

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-16T01:19:20.430
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3382601343365091456
 2Mass ID (if available) : 06315915+2334112

ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s

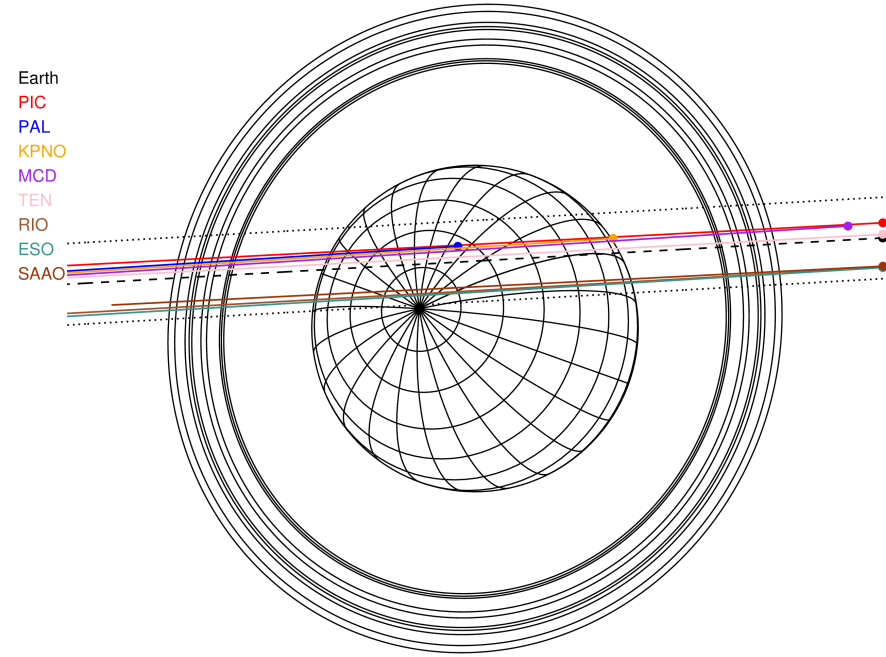
RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.665
 G magnitude : 16.377
 RP magnitude : 15.808
 BP magnitude : 16.784
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.93
 Sun-Target sep (deg) : 162.09
 Sun-Moon sep (deg) : 86.56
 B (ring opening deg) : 68.79
 PA of pole (deg) : 70.44

#	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



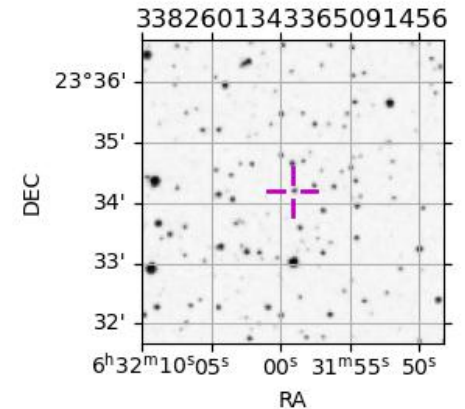
2035-01-16T01:19:20.4300 α: 06 31 59.1564 δ: +23 34 11.068 C/A 0.817° PA 183.25 deg v_sky -21.93 km/s D 17.95 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2035-01-16T01:19:20 K14.66 G16.38 PgtRgt



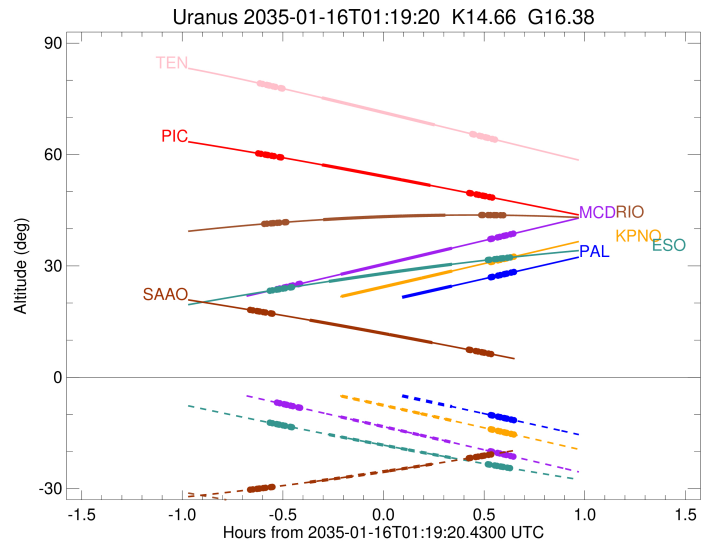
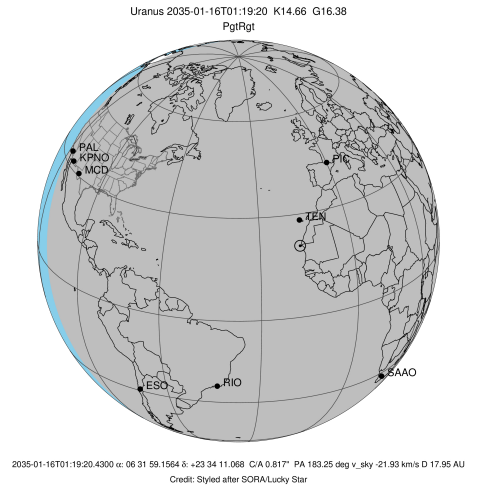
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	JAN 16 00:41 - JAN 16 01:51	PieRie
PAL	Palomar Mt (200")	33.4	243.1		+	+++++	JAN 16 01:39 - JAN 16 01:58	PneRne
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4		+ +	+++++	JAN 16 01:06 - JAN 16 01:58	PieRne
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	JAN 16 00:47 - JAN 16 01:57	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	JAN 16 00:42 - JAN 16 01:52	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	+++++	+ +	+++++	JAN 16 00:43 - JAN 16 01:54	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	JAN 16 00:45 - JAN 16 01:56	PieRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+ +	+++++	JAN 16 00:39 - JAN 16 01:51	PieRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



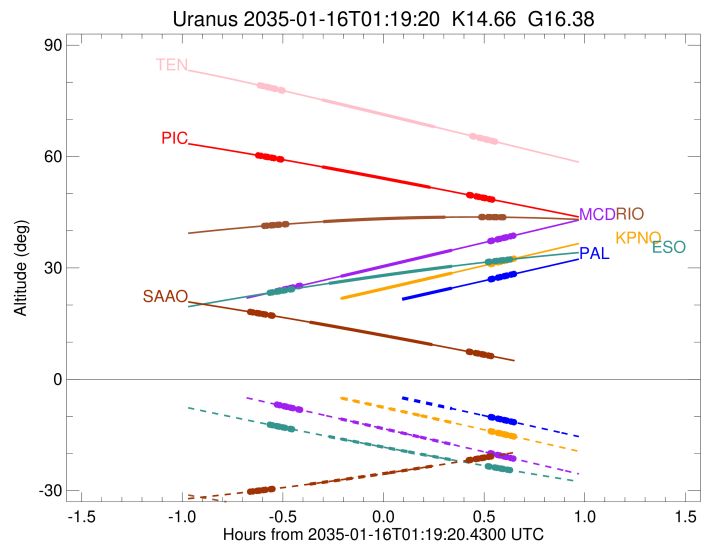
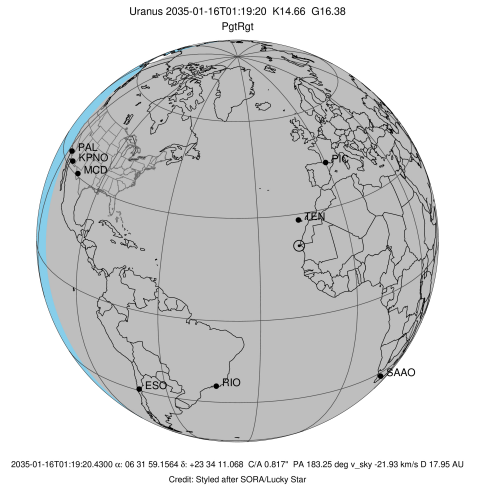
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-16T01:17:18.610
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       : 3382601343365091456
2Mass ID (if available) : 06315915+2334112
ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 14.665
G magnitude           : 16.377
RP magnitude          : 15.808
BP magnitude          : 16.784
DUPflag              : 0
Distance (au)        : 17.948
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -21.93
Sun-Target sep (deg) : 162.09
Sun-Moon sep (deg)   : 87.36
B (ring opening deg) : 68.79
PA of pole (deg)     : 70.44
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.011
C/A sky separation (km) : 13155.7
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
  
```



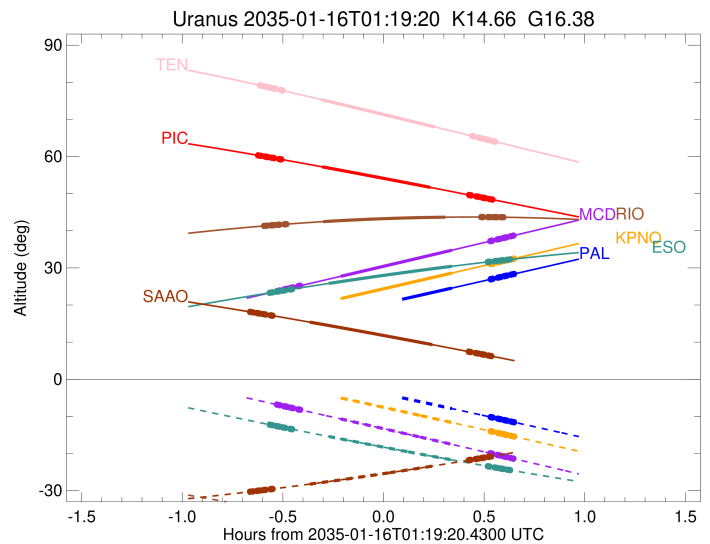
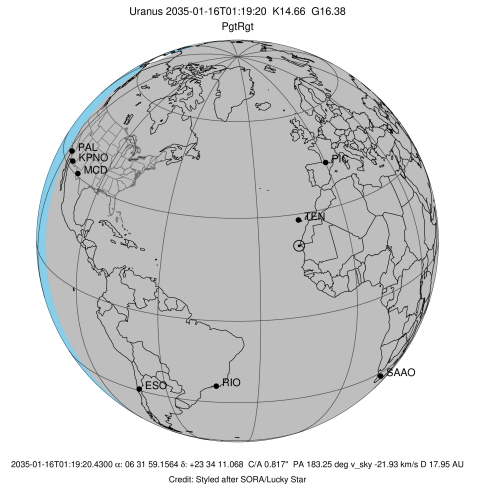
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-01-16T00:41:44.146		60.35	-67.19	51485.91	-22.84		
lambda	I	2035-01-16T00:42:48.167		60.18	-67.12	50026.71	-22.77		
delta	I	2035-01-16T00:44:04.099		59.98	-67.04	48300.35	-22.70		
gamma	I	2035-01-16T00:44:33.939		59.90	-67.01	47623.31	-22.68		
eta	I	2035-01-16T00:44:53.668		59.85	-66.98	47176.12	-22.66		
beta	I	2035-01-16T00:46:00.898		59.67	-66.91	45656.18	-22.59		
alpha	I	2035-01-16T00:46:43.133		59.56	-66.86	44699.75	-22.54		
4	I	2035-01-16T00:48:18.622		59.31	-66.74	42554.44	-22.43		
5	I	2035-01-16T00:48:32.500		59.27	-66.72	42231.43	-22.39		
6	I	2035-01-16T00:48:50.081		59.22	-66.70	41837.16	-22.38		
Uranus	I	2035-01-16T01:01:01.669		57.23	-65.67	25378.04		-12.34	-12.91
Uranus	E	2035-01-16T01:33:19.630		51.69	-61.98	25062.88		20.93	21.83
6	E	2035-01-16T01:44:54.508		49.63	-60.40	41862.93	22.33		
5	E	2035-01-16T01:45:08.955		49.59	-60.37	42189.65	22.33		
4	E	2035-01-16T01:45:27.449		49.54	-60.33	42609.76	22.37		
alpha	E	2035-01-16T01:47:01.383		49.26	-60.10	44717.82	22.47		
beta	E	2035-01-16T01:47:43.737		49.13	-60.00	45676.13	22.53		
eta	E	2035-01-16T01:48:50.258		48.93	-59.84	47176.12	22.59		
gamma	E	2035-01-16T01:49:10.182		48.87	-59.79	47626.39	22.61		
delta	E	2035-01-16T01:49:39.974		48.78	-59.72	48300.35	22.64		
lambda	E	2035-01-16T01:50:56.138		48.56	-59.54	50026.71	22.70		
epsilon	E	2035-01-16T01:51:37.598		48.43	-59.44	50968.35	22.77		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-16T01:23:30.560
 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 : 3382601343365091456
 2Mass ID (if available) : 06315915+2334112
 ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.665
 G magnitude : 16.377
 RP magnitude : 15.808
 BP magnitude : 16.784
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.93
 Sun-Target sep (deg) : 162.09
 Sun-Moon sep (deg) : 86.86
 B (ring opening deg) : 68.79
 PA of pole (deg) : 70.44
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.000
 C/A sky separation (km) : 13011.9
 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	2035-01-16T00:47:30.263		14.04	2.12x	51487.61	-22.56		
lambda	I	2035-01-16T00:48:35.152		14.25	1.92x	50026.71	-22.49		
delta	I	2035-01-16T00:49:52.010		14.51	1.68x	48300.35	-22.43		
gamma	I	2035-01-16T00:50:22.211		14.61	1.58x	47623.27	-22.41		
eta	I	2035-01-16T00:50:42.175		14.67	1.52x	47176.12	-22.39		
beta	I	2035-01-16T00:51:50.197		14.90	1.31x	45656.32	-22.33		
alpha	I	2035-01-16T00:52:32.942		15.04	1.18x	44699.56	-22.28		
4	I	2035-01-16T00:54:09.507		15.36	0.87x	42554.73	-22.18		
5	I	2035-01-16T00:54:23.581		15.41	0.83x	42230.89	-22.14		
6	I	2035-01-16T00:54:41.325		15.47	0.77x	41837.45	-22.13		
Uranus	I	2035-01-16T01:07:00.254		17.93	-1.56x	25380.17		-12.27	-12.83
Uranus	E	2035-01-16T01:39:42.774		24.56	-7.90	25060.27		20.99	21.89
6	E	2035-01-16T01:51:20.459		26.94	-10.19	41862.45	22.22		
5	E	2035-01-16T01:51:35.038		26.99	-10.24	42190.57	22.23		
4	E	2035-01-16T01:51:53.550		27.06	-10.30	42609.42	22.27		
alpha	E	2035-01-16T01:53:27.954		27.38	-10.61	44718.28	22.37		
beta	E	2035-01-16T01:54:10.471		27.53	-10.75	45675.94	22.43		
eta	E	2035-01-16T01:55:17.299		27.75	-10.98	47176.12	22.49		
gamma	E	2035-01-16T01:55:37.314		27.82	-11.04	47626.46	22.51		
delta	E	2035-01-16T01:56:07.234		27.93	-11.14	48300.35	22.54		
lambda	E	2035-01-16T01:57:23.727		28.19	-11.39	50026.71	22.60		
epsilon	E	2035-01-16T01:58:05.151		28.33	-11.53	50963.55	22.67		

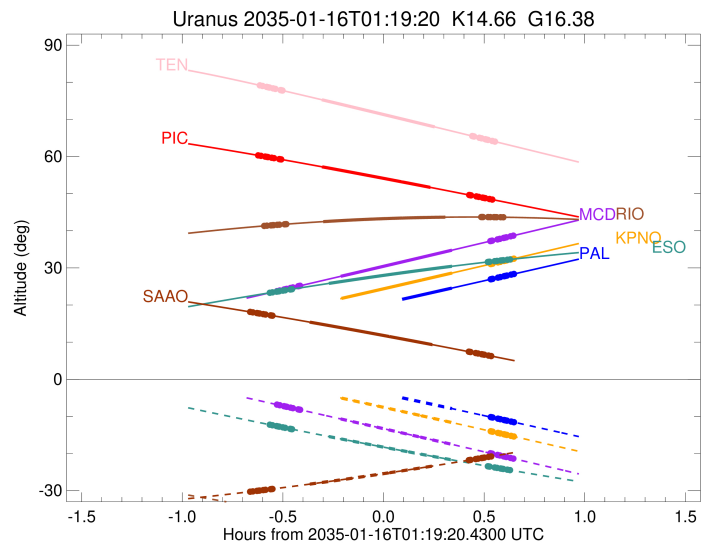
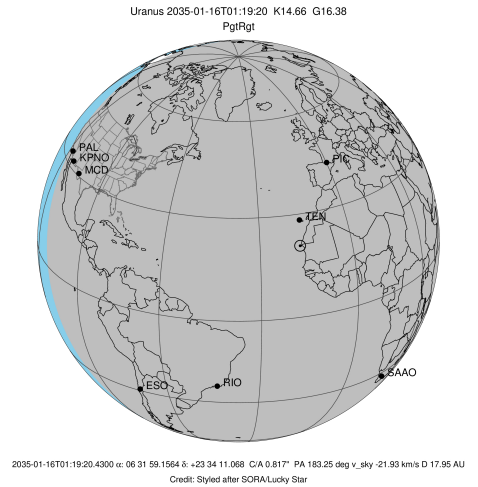
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-16T01:23:27.990
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 3382601343365091456
 2Mass ID (if available) : 06315915+2334112
 ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.665
 G magnitude : 16.377
 RP magnitude : 15.808
 BP magnitude : 16.784
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.93
 Sun-Target sep (deg) : 162.09
 Sun-Moon sep (deg) : 86.92
 B (ring opening deg) : 68.79
 PA of pole (deg) : 70.44
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.975
 C/A sky separation (km) : 12696.2
 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	2035-01-16T00:47:28.501		17.82	-1.29x	51486.14	-22.64		
lambda	I	2035-01-16T00:48:33.106		18.04	-1.50x	50026.71	-22.57		
delta	I	2035-01-16T00:49:49.694		18.30	-1.74x	48300.35	-22.51		
gamma	I	2035-01-16T00:50:19.784		18.40	-1.84x	47623.30	-22.49		
eta	I	2035-01-16T00:50:39.677		18.47	-1.91x	47176.12	-22.47		
beta	I	2035-01-16T00:51:47.450		18.70	-2.13x	45656.17	-22.42		
alpha	I	2035-01-16T00:52:30.013		18.85	-2.26x	44699.77	-22.37		
4	I	2035-01-16T00:54:06.210		19.17	-2.58x	42554.39	-22.27		
5	I	2035-01-16T00:54:20.180		19.22	-2.62x	42231.53	-22.23		
6	I	2035-01-16T00:54:37.891		19.28	-2.68x	41837.11	-22.23		
Uranus	I	2035-01-16T01:06:51.278		21.79	-5.08	25373.11		-12.51	-13.09
Uranus	E	2035-01-16T01:39:47.044		28.62	-11.67	25058.38		21.03	21.93
6	E	2035-01-16T01:51:20.263		31.04	-14.01	41862.18	22.32		
5	E	2035-01-16T01:51:34.818		31.09	-14.06	42191.09	22.32		
4	E	2035-01-16T01:51:53.215		31.16	-14.13	42609.24	22.36		
alpha	E	2035-01-16T01:53:27.262		31.48	-14.45	44718.53	22.46		
beta	E	2035-01-16T01:54:09.601		31.63	-14.59	45675.85	22.51		
eta	E	2035-01-16T01:55:16.185		31.87	-14.82	47176.12	22.57		
gamma	E	2035-01-16T01:55:36.130		31.94	-14.89	47626.50	22.59		
delta	E	2035-01-16T01:56:05.941		32.04	-14.99	48300.35	22.62		
lambda	E	2035-01-16T01:57:22.170		32.31	-15.25	50026.71	22.68		
epsilon	E	2035-01-16T01:58:03.355		32.45	-15.39	50961.30	22.75		

```

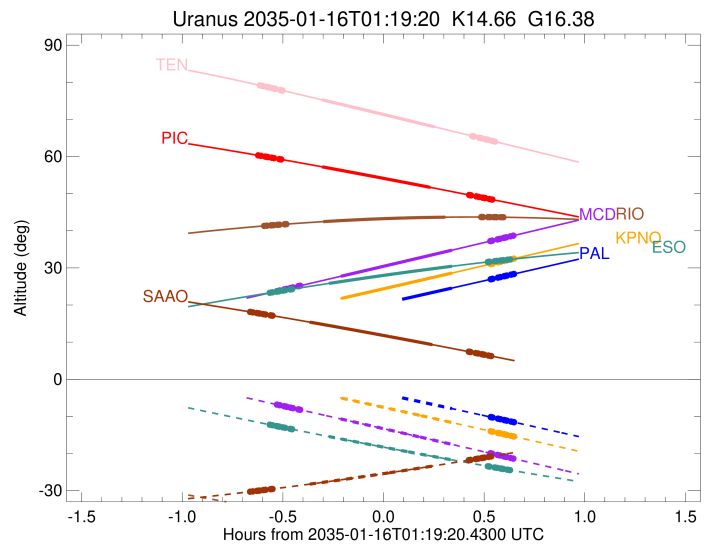
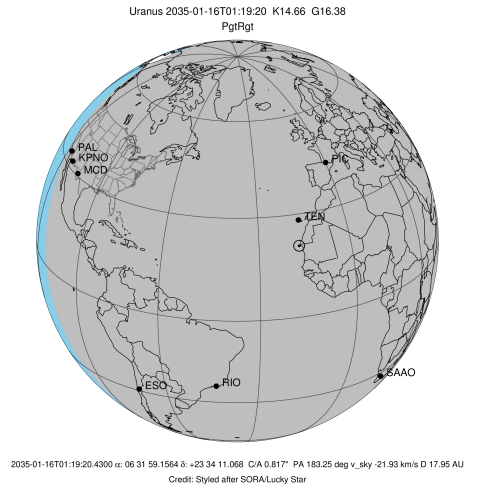
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-16T01:23:18.680
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : MCD
Location             : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 3382601343365091456
2Mass ID (if available) : 06315915+2334112
ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
RUWE (>1.4 is poor) : 1.07
K magnitude          : 14.665
G magnitude          : 16.377
RP magnitude         : 15.808
BP magnitude         : 16.784
DUPflag             : 0
Distance (au)        : 17.948
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -21.93
Sun-Target sep (deg) : 162.09
Sun-Moon sep (deg)  : 87.01
B (ring opening deg) : 68.79
PA of pole (deg)    : 70.44
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.946
C/A sky separation (km) : 12315.6
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	2035-01-16T00:47:21.076		23.69	-6.78	51484.30	-22.74		
lambda	I	2035-01-16T00:48:25.315		23.91	-7.00	50026.71	-22.67		
delta	I	2035-01-16T00:49:41.556		24.18	-7.25	48300.35	-22.62		
gamma	I	2035-01-16T00:50:11.505		24.28	-7.35	47623.34	-22.59		
eta	I	2035-01-16T00:50:31.305		24.35	-7.42	47176.12	-22.58		
beta	I	2035-01-16T00:51:38.760		24.59	-7.65	45656.00	-22.53		
alpha	I	2035-01-16T00:52:21.089		24.74	-7.79	44700.03	-22.48		
4	I	2035-01-16T00:53:56.819		25.07	-8.11	42553.98	-22.39		
5	I	2035-01-16T00:54:10.659		25.12	-8.16	42232.32	-22.35		
6	I	2035-01-16T00:54:28.326		25.18	-8.22	41836.68	-22.35		
Uranus	I	2035-01-16T01:06:34.971		27.73	-10.69	25364.52		-12.81	-13.39
Uranus	E	2035-01-16T01:39:45.309		34.77	-17.54	25056.41		21.08	21.98
6	E	2035-01-16T01:51:13.169		37.22	-19.94	41861.86	22.44		
5	E	2035-01-16T01:51:27.691		37.28	-19.99	42191.71	22.44		
4	E	2035-01-16T01:51:45.949		37.34	-20.05	42609.01	22.48		
alpha	E	2035-01-16T01:53:19.550		37.67	-20.38	44718.82	22.57		
beta	E	2035-01-16T01:54:01.668		37.82	-20.53	45675.73	22.62		
eta	E	2035-01-16T01:55:07.949		38.06	-20.76	47176.12	22.68		
gamma	E	2035-01-16T01:55:27.805		38.13	-20.83	47626.55	22.69		
delta	E	2035-01-16T01:55:57.481		38.24	-20.93	48300.35	22.72		
lambda	E	2035-01-16T01:57:13.378		38.51	-21.20	50026.71	22.77		
epsilon	E	2035-01-16T01:57:54.273		38.66	-21.34	50958.66	22.84		

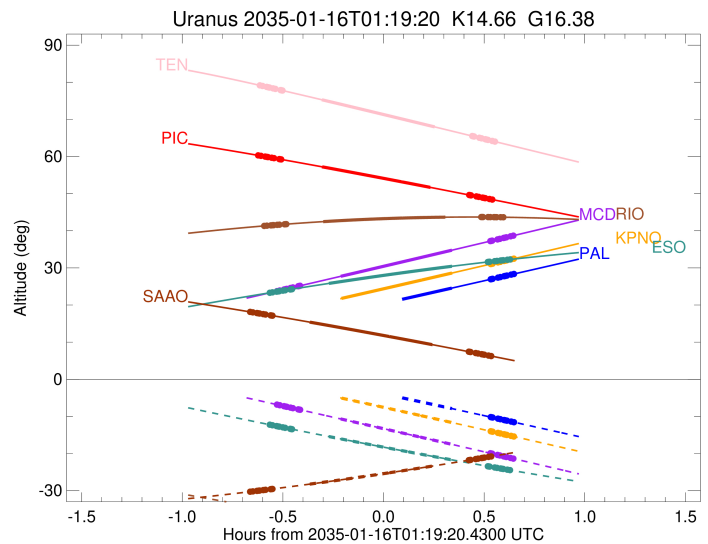
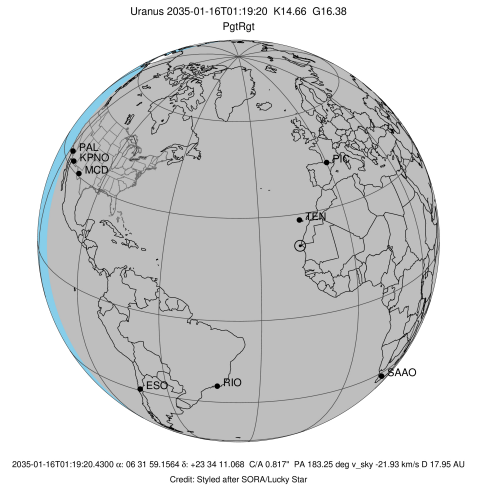
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2035-01-16T01:17:53.800
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        : 3382601343365091456
2Mass ID (if available) : 06315915+2334112
ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
RUWE (>1.4 is poor)  : 1.07
K magnitude           : 14.665
G magnitude           : 16.377
RP magnitude          : 15.808
BP magnitude          : 16.784
DUPflag              : 0
Distance (au)         : 17.948
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -21.93
Sun-Target sep (deg)  : 162.09
Sun-Moon sep (deg)    : 87.49
B (ring opening deg)  : 68.79
PA of pole (deg)      : 70.44
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.867
C/A sky separation (km) : 11291.8
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
    
```



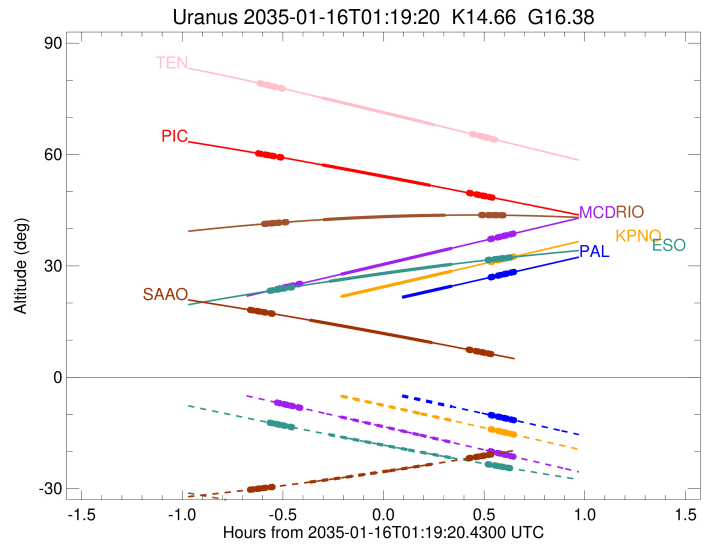
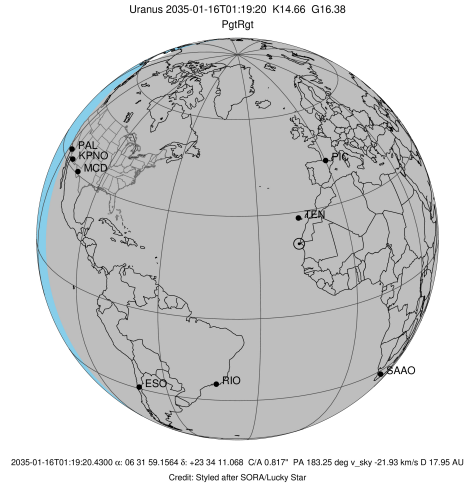
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-01-16T00:42:14.251		79.22	-79.62	51477.31	-23.16		
lambda	I	2035-01-16T00:43:17.004		79.01	-79.79	50026.71	-23.10		
delta	I	2035-01-16T00:44:31.820		78.75	-79.99	48300.35	-23.05		
gamma	I	2035-01-16T00:45:01.197		78.65	-80.07	47623.48	-23.03		
eta	I	2035-01-16T00:45:20.628		78.59	-80.12	47176.12	-23.02		
beta	I	2035-01-16T00:46:26.814		78.36	-80.29	45655.37	-22.97		
alpha	I	2035-01-16T00:47:08.244		78.21	-80.39	44700.98	-22.93		
4	I	2035-01-16T00:48:42.171		77.89	-80.63	42552.55	-22.85		
5	I	2035-01-16T00:48:55.545		77.84	-80.66	42235.10	-22.82		
6	I	2035-01-16T00:49:13.031		77.78	-80.70	41835.21	-22.82		
Uranus	I	2035-01-16T01:00:57.805		75.30	-82.14	25337.11		-13.71	-14.33
Uranus	E	2035-01-16T01:34:36.147		67.98	-81.64	25053.13		21.15	22.06
6	E	2035-01-16T01:45:49.594		65.51	-80.08	41861.28	22.77		
5	E	2035-01-16T01:46:03.979		65.46	-80.04	42192.83	22.77		
4	E	2035-01-16T01:46:21.893		65.39	-79.99	42608.60	22.81		
alpha	E	2035-01-16T01:47:54.226		65.06	-79.74	44719.33	22.88		
beta	E	2035-01-16T01:48:35.749		64.90	-79.63	45675.53	22.92		
eta	E	2035-01-16T01:49:41.181		64.66	-79.45	47176.12	22.97		
gamma	E	2035-01-16T01:50:00.789		64.59	-79.39	47626.61	22.98		
delta	E	2035-01-16T01:50:30.094		64.48	-79.31	48300.35	23.00		
lambda	E	2035-01-16T01:51:45.076		64.21	-79.10	50026.71	23.05		
epsilon	E	2035-01-16T01:52:25.315		64.06	-78.98	50954.51	23.10		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-16T01:19:38.060
 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 : 3382601343365091456
 2Mass ID (if available) : 06315915+2334112
 ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.665
 G magnitude : 16.377
 RP magnitude : 15.808
 BP magnitude : 16.784
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.93
 Sun-Target sep (deg) : 162.09
 Sun-Moon sep (deg) : 87.22
 B (ring opening deg) : 68.79
 PA of pole (deg) : 70.44
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.454
 C/A sky separation (km) : 5909.7
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



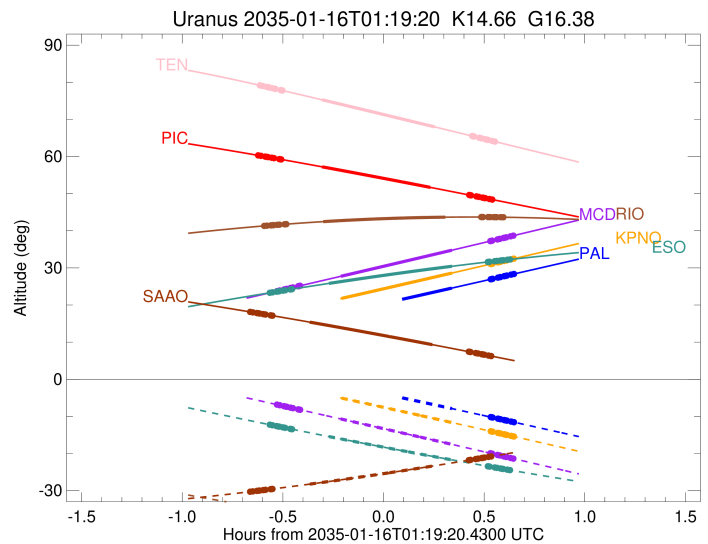
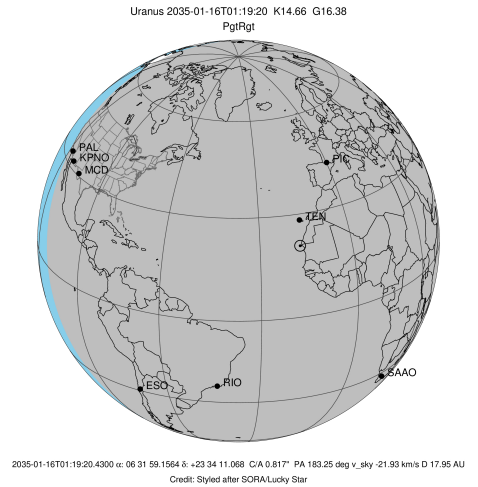
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-01-16T00:43:34.047		41.30	-34.70	51450.53	-23.59		
lambda	I	2035-01-16T00:44:34.457		41.37	-34.84	50026.71	-23.56		
delta	I	2035-01-16T00:45:47.737		41.46	-35.03	48300.35	-23.55		
gamma	I	2035-01-16T00:46:16.457		41.50	-35.10	47624.01	-23.55		
eta	I	2035-01-16T00:46:35.480		41.52	-35.14	47176.12	-23.54		
beta	I	2035-01-16T00:47:40.231		41.60	-35.30	45653.14	-23.53		
alpha	I	2035-01-16T00:48:20.377		41.65	-35.40	44704.61	-23.52		
4	I	2035-01-16T00:49:52.185		41.75	-35.62	42547.46	-23.50		
5	I	2035-01-16T00:50:04.541		41.77	-35.65	42245.38	-23.48		
6	I	2035-01-16T00:50:22.173		41.79	-35.69	41829.73	-23.48		
Uranus	I	2035-01-16T01:01:21.330		42.46	-37.24	25225.72		-16.94	-17.69
Uranus	E	2035-01-16T01:37:47.247		43.66	-41.64	25062.93		20.93	21.83
6	E	2035-01-16T01:48:29.717		43.70	-42.69	41856.31	23.49		
5	E	2035-01-16T01:48:44.312		43.70	-42.72	42202.36	23.49		
4	E	2035-01-16T01:49:01.042		43.70	-42.74	42604.85	23.50		
alpha	E	2035-01-16T01:50:31.132		43.69	-42.88	44723.61	23.52		
beta	E	2035-01-16T01:51:11.297		43.68	-42.94	45673.68	23.54		
eta	E	2035-01-16T01:52:15.152		43.68	-43.03	47176.12	23.55		
gamma	E	2035-01-16T01:52:34.308		43.67	-43.06	47627.24	23.55		
delta	E	2035-01-16T01:53:02.883		43.67	-43.10	48300.35	23.56		
lambda	E	2035-01-16T01:54:16.144		43.66	-43.21	50026.71	23.57		
epsilon	E	2035-01-16T01:54:53.884		43.65	-43.27	50916.36	23.59		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-16T01:21:28.460
 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 : 3382601343365091456
 2Mass ID (if available) : 06315915+2334112
 ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.665
 G magnitude : 16.377
 RP magnitude : 15.808
 BP magnitude : 16.784
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.93
 Sun-Target sep (deg) : 162.09
 Sun-Moon sep (deg) : 86.99
 B (ring opening deg) : 68.79
 PA of pole (deg) : 70.44
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.435
 C/A sky separation (km) : 5661.4
 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	2035-01-16T00:45:13.930		23.27	-12.20	51450.04	-23.48		
lambda	I	2035-01-16T00:46:14.593		23.42	-12.39	50026.71	-23.46		
delta	I	2035-01-16T00:47:28.199		23.60	-12.61	48300.35	-23.45		
gamma	I	2035-01-16T00:47:57.045		23.67	-12.70	47624.02	-23.44		
eta	I	2035-01-16T00:48:16.151		23.72	-12.76	47176.12	-23.44		
beta	I	2035-01-16T00:49:21.183		23.87	-12.96	45653.09	-23.43		
alpha	I	2035-01-16T00:50:01.493		23.97	-13.08	44704.69	-23.42		
4	I	2035-01-16T00:51:33.690		24.20	-13.36	42547.35	-23.40		
5	I	2035-01-16T00:51:46.083		24.23	-13.40	42245.61	-23.39		
6	I	2035-01-16T00:52:03.800		24.27	-13.45	41829.60	-23.39		
Uranus	I	2035-01-16T01:03:04.798		25.82	-15.43	25222.48		-17.03	-17.78
Uranus	E	2035-01-16T01:39:44.118		30.44	-21.71	25065.13		20.88	21.78
6	E	2035-01-16T01:50:27.911		31.60	-23.44	41855.96	23.44		
5	E	2035-01-16T01:50:42.581		31.63	-23.48	42203.04	23.44		
4	E	2035-01-16T01:50:59.300		31.66	-23.52	42604.57	23.46		
alpha	E	2035-01-16T01:52:29.601		31.81	-23.76	44723.91	23.47		
beta	E	2035-01-16T01:53:09.830		31.88	-23.87	45673.54	23.49		
eta	E	2035-01-16T01:54:13.823		31.99	-24.03	47176.12	23.50		
gamma	E	2035-01-16T01:54:33.020		32.02	-24.08	47627.29	23.50		
delta	E	2035-01-16T01:55:01.653		32.07	-24.16	48300.35	23.51		
lambda	E	2035-01-16T01:56:15.065		32.19	-24.35	50026.71	23.52		
epsilon	E	2035-01-16T01:56:52.767		32.26	-24.45	50913.67	23.55		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-16T01:15:41.920
 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 : 3382601343365091456
 2Mass ID (if available) : 06315915+2334112
 ICRS Star Coord at Epoch: 06h 31m 59.15643s +23:34:11.06775s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.665
 G magnitude : 16.377
 RP magnitude : 15.808
 BP magnitude : 16.784
 DUPflag : 0
 Distance (au) : 17.948
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.93
 Sun-Target sep (deg) : 162.09
 Sun-Moon sep (deg) : 86.80
 B (ring opening deg) : 68.79
 PA of pole (deg) : 70.44
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.500
 C/A sky separation (km) : 6512.6
 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_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	2035-01-16T00:39:22.281		18.18	-30.31	51452.10	-23.40		
lambda	I	2035-01-16T00:40:23.258		18.02	-30.20	50026.71	-23.37		
delta	I	2035-01-16T00:41:37.157		17.84	-30.07	48300.35	-23.35		
gamma	I	2035-01-16T00:42:06.126		17.76	-30.01	47623.98	-23.34		
eta	I	2035-01-16T00:42:25.312		17.71	-29.98	47176.12	-23.34		
beta	I	2035-01-16T00:43:30.628		17.55	-29.86	45653.27	-23.32		
alpha	I	2035-01-16T00:44:11.152		17.44	-29.78	44704.38	-23.31		
4	I	2035-01-16T00:45:43.784		17.21	-29.61	42547.78	-23.28		
5	I	2035-01-16T00:45:56.298		17.18	-29.58	42244.71	-23.26		
6	I	2035-01-16T00:46:14.054		17.13	-29.55	41830.09	-23.26		
Uranus	I	2035-01-16T00:57:21.665		15.39	-28.24	25234.51		-16.70	-17.45
Uranus	E	2035-01-16T01:33:55.374		9.32	-23.39	25058.59		21.03	21.93
6	E	2035-01-16T01:44:46.928		7.43	-21.80	41857.08	23.17		
5	E	2035-01-16T01:45:01.625		7.39	-21.76	42200.90	23.16		
4	E	2035-01-16T01:45:18.688		7.34	-21.72	42605.45	23.18		
alpha	E	2035-01-16T01:46:49.962		7.07	-21.49	44722.97	23.20		
beta	E	2035-01-16T01:47:30.717		6.95	-21.39	45673.98	23.22		
eta	E	2035-01-16T01:48:35.434		6.76	-21.22	47176.12	23.23		
gamma	E	2035-01-16T01:48:54.846		6.70	-21.18	47627.15	23.23		
delta	E	2035-01-16T01:49:23.816		6.61	-21.10	48300.35	23.24		
lambda	E	2035-01-16T01:50:38.076		6.39	-20.91	50026.71	23.25		
epsilon	E	2035-01-16T01:51:16.578		6.28	-20.82	50922.19	23.28		