

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-05-30T04:45:02.990
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 662978680890524672
 2Mass ID (if available) : 08273822+1944120

Uranus 2041-05-30T04:45:02 K14.17 G17.56 PgtRgt

ICRS Star Coord at Epoch: 08h 27m 38.29484s +19:44:11.04724s

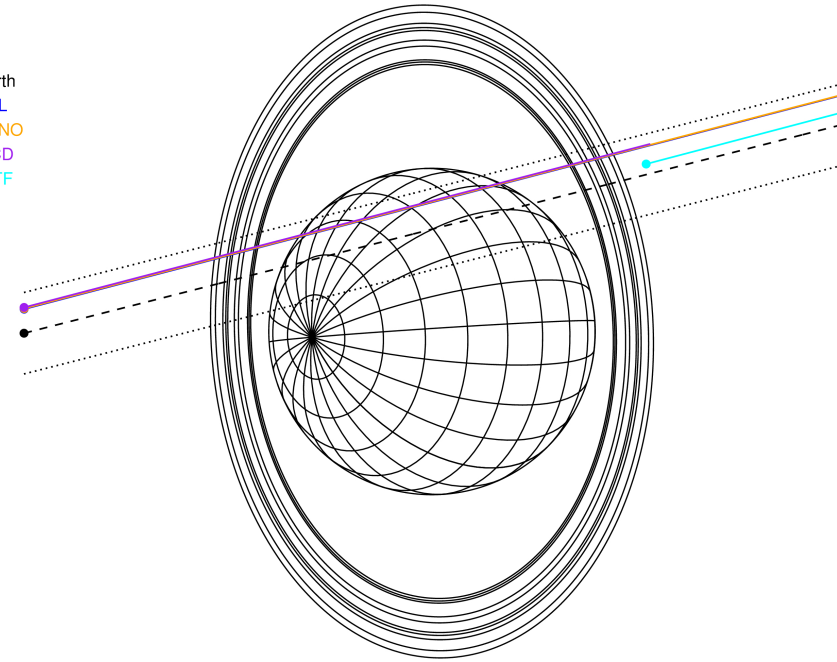
RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.171
 G magnitude : 17.556
 RP magnitude : 16.461
 BP magnitude : 18.928
 DUPflag : 0
 Distance (au) : 19.068
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 23.30
 Sun-Target sep (deg) : 55.83
 Sun-Moon sep (deg) : 52.90
 B (ring opening deg) : 42.62
 PA of pole (deg) : 92.74

#	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



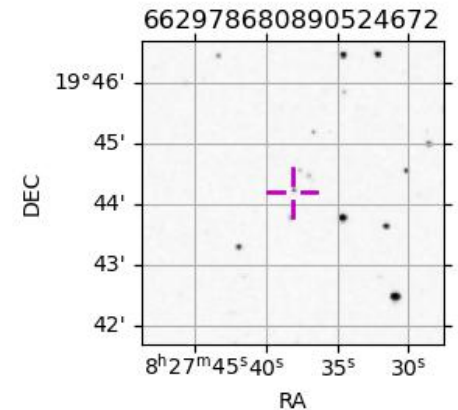
2041-05-30T04:45:02.9900 ex: 08 27 38.2948 s: +19 44 11.047 C/A 1.132° PA 194.30 deg v_sky +23.31 km/s D 19.07 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 KPNO
 MCD
 IRTF



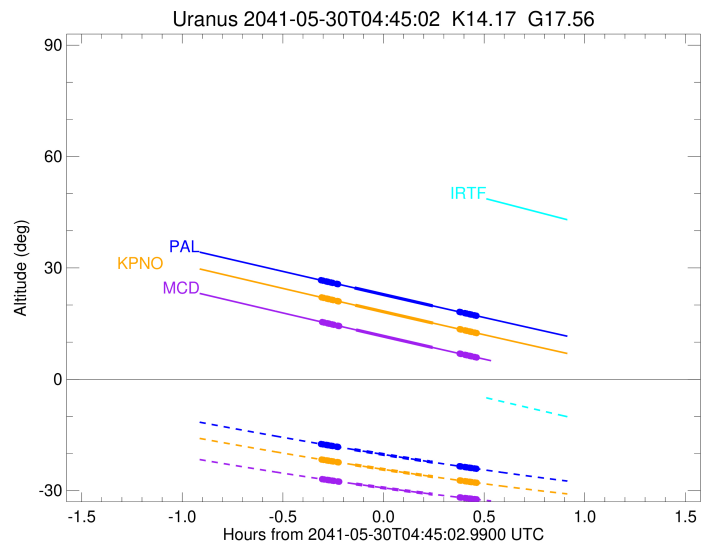
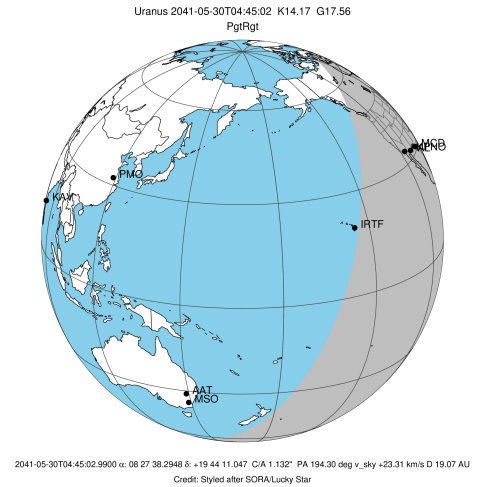
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++	+ +	+++++	MAY 30 04:26 - MAY 30 05:12	PieRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	MAY 30 04:26 - MAY 30 05:12	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	MAY 30 04:27 - MAY 30 05:12	PieRie
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



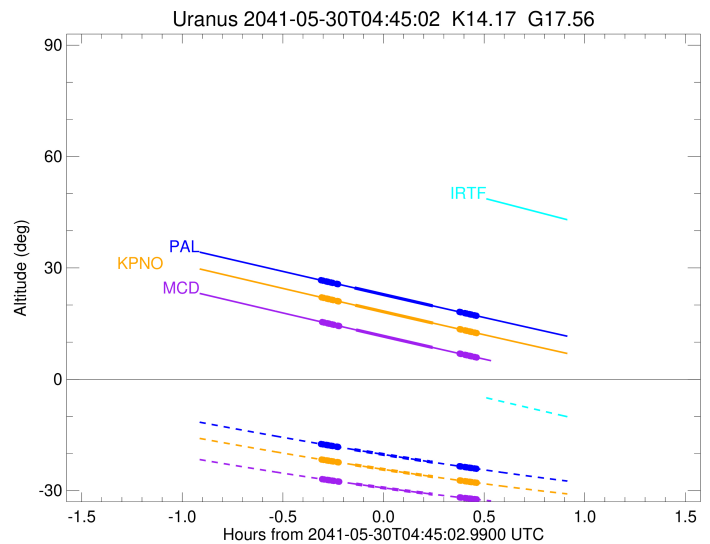
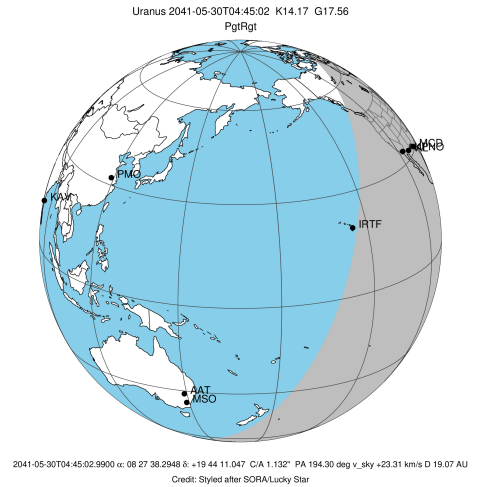
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2041-05-30T04:48:01.900
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 662978680890524672
2Mass ID (if available) : 08273822+1944120
ICRS Star Coord at Epoch: 08h 27m 38.29484s +19:44:11.04724s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 14.171
G magnitude          : 17.556
RP magnitude         : 16.461
BP magnitude         : 18.928
DUPflag             : 0
Distance (au)       : 19.068
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : 23.30
Sun-Target sep (deg) : 55.83
Sun-Moon sep (deg)  : 53.56
B (ring opening deg) : 42.62
PA of pole (deg)    : 92.74
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.415
C/A sky separation (km) : 19572.1
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_itrff93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



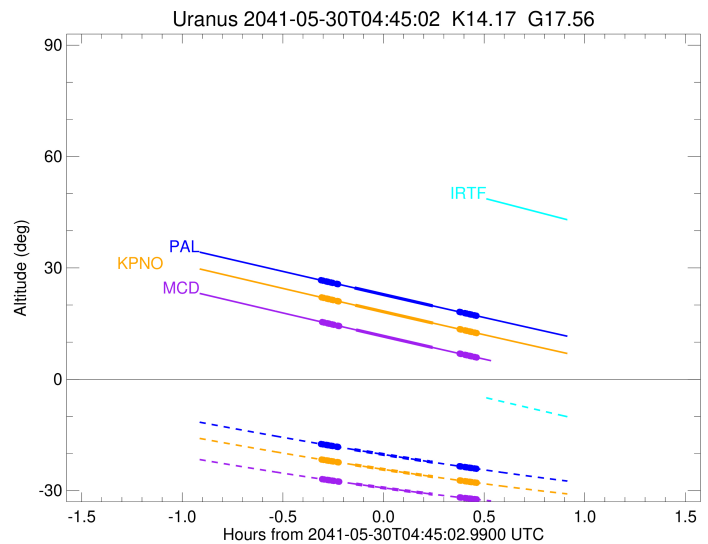
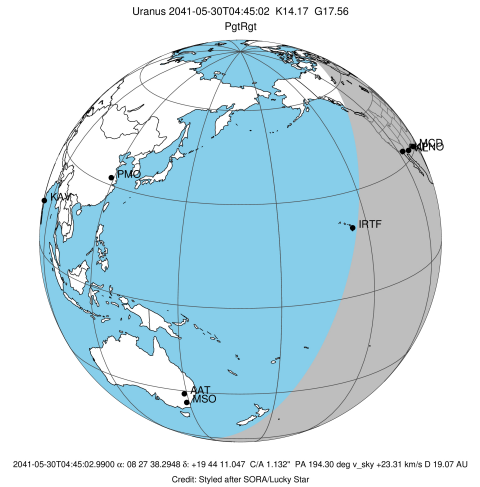
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-05-30T04:26:38.924		26.64	-17.48	50743.99	-31.17		
lambda	I	2041-05-30T04:27:01.970		26.56	-17.54	50026.71	-31.08		
delta	I	2041-05-30T04:27:57.694		26.36	-17.68	48300.35	-30.87		
gamma	I	2041-05-30T04:28:19.707		26.29	-17.74	47621.69	-30.75		
eta	I	2041-05-30T04:28:34.195		26.24	-17.78	47176.12	-30.72		
beta	I	2041-05-30T04:29:23.141		26.07	-17.90	45680.90	-30.51		
alpha	I	2041-05-30T04:29:55.250		25.95	-17.98	44691.45	-30.34		
4	I	2041-05-30T04:31:05.532		25.71	-18.16	42563.96	-29.97		
5	I	2041-05-30T04:31:17.718		25.67	-18.20	42181.26	-29.90		
6	I	2041-05-30T04:31:30.793		25.62	-18.23	41830.75	-29.82		
Uranus	I	2041-05-30T04:36:25.431		24.60	-18.97	25394.41		35.16	36.41
Uranus	E	2041-05-30T04:59:44.796		19.78	-22.35	25499.63		-20.17	-21.04
6	E	2041-05-30T05:07:42.966		18.14	-23.43	41875.81	29.92		
5	E	2041-05-30T05:07:56.597		18.09	-23.46	42314.49	30.00		
4	E	2041-05-30T05:08:07.191		18.06	-23.49	42612.17	30.07		
alpha	E	2041-05-30T05:09:16.065		17.82	-23.64	44718.73	30.44		
beta	E	2041-05-30T05:09:46.355		17.72	-23.71	45645.96	30.62		
eta	E	2041-05-30T05:10:36.270		17.55	-23.82	47176.12	30.84		
gamma	E	2041-05-30T05:10:51.016		17.50	-23.85	47631.30	30.90		
delta	E	2041-05-30T05:11:12.635		17.42	-23.90	48300.35	30.99		
lambda	E	2041-05-30T05:12:08.145		17.23	-24.02	50026.71	31.21		
epsilon	E	2041-05-30T05:12:53.506		17.08	-24.12	51445.91	31.29		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-05-30T04:48:09.230
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 662978680890524672
 2Mass ID (if available) : 08273822+1944120
 ICRS Star Coord at Epoch: 08h 27m 38.29484s +19:44:11.04724s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.171
 G magnitude : 17.556
 RP magnitude : 16.461
 BP magnitude : 18.928
 DUPflag : 0
 Distance (au) : 19.068
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 23.30
 Sun-Target sep (deg) : 55.83
 Sun-Moon sep (deg) : 53.52
 B (ring opening deg) : 42.62
 PA of pole (deg) : 92.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.421
 C/A sky separation (km) : 19651.7
 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_itrff93_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	2041-05-30T04:26:49.421		22.00	-21.67	50744.03	-31.19		
lambda	I	2041-05-30T04:27:12.452		21.92	-21.72	50026.71	-31.10		
delta	I	2041-05-30T04:28:08.139		21.73	-21.86	48300.35	-30.89		
gamma	I	2041-05-30T04:28:30.139		21.65	-21.91	47621.69	-30.80		
eta	I	2041-05-30T04:28:44.619		21.60	-21.95	47176.12	-30.74		
beta	I	2041-05-30T04:29:33.538		21.43	-22.07	45680.89	-30.52		
alpha	I	2041-05-30T04:30:05.632		21.32	-22.15	44691.41	-30.35		
4	I	2041-05-30T04:31:15.884		21.07	-22.32	42564.06	-29.98		
5	I	2041-05-30T04:31:28.062		21.03	-22.35	42181.40	-29.91		
6	I	2041-05-30T04:31:41.139		20.98	-22.38	41830.85	-29.83		
Uranus	I	2041-05-30T04:36:37.827		19.95	-23.09	25395.72		35.00	36.25
Uranus	E	2041-05-30T04:59:47.046		15.14	-26.25	25500.66		-19.99	-20.85
6	E	2041-05-30T05:07:47.548		13.48	-27.26	41875.85	29.93		
5	E	2041-05-30T05:08:01.170		13.44	-27.29	42314.47	30.01		
4	E	2041-05-30T05:08:11.762		13.40	-27.31	42612.21	30.08		
alpha	E	2041-05-30T05:09:20.602		13.16	-27.45	44718.67	30.46		
beta	E	2041-05-30T05:09:50.878		13.06	-27.52	45645.98	30.63		
eta	E	2041-05-30T05:10:40.762		12.89	-27.62	47176.12	30.86		
gamma	E	2041-05-30T05:10:55.497		12.84	-27.65	47631.29	30.92		
delta	E	2041-05-30T05:11:17.102		12.77	-27.69	48300.35	31.01		
lambda	E	2041-05-30T05:12:12.571		12.58	-27.80	50026.71	31.23		
epsilon	E	2041-05-30T05:12:57.883		12.42	-27.90	51445.48	31.32		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-05-30T04:48:14.000
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 662978680890524672
 2Mass ID (if available) : 08273822+1944120
 ICRS Star Coord at Epoch: 08h 27m 38.29484s +19:44:11.04724s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.171
 G magnitude : 17.556
 RP magnitude : 16.461
 BP magnitude : 18.928
 DUPflag : 0
 Distance (au) : 19.068
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 23.30
 Sun-Target sep (deg) : 55.83
 Sun-Moon sep (deg) : 53.44
 B (ring opening deg) : 42.62
 PA of pole (deg) : 92.74
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.432
 C/A sky separation (km) : 19806.4
 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_itrff93_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	2041-05-30T04:26:59.537		15.36	-26.94	50744.11	-31.22		
lambda	I	2041-05-30T04:27:22.554		15.28	-26.99	50026.71	-31.13		
delta	I	2041-05-30T04:28:18.204		15.08	-27.11	48300.35	-30.91		
gamma	I	2041-05-30T04:28:40.190		15.01	-27.16	47621.70	-30.82		
eta	I	2041-05-30T04:28:54.663		14.96	-27.20	47176.12	-30.76		
beta	I	2041-05-30T04:29:43.561		14.78	-27.30	45680.87	-30.53		
alpha	I	2041-05-30T04:30:15.647		14.67	-27.37	44691.32	-30.36		
4	I	2041-05-30T04:31:25.883		14.43	-27.53	42564.26	-29.98		
5	I	2041-05-30T04:31:38.053		14.39	-27.55	42181.66	-29.91		
6	I	2041-05-30T04:31:51.142		14.34	-27.58	41831.04	-29.83		
Uranus	I	2041-05-30T04:36:52.110		13.29	-28.23	25398.31		34.68	35.92
Uranus	E	2041-05-30T04:59:42.345		8.56	-30.96	25502.65		-19.63	-20.48
6	E	2041-05-30T05:07:47.769		6.90	-31.83	41875.92	29.93		
5	E	2041-05-30T05:08:01.383		6.86	-31.85	42314.43	30.01		
4	E	2041-05-30T05:08:11.981		6.82	-31.87	42612.28	30.08		
alpha	E	2041-05-30T05:09:20.803		6.59	-31.99	44718.55	30.47		
beta	E	2041-05-30T05:09:51.076		6.48	-32.04	45646.03	30.65		
eta	E	2041-05-30T05:10:40.934		6.31	-32.13	47176.12	30.87		
gamma	E	2041-05-30T05:10:55.661		6.26	-32.16	47631.29	30.94		
delta	E	2041-05-30T05:11:17.253		6.19	-32.19	48300.35	31.03		
lambda	E	2041-05-30T05:12:12.683		6.00	-32.29	50026.71	31.25		
epsilon	E	2041-05-30T05:12:57.931		5.85	-32.36	51444.65	31.35		