

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-25T04:48:43.190
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3382608941165644672
 2Mass ID (if available) : 06302664+2335185

ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s

RUWE (>1.4 is poor) : 1.01
 K magnitude : 13.536
 G magnitude : 16.529
 RP magnitude : 15.514
 BP magnitude : 17.422
 DUPflag : 0
 Distance (au) : 18.007
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.99
 Sun-Target sep (deg) : 152.43
 Sun-Moon sep (deg) : 45.67
 B (ring opening deg) : 69.12
 PA of pole (deg) : 69.93

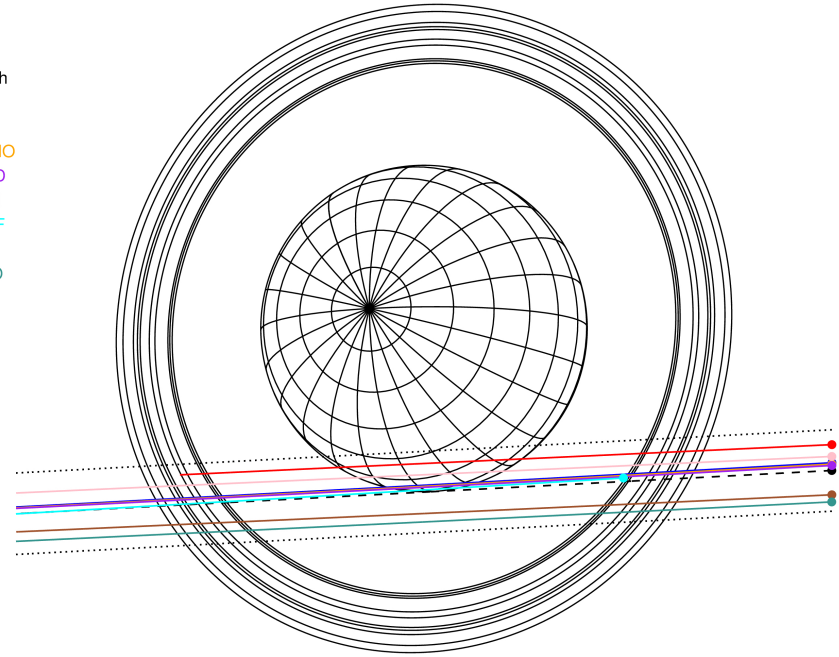
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2035-01-25T04:48:43.1900 α: 06 30 26.6062 δ: +23 35 18.150 C/A 1.952" PA 3.03 deg v_sky -19.99 km/s D 18.01 AU
 Credit: Styled after SORA/Lucky Star

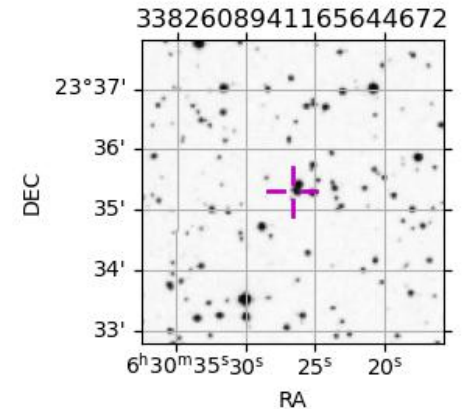
Uranus 2035-01-25T04:48:43 K13.54 G16.53 PtRgt

Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO



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

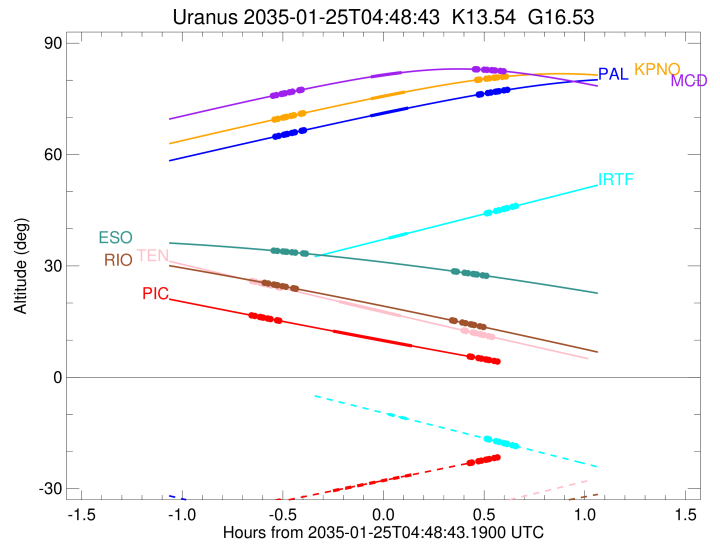
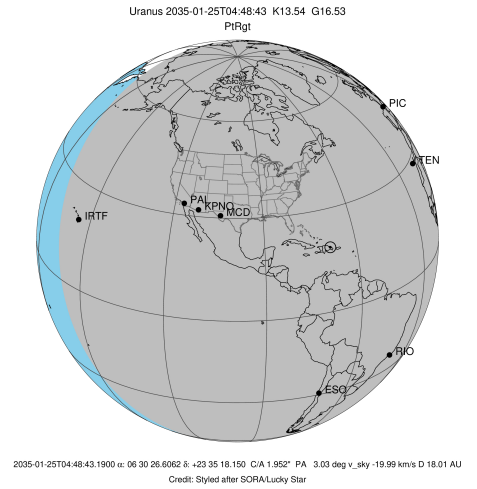
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	JAN 25 04:09 - JAN 25 05:17	PieRie
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	JAN 25 04:16 - JAN 25 05:25	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	JAN 25 04:16 - JAN 25 05:24	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	JAN 25 04:15 - JAN 25 05:24	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	JAN 25 04:09 - JAN 25 05:20	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5		+ +	+++++	JAN 25 04:50 - JAN 25 05:27	PieRne
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++		+++++	JAN 25 04:13 - JAN 25 05:18	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++++		+++++	JAN 25 04:16 - JAN 25 05:19	PnnRie
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



3382608941165644672

```

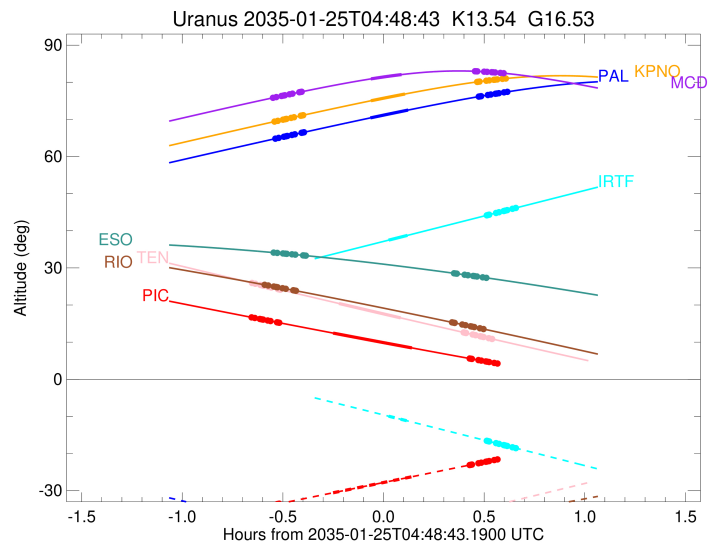
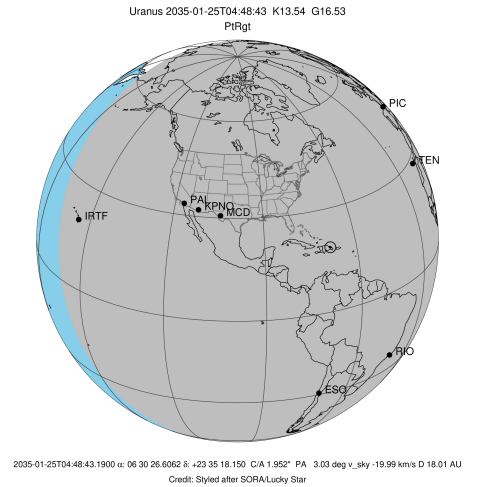
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-25T04:45:10.510
Event type           : PtRgt
: Uranus occs: topocentric, not geocentric
: Ring occs: geocentric, topocentric
Observer code        : PIC
Location             : Pic du Midi
Latitude (deg)       : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)        : 2.890
Gaia source ID       : 3382608941165644672
2Mass ID (if available) : 06302664+2335185
ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.536
G magnitude           : 16.529
RP magnitude          : 15.514
BP magnitude          : 17.422
DUPflag              : 0
Distance (au)         : 18.006
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.99
Sun-Target sep (deg) : 152.43
Sun-Moon sep (deg)   : 45.34
B (ring opening deg) : 69.12
PA of pole (deg)     : 69.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation ("): 1.617
C/A sky separation (km): 21120.2
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_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	2035-01-25T04:09:22.442		16.68	-35.03	51174.44	-19.19		
lambda	I	2035-01-25T04:10:22.168		16.50	-34.85	50026.71	-19.17		
delta	I	2035-01-25T04:11:52.601		16.24	-34.57	48300.35	-19.01		
gamma	I	2035-01-25T04:12:28.004		16.14	-34.46	47628.52	-18.94		
eta	I	2035-01-25T04:12:51.916		16.07	-34.39	47176.12	-18.90		
beta	I	2035-01-25T04:14:13.533		15.83	-34.14	45641.50	-18.73		
alpha	I	2035-01-25T04:15:01.723		15.69	-34.00	44736.67	-18.62		
4	I	2035-01-25T04:17:01.393		15.34	-33.63	42526.04	-18.32		
5	I	2035-01-25T04:17:12.623		15.30	-33.60	42310.77	-18.29		
6	I	2035-01-25T04:17:40.657		15.22	-33.51	41796.25	-18.20		
Uranus	I	2035-01-25T04:33:40.767		12.44	-30.58	25206.26		-17.15	-17.91
Uranus	E	2035-01-25T04:57:10.968		8.45	-26.26	25538.17		4.07	4.26
6	E	2035-01-25T05:14:24.386		5.59	-23.10	41847.12	18.12		
5	E	2035-01-25T05:14:45.056		5.54	-23.04	42220.61	18.20		
4	E	2035-01-25T05:15:05.086		5.48	-22.98	42596.50	18.24		
alpha	E	2035-01-25T05:17:01.438		5.16	-22.63	44732.55	18.53		
beta	E	2035-01-25T05:17:51.753		5.03	-22.47	45668.73	18.63		
eta	E	2035-01-25T05:19:12.347		4.81x	-22.23	47176.12	18.80		
gamma	E	2035-01-25T05:19:36.401		4.74x	-22.15	47628.76	18.84		
delta	E	2035-01-25T05:20:11.987		4.65x	-22.04	48300.35	18.90		
lambda	E	2035-01-25T05:21:42.932		4.40x	-21.77	50026.71	19.06		
epsilon	E	2035-01-25T05:22:24.617		4.29x	-21.64	50822.48	19.08		

```

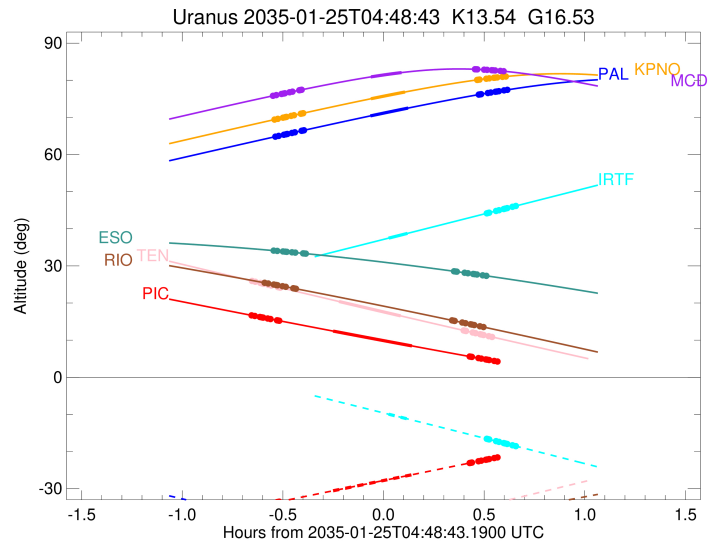
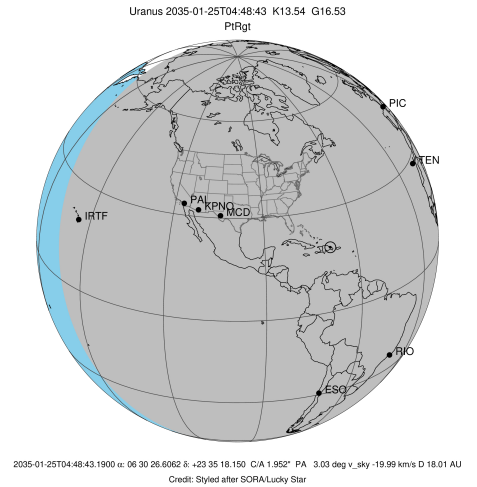
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-25T04:50:07.760
Event type           : PtRgt
: Uranus occs: topocentric, not geocentric
: Ring occs: geocentric, topocentric
Observer code        : PAL
Location             : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID       : 3382608941165644672
2Mass ID (if available) : 06302664+2335185
ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 13.536
G magnitude          : 16.529
RP magnitude         : 15.514
BP magnitude         : 17.422
DUPflag             : 0
Distance (au)        : 18.007
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -19.99
Sun-Target sep (deg) : 152.43
Sun-Moon sep (deg)  : 46.53
B (ring opening deg) : 69.12
PA of pole (deg)    : 69.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.877
C/A sky separation (km) : 24512.6
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	2035-01-25T04:16:29.445		64.82	-38.56	51147.09	-18.77		
lambda	I	2035-01-25T04:17:29.078		65.02	-38.77	50026.71	-18.72		
delta	I	2035-01-25T04:19:01.831		65.33	-39.09	48300.35	-18.50		
gamma	I	2035-01-25T04:19:38.220		65.45	-39.22	47628.87	-18.41		
eta	I	2035-01-25T04:20:02.863		65.54	-39.31	47176.12	-18.34		
beta	I	2035-01-25T04:21:27.137		65.82	-39.60	45641.23	-18.10		
alpha	I	2035-01-25T04:22:16.924		65.98	-39.77	44738.95	-17.95		
4	I	2035-01-25T04:24:21.632		66.40	-40.21	42526.50	-17.52		
5	I	2035-01-25T04:24:33.376		66.44	-40.25	42312.82	-17.47		
6	I	2035-01-25T04:25:02.897		66.54	-40.35	41795.40	-17.35		
Uranus	I	2035-01-25T04:44:48.098		70.41	-44.47	25361.31		-12.69	-13.27
Uranus	E	2035-01-25T04:56:02.113		72.51	-46.80	25551.67		-2.41	-2.53
6	E	2035-01-25T05:17:07.105		76.14	-51.16	41842.71	17.37		
5	E	2035-01-25T05:17:29.375		76.20	-51.23	42228.88	17.49		
4	E	2035-01-25T05:17:49.606		76.26	-51.30	42592.50	17.54		
alpha	E	2035-01-25T05:19:50.441		76.57	-51.71	44735.46	17.97		
beta	E	2035-01-25T05:20:42.012		76.70	-51.89	45666.95	18.12		
eta	E	2035-01-25T05:22:04.784		76.91	-52.17	47176.12	18.36		
gamma	E	2035-01-25T05:22:29.416		76.97	-52.26	47629.17	18.43		
delta	E	2035-01-25T05:23:05.748		77.06	-52.38	48300.35	18.52		
lambda	E	2035-01-25T05:24:38.394		77.28	-52.70	50026.71	18.74		
epsilon	E	2035-01-25T05:25:19.750		77.38	-52.84	50803.80	18.79		

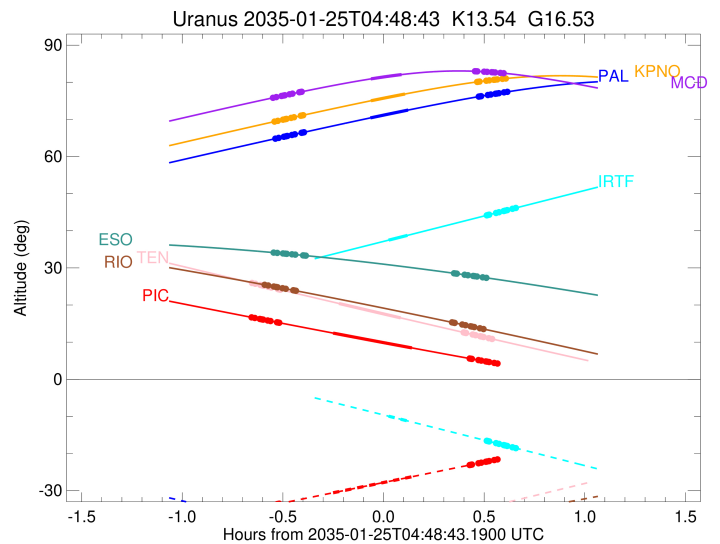
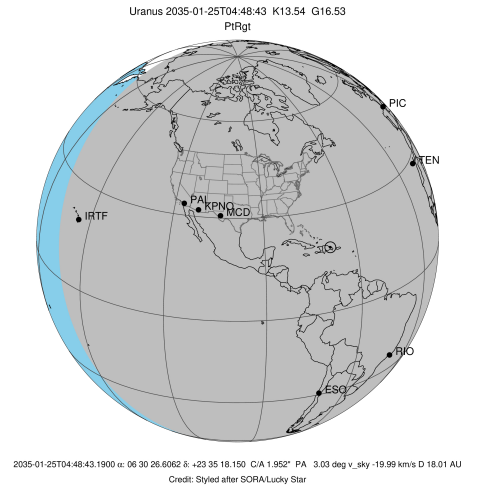
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch             : 2035-01-25T04:49:45.790
Event type           : PtRgt
: Uranus occs: topocentric, not geocentric
: 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       : 3382608941165644672
2Mass ID (if available) : 06302664+2335185
ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.536
G magnitude           : 16.529
RP magnitude          : 15.514
BP magnitude          : 17.422
DUPflag              : 0
Distance (au)        : 18.007
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -19.99
Sun-Target sep (deg) : 152.43
Sun-Moon sep (deg)   : 46.50
B (ring opening deg) : 69.12
PA of pole (deg)     : 69.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.891
C/A sky separation (km) : 24690.3
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	2035-01-25T04:16:14.232		69.42	-43.00	51145.21	-18.74		
lambda	I	2035-01-25T04:17:13.844		69.62	-43.21	50026.71	-18.70		
delta	I	2035-01-25T04:18:46.738		69.93	-43.54	48300.35	-18.47		
gamma	I	2035-01-25T04:19:23.187		70.05	-43.67	47628.90	-18.37		
eta	I	2035-01-25T04:19:47.875		70.14	-43.75	47176.12	-18.31		
beta	I	2035-01-25T04:21:12.314		70.42	-44.05	45641.22	-18.06		
alpha	I	2035-01-25T04:22:02.202		70.59	-44.23	44739.09	-17.91		
4	I	2035-01-25T04:24:07.231		71.00	-44.67	42526.54	-17.47		
5	I	2035-01-25T04:24:19.010		71.04	-44.71	42312.94	-17.42		
6	I	2035-01-25T04:24:48.626		71.14	-44.82	41795.36	-17.30		
Uranus	I	2035-01-25T04:44:58.353		75.02	-49.08	25374.85		-12.24	-12.80
Uranus	E	2035-01-25T04:55:08.106		76.85	-51.21	25548.18		-2.93	-3.07
6	E	2035-01-25T05:16:38.292		80.10	-55.69	41842.51	17.31		
5	E	2035-01-25T05:17:00.669		80.15	-55.77	42229.24	17.43		
4	E	2035-01-25T05:17:20.938		80.19	-55.84	42592.32	17.48		
alpha	E	2035-01-25T05:19:22.142		80.42	-56.25	44735.59	17.92		
beta	E	2035-01-25T05:20:13.837		80.52	-56.43	45666.87	18.07		
eta	E	2035-01-25T05:21:36.810		80.67	-56.72	47176.12	18.32		
gamma	E	2035-01-25T05:22:01.497		80.71	-56.80	47629.19	18.39		
delta	E	2035-01-25T05:22:37.905		80.77	-56.93	48300.35	18.48		
lambda	E	2035-01-25T05:24:10.734		80.92	-57.24	50026.71	18.71		
epsilon	E	2035-01-25T05:24:52.127		80.99	-57.39	50803.08	18.76		

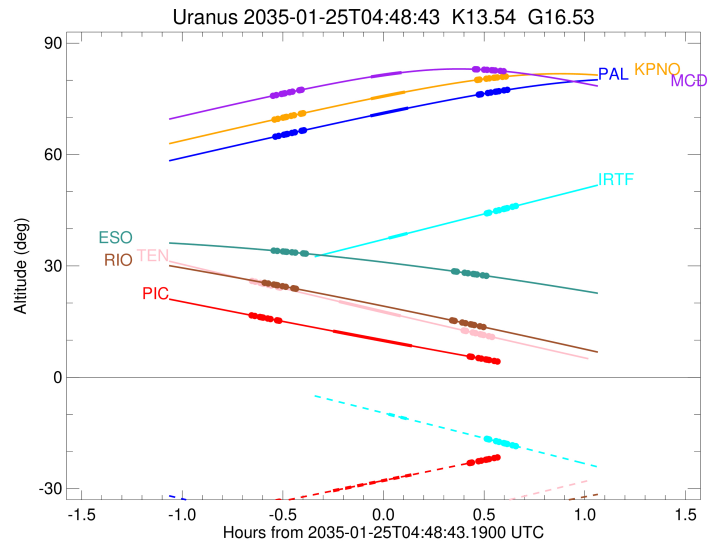
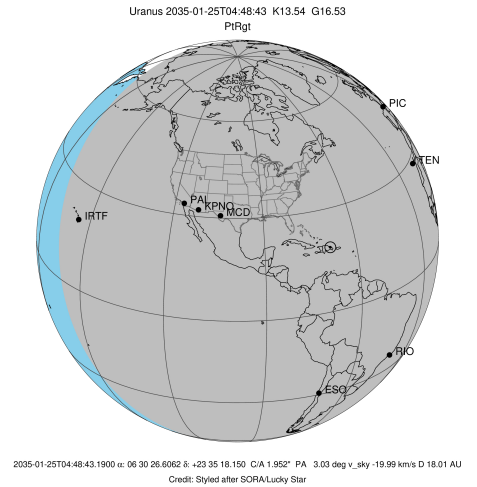
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2035-01-25T04:49:12.230
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3382608941165644672
 2Mass ID (if available) : 06302664+2335185
 ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 13.536
 G magnitude : 16.529
 RP magnitude : 15.514
 BP magnitude : 17.422
 DUPflag : 0
 Distance (au) : 18.007
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.99
 Sun-Target sep (deg) : 152.43
 Sun-Moon sep (deg) : 46.44
 B (ring opening deg) : 69.12
 PA of pole (deg) : 69.93
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.902
 C/A sky separation (km) : 24838.1
 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	2035-01-25T04:15:46.507		75.82	-49.47	51143.46	-18.73		
lambda	I	2035-01-25T04:16:46.081		76.02	-49.68	50026.71	-18.68		
delta	I	2035-01-25T04:18:19.075		76.31	-50.01	48300.35	-18.45		
gamma	I	2035-01-25T04:18:55.568		76.43	-50.14	47628.92	-18.35		
eta	I	2035-01-25T04:19:20.290		76.51	-50.23	47176.12	-18.28		
beta	I	2035-01-25T04:20:44.853		76.78	-50.53	45641.21	-18.03		
alpha	I	2035-01-25T04:21:34.816		76.94	-50.71	44739.23	-17.88		
4	I	2035-01-25T04:23:40.094		77.33	-51.16	42526.58	-17.43		
5	I	2035-01-25T04:23:51.901		77.36	-51.20	42313.04	-17.38		
6	I	2035-01-25T04:24:21.593		77.46	-51.30	41795.32	-17.26		
Uranus	I	2035-01-25T04:44:54.511		80.91	-55.67	25387.30		-11.81	-12.35
Uranus	E	2035-01-25T04:54:04.953		82.07	-57.60	25544.46		-3.40	-3.56
6	E	2035-01-25T05:15:59.002		82.98	-62.15	41842.37	17.26		
5	E	2035-01-25T05:16:21.468		82.96	-62.22	42229.52	17.38		
4	E	2035-01-25T05:16:41.774		82.95	-62.29	42592.19	17.43		
alpha	E	2035-01-25T05:18:43.299		82.86	-62.71	44735.67	17.88		
beta	E	2035-01-25T05:19:35.104		82.81	-62.88	45666.82	18.03		
eta	E	2035-01-25T05:20:58.254		82.72	-63.17	47176.12	18.28		
gamma	E	2035-01-25T05:21:22.991		82.70	-63.25	47629.20	18.35		
delta	E	2035-01-25T05:21:59.468		82.65	-63.37	48300.35	18.45		
lambda	E	2035-01-25T05:23:32.461		82.53	-63.69	50026.71	18.68		
epsilon	E	2035-01-25T05:24:13.896		82.47	-63.83	50802.58	18.73		

```

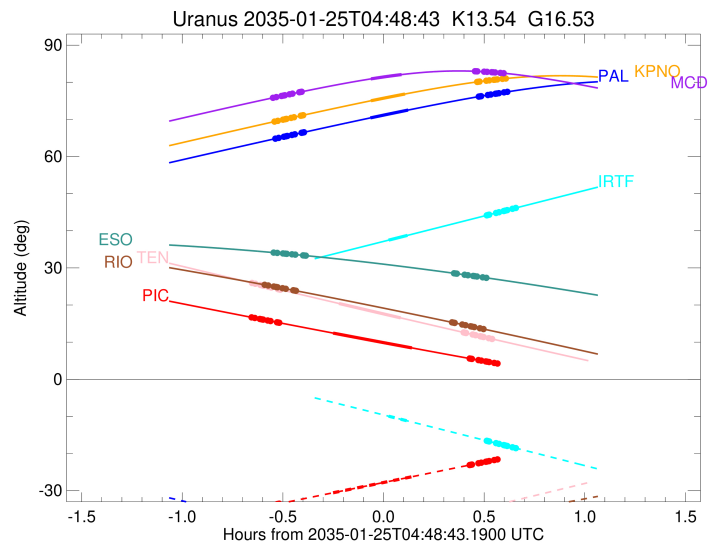
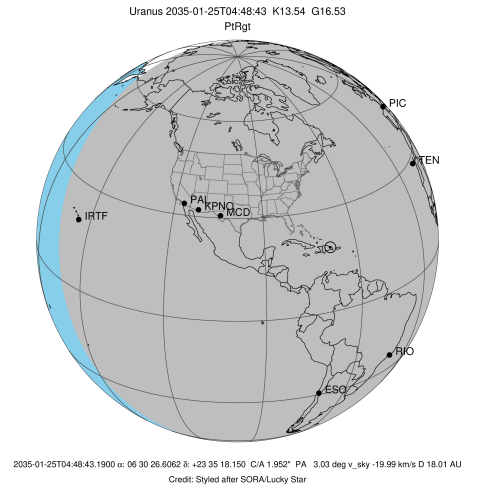
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-25T04:44:22.190
Event type           : PtRgt
: Uranus occs: topocentric, not geocentric
: Ring occs: geocentric, topocentric
Observer code        : TEN
Location              : Teide Obs./Tenerife
Latitude (deg)       : 28.30050
E. Longitude (deg)   : 343.48909
Altitude (km)        : 2.395
Gaia source ID       : 3382608941165644672
2Mass ID (if available) : 06302664+2335185
ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.536
G magnitude           : 16.529
RP magnitude          : 15.514
BP magnitude          : 17.422
DUPflag              : 0
Distance (au)         : 18.006
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.99
Sun-Target sep (deg) : 152.43
Sun-Moon sep (deg)   : 45.31
B (ring opening deg) : 69.12
PA of pole (deg)     : 69.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.752
C/A sky separation (km) : 22882.2
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_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	2035-01-25T04:09:31.284		25.94	-49.89	51158.18	-18.94		
lambda	I	2035-01-25T04:10:30.954		25.73	-49.68	50026.71	-18.90		
delta	I	2035-01-25T04:12:02.730		25.40	-49.34	48300.35	-18.71		
gamma	I	2035-01-25T04:12:38.696		25.27	-49.21	47628.73	-18.63		
eta	I	2035-01-25T04:13:03.023		25.19	-49.12	47176.12	-18.58		
beta	I	2035-01-25T04:14:26.132		24.89	-48.81	45641.33	-18.37		
alpha	I	2035-01-25T04:15:15.202		24.71	-48.63	44738.00	-18.25		
4	I	2035-01-25T04:17:17.617		24.28	-48.18	42526.26	-17.88		
5	I	2035-01-25T04:17:29.116		24.24	-48.14	42312.01	-17.84		
6	I	2035-01-25T04:17:57.955		24.13	-48.03	41795.72	-17.74		
Uranus	I	2035-01-25T04:35:26.902		20.41	-44.18	25275.18		-15.30	-15.99
Uranus	E	2035-01-25T04:53:50.245		16.53	-40.13	25556.67		1.36	1.42
6	E	2035-01-25T05:12:38.069		12.61	-35.99	41845.10	17.65		
5	E	2035-01-25T05:12:59.611		12.54	-35.91	42224.40	17.75		
4	E	2035-01-25T05:13:19.877		12.47	-35.83	42594.69	17.79		
alpha	E	2035-01-25T05:15:19.096		12.05	-35.40	44733.90	18.14		
beta	E	2035-01-25T05:16:10.342		11.88	-35.21	45667.93	18.27		
eta	E	2035-01-25T05:17:32.503		11.59	-34.91	47176.12	18.46		
gamma	E	2035-01-25T05:17:56.992		11.51	-34.82	47628.95	18.52		
delta	E	2035-01-25T05:18:33.172		11.39	-34.69	48300.35	18.60		
lambda	E	2035-01-25T05:20:05.543		11.07	-34.35	50026.71	18.78		
epsilon	E	2035-01-25T05:20:47.367		10.92	-34.20	50813.78	18.81		

```

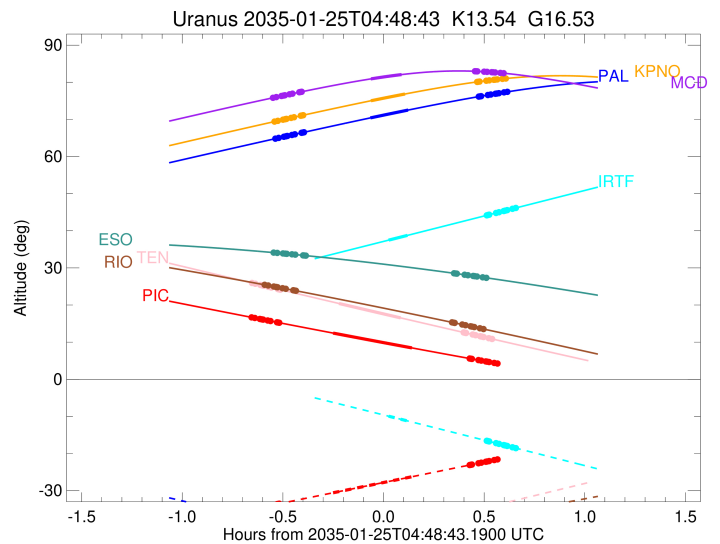
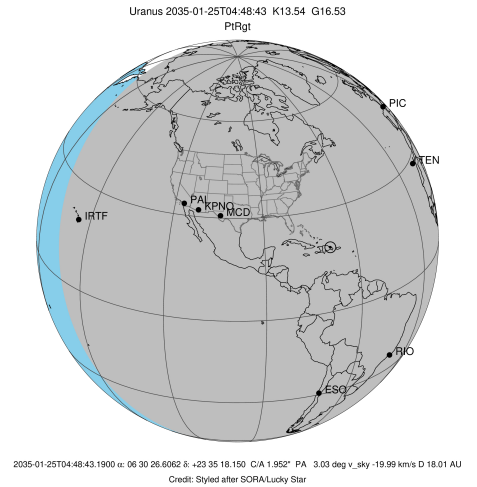
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-25T04:52:45.740
Event type           : PtRgt
: Uranus occs: topocentric, not geocentric
: Ring occs: geocentric, topocentric
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 3382608941165644672
2Mass ID (if available) : 06302664+2335185
ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.536
G magnitude           : 16.529
RP magnitude          : 15.514
BP magnitude          : 17.422
DUPflag              : 0
Distance (au)        : 18.007
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -19.99
Sun-Target sep (deg) : 152.43
Sun-Moon sep (deg)   : 46.64
B (ring opening deg) : 69.12
PA of pole (deg)     : 69.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.933
C/A sky separation (km) : 25239.4
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	2035-01-25T04:19:15.440		30.44	-3.01x	51142.24	-18.45		
lambda	I	2035-01-25T04:20:15.858		30.67	-3.24x	50026.71	-18.39		
delta	I	2035-01-25T04:21:50.305		31.02	-3.59x	48300.35	-18.16		
gamma	I	2035-01-25T04:22:27.379		31.16	-3.72x	47628.94	-18.06		
eta	I	2035-01-25T04:22:52.501		31.26	-3.82x	47176.12	-17.99		
beta	I	2035-01-25T04:24:18.459		31.58	-4.14x	45641.20	-17.74		
alpha	I	2035-01-25T04:25:09.262		31.77	-4.33x	44739.36	-17.58		
4	I	2035-01-25T04:27:16.763		32.26	-4.80x	42526.62	-17.12		
5	I	2035-01-25T04:27:28.789		32.30	-4.84x	42313.15	-17.07		
6	I	2035-01-25T04:27:59.042		32.42	-4.96x	41795.28	-16.94		
Uranus	I	2035-01-25T04:50:14.128		37.48	-9.95	25425.19		-10.39	-10.88
Uranus	E	2035-01-25T04:55:53.630		38.77	-11.22	25524.24		-5.26	-5.51
6	E	2035-01-25T05:19:30.058		44.16	-16.57	41841.57	17.00		
5	E	2035-01-25T05:19:52.994		44.25	-16.66	42231.01	17.13		
4	E	2035-01-25T05:20:13.485		44.33	-16.74	42591.43	17.18		
alpha	E	2035-01-25T05:22:16.758		44.80	-17.21	44736.19	17.65		
beta	E	2035-01-25T05:23:09.186		45.00	-17.41	45666.48	17.81		
eta	E	2035-01-25T05:24:33.372		45.32	-17.73	47176.12	18.07		
gamma	E	2035-01-25T05:24:58.404		45.41	-17.82	47629.27	18.14		
delta	E	2035-01-25T05:25:35.297		45.56	-17.96	48300.35	18.24		
lambda	E	2035-01-25T05:27:09.316		45.91	-18.32	50026.71	18.48		
epsilon	E	2035-01-25T05:27:51.010		46.07	-18.48	50799.27	18.54		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-25T04:44:45.790
Event type          : PtRgt
: Uranus occs: topocentric, not geocentric
: 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      : 3382608941165644672
2Mass ID (if available) : 06302664+2335185
ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
RUWE (>1.4 is poor) : 1.01
K magnitude         : 13.536
G magnitude         : 16.529
RP magnitude        : 15.514
BP magnitude        : 17.422
DUPflag            : 0
Distance (au)       : 18.006
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -19.99
Sun-Target sep (deg) : 152.43
Sun-Moon sep (deg)  : 45.34
B (ring opening deg) : 69.12
PA of pole (deg)    : 69.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.217
C/A sky separation (km) : 28949.1
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
  
```



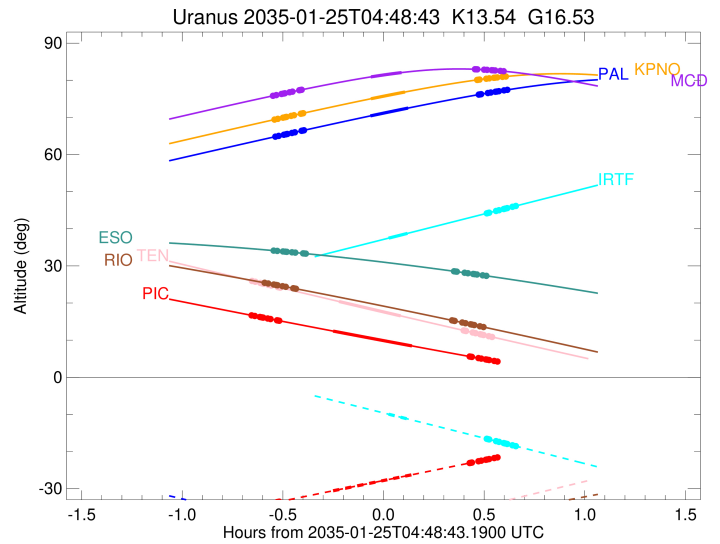
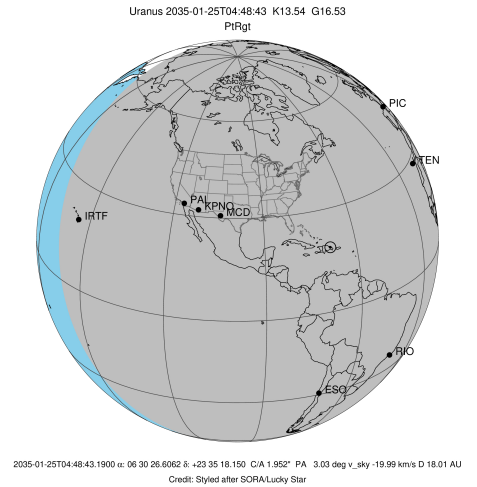
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-01-25T04:13:20.319		25.43	-45.03	51101.65	-17.53		
lambda	I	2035-01-25T04:14:21.623		25.26	-44.93	50026.71	-17.44		
delta	I	2035-01-25T04:16:01.560		24.98	-44.78	48300.35	-17.10		
gamma	I	2035-01-25T04:16:40.949		24.87	-44.72	47629.42	-16.96		
eta	I	2035-01-25T04:17:07.752		24.79	-44.68	47176.12	-16.86		
beta	I	2035-01-25T04:18:39.802		24.53	-44.53	45641.05	-16.50		
alpha	I	2035-01-25T04:19:34.376		24.37	-44.44	44742.39	-16.27		
4	I	2035-01-25T04:21:53.242		23.97	-44.21	42527.99	-15.60		
5	I	2035-01-25T04:22:06.577		23.93	-44.19	42314.85	-15.52		
6	I	2035-01-25T04:22:40.028		23.83	-44.13	41794.76	-15.34		

No planet occultations

6	E	2035-01-25T05:09:08.199		15.33	-38.41	41837.10	15.28		
5	E	2035-01-25T05:09:34.481		15.25	-38.34	42239.28	15.46		
4	E	2035-01-25T05:09:56.469		15.18	-38.29	42587.21	15.54		
alpha	E	2035-01-25T05:12:12.127		14.75	-37.97	44738.79	16.20		
beta	E	2035-01-25T05:13:08.865		14.57	-37.83	45664.73	16.42		
eta	E	2035-01-25T05:14:39.908		14.28	-37.60	47176.12	16.78		
gamma	E	2035-01-25T05:15:06.850		14.19	-37.54	47629.62	16.88		
delta	E	2035-01-25T05:15:46.417		14.06	-37.44	48300.35	17.02		
lambda	E	2035-01-25T05:17:26.858		13.74	-37.19	50026.71	17.35		
epsilon	E	2035-01-25T05:18:10.403		13.60	-37.08	50785.08	17.44		


```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2035-01-25T04:46:29.820
Event type           : PtRgt
: Uranus occs: topocentric, not geocentric
: 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       : 3382608941165644672
2Mass ID (if available) : 06302664+2335185
ICRS Star Coord at Epoch: 06h 30m 26.60619s +23:35:18.15028s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 13.536
G magnitude           : 16.529
RP magnitude          : 15.514
BP magnitude          : 17.422
DUPflag              : 0
Distance (au)        : 18.006
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -19.99
Sun-Target sep (deg) : 152.43
Sun-Moon sep (deg)   : 45.70
B (ring opening deg) : 69.12
PA of pole (deg)     : 69.93
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.317
C/A sky separation (km) : 30261.0
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	2035-01-25T04:16:01.782		34.11	-40.98	51089.85	-17.19		
lambda	I	2035-01-25T04:17:03.626		34.03	-41.03	50026.71	-17.08		
delta	I	2035-01-25T04:18:45.777		33.89	-41.11	48300.35	-16.71		
gamma	I	2035-01-25T04:19:26.115		33.83	-41.13	47629.56	-16.55		
eta	I	2035-01-25T04:19:53.607		33.80	-41.15	47176.12	-16.44		
beta	I	2035-01-25T04:21:28.200		33.66	-41.22	45641.07	-16.02		
alpha	I	2035-01-25T04:22:24.402		33.58	-41.26	44743.26	-15.76		
4	I	2035-01-25T04:24:48.231		33.37	-41.35	42528.58	-15.01		
5	I	2035-01-25T04:25:02.173		33.35	-41.35	42315.11	-14.91		
6	I	2035-01-25T04:25:37.038		33.30	-41.38	41794.75	-14.71		

No planet occultations

6	E	2035-01-25T05:09:43.988		28.55	-41.77	41835.05	14.68		
5	E	2035-01-25T05:10:11.711		28.50	-41.77	42243.05	14.88		
4	E	2035-01-25T05:10:34.214		28.45	-41.76	42585.22	14.97		
alpha	E	2035-01-25T05:12:54.634		28.16	-41.71	44739.93	15.73		
beta	E	2035-01-25T05:13:52.886		28.03	-41.69	45663.92	15.98		
eta	E	2035-01-25T05:15:26.300		27.83	-41.66	47176.12	16.39		
gamma	E	2035-01-25T05:15:53.879		27.77	-41.64	47629.78	16.51		
delta	E	2035-01-25T05:16:34.311		27.69	-41.63	48300.35	16.66		
lambda	E	2035-01-25T05:18:16.749		27.47	-41.58	50026.71	17.04		
epsilon	E	2035-01-25T05:19:00.720		27.37	-41.56	50779.07	17.14		