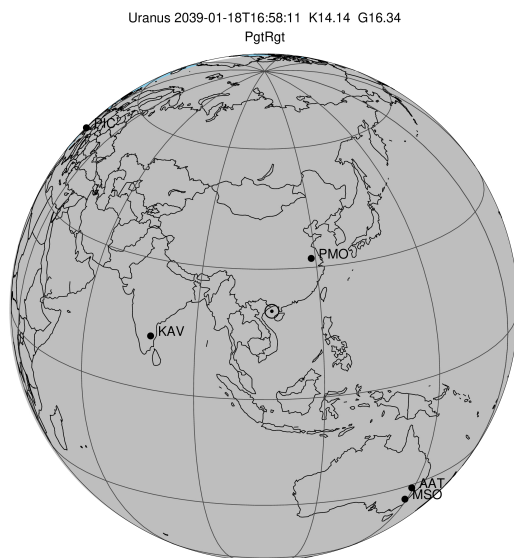


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2039-01-18T16:58:11.370  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 673771143431601920  
 2Mass ID (if available) : 07525762+2127449

ICRS Star Coord at Epoch: 07h 52m 57.61141s +21:27:44.95736s

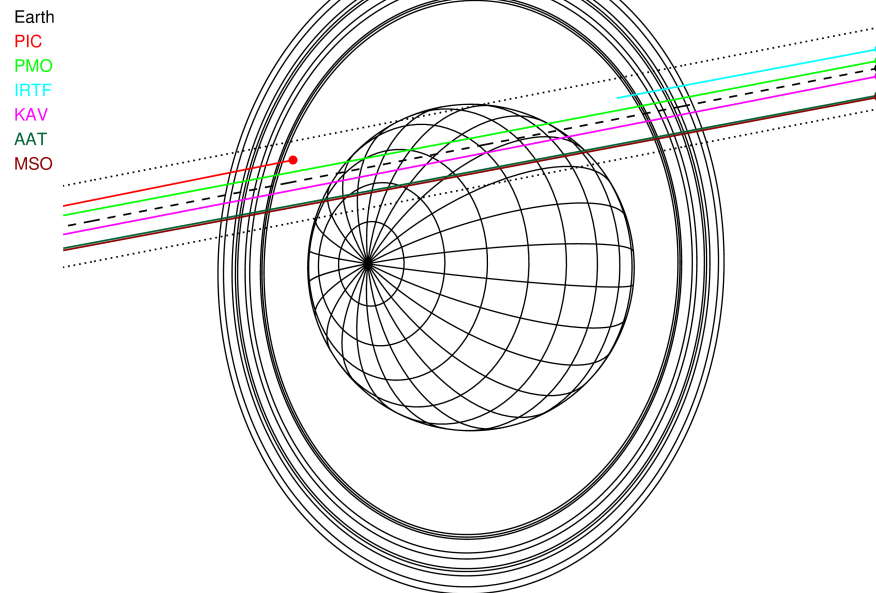
RUWE (>1.4 is poor) : 1.06  
 K magnitude : 14.140  
 G magnitude : 16.344  
 RP magnitude : 15.649  
 BP magnitude : 16.902  
 DUPflag : 0  
 Distance (au) : 17.661  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.25  
 Sun-Target sep (deg) : 178.14  
 Sun-Moon sep (deg) : 103.87  
 B (ring opening deg) : 50.75  
 PA of pole (deg) : 87.90

#	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



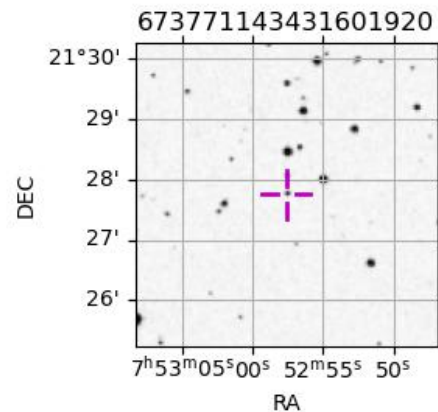
2039-01-18T16:58:11.3700 ra: 07 52 57.6114 s: +21 27 44.957 C/A 1.450° PA 191.00 deg v\_sky -23.25 km/s D 17.66 AU  
 Credit: Styled after SORA/Lucky Star

Uranus 2039-01-18T16:58:11 K14.14 G16.34 PgtRgt

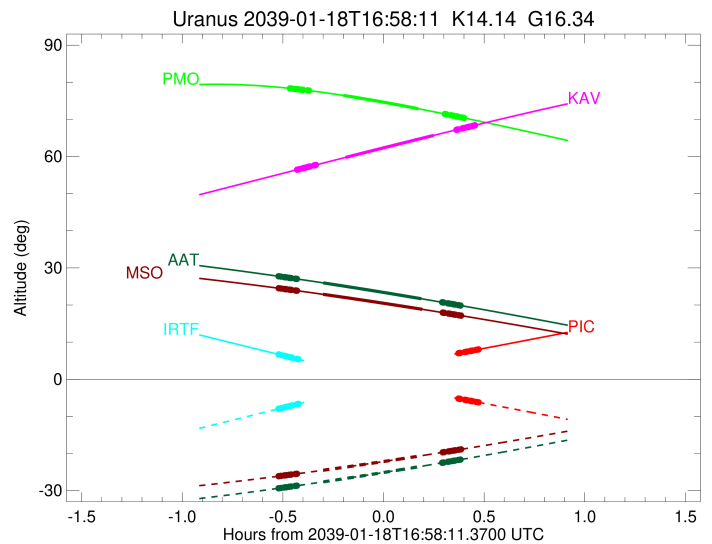
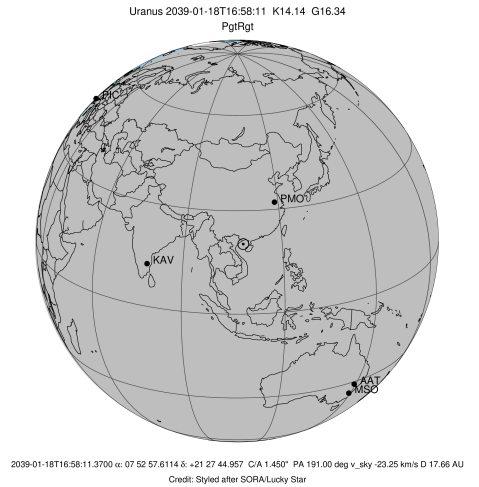


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			+++++	JAN 18 17:20 - JAN 18 17:26	PnnRne
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	JAN 18 16:30 - JAN 18 17:22	PieRie
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	+++++			JAN 18 16:27 - JAN 18 16:32	PnnRin
KAV	Kavalur Observatory	12.6	78.8	+++++	+ +	+++++	JAN 18 16:32 - JAN 18 17:25	PieRie
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	+++++	+ +	+++++	JAN 18 16:27 - JAN 18 17:21	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	JAN 18 16:27 - JAN 18 17:21	PieRie



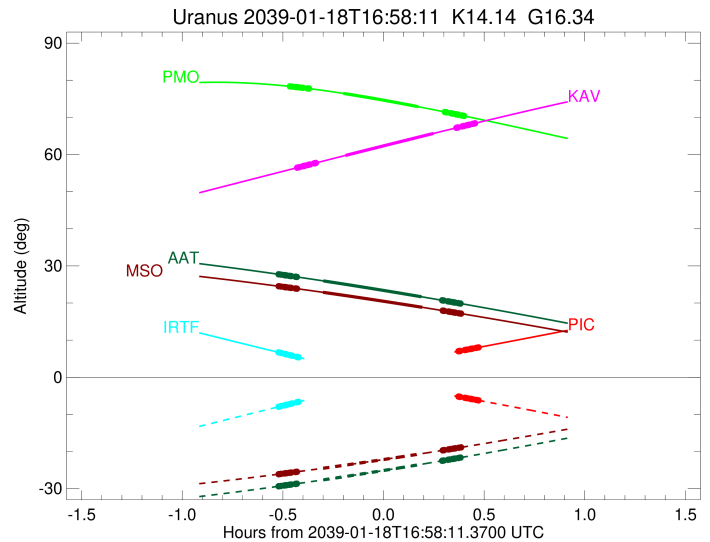
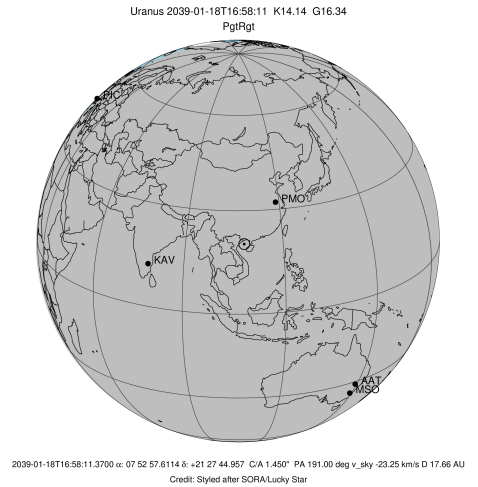
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2039-01-18T17:02:04.750  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PIC  
 Location : Pic du Midi  
 Latitude (deg) : 42.93656  
 E. Longitude (deg) : 0.14231  
 Altitude (km) : 2.890  
 Gaia source ID : 673771143431601920  
 2Mass ID (if available) : 07525762+2127449  
 ICRS Star Coord at Epoch: 07h 52m 57.61141s +21:27:44.95736s  
 RUWE (>1.4 is poor) : 1.06  
 K magnitude : 14.140  
 G magnitude : 16.344  
 RP magnitude : 15.649  
 BP magnitude : 16.902  
 DUPflag : 0  
 Distance (au) : 17.661  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.25  
 Sun-Target sep (deg) : 178.14  
 Sun-Moon sep (deg) : 103.74  
 B (ring opening deg) : 50.75  
 PA of pole (deg) : 87.90  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.716  
 C/A sky separation (km) : 21978.6  
 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\_itrff93\_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	2039-01-18T16:34:53.104	-0.51x	2.25x	50828.64	-26.52			
lambda	I	2039-01-18T16:35:23.324	-0.43x	2.17x	50026.71	-26.49			
delta	I	2039-01-18T16:36:28.794	-0.25x	2.00x	48300.35	-26.25			
gamma	I	2039-01-18T16:36:54.532	-0.18x	1.93x	47626.05	-26.15			
eta	I	2039-01-18T16:37:11.762	-0.14x	1.89x	47176.12	-26.08			
beta	I	2039-01-18T16:38:10.941	0.02x	1.73x	45641.11	-25.82			
alpha	I	2039-01-18T16:38:47.789	0.12x	1.63x	44684.64	-25.64			
4	I	2039-01-18T16:40:09.974	0.34x	1.42x	42594.47	-25.21			
5	I	2039-01-18T16:40:26.725	0.38x	1.37x	42161.76	-25.11			
6	I	2039-01-18T16:40:42.224	0.42x	1.33x	41797.62	-25.04			
Uranus	I	2039-01-18T16:52:44.627	2.38x	-0.60x	25528.04	-10.75	-11.25		
Uranus	E	2039-01-18T17:11:12.899	5.44	-3.64x	25391.59	25.81	26.86		
6	E	2039-01-18T17:20:34.513	7.02	-5.21	41868.28	25.10			
5	E	2039-01-18T17:20:47.796	7.06	-5.25	42238.08	25.17			
4	E	2039-01-18T17:20:59.190	7.09	-5.28	42526.04	25.27			
alpha	E	2039-01-18T17:22:26.478	7.34	-5.53	44734.51	25.71			
beta	E	2039-01-18T17:23:02.348	7.44	-5.63	45670.41	25.89			
eta	E	2039-01-18T17:24:00.316	7.60	-5.79	47176.12	26.15			
gamma	E	2039-01-18T17:24:17.343	7.65	-5.84	47622.01	26.22			
delta	E	2039-01-18T17:24:43.161	7.73	-5.91	48300.35	26.32			
lambda	E	2039-01-18T17:25:48.437	7.91	-6.10	50026.71	26.57			
epsilon	E	2039-01-18T17:26:30.511	8.03	-6.22	51147.48	26.61			

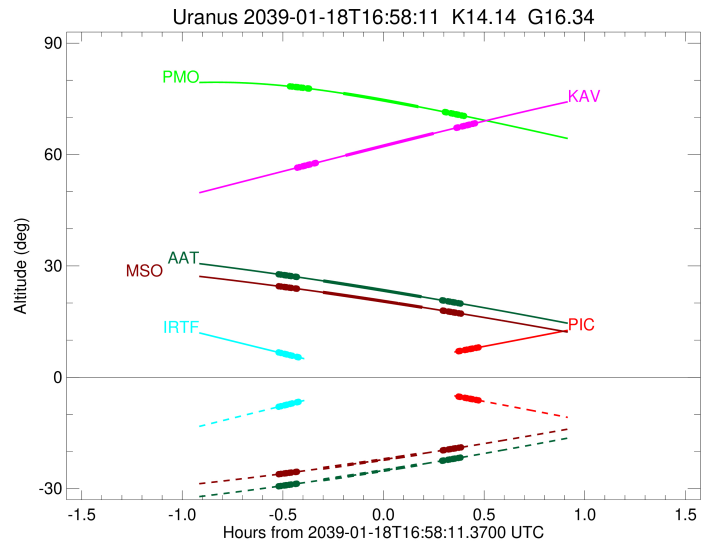
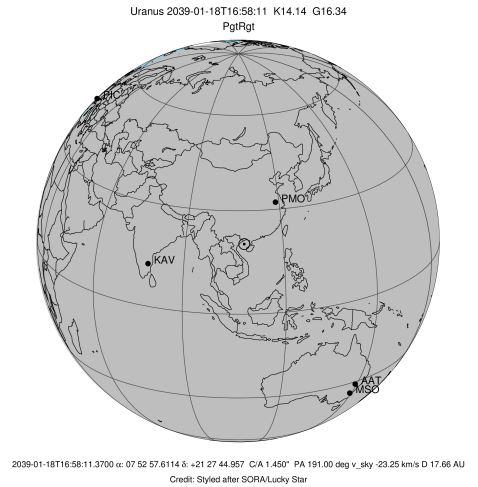
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2039-01-18T16:57:28.830
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       : 673771143431601920
2Mass ID (if available) : 07525762+2127449
ICRS Star Coord at Epoch: 07h 52m 57.61141s +21:27:44.95736s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 14.140
G magnitude           : 16.344
RP magnitude          : 15.649
BP magnitude          : 16.902
DUPflag              : 0
Distance (au)         : 17.661
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.25
Sun-Target sep (deg) : 178.14
Sun-Moon sep (deg)   : 104.83
B (ring opening deg) : 50.75
PA of pole (deg)     : 87.90
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.552
C/A sky separation (km) : 19880.4
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_itrfr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



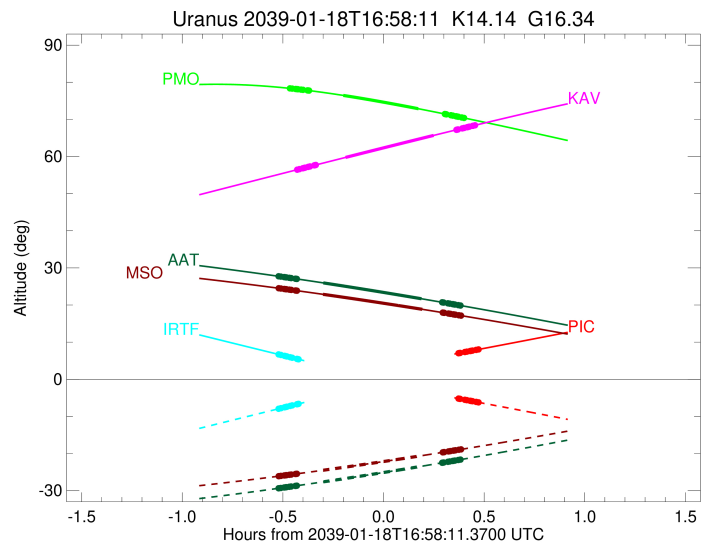
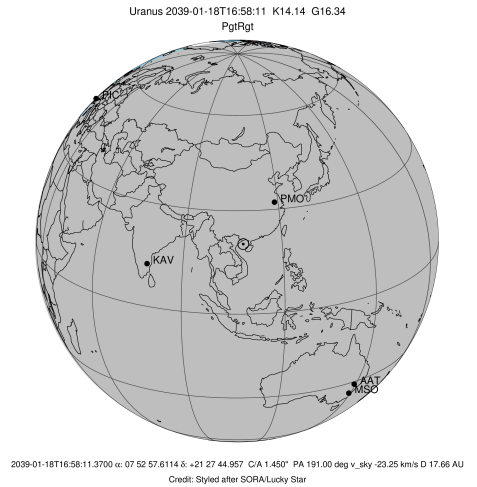
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2039-01-18T16:30:29.127		78.34	-78.07	50842.52	-27.69		
lambda	I	2039-01-18T16:30:58.566		78.30	-78.03	50026.71	-27.67		
delta	I	2039-01-18T16:32:01.178		78.19	-77.96	48300.35	-27.47		
gamma	I	2039-01-18T16:32:25.747		78.15	-77.93	47626.35	-27.39		
eta	I	2039-01-18T16:32:42.201		78.12	-77.91	47176.12	-27.33		
beta	I	2039-01-18T16:33:38.605		78.03	-77.84	45641.23	-27.13		
alpha	I	2039-01-18T16:34:13.633		77.96	-77.80	44684.78	-26.98		
4	I	2039-01-18T16:35:31.564		77.82	-77.69	42596.98	-26.62		
5	I	2039-01-18T16:35:47.417		77.79	-77.67	42164.09	-26.54		
6	I	2039-01-18T16:36:02.134		77.76	-77.65	41796.68	-26.49		
Uranus	I	2039-01-18T16:46:13.656		76.46	-76.61	25491.15		-16.04	-16.76
Uranus	E	2039-01-18T17:08:34.235		72.88	-73.45	25345.01		29.53	30.68
6	E	2039-01-18T17:16:30.814		71.45	-72.13	41869.72	26.46		
5	E	2039-01-18T17:16:43.596		71.41	-72.09	42242.13	26.52		
4	E	2039-01-18T17:16:54.230		71.38	-72.06	42525.94	26.60		
alpha	E	2039-01-18T17:18:17.383		71.13	-71.82	44735.88	26.95		
beta	E	2039-01-18T17:18:51.595		71.02	-71.72	45671.20	27.10		
eta	E	2039-01-18T17:19:47.020		70.85	-71.56	47176.12	27.31		
gamma	E	2039-01-18T17:20:03.337		70.80	-71.51	47622.15	27.36		
delta	E	2039-01-18T17:20:28.085		70.72	-71.44	48300.35	27.45		
lambda	E	2039-01-18T17:21:30.760		70.52	-71.25	50026.71	27.64		
epsilon	E	2039-01-18T17:22:11.779		70.40	-71.13	51162.87	27.66		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2039-01-18T16:54:13.180  
 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 : 673771143431601920  
 2Mass ID (if available) : 07525762+2127449  
 ICRS Star Coord at Epoch: 07h 52m 57.61141s +21:27:44.95736s  
 RUWE (>1.4 is poor) : 1.06  
 K magnitude : 14.140  
 G magnitude : 16.344  
 RP magnitude : 15.649  
 BP magnitude : 16.902  
 DUPflag : 0  
 Distance (au) : 17.661  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.25  
 Sun-Target sep (deg) : 178.14  
 Sun-Moon sep (deg) : 104.08  
 B (ring opening deg) : 50.75  
 PA of pole (deg) : 87.90  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.707  
 C/A sky separation (km) : 21861.4  
 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	2039-01-18T16:27:07.134		6.65	-7.90	50831.83	-26.67		
lambda	I	2039-01-18T16:27:37.308		6.54	-7.79	50026.71	-26.63		
delta	I	2039-01-18T16:28:42.420		6.30	-7.55	48300.35	-26.39		
gamma	I	2039-01-18T16:29:08.014		6.21	-7.46	47626.11	-26.29		
eta	I	2039-01-18T16:29:25.152		6.14	-7.39	47176.12	-26.22		
beta	I	2039-01-18T16:30:24.008		5.93	-7.17	45641.13	-25.97		
alpha	I	2039-01-18T16:31:00.648		5.79	-7.04	44684.66	-25.79		
4	I	2039-01-18T16:32:22.364		5.49	-6.74	42594.99	-25.35		
5	I	2039-01-18T16:32:39.021		5.43	-6.67	42162.20	-25.25		
6	I	2039-01-18T16:32:54.446		5.37	-6.62	41797.42	-25.18		
Uranus	I	2039-01-18T16:44:44.712		2.77x	-4.00x	25523.72		-11.48	-12.01
Uranus	E	2039-01-18T17:03:31.033		-1.33x	0.13x	25392.54		25.73	26.78
6	E	2039-01-18T17:12:52.084		-3.35x	2.16x	41868.13	25.10		
5	E	2039-01-18T17:13:05.351		-3.39x	2.21x	42237.67	25.16		
4	E	2039-01-18T17:13:16.768		-3.44x	2.25x	42526.05	25.26		
alpha	E	2039-01-18T17:14:44.096		-3.75x	2.57x	44734.35	25.69		
beta	E	2039-01-18T17:15:20.002		-3.88x	2.70x	45670.31	25.87		
eta	E	2039-01-18T17:16:18.041		-4.09x	2.91x	47176.12	26.12		
gamma	E	2039-01-18T17:16:35.090		-4.15x	2.97x	47621.99	26.19		
delta	E	2039-01-18T17:17:00.946		-4.24x	3.06x	48300.35	26.29		
lambda	E	2039-01-18T17:18:06.329		-4.47x	3.30x	50026.71	26.52		
epsilon	E	2039-01-18T17:18:48.390		-4.62x	3.45x	51145.01	26.55		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2039-01-18T17:00:04.240  
 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 : 673771143431601920  
 2Mass ID (if available) : 07525762+2127449  
 ICRS Star Coord at Epoch: 07h 52m 57.61141s +21:27:44.95736s  
 RUWE (>1.4 is poor) : 1.06  
 K magnitude : 14.140  
 G magnitude : 16.344  
 RP magnitude : 15.649  
 BP magnitude : 16.902  
 DUPflag : 0  
 Distance (au) : 17.661  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.25  
 Sun-Target sep (deg) : 178.14  
 Sun-Moon sep (deg) : 104.61  
 B (ring opening deg) : 50.75  
 PA of pole (deg) : 87.90  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.343  
 C/A sky separation (km) : 17196.7  
 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

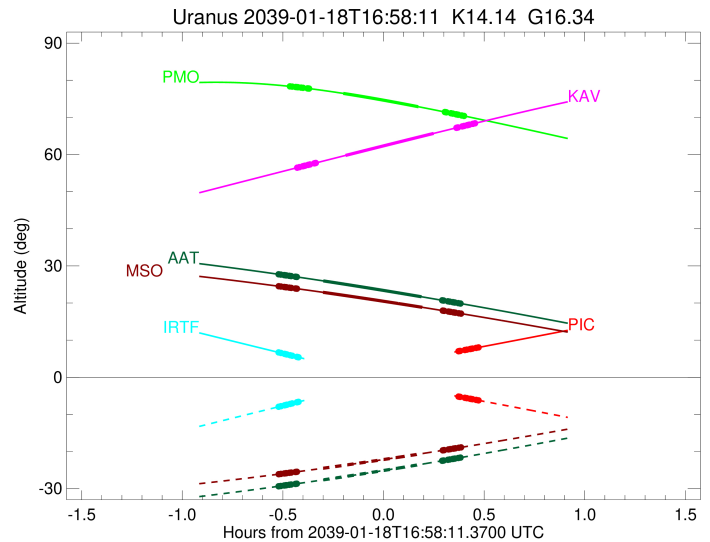
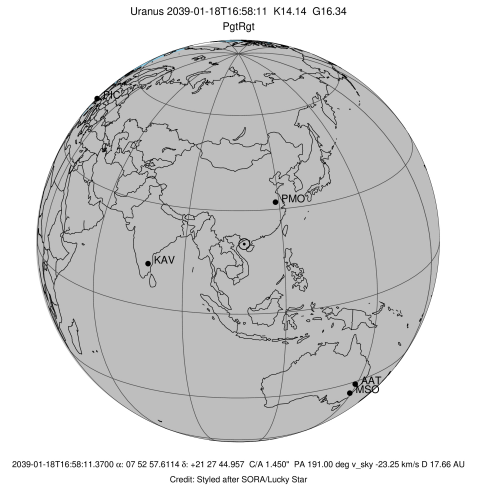


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2039-01-18T16:32:38.391		56.50	-55.04	50857.19	-28.33		
lambda	I	2039-01-18T16:33:07.679		56.61	-55.15	50026.71	-28.32		
delta	I	2039-01-18T16:34:08.780		56.84	-55.39	48300.35	-28.18		
gamma	I	2039-01-18T16:34:32.709		56.94	-55.48	47626.66	-28.12		
eta	I	2039-01-18T16:34:48.741		57.00	-55.54	47176.12	-28.08		
beta	I	2039-01-18T16:35:43.581		57.21	-55.75	45641.43	-27.93		
alpha	I	2039-01-18T16:36:17.546		57.34	-55.88	44685.06	-27.82		
4	I	2039-01-18T16:37:32.931		57.63	-56.17	42599.44	-27.57		
5	I	2039-01-18T16:37:48.222		57.68	-56.23	42166.80	-27.50		
6	I	2039-01-18T16:38:02.461		57.74	-56.29	41795.90	-27.47		
Uranus	I	2039-01-18T16:46:51.666		59.76	-58.33	25445.87		-20.94	-21.83
Uranus	E	2039-01-18T17:13:07.771		65.69	-64.35	25294.07		33.32	34.54
6	E	2039-01-18T17:19:57.750		67.20	-65.90	41871.70	27.51		
5	E	2039-01-18T17:20:10.327		67.25	-65.95	42248.07	27.54		
4	E	2039-01-18T17:20:20.313		67.29	-65.98	42526.00	27.61		
alpha	E	2039-01-18T17:21:40.652		67.58	-66.29	44737.87	27.86		
beta	E	2039-01-18T17:22:13.723		67.70	-66.41	45672.36	27.97		
eta	E	2039-01-18T17:23:07.437		67.90	-66.61	47176.12	28.13		
gamma	E	2039-01-18T17:23:23.291		67.96	-66.67	47622.37	28.17		
delta	E	2039-01-18T17:23:47.334		68.04	-66.76	48300.35	28.23		
lambda	E	2039-01-18T17:24:48.332		68.27	-66.99	50026.71	28.37		
epsilon	E	2039-01-18T17:25:29.172		68.41	-67.14	51187.25	28.38		



```

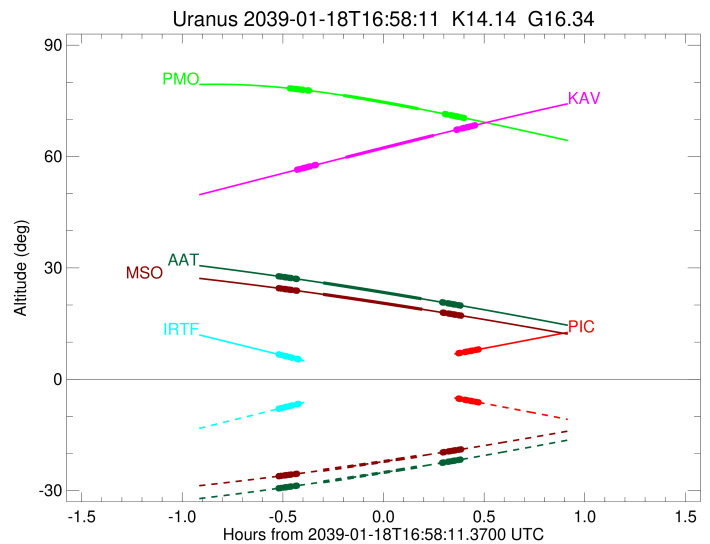
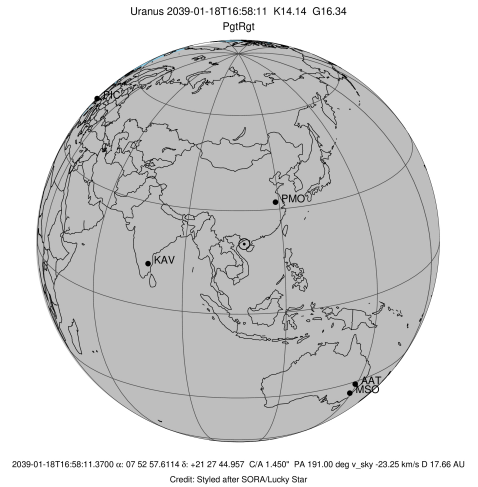
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2039-01-18T16:54:55.360
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : AAT
Location              : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 673771143431601920
2Mass ID (if available) : 07525762+2127449
ICRS Star Coord at Epoch: 07h 52m 57.61141s +21:27:44.95736s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 14.140
G magnitude           : 16.344
RP magnitude          : 15.649
BP magnitude          : 16.902
DUPflag              : 0
Distance (au)        : 17.661
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.25
Sun-Target sep (deg) : 178.14
Sun-Moon sep (deg)   : 104.41
B (ring opening deg) : 50.75
PA of pole (deg)     : 87.90
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.149
C/A sky separation (km) : 14718.8
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	2039-01-18T16:27:05.000		27.72	-29.35	50873.71	-28.75		
lambda	I	2039-01-18T16:27:34.435		27.66	-29.28	50026.71	-28.75		
delta	I	2039-01-18T16:28:34.584		27.53	-29.16	48300.35	-28.65		
gamma	I	2039-01-18T16:28:58.106		27.48	-29.11	47626.99	-28.60		
eta	I	2039-01-18T16:29:13.877		27.44	-29.07	47176.12	-28.57		
beta	I	2039-01-18T16:30:07.727		27.32	-28.96	45641.72	-28.47		
alpha	I	2039-01-18T16:30:41.011		27.25	-28.89	44685.49	-28.38		
4	I	2039-01-18T16:31:54.787		27.09	-28.73	42601.81	-28.20		
5	I	2039-01-18T16:32:09.707		27.05	-28.70	42169.89	-28.15		
6	I	2039-01-18T16:32:23.643		27.02	-28.67	41795.32	-28.13		
Uranus	I	2039-01-18T16:40:15.708		25.96	-27.63	25401.47		-24.97	-26.00
Uranus	E	2039-01-18T17:09:28.377		21.69	-23.44	25261.33		35.65	36.90
6	E	2039-01-18T17:15:42.276		20.72	-22.49	41873.14	28.06		
5	E	2039-01-18T17:15:54.838		20.69	-22.46	42252.78	28.09		
4	E	2039-01-18T17:16:04.441		20.67	-22.43	42526.23	28.13		
alpha	E	2039-01-18T17:17:23.423		20.46	-22.23	44739.38	28.31		
beta	E	2039-01-18T17:17:55.956		20.37	-22.15	45673.24	28.39		
eta	E	2039-01-18T17:18:48.892		20.24	-22.01	47176.12	28.50		
gamma	E	2039-01-18T17:19:04.550		20.19	-21.97	47622.56	28.53		
delta	E	2039-01-18T17:19:28.291		20.13	-21.91	48300.35	28.57		
lambda	E	2039-01-18T17:20:28.608		19.97	-21.75	50026.71	28.67		
epsilon	E	2039-01-18T17:21:09.705		19.86	-21.64	51206.30	28.66		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2039-01-18T16:55:00.320
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       : 673771143431601920
2Mass ID (if available) : 07525762+2127449
ICRS Star Coord at Epoch: 07h 52m 57.61141s +21:27:44.95736s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 14.140
G magnitude           : 16.344
RP magnitude          : 15.649
BP magnitude          : 16.902
DUPflag              : 0
Distance (au)         : 17.661
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -23.25
Sun-Target sep (deg) : 178.14
Sun-Moon sep (deg)   : 104.36
B (ring opening deg) : 50.75
PA of pole (deg)     : 87.90
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.125
C/A sky separation (km) : 14408.7
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	2039-01-18T16:27:06.890		24.50	-26.09	50875.56	-28.79		
lambda	I	2039-01-18T16:27:36.348		24.44	-26.03	50026.71	-28.79		
delta	I	2039-01-18T16:28:36.409		24.32	-25.91	48300.35	-28.69		
gamma	I	2039-01-18T16:28:59.892		24.28	-25.87	47627.02	-28.65		
eta	I	2039-01-18T16:29:15.637		24.24	-25.83	47176.12	-28.62		
beta	I	2039-01-18T16:30:09.391		24.13	-25.73	45641.76	-28.52		
alpha	I	2039-01-18T16:30:42.609		24.07	-25.66	44685.54	-28.44		
4	I	2039-01-18T16:31:56.225		23.92	-25.52	42602.06	-28.27		
5	I	2039-01-18T16:32:11.107		23.89	-25.49	42170.25	-28.22		
6	I	2039-01-18T16:32:25.013		23.86	-25.46	41795.26	-28.20		
Uranus	I	2039-01-18T16:40:11.238		22.88	-24.51	25396.41		-25.40	-26.44
Uranus	E	2039-01-18T17:09:42.897		18.85	-20.56	25257.63		35.91	37.17
6	E	2039-01-18T17:15:52.880		17.95	-19.68	41873.33	28.13		
5	E	2039-01-18T17:16:05.444		17.92	-19.65	42253.42	28.15		
4	E	2039-01-18T17:16:14.997		17.90	-19.63	42526.27	28.20		
alpha	E	2039-01-18T17:17:33.806		17.70	-19.44	44739.59	28.37		
beta	E	2039-01-18T17:18:06.268		17.62	-19.36	45673.36	28.45		
eta	E	2039-01-18T17:18:59.101		17.49	-19.23	47176.12	28.55		
gamma	E	2039-01-18T17:19:14.732		17.45	-19.19	47622.59	28.58		
delta	E	2039-01-18T17:19:38.431		17.39	-19.13	48300.35	28.62		
lambda	E	2039-01-18T17:20:38.652		17.25	-18.99	50026.71	28.71		
epsilon	E	2039-01-18T17:21:19.781		17.14	-18.88	51208.96	28.71		