

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-02T13:23:02.790
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3404550928350591616
 2Mass ID (if available) : 05341423+2327405

Uranus 2032-01-02T13:23:02 K14.66 G17.27 PgtRgt

ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s

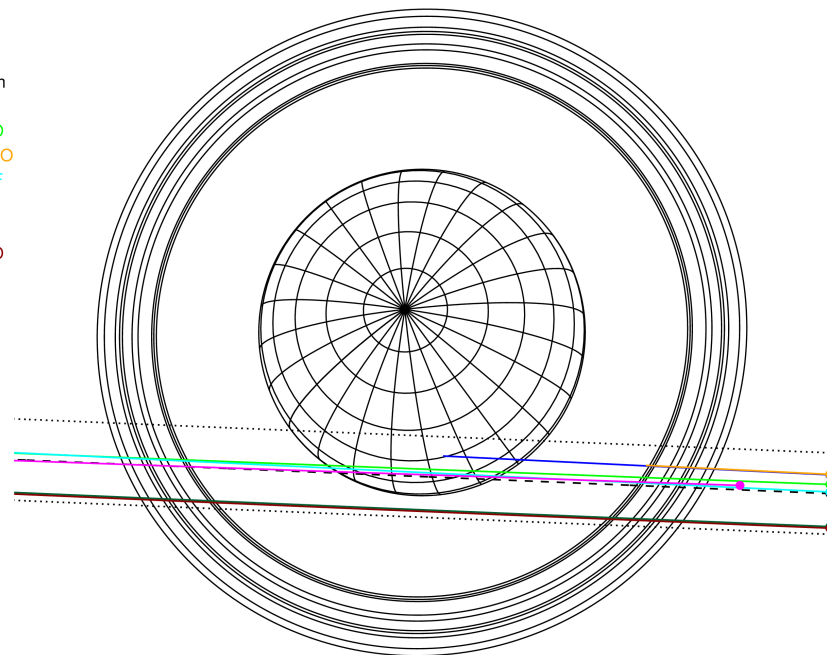
RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.656
 G magnitude : 17.275
 RP magnitude : 16.445
 BP magnitude : 18.003
 DUPflag : 0
 Distance (au) : 18.142
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.11
 Sun-Target sep (deg) : 162.85
 Sun-Moon sep (deg) : 69.77
 B (ring opening deg) : 79.83
 PA of pole (deg) : 36.52

Uranus 2032-01-02T13:23:02 K14.66 G17.27
 PgtRgt



2032-01-02T13:23:02.7900 ex: 05 34 14.2500 s: +23 27 40.513 C/A 1.7077 PA 357.61 deg v_sky -22.11 km/s D 18.14 AU
 Credit: Styled after SORA/Lucky Star

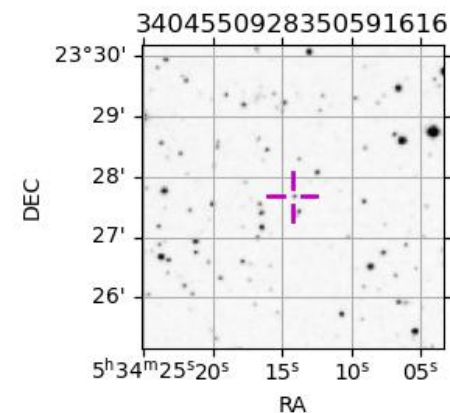
Earth
 PAL
 PMO
 KPNO
 IRTF
 KAV
 AAT
 MSO



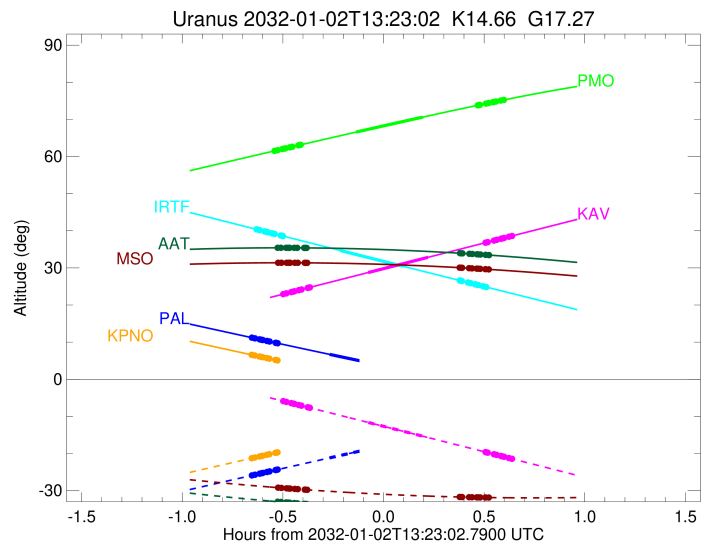
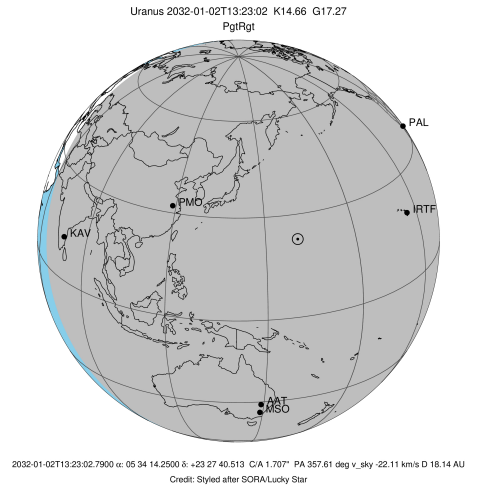
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+		JAN 02 12:43 - JAN 02 13:06	PinRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	JAN 02 12:50 - JAN 02 13:58	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++			JAN 02 12:43 - JAN 02 12:51	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	+++++	+ +	+++++	JAN 02 12:44 - JAN 02 13:53	PieRie
KAV	Kavalur Observatory	12.6	78.8	+++++	+ +	+++++	JAN 02 12:52 - JAN 02 14:01	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 02 12:51 - JAN 02 13:54	PnnRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++		+++++	JAN 02 12:51 - JAN 02 13:54	PnnRie

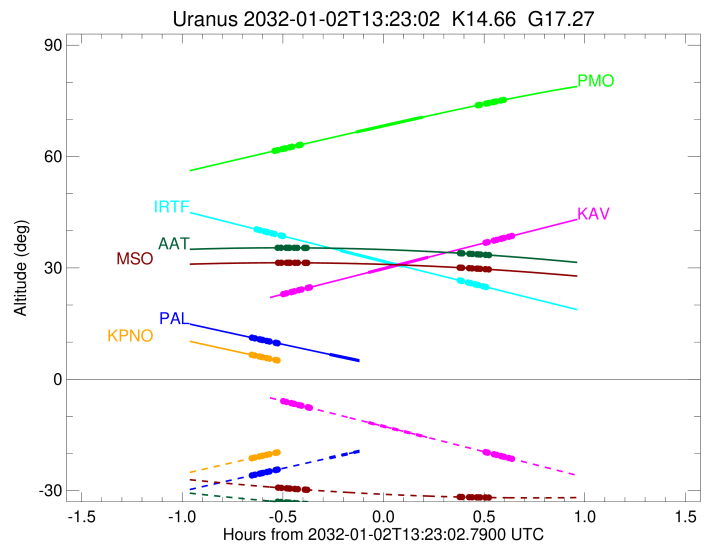
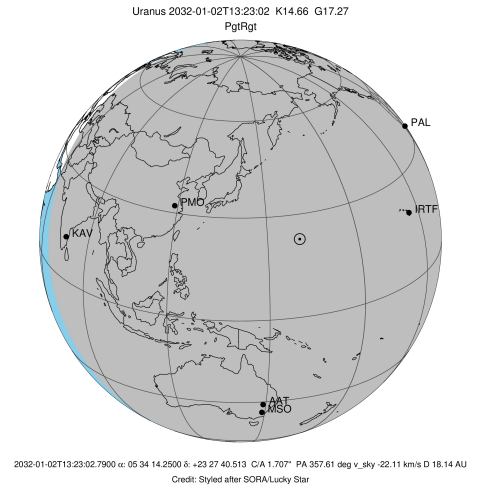


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-02T13:19:05.750
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3404550928350591616
 2Mass ID (if available) : 05341423+2327405
 ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.656
 G magnitude : 17.275
 RP magnitude : 16.445
 BP magnitude : 18.003
 DUPflag : 0
 Distance (au) : 18.142
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.11
 Sun-Target sep (deg) : 162.85
 Sun-Moon sep (deg) : 69.57
 B (ring opening deg) : 79.83
 PA of pole (deg) : 36.52
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.456
 C/A sky separation (km) : 19159.4
 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



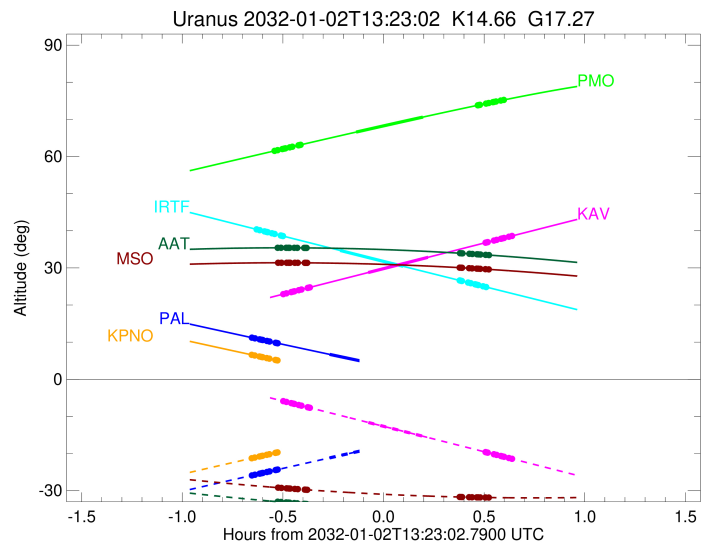
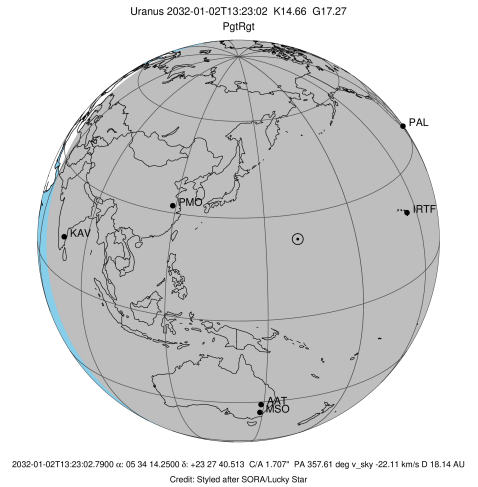
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-02T12:43:29.484		11.27	-25.97	51555.05	-20.63		
lambda	I	2032-01-02T12:44:43.782		11.03	-25.71	50026.71	-20.52		
delta	I	2032-01-02T12:46:08.202		10.75	-25.43	48300.35	-20.38		
gamma	I	2032-01-02T12:46:41.500		10.64	-25.31	47622.64	-20.32		
eta	I	2032-01-02T12:47:03.491		10.57	-25.24	47176.12	-20.29		
beta	I	2032-01-02T12:48:17.802		10.33	-24.98	45673.20	-20.14		
alpha	I	2032-01-02T12:49:03.732		10.18	-24.83	44751.31	-20.05		
4	I	2032-01-02T12:50:55.008		9.82	-24.45	42530.38	-19.79		
5	I	2032-01-02T12:51:12.944		9.76	-24.39	42182.39	-19.77		
6	I	2032-01-02T12:51:29.136		9.71	-24.33	41865.48	-19.73		
Uranus	I	2032-01-02T13:06:58.348		6.71	-21.18	24991.54		-10.17	-10.64
Uranus	E	2032-01-02T13:31:52.325		1.99x	-16.16	25543.73		-1.63	-1.71
6	E	2032-01-02T13:47:12.490		-0.85x	-13.11	41846.97	19.64		
5	E	2032-01-02T13:47:36.400		-0.93x	-13.04	42314.90	19.68		
4	E	2032-01-02T13:47:49.793		-0.97x	-12.99	42579.38	19.70		
alpha	E	2032-01-02T13:49:36.247		-1.29x	-12.64	44691.23	19.95		
beta	E	2032-01-02T13:50:23.777		-1.44x	-12.48	45641.08	20.04		
eta	E	2032-01-02T13:51:40.095		-1.67x	-12.23	47176.12	20.18		
gamma	E	2032-01-02T13:52:02.358		-1.74x	-12.16	47625.83	20.22		
delta	E	2032-01-02T13:52:35.674		-1.84x	-12.05	48300.35	20.27		
lambda	E	2032-01-02T13:54:00.552		-2.10x	-11.77	50026.71	20.40		
epsilon	E	2032-01-02T13:54:41.698		-2.22x	-11.64	50867.40	20.51		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-02T13:24:30.670
 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 : 3404550928350591616
 2Mass ID (if available) : 05341423+2327405
 ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.656
 G magnitude : 17.275
 RP magnitude : 16.445
 BP magnitude : 18.003
 DUPflag : 0
 Distance (au) : 18.142
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.11
 Sun-Target sep (deg) : 162.85
 Sun-Moon sep (deg) : 70.66
 B (ring opening deg) : 79.83
 PA of pole (deg) : 36.52
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.624
 C/A sky separation (km) : 21374.5
 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_itrff93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



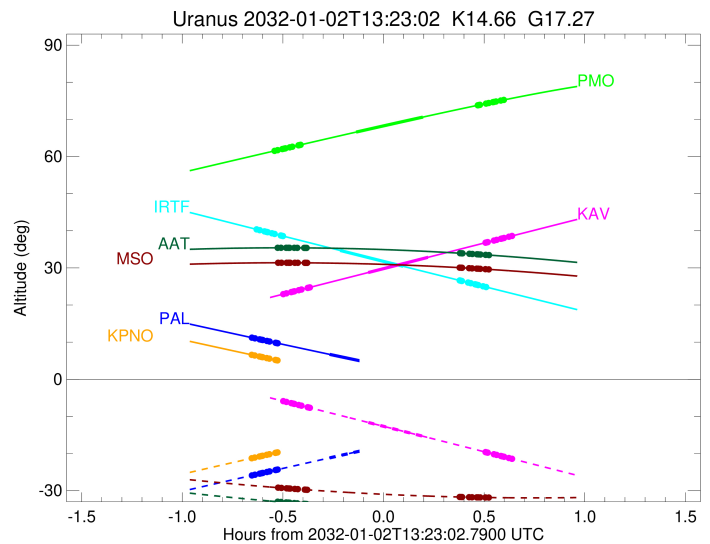
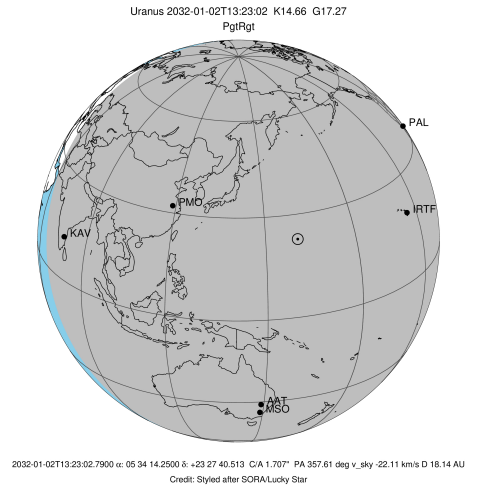
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-02T12:50:14.451		61.46	-45.47	51555.30	-20.51		
lambda	I	2032-01-02T12:51:29.231		61.72	-45.73	50026.71	-20.37		
delta	I	2032-01-02T12:52:54.320		62.02	-46.04	48300.35	-20.20		
gamma	I	2032-01-02T12:53:27.933		62.14	-46.15	47622.48	-20.13		
eta	I	2032-01-02T12:53:50.134		62.21	-46.23	47176.12	-20.08		
beta	I	2032-01-02T12:55:05.309		62.48	-46.50	45672.48	-19.90		
alpha	I	2032-01-02T12:55:51.813		62.64	-46.66	44750.88	-19.78		
4	I	2032-01-02T12:57:44.826		63.03	-47.06	42529.46	-19.45		
5	I	2032-01-02T12:58:02.902		63.09	-47.13	42185.49	-19.42		
6	I	2032-01-02T12:58:19.451		63.15	-47.19	41867.06	-19.36		
Uranus	I	2032-01-02T13:14:53.507		66.59	-50.70	25000.74		-10.08	-10.55
Uranus	E	2032-01-02T13:34:49.578		70.63	-54.92	25501.82		-3.16	-3.31
6	E	2032-01-02T13:51:09.738		73.81	-58.36	41849.89	19.39		
5	E	2032-01-02T13:51:33.725		73.88	-58.45	42314.18	19.45		
4	E	2032-01-02T13:51:47.155		73.93	-58.49	42576.25	19.48		
alpha	E	2032-01-02T13:53:34.831		74.26	-58.87	44692.62	19.81		
beta	E	2032-01-02T13:54:22.590		74.41	-59.04	45641.06	19.93		
eta	E	2032-01-02T13:55:39.256		74.65	-59.31	47176.12	20.11		
gamma	E	2032-01-02T13:56:01.571		74.72	-59.39	47625.50	20.16		
delta	E	2032-01-02T13:56:34.980		74.82	-59.50	48300.35	20.24		
lambda	E	2032-01-02T13:57:59.927		75.08	-59.80	50026.71	20.41		
epsilon	E	2032-01-02T13:58:41.885		75.21	-59.95	50884.61	20.54		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-02T13:19:07.060
 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 : 3404550928350591616
 2Mass ID (if available) : 05341423+2327405
 ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.656
 G magnitude : 17.275
 RP magnitude : 16.445
 BP magnitude : 18.003
 DUPflag : 0
 Distance (au) : 18.142
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.11
 Sun-Target sep (deg) : 162.85
 Sun-Moon sep (deg) : 69.51
 B (ring opening deg) : 79.83
 PA of pole (deg) : 36.52
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.450
 C/A sky separation (km) : 19078.0
 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



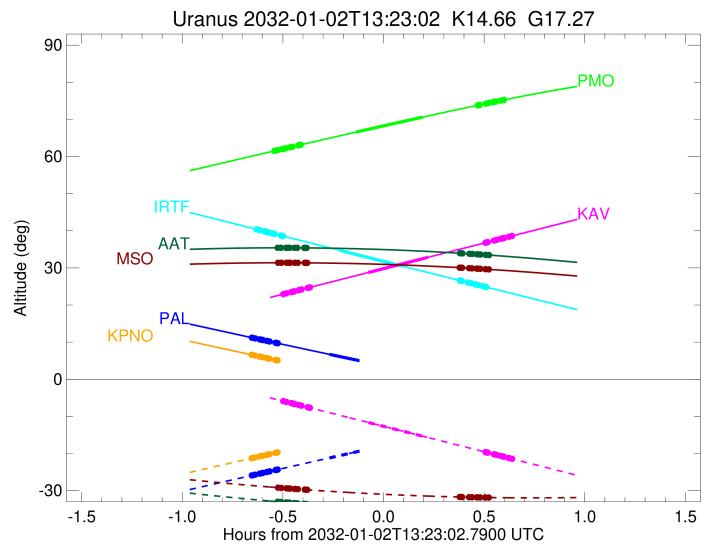
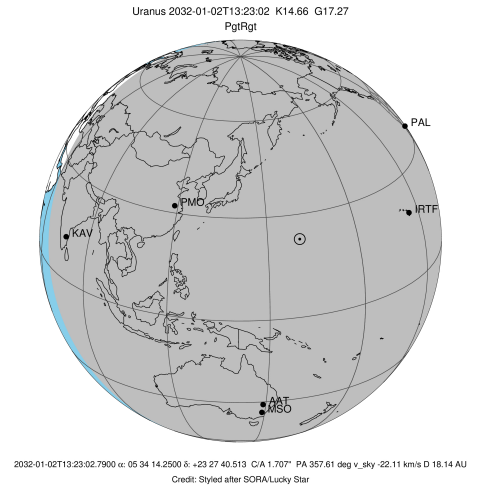
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-02T12:43:25.757		6.65	-21.34	51555.02	-20.61		
lambda	I	2032-01-02T12:44:40.120		6.40	-21.09	50026.71	-20.50		
delta	I	2032-01-02T12:46:04.611		6.13	-20.80	48300.35	-20.36		
gamma	I	2032-01-02T12:46:37.935		6.02	-20.68	47622.64	-20.31		
eta	I	2032-01-02T12:46:59.943		5.95	-20.61	47176.12	-20.27		
beta	I	2032-01-02T12:48:14.308		5.71	-20.35	45673.23	-20.13		
alpha	I	2032-01-02T12:49:00.269		5.56	-20.20	44751.33	-20.04		
4	I	2032-01-02T12:50:51.609		5.20	-19.82	42530.42	-19.78		
5	I	2032-01-02T12:51:09.561		5.14	-19.75	42182.26	-19.76		
6	I	2032-01-02T12:51:25.758		5.09	-19.70	41865.41	-19.72		
Uranus	I	2032-01-02T13:06:54.070		2.11x	-16.54	24991.61		-10.16	-10.64
Uranus	E	2032-01-02T13:31:59.120		-2.60x	-11.49	25544.63		-1.58	-1.66
6	E	2032-01-02T13:47:18.415		-5.40x	-8.45	41846.88	19.63		
5	E	2032-01-02T13:47:42.343		-5.47x	-8.37	42314.92	19.67		
4	E	2032-01-02T13:47:55.747		-5.51x	-8.33	42579.48	19.69		
alpha	E	2032-01-02T13:49:42.256		-5.83x	-7.98	44691.19	19.94		
beta	E	2032-01-02T13:50:29.820		-5.98x	-7.82	45641.09	20.03		
eta	E	2032-01-02T13:51:46.194		-6.21x	-7.57	47176.12	20.17		
gamma	E	2032-01-02T13:52:08.474		-6.27x	-7.50	47625.84	20.20		
delta	E	2032-01-02T13:52:41.816		-6.37x	-7.39	48300.35	20.26		
lambda	E	2032-01-02T13:54:06.766		-6.63x	-7.11	50026.71	20.38		
epsilon	E	2032-01-02T13:54:47.924		-6.75x	-6.98	50866.90	20.49		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-02T13:19:08.120
 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 : 3404550928350591616
 2Mass ID (if available) : 05341423+2327405
 ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.656
 G magnitude : 17.275
 RP magnitude : 16.445
 BP magnitude : 18.003
 DUPflag : 0
 Distance (au) : 18.142
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.11
 Sun-Target sep (deg) : 162.85
 Sun-Moon sep (deg) : 69.96
 B (ring opening deg) : 79.83
 PA of pole (deg) : 36.52
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.664
 C/A sky separation (km) : 21900.3
 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



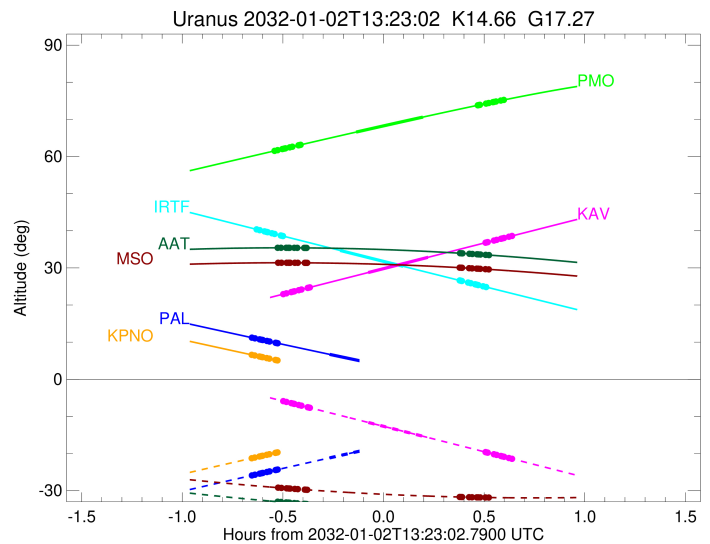
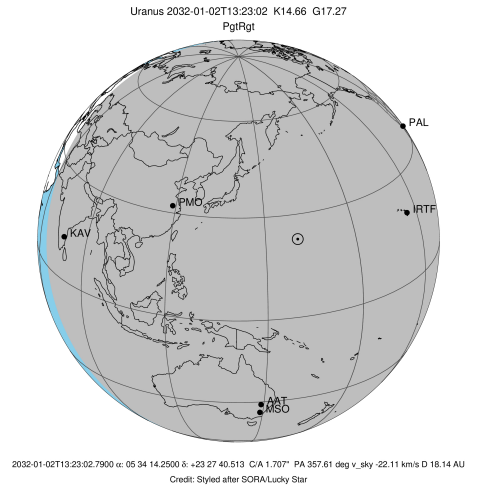
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-02T12:44:53.648		40.45	-57.50	51555.19	-20.34		
lambda	I	2032-01-02T12:46:09.054		40.16	-57.21	50026.71	-20.20		
delta	I	2032-01-02T12:47:34.914		39.83	-56.88	48300.35	-20.01		
gamma	I	2032-01-02T12:48:08.852		39.71	-56.75	47622.40	-19.94		
eta	I	2032-01-02T12:48:31.266		39.62	-56.66	47176.12	-19.88		
beta	I	2032-01-02T12:49:47.231		39.33	-56.37	45672.09	-19.69		
alpha	I	2032-01-02T12:50:34.231		39.15	-56.19	44750.64	-19.56		
4	I	2032-01-02T12:52:28.577		38.72	-55.75	42529.05	-19.22		
5	I	2032-01-02T12:52:46.790		38.65	-55.68	42187.04	-19.18		
6	I	2032-01-02T12:53:03.581		38.58	-55.62	41867.79	-19.12		
Uranus	I	2032-01-02T13:10:07.301		34.70	-51.70	25009.37		-10.00	-10.46
Uranus	E	2032-01-02T13:28:52.741		30.44	-47.39	25491.06		-3.45	-3.61
6	E	2032-01-02T13:45:45.874		26.62	-43.52	41850.10	19.04		
5	E	2032-01-02T13:46:10.284		26.53	-43.43	42314.11	19.10		
4	E	2032-01-02T13:46:23.950		26.48	-43.37	42576.03	19.14		
alpha	E	2032-01-02T13:48:13.540		26.07	-42.95	44692.70	19.48		
beta	E	2032-01-02T13:49:02.108		25.88	-42.77	45641.06	19.60		
eta	E	2032-01-02T13:50:20.049		25.59	-42.47	47176.12	19.79		
gamma	E	2032-01-02T13:50:42.728		25.50	-42.39	47625.49	19.84		
delta	E	2032-01-02T13:51:16.679		25.38	-42.26	48300.35	19.91		
lambda	E	2032-01-02T13:52:42.978		25.05	-41.93	50026.71	20.09		
epsilon	E	2032-01-02T13:53:25.621		24.89	-41.76	50885.18	20.23		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-02T13:27:02.820
 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 : 3404550928350591616
 2Mass ID (if available) : 05341423+2327405
 ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.656
 G magnitude : 17.275
 RP magnitude : 16.445
 BP magnitude : 18.003
 DUPflag : 0
 Distance (au) : 18.142
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.11
 Sun-Target sep (deg) : 162.85
 Sun-Moon sep (deg) : 70.45
 B (ring opening deg) : 79.83
 PA of pole (deg) : 36.52
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.691
 C/A sky separation (km) : 22248.5
 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	2032-01-02T12:52:50.134		22.86	-5.82	51555.24	-20.15		
lambda	I	2032-01-02T12:54:06.242		23.15	-6.10	50026.71	-20.01		
delta	I	2032-01-02T12:55:32.907		23.48	-6.43	48300.35	-19.83		
gamma	I	2032-01-02T12:56:07.167		23.61	-6.56	47622.42	-19.75		
eta	I	2032-01-02T12:56:29.796		23.70	-6.64	47176.12	-19.70		
beta	I	2032-01-02T12:57:46.494		23.99	-6.93	45672.17	-19.50		
alpha	I	2032-01-02T12:58:33.960		24.17	-7.11	44750.68	-19.37		
4	I	2032-01-02T13:00:29.472		24.62	-7.55	42529.11	-19.02		
5	I	2032-01-02T13:00:47.891		24.69	-7.62	42186.80	-18.98		
6	I	2032-01-02T13:01:04.855		24.75	-7.68	41867.69	-18.91		
Uranus	I	2032-01-02T13:18:30.606		28.75	-11.64	25012.50		-9.97	-10.43
Uranus	E	2032-01-02T13:36:18.525		32.85	-15.69	25474.40		-3.85	-4.03
6	E	2032-01-02T13:53:28.074		36.79	-19.62	41851.07	18.99		
5	E	2032-01-02T13:53:52.464		36.89	-19.71	42313.76	19.05		
4	E	2032-01-02T13:54:06.127		36.94	-19.76	42574.96	19.09		
alpha	E	2032-01-02T13:55:55.987		37.36	-20.18	44693.22	19.45		
beta	E	2032-01-02T13:56:44.575		37.54	-20.37	45641.07	19.58		
eta	E	2032-01-02T13:58:02.553		37.84	-20.67	47176.12	19.78		
gamma	E	2032-01-02T13:58:25.228		37.93	-20.75	47625.37	19.84		
delta	E	2032-01-02T13:58:59.181		38.06	-20.88	48300.35	19.92		
lambda	E	2032-01-02T14:00:25.435		38.39	-21.21	50026.71	20.11		
epsilon	E	2032-01-02T14:01:08.370		38.56	-21.38	50891.90	20.26		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-01-02T13:22:40.100
 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 : 3404550928350591616
 2Mass ID (if available) : 05341423+2327405
 ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.656
 G magnitude : 17.275
 RP magnitude : 16.445
 BP magnitude : 18.003
 DUPflag : 0
 Distance (au) : 18.142
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.11
 Sun-Target sep (deg) : 162.85
 Sun-Moon sep (deg) : 70.21
 B (ring opening deg) : 79.83
 PA of pole (deg) : 36.52
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.109
 C/A sky separation (km) : 27745.8
 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



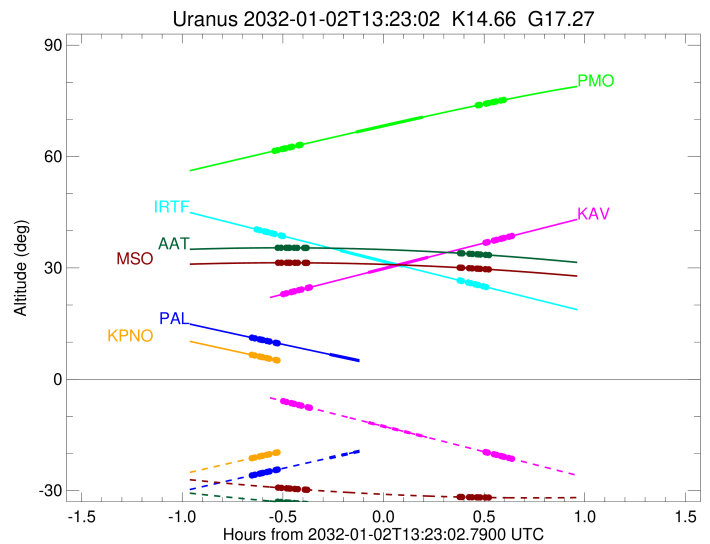
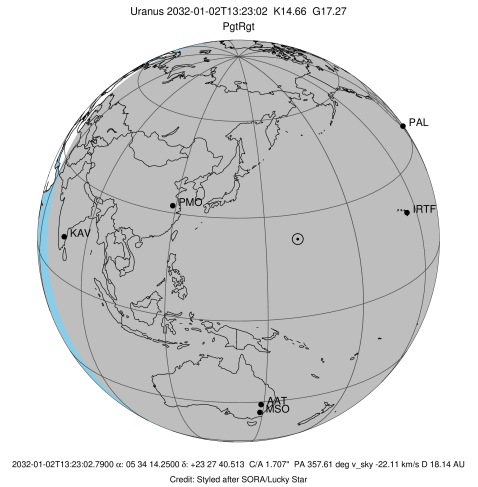
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-01-02T12:51:09.113		35.41	-32.96	51550.78	-18.99		
lambda	I	2032-01-02T12:52:29.818		35.41	-33.06	50026.71	-18.76		
delta	I	2032-01-02T12:54:02.616		35.41	-33.18	48300.35	-18.44		
gamma	I	2032-01-02T12:54:39.534		35.41	-33.22	47621.93	-18.31		
eta	I	2032-01-02T12:55:03.946		35.41	-33.25	47176.12	-18.22		
beta	I	2032-01-02T12:56:27.378		35.41	-33.35	45669.48	-17.87		
alpha	I	2032-01-02T12:57:19.261		35.40	-33.41	44748.59	-17.65		
4	I	2032-01-02T12:59:27.099		35.39	-33.56	42526.90	-17.03		
5	I	2032-01-02T12:59:46.979		35.39	-33.59	42198.47	-16.95		
6	I	2032-01-02T13:00:06.332		35.39	-33.61	41872.37	-16.83		

No planet occultations

6	E	2032-01-02T13:45:52.079		33.96	-35.73	41857.26	16.82		
5	E	2032-01-02T13:46:18.899		33.93	-35.74	42310.40	16.94		
4	E	2032-01-02T13:46:34.068		33.92	-35.74	42567.95	17.02		
alpha	E	2032-01-02T13:48:36.847		33.80	-35.79	44696.69	17.64		
beta	E	2032-01-02T13:49:30.085		33.75	-35.81	45641.37	17.86		
eta	E	2032-01-02T13:50:55.187		33.67	-35.83	47176.12	18.20		
gamma	E	2032-01-02T13:51:19.768		33.64	-35.84	47624.70	18.29		
delta	E	2032-01-02T13:51:56.562		33.61	-35.85	48300.35	18.43		
lambda	E	2032-01-02T13:53:29.431		33.51	-35.87	50026.71	18.74		
epsilon	E	2032-01-02T13:54:17.442		33.46	-35.88	50930.23	18.98		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2032-01-02T13:22:42.150
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       : 3404550928350591616
2Mass ID (if available) : 05341423+2327405
ICRS Star Coord at Epoch: 05h 34m 14.24996s +23:27:40.51276s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 14.656
G magnitude          : 17.275
RP magnitude         : 16.445
BP magnitude         : 18.003
DUPflag             : 0
Distance (au)        : 18.142
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -22.11
Sun-Target sep (deg) : 162.85
Sun-Moon sep (deg)   : 70.16
B (ring opening deg) : 79.83
PA of pole (deg)     : 36.52
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.127
C/A sky separation (km) : 27990.7
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_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	2032-01-02T12:51:16.982		31.38	-29.18	51550.43	-18.91		
lambda	I	2032-01-02T12:52:38.047		31.38	-29.27	50026.71	-18.67		
delta	I	2032-01-02T12:54:11.317		31.38	-29.38	48300.35	-18.35		
gamma	I	2032-01-02T12:54:48.437		31.38	-29.42	47621.91	-18.21		
eta	I	2032-01-02T12:55:12.984		31.38	-29.45	47176.12	-18.11		
beta	I	2032-01-02T12:56:36.916		31.38	-29.54	45669.35	-17.76		
alpha	I	2032-01-02T12:57:29.128		31.37	-29.60	44748.48	-17.53		
4	I	2032-01-02T12:59:37.869		31.36	-29.74	42526.83	-16.90		
5	I	2032-01-02T12:59:57.870		31.36	-29.76	42199.03	-16.82		
6	I	2032-01-02T13:00:17.395		31.36	-29.78	41872.56	-16.70		

No planet occultations

6	E	2032-01-02T13:45:45.469		30.07	-31.71	41857.56	16.69		
5	E	2032-01-02T13:46:12.465		30.04	-31.72	42310.18	16.81		
4	E	2032-01-02T13:46:27.746		30.03	-31.73	42567.60	16.89		
alpha	E	2032-01-02T13:48:31.424		29.93	-31.77	44696.88	17.52		
beta	E	2032-01-02T13:49:24.990		29.88	-31.78	45641.39	17.75		
eta	E	2032-01-02T13:50:50.593		29.80	-31.81	47176.12	18.10		
gamma	E	2032-01-02T13:51:15.309		29.78	-31.81	47624.67	18.19		
delta	E	2032-01-02T13:51:52.303		29.75	-31.82	48300.35	18.33		
lambda	E	2032-01-02T13:53:25.642		29.66	-31.85	50026.71	18.65		
epsilon	E	2032-01-02T13:54:13.985		29.61	-31.86	50932.22	18.89		