

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-09-01T13:06:03.360
 Event type : PRgt
 : Uranus occs: not geocentric or topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 865489378193570176
 2Mass ID (if available) : 07361907+2202158

ICRS Star Coord at Epoch: 07h 36m 19.07521s +22:02:15.32126s

RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.859
 G magnitude : 15.447
 RP magnitude : 14.904
 BP magnitude : 15.725
 DUPflag : 0
 Distance (au) : 19.403
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.93
 Sun-Target sep (deg) : 46.70
 Sun-Moon sep (deg) : 59.30
 B (ring opening deg) : 54.57
 PA of pole (deg) : 85.30

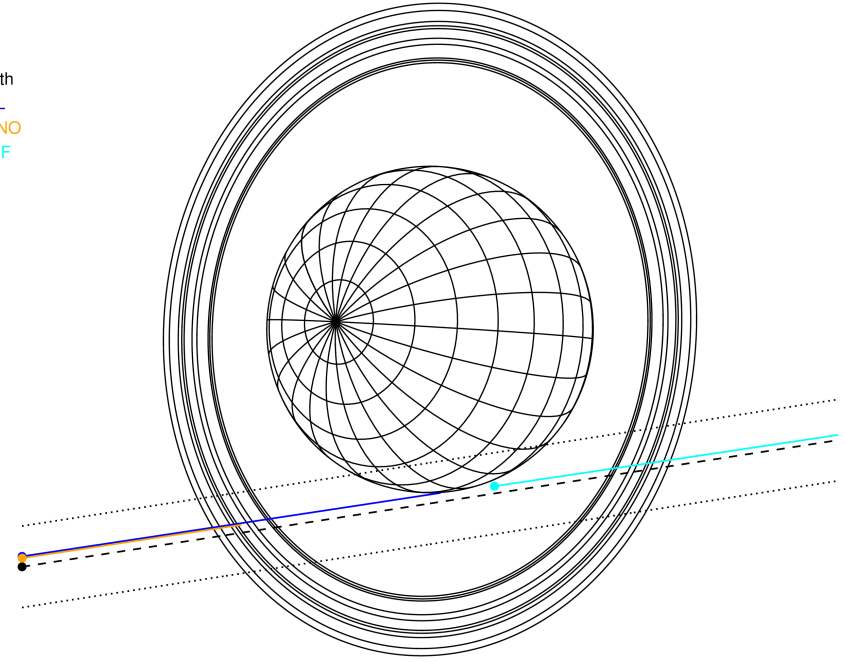
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2037-09-01T13:06:03.3600 α: 07 36 19.0752 δ: +22 02 15.321 C/A 1.908" PA 8.83 deg v_sky +26.93 km/s D 19.40 AU
 Credit: Styled after SORA/Lucky Star

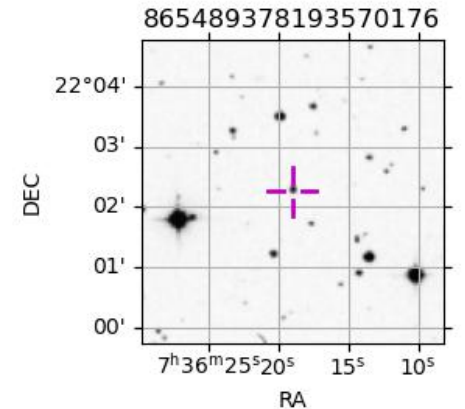
Uranus 2037-09-01T13:06:03 K13.86 G15.45 PRgt

Earth
 PAL
 KPNO
 IRTF



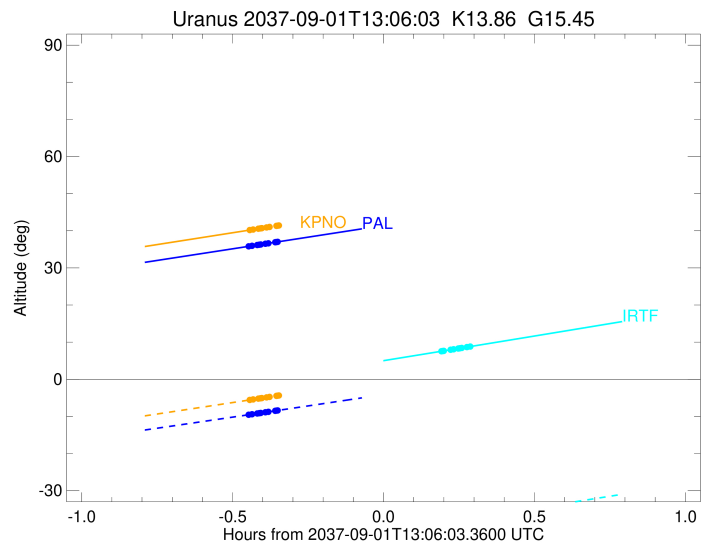
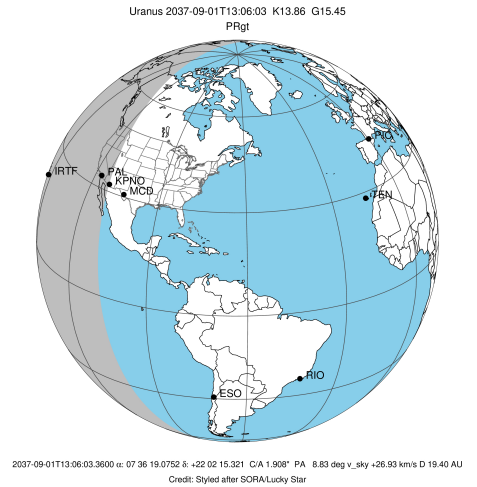
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++			SEP 01 12:39 - SEP 01 12:45	PnnRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++			SEP 01 12:39 - SEP 01 12:41	PnnRin
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			+++++	SEP 01 13:17 - SEP 01 13:23	PnnRne
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					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2037-09-01T13:03:08.760
Event type            : PRgt
: Uranus occs: not geocentric or topocentric
: Ring occs: geocentric, topocentric
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 865489378193570176
2Mass ID (if available) : 07361907+2202158
ICRS Star Coord at Epoch: 07h 36m 19.07521s +22:02:15.32126s
RUWE (>1.4 is poor)  : 1.06
K magnitude           : 13.859
G magnitude           : 15.447
RP magnitude          : 14.904
BP magnitude          : 15.725
DUPflag              : 0
Distance (au)         : 19.403
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : 26.93
Sun-Target sep (deg)  : 46.70
Sun-Moon sep (deg)    : 59.50
B (ring opening deg)  : 54.57
PA of pole (deg)      : 85.30
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.816
C/A sky separation (km) : 25552.6
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
  
```

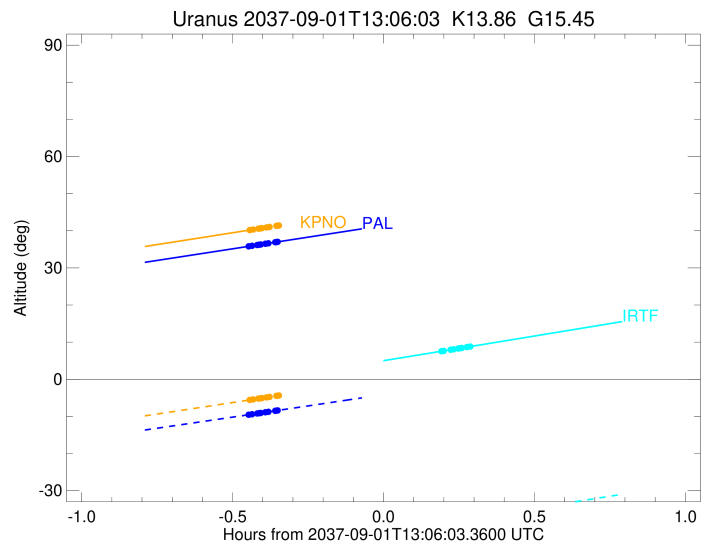
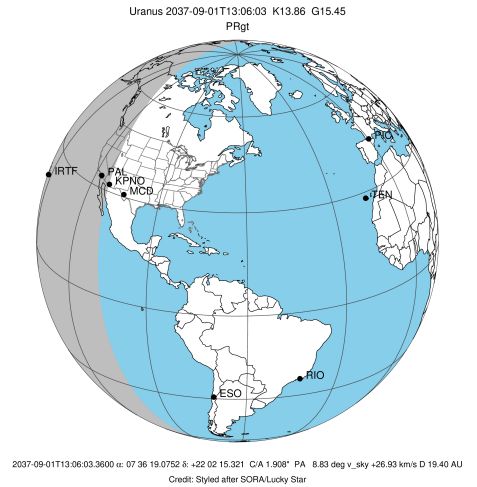


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-09-01T12:39:10.560		35.79	-9.58	51303.35	-28.21		
lambda	I	2037-09-01T12:39:56.200		35.95	-9.42	50026.71	-27.85		
delta	I	2037-09-01T12:40:58.605		36.17	-9.21	48300.35	-27.47		
gamma	I	2037-09-01T12:41:23.175		36.25	-9.13	47627.24	-27.31		
eta	I	2037-09-01T12:41:39.722		36.31	-9.08	47176.12	-27.21		
beta	I	2037-09-01T12:42:35.338		36.51	-8.89	45672.39	-26.82		
alpha	I	2037-09-01T12:43:09.752		36.63	-8.77	44749.46	-26.54		
4	I	2037-09-01T12:44:33.693		36.92	-8.49	42552.78	-25.81		
5	I	2037-09-01T12:44:46.889		36.96	-8.45	42204.70	-25.73		
6	I	2037-09-01T12:45:00.874		37.01	-8.40	41876.85	-25.61		

No planet occultations

6	E	2037-09-01T13:18:49.972		44.10	-1.51x	41842.66	25.55		
5	E	2037-09-01T13:19:09.260		44.17	-1.44x	42314.58	25.67		
4	E	2037-09-01T13:19:17.499		44.20	-1.42x	42536.16	25.75		
alpha	E	2037-09-01T13:20:39.651		44.49	-1.13x	44695.11	26.48		
beta	E	2037-09-01T13:21:16.230		44.61	-1.01x	45672.59	26.75		
eta	E	2037-09-01T13:22:12.072		44.81	-0.82x	47176.12	27.14		
gamma	E	2037-09-01T13:22:28.437		44.87	-0.76x	47621.11	27.24		
delta	E	2037-09-01T13:22:53.296		44.95	-0.68x	48300.35	27.40		
lambda	E	2037-09-01T13:23:55.870		45.17	-0.46x	50026.71	27.77		
epsilon	E	2037-09-01T13:24:44.914		45.34	-0.29x	51395.14	28.13		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-09-01T13:03:19.640
 Event type : PRgt
 : Uranus occs: not geocentric or topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 865489378193570176
 2Mass ID (if available) : 07361907+2202158
 ICRS Star Coord at Epoch: 07h 36m 19.07521s +22:02:15.32126s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.859
 G magnitude : 15.447
 RP magnitude : 14.904
 BP magnitude : 15.725
 DUPflag : 0
 Distance (au) : 19.403
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.93
 Sun-Target sep (deg) : 46.70
 Sun-Moon sep (deg) : 59.57
 B (ring opening deg) : 54.57
 PA of pole (deg) : 85.30
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.833
 C/A sky separation (km) : 25797.7
 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

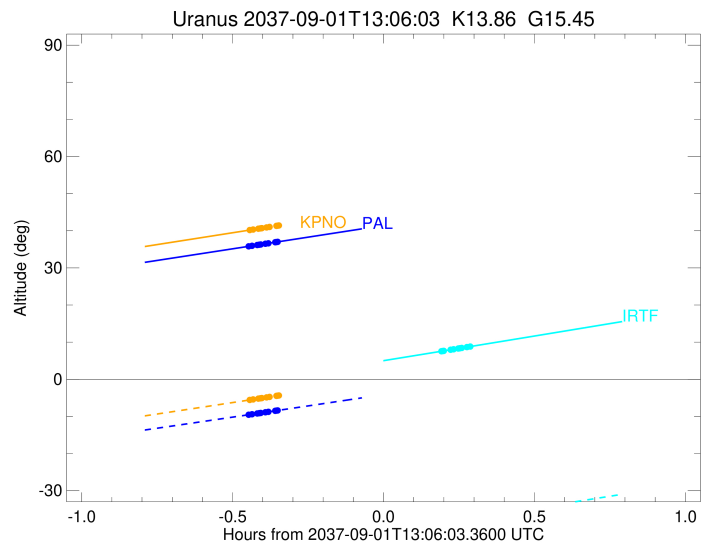
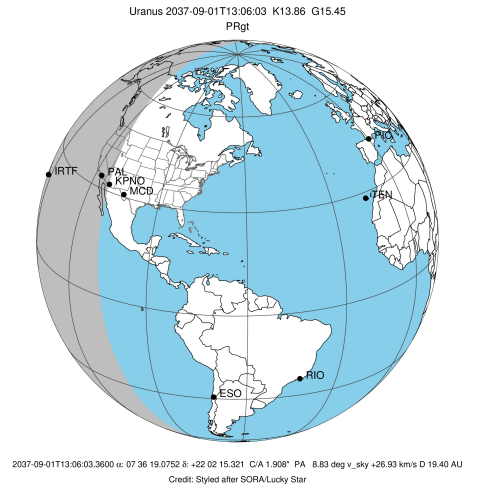


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2037-09-01T12:39:23.210		40.18	-5.59	51305.58	-28.09		
lambda	I	2037-09-01T12:40:09.143		40.34	-5.43	50026.71	-27.71		
delta	I	2037-09-01T12:41:11.859		40.56	-5.21	48300.35	-27.33		
gamma	I	2037-09-01T12:41:36.558		40.65	-5.13	47627.20	-27.17		
eta	I	2037-09-01T12:41:53.193		40.71	-5.07	47176.12	-27.06		
beta	I	2037-09-01T12:42:49.117		40.91	-4.88x	45672.51	-26.66		
alpha	I	2037-09-01T12:43:23.747		41.03	-4.76x	44749.36	-26.38		
4	I	2037-09-01T12:44:48.244		41.33	-4.46x	42552.47	-25.63		
5	I	2037-09-01T12:45:01.502		41.38	-4.42x	42205.28	-25.55		
6	I	2037-09-01T12:45:15.592		41.43	-4.37x	41876.97	-25.43		

No planet occultations

6	E	2037-09-01T13:18:55.100		48.59	2.67x	41842.96	25.37		
5	E	2037-09-01T13:19:14.496		48.66	2.74x	42314.50	25.50		
4	E	2037-09-01T13:19:22.789		48.69	2.77x	42535.96	25.58		
alpha	E	2037-09-01T13:20:45.482		48.99	3.06x	44695.26	26.32		
beta	E	2037-09-01T13:21:22.274		49.12	3.19x	45672.69	26.60		
eta	E	2037-09-01T13:22:18.419		49.32	3.38x	47176.12	26.99		
gamma	E	2037-09-01T13:22:34.870		49.37	3.44x	47621.10	27.10		
delta	E	2037-09-01T13:22:59.856		49.46	3.53x	48300.35	27.27		
lambda	E	2037-09-01T13:24:02.733		49.69	3.75x	50026.71	27.64		
epsilon	E	2037-09-01T13:24:52.059		49.86	3.92x	51396.82	28.01		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2037-09-01T13:02:05.230
 Event type : PRgt
 : Uranus occs: not geocentric or topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 865489378193570176
 2Mass ID (if available) : 07361907+2202158
 ICRS Star Coord at Epoch: 07h 36m 19.07521s +22:02:15.32126s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.859
 G magnitude : 15.447
 RP magnitude : 14.904
 BP magnitude : 15.725
 DUPflag : 0
 Distance (au) : 19.403
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.93
 Sun-Target sep (deg) : 46.70
 Sun-Moon sep (deg) : 58.92
 B (ring opening deg) : 54.57
 PA of pole (deg) : 85.30
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.831
 C/A sky separation (km) : 25759.8
 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	2037-09-01T12:38:24.637	-1.01x	-46.40	51304.16	-28.42			
lambda	I	2037-09-01T12:39:09.988	-0.85x	-46.26	50026.71	-28.04			
delta	I	2037-09-01T12:40:11.976	-0.62x	-46.06	48300.35	-27.66			
gamma	I	2037-09-01T12:40:36.387	-0.54x	-45.99	47627.22	-27.49			
eta	I	2037-09-01T12:40:52.828	-0.48x	-45.93	47176.12	-27.38			
beta	I	2037-09-01T12:41:48.100	-0.28x	-45.76	45672.44	-26.98			
alpha	I	2037-09-01T12:42:22.317	-0.15x	-45.65	44749.42	-26.69			
4	I	2037-09-01T12:43:45.809	0.15x	-45.38	42552.64	-25.94			
5	I	2037-09-01T12:43:58.925	0.20x	-45.34	42204.97	-25.86			
6	I	2037-09-01T12:44:12.844	0.25x	-45.29	41876.91	-25.73			

No planet occultations

6	E	2037-09-01T13:17:33.309	7.54	-38.61	41843.03	25.66			
5	E	2037-09-01T13:17:52.481	7.61	-38.55	42314.49	25.79			
4	E	2037-09-01T13:18:00.681	7.64	-38.52	42535.91	25.87			
alpha	E	2037-09-01T13:19:22.464	7.94	-38.24	44695.31	26.61			
beta	E	2037-09-01T13:19:58.854	8.08	-38.11	45672.72	26.90			
eta	E	2037-09-01T13:20:54.390	8.28	-37.92	47176.12	27.29			
gamma	E	2037-09-01T13:21:10.663	8.34	-37.86	47621.10	27.40			
delta	E	2037-09-01T13:21:35.381	8.43	-37.78	48300.35	27.56			
lambda	E	2037-09-01T13:22:37.587	8.66	-37.56	50026.71	27.94			
epsilon	E	2037-09-01T13:23:26.413	8.84	-37.39	51397.46	28.31			