

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-09-20T01:08:20.760  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 869233932545649536  
 2Mass ID (if available) : 07203996+2232478

ICRS Star Coord at Epoch: 07h 20m 39.96972s +22:32:48.77829s

RUWE (>1.4 is poor) : 1.00  
 K magnitude : 12.576  
 G magnitude : 15.660  
 RP magnitude : 14.663  
 BP magnitude : 16.662  
 DUPflag : 0  
 Distance (au) : 19.126  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 17.35  
 Sun-Target sep (deg) : 68.60  
 Sun-Moon sep (deg) : 68.20  
 B (ring opening deg) : 58.12  
 PA of pole (deg) : 82.48

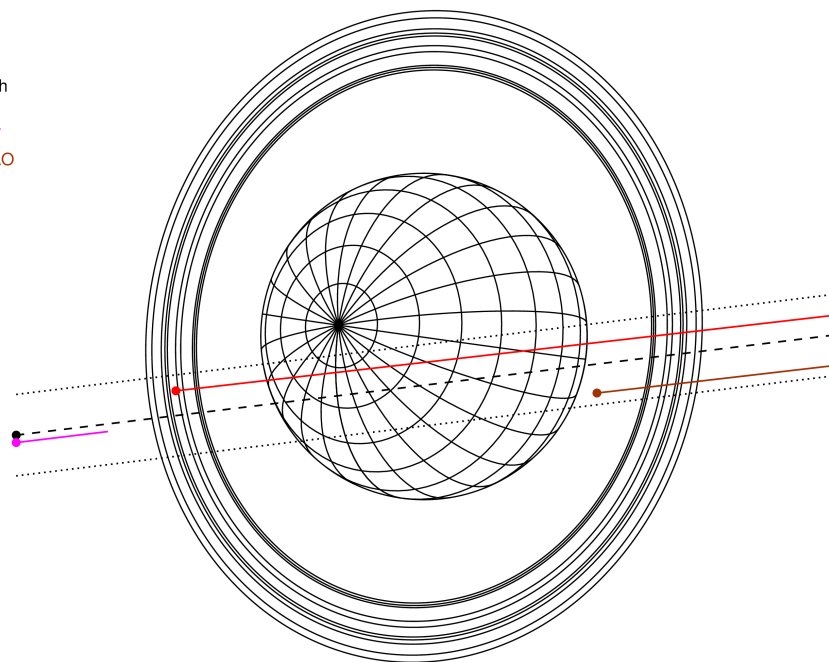
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2036-09-20T01:08:20.7600 α: 07 20 39.9697 s; +22 32 48.778 C/A 0.543° PA 6.98 deg v\_sky +17.35 km/s D 19.13 AU  
 Credit: Styled after SORA/Lucky Star

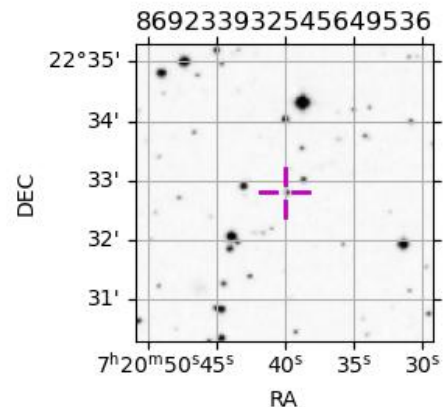
Uranus 2036-09-20T01:08:20 K12.58 G15.66 PgtRgt

Earth  
 PIC  
 KAV  
 SAOA

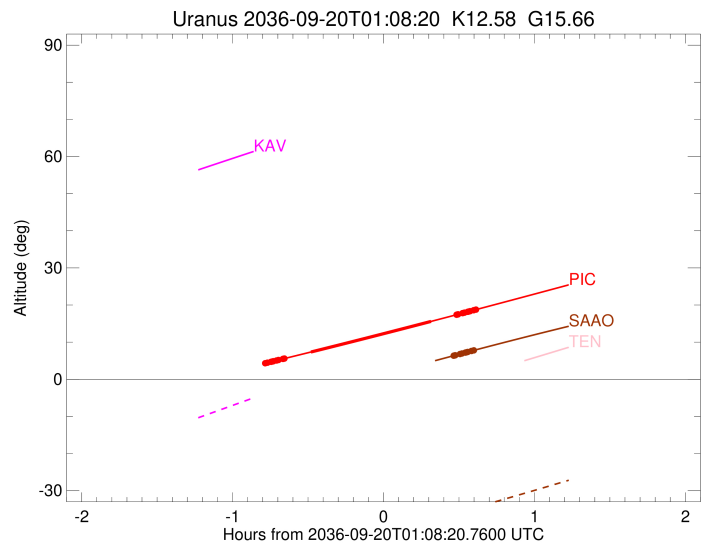
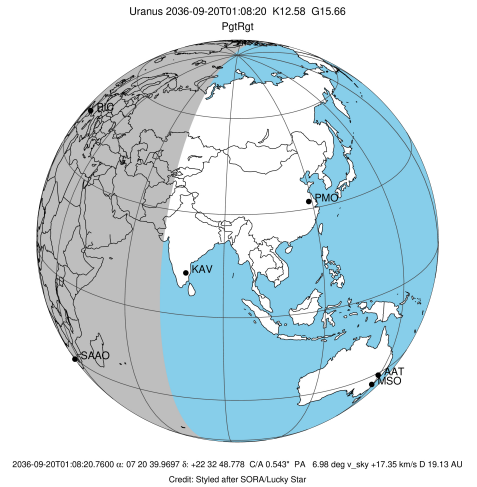


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	SEP 20 00:25 - SEP 20 01:44	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					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					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8			+++++	SEP 20 01:36 - SEP 20 01:43	PnnRne
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

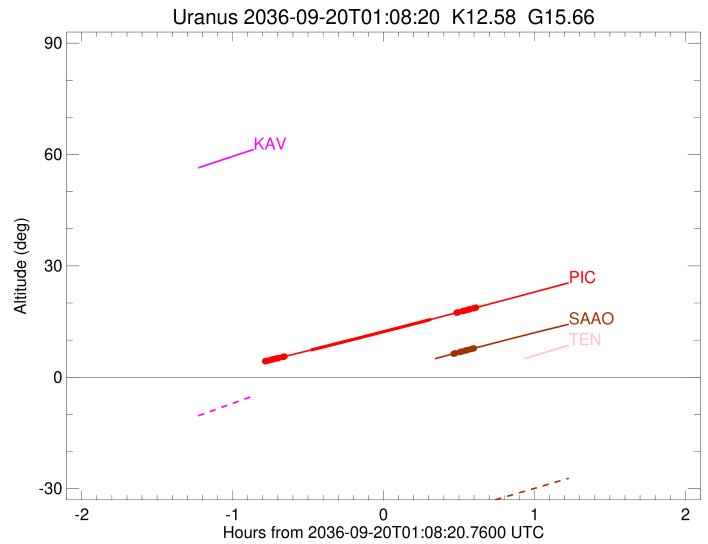
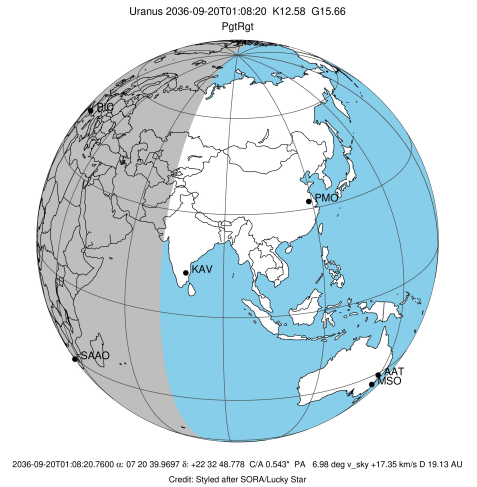


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-09-20T01:03:22.540  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 869233932545649536  
 2Mass ID (if available) : 07203996+2232478  
 ICRS Star Coord at Epoch: 07h 20m 39.96972s +22:32:48.77829s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 12.576  
 G magnitude : 15.660  
 RP magnitude : 14.663  
 BP magnitude : 16.662  
 DUPflag : 0  
 Distance (au) : 19.126  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 17.35  
 Sun-Target sep (deg) : 68.60  
 Sun-Moon sep (deg) : 68.68  
 B (ring opening deg) : 58.12  
 PA of pole (deg) : 82.48  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.291  
 C/A sky separation (km) : 4033.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ural11.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ural11.bsp  
 ural61.bsp  
 vgr2.ural61.bsp  
 peph.ural60.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	2036-09-20T00:21:00.529		4.27x	-45.86	51532.93	-20.29		
lambda	I	2036-09-20T00:22:14.743		4.47x	-45.82	50026.71	-20.29		
delta	I	2036-09-20T00:23:39.837		4.71x	-45.77	48300.35	-20.28		
gamma	I	2036-09-20T00:24:12.950		4.80x	-45.75	47628.75	-20.28		
eta	I	2036-09-20T00:24:35.270		4.86x	-45.74	47176.12	-20.28		
beta	I	2036-09-20T00:25:50.146		5.06	-45.69	45656.94	-20.27		
alpha	I	2036-09-20T00:26:34.916		5.19	-45.66	44747.63	-20.26		
4	I	2036-09-20T00:28:23.330		5.49	-45.59	42564.80	-20.26		
5	I	2036-09-20T00:28:38.390		5.53	-45.58	42273.93	-20.26		
6	I	2036-09-20T00:29:01.233		5.59	-45.57	41794.80	-20.25		
Uranus	I	2036-09-20T00:39:31.679		7.35	-45.08	25202.18		29.03	30.16
Uranus	E	2036-09-20T01:27:13.381		15.58	-41.45	25140.75		-31.75	-32.95
6	E	2036-09-20T01:37:24.037		17.39	-40.41	41879.28	20.11		
5	E	2036-09-20T01:37:38.568		17.43	-40.38	42183.09	20.11		
4	E	2036-09-20T01:37:59.231		17.49	-40.35	42586.11	20.11		
alpha	E	2036-09-20T01:39:44.419		17.80	-40.16	44686.72	20.11		
beta	E	2036-09-20T01:40:33.195		17.95	-40.07	45668.78	20.11		
eta	E	2036-09-20T01:41:48.098		18.17	-39.94	47176.12	20.11		
gamma	E	2036-09-20T01:42:10.396		18.24	-39.89	47624.62	20.12		
delta	E	2036-09-20T01:42:43.988		18.34	-39.83	48300.35	20.12		
lambda	E	2036-09-20T01:44:09.802		18.59	-39.67	50026.71	20.12		
epsilon	E	2036-09-20T01:44:45.718		18.70	-39.61	50749.31	20.12		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-09-20T01:03:45.060  
 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 : 869233932545649536  
 2Mass ID (if available) : 07203996+2232478  
 ICRS Star Coord at Epoch: 07h 20m 39.96972s +22:32:48.77829s  
 RUWE (>1.4 is poor) : 1.00  
 K magnitude : 12.576  
 G magnitude : 15.660  
 RP magnitude : 14.663  
 BP magnitude : 16.662  
 DUPflag : 0  
 Distance (au) : 19.126  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 17.35  
 Sun-Target sep (deg) : 68.60  
 Sun-Moon sep (deg) : 68.50  
 B (ring opening deg) : 58.12  
 PA of pole (deg) : 82.48  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.857  
 C/A sky separation (km) : 11889.6  
 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	2036-09-20T00:21:36.209	-7.80x	-49.17	51507.46	-19.64			
lambda	I	2036-09-20T00:22:51.613	-7.55x	-48.98	50026.71	-19.62			
delta	I	2036-09-20T00:24:19.713	-7.26x	-48.75	48300.35	-19.57			
gamma	I	2036-09-20T00:24:54.007	-7.15x	-48.66	47629.51	-19.55			
eta	I	2036-09-20T00:25:17.205	-7.07x	-48.61	47176.12	-19.54			
beta	I	2036-09-20T00:26:34.805	-6.82x	-48.40	45660.46	-19.49			
alpha	I	2036-09-20T00:27:21.737	-6.67x	-48.28	44744.04	-19.45			
4	I	2036-09-20T00:29:14.133	-6.30x	-47.99	42573.37	-19.38			
5	I	2036-09-20T00:29:31.071	-6.24x	-47.95	42259.88	-19.36			
6	I	2036-09-20T00:29:54.030	-6.17x	-47.89	41795.99	-19.35			
Uranus	I	2036-09-20T00:42:08.607	-3.79x	-45.90	25324.20			23.09	24.06
Uranus	E	2036-09-20T01:25:14.033	4.34x	-38.27	25162.32			-30.81	-31.98
6	E	2036-09-20T01:36:14.752	6.35	-36.20	41877.30	19.20			
5	E	2036-09-20T01:36:29.822	6.39	-36.15	42172.42	19.21			
4	E	2036-09-20T01:36:52.262	6.46	-36.08	42593.91	19.23			
alpha	E	2036-09-20T01:38:41.591	6.79	-35.73	44685.13	19.29			
beta	E	2036-09-20T01:39:32.680	6.94	-35.57	45671.92	19.33			
eta	E	2036-09-20T01:40:50.410	7.18	-35.32	47176.12	19.37			
gamma	E	2036-09-20T01:41:13.605	7.25	-35.24	47625.49	19.38			
delta	E	2036-09-20T01:41:48.413	7.35	-35.13	48300.35	19.40			
lambda	E	2036-09-20T01:43:17.322	7.61	-34.85	50026.71	19.44			
epsilon	E	2036-09-20T01:43:54.187	7.72	-34.73	50743.55	19.45			