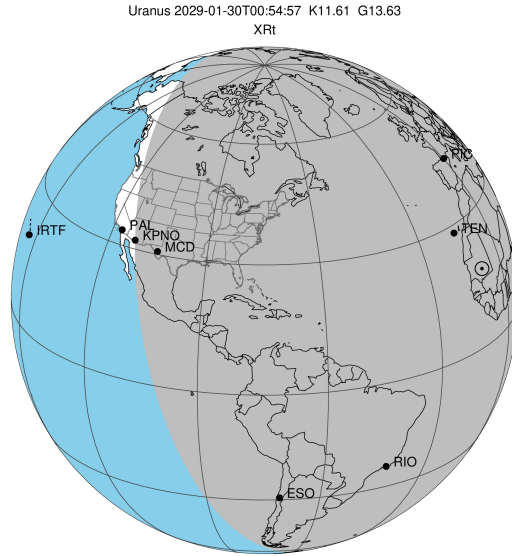


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2029-01-30T00:54:57.390  
 Event type : XRT  
 : No Uranus occs  
 : Ring occs: topocentric, not geocentric  
 Gaia source ID : 144990266189888000  
 2Mass ID (if available) : 04330820+2154582

ICRS Star Coord at Epoch: 04h 33m 08.20997s +21:54:57.99890s

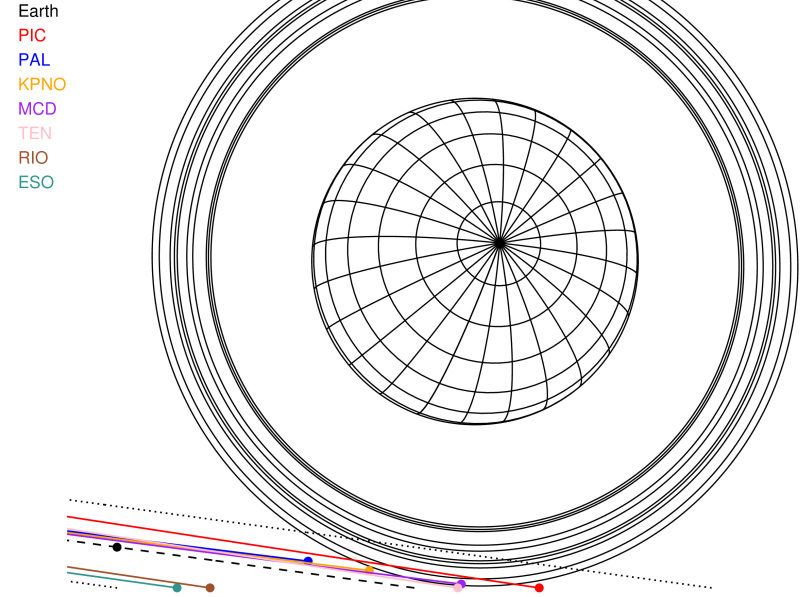
RUWE (>1.4 is poor) : 1.06  
 K magnitude : 11.613  
 G magnitude : 13.629  
 RP magnitude : 12.934  
 BP magnitude : 14.159  
 DUPflag : 0  
 Distance (au) : 18.773  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -8.53  
 Sun-Target sep (deg) : 119.91  
 Sun-Moon sep (deg) : 57.23  
 B (ring opening deg) : 79.11  
 PA of pole (deg) : -53.29

#	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



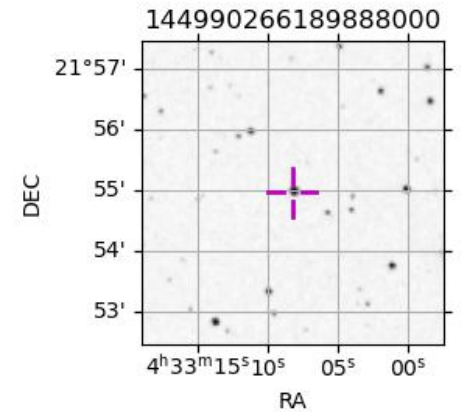
2029-01-30T00:54:57.3900 α: 04 33 08.2100 δ: +21 54 57.999 C/A 3.808° PA 352.20 deg v\_sky - 8.53 km/s D 18.77 AU  
 Credit: Styled after SORA/Lucky Star

Uranus 2029-01-30T00:54:57 K11.61 G13.63 XRT



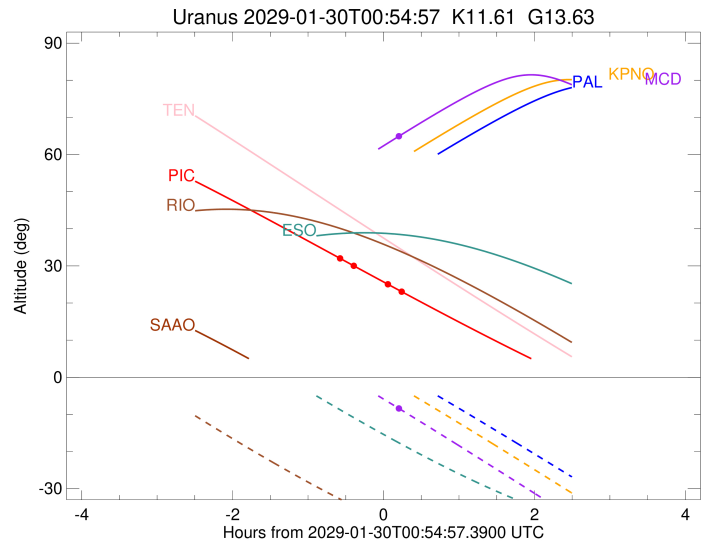
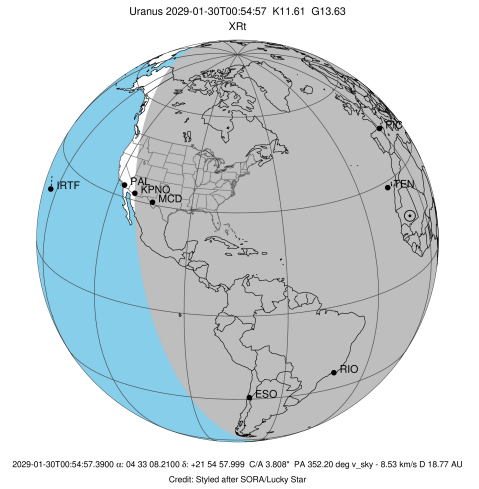
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	++			JAN 30 00:18 - JAN 30 01:10	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			+	JAN 30 01:10 - JAN 30 01:10	PnnRne
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



```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2029-01-30T00:46:35.610
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      : 144990266189888000
2Mass ID (if available) : 04330820+2154582
ICRS Star Coord at Epoch: 04h 33m 08.20997s +21:54:57.99890s
RUWE (>1.4 is poor) : 1.06
K magnitude         : 11.613
G magnitude         : 13.629
RP magnitude        : 12.934
BP magnitude        : 14.159
DUPflag            : 0
Distance (au)       : 18.773
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -8.53
Sun-Target sep (deg) : 119.91
Sun-Moon sep (deg)  : 57.18
B (ring opening deg) : 79.11
PA of pole (deg)    : -53.29
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.604
C/A sky separation (km) : 49073.8
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
  
```



```

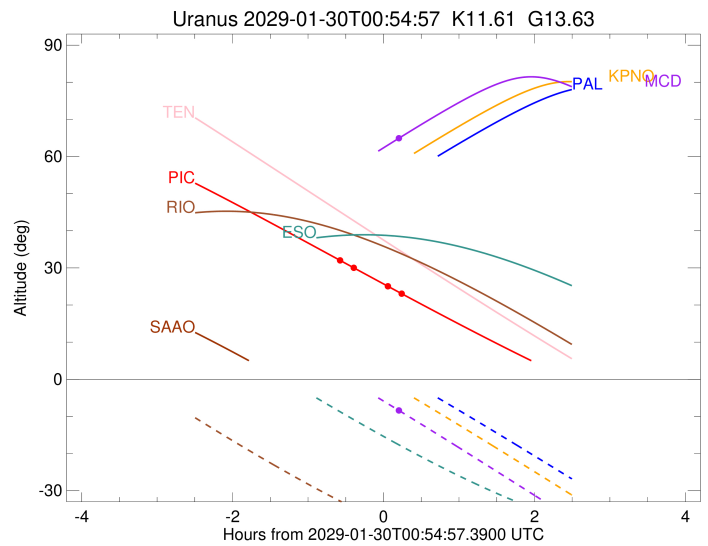
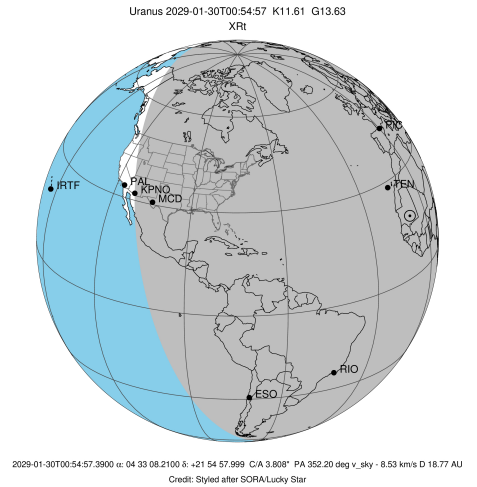
b: ring blocked by planet  x: target alt < 5.0 deg or sun > -5.0 deg
Ring      I/E      UTC      b? alt  alt-sun  radius  r-dot  lat-geo lat-geodetic
-----
epsilon   I  2029-01-30T00:18:06.704  32.45 -64.86  51483.17 -2.35
lambda    I  2029-01-30T00:31:30.930  29.99 -64.57  50026.71 -1.22

No planet occultations

lambda    E  2029-01-30T00:58:15.322  25.09 -63.08  50026.71  1.21
epsilon   E  2029-01-30T01:10:33.050  22.85 -62.03  51315.07  2.32
  
```

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2029-01-30T00:58:25.530
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      : 144990266189888000
2Mass ID (if available) : 04330820+2154582
ICRS Star Coord at Epoch: 04h 33m 08.20997s +21:54:57.99890s
RUWE (>1.4 is poor) : 1.06
K magnitude          : 11.613
G magnitude          : 13.629
RP magnitude         : 12.934
BP magnitude         : 14.159
DUPflag             : 0
Distance (au)       : 18.773
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -8.53
Sun-Target sep (deg) : 119.91
Sun-Moon sep (deg)  : 58.18
B (ring opening deg) : 79.11
PA of pole (deg)    : -53.29
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.702
C/A sky separation (km) : 50403.2
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_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	2029-01-30T00:42:00.056		59.58	-3.21x	51460.98	-1.32		

No planet occultations

epsilon	E	2029-01-30T01:10:13.997		65.56	-9.03	51368.62	1.32		
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