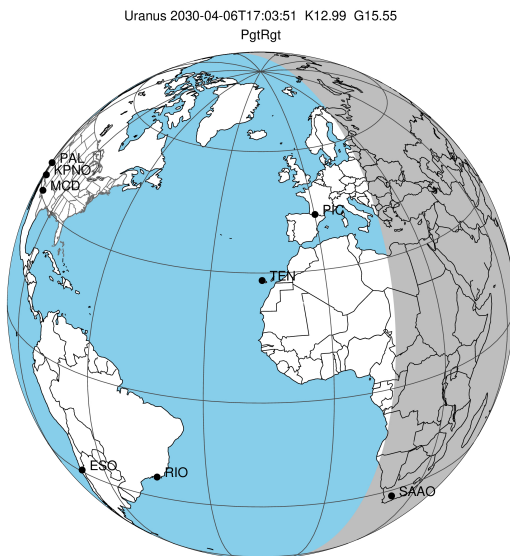


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-06T17:03:51.740
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3413211613939108224
 2Mass ID (if available) : 04543662+2238044

ICRS Star Coord at Epoch: 04h 54m 36.63121s +22:38:04.20658s

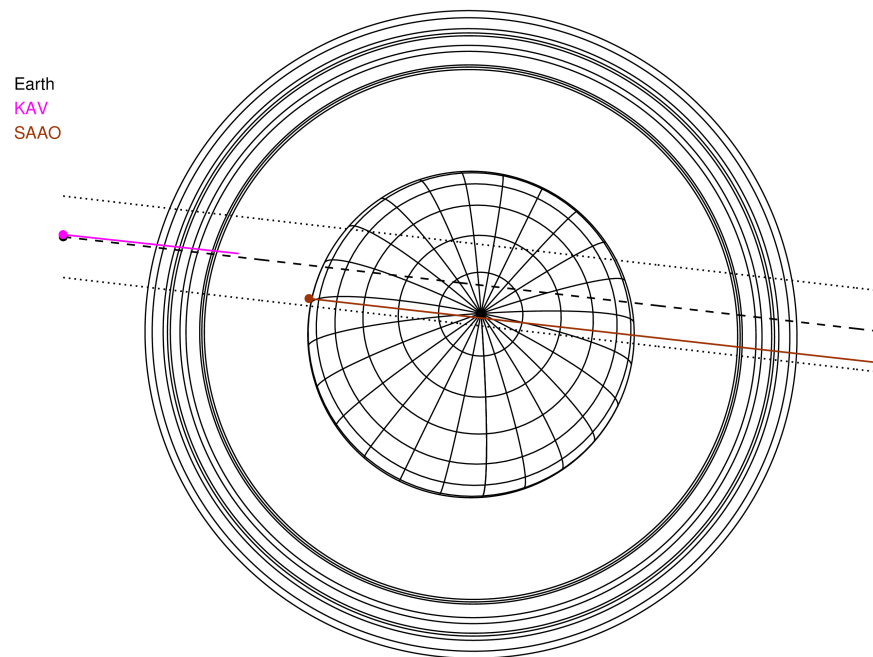
RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.992
 G magnitude : 15.549
 RP magnitude : 14.743
 BP magnitude : 16.226
 DUPflag : 0
 Distance (au) : 19.707
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 21.93
 Sun-Target sep (deg) : 58.42
 Sun-Moon sep (deg) : 16.81
 B (ring opening deg) : 81.78
 PA of pole (deg) : -25.51

#	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



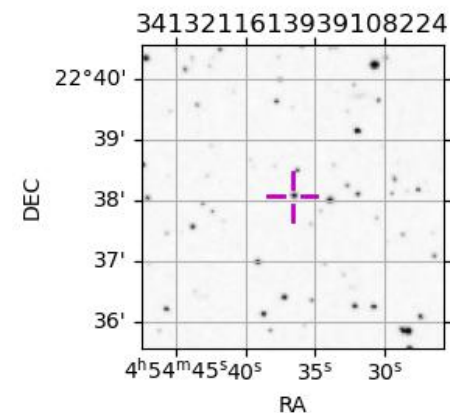
2030-04-06T17:03:51.7400 ex: 04 54 36.6312 s: +22 38 04.207 C/A 0.554° PA 173.40 deg v_sky +21.93 km/s D 19.71 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2030-04-06T17:03:51 K12.99 G15.55 PgtRgt

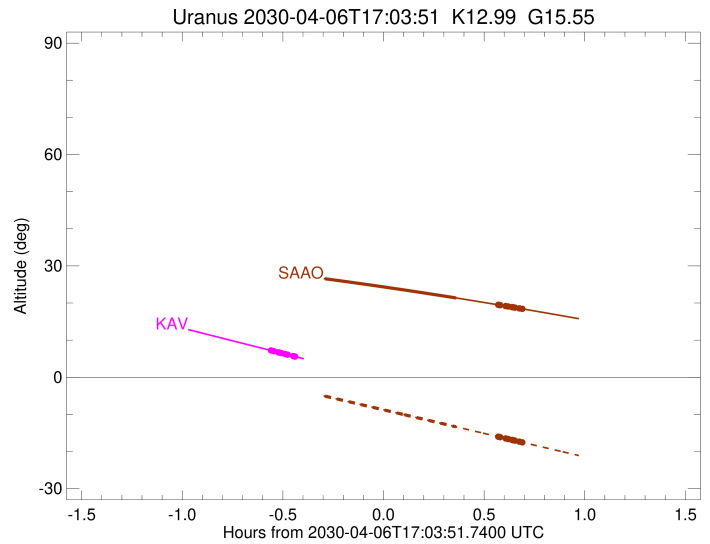
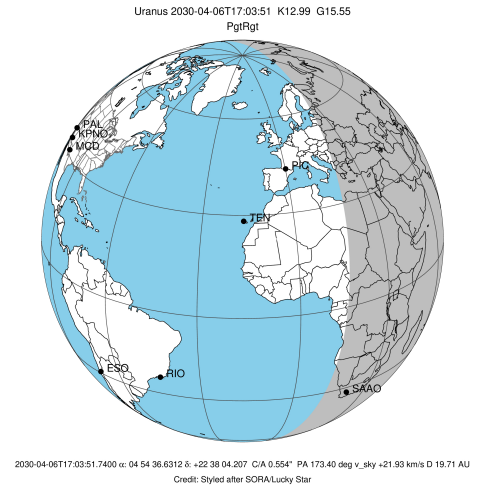


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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					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					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++			APR 06 16:30 - APR 06 16:37	PnnRin
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		+	+++++	APR 06 16:46 - APR 06 17:44	PieRne
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

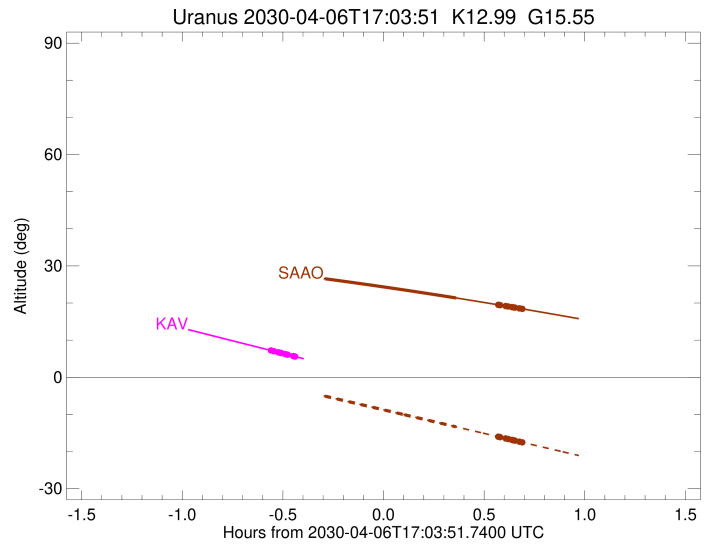
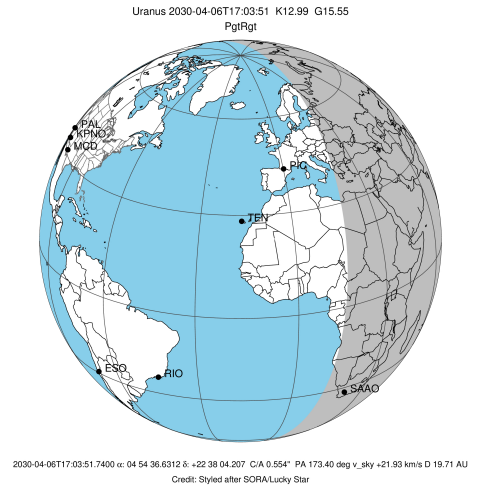


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-06T17:08:36.530
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KAV
 Location : Kavalur Observatory
 Latitude (deg) : 12.57556
 E. Longitude (deg) : 78.83167
 Altitude (km) : 0.722
 Gaia source ID : 3413211613939108224
 2Mass ID (if available) : 04543662+2238044
 ICRS Star Coord at Epoch: 04h 54m 36.63121s +22:38:04.20658s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.992
 G magnitude : 15.549
 RP magnitude : 14.743
 BP magnitude : 16.226
 DUPflag : 0
 Distance (au) : 19.707
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 21.93
 Sun-Target sep (deg) : 58.42
 Sun-Moon sep (deg) : 17.64
 B (ring opening deg) : 81.78
 PA of pole (deg) : -25.51
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.609
 C/A sky separation (km) : 8709.0
 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_itrf93_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	2030-04-06T16:30:01.418		7.28	-50.95	51534.40	-21.57		
lambda	I	2030-04-06T16:31:11.309		7.02	-51.20	50026.71	-21.56		
delta	I	2030-04-06T16:32:31.411		6.72	-51.49	48300.35	-21.54		
gamma	I	2030-04-06T16:33:02.730		6.60	-51.60	47625.86	-21.53		
eta	I	2030-04-06T16:33:23.622		6.52	-51.67	47176.12	-21.52		
beta	I	2030-04-06T16:34:33.114		6.26	-51.92	45681.07	-21.50		
alpha	I	2030-04-06T16:35:18.898		6.08	-52.09	44696.91	-21.49		
4	I	2030-04-06T16:36:58.538		5.71	-52.44	42558.17	-21.44		
5	I	2030-04-06T16:37:16.293		5.64	-52.50	42178.72	-21.43		
6	I	2030-04-06T16:37:34.019		5.57	-52.57	41797.42	-21.42		
Uranus	I	2030-04-06T16:50:21.792		2.67x	-55.26	25558.95		0.08	0.08
Uranus	E	2030-04-06T17:26:37.768		-5.46x	-62.32	25322.22		5.22	5.46
6	E	2030-04-06T17:39:31.246		-8.31x	-64.54	41867.47	21.56		
5	E	2030-04-06T17:39:49.375		-8.38x	-64.59	42263.10	21.57		
4	E	2030-04-06T17:40:03.580		-8.43x	-64.63	42565.66	21.58		
alpha	E	2030-04-06T17:41:44.596		-8.80x	-64.90	44748.50	21.63		
beta	E	2030-04-06T17:42:25.843		-8.95x	-65.01	45641.72	21.65		
eta	E	2030-04-06T17:43:36.653		-9.21x	-65.19	47176.12	21.68		
gamma	E	2030-04-06T17:43:57.518		-9.29x	-65.25	47628.56	21.69		
delta	E	2030-04-06T17:44:28.483		-9.40x	-65.33	48300.35	21.70		
lambda	E	2030-04-06T17:45:47.984		-9.70x	-65.54	50026.71	21.73		
epsilon	E	2030-04-06T17:46:20.970		-9.82x	-65.62	50743.64	21.74		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2030-04-06T17:05:58.260
 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 : 3413211613939108224
 2Mass ID (if available) : 04543662+2238044
 ICRS Star Coord at Epoch: 04h 54m 36.63121s +22:38:04.20658s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.992
 G magnitude : 15.549
 RP magnitude : 14.743
 BP magnitude : 16.226
 DUPflag : 0
 Distance (au) : 19.707
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 21.93
 Sun-Target sep (deg) : 58.42
 Sun-Moon sep (deg) : 17.37
 B (ring opening deg) : 81.78
 PA of pole (deg) : -25.51
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.191
 C/A sky separation (km) : 2737.1
 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_itrf93_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	2030-04-06T16:26:17.001		28.82	-0.84x	51546.42	-21.56		
lambda	I	2030-04-06T16:27:27.500		28.69	-1.09x	50026.71	-21.56		
delta	I	2030-04-06T16:28:47.590		28.55	-1.37x	48300.35	-21.55		
gamma	I	2030-04-06T16:29:18.913		28.49	-1.48x	47625.22	-21.55		
eta	I	2030-04-06T16:29:39.749		28.45	-1.55x	47176.12	-21.55		
beta	I	2030-04-06T16:30:49.102		28.33	-1.80x	45681.23	-21.55		
alpha	I	2030-04-06T16:31:34.911		28.24	-1.96x	44693.70	-21.55		
4	I	2030-04-06T16:33:13.721		28.06	-2.30x	42564.24	-21.55		
5	I	2030-04-06T16:33:31.328		28.03	-2.37x	42187.16	-21.55		
6	I	2030-04-06T16:33:49.172		28.00	-2.43x	41799.89	-21.54		
Uranus	I	2030-04-06T16:46:23.405		26.54	-5.08	25529.52		-1.83	-1.91
Uranus	E	2030-04-06T17:25:28.104		21.37	-13.34	25451.66		3.50	3.66
6	E	2030-04-06T17:38:05.306		19.52	-16.01	41871.61	21.63		
5	E	2030-04-06T17:38:23.729		19.47	-16.08	42273.96	21.63		
4	E	2030-04-06T17:38:37.671		19.43	-16.13	42572.35	21.63		
alpha	E	2030-04-06T17:40:18.123		19.18	-16.48	44745.97	21.64		
beta	E	2030-04-06T17:40:59.469		19.08	-16.63	45641.20	21.64		
eta	E	2030-04-06T17:42:10.371		18.90	-16.88	47176.12	21.65		
gamma	E	2030-04-06T17:42:31.240		18.85	-16.95	47627.90	21.65		
delta	E	2030-04-06T17:43:02.300		18.77	-17.06	48300.35	21.65		
lambda	E	2030-04-06T17:44:22.027		18.56	-17.34	50026.71	21.66		
epsilon	E	2030-04-06T17:44:55.216		18.48	-17.46	50745.50	21.66		