

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2029-08-06T04:50:48.910
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3418340728308407040
 2Mass ID (if available) : 05041270+2249419

ICRS Star Coord at Epoch: 05h 04m 12.71048s +22:49:42.00405s

RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.289
 G magnitude : 16.377
 RP magnitude : 15.679
 BP magnitude : 16.901
 DUPflag : 0
 Distance (au) : 19.790
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.80
 Sun-Target sep (deg) : 56.45
 Sun-Moon sep (deg) : 8.38
 B (ring opening deg) : 82.26
 PA of pole (deg) : -9.05

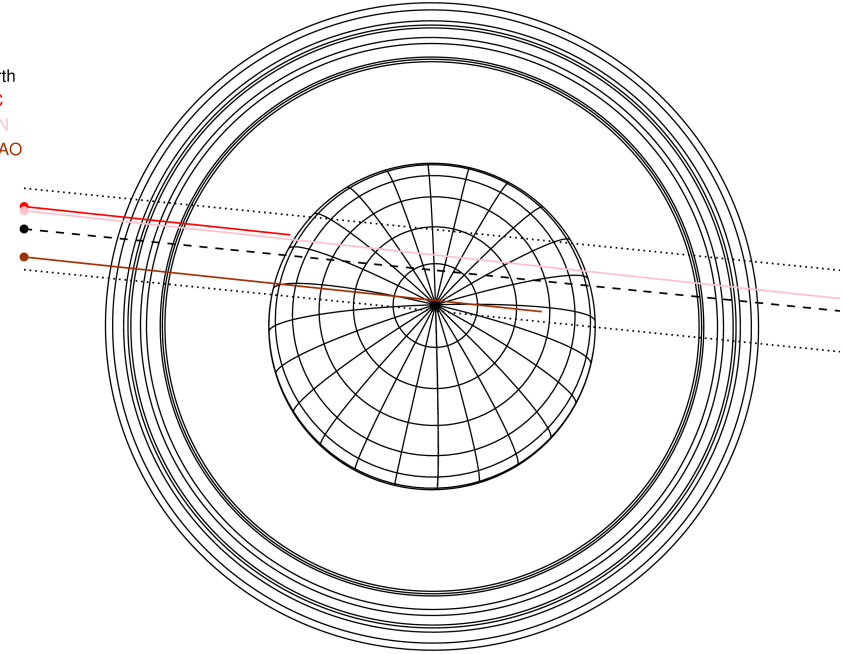
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2029-08-06T04:50:48.9100 ex: 05 04 12.7105 s: +22 49 42.004 C/A 0.618° PA 174.26 deg v_sky +22.80 km/s D 19.79 AU
 Credit: Styled after SORA/Lucky Star

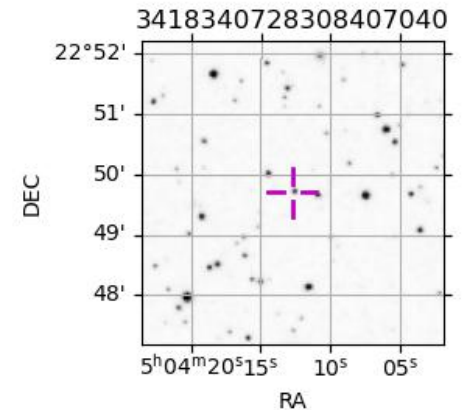
Uranus 2029-08-06T04:50:48 K14.29 G16.38 PgtRgt

Earth
 PIC
 TEN
 SAAO

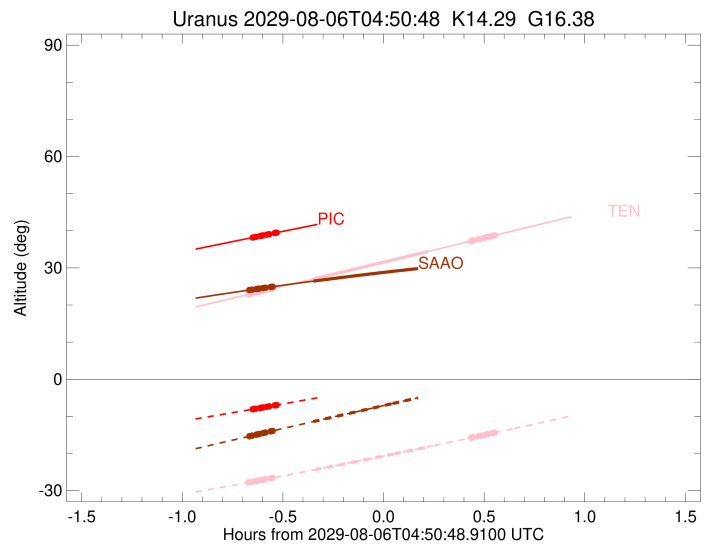
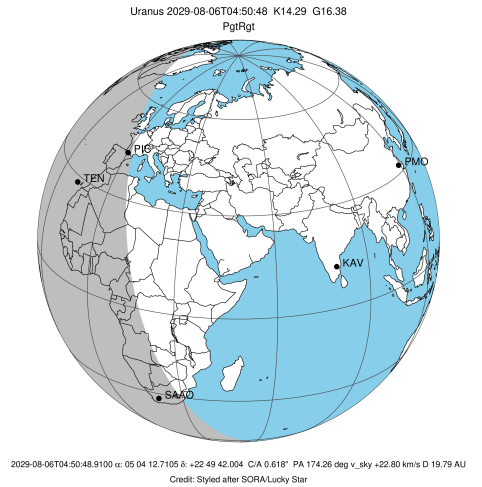


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+++++			AUG 06 04:11 - AUG 06 04:18	PnnRin
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	+++++	+ +	+++++	AUG 06 04:10 - AUG 06 05:23	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	+++++	+		AUG 06 04:10 - AUG 06 04:29	PinRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

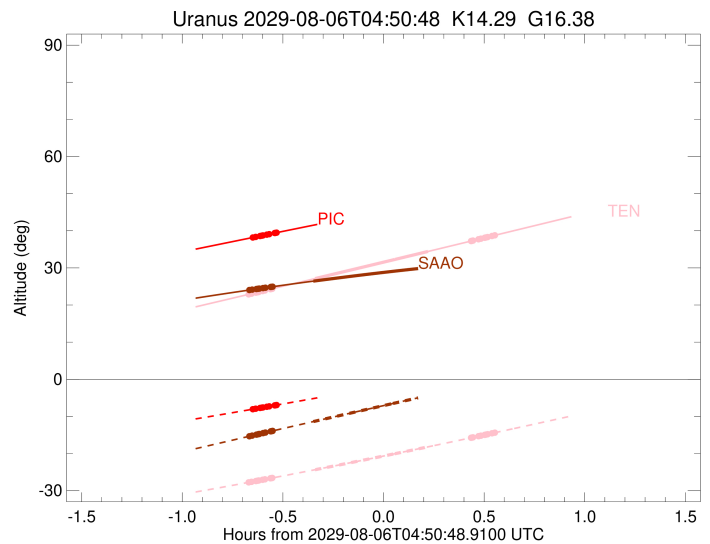
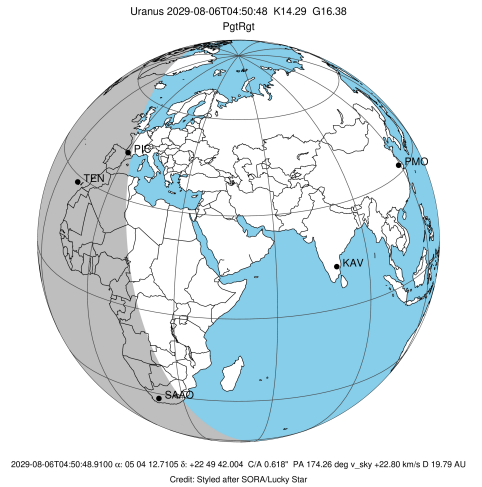


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2029-08-06T04:48:28.980
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3418340728308407040
 2Mass ID (if available) : 05041270+2249419
 ICRS Star Coord at Epoch: 05h 04m 12.71048s +22:49:42.00405s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.289
 G magnitude : 16.377
 RP magnitude : 15.679
 BP magnitude : 16.901
 DUPflag : 0
 Distance (au) : 19.790
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.80
 Sun-Target sep (deg) : 56.45
 Sun-Moon sep (deg) : 8.92
 B (ring opening deg) : 82.26
 PA of pole (deg) : -9.05
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.831
 C/A sky separation (km) : 11933.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl1.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



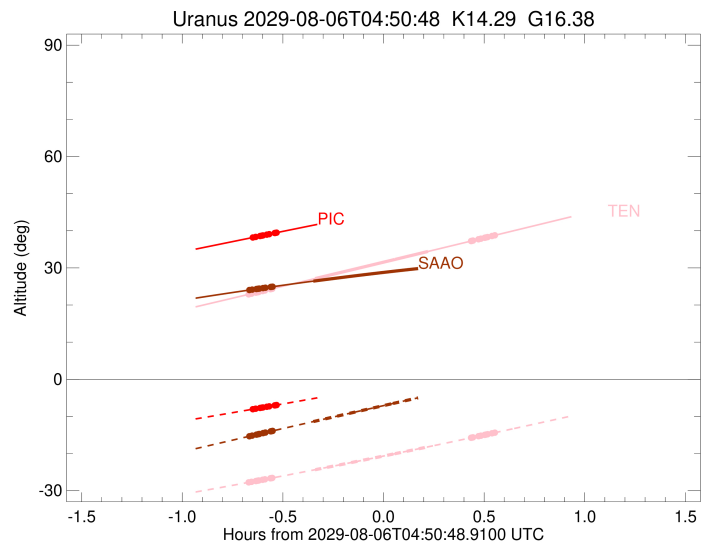
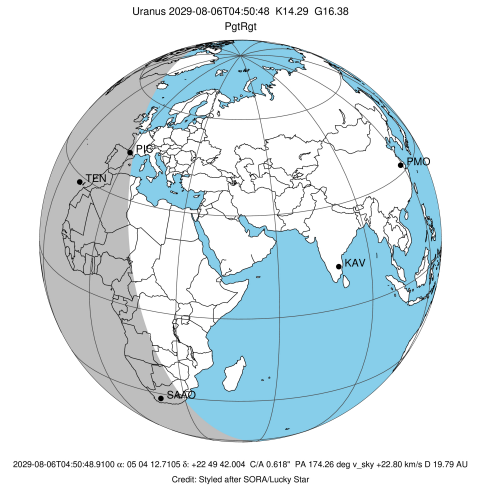
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2029-08-06T04:11:40.049		38.16	-8.09	51403.50	-21.98		
lambda	I	2029-08-06T04:12:42.647		38.35	-7.93	50026.71	-21.97		
delta	I	2029-08-06T04:14:01.299		38.59	-7.72	48300.35	-21.92		
gamma	I	2029-08-06T04:14:32.283		38.69	-7.64	47621.42	-21.90		
eta	I	2029-08-06T04:14:52.622		38.75	-7.59	47176.12	-21.89		
beta	I	2029-08-06T04:16:02.413		38.96	-7.41	45650.44	-21.83		
alpha	I	2029-08-06T04:16:44.425		39.09	-7.30	44733.68	-21.79		
4	I	2029-08-06T04:18:25.811		39.40	-7.03	42528.50	-21.70		
5	I	2029-08-06T04:18:42.546		39.45	-6.98	42165.10	-21.69		
6	I	2029-08-06T04:18:59.369		39.50	-6.94	41801.35	-21.67		
Uranus	I	2029-08-06T04:31:54.398		41.87	-4.87x	25453.61		3.26	3.42
Uranus	E	2029-08-06T05:05:02.042		47.87	0.63x	25402.35		3.98	4.17
6	E	2029-08-06T05:18:04.512		50.19	2.86x	41879.74	21.59		
5	E	2029-08-06T05:18:24.709		50.25	2.92x	42315.09	21.61		
4	E	2029-08-06T05:18:38.553		50.29	2.96x	42615.33	21.62		
alpha	E	2029-08-06T05:20:14.322		50.57	3.23x	44689.83	21.70		
beta	E	2029-08-06T05:20:59.872		50.71	3.36x	45678.99	21.74		
eta	E	2029-08-06T05:22:08.649		50.91	3.56x	47176.12	21.79		
gamma	E	2029-08-06T05:22:29.541		50.97	3.62x	47631.55	21.81		
delta	E	2029-08-06T05:23:00.196		51.06	3.71x	48300.35	21.83		
lambda	E	2029-08-06T05:24:19.201		51.29	3.94x	50026.71	21.87		
epsilon	E	2029-08-06T05:24:53.489		51.39	4.04x	50777.11	21.88		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2029-08-06T04:47:15.950
 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 : 3418340728308407040
 2Mass ID (if available) : 05041270+2249419
 ICRS Star Coord at Epoch: 05h 04m 12.71048s +22:49:42.00405s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.289
 G magnitude : 16.377
 RP magnitude : 15.679
 BP magnitude : 16.901
 DUPflag : 0
 Distance (au) : 19.790
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.80
 Sun-Target sep (deg) : 56.45
 Sun-Moon sep (deg) : 9.14
 B (ring opening deg) : 82.26
 PA of pole (deg) : -9.05
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.779
 C/A sky separation (km) : 11182.7
 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_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	2029-08-06T04:10:25.934		22.84	-27.81	51407.78	-22.14		
lambda	I	2029-08-06T04:11:28.284		23.06	-27.63	50026.71	-22.13		
delta	I	2029-08-06T04:12:46.363		23.34	-27.41	48300.35	-22.09		
gamma	I	2029-08-06T04:13:17.117		23.45	-27.32	47621.39	-22.07		
eta	I	2029-08-06T04:13:37.301		23.52	-27.27	47176.12	-22.05		
beta	I	2029-08-06T04:14:46.564		23.77	-27.07	45650.18	-22.01		
alpha	I	2029-08-06T04:15:28.208		23.91	-26.95	44734.16	-21.97		
4	I	2029-08-06T04:17:08.783		24.27	-26.67	42528.26	-21.89		
5	I	2029-08-06T04:17:25.395		24.33	-26.62	42164.44	-21.88		
6	I	2029-08-06T04:17:42.054		24.39	-26.57	41800.96	-21.86		
Uranus	I	2029-08-06T04:30:26.688		27.13	-24.36	25467.49		3.04	3.18
Uranus	E	2029-08-06T05:04:04.339		34.42	-18.21	25420.24		3.75	3.92
6	E	2029-08-06T05:16:57.017		37.23	-15.76	41879.75	21.75		
5	E	2029-08-06T05:17:17.063		37.31	-15.69	42315.18	21.77		
4	E	2029-08-06T05:17:30.815		37.36	-15.65	42615.54	21.78		
alpha	E	2029-08-06T05:19:05.922		37.70	-15.34	44690.18	21.85		
beta	E	2029-08-06T05:19:51.146		37.87	-15.20	45678.81	21.89		
eta	E	2029-08-06T05:20:59.499		38.12	-14.98	47176.12	21.93		
gamma	E	2029-08-06T05:21:20.263		38.19	-14.91	47631.56	21.94		
delta	E	2029-08-06T05:21:50.734		38.31	-14.81	48300.35	21.96		
lambda	E	2029-08-06T05:23:09.284		38.59	-14.56	50026.71	22.00		
epsilon	E	2029-08-06T05:23:43.510		38.72	-14.45	50779.92	22.00		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2029-08-06T04:48:36.220
 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 : 3418340728308407040
 2Mass ID (if available) : 05041270+2249419
 ICRS Star Coord at Epoch: 05h 04m 12.71048s +22:49:42.00405s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.289
 G magnitude : 16.377
 RP magnitude : 15.679
 BP magnitude : 16.901
 DUPflag : 0
 Distance (au) : 19.790
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.80
 Sun-Target sep (deg) : 56.45
 Sun-Moon sep (deg) : 8.96
 B (ring opening deg) : 82.26
 PA of pole (deg) : -9.05
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.286
 C/A sky separation (km) : 4107.5
 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	2029-08-06T04:10:36.695		24.01	-15.40	51449.92	-22.43		
lambda	I	2029-08-06T04:11:40.132		24.15	-15.18	50026.71	-22.43		
delta	I	2029-08-06T04:12:57.107		24.32	-14.91	48300.35	-22.42		
gamma	I	2029-08-06T04:13:27.400		24.38	-14.81	47621.12	-22.42		
eta	I	2029-08-06T04:13:47.249		24.42	-14.74	47176.12	-22.42		
beta	I	2029-08-06T04:14:55.442		24.57	-14.50	45647.62	-22.41		
alpha	I	2029-08-06T04:15:35.995		24.66	-14.36	44738.88	-22.40		
4	I	2029-08-06T04:17:14.771		24.87	-14.02	42526.43	-22.39		
5	I	2029-08-06T04:17:31.185		24.90	-13.96	42158.90	-22.39		
6	I	2029-08-06T04:17:47.325		24.94	-13.90	41797.65	-22.39		
Uranus	I	2029-08-06T04:29:54.315		26.44	-11.39	25552.00		0.84	0.88
Uranus	E	2029-08-06T05:07:18.309		30.40	-3.75x	25532.01		1.65	1.72
6	E	2029-08-06T05:19:31.347		31.46	-1.29x	41879.10	22.32		
5	E	2029-08-06T05:19:50.866		31.48	-1.23x	42314.62	22.32		
4	E	2029-08-06T05:20:04.382		31.50	-1.18x	42616.52	22.32		
alpha	E	2029-08-06T05:21:37.426		31.62	-0.87x	44693.51	22.33		
beta	E	2029-08-06T05:22:21.482		31.68	-0.72x	45677.11	22.33		
eta	E	2029-08-06T05:23:28.598		31.77	-0.50x	47176.12	22.34		
gamma	E	2029-08-06T05:23:48.986		31.80	-0.43x	47631.56	22.34		
delta	E	2029-08-06T05:24:18.922		31.84	-0.33x	48300.35	22.34		
lambda	E	2029-08-06T05:25:36.186		31.93	-0.08x	50026.71	22.35		
epsilon	E	2029-08-06T05:26:11.090		31.98	0.04x	50806.72	22.34		