

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-03T23:47:41.690
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3383339841520889728
 2Mass ID (if available) : 06285916+2336229

Uranus 2035-02-03T23:47:41 K11.27 G13.86 PgtRgt

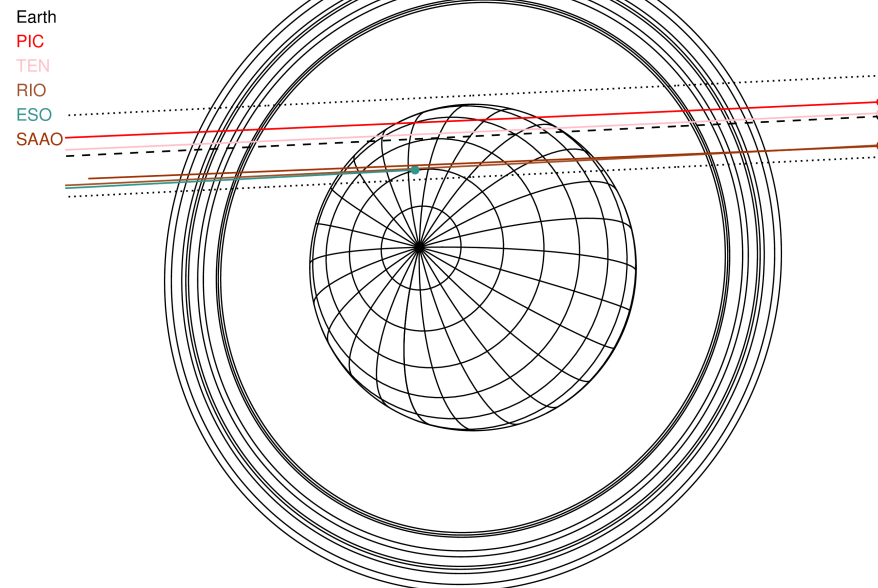
ICRS Star Coord at Epoch: 06h 28m 59.16103s +23:36:23.00552s

RUWE (>1.4 is poor) : 1.13
 K magnitude : 11.270
 G magnitude : 13.858
 RP magnitude : 13.067
 BP magnitude : 14.526
 DUPflag : 0
 Distance (au) : 18.095
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.13
 Sun-Target sep (deg) : 142.15
 Sun-Moon sep (deg) : 167.31
 B (ring opening deg) : 69.42
 PA of pole (deg) : 69.43

Uranus 2035-02-03T23:47:41 K11.27 G13.86
 PgtRgt



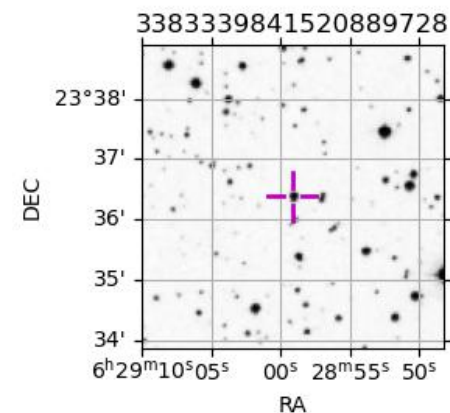
2035-02-03T23:47:41.6900 ra: 06 28 59.1610 s: +23 36 23.006 C/A 1.5711 PA 182.80 deg v_sky -17.13 km/s D 18.09 AU
 Credit: Styled after SORA/Lucky Star



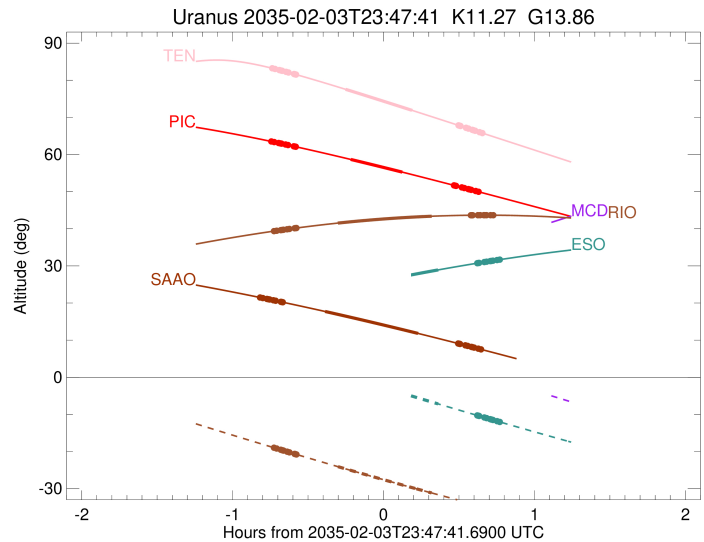
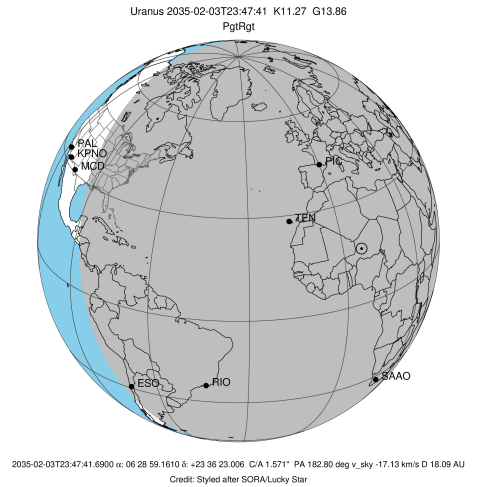
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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 03 23:02 - FEB 04 00:25	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 03 23:03 - FEB 04 00:27	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +	+++++	FEB 03 23:03 - FEB 04 00:31	PieRie
ESO	European Southern Obs	-29.3	289.3		+	+++++	FEB 04 00:09 - FEB 04 00:33	PneRne
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+ +	+++++	FEB 03 22:58 - FEB 04 00:26	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

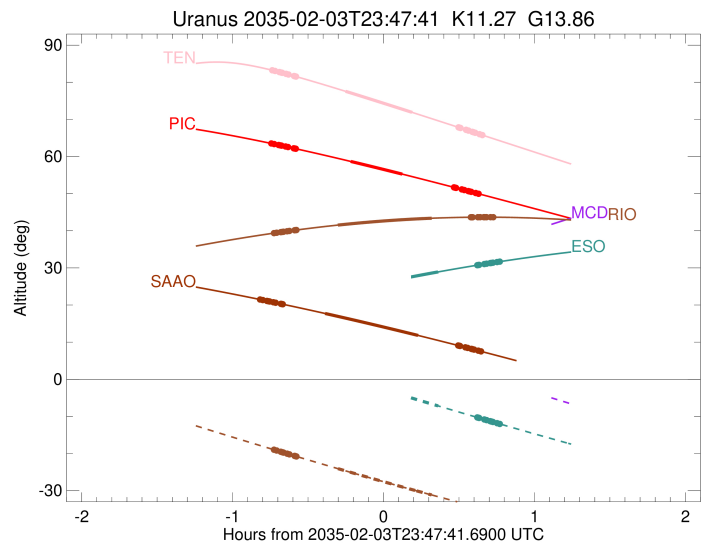
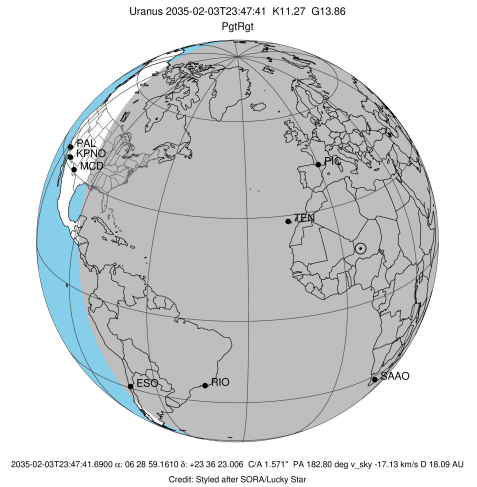


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-03T23:45:14.920
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3383339841520889728
 2Mass ID (if available) : 06285916+2336229
 ICRS Star Coord at Epoch: 06h 28m 59.16103s +23:36:23.00552s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 11.270
 G magnitude : 13.858
 RP magnitude : 13.067
 BP magnitude : 14.526
 DUPflag : 0
 Distance (au) : 18.095
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.13
 Sun-Target sep (deg) : 142.15
 Sun-Moon sep (deg) : 167.93
 B (ring opening deg) : 69.42
 PA of pole (deg) : 69.43
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.756
 C/A sky separation (km) : 23048.6
 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



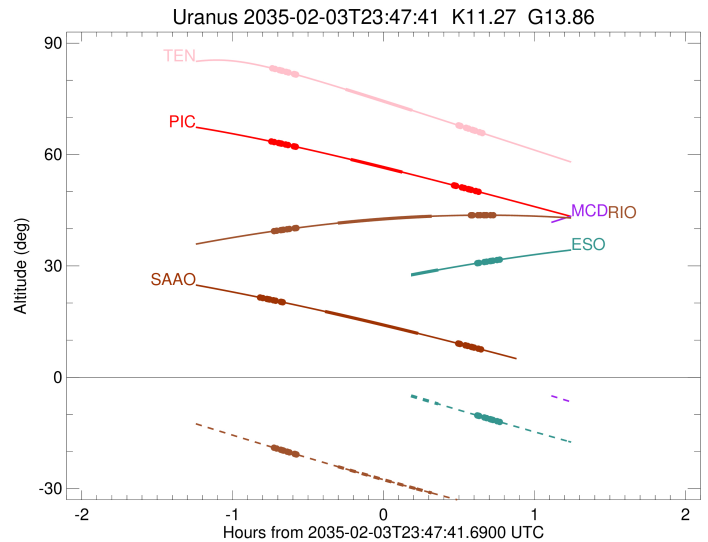
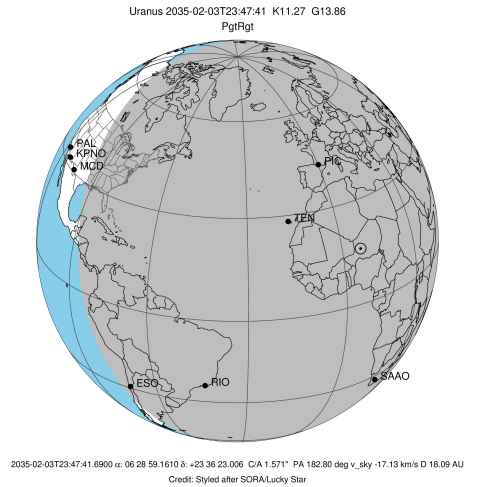
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-02-03T23:02:50.284		63.56	-59.63	51420.45	-16.51		
lambda	I	2035-02-03T23:04:15.252		63.36	-59.78	50026.71	-16.34		
delta	I	2035-02-03T23:06:01.427		63.10	-59.96	48300.35	-16.17		
gamma	I	2035-02-03T23:06:43.270		63.00	-60.03	47625.02	-16.10		
eta	I	2035-02-03T23:07:11.187		62.93	-60.08	47176.12	-16.06		
beta	I	2035-02-03T23:08:46.915		62.70	-60.24	45648.45	-15.88		
alpha	I	2035-02-03T23:09:45.932		62.55	-60.33	44714.90	-15.75		
4	I	2035-02-03T23:12:05.952		62.21	-60.56	42533.62	-15.45		
5	I	2035-02-03T23:12:21.925		62.17	-60.58	42278.88	-15.38		
6	I	2035-02-03T23:12:52.542		62.09	-60.63	41811.51	-15.33		
Uranus	I	2035-02-03T23:34:41.042		58.68	-62.35	25557.98		-0.89	-0.93
Uranus	E	2035-02-03T23:55:11.051		55.26	-63.31	25278.06		14.97	15.65
6	E	2035-02-04T00:15:45.927		51.69	-63.58	41878.30	15.27		
5	E	2035-02-04T00:16:04.032		51.64	-63.58	42156.12	15.32		
4	E	2035-02-04T00:16:32.619		51.55	-63.58	42609.43	15.39		
alpha	E	2035-02-04T00:18:46.616		51.16	-63.56	44690.13	15.68		
beta	E	2035-02-04T00:19:49.238		50.97	-63.55	45680.89	15.81		
eta	E	2035-02-04T00:21:23.352		50.70	-63.53	47176.12	15.98		
gamma	E	2035-02-04T00:21:51.238		50.61	-63.52	47622.51	16.03		
delta	E	2035-02-04T00:22:33.429		50.49	-63.51	48300.35	16.10		
lambda	E	2035-02-04T00:24:20.103		50.17	-63.48	50026.71	16.26		
epsilon	E	2035-02-04T00:25:33.833		49.95	-63.46	51229.63	16.43		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-03T23:46:07.110
 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 : 3383339841520889728
 2Mass ID (if available) : 06285916+2336229
 ICRS Star Coord at Epoch: 06h 28m 59.16103s +23:36:23.00552s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 11.270
 G magnitude : 13.858
 RP magnitude : 13.067
 BP magnitude : 14.526
 DUPflag : 0
 Distance (au) : 18.095
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.13
 Sun-Target sep (deg) : 142.15
 Sun-Moon sep (deg) : 167.74
 B (ring opening deg) : 69.42
 PA of pole (deg) : 69.43
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.616
 C/A sky separation (km) : 21209.1
 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



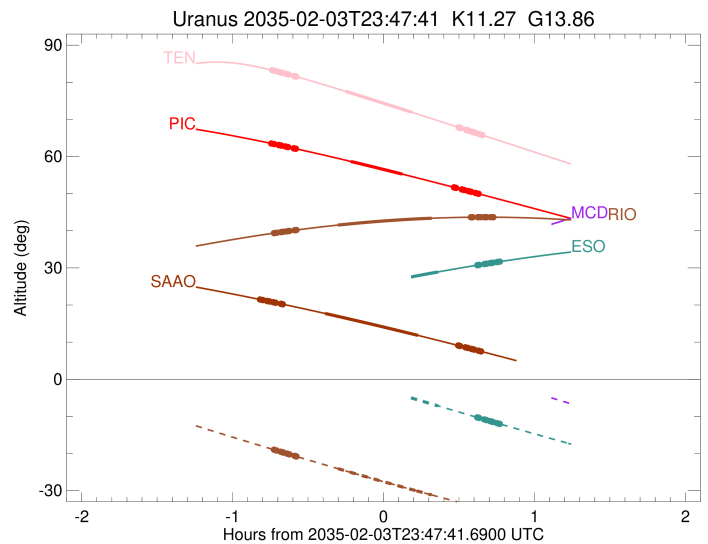
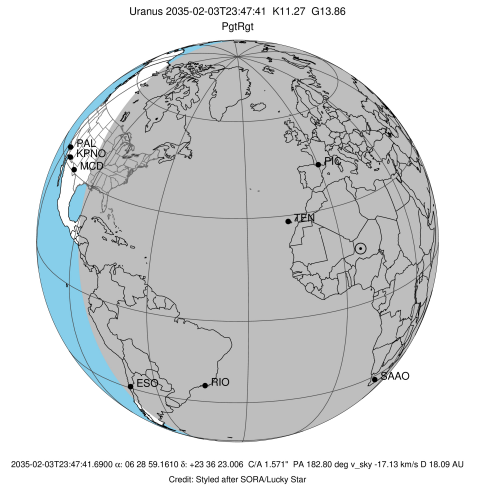
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-02-03T23:03:14.257		83.28	-56.43	51408.56	-16.92		
lambda	I	2035-02-03T23:04:36.392		83.05	-56.72	50026.71	-16.77		
delta	I	2035-02-03T23:06:19.735		82.75	-57.09	48300.35	-16.63		
gamma	I	2035-02-03T23:07:00.391		82.63	-57.24	47625.24	-16.57		
eta	I	2035-02-03T23:07:27.519		82.55	-57.33	47176.12	-16.54		
beta	I	2035-02-03T23:09:00.413		82.27	-57.67	45647.76	-16.39		
alpha	I	2035-02-03T23:09:57.401		82.10	-57.87	44716.47	-16.28		
4	I	2035-02-03T23:12:12.774		81.68	-58.35	42532.41	-16.04		
5	I	2035-02-03T23:12:27.820		81.63	-58.40	42282.21	-15.98		
6	I	2035-02-03T23:12:57.609		81.53	-58.51	41809.82	-15.94		
Uranus	I	2035-02-03T23:32:35.390		77.57	-62.63	25540.80		-3.74	-3.92
Uranus	E	2035-02-03T23:59:04.317		71.90	-67.97	25204.53		16.91	17.66
6	E	2035-02-04T00:17:34.367		67.85	-71.43	41878.83	15.89		
5	E	2035-02-04T00:17:51.718		67.78	-71.48	42155.47	15.93		
4	E	2035-02-04T00:18:19.300		67.68	-71.56	42610.65	15.99		
alpha	E	2035-02-04T00:20:28.533		67.21	-71.94	44691.07	16.23		
beta	E	2035-02-04T00:21:29.043		66.99	-72.11	45681.04	16.34		
eta	E	2035-02-04T00:23:00.208		66.65	-72.38	47176.12	16.48		
gamma	E	2035-02-04T00:23:27.268		66.55	-72.45	47622.68	16.52		
delta	E	2035-02-04T00:24:08.211		66.40	-72.57	48300.35	16.58		
lambda	E	2035-02-04T00:25:51.900		66.02	-72.86	50026.71	16.72		
epsilon	E	2035-02-04T00:27:02.697		65.76	-73.06	51213.19	16.86		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-03T23:48:26.940
 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 : 3383339841520889728
 2Mass ID (if available) : 06285916+2336229
 ICRS Star Coord at Epoch: 06h 28m 59.16103s +23:36:23.00552s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 11.270
 G magnitude : 13.858
 RP magnitude : 13.067
 BP magnitude : 14.526
 DUPflag : 0
 Distance (au) : 18.095
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.13
 Sun-Target sep (deg) : 142.15
 Sun-Moon sep (deg) : 167.07
 B (ring opening deg) : 69.42
 PA of pole (deg) : 69.43
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.212
 C/A sky separation (km) : 15907.8
 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_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	2035-02-03T23:03:57.753		39.35	-18.94	51373.36	-17.66		
lambda	I	2035-02-03T23:05:14.285		39.47	-19.20	50026.71	-17.57		
delta	I	2035-02-03T23:06:52.747		39.63	-19.53	48300.35	-17.50		
gamma	I	2035-02-03T23:07:31.332		39.69	-19.66	47625.86	-17.46		
eta	I	2035-02-03T23:07:57.099		39.73	-19.75	47176.12	-17.44		
beta	I	2035-02-03T23:09:25.073		39.87	-20.05	45646.00	-17.37		
alpha	I	2035-02-03T23:10:18.390		39.95	-20.23	44720.80	-17.31		
4	I	2035-02-03T23:12:25.692		40.15	-20.66	42529.60	-17.18		
5	I	2035-02-03T23:12:38.936		40.17	-20.70	42290.66	-17.15		
6	I	2035-02-03T23:13:07.425		40.21	-20.80	41805.58	-17.13		
Uranus	I	2035-02-03T23:29:35.834		41.53	-24.08	25444.07		-9.46	-9.90
Uranus	E	2035-02-04T00:06:51.571		43.38	-31.17	25084.00		19.75	20.60
6	E	2035-02-04T00:22:27.803		43.65	-33.96	41879.67	17.13		
5	E	2035-02-04T00:22:43.875		43.65	-34.01	42154.84	17.15		
4	E	2035-02-04T00:23:09.641		43.65	-34.08	42613.46	17.19		
alpha	E	2035-02-04T00:25:10.418		43.66	-34.44	44694.02	17.32		
beta	E	2035-02-04T00:26:07.102		43.66	-34.60	45681.23	17.37		
eta	E	2035-02-04T00:27:33.026		43.66	-34.85	47176.12	17.45		
gamma	E	2035-02-04T00:27:58.631		43.66	-34.92	47623.20	17.47		
delta	E	2035-02-04T00:28:37.352		43.66	-35.03	48300.35	17.50		
lambda	E	2035-02-04T00:30:15.772		43.66	-35.31	50026.71	17.58		
epsilon	E	2035-02-04T00:31:20.528		43.66	-35.50	51166.39	17.67		

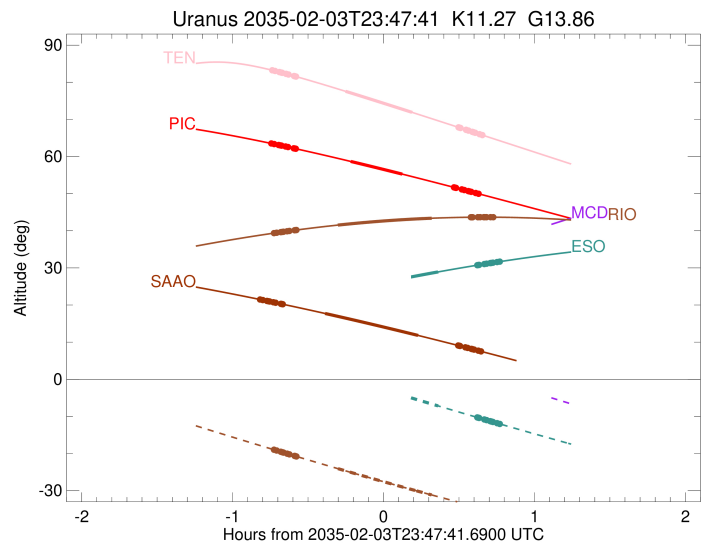
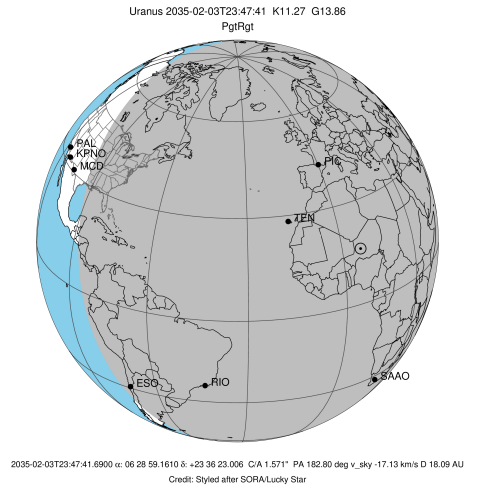
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-02-03T23:50:46.380
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 3383339841520889728
 2Mass ID (if available) : 06285916+2336229
 ICRS Star Coord at Epoch: 06h 28m 59.16103s +23:36:23.00552s
 RUWE (>1.4 is poor) : 1.13
 K magnitude : 11.270
 G magnitude : 13.858
 RP magnitude : 13.067
 BP magnitude : 14.526
 DUPflag : 0
 Distance (au) : 18.095
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -17.13
 Sun-Target sep (deg) : 142.15
 Sun-Moon sep (deg) : 166.72
 B (ring opening deg) : 69.42
 PA of pole (deg) : 69.43
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.199
 C/A sky separation (km) : 15737.1
 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	2035-02-03T23:05:56.827		19.92	5.91x	51373.46	-17.55		
lambda	I	2035-02-03T23:07:13.843		20.13	5.64x	50026.71	-17.46		
delta	I	2035-02-03T23:08:52.906		20.39	5.29x	48300.35	-17.39		
gamma	I	2035-02-03T23:09:31.722		20.49	5.16x	47625.86	-17.36		
eta	I	2035-02-03T23:09:57.641		20.56	5.06x	47176.12	-17.34		
beta	I	2035-02-03T23:11:26.128		20.79	4.75x	45646.00	-17.27		
alpha	I	2035-02-03T23:12:19.748		20.93	4.57x	44720.81	-17.21		
4	I	2035-02-03T23:14:27.751		21.26	4.12x	42529.59	-17.09		
5	I	2035-02-03T23:14:41.062		21.29	4.07x	42290.69	-17.06		
6	I	2035-02-03T23:15:09.705		21.37	3.97x	41805.57	-17.04		
Uranus	I	2035-02-03T23:31:41.053		23.85	0.53x	25442.17		-9.54	-9.99
Uranus	E	2035-02-04T00:09:24.255		28.92	-7.17	25080.65		19.82	20.68
6	E	2035-02-04T00:25:01.057		30.73	-10.28	41879.69	17.10		
5	E	2035-02-04T00:25:17.169		30.76	-10.34	42154.85	17.11		
4	E	2035-02-04T00:25:42.998		30.81	-10.42	42613.59	17.15		
alpha	E	2035-02-04T00:27:44.065		31.03	-10.82	44694.21	17.27		
beta	E	2035-02-04T00:28:40.877		31.13	-11.01	45681.23	17.33		
eta	E	2035-02-04T00:30:07.013		31.29	-11.29	47176.12	17.41		
gamma	E	2035-02-04T00:30:32.682		31.33	-11.37	47623.24	17.43		
delta	E	2035-02-04T00:31:11.498		31.40	-11.50	48300.35	17.46		
lambda	E	2035-02-04T00:32:50.164		31.57	-11.82	50026.71	17.53		
epsilon	E	2035-02-04T00:33:54.910		31.69	-12.03	51163.33	17.62		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-02-03T23:43:10.090
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      : 3383339841520889728
2Mass ID (if available) : 06285916+2336229
ICRS Star Coord at Epoch: 06h 28m 59.16103s +23:36:23.00552s
RUWE (>1.4 is poor) : 1.13
K magnitude          : 11.270
G magnitude          : 13.858
RP magnitude         : 13.067
BP magnitude         : 14.526
DUPflag             : 0
Distance (au)       : 18.095
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -17.13
Sun-Target sep (deg) : 142.15
Sun-Moon sep (deg)  : 167.66
B (ring opening deg) : 69.42
PA of pole (deg)    : 69.43
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.246
C/A sky separation (km) : 16346.2
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	2035-02-03T22:58:25.701		21.51	-41.41	51373.58	-17.50		
lambda	I	2035-02-03T22:59:42.962		21.34	-41.40	50026.71	-17.40		
delta	I	2035-02-03T23:01:22.383		21.10	-41.38	48300.35	-17.32		
gamma	I	2035-02-03T23:02:01.356		21.01	-41.37	47625.85	-17.29		
eta	I	2035-02-03T23:02:27.385		20.95	-41.36	47176.12	-17.27		
beta	I	2035-02-03T23:03:56.278		20.74	-41.34	45646.03	-17.18		
alpha	I	2035-02-03T23:04:50.180		20.61	-41.33	44720.72	-17.12		
4	I	2035-02-03T23:06:58.918		20.31	-41.29	42529.65	-16.98		
5	I	2035-02-03T23:07:12.333		20.28	-41.29	42290.48	-16.95		
6	I	2035-02-03T23:07:41.146		20.21	-41.28	41805.68	-16.93		
Uranus	I	2035-02-03T23:24:27.661		17.73	-40.78	25449.86		-9.22	-9.65
Uranus	E	2035-02-04T00:01:27.455		11.81	-38.57	25092.51		19.56	20.41
6	E	2035-02-04T00:17:25.783		9.09	-37.19	41879.61	16.82		
5	E	2035-02-04T00:17:42.154		9.04	-37.16	42154.82	16.84		
4	E	2035-02-04T00:18:08.395		8.97	-37.12	42613.14	16.87		
alpha	E	2035-02-04T00:20:11.406		8.61	-36.93	44693.61	17.00		
beta	E	2035-02-04T00:21:09.154		8.44	-36.83	45681.23	17.06		
eta	E	2035-02-04T00:22:36.647		8.19	-36.69	47176.12	17.14		
gamma	E	2035-02-04T00:23:02.713		8.11	-36.65	47623.13	17.16		
delta	E	2035-02-04T00:23:42.140		8.00	-36.58	48300.35	17.19		
lambda	E	2035-02-04T00:25:22.335		7.71	-36.41	50026.71	17.27		
epsilon	E	2035-02-04T00:26:28.637		7.51	-36.30	51173.02	17.36		