

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-14T20:47:54.440
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425399180642135680
 2Mass ID (if available) : 06074726+2342064

Uranus 2034-02-14T20:47:54 K14.28 G16.19 PgtRgt

ICRS Star Coord at Epoch: 06h 07m 47.26164s +23:42:06.47192s

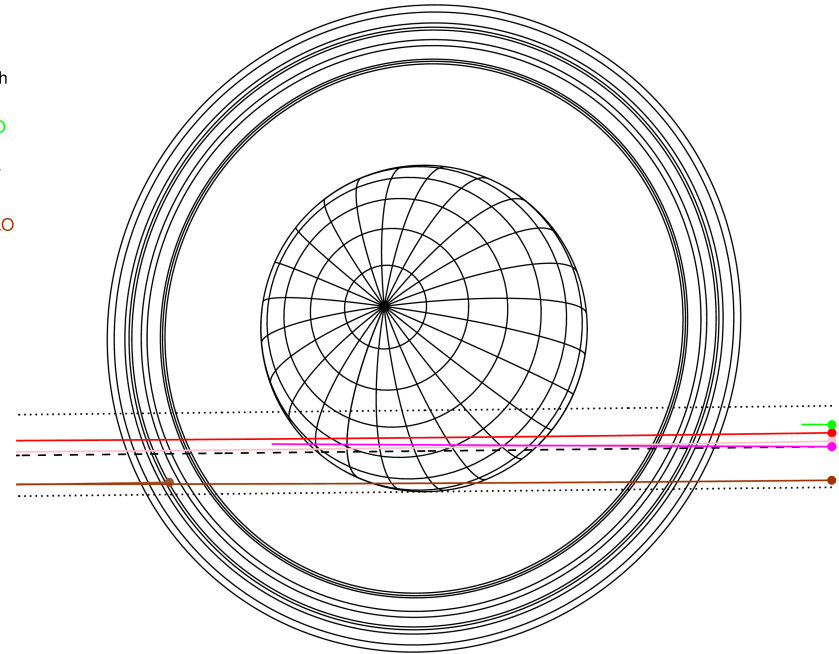
RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.282
 G magnitude : 16.188
 RP magnitude : 15.545
 BP magnitude : 16.672
 DUPflag : 0
 Distance (au) : 18.347
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.16
 Sun-Target sep (deg) : 126.03
 Sun-Moon sep (deg) : 174.03
 B (ring opening deg) : 73.80
 PA of pole (deg) : 60.91

Uranus 2034-02-14T20:47:54 K14.28 G16.19
 PgtRgt



2034-02-14T20:47:54.4400 α: 06 07 47.2616 δ: +23 42 06.472 C/A 1.436° PA 0.62 deg v_sky -11.16 km/s D 18.35 AU
 Credit: Styled after SORA/Lucky Star

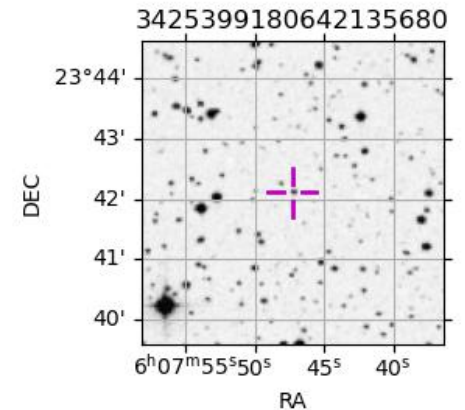
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 SAAO



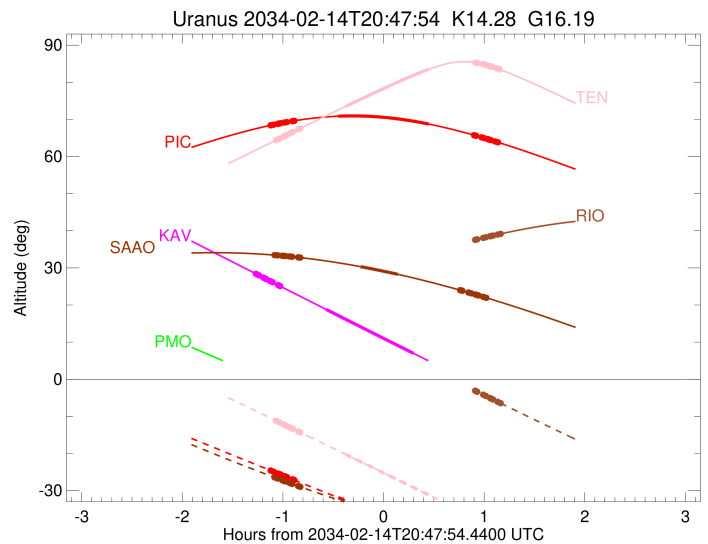
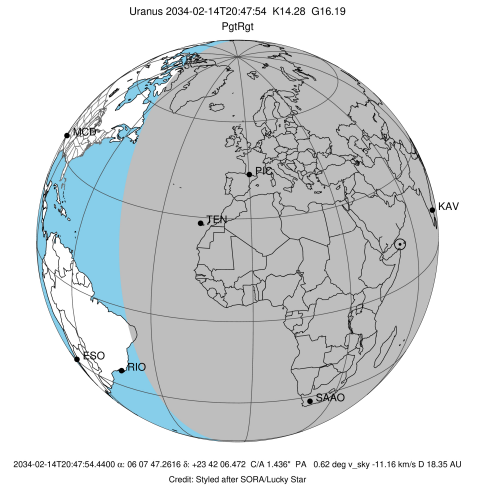
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	+++++	+ +	+++++	FEB 14 19:40 - FEB 14 21:55	PieRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
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	+++++	+ +	+++++	FEB 14 19:43 - FEB 14 21:56	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++	+ +		FEB 14 19:31 - FEB 14 21:05	PieRin
RIO	Rio de Janeiro	-22.9	316.8			++++	FEB 14 21:51 - FEB 14 21:57	PnnRne
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	+++++	+ +	+++++	FEB 14 19:42 - FEB 14 21:48	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

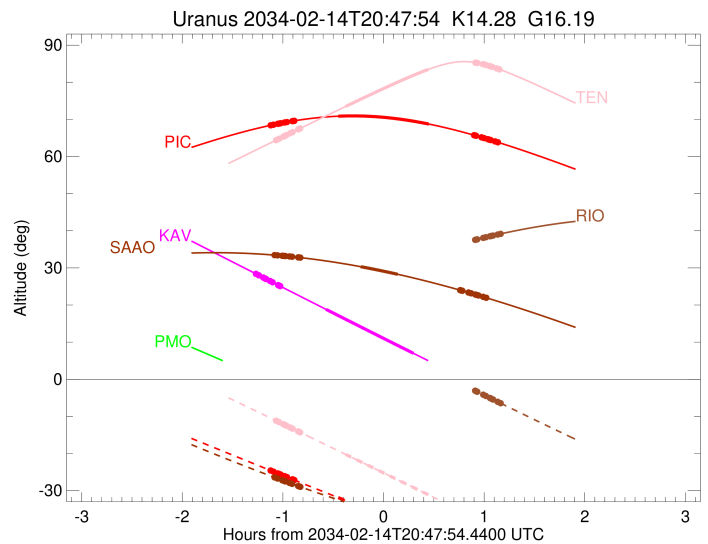
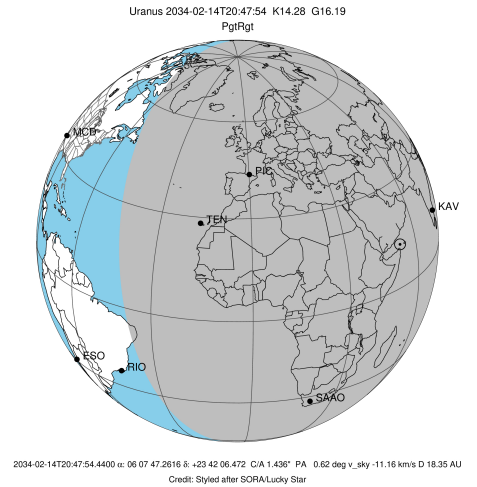


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-14T20:47:26.440
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3425399180642135680
 2Mass ID (if available) : 06074726+2342064
 ICRS Star Coord at Epoch: 06h 07m 47.26164s +23:42:06.47192s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.282
 G magnitude : 16.188
 RP magnitude : 15.545
 BP magnitude : 16.672
 DUPflag : 0
 Distance (au) : 18.347
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.16
 Sun-Target sep (deg) : 126.03
 Sun-Moon sep (deg) : 174.38
 B (ring opening deg) : 73.80
 PA of pole (deg) : 60.91
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.285
 C/A sky separation (km) : 17098.9
 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



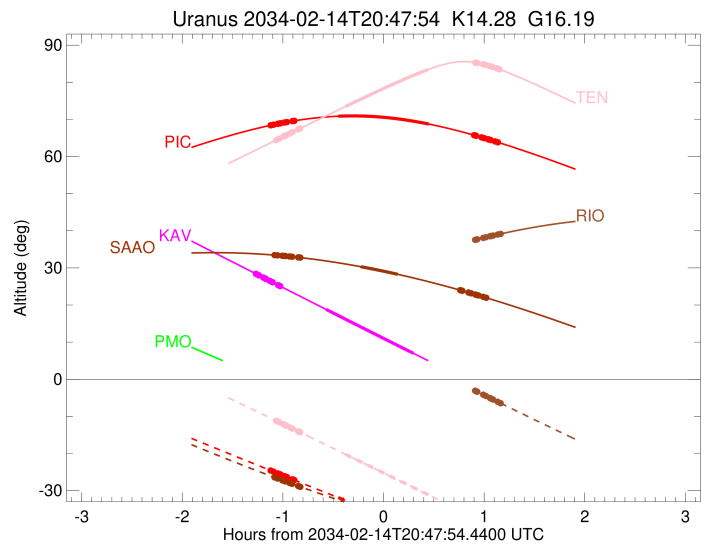
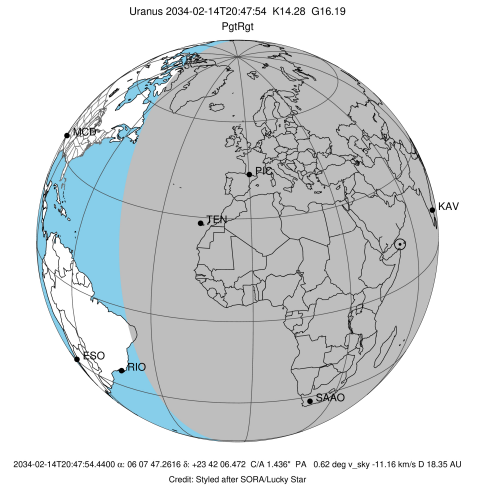
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-14T19:40:06.942		68.37	-24.49	51504.31	-11.19		
lambda	I	2034-02-14T19:42:19.434		68.58	-24.89	50026.71	-11.13		
delta	I	2034-02-14T19:44:54.911		68.82	-25.37	48300.35	-11.08		
gamma	I	2034-02-14T19:45:55.506		68.91	-25.55	47629.93	-11.05		
eta	I	2034-02-14T19:46:36.596		68.97	-25.68	47176.12	-11.04		
beta	I	2034-02-14T19:48:56.146		69.17	-26.10	45641.08	-10.98		
alpha	I	2034-02-14T19:50:20.257		69.29	-26.35	44714.88	-10.94		
4	I	2034-02-14T19:53:33.403		69.54	-26.94	42616.51	-10.84		
5	I	2034-02-14T19:54:14.530		69.59	-27.07	42178.75	-10.81		
6	I	2034-02-14T19:54:44.896		69.63	-27.16	41849.69	-10.81		
Uranus	I	2034-02-14T20:20:54.106		70.86	-31.88	25047.17		-15.75	-16.46
Uranus	E	2034-02-14T21:14:54.377		68.75	-41.27	25504.20		5.03	5.27
6	E	2034-02-14T21:41:56.668		65.75	-45.66	41859.29	10.77		
5	E	2034-02-14T21:42:31.158		65.67	-45.75	42230.03	10.77		
4	E	2034-02-14T21:43:00.669		65.61	-45.83	42538.97	10.80		
alpha	E	2034-02-14T21:46:23.964		65.17	-46.35	44744.94	10.90		
beta	E	2034-02-14T21:47:49.079		64.98	-46.57	45676.20	10.93		
eta	E	2034-02-14T21:50:05.977		64.67	-46.93	47176.12	10.99		
gamma	E	2034-02-14T21:50:46.431		64.58	-47.03	47620.97	11.00		
delta	E	2034-02-14T21:51:48.105		64.44	-47.19	48300.35	11.03		
lambda	E	2034-02-14T21:54:24.284		64.08	-47.58	50026.71	11.08		
epsilon	E	2034-02-14T21:55:51.455		63.87	-47.80	50993.73	11.14		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-14T20:49:32.710
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3425399180642135680
 2Mass ID (if available) : 06074726+2342064
 ICRS Star Coord at Epoch: 06h 07m 47.26164s +23:42:06.47192s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.282
 G magnitude : 16.188
 RP magnitude : 15.545
 BP magnitude : 16.672
 DUPflag : 0
 Distance (au) : 18.347
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.16
 Sun-Target sep (deg) : 126.03
 Sun-Moon sep (deg) : 174.26
 B (ring opening deg) : 73.80
 PA of pole (deg) : 60.91
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.403
 C/A sky separation (km) : 18666.2
 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



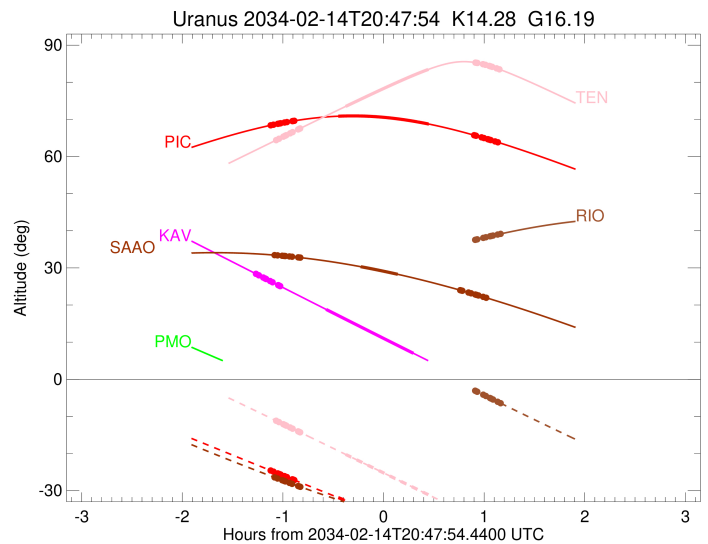
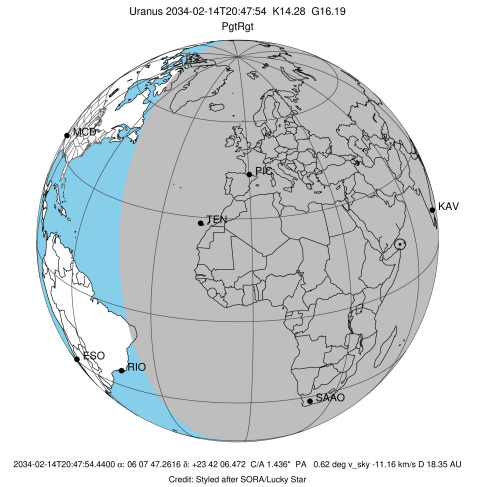
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-02-14T19:43:22.070		64.30	-11.05	51509.90	-11.08		
lambda	I	2034-02-14T19:45:36.470		64.79	-11.54	50026.71	-11.01		
delta	I	2034-02-14T19:48:13.730		65.37	-12.11	48300.35	-10.94		
gamma	I	2034-02-14T19:49:15.075		65.60	-12.34	47629.80	-10.92		
eta	I	2034-02-14T19:49:56.670		65.75	-12.49	47176.12	-10.90		
beta	I	2034-02-14T19:52:18.067		66.27	-13.00	45641.12	-10.83		
alpha	I	2034-02-14T19:53:43.269		66.58	-13.31	44716.06	-10.78		
4	I	2034-02-14T19:56:59.570		67.30	-14.03	42616.39	-10.66		
5	I	2034-02-14T19:57:41.530		67.45	-14.18	42176.63	-10.63		
6	I	2034-02-14T19:58:12.065		67.57	-14.29	41851.23	-10.62		
Uranus	I	2034-02-14T20:25:23.379		73.51	-20.26	25070.45		-15.37	-16.06
Uranus	E	2034-02-14T21:14:40.855		83.47	-31.11	25529.94		3.66	3.83
6	E	2034-02-14T21:42:44.610		85.30	-37.28	41860.92	10.63		
5	E	2034-02-14T21:43:19.052		85.26	-37.41	42226.44	10.64		
4	E	2034-02-14T21:43:49.356		85.22	-37.52	42540.42	10.67		
alpha	E	2034-02-14T21:47:14.814		84.88	-38.27	44745.81	10.79		
beta	E	2034-02-14T21:48:40.613		84.71	-38.58	45675.64	10.84		
eta	E	2034-02-14T21:50:58.696		84.41	-39.09	47176.12	10.91		
gamma	E	2034-02-14T21:51:39.452		84.32	-39.24	47620.96	10.92		
delta	E	2034-02-14T21:52:41.562		84.17	-39.46	48300.35	10.95		
lambda	E	2034-02-14T21:55:18.707		83.77	-40.04	50026.71	11.02		
epsilon	E	2034-02-14T21:56:47.579		83.53	-40.36	51007.44	11.09		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-14T20:39:10.660
 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 : 3425399180642135680
 2Mass ID (if available) : 06074726+2342064
 ICRS Star Coord at Epoch: 06h 07m 47.26164s +23:42:06.47192s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.282
 G magnitude : 16.188
 RP magnitude : 15.545
 BP magnitude : 16.672
 DUPflag : 0
 Distance (au) : 18.347
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.16
 Sun-Target sep (deg) : 126.03
 Sun-Moon sep (deg) : 173.77
 B (ring opening deg) : 73.80
 PA of pole (deg) : 60.91
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.370
 C/A sky separation (km) : 18226.1
 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	2034-02-14T19:31:19.964		28.52	-82.04	51511.72	-10.97		
lambda	I	2034-02-14T19:33:35.803		28.00	-81.49	50026.71	-10.91		
delta	I	2034-02-14T19:36:14.594		27.39	-80.85	48300.35	-10.84		
gamma	I	2034-02-14T19:37:16.550		27.16	-80.59	47629.77	-10.81		
eta	I	2034-02-14T19:37:58.557		27.00	-80.42	47176.12	-10.79		
beta	I	2034-02-14T19:40:21.380		26.45	-79.84	45641.13	-10.72		
alpha	I	2034-02-14T19:41:47.430		26.12	-79.49	44716.32	-10.67		
4	I	2034-02-14T19:45:05.788		25.36	-78.69	42616.36	-10.55		
5	I	2034-02-14T19:45:48.205		25.20	-78.52	42176.26	-10.52		
6	I	2034-02-14T19:46:18.995		25.08	-78.39	41851.50	-10.51		
Uranus	I	2034-02-14T20:13:41.434		18.82	-71.72	25068.35		-15.41	-16.10
Uranus	E	2034-02-14T21:05:45.810		6.99	-59.03	25518.60		4.31	4.52
6	E	2034-02-14T21:34:26.616		0.55x	-52.05	41859.90	10.29		
5	E	2034-02-14T21:35:02.506		0.42x	-51.91	42228.71	10.30		
4	E	2034-02-14T21:35:33.532		0.30x	-51.78	42539.49	10.33		
alpha	E	2034-02-14T21:39:05.983		-0.49x	-50.92	44745.25	10.43		
beta	E	2034-02-14T21:40:34.840		-0.82x	-50.56	45676.01	10.47		
eta	E	2034-02-14T21:42:57.776		-1.35x	-49.98	47176.12	10.53		
gamma	E	2034-02-14T21:43:39.996		-1.51x	-49.81	47620.97	10.54		
delta	E	2034-02-14T21:44:44.352		-1.74x	-49.55	48300.35	10.57		
lambda	E	2034-02-14T21:47:27.273		-2.35x	-48.89	50026.71	10.62		
epsilon	E	2034-02-14T21:48:58.561		-2.68x	-48.52	50997.79	10.68		

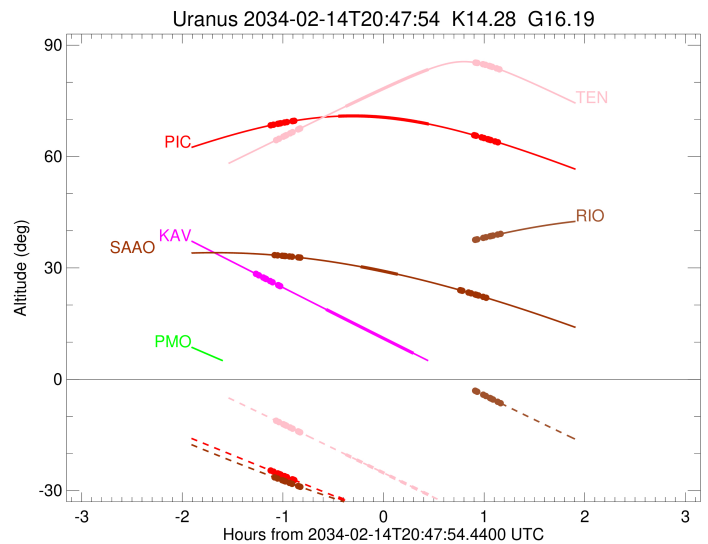
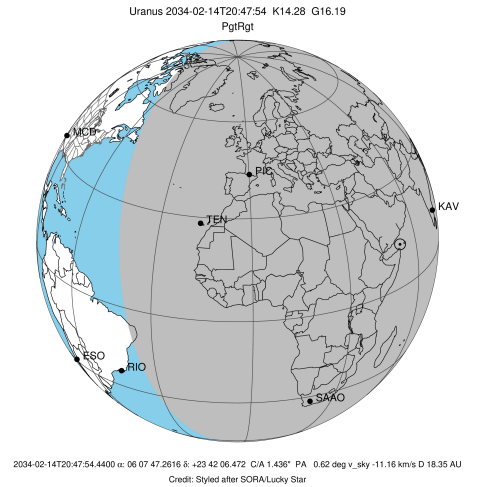
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-02-14T20:52:51.740
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 3425399180642135680
 2Mass ID (if available) : 06074726+2342064
 ICRS Star Coord at Epoch: 06h 07m 47.26164s +23:42:06.47192s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 14.282
 G magnitude : 16.188
 RP magnitude : 15.545
 BP magnitude : 16.672
 DUPflag : 0
 Distance (au) : 18.347
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -11.16
 Sun-Target sep (deg) : 126.03
 Sun-Moon sep (deg) : 173.70
 B (ring opening deg) : 73.80
 PA of pole (deg) : 60.91
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.757
 C/A sky separation (km) : 23373.6
 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_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	2034-02-14T19:49:26.479		20.35	22.58x	51526.17	-10.48		
lambda	I	2034-02-14T19:51:50.328		20.79	22.03x	50026.71	-10.38		
delta	I	2034-02-14T19:54:37.454		21.29	21.39x	48300.35	-10.28		
gamma	I	2034-02-14T19:55:42.895		21.48	21.14x	47629.36	-10.23		
eta	I	2034-02-14T19:56:27.265		21.62	20.97x	47176.12	-10.20		
beta	I	2034-02-14T19:58:58.667		22.07	20.39x	45641.43	-10.08		
alpha	I	2034-02-14T20:00:29.946		22.34	20.04x	44719.97	-10.01		
4	I	2034-02-14T20:04:02.848		22.96	19.23x	42615.56	-9.81		
5	I	2034-02-14T20:04:48.873		23.10	19.05x	42170.23	-9.76		
6	I	2034-02-14T20:05:20.953		23.19	18.93x	41856.19	-9.74		
Uranus	I	2034-02-14T20:39:07.362		28.83	11.21x	25217.19		-12.75	-13.34
Uranus	E	2034-02-14T21:07:50.073		33.13	4.70x	25552.17		-1.77	-1.86
6	E	2034-02-14T21:42:34.262		37.56	-3.09x	41865.57	9.81		
5	E	2034-02-14T21:43:09.969		37.62	-3.22x	42215.61	9.83		
4	E	2034-02-14T21:43:44.129		37.69	-3.35x	42545.20	9.88		
alpha	E	2034-02-14T21:47:24.632		38.09	-4.16x	44748.15	10.09		
beta	E	2034-02-14T21:48:55.884		38.26	-4.50x	45673.80	10.16		
eta	E	2034-02-14T21:51:22.849		38.52	-5.04	47176.12	10.28		
gamma	E	2034-02-14T21:52:06.041		38.59	-5.20	47620.98	10.32		
delta	E	2034-02-14T21:53:11.747		38.71	-5.45	48300.35	10.36		
lambda	E	2034-02-14T21:55:57.432		38.99	-6.06	50026.71	10.47		
epsilon	E	2034-02-14T21:57:34.793		39.15	-6.41	51049.43	10.58		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-02-14T20:44:41.000
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : SAAO
Location             : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)       : -32.37953
E. Longitude (deg)   : 20.81070
Altitude (km)        : 1.768
Gaia source ID       : 3425399180642135680
2Mass ID (if available) : 06074726+2342064
ICRS Star Coord at Epoch: 06h 07m 47.26164s +23:42:06.47192s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 14.282
G magnitude           : 16.188
RP magnitude          : 15.545
BP magnitude          : 16.672
DUPflag              : 0
Distance (au)        : 18.347
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -11.16
Sun-Target sep (deg) : 126.03
Sun-Moon sep (deg)   : 173.27
B (ring opening deg) : 73.80
PA of pole (deg)     : 60.91
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation ("): 1.822
C/A sky separation (km): 24240.2
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	2034-02-14T19:42:21.133		33.47	-26.33	51531.00	-10.50		
lambda	I	2034-02-14T19:44:45.269		33.38	-26.74	50026.71	-10.39		
delta	I	2034-02-14T19:47:32.410		33.27	-27.20	48300.35	-10.27		
gamma	I	2034-02-14T19:48:37.941		33.22	-27.39	47629.21	-10.22		
eta	I	2034-02-14T19:49:22.370		33.19	-27.51	47176.12	-10.18		
beta	I	2034-02-14T19:51:54.158		33.08	-27.93	45641.58	-10.05		
alpha	I	2034-02-14T19:53:25.695		33.01	-28.18	44721.22	-9.97		
4	I	2034-02-14T19:57:00.030		32.84	-28.76	42615.16	-9.74		
5	I	2034-02-14T19:57:46.485		32.80	-28.88	42168.43	-9.69		
6	I	2034-02-14T19:58:18.477		32.77	-28.97	41857.67	-9.66		
Uranus	I	2034-02-14T20:34:18.511		30.33	-34.42	25276.80		-11.55	-12.08
Uranus	E	2034-02-14T20:56:20.238		28.28	-37.35	25538.75		-3.05	-3.20
6	E	2034-02-14T21:33:39.309		24.00	-41.39	41865.92	9.59		
5	E	2034-02-14T21:34:15.732		23.92	-41.45	42214.78	9.61		
4	E	2034-02-14T21:34:50.796		23.85	-41.50	42545.58	9.66		
alpha	E	2034-02-14T21:38:36.150		23.36	-41.83	44748.29	9.88		
beta	E	2034-02-14T21:40:09.295		23.16	-41.96	45673.67	9.96		
eta	E	2034-02-14T21:42:39.255		22.83	-42.17	47176.12	10.08		
gamma	E	2034-02-14T21:43:23.303		22.73	-42.23	47620.98	10.12		
delta	E	2034-02-14T21:44:30.295		22.58	-42.32	48300.35	10.17		
lambda	E	2034-02-14T21:47:19.144		22.20	-42.54	50026.71	10.28		
epsilon	E	2034-02-14T21:48:58.508		21.98	-42.67	51051.38	10.39		