

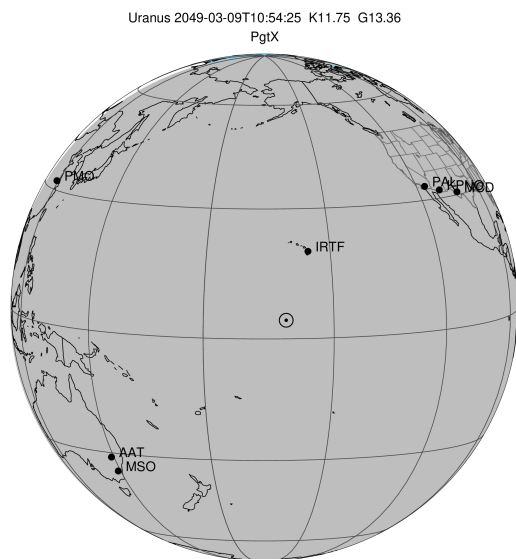
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2049-03-09T10:54:25.810
 Event type : PgtX
 : Uranus occs: geocentric, topocentric
 : No ring occs
 Gaia source ID : 3865087047296027136
 2Mass ID (if available) : 10583110+0726208

Uranus 2049-03-09T10:54:25 K11.75 G13.36 PgtX

ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s

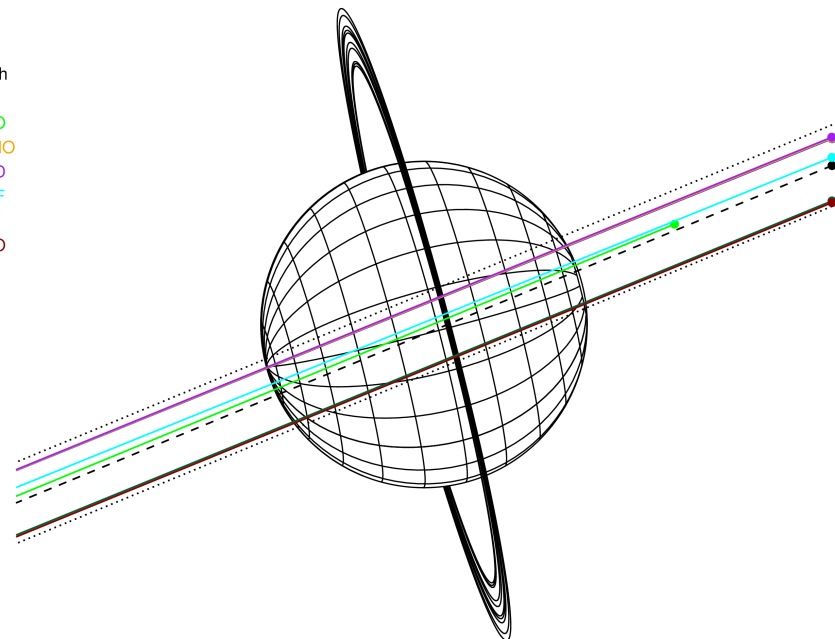
RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.749
 G magnitude : 13.362
 RP magnitude : 12.810
 BP magnitude : 13.754
 DUPflag : 0
 Distance (au) : 17.300
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 174.31
 Sun-Moon sep (deg) : 106.76
 B (ring opening deg) : 4.51
 PA of pole (deg) : 104.74

#	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



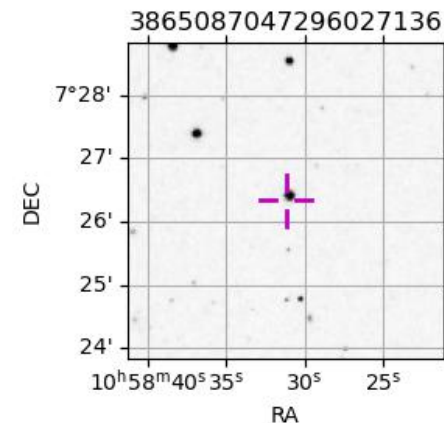
2049-03-09T10:54:25.8100 α: 10 58 31.1749 s: +07 26 18.575 C/A 0.109° PA 22.44 deg v_sky -22.76 km/s D 17.30 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 PMO
 KPNO
 MCD
 IRTF
 AAT
 MSO

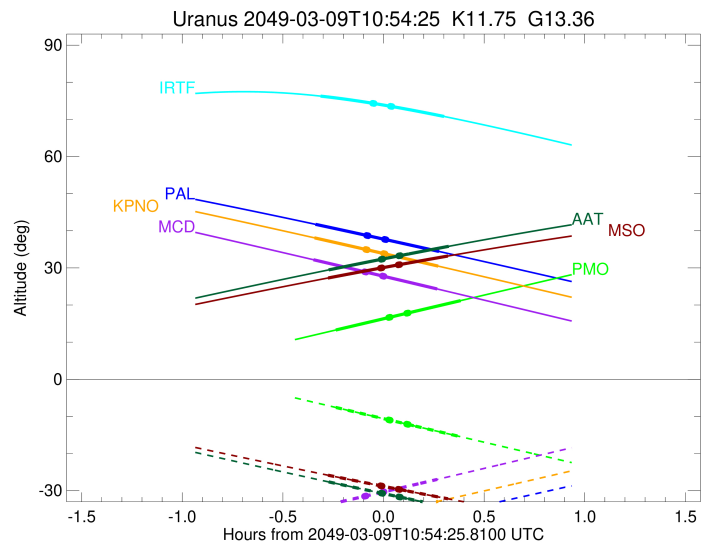
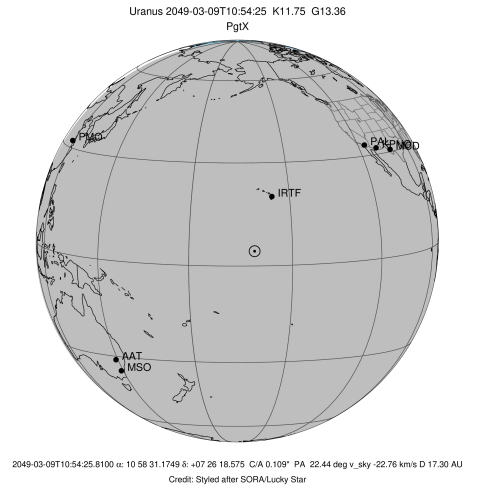


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1		+	+	MAR 09 10:34 - MAR 09 11:10	PieRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8		+	+	MAR 09 10:40 - MAR 09 11:17	PieRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4		+	+	MAR 09 10:33 - MAR 09 11:10	PieRnn
MCD	McDonald Obs. 2.7m	30.7	256.0		+	+	MAR 09 10:33 - MAR 09 11:10	PieRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5		+	+	MAR 09 10:35 - MAR 09 11:12	PieRnn
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		+	+	MAR 09 10:38 - MAR 09 11:13	PieRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0		+	+	MAR 09 10:37 - MAR 09 11:13	PieRnn

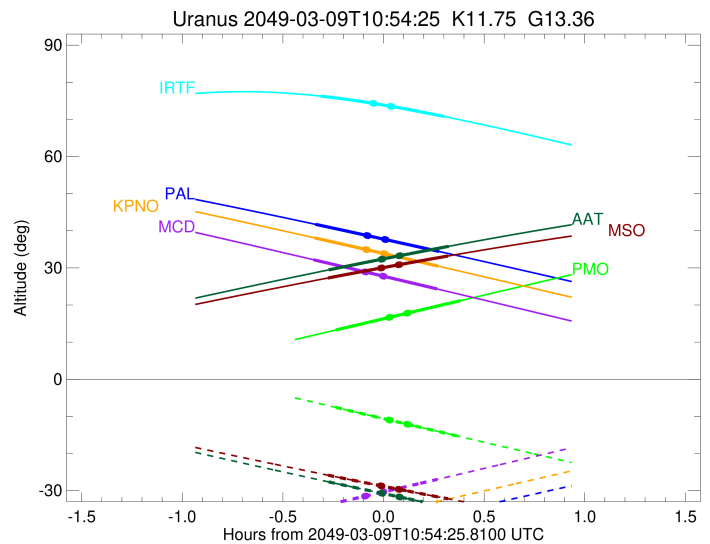
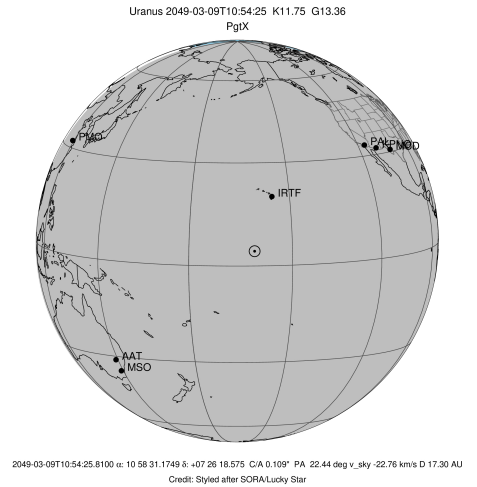


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2049-03-09T10:52:33.550
 Event type : PgtX
 : Uranus occs: geocentric, topocentric
 : No ring occs
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3865087047296027136
 2Mass ID (if available) : 10583110+0726208
 ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.749
 G magnitude : 13.362
 RP magnitude : 12.810
 BP magnitude : 13.754
 DUPflag : 0
 Distance (au) : 17.300
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 174.31
 Sun-Moon sep (deg) : 107.20
 B (ring opening deg) : 4.51
 PA of pole (deg) : 104.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.232
 C/A sky separation (km) : 2909.2
 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	2049-03-09T10:49:26.132	b	38.74	-40.66	51007.55	-285.82		
lambda	I	2049-03-09T10:49:29.562	b	38.73	-40.65	50026.70	-285.89		
delta	I	2049-03-09T10:49:35.602	b	38.71	-40.63	48300.35	-285.79		
gamma	I	2049-03-09T10:49:37.952	b	38.71	-40.62	47628.72	-285.76		
eta	I	2049-03-09T10:49:39.536	b	38.70	-40.62	47176.12	-285.73		
beta	I	2049-03-09T10:49:45.082	b	38.68	-40.60	45641.34	-285.97		
alpha	I	2049-03-09T10:49:48.484	b	38.67	-40.59	44750.25	-286.43		
4	I	2049-03-09T10:49:56.657	b	38.64	-40.56	42541.66	-287.18		
5	I	2049-03-09T10:49:56.281	b	38.64	-40.56	42291.78	-284.63		
6	I	2049-03-09T10:49:59.905	b	38.63	-40.55	41875.66	-289.22		
Uranus	I	2049-03-09T10:34:09.641		41.74	-43.48	25555.62		-75.39	-76.01
Uranus	E	2049-03-09T11:10:58.575		34.43	-36.54	25555.42		85.41	85.61
6	E	2049-03-09T10:54:33.001	b	37.73	-39.69	41796.61	286.86		
5	E	2049-03-09T10:54:36.908	b	37.72	-39.68	42186.78	282.39		
4	E	2049-03-09T10:54:36.922	b	37.72	-39.68	42595.60	284.91		
alpha	E	2049-03-09T10:54:44.711	b	37.69	-39.66	44688.67	284.30		
beta	E	2049-03-09T10:54:48.459	b	37.68	-39.65	45681.19	283.92		
eta	E	2049-03-09T10:54:53.899	b	37.66	-39.63	47176.12	283.79		
gamma	E	2049-03-09T10:54:55.474	b	37.65	-39.62	47623.22	283.85		
delta	E	2049-03-09T10:54:57.859	b	37.65	-39.62	48300.34	283.93		
lambda	E	2049-03-09T10:55:03.937	b	37.63	-39.60	50026.73	284.13		
epsilon	E	2049-03-09T10:55:08.205	b	37.61	-39.58	51239.63	284.14		

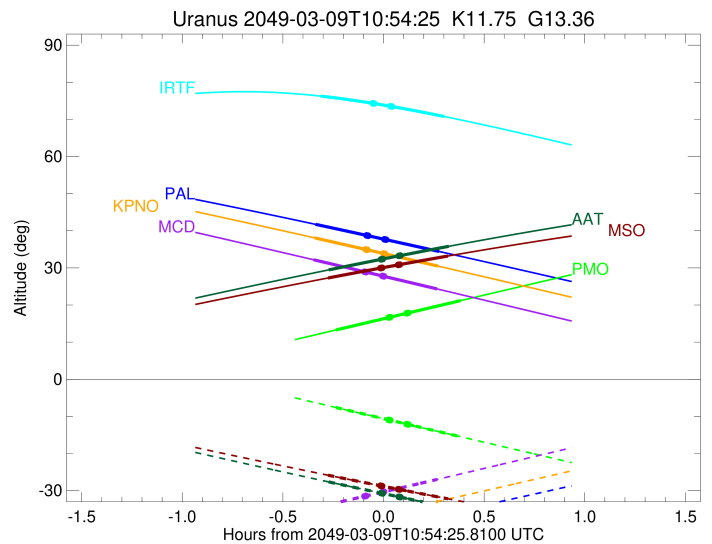
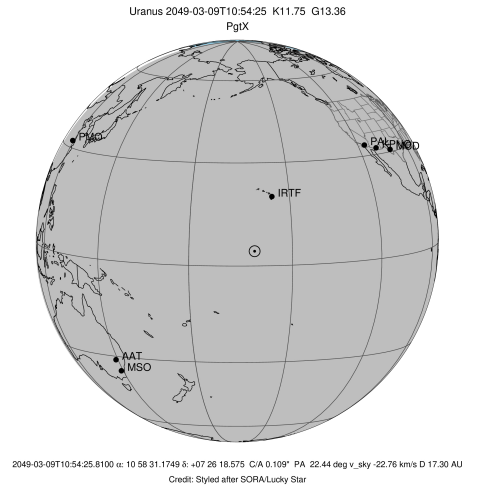
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2049-03-09T10:58:50.100
 Event type : PgtX
 : Uranus occs: geocentric, topocentric
 : No ring occs
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3865087047296027136
 2Mass ID (if available) : 10583110+0726208
 ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.749
 G magnitude : 13.362
 RP magnitude : 12.810
 BP magnitude : 13.754
 DUPflag : 0
 Distance (au) : 17.300
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 174.31
 Sun-Moon sep (deg) : 107.27
 B (ring opening deg) : 4.51
 PA of pole (deg) : 104.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.039
 C/A sky separation (km) : 493.5
 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	2049-03-09T10:56:02.477	b	16.64	-10.95	51033.86	-281.33		
lambda	I	2049-03-09T10:56:06.057	b	16.65	-10.96	50026.69	-281.28		
delta	I	2049-03-09T10:56:12.195	b	16.67	-10.98	48300.35	-281.27		
gamma	I	2049-03-09T10:56:14.582	b	16.68	-10.99	47629.05	-281.29		
eta	I	2049-03-09T10:56:16.192	b	16.69	-11.00	47176.14	-281.31		
beta	I	2049-03-09T10:56:21.822	b	16.71	-11.02	45641.16	-281.75		
alpha	I	2049-03-09T10:56:25.257	b	16.72	-11.03	44749.22	-282.37		
4	I	2049-03-09T10:56:33.502	b	16.75	-11.06	42544.59	-283.78		
5	I	2049-03-09T10:56:33.045	b	16.75	-11.06	42286.86	-281.17		
6	I	2049-03-09T10:56:36.904	b	16.76	-11.07	41877.05	-286.14		
Uranus	I	2049-03-09T10:40:12.795		13.27	-7.59	25555.46		-81.98	-82.34
Uranus	E	2049-03-09T11:17:26.070		21.19	-15.48	25555.50		80.11	80.54
6	E	2049-03-09T11:01:08.609	b	17.73	-12.03	41797.79	281.48		
5	E	2049-03-09T11:01:12.372	b	17.74	-12.04	42181.57	277.33		
4	E	2049-03-09T11:01:12.508	b	17.74	-12.04	42598.72	279.85		
alpha	E	2049-03-09T11:01:20.444	b	17.77	-12.07	44687.50	279.62		
beta	E	2049-03-09T11:01:24.280	b	17.78	-12.09	45681.07	279.42		
eta	E	2049-03-09T11:01:29.809	b	17.80	-12.10	47176.11	279.50		
gamma	E	2049-03-09T11:01:31.410	b	17.81	-12.11	47623.57	279.61		
delta	E	2049-03-09T11:01:33.830	b	17.82	-12.12	48300.33	279.77		
lambda	E	2049-03-09T11:01:39.996	b	17.84	-12.14	50026.71	280.16		
epsilon	E	2049-03-09T11:01:44.420	b	17.85	-12.16	51266.74	280.45		

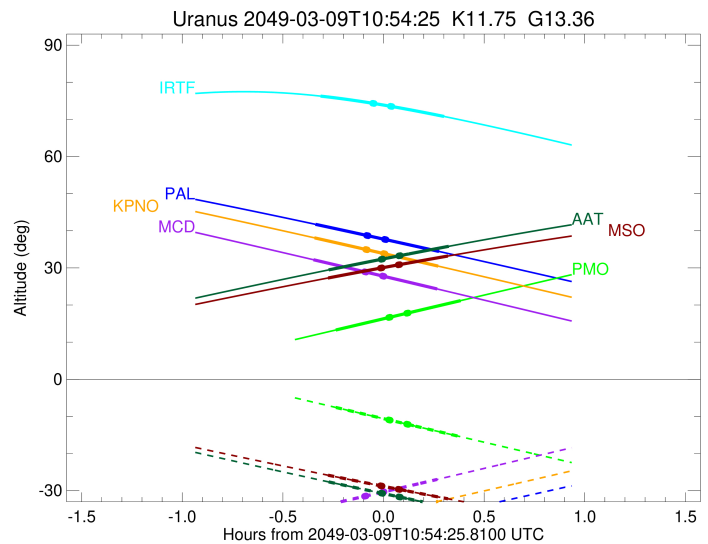
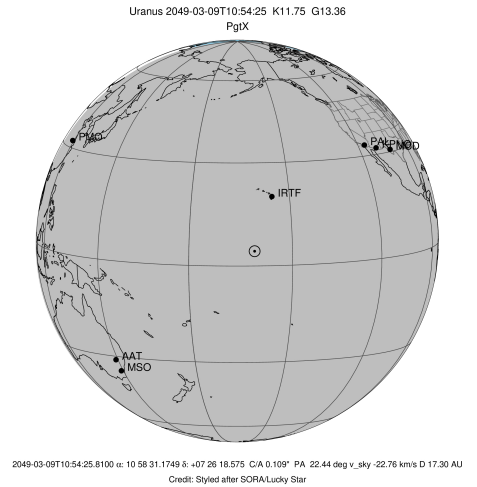
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2049-03-09T10:52:17.050
Event type          : PgtX
: Uranus occs: geocentric, topocentric
: No ring occs
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 3865087047296027136
2Mass ID (if available) : 10583110+0726208
ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s
RUWE (>1.4 is poor) : 1.02
K magnitude         : 11.749
G magnitude         : 13.362
RP magnitude        : 12.810
BP magnitude        : 13.754
DUPflag            : 0
Distance (au)       : 17.300
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -22.76
Sun-Target sep (deg) : 174.31
Sun-Moon sep (deg)  : 107.14
B (ring opening deg) : 4.51
PA of pole (deg)    : 104.74
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.237
C/A sky separation (km) : 2970.0
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	2049-03-09T10:49:09.019	b	34.96	-37.21	51007.07	-285.68		
lambda	I	2049-03-09T10:49:12.449	b	34.95	-37.20	50026.73	-285.76		
delta	I	2049-03-09T10:49:18.491	b	34.93	-37.18	48300.36	-285.68		
gamma	I	2049-03-09T10:49:20.842	b	34.92	-37.17	47628.73	-285.65		
eta	I	2049-03-09T10:49:22.427	b	34.92	-37.17	47176.10	-285.63		
beta	I	2049-03-09T10:49:27.975	b	34.90	-37.15	45641.35	-285.88		
alpha	I	2049-03-09T10:49:31.378	b	34.89	-37.14	44750.28	-286.35		
4	I	2049-03-09T10:49:39.553	b	34.86	-37.11	42541.62	-287.14		
5	I	2049-03-09T10:49:39.178	b	34.86	-37.11	42291.88	-284.59		
6	I	2049-03-09T10:49:42.799	b	34.85	-37.10	41875.62	-289.19		
Uranus	I	2049-03-09T10:33:52.374		38.09	-40.21	25555.63		-75.24	-75.87
Uranus	E	2049-03-09T11:10:42.947		30.49	-32.88	25555.42		85.43	85.63
6	E	2049-03-09T10:54:16.334	b	33.91	-36.19	41796.58	286.95		
5	E	2049-03-09T10:54:20.243	b	33.89	-36.18	42186.87	282.45		
4	E	2049-03-09T10:54:20.255	b	33.89	-36.18	42595.55	284.97		
alpha	E	2049-03-09T10:54:28.043	b	33.87	-36.15	44688.70	284.31		
beta	E	2049-03-09T10:54:31.791	b	33.85	-36.14	45681.23	283.90		
eta	E	2049-03-09T10:54:37.231	b	33.84	-36.12	47176.11	283.74		
gamma	E	2049-03-09T10:54:38.807	b	33.83	-36.12	47623.23	283.78		
delta	E	2049-03-09T10:54:41.193	b	33.82	-36.11	48300.34	283.85		
lambda	E	2049-03-09T10:54:47.273	b	33.80	-36.09	50026.70	284.03		
epsilon	E	2049-03-09T10:54:51.540	b	33.79	-36.07	51239.18	284.02		

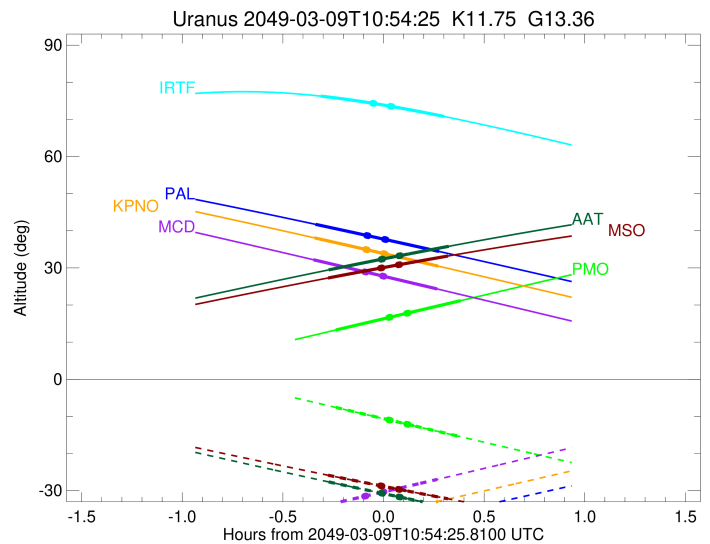
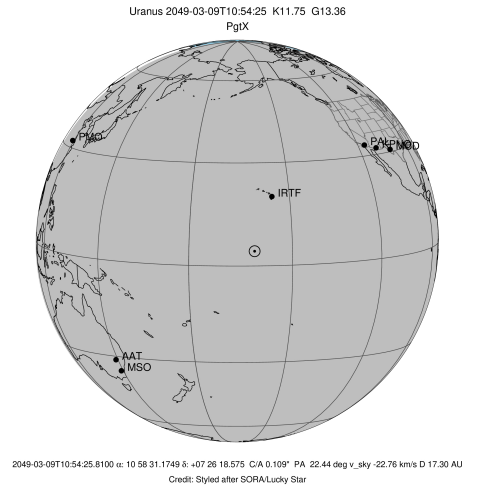
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2049-03-09T10:51:58.150
 Event type : PgtX
 : Uranus occs: geocentric, topocentric
 : No ring occs
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3865087047296027136
 2Mass ID (if available) : 10583110+0726208
 ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.749
 G magnitude : 13.362
 RP magnitude : 12.810
 BP magnitude : 13.754
 DUPflag : 0
 Distance (au) : 17.300
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 174.31
 Sun-Moon sep (deg) : 107.04
 B (ring opening deg) : 4.51
 PA of pole (deg) : 104.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.247
 C/A sky separation (km) : 3093.3
 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	2049-03-09T10:48:48.925	b	28.96	-31.52	51006.14	-285.48		
lambda	I	2049-03-09T10:48:52.354	b	28.94	-31.50	50026.73	-285.58		
delta	I	2049-03-09T10:48:58.399	b	28.92	-31.48	48300.34	-285.53		
gamma	I	2049-03-09T10:49:00.752	b	28.91	-31.47	47628.70	-285.51		
eta	I	2049-03-09T10:49:02.337	b	28.91	-31.47	47176.14	-285.50		
beta	I	2049-03-09T10:49:07.887	b	28.89	-31.45	45641.36	-285.79		
alpha	I	2049-03-09T10:49:11.292	b	28.88	-31.44	44750.31	-286.27		
4	I	2049-03-09T10:49:19.470	b	28.85	-31.41	42541.52	-287.11		
5	I	2049-03-09T10:49:19.098	b	28.85	-31.41	42292.05	-284.55		
6	I	2049-03-09T10:49:22.712	b	28.84	-31.40	41875.58	-289.18		
Uranus	I	2049-03-09T10:33:32.268		32.20	-34.68	25555.64		-74.95	-75.59
Uranus	E	2049-03-09T11:10:25.369		24.33	-26.98	25555.42		85.46	85.66
6	E	2049-03-09T10:53:57.041	b	27.86	-30.44	41796.53	287.22		
5	E	2049-03-09T10:54:00.954	b	27.85	-30.43	42187.09	282.66		
4	E	2049-03-09T10:54:00.962	b	27.85	-30.43	42595.43	285.18		
alpha	E	2049-03-09T10:54:08.745	b	27.82	-30.40	44688.73	284.40		
beta	E	2049-03-09T10:54:12.491	b	27.81	-30.39	45681.21	283.95		
eta	E	2049-03-09T10:54:17.931	b	27.79	-30.37	47176.11	283.73		
gamma	E	2049-03-09T10:54:19.506	b	27.78	-30.37	47623.23	283.76		
delta	E	2049-03-09T10:54:21.892	b	27.77	-30.36	48300.36	283.80		
lambda	E	2049-03-09T10:54:27.974	b	27.75	-30.34	50026.71	283.93		
epsilon	E	2049-03-09T10:54:32.240	b	27.74	-30.32	51238.19	283.88		

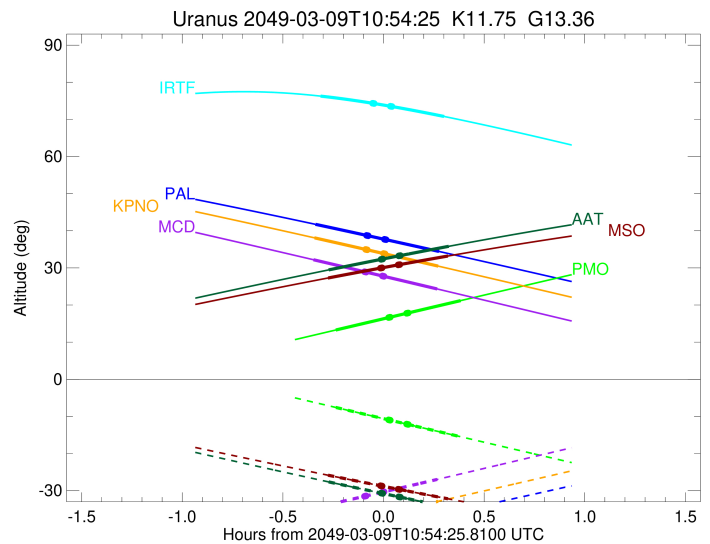
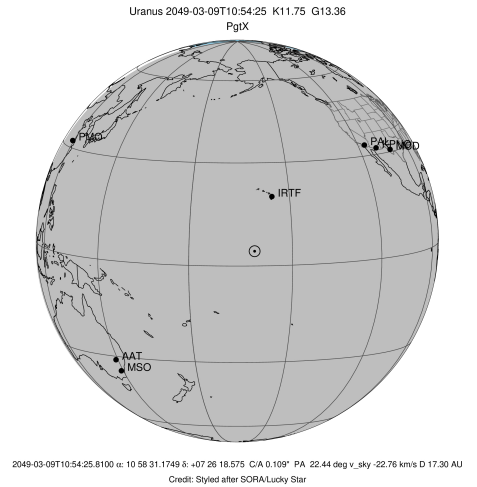
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2049-03-09T10:54:05.300
Event type            : PgtX
: Uranus occs: geocentric, topocentric
: No ring occs
Observer code         : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)        : 19.82622
E. Longitude (deg)    : 204.52800
Altitude (km)         : 4.168
Gaia source ID        : 3865087047296027136
2Mass ID (if available) : 10583110+0726208
ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s
RUWE (>1.4 is poor)  : 1.02
K magnitude           : 11.749
G magnitude           : 13.362
RP magnitude          : 12.810
BP magnitude          : 13.754
DUPflag              : 0
Distance (au)         : 17.300
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -22.76
Sun-Target sep (deg)  : 174.31
Sun-Moon sep (deg)    : 107.59
B (ring opening deg)  : 4.51
PA of pole (deg)      : 104.74
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.023
C/A sky separation (km) : 290.9
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
    
```



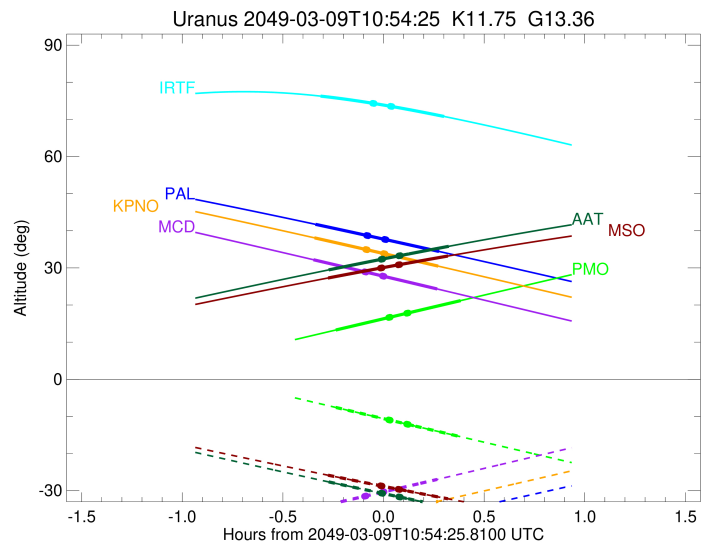
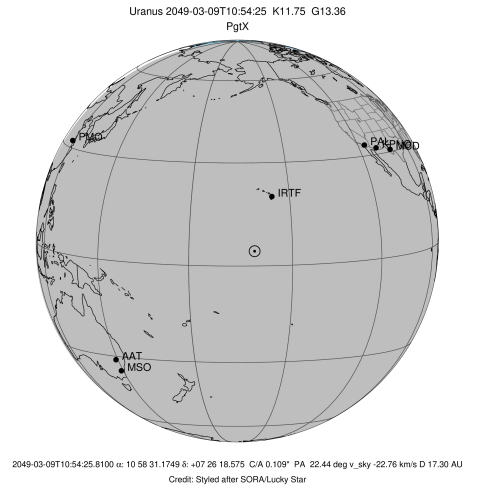
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2049-03-09T10:51:15.381	b	74.34	-73.84	51027.91	-284.32		
lambda	I	2049-03-09T10:51:18.903	b	74.33	-73.84	50026.71	-284.18		
delta	I	2049-03-09T10:51:24.981	b	74.32	-73.83	48300.34	-283.93		
gamma	I	2049-03-09T10:51:27.346	b	74.31	-73.83	47628.99	-283.83		
eta	I	2049-03-09T10:51:28.941	b	74.31	-73.83	47176.13	-283.77		
beta	I	2049-03-09T10:51:34.526	b	74.30	-73.82	45641.20	-283.88		
alpha	I	2049-03-09T10:51:37.940	b	74.29	-73.82	44749.46	-284.27		
4	I	2049-03-09T10:51:46.148	b	74.27	-73.81	42543.92	-284.96		
5	I	2049-03-09T10:51:45.707	b	74.27	-73.81	42288.00	-282.42		
6	I	2049-03-09T10:51:49.515	b	74.26	-73.80	41876.76	-286.94		
Uranus	I	2049-03-09T10:35:42.084		76.27	-74.51	25555.48		-80.88	-81.27
Uranus	E	2049-03-09T11:12:28.911		70.80	-71.66	25555.46		81.99	82.34
6	E	2049-03-09T10:56:17.773	b	73.58	-73.45	41797.48	290.07		
5	E	2049-03-09T10:56:21.480	b	73.57	-73.44	42182.79	285.00		
4	E	2049-03-09T10:56:21.584	b	73.57	-73.44	42597.99	287.57		
alpha	E	2049-03-09T10:56:29.322	b	73.55	-73.43	44687.76	286.11		
beta	E	2049-03-09T10:56:33.068	b	73.54	-73.42	45681.15	285.44		
eta	E	2049-03-09T10:56:38.486	b	73.52	-73.41	47176.10	284.99		
gamma	E	2049-03-09T10:56:40.056	b	73.52	-73.41	47623.49	284.97		
delta	E	2049-03-09T10:56:42.431	b	73.51	-73.41	48300.34	284.94		
lambda	E	2049-03-09T10:56:48.490	b	73.50	-73.40	50026.71	284.95		
epsilon	E	2049-03-09T10:56:52.819	b	73.49	-73.39	51260.35	284.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2049-03-09T10:55:59.060
 Event type : PgtX
 : Uranus occs: geocentric, topocentric
 : No ring occs
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 3865087047296027136
 2Mass ID (if available) : 10583110+0726208
 ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.749
 G magnitude : 13.362
 RP magnitude : 12.810
 BP magnitude : 13.754
 DUPflag : 0
 Distance (au) : 17.300
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 174.31
 Sun-Moon sep (deg) : 107.32
 B (ring opening deg) : 4.51
 PA of pole (deg) : 104.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.506
 C/A sky separation (km) : 6348.3
 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	2049-03-09T10:53:43.278	b	32.30	-30.66	51080.19	-289.98		
lambda	I	2049-03-09T10:53:46.915	b	32.32	-30.68	50026.71	-289.69		
delta	I	2049-03-09T10:53:52.874	b	32.33	-30.69	48300.36	-289.68		
gamma	I	2049-03-09T10:53:55.190	b	32.34	-30.70	47629.62	-289.68		
eta	I	2049-03-09T10:53:56.755	b	32.34	-30.71	47176.10	-289.67		
beta	I	2049-03-09T10:54:02.216	b	32.36	-30.72	45641.06	-289.96		
alpha	I	2049-03-09T10:54:05.521	b	32.37	-30.73	44747.03	-290.43		
4	I	2049-03-09T10:54:13.470	b	32.39	-30.76	42550.03	-291.28		
5	I	2049-03-09T10:54:12.941	b	32.39	-30.76	42277.66	-288.49		
6	I	2049-03-09T10:54:16.952	b	32.40	-30.77	41878.79	-293.31		
Uranus	I	2049-03-09T10:38:04.116		29.46	-27.64	25555.47		-81.81	-82.17
Uranus	E	2049-03-09T11:13:53.151		35.82	-34.44	25555.91		67.67	68.57
6	E	2049-03-09T10:58:53.880	b	33.22	-31.65	41800.49	292.45		
5	E	2049-03-09T10:58:57.071	b	33.23	-31.66	42173.67	287.69		
4	E	2049-03-09T10:58:57.441	b	33.23	-31.66	42603.48	290.46		
alpha	E	2049-03-09T10:59:05.103	b	33.26	-31.68	44685.96	289.69		
beta	E	2049-03-09T10:59:08.840	b	33.27	-31.69	45680.60	289.25		
eta	E	2049-03-09T10:59:14.187	b	33.28	-31.71	47176.12	289.02		
gamma	E	2049-03-09T10:59:15.737	b	33.29	-31.71	47624.15	289.05		
delta	E	2049-03-09T10:59:18.077	b	33.29	-31.72	48300.37	289.07		
lambda	E	2049-03-09T10:59:24.048	b	33.31	-31.74	50026.72	289.14		
epsilon	E	2049-03-09T10:59:28.490	b	33.33	-31.75	51311.20	289.45		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2049-03-09T10:55:46.440
 Event type : PgtX
 : Uranus occs: geocentric, topocentric
 : No ring occs
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 3865087047296027136
 2Mass ID (if available) : 10583110+0726208
 ICRS Star Coord at Epoch: 10h 58m 31.17494s +07:26:18.57513s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.749
 G magnitude : 13.362
 RP magnitude : 12.810
 BP magnitude : 13.754
 DUPflag : 0
 Distance (au) : 17.300
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.76
 Sun-Target sep (deg) : 174.31
 Sun-Moon sep (deg) : 107.28
 B (ring opening deg) : 4.51
 PA of pole (deg) : 104.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.527
 C/A sky separation (km) : 6606.9
 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	2049-03-09T10:53:32.067	b	29.94	-28.68	51082.23	-289.71		
lambda	I	2049-03-09T10:53:35.714	b	29.95	-28.69	50026.71	-289.39		
delta	I	2049-03-09T10:53:41.680	b	29.97	-28.71	48300.35	-289.35		
gamma	I	2049-03-09T10:53:43.998	b	29.97	-28.71	47629.63	-289.34		
eta	I	2049-03-09T10:53:45.565	b	29.98	-28.72	47176.11	-289.32		
beta	I	2049-03-09T10:53:51.033	b	29.99	-28.74	45641.07	-289.58		
alpha	I	2049-03-09T10:53:54.340	b	30.00	-28.75	44746.91	-290.02		
4	I	2049-03-09T10:54:02.297	b	30.03	-28.77	42550.26	-290.83		
5	I	2049-03-09T10:54:01.766	b	30.02	-28.77	42277.24	-288.03		
6	I	2049-03-09T10:54:05.791	b	30.04	-28.78	41878.82	-292.83		
Uranus	I	2049-03-09T10:37:53.865		27.28	-25.84	25555.48		-81.31	-81.69
Uranus	E	2049-03-09T11:13:38.216		33.20	-32.20	25555.94		67.07	67.99
6	E	2049-03-09T10:58:42.866	b	30.80	-29.60	41800.62	291.99		
5	E	2049-03-09T10:58:46.041	b	30.81	-29.61	42173.34	287.25		
4	E	2049-03-09T10:58:46.423	b	30.81	-29.61	42603.67	290.02		
alpha	E	2049-03-09T10:58:54.096	b	30.83	-29.63	44685.88	289.29		
beta	E	2049-03-09T10:58:57.839	b	30.84	-29.64	45680.57	288.87		
eta	E	2049-03-09T10:59:03.194	b	30.85	-29.66	47176.11	288.66		
gamma	E	2049-03-09T10:59:04.746	b	30.86	-29.66	47624.20	288.69		
delta	E	2049-03-09T10:59:07.088	b	30.87	-29.67	48300.35	288.73		
lambda	E	2049-03-09T10:59:13.066	b	30.88	-29.69	50026.71	288.82		
epsilon	E	2049-03-09T10:59:17.520	b	30.89	-29.70	51313.09	289.16		