

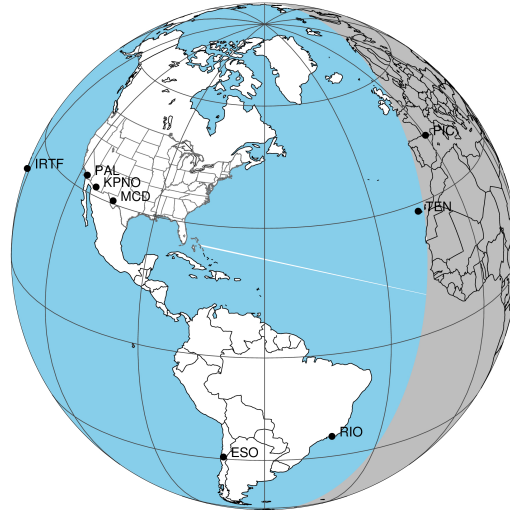
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2033-04-28T19:26:30.600
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3427497323706184192
 2Mass ID (if available) : 05525312+2338357

Uranus 2033-04-28T19:26:30 K13.71 G15.90 PgtRgt

ICRS Star Coord at Epoch: 05h 52m 53.11669s +23:38:35.87686s

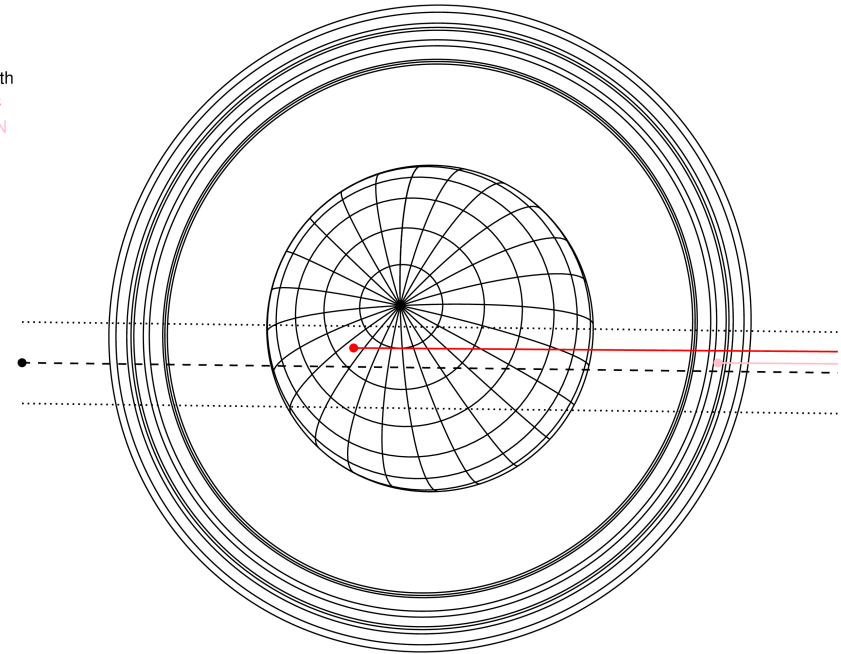
RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.715
 G magnitude : 15.898
 RP magnitude : 15.184
 BP magnitude : 16.440
 DUPflag : 0
 Distance (au) : 19.628
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.51
 Sun-Target sep (deg) : 50.01
 Sun-Moon sep (deg) : 54.25
 B (ring opening deg) : 76.68
 PA of pole (deg) : 52.48

Uranus 2033-04-28T19:26:30 K13.71 G15.90
 PgtRgt



2033-04-28T19:26:30.6000 ex: 05 52 53.1167 h: +23 38 35.877 C/A 0.426° PA 359.29 deg v_sky +25.51 km/s D 19.63 AU
 Credit: Styled after SORA/Lucky Star

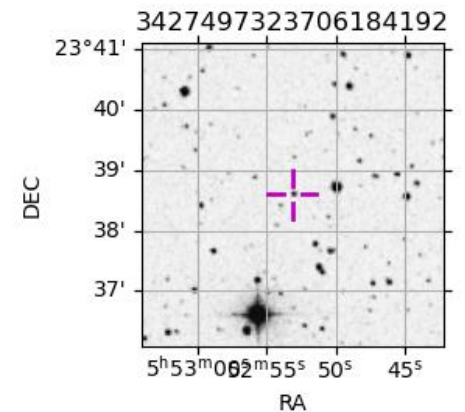
Earth
 PIC
 TEN



#	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

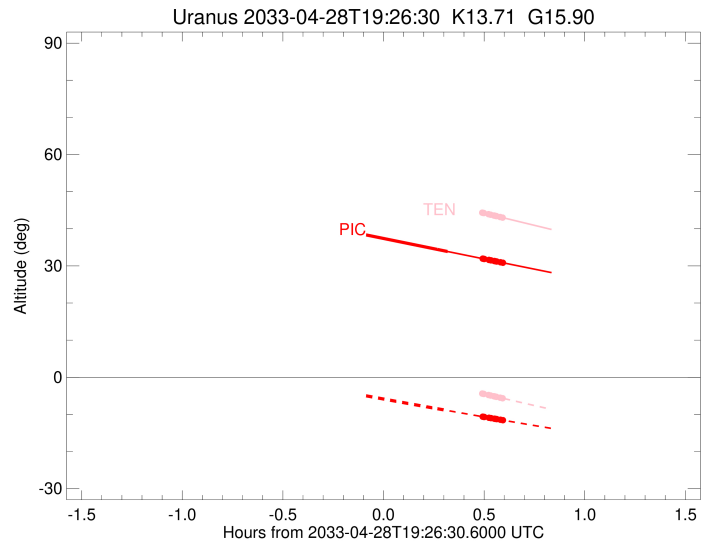
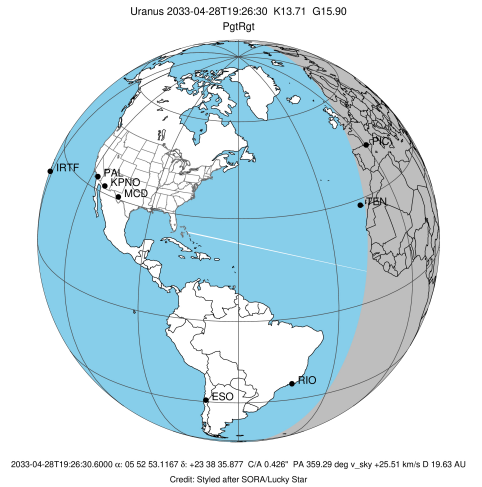
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1		+	+++++	APR 28 19:45 - APR 28 20:02	PneRne
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			+++++	APR 28 19:59 - APR 28 20:02	PnnRne
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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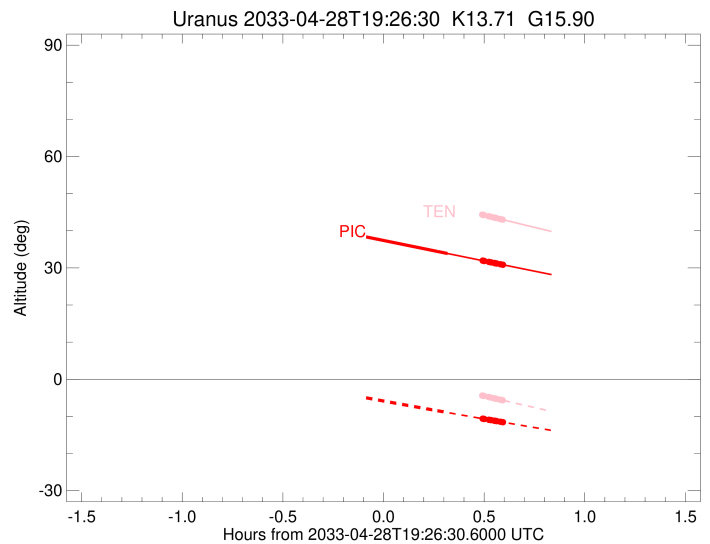
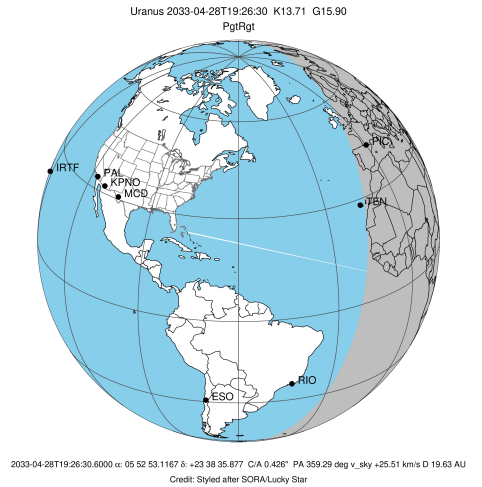
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2033-04-28T19:29:12.330
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PIC
Location             : Pic du Midi
Latitude (deg)       : 42.93656
E. Longitude (deg)   : 0.14231
Altitude (km)        : 2.890
Gaia source ID       : 3427497323706184192
2Mass ID (if available) : 05525312+2338357
ICRS Star Coord at Epoch: 05h 52m 53.11669s +23:38:35.87686s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 13.715
G magnitude          : 15.898
RP magnitude         : 15.184
BP magnitude         : 16.440
DUPflag             : 0
Distance (au)        : 19.628
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 25.51
Sun-Target sep (deg) : 50.01
Sun-Moon sep (deg)   : 55.14
B (ring opening deg) : 76.68
PA of pole (deg)     : 52.48
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.221
C/A sky separation (km) : 3142.9
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_itr93_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	2033-04-28T18:56:08.279		42.97	-0.74x	51149.97	-25.70		
lambda	I	2033-04-28T18:56:52.017		42.84	-0.86x	50026.71	-25.68		
delta	I	2033-04-28T18:57:59.243		42.63	-1.05x	48300.35	-25.68		
gamma	I	2033-04-28T18:58:25.359		42.55	-1.13x	47629.72	-25.68		
eta	I	2033-04-28T18:58:43.025		42.50	-1.18x	47176.12	-25.68		
beta	I	2033-04-28T18:59:42.190		42.32	-1.35x	45656.64	-25.67		
alpha	I	2033-04-28T19:00:19.767		42.20	-1.46x	44693.13	-25.67		
4	I	2033-04-28T19:01:43.228		41.95	-1.69x	42551.69	-25.67		
5	I	2033-04-28T19:01:57.808		41.90	-1.73x	42178.58	-25.66		
6	I	2033-04-28T19:02:09.282		41.87	-1.77x	41879.25	-25.66		
Uranus	I	2033-04-28T19:12:42.463		39.93	-3.56x	25269.57		9.50	9.94
Uranus	E	2033-04-28T19:45:35.987		33.88	-8.96	25138.86		-11.52	-12.05
6	E	2033-04-28T19:56:02.995		31.96	-10.62	41794.75	25.75		
5	E	2033-04-28T19:56:21.705		31.90	-10.66	42282.03	25.75		
4	E	2033-04-28T19:56:33.901		31.86	-10.70	42596.65	25.76		
alpha	E	2033-04-28T19:57:57.453		31.61	-10.91	44746.85	25.76		
beta	E	2033-04-28T19:58:33.253		31.50	-11.01	45668.33	25.77		
eta	E	2033-04-28T19:59:31.749		31.32	-11.16	47176.12	25.77		
gamma	E	2033-04-28T19:59:49.102		31.27	-11.20	47623.39	25.77		
delta	E	2033-04-28T20:00:15.366		31.19	-11.27	48300.35	25.78		
lambda	E	2033-04-28T20:01:22.330		30.98	-11.45	50026.71	25.78		
epsilon	E	2033-04-28T20:02:07.561		30.84	-11.56	51193.01	25.80		

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target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2033-04-28T19:29:05.340
Event type           : PgtRgt
: Uranus occs: geocentric, 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       : 3427497323706184192
2Mass ID (if available) : 05525312+2338357
ICRS Star Coord at Epoch: 05h 52m 53.11669s +23:38:35.87686s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 13.715
G magnitude          : 15.898
RP magnitude         : 15.184
BP magnitude         : 16.440
DUPflag             : 0
Distance (au)        : 19.628
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 25.51
Sun-Target sep (deg) : 50.01
Sun-Moon sep (deg)  : 55.25
B (ring opening deg) : 76.68
PA of pole (deg)    : 52.48
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.355
C/A sky separation (km) : 5052.0
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	2033-04-28T18:55:54.781		57.58	8.36x	51165.16	-25.50		
lambda	I	2033-04-28T18:56:39.470		57.42	8.20x	50026.71	-25.47		
delta	I	2033-04-28T18:57:47.255		57.17	7.95x	48300.35	-25.46		
gamma	I	2033-04-28T18:58:13.588		57.07	7.86x	47629.88	-25.46		
eta	I	2033-04-28T18:58:31.411		57.00	7.79x	47176.12	-25.46		
beta	I	2033-04-28T18:59:31.061		56.78	7.58x	45657.47	-25.45		
alpha	I	2033-04-28T19:00:08.971		56.64	7.44x	44694.12	-25.44		
4	I	2033-04-28T19:01:33.158		56.33	7.14x	42553.56	-25.43		
5	I	2033-04-28T19:01:48.066		56.28	7.09x	42176.05	-25.42		
6	I	2033-04-28T19:01:59.574		56.24	7.05x	41878.91	-25.42		
Uranus	I	2033-04-28T19:12:41.211		53.87	4.75x	25311.66		8.77	9.18
Uranus	E	2033-04-28T19:45:20.114		46.67	-2.17x	25104.23		-12.00	-12.55
6	E	2033-04-28T19:55:54.762		44.35	-4.38x	41794.80	25.50		
5	E	2033-04-28T19:56:13.527		44.28	-4.45x	42278.99	25.50		
4	E	2033-04-28T19:56:26.002		44.23	-4.49x	42598.34	25.51		
alpha	E	2033-04-28T19:57:50.315		43.93	-4.78x	44747.63	25.53		
beta	E	2033-04-28T19:58:26.436		43.79	-4.91x	45669.11	25.54		
eta	E	2033-04-28T19:59:25.420		43.58	-5.11	47176.12	25.55		
gamma	E	2033-04-28T19:59:42.932		43.51	-5.18	47623.57	25.55		
delta	E	2033-04-28T20:00:09.415		43.42	-5.27	48300.35	25.56		
lambda	E	2033-04-28T20:01:16.945		43.17	-5.50	50026.71	25.57		
epsilon	E	2033-04-28T20:02:03.145		43.00	-5.66	51208.25	25.60		