

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-01-31T07:47:32.380
 Event type : XRT
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Gaia source ID : 3881552092187346816
 2Mass ID (if available) : 10082064+1218364

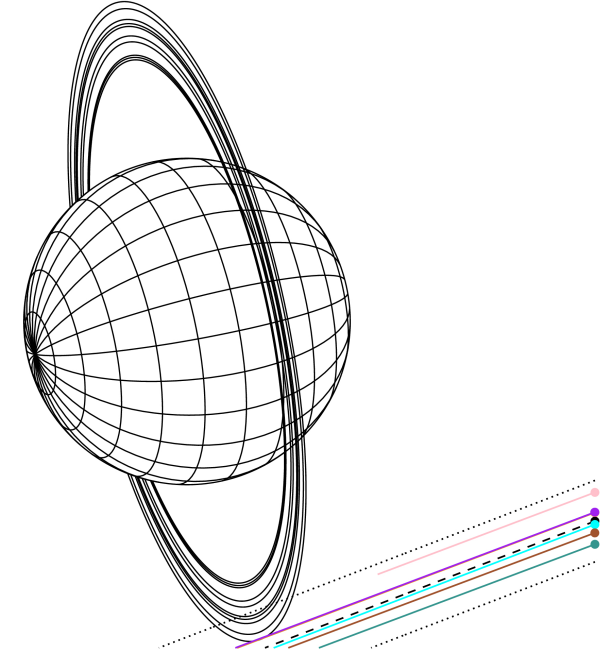
Uranus 2046-01-31T07:47:32 K14.02 G18.72 XRT

ICRS Star Coord at Epoch: 10h 08m 20.63914s +12:18:36.47640s

RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.017
 G magnitude : 18.722
 RP magnitude : 17.462
 BP magnitude : 20.474
 DUPflag : 0
 Distance (au) : 17.402
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.45
 Sun-Target sep (deg) : 161.23
 Sun-Moon sep (deg) : 97.58
 B (ring opening deg) : 17.66
 PA of pole (deg) : 102.22



Earth
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

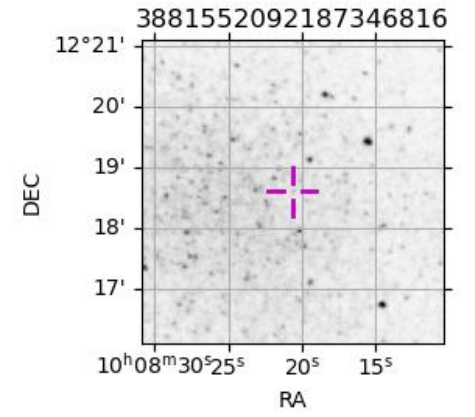


2046-01-31T07:47:32.3800 α: 10 08 20.63914 s: +12 18 36.476 C/A 4.118° PA 21.00 deg v_sky -21.45 km/s D 17.40 AU
 Credit: Styled after SORA/Lucky Star

#	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

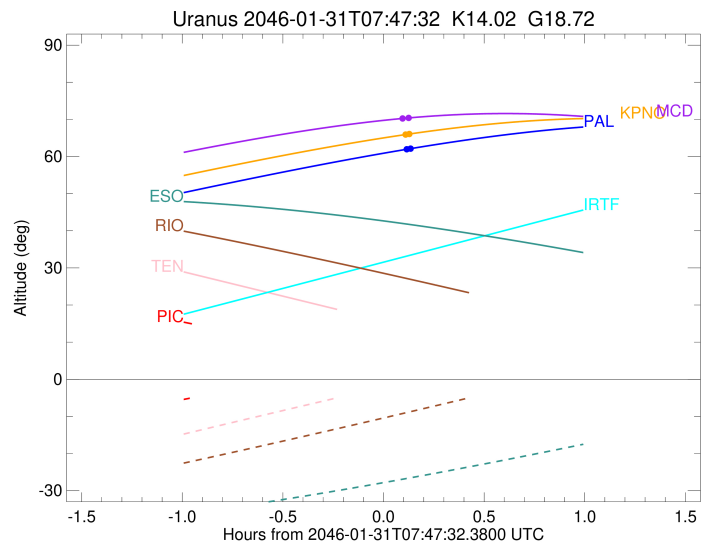
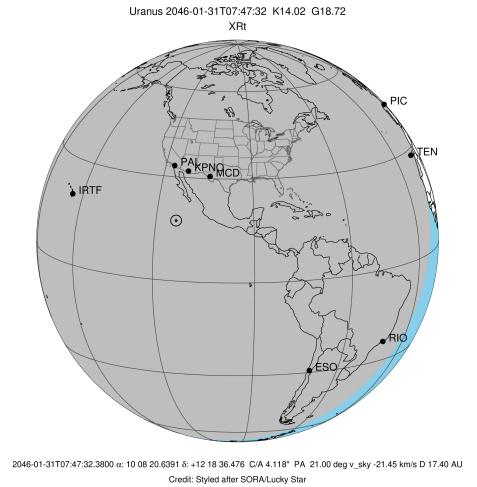
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+			JAN 31 07:53 - JAN 31 07:55	PnnRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+			JAN 31 07:52 - JAN 31 07:54	PnnRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+			JAN 31 07:53 - JAN 31 07:54	PnnRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
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            : 2046-01-31T07:49:47.920
Event type          : XRt
: No Uranus occs
: Ring occs: topocentric, not geocentric
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 3881552092187346816
2Mass ID (if available) : 10082064+1218364
ICRS Star Coord at Epoch: 10h 08m 20.63914s +12:18:36.47640s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 14.017
G magnitude          : 18.722
RP magnitude         : 17.462
BP magnitude         : 20.474
DUPflag             : 0
Distance (au)       : 17.402
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -21.45
Sun-Target sep (deg) : 161.23
Sun-Moon sep (deg)  : 98.33
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 (") : 4.008
C/A sky separation (km) : 50580.4
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_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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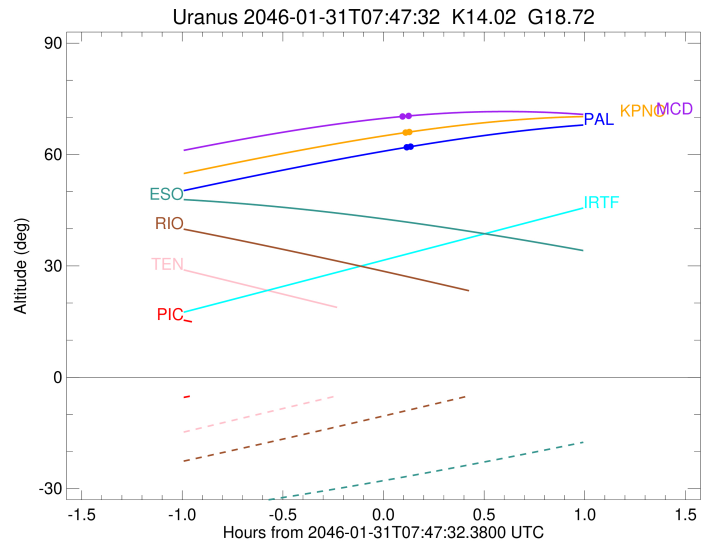
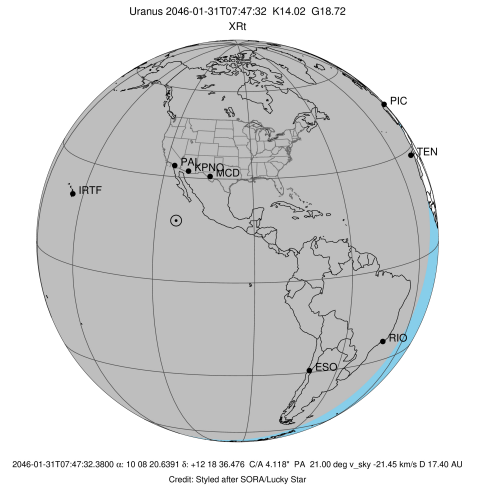
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-01-31T07:55:07.634		62.05	-74.07	51245.18	-5.73		

No planet occultations

epsilon	E	2046-01-31T07:53:46.762		61.85	-74.05	51131.51	1.87		
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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2046-01-31T07:49:27.460
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      : 3881552092187346816
2Mass ID (if available) : 10082064+1218364
ICRS Star Coord at Epoch: 10h 08m 20.63914s +12:18:36.47640s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 14.017
G magnitude          : 18.722
RP magnitude         : 17.462
BP magnitude         : 20.474
DUPflag             : 0
Distance (au)        : 17.402
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -21.45
Sun-Target sep (deg) : 161.23
Sun-Moon sep (deg)  : 98.37
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 (") : 4.008
C/A sky separation (km) : 50589.0
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_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```

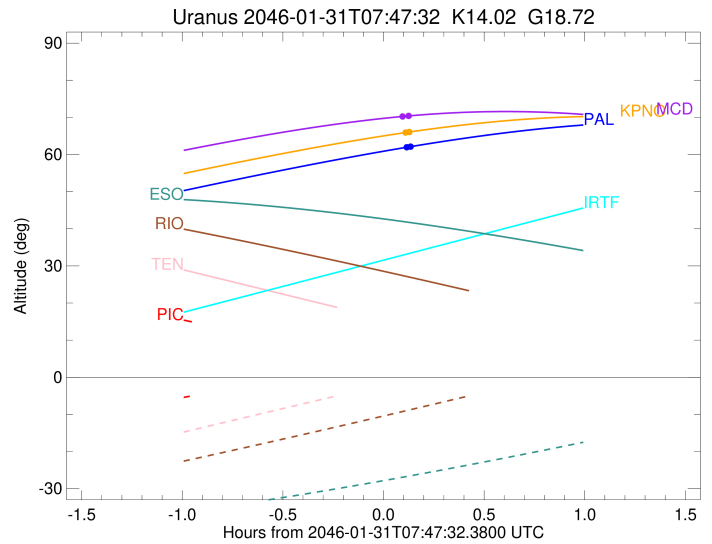
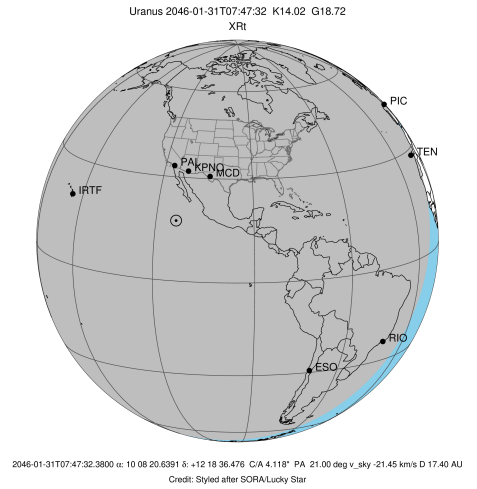


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-01-31T07:54:57.015		66.03	-75.10	51204.98	-4.82		

No planet occultations

epsilon	E	2046-01-31T07:52:35.470		65.71	-75.22	51123.75	1.27		
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target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-01-31T07:48:56.910
 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 : 3881552092187346816
 2Mass ID (if available) : 10082064+1218364
 ICRS Star Coord at Epoch: 10h 08m 20.63914s +12:18:36.47640s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.017
 G magnitude : 18.722
 RP magnitude : 17.462
 BP magnitude : 20.474
 DUPflag : 0
 Distance (au) : 17.402
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -21.45
 Sun-Target sep (deg) : 161.23
 Sun-Moon sep (deg) : 98.42
 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) : 50501.2
 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_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	2046-01-31T07:54:15.699		70.34	-73.30	51129.89	4.29		
No planet occultations									
epsilon	E	2046-01-31T07:53:37.626		70.29	-73.39	51365.27	-8.74		