (deg)     : 72.34
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.630
C/A sky separation (km) : 8197.1
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
    
```



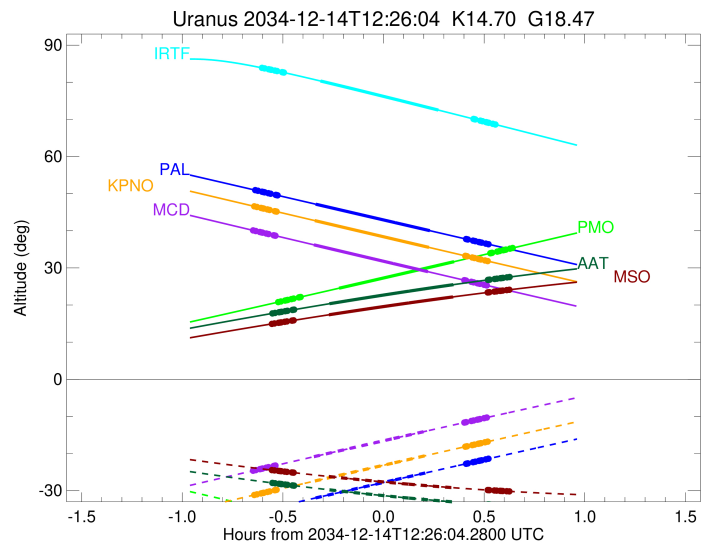
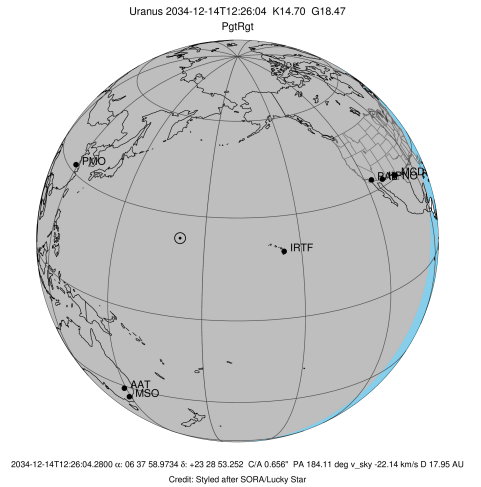
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-12-14T11:49:34.291		83.94	-68.09	51553.59	-23.86		
lambda	I	2034-12-14T11:50:38.300		83.74	-67.85	50026.71	-23.84		
delta	I	2034-12-14T11:51:50.740		83.51	-67.57	48300.35	-23.82		
gamma	I	2034-12-14T11:52:19.268		83.42	-67.46	47620.98	-23.81		
eta	I	2034-12-14T11:52:37.956		83.36	-67.39	47176.12	-23.80		
beta	I	2034-12-14T11:53:41.026		83.16	-67.15	45675.50	-23.78		
alpha	I	2034-12-14T11:54:22.554		83.02	-66.99	44684.97	-23.75		
4	I	2034-12-14T11:55:49.837		82.73	-66.66	42608.87	-23.71		
5	I	2034-12-14T11:56:09.371		82.67	-66.58	42155.47	-23.70		
6	I	2034-12-14T11:56:20.831		82.63	-66.54	41879.43	-23.70		
Uranus	I	2034-12-14T12:07:17.323		80.35	-64.03	25266.79		-16.90	-17.65
Uranus	E	2034-12-14T12:42:26.254		72.51	-55.96	25060.46		22.46	23.41
6	E	2034-12-14T12:52:52.148		70.13	-53.56	41800.43	23.67		
5	E	2034-12-14T12:53:13.256		70.05	-53.48	42304.40	23.68		
4	E	2034-12-14T12:53:24.162		70.01	-53.44	42546.17	23.69		
alpha	E	2034-12-14T12:54:56.951		69.66	-53.09	44751.54	23.73		
beta	E	2034-12-14T12:55:34.806		69.52	-52.94	45652.78	23.75		
eta	E	2034-12-14T12:56:38.876		69.27	-52.70	47176.12	23.78		
gamma	E	2034-12-14T12:56:58.008		69.20	-52.62	47631.07	23.78		
delta	E	2034-12-14T12:57:26.144		69.09	-52.52	48300.35	23.79		
lambda	E	2034-12-14T12:58:38.666		68.81	-52.24	50026.71	23.82		
epsilon	E	2034-12-14T12:59:09.223		68.70	-52.12	50754.62	23.83		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T12:28:28.850
 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 : 3382409272430314752
 2Mass ID (if available) : 06375897+2328536
 ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.703
 G magnitude : 18.466
 RP magnitude : 17.275
 BP magnitude : 19.886
 DUPflag : 0
 Distance (au) : 17.946
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.14
 Sun-Target sep (deg) : 163.39
 Sun-Moon sep (deg) : 156.18
 B (ring opening deg) : 67.51
 PA of pole (deg) : 72.34
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.270
 C/A sky separation (km) : 3508.3
 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	2034-12-14T11:52:40.355		17.70	-27.89	51555.29	-23.93		
lambda	I	2034-12-14T11:53:44.228		17.87	-28.01	50026.71	-23.93		
delta	I	2034-12-14T11:54:56.373		18.06	-28.15	48300.35	-23.93		
gamma	I	2034-12-14T11:55:24.764		18.13	-28.20	47621.05	-23.93		
eta	I	2034-12-14T11:55:43.361		18.18	-28.24	47176.12	-23.92		
beta	I	2034-12-14T11:56:46.128		18.34	-28.36	45674.05	-23.92		
alpha	I	2034-12-14T11:57:27.348		18.45	-28.44	44684.65	-23.92		
4	I	2034-12-14T11:58:54.064		18.67	-28.60	42605.98	-23.91		
5	I	2034-12-14T11:59:13.333		18.72	-28.63	42157.02	-23.91		
6	I	2034-12-14T11:59:24.787		18.75	-28.66	41878.62	-23.91		
Uranus	I	2034-12-14T12:09:57.558		20.35	-29.79	25181.59		-19.34	-20.19
Uranus	E	2034-12-14T12:46:54.825		25.49	-33.04	25087.64		21.79	22.72
6	E	2034-12-14T12:57:10.494		26.77	-33.73	41798.14	23.99		
5	E	2034-12-14T12:57:31.596		26.81	-33.75	42308.72	23.99		
4	E	2034-12-14T12:57:41.931		26.83	-33.76	42541.87	23.99		
alpha	E	2034-12-14T12:59:13.837		27.02	-33.85	44752.20	24.00		
beta	E	2034-12-14T12:59:51.153		27.09	-33.89	45650.81	24.00		
eta	E	2034-12-14T13:00:54.660		27.22	-33.95	47176.12	24.01		
gamma	E	2034-12-14T13:01:13.617		27.25	-33.97	47631.29	24.01		
delta	E	2034-12-14T13:01:41.480		27.31	-34.00	48300.35	24.01		
lambda	E	2034-12-14T13:02:53.360		27.45	-34.07	50026.71	24.02		
epsilon	E	2034-12-14T13:03:23.353		27.51	-34.10	50747.20	24.02		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-12-14T12:28:20.940
 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 : 3382409272430314752
 2Mass ID (if available) : 06375897+2328536
 ICRS Star Coord at Epoch: 06h 37m 58.97343s +23:28:53.25242s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 14.703
 G magnitude : 18.466
 RP magnitude : 17.275
 BP magnitude : 19.886
 DUPflag : 0
 Distance (au) : 17.946
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.14
 Sun-Target sep (deg) : 163.39
 Sun-Moon sep (deg) : 156.14
 B (ring opening deg) : 67.51
 PA of pole (deg) : 72.34
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.250
 C/A sky separation (km) : 3253.7
 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	2034-12-14T11:52:31.044		14.88	-24.44	51555.30	-23.93		
lambda	I	2034-12-14T11:53:34.930		15.03	-24.55	50026.71	-23.93		
delta	I	2034-12-14T11:54:47.090		15.21	-24.68	48300.35	-23.92		
gamma	I	2034-12-14T11:55:15.486		15.28	-24.73	47621.05	-23.92		
eta	I	2034-12-14T11:55:34.085		15.33	-24.76	47176.12	-23.92		
beta	I	2034-12-14T11:56:36.866		15.48	-24.88	45673.96	-23.92		
alpha	I	2034-12-14T11:57:18.088		15.58	-24.95	44684.64	-23.91		
4	I	2034-12-14T11:58:44.820		15.79	-25.10	42605.80	-23.91		
5	I	2034-12-14T11:59:04.082		15.84	-25.13	42157.14	-23.91		
6	I	2034-12-14T11:59:15.545		15.87	-25.15	41878.56	-23.91		
Uranus	I	2034-12-14T12:09:47.612		17.37	-26.20	25177.21		-19.46	-20.31
Uranus	E	2034-12-14T12:46:49.296		22.19	-29.21	25089.98		21.73	22.66
6	E	2034-12-14T12:57:05.197		23.38	-29.84	41798.04	23.98		
5	E	2034-12-14T12:57:26.314		23.42	-29.86	42308.90	23.98		
4	E	2034-12-14T12:57:36.631		23.44	-29.87	42541.67	23.98		
alpha	E	2034-12-14T12:59:08.568		23.61	-29.96	44752.22	23.99		
beta	E	2034-12-14T12:59:45.888		23.68	-29.99	45650.71	24.00		
eta	E	2034-12-14T13:00:49.418		23.80	-30.05	47176.12	24.00		
gamma	E	2034-12-14T13:01:08.381		23.84	-30.07	47631.29	24.00		
delta	E	2034-12-14T13:01:36.251		23.89	-30.09	48300.35	24.01		
lambda	E	2034-12-14T13:02:48.155		24.02	-30.16	50026.71	24.01		
epsilon	E	2034-12-14T13:03:18.148		24.07	-30.18	50746.93	24.02		