

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-03T03:12:45.300
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424684532445042304
 2Mass ID (if available) : 06030842+2337092

Uranus 2032-09-03T03:12:45 K14.43 G16.99 PgtRgt

ICRS Star Coord at Epoch: 06h 03m 08.43160s +23:37:09.14414s

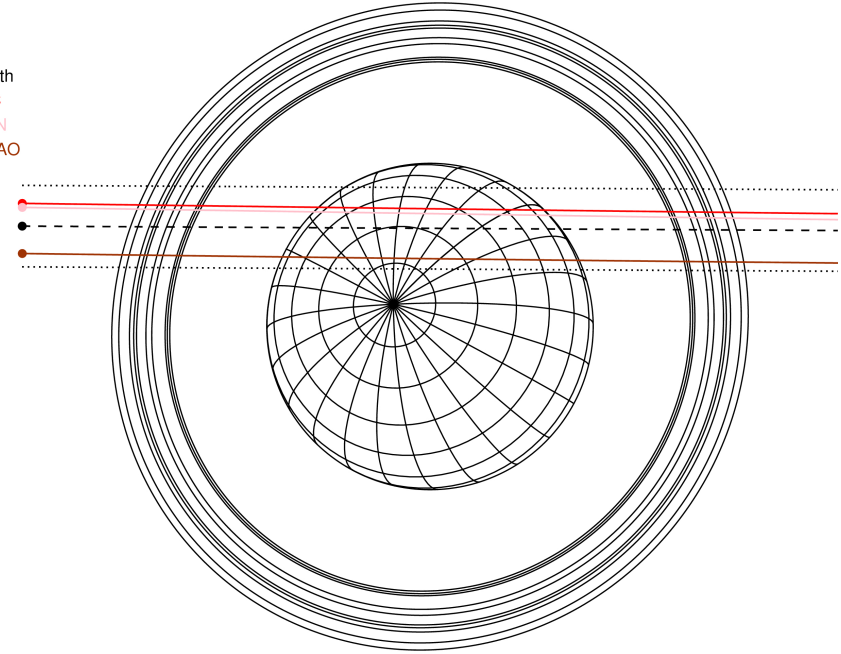
RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.426
 G magnitude : 16.989
 RP magnitude : 16.155
 BP magnitude : 17.716
 DUPflag : 0
 Distance (au) : 19.360
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.55
 Sun-Target sep (deg) : 70.01
 Sun-Moon sep (deg) : 51.27
 B (ring opening deg) : 74.76
 PA of pole (deg) : 58.80

Uranus 2032-09-03T03:12:45 K14.43 G16.99
 PgtRgt



2032-09-03T03:12:45.3000 ex: 06 03 08.4316 s: +23 37 09.144 C/A 1.099° PA 179.69 deg v_sky +16.55 km/s D 19.36 AU
 Credit: Styled after SORA/Lucky Star

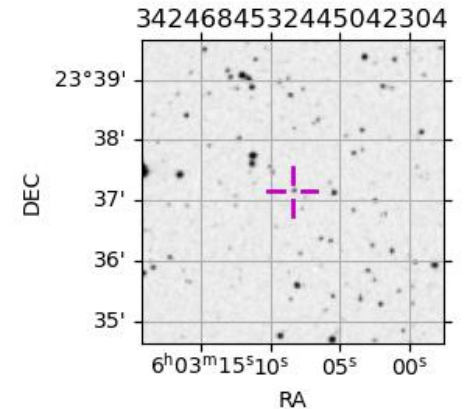
Earth
 PIC
 TEN
 SAAO



#	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

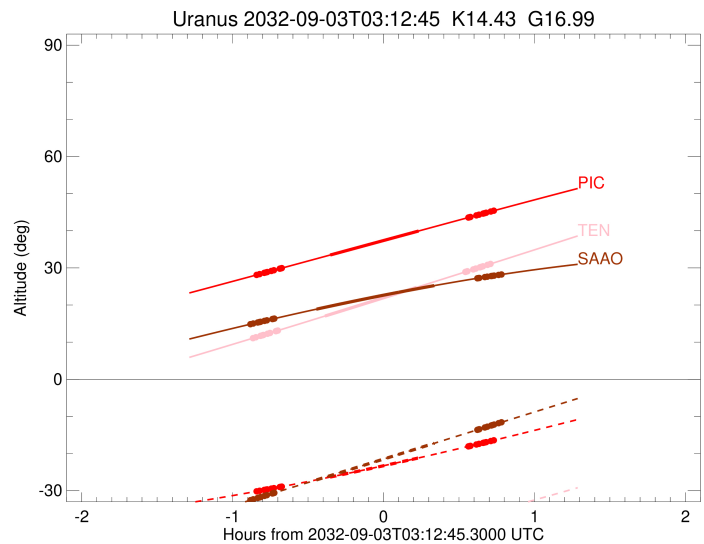
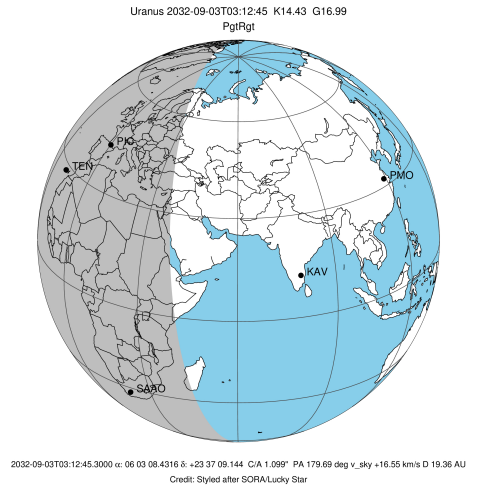
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	SEP 03 02:22 - SEP 03 03:56	PieRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
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	+++++	+ +	+++++	SEP 03 02:21 - SEP 03 03:55	PieRie
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					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+ +	+++++	SEP 03 02:20 - SEP 03 03:59	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



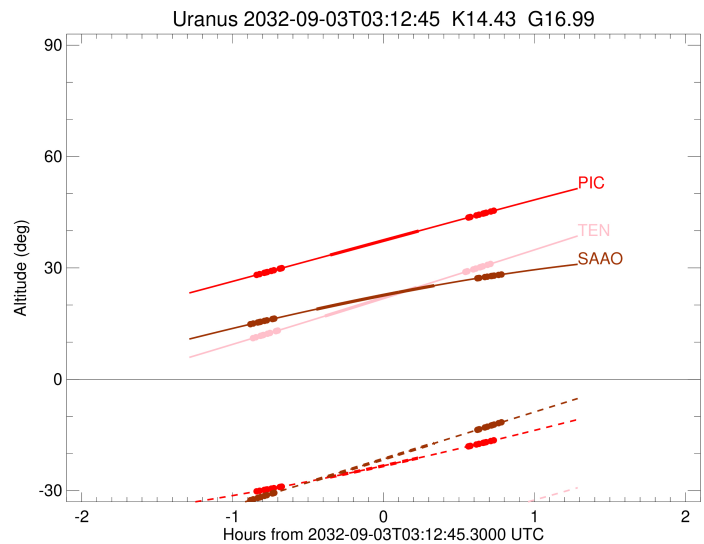
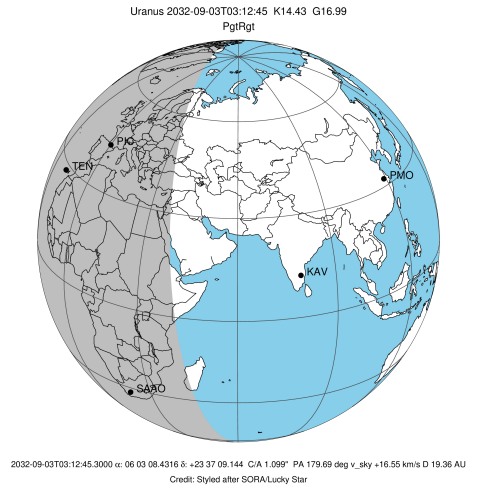
3424684532445042304

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-03T03:08:46.300
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3424684532445042304
 2Mass ID (if available) : 06030842+2337092
 ICRS Star Coord at Epoch: 06h 03m 08.43160s +23:37:09.14414s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.426
 G magnitude : 16.989
 RP magnitude : 16.155
 BP magnitude : 17.716
 DUPflag : 0
 Distance (au) : 19.360
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.55
 Sun-Target sep (deg) : 70.01
 Sun-Moon sep (deg) : 52.09
 B (ring opening deg) : 74.76
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.313
 C/A sky separation (km) : 18439.4
 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_itrff93_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	2032-09-03T02:22:41.842		28.18	-30.14	50791.17	-15.71		
lambda	I	2032-09-03T02:23:30.477		28.33	-30.04	50026.71	-15.70		
delta	I	2032-09-03T02:25:20.775		28.66	-29.81	48300.35	-15.60		
gamma	I	2032-09-03T02:26:03.714		28.79	-29.72	47631.21	-15.56		
eta	I	2032-09-03T02:26:32.982		28.88	-29.66	47176.12	-15.54		
beta	I	2032-09-03T02:28:09.591		29.18	-29.46	45680.95	-15.44		
alpha	I	2032-09-03T02:29:09.789		29.36	-29.33	44752.01	-15.37		
4	I	2032-09-03T02:31:33.239		29.80	-29.02	42555.33	-15.20		
5	I	2032-09-03T02:31:50.342		29.85	-28.99	42311.34	-15.18		
6	I	2032-09-03T02:32:21.007		29.95	-28.92	41839.52	-15.13		
Uranus	I	2032-09-03T02:51:32.106		33.47	-26.35	25058.74		14.57	15.23
Uranus	E	2032-09-03T03:26:44.272		39.94	-21.18	25529.37		-3.46	-3.63
6	E	2032-09-03T03:46:26.352		43.55	-18.09	41802.05	15.02		
5	E	2032-09-03T03:46:53.430		43.64	-18.02	42207.61	15.07		
4	E	2032-09-03T03:47:20.987		43.72	-17.94	42614.41	15.09		
alpha	E	2032-09-03T03:49:37.882		44.14	-17.58	44692.58	15.25		
beta	E	2032-09-03T03:50:40.103		44.33	-17.41	45645.41	15.31		
eta	E	2032-09-03T03:52:19.814		44.63	-17.14	47176.12	15.40		
gamma	E	2032-09-03T03:52:48.699		44.72	-17.06	47621.44	15.43		
delta	E	2032-09-03T03:53:32.644		44.85	-16.94	48300.35	15.47		
lambda	E	2032-09-03T03:55:23.927		45.19	-16.64	50026.71	15.56		
epsilon	E	2032-09-03T03:56:44.255		45.43	-16.42	51278.74	15.57		

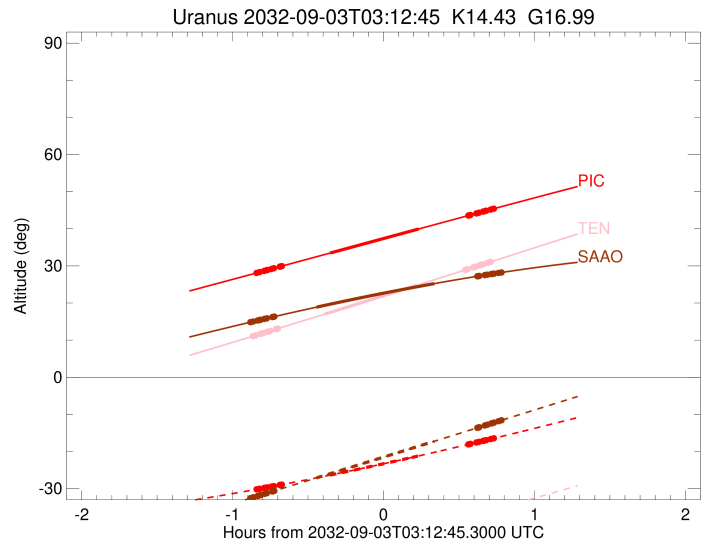
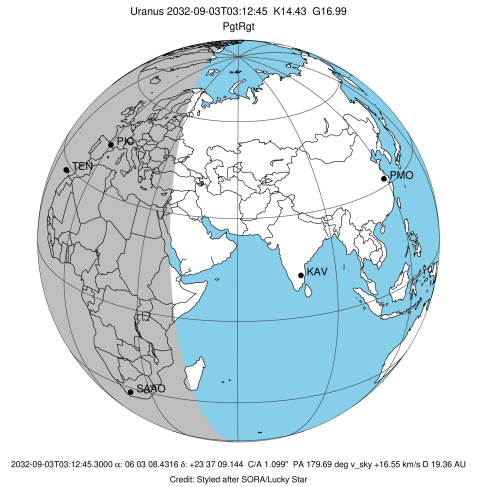
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-09-03T03:07:23.630
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3424684532445042304
 2Mass ID (if available) : 06030842+2337092
 ICRS Star Coord at Epoch: 06h 03m 08.43160s +23:37:09.14414s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 14.426
 G magnitude : 16.989
 RP magnitude : 16.155
 BP magnitude : 17.716
 DUPflag : 0
 Distance (au) : 19.360
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 16.55
 Sun-Target sep (deg) : 70.01
 Sun-Moon sep (deg) : 52.03
 B (ring opening deg) : 74.76
 PA of pole (deg) : 58.80
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.259
 C/A sky separation (km) : 17675.7
 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	2032-09-03T02:21:15.230		11.15	-50.03	50793.88	-15.91		
lambda	I	2032-09-03T02:22:03.437		11.32	-49.94	50026.71	-15.90		
delta	I	2032-09-03T02:23:52.339		11.69	-49.74	48300.35	-15.81		
gamma	I	2032-09-03T02:24:34.717		11.84	-49.66	47631.24	-15.77		
eta	I	2032-09-03T02:25:03.600		11.94	-49.60	47176.12	-15.74		
beta	I	2032-09-03T02:26:38.896		12.27	-49.42	45681.00	-15.65		
alpha	I	2032-09-03T02:27:38.244		12.47	-49.30	44752.10	-15.59		
4	I	2032-09-03T02:29:59.637		12.96	-49.02	42554.57	-15.43		
5	I	2032-09-03T02:30:16.465		13.02	-48.99	42310.88	-15.42		
6	I	2032-09-03T02:30:46.586		13.12	-48.93	41840.30	-15.37		
Uranus	I	2032-09-03T02:49:27.541		17.03	-46.49	25047.36		14.74	15.41
Uranus	E	2032-09-03T03:26:02.145		24.78	-40.87	25517.27		-4.11	-4.30
6	E	2032-09-03T03:45:14.386		28.90	-37.57	41802.61	15.22		
5	E	2032-09-03T03:45:40.941		29.00	-37.49	42205.90	15.27		
4	E	2032-09-03T03:46:08.247		29.10	-37.41	42614.08	15.29		
alpha	E	2032-09-03T03:48:23.393		29.58	-37.01	44692.12	15.43		
beta	E	2032-09-03T03:49:24.883		29.80	-36.82	45645.15	15.49		
eta	E	2032-09-03T03:51:03.479		30.16	-36.53	47176.12	15.58		
gamma	E	2032-09-03T03:51:32.044		30.26	-36.44	47621.40	15.60		
delta	E	2032-09-03T03:52:15.519		30.42	-36.31	48300.35	15.63		
lambda	E	2032-09-03T03:54:05.654		30.82	-35.98	50026.71	15.71		
epsilon	E	2032-09-03T03:55:25.649		31.10	-35.74	51285.93	15.72		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-09-03T03:09:17.960
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : SAAO
Location            : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)      : -32.37953
E. Longitude (deg)  : 20.81070
Altitude (km)       : 1.768
Gaia source ID      : 3424684532445042304
2Mass ID (if available) : 06030842+2337092
ICRS Star Coord at Epoch: 06h 03m 08.43160s +23:37:09.14414s
RUWE (>1.4 is poor) : 1.11
K magnitude          : 14.426
G magnitude          : 16.989
RP magnitude         : 16.155
BP magnitude         : 17.716
DUPflag             : 0
Distance (au)       : 19.360
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : 16.55
Sun-Target sep (deg) : 70.01
Sun-Moon sep (deg)  : 51.80
B (ring opening deg) : 74.76
PA of pole (deg)    : 58.80
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.756
C/A sky separation (km) : 10621.3
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	2032-09-03T02:20:10.820		14.89	-32.50	50826.69	-16.38		
lambda	I	2032-09-03T02:20:59.627		15.02	-32.33	50026.71	-16.38		
delta	I	2032-09-03T02:22:45.101		15.30	-31.97	48300.35	-16.35		
gamma	I	2032-09-03T02:23:26.024		15.41	-31.83	47631.48	-16.34		
eta	I	2032-09-03T02:23:53.903		15.48	-31.73	47176.12	-16.33		
beta	I	2032-09-03T02:25:25.605		15.72	-31.42	45681.23	-16.30		
alpha	I	2032-09-03T02:26:22.500		15.87	-31.22	44752.41	-16.27		
4	I	2032-09-03T02:28:37.977		16.23	-30.75	42547.26	-16.22		
5	I	2032-09-03T02:28:53.925		16.27	-30.70	42304.88	-16.22		
6	I	2032-09-03T02:29:21.807		16.34	-30.60	41848.02	-16.20		
Uranus	I	2032-09-03T02:46:06.152		18.89	-27.11	25018.60		15.17	15.86
Uranus	E	2032-09-03T03:32:57.082		25.23	-17.24	25378.41		-8.61	-9.01
6	E	2032-09-03T03:50:00.469		27.20	-13.63	41807.51	16.08		
5	E	2032-09-03T03:50:24.476		27.24	-13.55	42193.29	16.10		
4	E	2032-09-03T03:50:51.145		27.29	-13.45	42610.87	16.10		
alpha	E	2032-09-03T03:52:59.850		27.52	-13.00	44688.99	16.15		
beta	E	2032-09-03T03:53:58.755		27.63	-12.79	45643.41	16.17		
eta	E	2032-09-03T03:55:33.517		27.80	-12.46	47176.12	16.20		
gamma	E	2032-09-03T03:56:00.986		27.85	-12.36	47621.13	16.20		
delta	E	2032-09-03T03:56:42.888		27.92	-12.21	48300.35	16.22		
lambda	E	2032-09-03T03:58:29.261		28.10	-11.84	50026.71	16.24		
epsilon	E	2032-09-03T03:59:49.975		28.24	-11.55	51338.46	16.24		