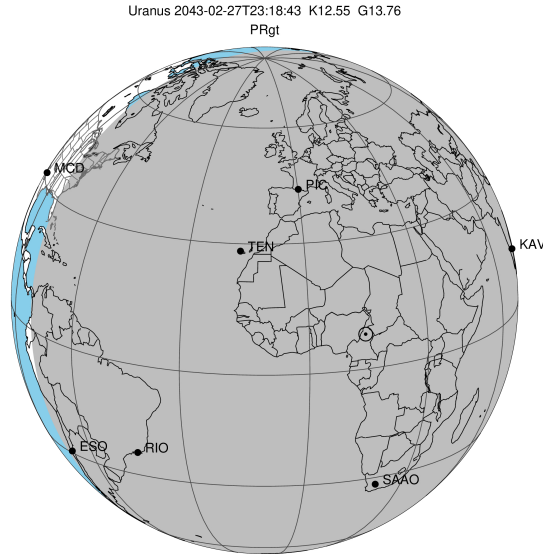


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2043-02-27T23:18:43.490  
 Event type : PRgt  
 : Uranus occs: not geocentric or topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 611251567949413632  
 2Mass ID (if available) : 09055512+1721582

ICRS Star Coord at Epoch: 09h 05m 55.12265s +17:21:57.61386s

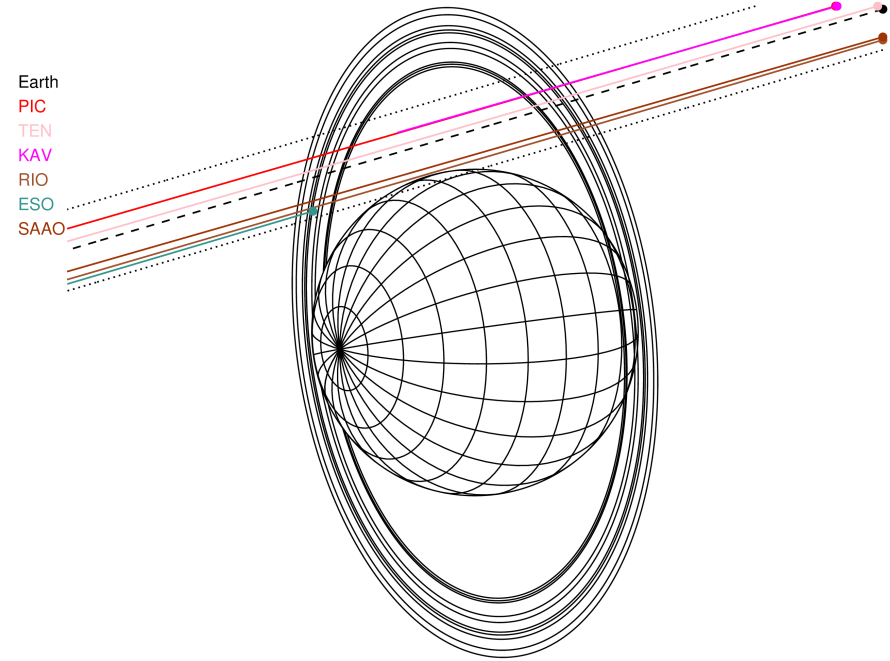
RUWE (>1.4 is poor) : 0.96  
 K magnitude : 12.554  
 G magnitude : 13.757  
 RP magnitude : 13.323  
 BP magnitude : 14.034  
 DUPflag : 0  
 Distance (au) : 17.534  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.39  
 Sun-Target sep (deg) : 155.13  
 Sun-Moon sep (deg) : 70.58  
 B (ring opening deg) : 33.38  
 PA of pole (deg) : 97.03

#	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



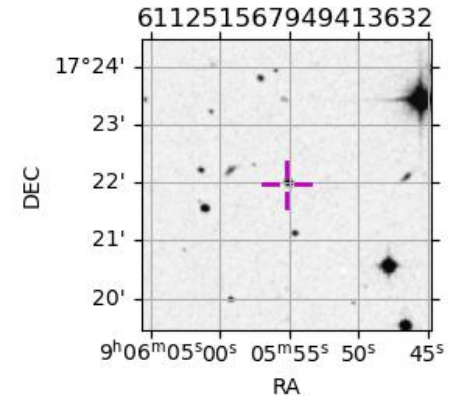
2043-02-27T23:18:43.4900 ra: 09 05 55.1226 s: +17 21 57.614 C/A 2.4011 PA 196.46 deg v\_sky -20.39 km/s D 17.53 AU  
 Credit: Styled after SORA/Lucky Star

Uranus 2043-02-27T23:18:43 K12.55 G13.76 PRgt

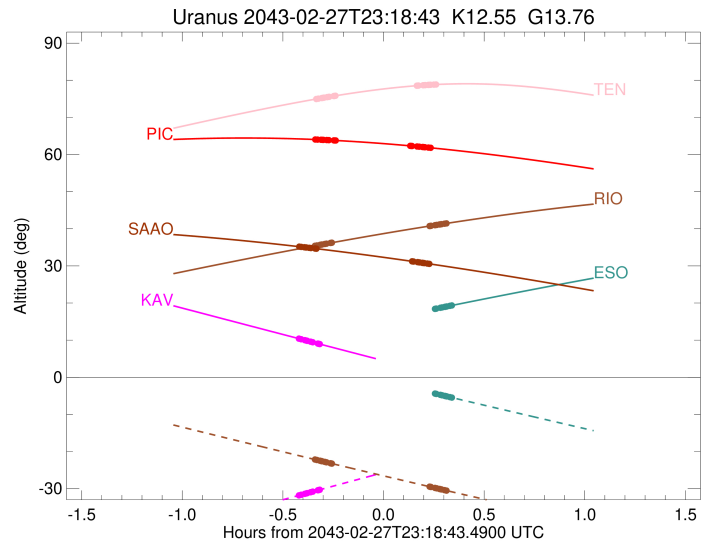
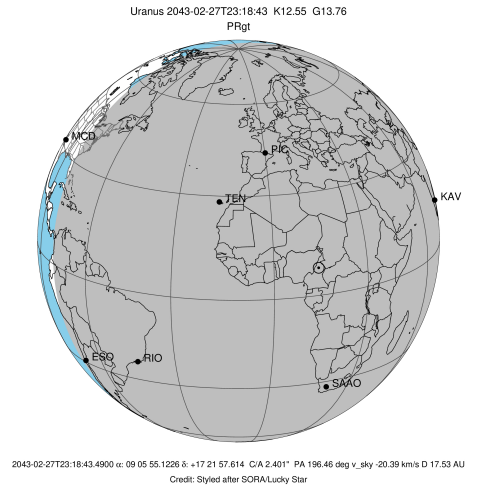


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	FEB 27 22:58 - FEB 27 23:33	PnnRie
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 27 22:58 - FEB 27 23:34	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++			FEB 27 22:53 - FEB 27 22:59	PnnRin
RIO	Rio de Janeiro	-22.9	316.8	+++++		+++++	FEB 27 22:58 - FEB 27 23:37	PnnRie
ESO	European Southern Obs	-29.3	289.3			+++++	FEB 27 23:37 - FEB 27 23:39	PnnRne
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++		+++++	FEB 27 22:53 - FEB 27 23:32	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2043-02-27T23:18:33.730  
 Event type : PRgt  
 : Uranus occs: not geocentric or 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 : 611251567949413632  
 2Mass ID (if available) : 09055512+1721582  
 ICRS Star Coord at Epoch: 09h 05m 55.12265s +17:21:57.61386s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 12.554  
 G magnitude : 13.757  
 RP magnitude : 13.323  
 BP magnitude : 14.034  
 DUPflag : 0  
 Distance (au) : 17.534  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.39  
 Sun-Target sep (deg) : 155.13  
 Sun-Moon sep (deg) : 71.35  
 B (ring opening deg) : 33.38  
 PA of pole (deg) : 97.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.623  
 C/A sky separation (km) : 33353.5  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itrfr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



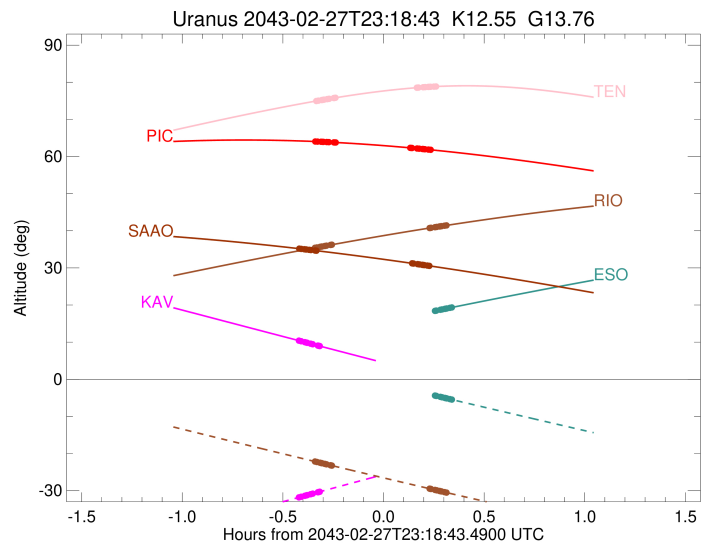
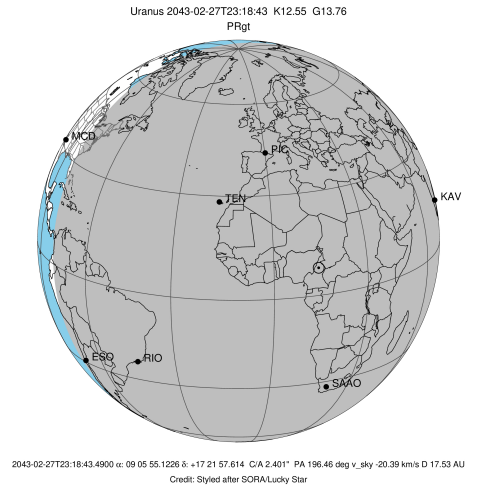
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-02-27T22:58:23.742		64.04	-51.78	51141.37	-28.29		
lambda	I	2043-02-27T22:59:03.753		64.02	-51.84	50026.71	-27.61		
delta	I	2043-02-27T23:00:07.230		63.98	-51.93	48300.35	-26.77		
gamma	I	2043-02-27T23:00:32.383		63.96	-51.97	47631.58	-26.41		
eta	I	2043-02-27T23:00:49.715		63.95	-52.00	47176.12	-26.15		
beta	I	2043-02-27T23:01:47.911		63.91	-52.08	45679.44	-25.22		
alpha	I	2043-02-27T23:02:27.655		63.88	-52.14	44687.72	-24.53		
4	I	2043-02-27T23:03:58.830		63.81	-52.28	42537.25	-22.81		
5	I	2043-02-27T23:04:12.527		63.80	-52.30	42188.54	-22.42		
6	I	2043-02-27T23:04:27.178		63.79	-52.32	41871.98	-22.18		

No planet occultations

6	E	2043-02-27T23:26:37.684		62.34	-53.95	41824.11	22.17		
5	E	2043-02-27T23:26:54.702		62.32	-53.97	42159.34	22.41		
4	E	2043-02-27T23:27:10.330		62.30	-53.98	42533.60	22.80		
alpha	E	2043-02-27T23:28:43.123		62.17	-54.07	44700.26	24.52		
beta	E	2043-02-27T23:29:21.167		62.12	-54.11	45654.47	25.21		
eta	E	2043-02-27T23:30:20.277		62.03	-54.16	47176.12	26.13		
gamma	E	2043-02-27T23:30:37.422		62.01	-54.18	47626.33	26.39		
delta	E	2043-02-27T23:31:02.791		61.97	-54.20	48300.35	26.75		
lambda	E	2043-02-27T23:32:06.315		61.88	-54.26	50026.71	27.59		
epsilon	E	2043-02-27T23:33:00.935		61.79	-54.31	51551.91	28.27		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2043-02-27T23:19:20.640
Event type           : PRgt
: Uranus occs: not geocentric or 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       : 611251567949413632
2Mass ID (if available) : 09055512+1721582
ICRS Star Coord at Epoch: 09h 05m 55.12265s +17:21:57.61386s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 12.554
G magnitude           : 13.757
RP magnitude          : 13.323
BP magnitude          : 14.034
DUPflag              : 0
Distance (au)         : 17.534
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -20.39
Sun-Target sep (deg) : 155.13
Sun-Moon sep (deg)   : 71.46
B (ring opening deg) : 33.38
PA of pole (deg)     : 97.03
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 2.474
C/A sky separation (km) : 31455.3
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall11.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
  
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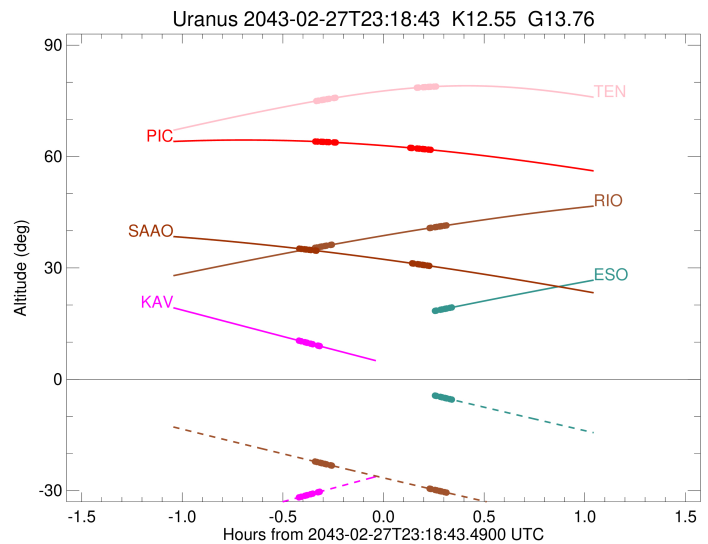
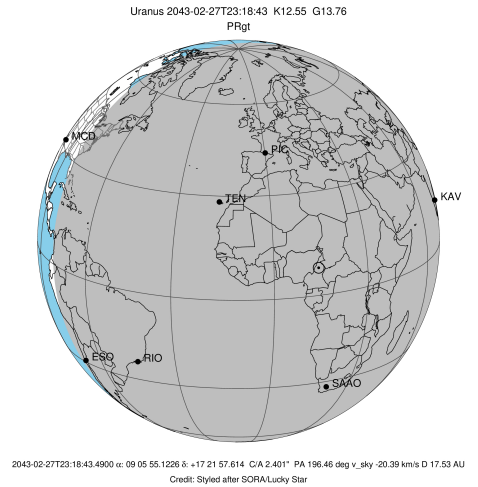


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-02-27T22:58:42.843		74.96	-51.45	51121.90	-29.53		
lambda	I	2043-02-27T22:59:20.416		75.06	-51.58	50026.71	-28.94		
delta	I	2043-02-27T23:00:20.805		75.22	-51.78	48300.35	-28.22		
gamma	I	2043-02-27T23:00:44.631		75.28	-51.86	47631.56	-27.92		
eta	I	2043-02-27T23:01:01.009		75.32	-51.91	47176.12	-27.70		
beta	I	2043-02-27T23:01:55.724		75.46	-52.09	45679.90	-26.92		
alpha	I	2043-02-27T23:02:32.813		75.56	-52.22	44688.67	-26.33		
4	I	2043-02-27T23:03:57.117		75.76	-52.50	42539.44	-24.92		
5	I	2043-02-27T23:04:09.274		75.79	-52.54	42193.33	-24.58		
6	I	2043-02-27T23:04:22.919		75.83	-52.58	41873.68	-24.41		

No planet occultations

6	E	2043-02-27T23:28:36.597		78.54	-57.25	41821.18	24.41		
5	E	2043-02-27T23:28:52.510		78.56	-57.30	42161.45	24.59		
4	E	2043-02-27T23:29:06.538		78.57	-57.34	42535.48	24.92		
alpha	E	2043-02-27T23:30:32.356		78.66	-57.60	44702.10	26.33		
beta	E	2043-02-27T23:31:07.742		78.70	-57.71	45653.34	26.92		
eta	E	2043-02-27T23:32:03.338		78.75	-57.88	47176.12	27.70		
gamma	E	2043-02-27T23:32:19.520		78.77	-57.93	47626.04	27.92		
delta	E	2043-02-27T23:32:43.545		78.79	-58.01	48300.35	28.22		
lambda	E	2043-02-27T23:33:43.938		78.83	-58.19	50026.71	28.94		
epsilon	E	2043-02-27T23:34:36.026		78.87	-58.35	51548.90	29.53		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2043-02-27T23:13:58.000  
 Event type : PRgt  
 : Uranus occs: not geocentric or 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 : 611251567949413632  
 2Mass ID (if available) : 09055512+1721582  
 ICRS Star Coord at Epoch: 09h 05m 55.12265s +17:21:57.61386s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 12.554  
 G magnitude : 13.757  
 RP magnitude : 13.323  
 BP magnitude : 14.034  
 DUPflag : 0  
 Distance (au) : 17.534  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.39  
 Sun-Target sep (deg) : 155.13  
 Sun-Moon sep (deg) : 70.38  
 B (ring opening deg) : 33.38  
 PA of pole (deg) : 97.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.629  
 C/A sky separation (km) : 33438.1  
 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

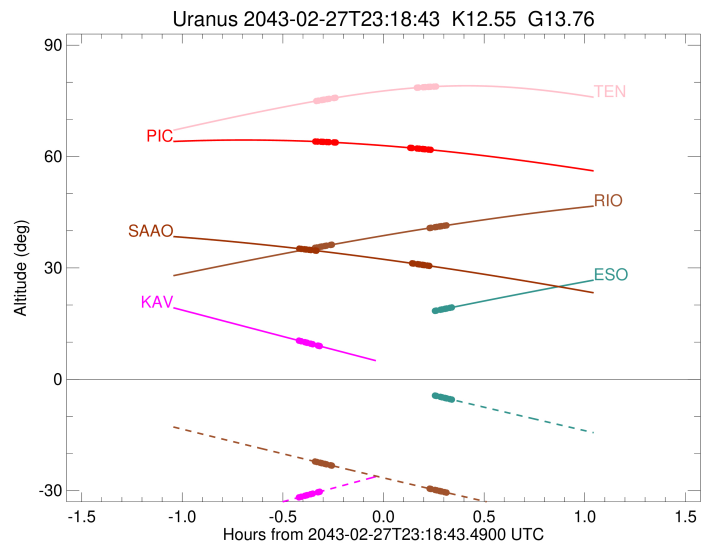
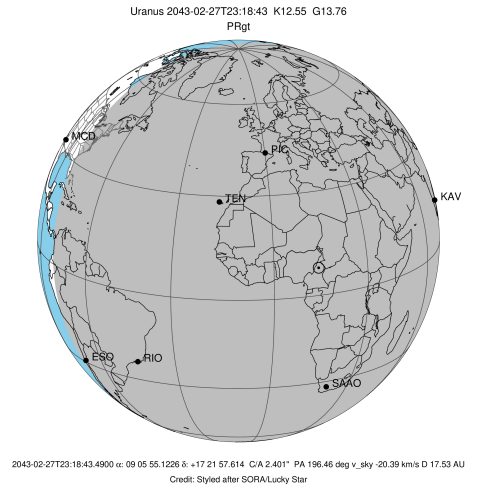


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-02-27T22:53:31.489		10.40	-31.82	51141.90	-27.83		
lambda	I	2043-02-27T22:54:12.196		10.24	-31.65	50026.71	-27.15		
delta	I	2043-02-27T22:55:16.766		9.99	-31.39	48300.35	-26.31		
gamma	I	2043-02-27T22:55:42.359		9.89	-31.28	47631.58	-25.95		
eta	I	2043-02-27T22:55:59.997		9.82	-31.21	47176.12	-25.69		
beta	I	2043-02-27T22:56:59.237		9.58	-30.97	45679.42	-24.77		
alpha	I	2043-02-27T22:57:39.711		9.43	-30.81	44687.69	-24.08		
4	I	2043-02-27T22:59:12.619		9.06	-30.43	42537.18	-22.37		
5	I	2043-02-27T22:59:26.598		9.01	-30.37	42188.37	-21.98		
6	I	2043-02-27T22:59:41.530		8.95	-30.31	41871.92	-21.75		

No planet occultations

6	E	2043-02-27T23:22:07.868		3.67x	-24.84	41824.26	21.70		
5	E	2043-02-27T23:22:25.232		3.61x	-24.77	42159.24	21.93		
4	E	2043-02-27T23:22:41.212		3.54x	-24.70	42533.51	22.32		
alpha	E	2043-02-27T23:24:15.955		3.17x	-24.32	44700.17	24.02		
beta	E	2043-02-27T23:24:54.791		3.02x	-24.16	45654.53	24.70		
eta	E	2043-02-27T23:25:55.101		2.79x	-23.92	47176.12	25.62		
gamma	E	2043-02-27T23:26:12.592		2.72x	-23.84	47626.35	25.87		
delta	E	2043-02-27T23:26:38.470		2.62x	-23.74	48300.35	26.22		
lambda	E	2043-02-27T23:27:43.259		2.37x	-23.48	50026.71	27.06		
epsilon	E	2043-02-27T23:28:38.962		2.15x	-23.25	51552.04	27.73		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2043-02-27T23:20:16.050  
 Event type : PRgt  
 : Uranus occs: not geocentric or 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 : 611251567949413632  
 2Mass ID (if available) : 09055512+1721582  
 ICRS Star Coord at Epoch: 09h 05m 55.12265s +17:21:57.61386s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 12.554  
 G magnitude : 13.757  
 RP magnitude : 13.323  
 BP magnitude : 14.034  
 DUPflag : 0  
 Distance (au) : 17.534  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.39  
 Sun-Target sep (deg) : 155.13  
 Sun-Moon sep (deg) : 71.20  
 B (ring opening deg) : 33.38  
 PA of pole (deg) : 97.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.036  
 C/A sky separation (km) : 25890.2  
 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\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk

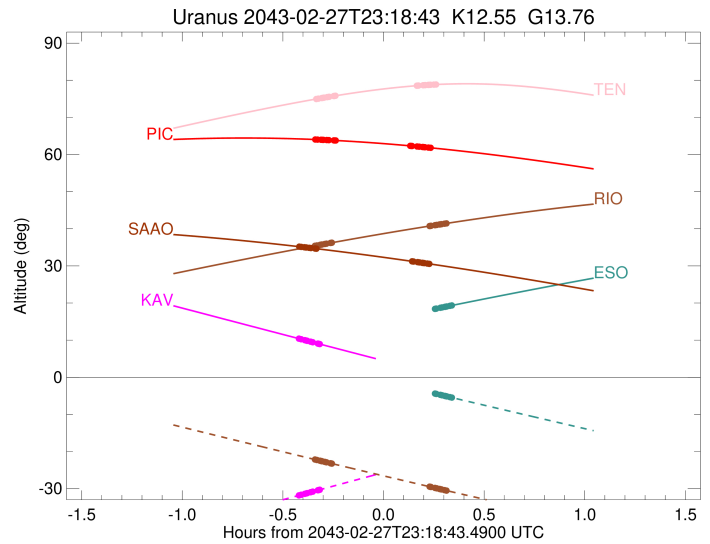
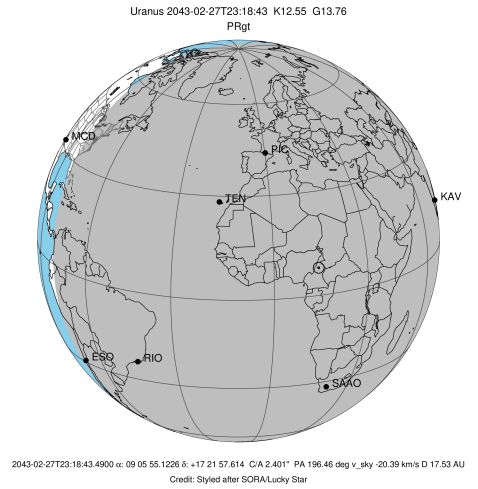


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-02-27T22:58:20.991		35.42	-22.17	51069.36	-32.23		
lambda	I	2043-02-27T22:58:53.609		35.51	-22.29	50026.71	-31.84		
delta	I	2043-02-27T22:59:48.191		35.67	-22.49	48300.35	-31.41		
gamma	I	2043-02-27T23:00:09.551		35.72	-22.56	47631.46	-31.22		
eta	I	2043-02-27T23:00:24.165		35.76	-22.62	47176.12	-31.09		
beta	I	2043-02-27T23:01:12.533		35.90	-22.79	45680.79	-30.62		
alpha	I	2043-02-27T23:01:44.835		35.99	-22.91	44691.69	-30.27		
4	I	2043-02-27T23:02:57.376		36.19	-23.17	42545.69	-29.47		
5	I	2043-02-27T23:03:06.873		36.21	-23.20	42206.41	-29.25		
6	I	2043-02-27T23:03:19.090		36.25	-23.25	41877.08	-29.19		

No planet occultations

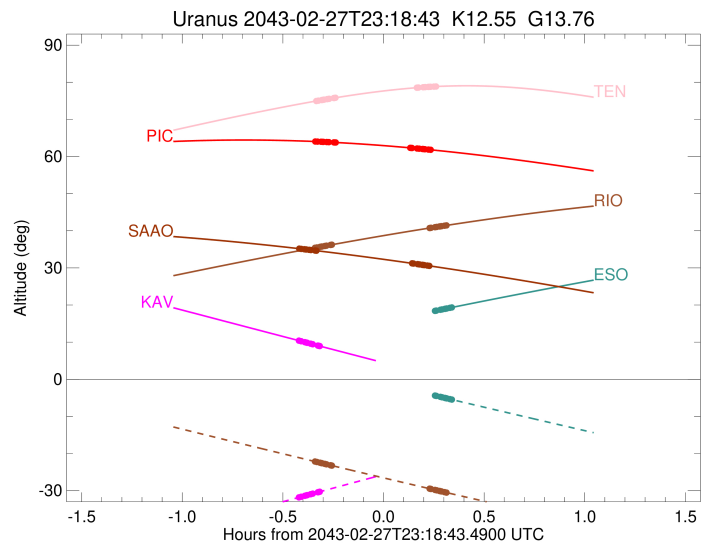
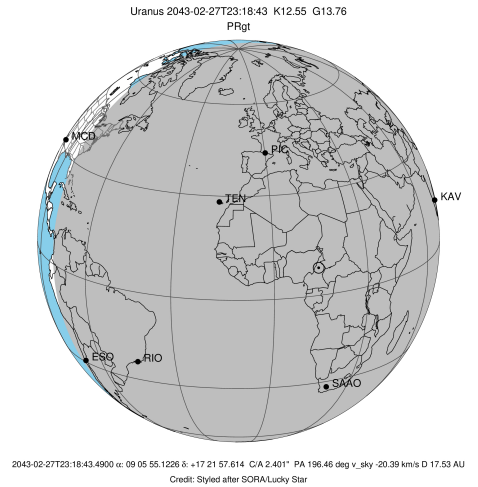
6	E	2043-02-27T23:32:24.686		40.73	-29.46	41814.10	29.22		
5	E	2043-02-27T23:32:38.928		40.76	-29.51	42168.59	29.28		
4	E	2043-02-27T23:32:50.145		40.79	-29.55	42541.11	29.51		
alpha	E	2043-02-27T23:34:03.973		40.97	-29.81	44707.25	30.31		
beta	E	2043-02-27T23:34:34.561		41.04	-29.91	45650.48	30.66		
eta	E	2043-02-27T23:35:23.769		41.15	-30.08	47176.12	31.13		
gamma	E	2043-02-27T23:35:38.165		41.19	-30.13	47625.24	31.26		
delta	E	2043-02-27T23:35:59.696		41.24	-30.21	48300.35	31.45		
lambda	E	2043-02-27T23:36:54.205		41.37	-30.40	50026.71	31.89		
epsilon	E	2043-02-27T23:37:41.270		41.48	-30.56	51535.71	32.28		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2043-02-27T23:21:38.680  
 Event type : PRgt  
 : Uranus occs: not geocentric or 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 : 611251567949413632  
 2Mass ID (if available) : 09055512+1721582  
 ICRS Star Coord at Epoch: 09h 05m 55.12265s +17:21:57.61386s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 12.554  
 G magnitude : 13.757  
 RP magnitude : 13.323  
 BP magnitude : 14.034  
 DUPflag : 0  
 Distance (au) : 17.534  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.39  
 Sun-Target sep (deg) : 155.13  
 Sun-Moon sep (deg) : 70.97  
 B (ring opening deg) : 33.38  
 PA of pole (deg) : 97.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.001  
 C/A sky separation (km) : 25445.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-02-27T22:59:26.086		11.86	3.07x	51066.26	-32.17		
lambda	I	2043-02-27T22:59:58.665		11.97	2.95x	50026.71	-31.79		
delta	I	2043-02-27T23:00:53.316		12.14	2.75x	48300.35	-31.38		
gamma	I	2043-02-27T23:01:14.693		12.21	2.67x	47631.45	-31.20		
eta	I	2043-02-27T23:01:29.315		12.26	2.62x	47176.12	-31.08		
beta	I	2043-02-27T23:02:17.684		12.42	2.45x	45680.83	-30.63		
alpha	I	2043-02-27T23:02:49.958		12.52	2.33x	44691.89	-30.30		
4	I	2043-02-27T23:04:02.400		12.75	2.07x	42546.10	-29.54		
5	I	2043-02-27T23:04:11.830		12.78	2.04x	42207.24	-29.32		
6	I	2043-02-27T23:04:24.066		12.82	1.99x	41877.24	-29.27		
Uranus	I	2043-02-27T23:19:42.389		15.74	-1.31x	25558.06		3.47	3.64
Uranus	E	2043-02-27T23:23:29.421		16.46	-2.13x	25547.60		12.21	12.77
6	E	2043-02-27T23:34:00.982		18.41	-4.38x	41813.55	29.33		
5	E	2043-02-27T23:34:15.246		18.46	-4.44x	42169.28	29.38		
4	E	2043-02-27T23:34:26.375		18.49	-4.48x	42541.63	29.60		
alpha	E	2043-02-27T23:35:40.043		18.72	-4.74x	44707.71	30.36		
beta	E	2043-02-27T23:36:10.559		18.81	-4.85x	45650.24	30.70		
eta	E	2043-02-27T23:36:59.730		18.96	-5.02	47176.12	31.15		
gamma	E	2043-02-27T23:37:14.118		19.00	-5.07	47625.18	31.27		
delta	E	2043-02-27T23:37:35.647		19.07	-5.15	48300.35	31.45		
lambda	E	2043-02-27T23:38:30.168		19.24	-5.34	50026.71	31.87		
epsilon	E	2043-02-27T23:39:17.222		19.38	-5.51	51534.18	32.25		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2043-02-27T23:15:21.150  
 Event type : PRgt  
 : Uranus occs: not geocentric or 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 : 611251567949413632  
 2Mass ID (if available) : 09055512+1721582  
 ICRS Star Coord at Epoch: 09h 05m 55.12265s +17:21:57.61386s  
 RUWE (>1.4 is poor) : 0.96  
 K magnitude : 12.554  
 G magnitude : 13.757  
 RP magnitude : 13.323  
 BP magnitude : 14.034  
 DUPflag : 0  
 Distance (au) : 17.534  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -20.39  
 Sun-Target sep (deg) : 155.13  
 Sun-Moon sep (deg) : 70.84  
 B (ring opening deg) : 33.38  
 PA of pole (deg) : 97.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 2.108  
 C/A sky separation (km) : 26806.7  
 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	2043-02-27T22:53:39.055		35.18	-49.68	51076.33	-31.83		
lambda	I	2043-02-27T22:54:12.330		35.12	-49.67	50026.71	-31.41		
delta	I	2043-02-27T22:55:07.704		35.02	-49.67	48300.35	-30.93		
gamma	I	2043-02-27T22:55:29.397		34.98	-49.67	47631.48	-30.73		
eta	I	2043-02-27T22:55:44.248		34.96	-49.66	47176.12	-30.59		
beta	I	2043-02-27T22:56:33.458		34.87	-49.66	45680.70	-30.08		
alpha	I	2043-02-27T22:57:06.387		34.81	-49.65	44691.23	-29.70		
4	I	2043-02-27T22:58:20.427		34.68	-49.64	42544.79	-28.82		
5	I	2043-02-27T22:58:30.244		34.66	-49.63	42204.58	-28.58		
6	I	2043-02-27T22:58:42.636		34.64	-49.63	41876.69	-28.50		

No planet occultations

6	E	2043-02-27T23:27:11.621		31.24	-48.70	41815.22	28.46		
5	E	2043-02-27T23:27:26.087		31.20	-48.69	42167.24	28.54		
4	E	2043-02-27T23:27:37.701		31.18	-48.68	42540.10	28.77		
alpha	E	2043-02-27T23:28:53.249		31.01	-48.61	44706.36	29.65		
beta	E	2043-02-27T23:29:24.556		30.95	-48.58	45650.95	30.03		
eta	E	2043-02-27T23:30:14.753		30.84	-48.53	47176.12	30.53		
gamma	E	2043-02-27T23:30:29.433		30.80	-48.52	47625.38	30.68		
delta	E	2043-02-27T23:30:51.365		30.75	-48.50	48300.35	30.88		
lambda	E	2043-02-27T23:31:46.848		30.63	-48.45	50026.71	31.35		
epsilon	E	2043-02-27T23:32:34.788		30.53	-48.40	51538.54	31.76		