

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-10T13:44:44.770
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3380120677630823808
 2Mass ID (if available) : 06585862+2307585

Uranus 2035-12-10T13:44:44 K13.38 G14.70 PgtRgt

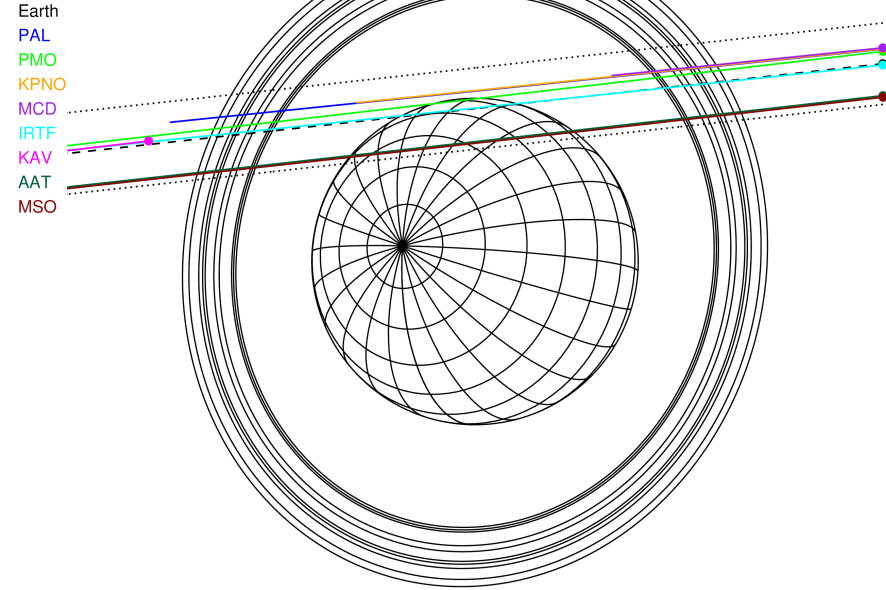
ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s

RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.377
 G magnitude : 14.698
 RP magnitude : 14.222
 BP magnitude : 15.014
 DUPflag : 0
 Distance (au) : 17.938
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.39
 Sun-Target sep (deg) : 154.28
 Sun-Moon sep (deg) : 85.74
 B (ring opening deg) : 62.94
 PA of pole (deg) : 77.84

#	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

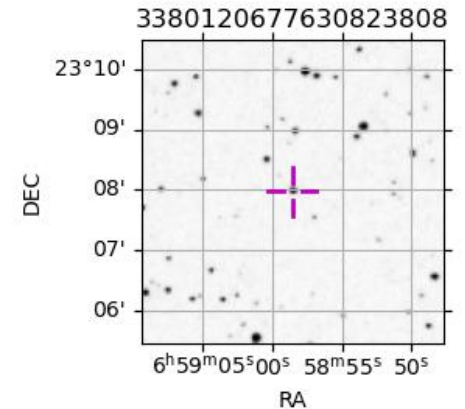


2035-12-10T13:44:44.7700 ra: 06 58 58.6145 s: +23 07 58.402 C/A 1.838° PA 186.28 deg v_sky -20.39 km/s D 17.94 AU
 Credit: Styled after SORA/Lucky Star



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	+++++		+++++	DEC 10 13:08 - DEC 10 14:11	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	DEC 10 13:15 - DEC 10 14:20	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++			DEC 10 13:07 - DEC 10 13:16	PnnRin
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++			DEC 10 13:07 - DEC 10 13:15	PnnRin
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	DEC 10 13:09 - DEC 10 14:14	PieRie
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	+++++	+ +	+++++	DEC 10 13:11 - DEC 10 14:20	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	DEC 10 13:11 - DEC 10 14:20	PieRie

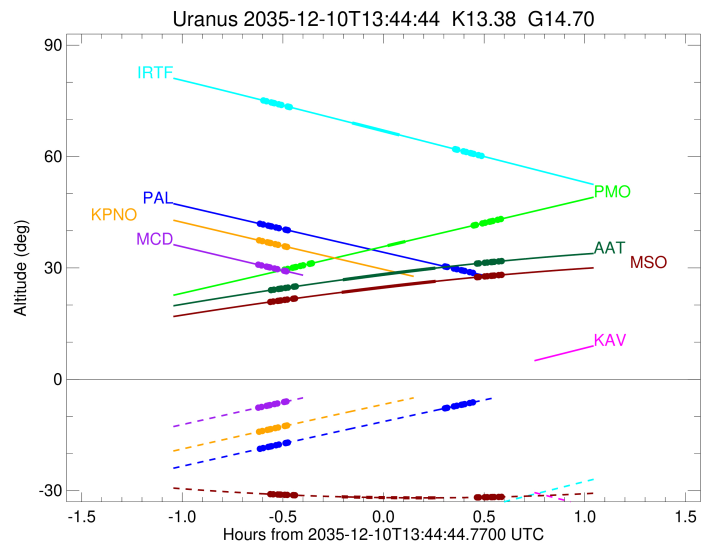
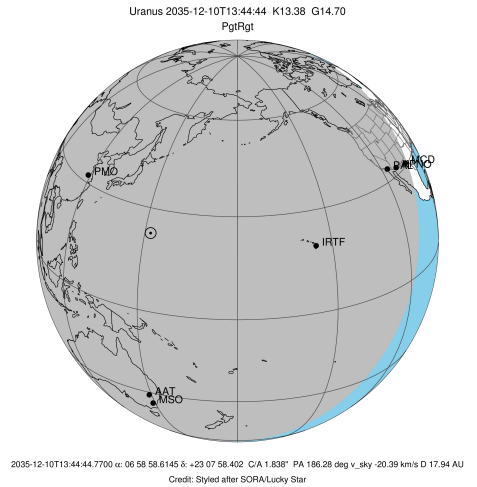


3380120677630823808

6^h59^m05^s00^s 58^m55^s 50^s

RA

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-10T13:40:57.410
 Event type : PgtRgt
 : Uranus occs: geocentric, 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 : 3380120677630823808
 2Mass ID (if available) : 06585862+2307585
 ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.377
 G magnitude : 14.698
 RP magnitude : 14.222
 BP magnitude : 15.014
 DUPflag : 0
 Distance (au) : 17.938
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.39
 Sun-Target sep (deg) : 154.28
 Sun-Moon sep (deg) : 86.32
 B (ring opening deg) : 62.94
 PA of pole (deg) : 77.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.041
 C/A sky separation (km) : 26553.5
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

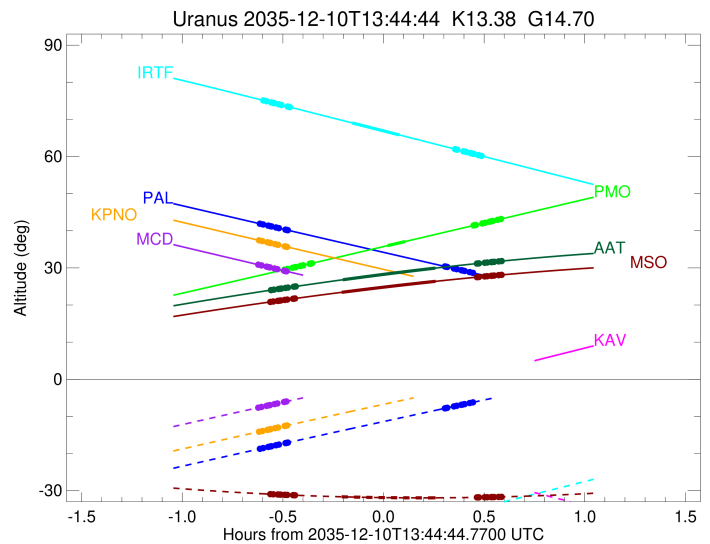
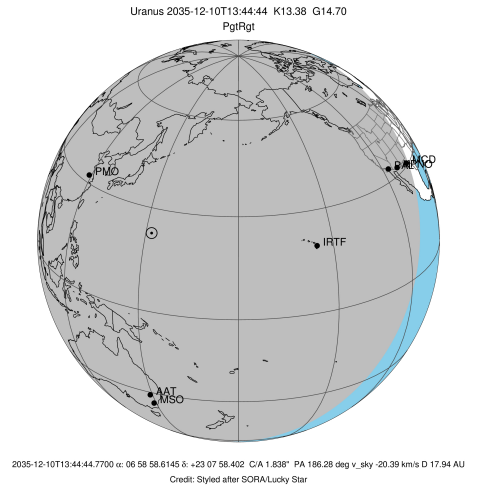
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-10T13:07:59.996		41.88	-18.71	51042.92	-19.57		
lambda	I	2035-12-10T13:08:52.368		41.69	-18.54	50026.71	-19.33		
delta	I	2035-12-10T13:10:22.357		41.38	-18.24	48300.35	-19.04		
gamma	I	2035-12-10T13:10:57.797		41.26	-18.12	47627.80	-18.92		
eta	I	2035-12-10T13:11:21.730		41.17	-18.04	47176.12	-18.83		
beta	I	2035-12-10T13:12:41.949		40.89	-17.77	45678.13	-18.53		
alpha	I	2035-12-10T13:13:35.467		40.71	-17.59	44690.61	-18.30		
4	I	2035-12-10T13:15:35.027		40.29	-17.19	42538.74	-17.75		
5	I	2035-12-10T13:15:49.389		40.24	-17.14	42292.62	-17.72		
6	I	2035-12-10T13:16:15.668		40.15	-17.05	41826.87	-17.55		

No planet occultations

6	E	2035-12-10T14:02:58.826		30.41	-7.84	41798.45	17.49		
5	E	2035-12-10T14:03:27.022		30.31	-7.75	42278.51	17.66		
4	E	2035-12-10T14:03:41.739		30.26	-7.70	42546.86	17.69		
alpha	E	2035-12-10T14:05:42.831		29.84	-7.31	44707.75	18.23		
beta	E	2035-12-10T14:06:34.816		29.66	-7.15	45666.10	18.46		
eta	E	2035-12-10T14:07:55.885		29.38	-6.89	47176.12	18.76		
gamma	E	2035-12-10T14:08:20.051		29.30	-6.81	47630.45	18.84		
delta	E	2035-12-10T14:08:55.491		29.18	-6.70	48300.35	18.96		
lambda	E	2035-12-10T14:10:25.848		28.87	-6.41	50026.71	19.25		
epsilon	E	2035-12-10T14:11:44.338		28.60	-6.16	51546.16	19.49		

```

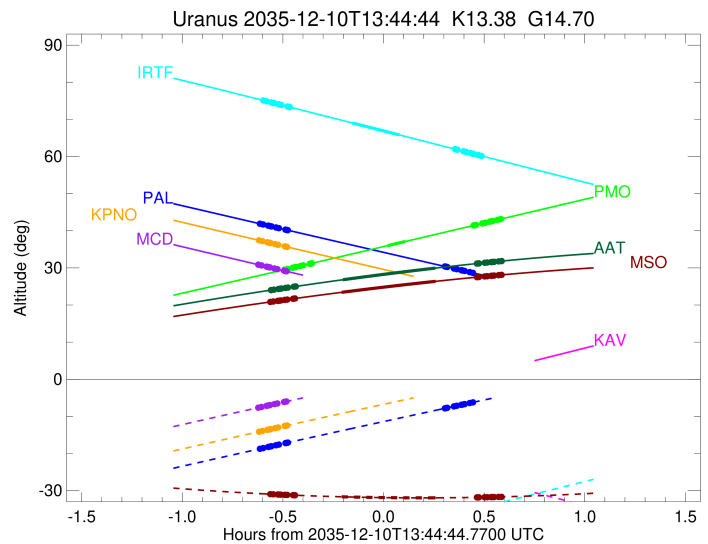
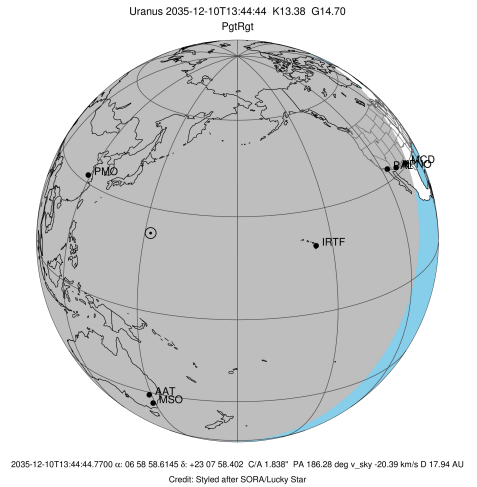
target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2035-12-10T13:48:51.330
Event type             : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : PMO
Location               : Purple Mtn Obs. Nanking
Latitude (deg)        : 32.06667
E. Longitude (deg)    : 118.82089
Altitude (km)         : 0.364
Gaia source ID        : 3380120677630823808
2Mass ID (if available) : 06585862+2307585
ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s
RUWE (>1.4 is poor)  : 0.99
K magnitude            : 13.377
G magnitude           : 14.698
RP magnitude          : 14.222
BP magnitude          : 15.014
DUPflag               : 0
Distance (au)         : 17.938
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -20.39
Sun-Target sep (deg)  : 154.28
Sun-Moon sep (deg)    : 86.25
B (ring opening deg)  : 62.94
PA of pole (deg)      : 77.84
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.944
C/A sky separation (km) : 25297.0
NAIF SPICE kernels    : RAJobs_U111+rgf15.spk
URKALLvl1.spk
ural11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ural11.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	2035-12-10T13:15:20.933		29.55	-53.16	51036.45	-19.84		
lambda	I	2035-12-10T13:16:12.234		29.73	-53.34	50026.71	-19.61		
delta	I	2035-12-10T13:17:40.808		30.04	-53.66	48300.35	-19.36		
gamma	I	2035-12-10T13:18:15.643		30.16	-53.78	47627.70	-19.26		
eta	I	2035-12-10T13:18:39.141		30.24	-53.86	47176.12	-19.18		
beta	I	2035-12-10T13:19:57.816		30.52	-54.14	45677.89	-18.92		
alpha	I	2035-12-10T13:20:50.148		30.70	-54.32	44691.05	-18.71		
4	I	2035-12-10T13:22:46.798		31.11	-54.73	42539.55	-18.24		
5	I	2035-12-10T13:23:00.906		31.16	-54.78	42291.15	-18.21		
6	I	2035-12-10T13:23:26.325		31.25	-54.87	41827.97	-18.06		
Uranus	I	2035-12-10T13:45:59.955		36.00	-59.63	25542.27		4.89	5.12
Uranus	E	2035-12-10T13:51:15.707		37.12	-60.73	25471.41		11.27	11.79
6	E	2035-12-10T14:11:33.406		41.42	-64.94	41799.36	18.13		
5	E	2035-12-10T14:12:00.390		41.51	-65.03	42275.16	18.28		
4	E	2035-12-10T14:12:14.931		41.57	-65.08	42548.75	18.31		
alpha	E	2035-12-10T14:14:12.202		41.98	-65.48	44709.24	18.79		
beta	E	2035-12-10T14:15:02.543		42.16	-65.65	45665.22	19.00		
eta	E	2035-12-10T14:16:21.439		42.44	-65.92	47176.12	19.27		
gamma	E	2035-12-10T14:16:44.964		42.52	-66.00	47630.30	19.35		
delta	E	2035-12-10T14:17:19.503		42.65	-66.12	48300.35	19.45		
lambda	E	2035-12-10T14:18:47.650		42.96	-66.42	50026.71	19.71		
epsilon	E	2035-12-10T14:20:04.144		43.23	-66.68	51542.45	19.94		

```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2035-12-10T13:40:43.480
Event type             : PgtRgt
: Uranus occs: geocentric, 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        : 3380120677630823808
2Mass ID (if available) : 06585862+2307585
ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s
RUWE (>1.4 is poor)  : 0.99
K magnitude           : 13.377
G magnitude           : 14.698
RP magnitude          : 14.222
BP magnitude          : 15.014
DUPflag              : 0
Distance (au)         : 17.938
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -20.39
Sun-Target sep (deg)  : 154.28
Sun-Moon sep (deg)    : 86.26
B (ring opening deg)  : 62.94
PA of pole (deg)      : 77.84
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.047
C/A sky separation (km) : 26625.1
NAIF SPICE kernels    : RAJobs_U111+rgf15.spk
URKALLvl1.spk
ural11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ural11.bsp
ural161.bsp
vgr2.ural161.bsp
peph.ural160.bsp
earthstns_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```

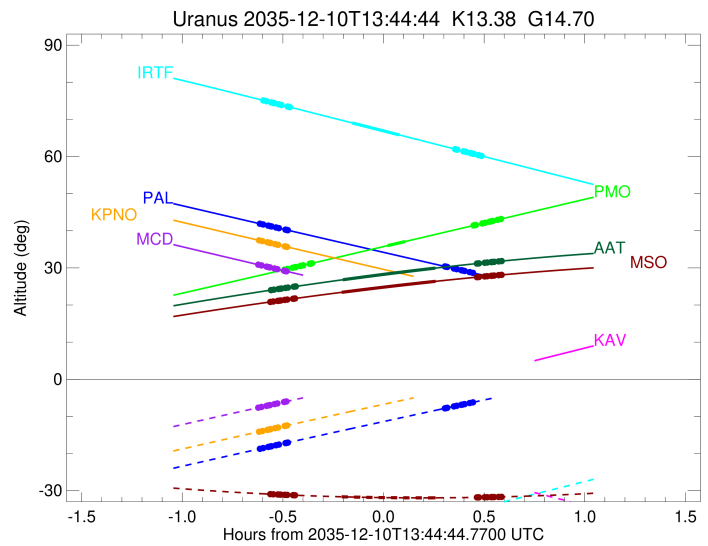
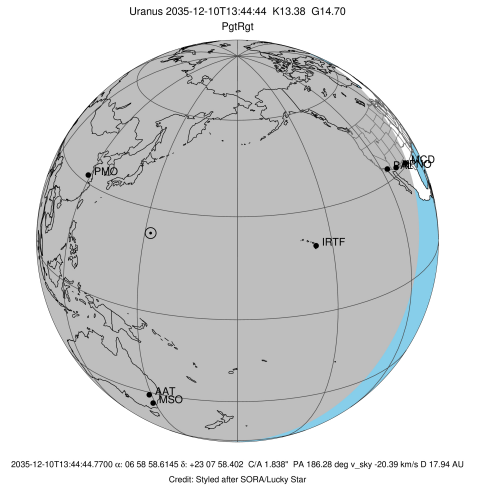


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-10T13:07:45.034		37.40	-14.11	51043.47	-19.53		
lambda	I	2035-12-10T13:08:37.559		37.21	-13.93	50026.71	-19.28		
delta	I	2035-12-10T13:10:07.771		36.89	-13.63	48300.35	-18.99		
gamma	I	2035-12-10T13:10:43.302		36.77	-13.51	47627.81	-18.87		
eta	I	2035-12-10T13:11:07.298		36.68	-13.43	47176.12	-18.78		
beta	I	2035-12-10T13:12:27.733		36.40	-13.16	45678.15	-18.48		
alpha	I	2035-12-10T13:13:21.405		36.21	-12.98	44690.57	-18.24		
4	I	2035-12-10T13:15:21.325		35.79	-12.58	42538.68	-17.70		
5	I	2035-12-10T13:15:35.722		35.74	-12.53	42292.73	-17.66		
6	I	2035-12-10T13:16:02.096		35.64	-12.45	41826.78	-17.49		

No planet occultations

6	E	2035-12-10T14:02:44.112		25.84	-3.27x	41798.41	17.43		
5	E	2035-12-10T14:03:12.417		25.74	-3.18x	42278.67	17.60		
4	E	2035-12-10T14:03:27.168		25.69	-3.13x	42546.77	17.63		
alpha	E	2035-12-10T14:05:28.651		25.27	-2.74x	44707.69	18.18		
beta	E	2035-12-10T14:06:20.801		25.09	-2.57x	45666.14	18.41		
eta	E	2035-12-10T14:07:42.108		24.80	-2.31x	47176.12	18.70		
gamma	E	2035-12-10T14:08:06.343		24.72	-2.24x	47630.45	18.79		
delta	E	2035-12-10T14:08:41.883		24.60	-2.12x	48300.35	18.91		
lambda	E	2035-12-10T14:10:12.488		24.28	-1.83x	50026.71	19.19		
epsilon	E	2035-12-10T14:11:31.195		24.01	-1.58x	51546.32	19.44		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-10T13:40:29.320
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3380120677630823808
 2Mass ID (if available) : 06585862+2307585
 ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.377
 G magnitude : 14.698
 RP magnitude : 14.222
 BP magnitude : 15.014
 DUPflag : 0
 Distance (au) : 17.938
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.39
 Sun-Target sep (deg) : 154.28
 Sun-Moon sep (deg) : 86.16
 B (ring opening deg) : 62.94
 PA of pole (deg) : 77.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.060
 C/A sky separation (km) : 26801.7
 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

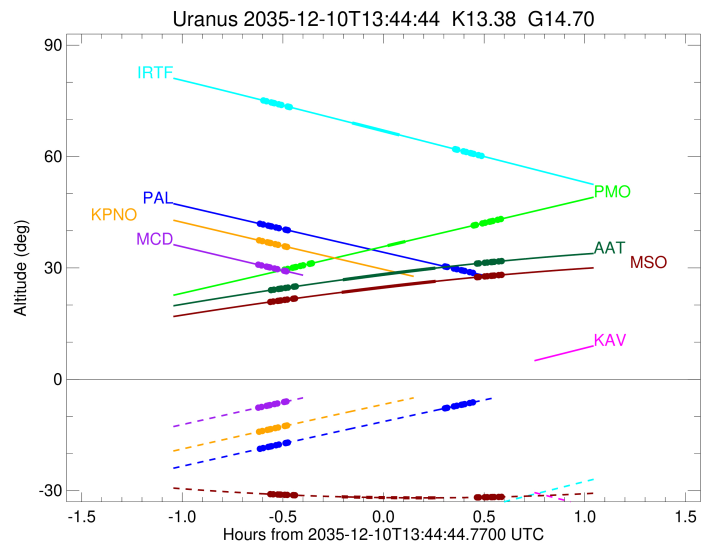
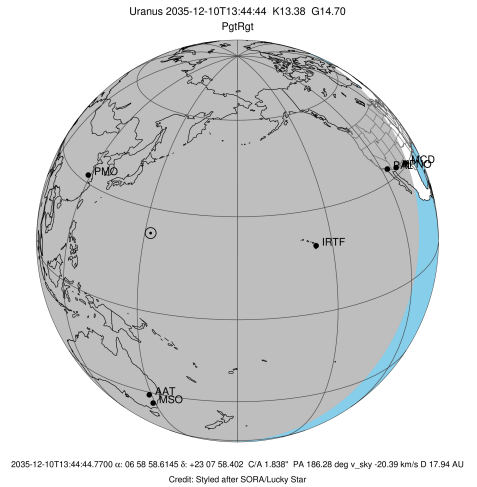


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-10T13:07:30.603		30.85	-7.63	51044.98	-19.43		
lambda	I	2035-12-10T13:08:23.461		30.66	-7.46	50026.71	-19.18		
delta	I	2035-12-10T13:09:54.132		30.34	-7.15	48300.35	-18.89		
gamma	I	2035-12-10T13:10:29.850		30.21	-7.04	47627.83	-18.77		
eta	I	2035-12-10T13:10:53.976		30.13	-6.96	47176.12	-18.68		
beta	I	2035-12-10T13:12:14.861		29.84	-6.69	45678.20	-18.37		
alpha	I	2035-12-10T13:13:08.860		29.65	-6.51	44690.48	-18.13		
4	I	2035-12-10T13:15:09.543		29.22	-6.11	42538.51	-17.58		
5	I	2035-12-10T13:15:24.010		29.17	-6.06	42293.02	-17.54		
6	I	2035-12-10T13:15:50.594		29.08	-5.98	41826.56	-17.37		

No planet occultations

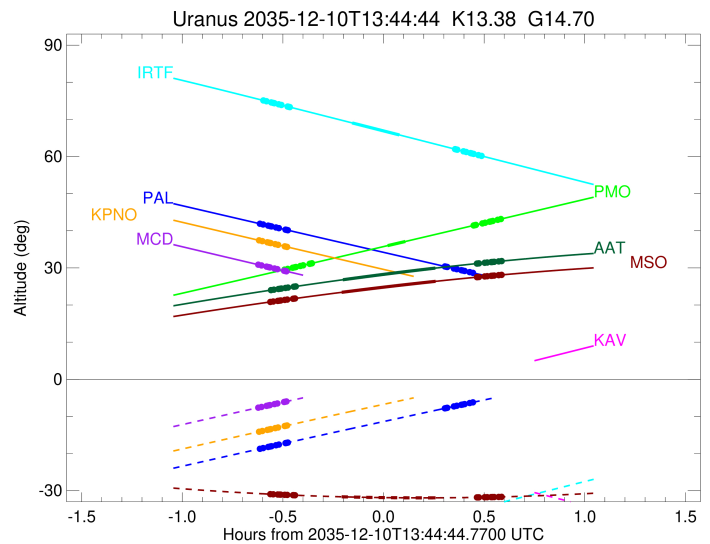
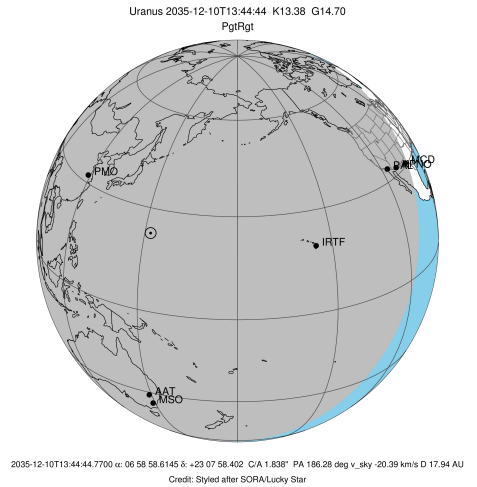
6	E	2035-12-10T14:02:26.038		19.30	3.04x	41798.32	17.31		
5	E	2035-12-10T14:02:54.571		19.20	3.13x	42279.04	17.48		
4	E	2035-12-10T14:03:09.388		19.15	3.17x	42546.56	17.51		
alpha	E	2035-12-10T14:05:11.673		18.72	3.56x	44707.52	18.06		
beta	E	2035-12-10T14:06:04.160		18.54	3.72x	45666.24	18.29		
eta	E	2035-12-10T14:07:25.939		18.26	3.98x	47176.12	18.60		
gamma	E	2035-12-10T14:07:50.314		18.18	4.05x	47630.47	18.68		
delta	E	2035-12-10T14:08:26.051		18.05	4.16x	48300.35	18.81		
lambda	E	2035-12-10T14:09:57.142		17.74	4.45x	50026.71	19.09		
epsilon	E	2035-12-10T14:11:16.269		17.47	4.69x	51546.67	19.34		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-10T13:42:38.160
 Event type : PgtRgt
 : Uranus occs: geocentric, 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 : 3380120677630823808
 2Mass ID (if available) : 06585862+2307585
 ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.377
 G magnitude : 14.698
 RP magnitude : 14.222
 BP magnitude : 15.014
 DUPflag : 0
 Distance (au) : 17.938
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.39
 Sun-Target sep (deg) : 154.28
 Sun-Moon sep (deg) : 86.64
 B (ring opening deg) : 62.94
 PA of pole (deg) : 77.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.838
 C/A sky separation (km) : 23905.8
 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



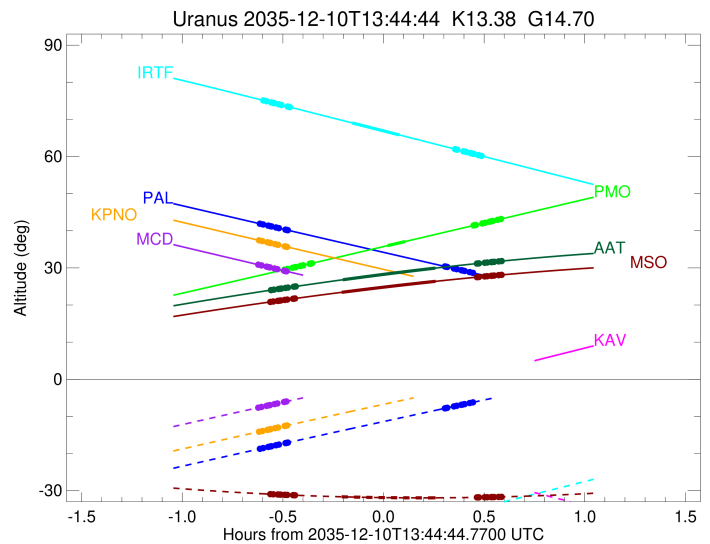
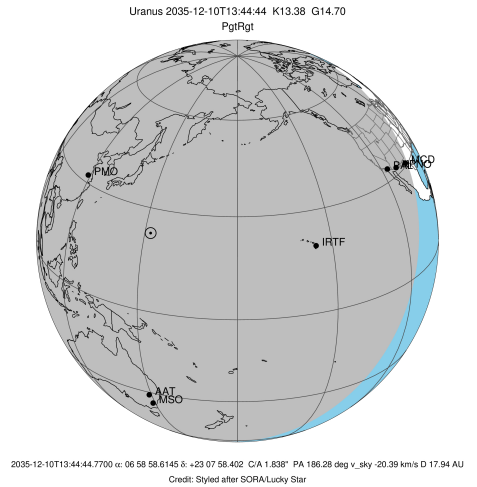
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-10T13:09:02.986		75.08	-49.38	51020.42	-20.45		
lambda	I	2035-12-10T13:09:51.923		74.90	-49.19	50026.71	-20.25		
delta	I	2035-12-10T13:11:17.665		74.57	-48.86	48300.35	-20.02		
gamma	I	2035-12-10T13:11:51.356		74.44	-48.73	47627.47	-19.92		
eta	I	2035-12-10T13:12:14.048		74.36	-48.65	47176.12	-19.86		
beta	I	2035-12-10T13:13:29.998		74.07	-48.35	45677.35	-19.62		
alpha	I	2035-12-10T13:14:20.322		73.88	-48.16	44692.04	-19.44		
4	I	2035-12-10T13:16:12.414		73.45	-47.73	42541.24	-19.02		
5	I	2035-12-10T13:16:26.196		73.40	-47.68	42288.14	-19.00		
6	I	2035-12-10T13:16:50.296		73.31	-47.59	41830.14	-18.87		
Uranus	I	2035-12-10T13:35:23.324		69.06	-43.34	25558.04		-1.18	-1.23
Uranus	E	2035-12-10T13:49:28.566		65.82	-40.12	25382.18		16.17	16.89
6	E	2035-12-10T14:06:01.497		62.00	-36.34	41800.01	18.83		
5	E	2035-12-10T14:06:27.331		61.91	-36.24	42272.93	18.97		
4	E	2035-12-10T14:06:41.555		61.85	-36.19	42549.99	18.99		
alpha	E	2035-12-10T14:08:34.887		61.42	-35.76	44710.17	19.41		
beta	E	2035-12-10T14:09:23.600		61.23	-35.57	45664.68	19.59		
eta	E	2035-12-10T14:10:40.247		60.93	-35.28	47176.12	19.82		
gamma	E	2035-12-10T14:11:03.121		60.85	-35.20	47630.22	19.89		
delta	E	2035-12-10T14:11:36.740		60.72	-35.07	48300.35	19.98		
lambda	E	2035-12-10T14:13:02.654		60.39	-34.74	50026.71	20.20		
epsilon	E	2035-12-10T14:14:17.231		60.10	-34.46	51540.14	20.40		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-10T13:46:34.220
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 3380120677630823808
 2Mass ID (if available) : 06585862+2307585
 ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.377
 G magnitude : 14.698
 RP magnitude : 14.222
 BP magnitude : 15.014
 DUPflag : 0
 Distance (au) : 17.938
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.39
 Sun-Target sep (deg) : 154.28
 Sun-Moon sep (deg) : 86.16
 B (ring opening deg) : 62.94
 PA of pole (deg) : 77.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.433
 C/A sky separation (km) : 18644.5
 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	2035-12-10T13:11:20.727		24.03	-34.91	50979.91	-21.43		
lambda	I	2035-12-10T13:12:05.397		24.14	-34.94	50026.71	-21.31		
delta	I	2035-12-10T13:13:26.661		24.32	-35.01	48300.35	-21.18		
gamma	I	2035-12-10T13:13:58.502		24.39	-35.03	47626.85	-21.13		
eta	I	2035-12-10T13:14:19.857		24.44	-35.05	47176.12	-21.09		
beta	I	2035-12-10T13:15:31.246		24.60	-35.10	45675.75	-20.96		
alpha	I	2035-12-10T13:16:18.017		24.70	-35.13	44694.97	-20.85		
4	I	2035-12-10T13:18:02.003		24.94	-35.20	42546.20	-20.62		
5	I	2035-12-10T13:18:15.376		24.97	-35.21	42279.28	-20.62		
6	I	2035-12-10T13:18:36.901		25.01	-35.22	41836.12	-20.54		
Uranus	I	2035-12-10T13:32:37.014		26.81	-35.68	25478.06		-10.83	-11.33
Uranus	E	2035-12-10T14:00:11.343		29.94	-35.97	25203.25		23.40	24.38
6	E	2035-12-10T14:12:32.851		31.16	-35.84	41803.61	20.59		
5	E	2035-12-10T14:12:55.752		31.20	-35.83	42261.75	20.67		
4	E	2035-12-10T14:13:09.772		31.22	-35.83	42556.27	20.68		
alpha	E	2035-12-10T14:14:54.396		31.38	-35.79	44714.91	20.91		
beta	E	2035-12-10T14:15:39.327		31.45	-35.78	45661.92	21.02		
eta	E	2035-12-10T14:16:51.092		31.56	-35.75	47176.12	21.15		
gamma	E	2035-12-10T14:17:12.519		31.59	-35.75	47629.71	21.19		
delta	E	2035-12-10T14:17:44.127		31.64	-35.73	48300.35	21.24		
lambda	E	2035-12-10T14:19:05.136		31.76	-35.70	50026.71	21.38		
epsilon	E	2035-12-10T14:20:15.018		31.86	-35.67	51524.06	21.50		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-12-10T13:46:26.950
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 3380120677630823808
 2Mass ID (if available) : 06585862+2307585
 ICRS Star Coord at Epoch: 06h 58m 58.61454s +23:07:58.40181s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.377
 G magnitude : 14.698
 RP magnitude : 14.222
 BP magnitude : 15.014
 DUPflag : 0
 Distance (au) : 17.938
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.39
 Sun-Target sep (deg) : 154.28
 Sun-Moon sep (deg) : 86.11
 B (ring opening deg) : 62.94
 PA of pole (deg) : 77.84
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.414
 C/A sky separation (km) : 18399.8
 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	2035-12-10T13:11:08.469		20.85	-30.95	50977.97	-21.46		
lambda	I	2035-12-10T13:11:52.986		20.94	-30.99	50026.71	-21.34		
delta	I	2035-12-10T13:13:14.128		21.11	-31.04	48300.35	-21.21		
gamma	I	2035-12-10T13:13:45.917		21.18	-31.06	47626.82	-21.16		
eta	I	2035-12-10T13:14:07.234		21.23	-31.08	47176.12	-21.12		
beta	I	2035-12-10T13:15:18.496		21.38	-31.13	45675.66	-21.00		
alpha	I	2035-12-10T13:16:05.160		21.47	-31.16	44695.13	-20.90		
4	I	2035-12-10T13:17:48.912		21.69	-31.22	42546.45	-20.67		
5	I	2035-12-10T13:18:02.285		21.72	-31.23	42278.84	-20.67		
6	I	2035-12-10T13:18:23.725		21.76	-31.24	41836.40	-20.59		
Uranus	I	2035-12-10T13:32:16.928		23.42	-31.66	25473.07		-11.16	-11.68
Uranus	E	2035-12-10T14:00:17.122		26.38	-31.94	25197.85		23.59	24.58
6	E	2035-12-10T14:12:32.971		27.50	-31.82	41803.78	20.64		
5	E	2035-12-10T14:12:55.782		27.53	-31.81	42261.25	20.72		
4	E	2035-12-10T14:13:09.810		27.55	-31.81	42556.55	20.72		
alpha	E	2035-12-10T14:14:54.206		27.70	-31.78	44715.12	20.95		
beta	E	2035-12-10T14:15:39.035		27.76	-31.77	45661.80	21.06		
eta	E	2035-12-10T14:16:50.681		27.86	-31.75	47176.12	21.19		
gamma	E	2035-12-10T14:17:12.072		27.89	-31.74	47629.69	21.22		
delta	E	2035-12-10T14:17:43.632		27.94	-31.73	48300.35	21.28		
lambda	E	2035-12-10T14:19:04.526		28.05	-31.70	50026.71	21.40		
epsilon	E	2035-12-10T14:20:14.283		28.14	-31.67	51523.26	21.53		