

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-01-31T02:54:21.850
 Event type : XRT
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Gaia source ID : 3881552023473783424
 2Mass ID (if available) : 10082254+1218259

Uranus 2046-01-31T02:54:21 K14.51 G18.36 XRT

ICRS Star Coord at Epoch: 10h 08m 22.54341s +12:18:25.82571s

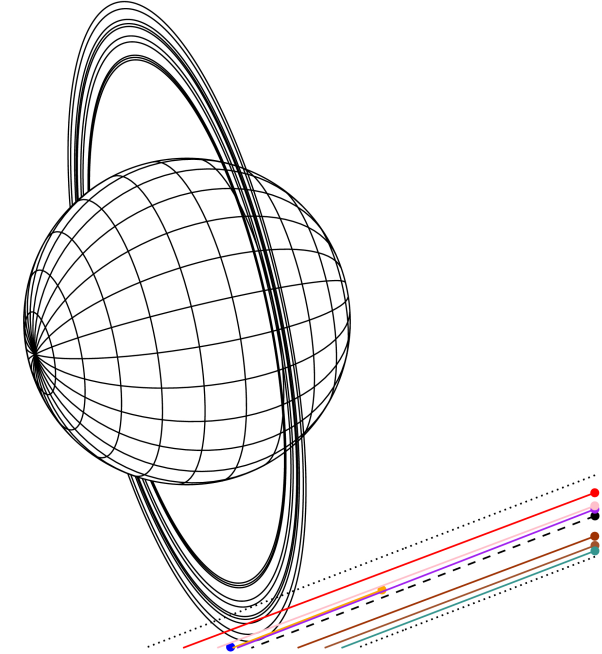
RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.509
 G magnitude : 18.357
 RP magnitude : 17.338
 BP magnitude : 19.503
 DUPflag : 0
 Distance (au) : 17.403
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.41
 Sun-Target sep (deg) : 161.01
 Sun-Moon sep (deg) : 94.95
 B (ring opening deg) : 17.66
 PA of pole (deg) : 102.22

Uranus 2046-01-31T02:54:21 K14.51 G18.36 XRT



2046-01-31T02:54:21.8500 α: 10 08 22.5434 δ: +12 18 25.8256 C/A 4.058° PA 21.01 deg v_sky -21.41 km/s D 17.40 AU
 Credit: Styled after SORA/Lucky Star

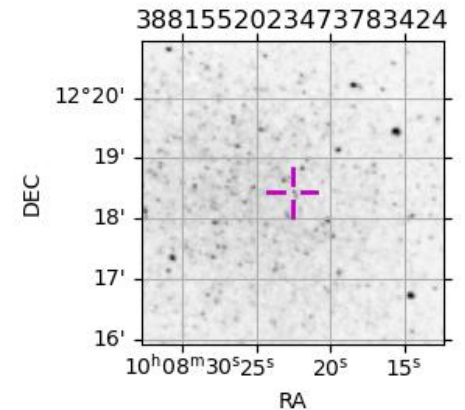
Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 RIO
 ESO
 SAAO



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

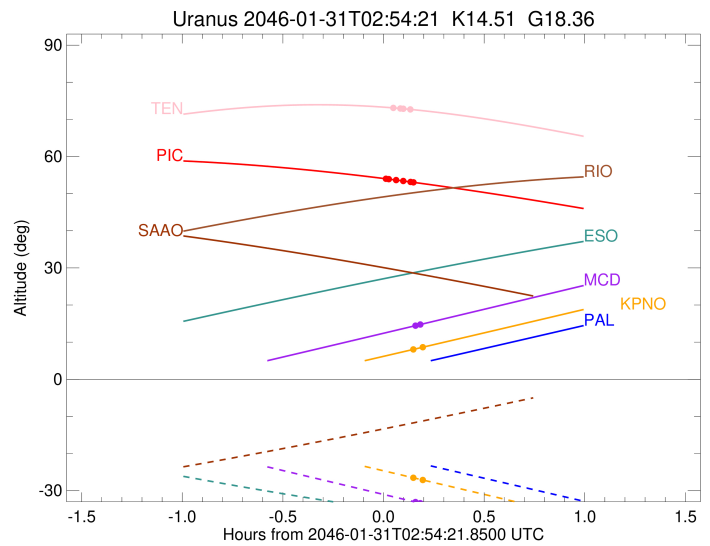
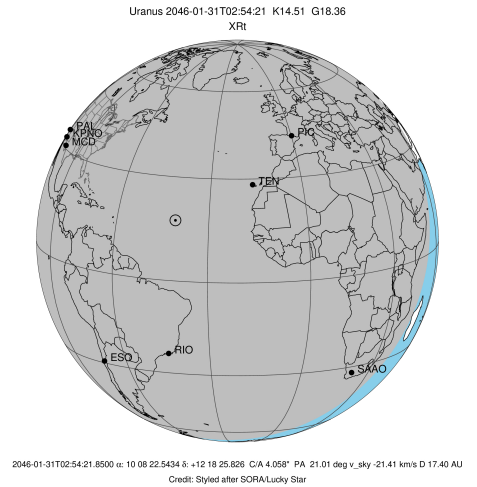
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++		+++	JAN 31 02:55 - JAN 31 03:03	PnnRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+		+	JAN 31 03:03 - JAN 31 03:05	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+		+	JAN 31 03:03 - JAN 31 03:04	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5	++		++	JAN 31 02:57 - JAN 31 03:02	PnnRie
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					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2046-01-31T02:54:17.130
Event type          : XRt
                    : No Uranus occs
                    : Ring occs: topocentric, not geocentric
Observer code       : PIC
Location            : Pic du Midi
Latitude (deg)      : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)       : 2.890
Gaia source ID      : 3881552023473783424
2Mass ID (if available) : 10082254+1218259
ICRS Star Coord at Epoch: 10h 08m 22.54341s +12:18:25.82571s
RUWE (>1.4 is poor) : 0.97
K magnitude         : 14.509
G magnitude         : 18.357
RP magnitude        : 17.338
BP magnitude        : 19.503
DUPflag            : 0
Distance (au)       : 17.403
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -21.41
Sun-Target sep (deg) : 161.01
Sun-Moon sep (deg)  : 95.71
B (ring opening deg) : 17.66
PA of pole (deg)    : 102.22
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.773
C/A sky separation (km) : 47618.3
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
ura111.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.ura111.bsp
ura161.bsp
vgr2.ura161.bsp
peph.ura160.bsp
earthstns_itrfr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



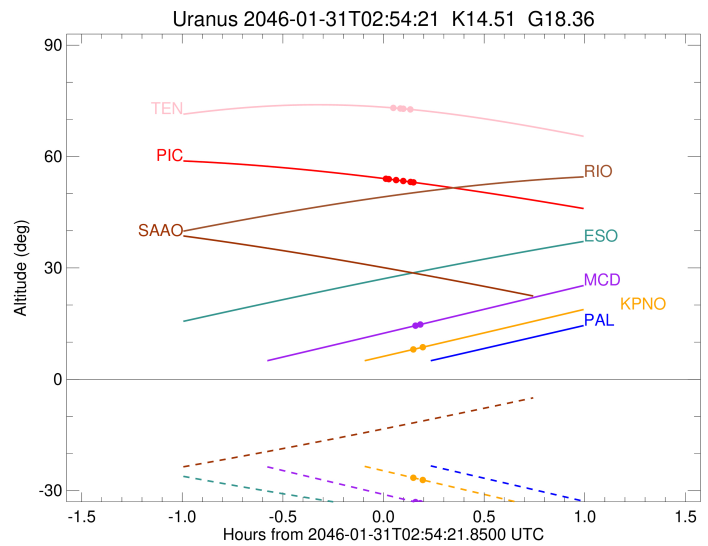
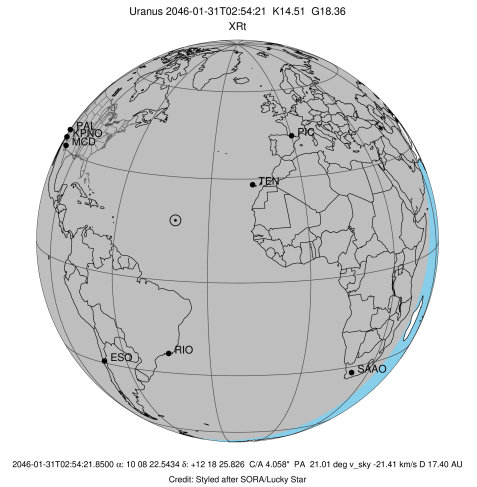
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-01-31T02:55:19.457		53.98	-47.24	50833.33	-23.25		
lambda	I	2046-01-31T02:55:57.493		53.91	-47.13	50026.71	-19.46		
delta	I	2046-01-31T02:58:09.745		53.66	-46.76	48300.35	-6.41		

No planet occultations

delta	E	2046-01-31T03:00:13.040		53.42	-46.41	48300.35	6.42		
lambda	E	2046-01-31T03:02:25.307		53.15	-46.04	50026.71	19.47		
epsilon	E	2046-01-31T03:03:13.030		53.06	-45.90	51059.25	23.25		

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2046-01-31T02:59:04.590
Event type          : XRt
                    : No Uranus occs
                    : Ring occs: topocentric, not geocentric
Observer code       : KPNO
Location            : Kitt Peak Natl Obs
Latitude (deg)      : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)       : 2.120
Gaia source ID      : 3881552023473783424
2Mass ID (if available) : 10082254+1218259
ICRS Star Coord at Epoch: 10h 08m 22.54341s +12:18:25.82571s
RUWE (>1.4 is poor) : 0.97
K magnitude         : 14.509
G magnitude         : 18.357
RP magnitude        : 17.338
BP magnitude        : 19.503
DUPflag            : 0
Distance (au)       : 17.403
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -21.41
Sun-Target sep (deg) : 161.01
Sun-Moon sep (deg)  : 94.97
B (ring opening deg) : 17.66
PA of pole (deg)    : 102.22
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.980
C/A sky separation (km) : 50239.8
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
  
```



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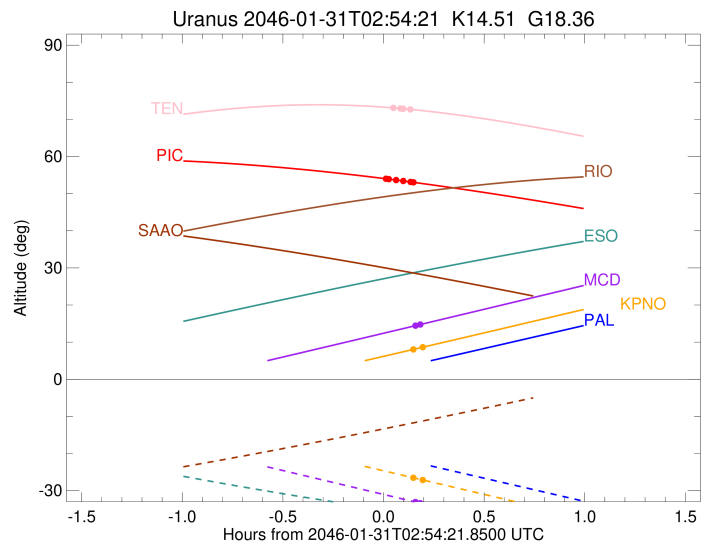
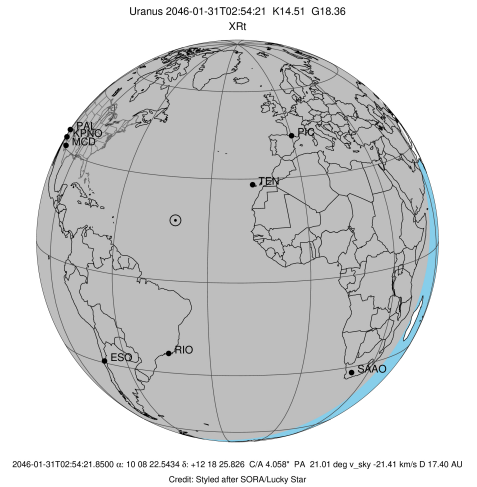
b: ring blocked by planet  x: target alt < 5.0 deg or sun > -5.0 deg
Ring      I/E      UTC      b?  alt  alt-sun  radius  r-dot  lat-geo lat-geodetic
-----
epsilon   I  2046-01-31T03:03:56.032  8.18 -26.68  50913.92  -4.74

No planet occultations

epsilon   E  2046-01-31T03:05:33.676  8.52 -27.02  50958.55  4.71
  
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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2046-01-31T02:59:02.680
Event type           : XRt
: No Uranus occs
: Ring occs: topocentric, not geocentric
Observer code        : MCD
Location             : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 3881552023473783424
2Mass ID (if available) : 10082254+1218259
ICRS Star Coord at Epoch: 10h 08m 22.54341s +12:18:25.82571s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.509
G magnitude          : 18.357
RP magnitude         : 17.338
BP magnitude         : 19.503
DUPflag             : 0
Distance (au)        : 17.403
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -21.41
Sun-Target sep (deg) : 161.01
Sun-Moon sep (deg)   : 95.07
B (ring opening deg) : 17.66
PA of pole (deg)     : 102.22
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 4.001
C/A sky separation (km) : 50497.7
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
  
```



```

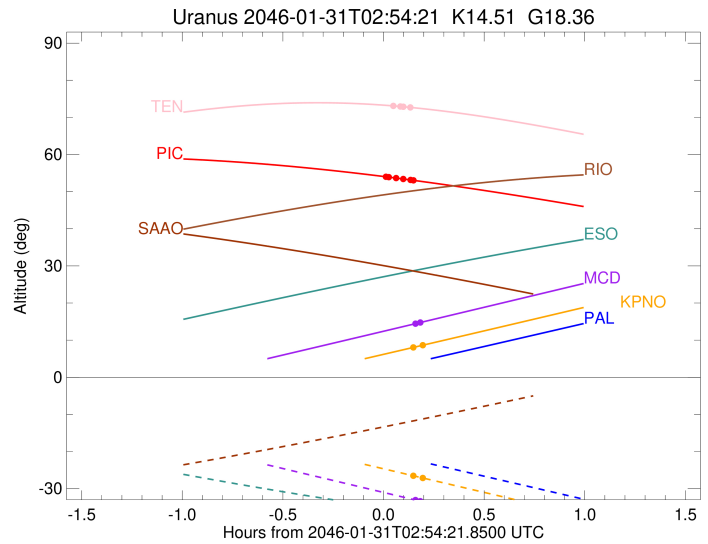
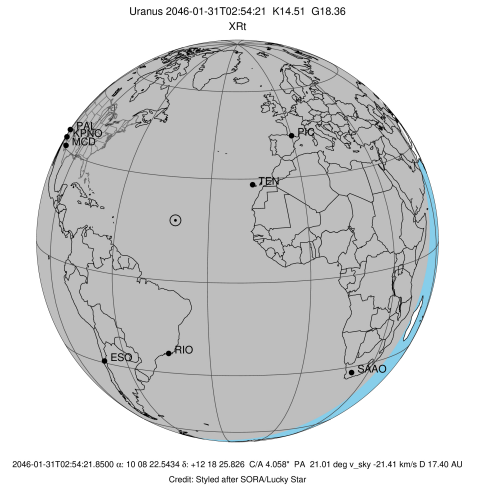
b: ring blocked by planet  x: target alt < 5.0 deg or sun > -5.0 deg
Ring      I/E      UTC      b? alt  alt-sun  radius  r-dot  lat-geo lat-geodetic
-----
epsilon   I  2046-01-31T03:03:01.383  14.25 -32.89  53252.23  -20.19

No planet occultations

epsilon   E  2046-01-31T03:04:55.279  14.66 -33.29  51335.14   6.61
  
```

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2046-01-31T02:54:46.550
Event type          : XRt
                    : No Uranus occs
                    : Ring occs: topocentric, not geocentric
Observer code       : TEN
Location            : Teide Obs./Tenerife
Latitude (deg)      : 28.30050
E. Longitude (deg)  : 343.48909
Altitude (km)       : 2.395
Gaia source ID      : 3881552023473783424
2Mass ID (if available) : 10082254+1218259
ICRS Star Coord at Epoch: 10h 08m 22.54341s +12:18:25.82571s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 14.509
G magnitude          : 18.357
RP magnitude         : 17.338
BP magnitude         : 19.503
DUPflag             : 0
Distance (au)       : 17.403
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -21.41
Sun-Target sep (deg) : 161.01
Sun-Moon sep (deg)  : 95.84
B (ring opening deg) : 17.66
PA of pole (deg)    : 102.22
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.922
C/A sky separation (km) : 49506.5
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_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b? alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-01-31T02:57:38.263	73.08	-64.95	50873.08	-13.51		
lambda	I	2046-01-31T02:59:28.461	72.94	-64.57	50026.72	-2.16		

No planet occultations

lambda	E	2046-01-31T03:00:11.215	72.88	-64.42	50026.73	2.17		
epsilon	E	2046-01-31T03:02:11.052	72.71	-64.01	51003.75	13.51		