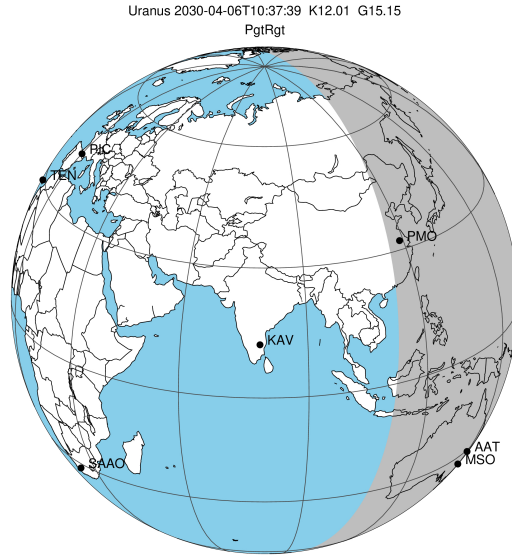


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-06T10:37:39.780
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3413211510859893632
 2Mass ID (if available) : 04543408+2238002

ICRS Star Coord at Epoch: 04h 54m 34.08490s +22:38:00.28481s

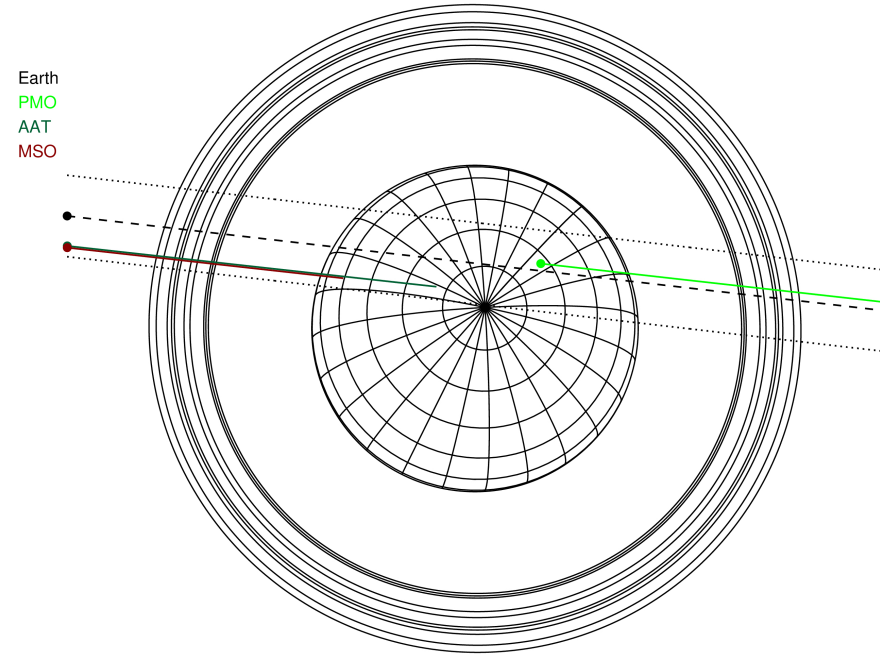
RUWE (>1.4 is poor) : 1.59
 K magnitude : 12.012
 G magnitude : 15.151
 RP magnitude : 14.233
 BP magnitude : 15.991
 DUPflag : 0
 Distance (au) : 19.703
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 21.82
 Sun-Target sep (deg) : 58.67
 Sun-Moon sep (deg) : 19.97
 B (ring opening deg) : 81.78
 PA of pole (deg) : -25.58

#	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



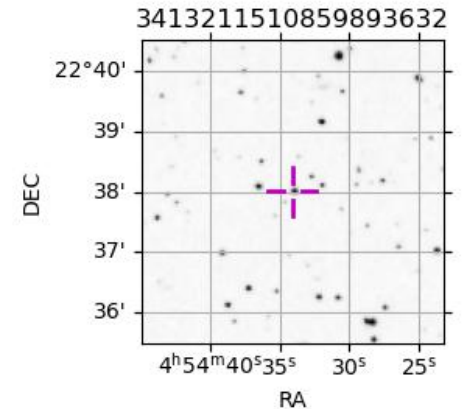
2030-04-06T10:37:39.7800 ex: 04 54 34.0849 s: +22 38 00.285 C/A 0.715° PA 173.39 deg v_sky +21.82 km/s D 19.70 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2030-04-06T10:37:39 K12.01 G15.15 PgtRgt

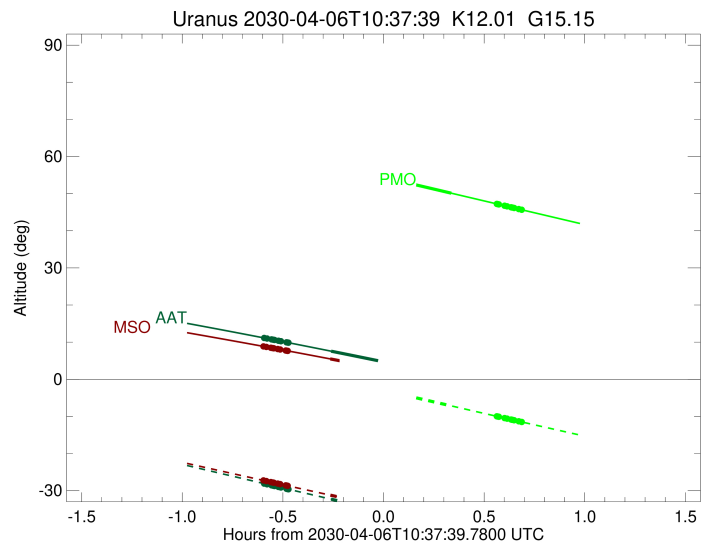
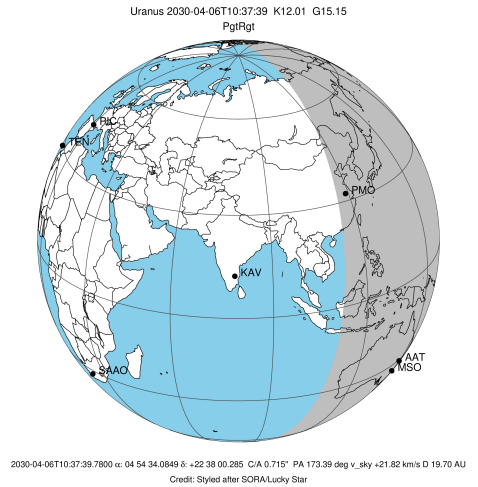


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8		+	+++++++	APR 06 10:57 - APR 06 11:18	PneRne
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
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					PnnRnn
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	+++++++	+		APR 06 10:01 - APR 06 10:22	PinRin
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++++	+		APR 06 10:01 - APR 06 10:21	PinRin

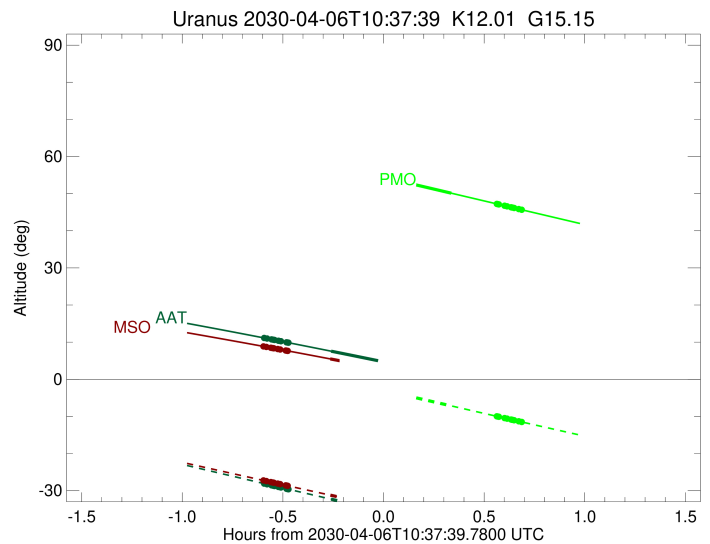
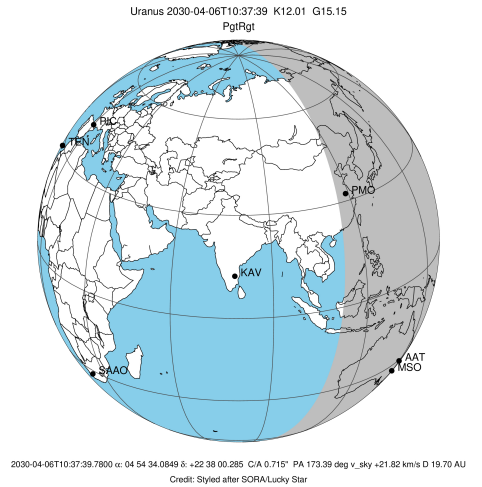


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-06T10:40:23.000
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3413211510859893632
 2Mass ID (if available) : 04543408+2238002
 ICRS Star Coord at Epoch: 04h 54m 34.08490s +22:38:00.28481s
 RUWE (>1.4 is poor) : 1.59
 K magnitude : 12.012
 G magnitude : 15.151
 RP magnitude : 14.233
 BP magnitude : 15.991
 DUPflag : 0
 Distance (au) : 19.703
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 21.82
 Sun-Target sep (deg) : 58.67
 Sun-Moon sep (deg) : 20.68
 B (ring opening deg) : 81.78
 PA of pole (deg) : -25.58
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.788
 C/A sky separation (km) : 11256.1
 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	2030-04-06T10:01:23.808		62.05	4.67x	51527.40	-20.94		
lambda	I	2030-04-06T10:02:35.486		61.81	4.41x	50026.71	-20.92		
delta	I	2030-04-06T10:03:58.084		61.52	4.12x	48300.35	-20.88		
gamma	I	2030-04-06T10:04:30.386		61.41	4.01x	47626.14	-20.86		
eta	I	2030-04-06T10:04:51.962		61.33	3.93x	47176.12	-20.85		
beta	I	2030-04-06T10:06:03.740		61.08	3.68x	45680.90	-20.81		
alpha	I	2030-04-06T10:06:50.986		60.92	3.51x	44698.36	-20.78		
4	I	2030-04-06T10:08:34.272		60.56	3.15x	42555.78	-20.70		
5	I	2030-04-06T10:08:52.666		60.49	3.09x	42175.62	-20.69		
6	I	2030-04-06T10:09:10.953		60.43	3.02x	41796.65	-20.67		
Uranus	I	2030-04-06T10:22:36.129		57.61	0.19x	25550.13		1.00	1.05
Uranus	E	2030-04-06T10:57:53.725		50.12	-7.18	25261.10		5.87	6.14
6	E	2030-04-06T11:11:28.043		47.24	-9.98	41865.26	20.75		
5	E	2030-04-06T11:11:46.708		47.17	-10.04	42257.74	20.77		
4	E	2030-04-06T11:12:01.577		47.12	-10.10	42562.54	20.78		
alpha	E	2030-04-06T11:13:46.566		46.75	-10.46	44749.46	20.87		
beta	E	2030-04-06T11:14:29.282		46.59	-10.60	45642.08	20.90		
eta	E	2030-04-06T11:15:42.596		46.33	-10.85	47176.12	20.94		
gamma	E	2030-04-06T11:16:04.206		46.26	-10.93	47628.83	20.96		
delta	E	2030-04-06T11:16:36.235		46.14	-11.04	48300.35	20.97		
lambda	E	2030-04-06T11:17:58.455		45.85	-11.32	50026.71	21.02		
epsilon	E	2030-04-06T11:18:32.602		45.73	-11.43	50744.73	21.04		

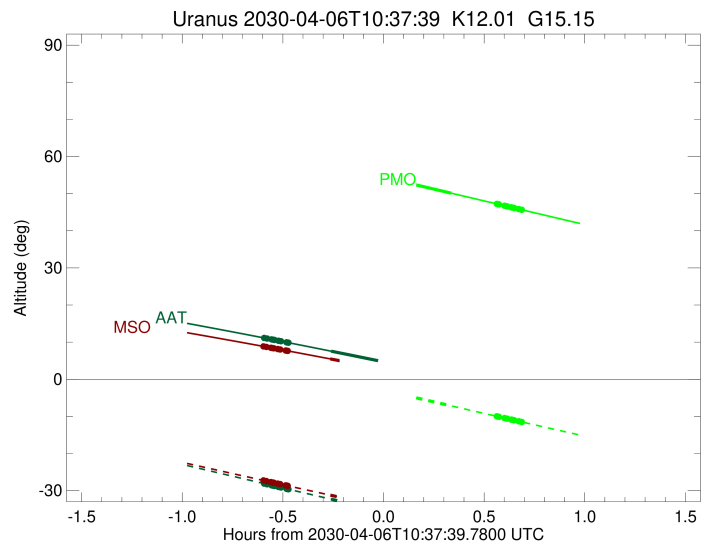
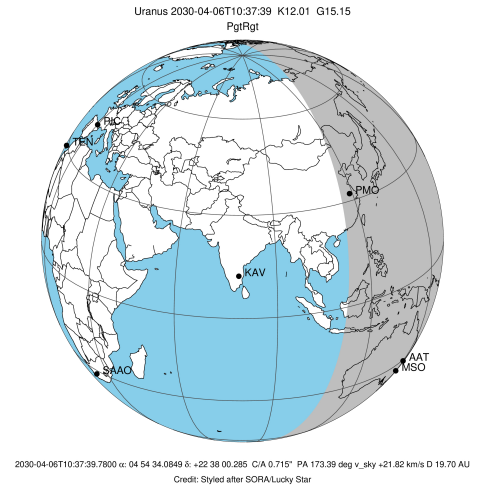
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-06T10:41:12.500
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 3413211510859893632
 2Mass ID (if available) : 04543408+2238002
 ICRS Star Coord at Epoch: 04h 54m 34.08490s +22:38:00.28481s
 RUWE (>1.4 is poor) : 1.59
 K magnitude : 12.012
 G magnitude : 15.151
 RP magnitude : 14.233
 BP magnitude : 15.991
 DUPflag : 0
 Distance (au) : 19.703
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 21.82
 Sun-Target sep (deg) : 58.67
 Sun-Moon sep (deg) : 20.67
 B (ring opening deg) : 81.78
 PA of pole (deg) : -25.58
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.409
 C/A sky separation (km) : 5845.7
 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	2030-04-06T10:01:47.429		11.18	-28.04	51541.53	-21.47		
lambda	I	2030-04-06T10:02:57.978		10.97	-28.29	50026.71	-21.47		
delta	I	2030-04-06T10:04:18.410		10.74	-28.57	48300.35	-21.46		
gamma	I	2030-04-06T10:04:49.861		10.64	-28.68	47625.51	-21.46		
eta	I	2030-04-06T10:05:10.808		10.58	-28.76	47176.12	-21.45		
beta	I	2030-04-06T10:06:20.504		10.38	-29.00	45681.20	-21.44		
alpha	I	2030-04-06T10:07:06.491		10.24	-29.16	44695.05	-21.44		
4	I	2030-04-06T10:08:46.049		9.95	-29.51	42561.63	-21.41		
5	I	2030-04-06T10:09:03.789		9.90	-29.58	42183.45	-21.41		
6	I	2030-04-06T10:09:21.654		9.84	-29.64	41798.75	-21.41		
Uranus	I	2030-04-06T10:22:03.731		7.56	-32.30	25552.37		-0.87	-0.91
Uranus	E	2030-04-06T11:00:11.563		0.45x	-40.14	25388.13		4.42	4.63
6	E	2030-04-06T11:12:57.815		-2.00x	-42.70	41869.19	21.53		
5	E	2030-04-06T11:13:16.109		-2.06x	-42.76	42267.48	21.53		
4	E	2030-04-06T11:13:30.246		-2.11x	-42.81	42568.31	21.54		
alpha	E	2030-04-06T11:15:11.350		-2.44x	-43.14	44747.54	21.56		
beta	E	2030-04-06T11:15:52.771		-2.57x	-43.28	45641.46	21.57		
eta	E	2030-04-06T11:17:03.873		-2.80x	-43.51	47176.12	21.59		
gamma	E	2030-04-06T11:17:24.817		-2.87x	-43.58	47628.29	21.59		
delta	E	2030-04-06T11:17:55.938		-2.97x	-43.69	48300.35	21.60		
lambda	E	2030-04-06T11:19:15.844		-3.23x	-43.95	50026.71	21.61		
epsilon	E	2030-04-06T11:19:49.014		-3.34x	-44.06	50743.68	21.62		

```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2030-04-06T10:41:00.320
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        : 3413211510859893632
2Mass ID (if available) : 04543408+2238002
ICRS Star Coord at Epoch: 04h 54m 34.08490s +22:38:00.28481s
RUWE (>1.4 is poor)  : 1.59
K magnitude            : 12.012
G magnitude           : 15.151
RP magnitude          : 14.233
BP magnitude          : 15.991
DUPflag               : 0
Distance (au)         : 19.703
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : 21.82
Sun-Target sep (deg)  : 58.67
Sun-Moon sep (deg)    : 20.63
B (ring opening deg)  : 81.78
PA of pole (deg)      : -25.58
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.389
C/A sky separation (km) : 5557.3
NAIF SPICE kernels    : RAJobs_U111+rgf15.spk
URKALLvl.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	2030-04-06T10:01:34.602		8.90	-27.19	51542.09	-21.49		
lambda	I	2030-04-06T10:02:45.103		8.71	-27.43	50026.71	-21.49		
delta	I	2030-04-06T10:04:05.446		8.49	-27.70	48300.35	-21.48		
gamma	I	2030-04-06T10:04:36.863		8.40	-27.80	47625.48	-21.48		
eta	I	2030-04-06T10:04:57.785		8.34	-27.87	47176.12	-21.48		
beta	I	2030-04-06T10:06:07.398		8.15	-28.10	45681.21	-21.47		
alpha	I	2030-04-06T10:06:53.335		8.02	-28.26	44694.90	-21.46		
4	I	2030-04-06T10:08:32.746		7.74	-28.59	42561.92	-21.44		
5	I	2030-04-06T10:08:50.459		7.69	-28.65	42183.86	-21.44		
6	I	2030-04-06T10:09:08.310		7.64	-28.71	41798.87	-21.44		
Uranus	I	2030-04-06T10:21:48.924		5.48	-31.22	25550.88		-0.96	-1.00
Uranus	E	2030-04-06T11:00:02.462		-1.31x	-38.62	25394.43		4.34	4.55
6	E	2030-04-06T11:12:47.169		-3.66x	-41.01	41869.39	21.55		
5	E	2030-04-06T11:13:05.459		-3.71x	-41.06	42268.02	21.56		
4	E	2030-04-06T11:13:19.569		-3.76x	-41.11	42568.63	21.56		
alpha	E	2030-04-06T11:15:00.545		-4.07x	-41.42	44747.42	21.59		
beta	E	2030-04-06T11:15:41.930		-4.20x	-41.54	45641.44	21.59		
eta	E	2030-04-06T11:16:52.966		-4.42x	-41.76	47176.12	21.61		
gamma	E	2030-04-06T11:17:13.889		-4.48x	-41.82	47628.26	21.61		
delta	E	2030-04-06T11:17:44.984		-4.58x	-41.92	48300.35	21.62		
lambda	E	2030-04-06T11:19:04.822		-4.83x	-42.16	50026.71	21.63		
epsilon	E	2030-04-06T11:19:37.969		-4.93x	-42.26	50743.75	21.63		