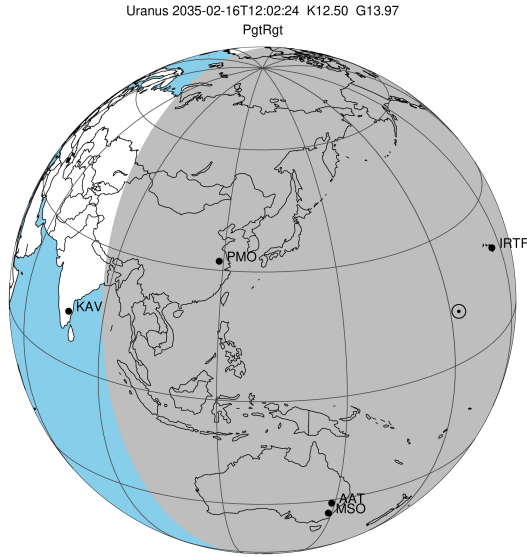


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-16T12:02:24.720
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3383348706333493120
 2Mass ID (if available) : 06273058+2337163

ICRS Star Coord at Epoch: 06h 27m 30.58121s +23:37:16.29810s

RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.501
 G magnitude : 13.967
 RP magnitude : 13.447
 BP magnitude : 14.319
 DUPflag : 0
 Distance (au) : 18.242
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.39
 Sun-Target sep (deg) : 129.15
 Sun-Moon sep (deg) : 27.18
 B (ring opening deg) : 69.73
 PA of pole (deg) : 68.93

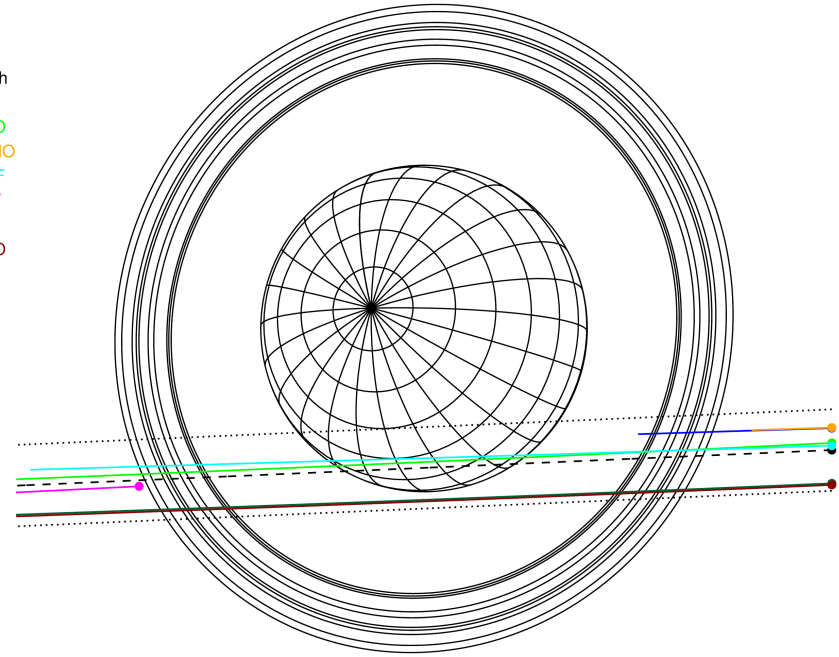
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2035-02-16T12:02:24.7200 α: 06 27 30.5812 & +23 37 16.298 C/A 1.642° PA 2.50 deg v_sky -12.39 km/s D 18.24 AU
 Credit: Styled after SORA/Lucky Star

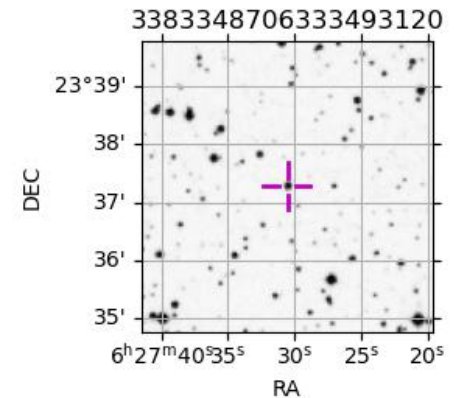
Uranus 2035-02-16T12:02:24 K12.50 G13.97 PgtRgt

Earth
 PAL
 PMO
 KPNO
 IRTF
 KAV
 AAT
 MSO

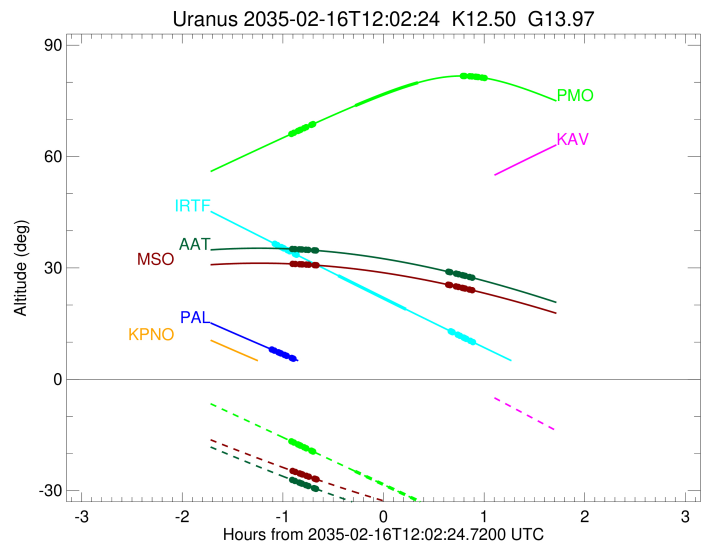
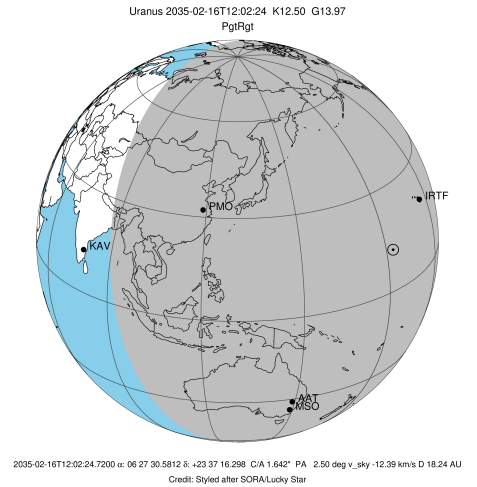


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++			FEB 16 10:56 - FEB 16 11:08	PnnRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	FEB 16 11:07 - FEB 16 13:02	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	+++++	+ +	+++++	FEB 16 10:57 - FEB 16 12:55	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	+++++		+++++	FEB 16 11:08 - FEB 16 12:55	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	FEB 16 11:08 - FEB 16 12:55	PnnRie

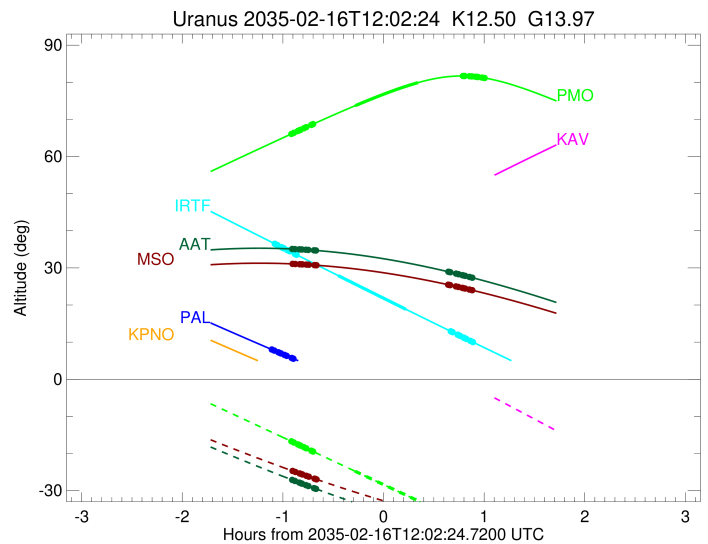
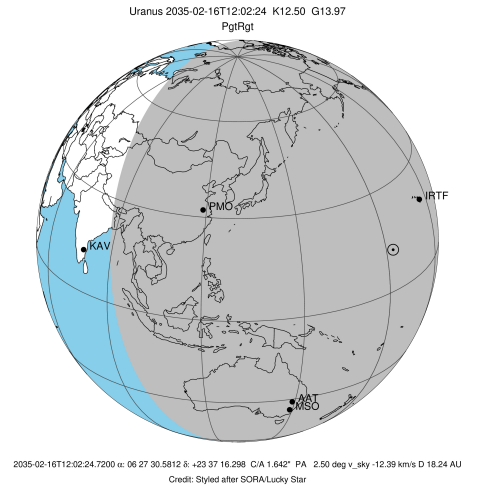


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-16T11:56:14.860
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3383348706333493120
 2Mass ID (if available) : 06273058+2337163
 ICRS Star Coord at Epoch: 06h 27m 30.58121s +23:37:16.29810s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.501
 G magnitude : 13.967
 RP magnitude : 13.447
 BP magnitude : 14.319
 DUPflag : 0
 Distance (au) : 18.242
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.39
 Sun-Target sep (deg) : 129.15
 Sun-Moon sep (deg) : 27.91
 B (ring opening deg) : 69.73
 PA of pole (deg) : 68.93
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.331
 C/A sky separation (km) : 17610.2
 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	2035-02-16T10:56:03.215		7.97	-45.10	50990.21	-12.21		
lambda	I	2035-02-16T10:57:22.043		7.71	-44.84	50026.71	-12.20		
delta	I	2035-02-16T10:59:43.889		7.26	-44.36	48300.35	-12.14		
gamma	I	2035-02-16T11:00:39.121		7.08	-44.18	47630.87	-12.11		
eta	I	2035-02-16T11:01:16.714		6.96	-44.05	47176.12	-12.09		
beta	I	2035-02-16T11:03:24.017		6.55	-43.63	45643.52	-12.01		
alpha	I	2035-02-16T11:04:38.216		6.32	-43.38	44751.50	-11.97		
4	I	2035-02-16T11:07:43.904		5.73	-42.75	42546.53	-11.85		
5	I	2035-02-16T11:08:03.277		5.66	-42.69	42300.36	-11.82		
6	I	2035-02-16T11:08:45.502		5.53	-42.54	41805.28	-11.80		
Uranus	I	2035-02-16T11:31:56.499	1.16x	-37.81	25112.12			-18.79	-19.61
Uranus	E	2035-02-16T12:21:20.091	-7.70x	-27.55	25476.15			7.88	8.25
6	E	2035-02-16T12:46:17.086	-11.89x	-22.33	41879.23		11.63		
5	E	2035-02-16T12:46:41.353	-11.95x	-22.24	42157.29		11.65		
4	E	2035-02-16T12:47:20.168	-12.06x	-22.11	42616.15		11.67		
alpha	E	2035-02-16T12:50:18.385	-12.54x	-21.48	44701.66		11.78		
beta	E	2035-02-16T12:51:41.411	-12.77x	-21.19	45680.35		11.82		
eta	E	2035-02-16T12:53:47.661	-13.11x	-20.75	47176.12		11.89		
gamma	E	2035-02-16T12:54:25.384	-13.21x	-20.62	47624.78		11.90		
delta	E	2035-02-16T12:55:22.081	-13.36x	-20.42	48300.35		11.93		
lambda	E	2035-02-16T12:57:46.448	-13.74x	-19.92	50026.71		11.99		
epsilon	E	2035-02-16T12:59:09.240	-13.96x	-19.63	51020.47		11.99		

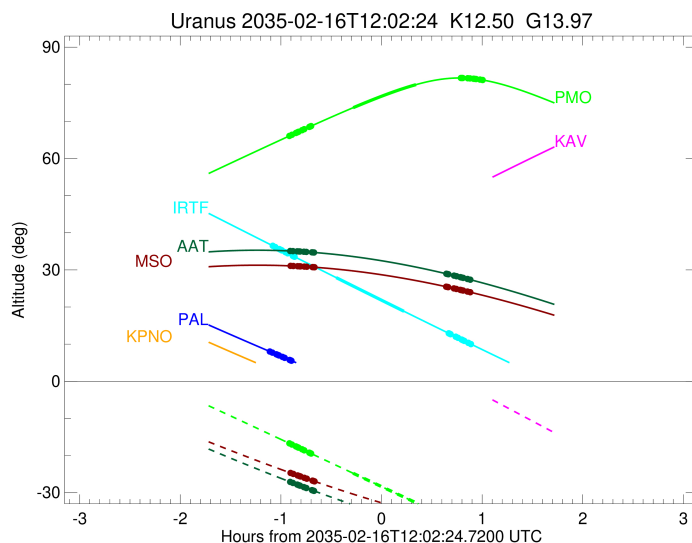
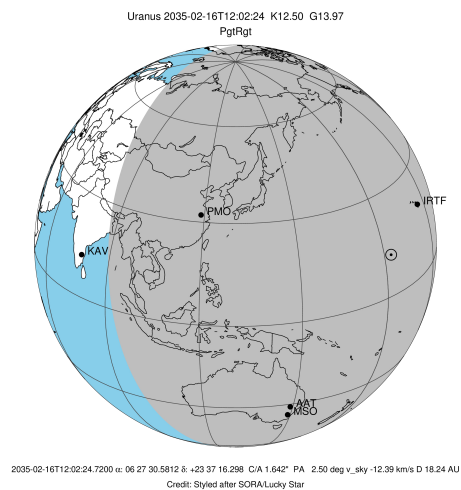
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-16T12:03:52.130
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3383348706333493120
 2Mass ID (if available) : 06273058+2337163
 ICRS Star Coord at Epoch: 06h 27m 30.58121s +23:37:16.29810s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.501
 G magnitude : 13.967
 RP magnitude : 13.447
 BP magnitude : 14.319
 DUPflag : 0
 Distance (au) : 18.242
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.39
 Sun-Target sep (deg) : 129.15
 Sun-Moon sep (deg) : 27.50
 B (ring opening deg) : 69.73
 PA of pole (deg) : 68.93
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.579
 C/A sky separation (km) : 20894.6
 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_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	2035-02-16T11:07:44.668		66.14	-16.78	50969.16	-12.22		
lambda	I	2035-02-16T11:09:01.713		66.40	-17.05	50026.71	-12.21		
delta	I	2035-02-16T11:11:23.669		66.89	-17.55	48300.35	-12.11		
gamma	I	2035-02-16T11:12:19.020		67.08	-17.75	47631.02	-12.07		
eta	I	2035-02-16T11:12:56.746		67.21	-17.88	47176.12	-12.04		
beta	I	2035-02-16T11:15:04.600		67.65	-18.33	45644.21	-11.94		
alpha	I	2035-02-16T11:16:19.307		67.90	-18.60	44751.97	-11.88		
4	I	2035-02-16T11:19:26.639		68.54	-19.26	42549.44	-11.70		
5	I	2035-02-16T11:19:46.829		68.61	-19.33	42296.65	-11.66		
6	I	2035-02-16T11:20:29.091		68.75	-19.48	41807.53	-11.63		
Uranus	I	2035-02-16T11:45:30.679		73.69	-24.79	25188.63		-17.01	-17.76
Uranus	E	2035-02-16T12:23:01.811		79.91	-32.73	25537.93		3.96	4.15
6	E	2035-02-16T12:49:46.916		81.70	-38.35	41878.37	11.63		
5	E	2035-02-16T12:50:11.389		81.70	-38.44	42159.61	11.67		
4	E	2035-02-16T12:50:50.087		81.69	-38.57	42616.53	11.71		
alpha	E	2035-02-16T12:53:47.445		81.63	-39.19	44704.44	11.88		
beta	E	2035-02-16T12:55:09.419		81.59	-39.47	45679.74	11.95		
eta	E	2035-02-16T12:57:14.189		81.50	-39.90	47176.12	12.05		
gamma	E	2035-02-16T12:57:51.421		81.47	-40.03	47625.23	12.08		
delta	E	2035-02-16T12:58:47.232		81.42	-40.23	48300.35	12.12		
lambda	E	2035-02-16T13:01:09.134		81.27	-40.72	50026.71	12.21		
epsilon	E	2035-02-16T13:02:27.864		81.18	-40.99	50990.18	12.22		

```

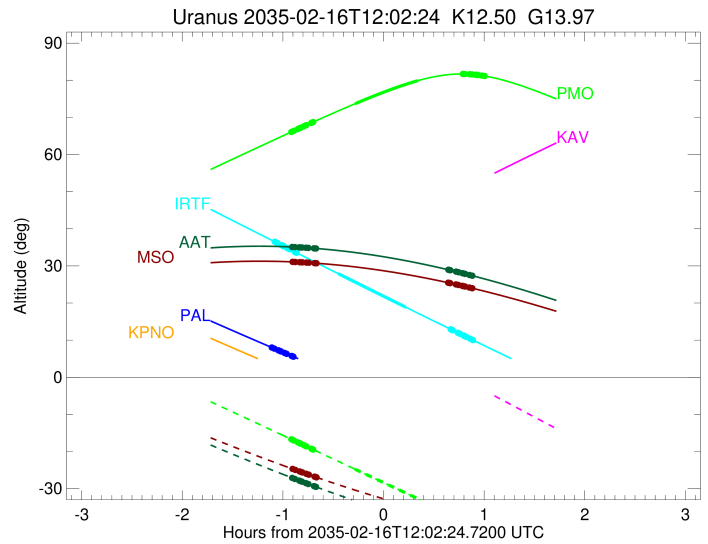
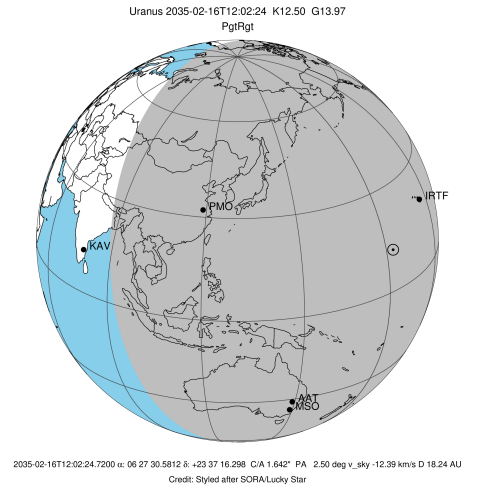
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-02-16T11:55:11.110
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 338334870633493120
2Mass ID (if available) : 06273058+2337163
ICRS Star Coord at Epoch: 06h 27m 30.58121s +23:37:16.29810s
RUWE (>1.4 is poor) : 1.04
K magnitude          : 12.501
G magnitude          : 13.967
RP magnitude         : 13.447
BP magnitude         : 14.319
DUPflag             : 0
Distance (au)       : 18.242
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -12.39
Sun-Target sep (deg) : 129.15
Sun-Moon sep (deg)  : 28.17
B (ring opening deg) : 69.73
PA of pole (deg)    : 68.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.534
C/A sky separation (km) : 20300.5
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	2035-02-16T10:57:50.489		36.44	-80.92	50968.54	-12.18		
lambda	I	2035-02-16T10:59:07.730		36.14	-80.73	50026.71	-12.17		
delta	I	2035-02-16T11:01:30.131		35.60	-80.38	48300.35	-12.08		
gamma	I	2035-02-16T11:02:25.650		35.39	-80.24	47631.03	-12.04		
eta	I	2035-02-16T11:03:03.489		35.25	-80.14	47176.12	-12.01		
beta	I	2035-02-16T11:05:11.707		34.76	-79.79	45644.20	-11.91		
alpha	I	2035-02-16T11:06:26.613		34.48	-79.58	44751.96	-11.85		
4	I	2035-02-16T11:09:34.381		33.77	-79.04	42549.36	-11.68		
5	I	2035-02-16T11:09:54.595		33.69	-78.98	42296.76	-11.64		
6	I	2035-02-16T11:10:36.951		33.53	-78.85	41807.46	-11.61		
Uranus	I	2035-02-16T11:35:23.602		27.92	-73.91	25177.18		-17.28	-18.05
Uranus	E	2035-02-16T12:15:49.174		18.85	-64.90	25525.59		4.99	5.23
6	E	2035-02-16T12:42:32.936		12.91	-58.72	41878.67	11.44		
5	E	2035-02-16T12:42:57.757		12.82	-58.63	42158.83	11.46		
4	E	2035-02-16T12:43:37.167		12.68	-58.48	42616.46	11.50		
alpha	E	2035-02-16T12:46:37.814		12.01	-57.77	44703.57	11.65		
beta	E	2035-02-16T12:48:01.511		11.71	-57.45	45679.94	11.71		
eta	E	2035-02-16T12:50:08.853		11.24	-56.95	47176.12	11.80		
gamma	E	2035-02-16T12:50:46.868		11.10	-56.81	47625.09	11.82		
delta	E	2035-02-16T12:51:43.898		10.89	-56.58	48300.35	11.86		
lambda	E	2035-02-16T12:54:08.967		10.36	-56.02	50026.71	11.94		
epsilon	E	2035-02-16T12:55:30.320		10.06	-55.70	50999.92	11.94		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-02-16T12:00:00.840
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       : 3383348706333493120
2Mass ID (if available) : 06273058+2337163
ICRS Star Coord at Epoch: 06h 27m 30.58121s +23:37:16.29810s
RUWE (>1.4 is poor) : 1.04
K magnitude           : 12.501
G magnitude           : 13.967
RP magnitude         : 13.447
BP magnitude         : 14.319
DUPflag              : 0
Distance (au)        : 18.242
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -12.39
Sun-Target sep (deg) : 129.15
Sun-Moon sep (deg)   : 27.56
B (ring opening deg) : 69.73
PA of pole (deg)     : 68.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.027
C/A sky separation (km) : 26815.3
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall11.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
  
```

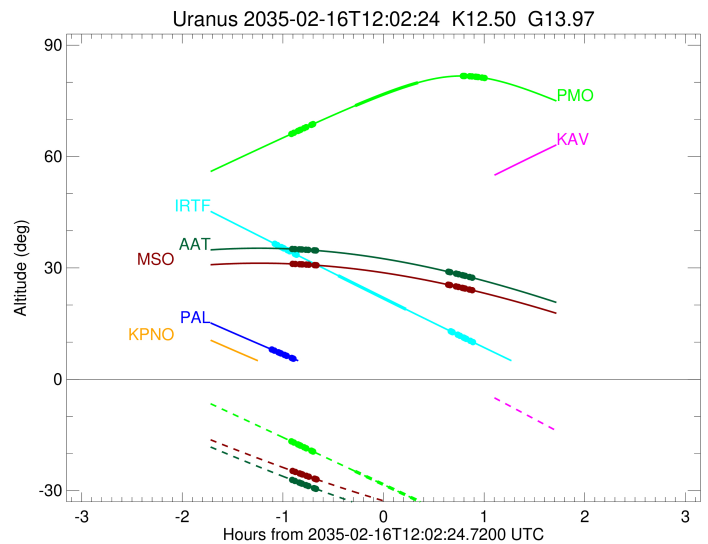
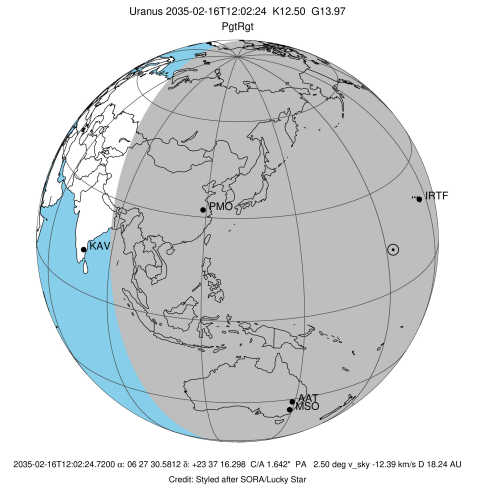


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-02-16T11:08:19.057		35.09	-27.17	50920.40	-11.39		
lambda	I	2035-02-16T11:09:37.480		35.06	-27.40	50026.71	-11.35		
delta	I	2035-02-16T11:12:10.677		35.00	-27.84	48300.35	-11.18		
gamma	I	2035-02-16T11:13:10.710		34.97	-28.01	47631.33	-11.11		
eta	I	2035-02-16T11:13:51.789		34.95	-28.13	47176.12	-11.06		
beta	I	2035-02-16T11:16:11.472		34.89	-28.52	45646.15	-10.87		
alpha	I	2035-02-16T11:17:33.877		34.85	-28.75	44752.43	-10.75		
4	I	2035-02-16T11:21:01.793		34.74	-29.34	42556.77	-10.42		
5	I	2035-02-16T11:21:26.252		34.72	-29.41	42286.52	-10.35		
6	I	2035-02-16T11:22:12.268		34.69	-29.53	41813.50	-10.29		

No planet occultations

6	E	2035-02-16T12:41:06.822		28.96	-40.81	41875.97	10.24		
5	E	2035-02-16T12:41:35.277		28.90	-40.86	42165.20	10.30		
4	E	2035-02-16T12:42:18.695		28.83	-40.94	42616.20	10.37		
alpha	E	2035-02-16T12:45:37.740		28.47	-41.31	44709.32	10.69		
beta	E	2035-02-16T12:47:08.044		28.30	-41.47	45678.41	10.81		
eta	E	2035-02-16T12:49:25.489		28.04	-41.72	47176.12	10.99		
gamma	E	2035-02-16T12:50:06.333		27.97	-41.79	47625.97	11.04		
delta	E	2035-02-16T12:51:07.227		27.85	-41.89	48300.35	11.11		
lambda	E	2035-02-16T12:53:41.413		27.56	-42.16	50026.71	11.28		
epsilon	E	2035-02-16T12:55:02.435		27.40	-42.29	50943.96	11.31		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-16T12:00:05.870
 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 : 3383348706333493120
 2Mass ID (if available) : 06273058+2337163
 ICRS Star Coord at Epoch: 06h 27m 30.58121s +23:37:16.29810s
 RUWE (>1.4 is poor) : 1.04
 K magnitude : 12.501
 G magnitude : 13.967
 RP magnitude : 13.447
 BP magnitude : 14.319
 DUPflag : 0
 Distance (au) : 18.242
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -12.39
 Sun-Target sep (deg) : 129.15
 Sun-Moon sep (deg) : 27.52
 B (ring opening deg) : 69.73
 PA of pole (deg) : 68.93
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.046
 C/A sky separation (km) : 27068.6
 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_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	2035-02-16T11:08:32.989		31.07	-24.75	50918.46	-11.33		
lambda	I	2035-02-16T11:09:51.652		31.05	-24.96	50026.71	-11.29		
delta	I	2035-02-16T11:12:25.700		30.99	-25.38	48300.35	-11.12		
gamma	I	2035-02-16T11:13:26.084		30.97	-25.54	47631.34	-11.04		
eta	I	2035-02-16T11:14:07.411		30.95	-25.65	47176.12	-10.99		
beta	I	2035-02-16T11:16:27.969		30.89	-26.02	45646.24	-10.80		
alpha	I	2035-02-16T11:17:50.936		30.85	-26.24	44752.43	-10.67		
4	I	2035-02-16T11:21:20.353		30.75	-26.79	42557.09	-10.34		
5	I	2035-02-16T11:21:45.090		30.74	-26.85	42286.04	-10.27		
6	I	2035-02-16T11:22:31.405		30.71	-26.97	41813.78	-10.21		

No planet occultations

6	E	2035-02-16T12:40:59.581		25.47	-37.32	41875.82	10.16		
5	E	2035-02-16T12:41:28.305		25.42	-37.36	42165.53	10.22		
4	E	2035-02-16T12:42:12.036		25.35	-37.44	42616.15	10.29		
alpha	E	2035-02-16T12:45:32.537		25.02	-37.78	44709.56	10.62		
beta	E	2035-02-16T12:47:03.403		24.86	-37.93	45678.33	10.74		
eta	E	2035-02-16T12:49:21.696		24.62	-38.15	47176.12	10.92		
gamma	E	2035-02-16T12:50:02.781		24.55	-38.22	47626.00	10.98		
delta	E	2035-02-16T12:51:04.015		24.44	-38.31	48300.35	11.05		
lambda	E	2035-02-16T12:53:39.025		24.17	-38.55	50026.71	11.22		
epsilon	E	2035-02-16T12:55:00.262		24.02	-38.68	50941.78	11.26		