

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-10-31T07:30:04.640
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 52019887975678208
 2Mass ID (if available) : 04092900+2051172

Uranus 2026-10-31T07:30:04 K14.68 G17.66 PgtRgt

ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s

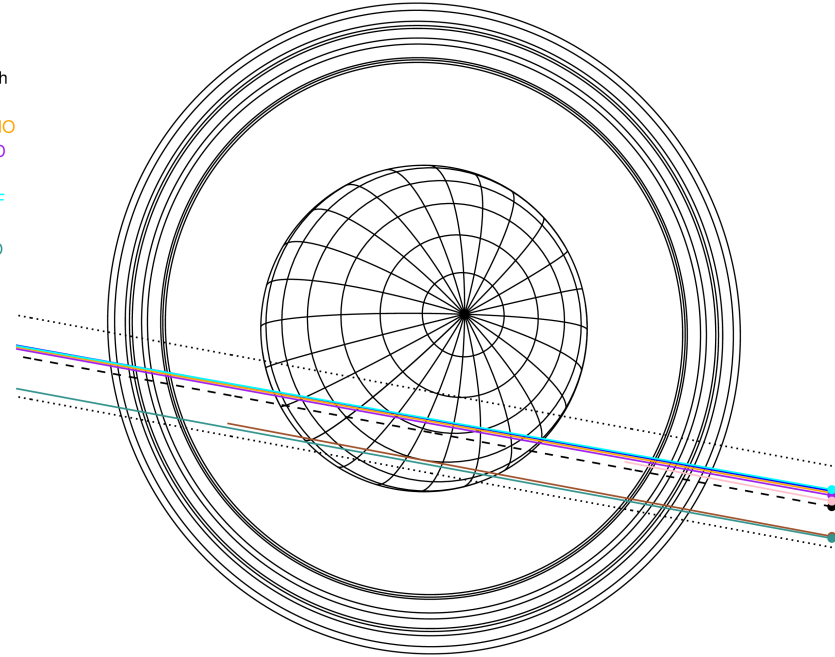
RUWE (>1.4 is poor) : 0.98
 K magnitude : 14.682
 G magnitude : 17.663
 RP magnitude : 16.763
 BP magnitude : 18.528
 DUPflag : 0
 Distance (au) : 18.544
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.24
 Sun-Target sep (deg) : 153.20
 Sun-Moon sep (deg) : 43.11
 B (ring opening deg) : 74.71
 PA of pole (deg) : -70.66

#	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



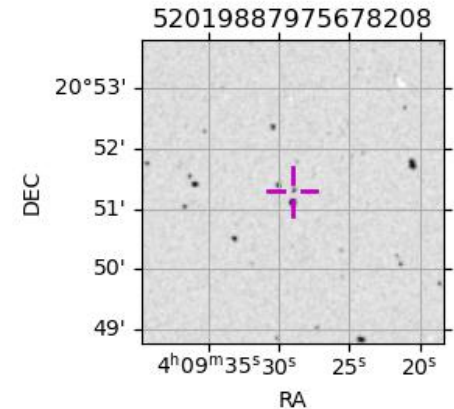
2026-10-31T07:30:04.6400 ra: 04 09 29.0164 s: +20 51 17.312 C/A 1.173° PA 349.52 deg v_sky -20.24 km/s D 18.54 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PAL
 KPNO
 MCD
 TEN
 IRTF
 RIO
 ESO

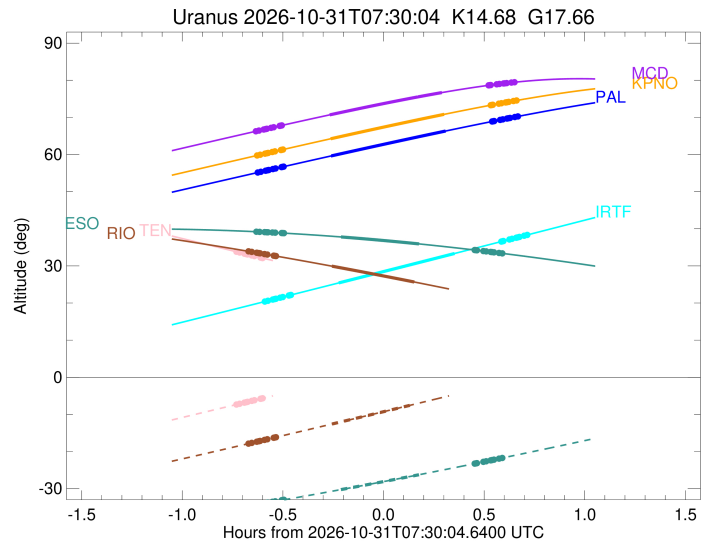
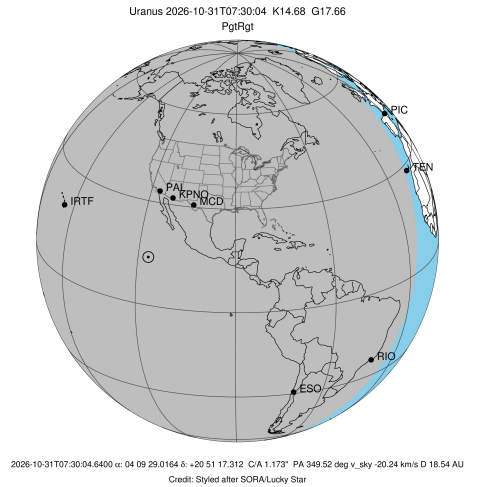


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++	+ +	+++++	OCT 31 06:52 - OCT 31 08:10	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	OCT 31 06:52 - OCT 31 08:09	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	OCT 31 06:51 - OCT 31 08:09	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++			OCT 31 06:46 - OCT 31 06:54	PnnRin
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	OCT 31 06:54 - OCT 31 08:12	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +		OCT 31 06:49 - OCT 31 07:39	PieRin
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	OCT 31 06:51 - OCT 31 08:05	PieRie
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



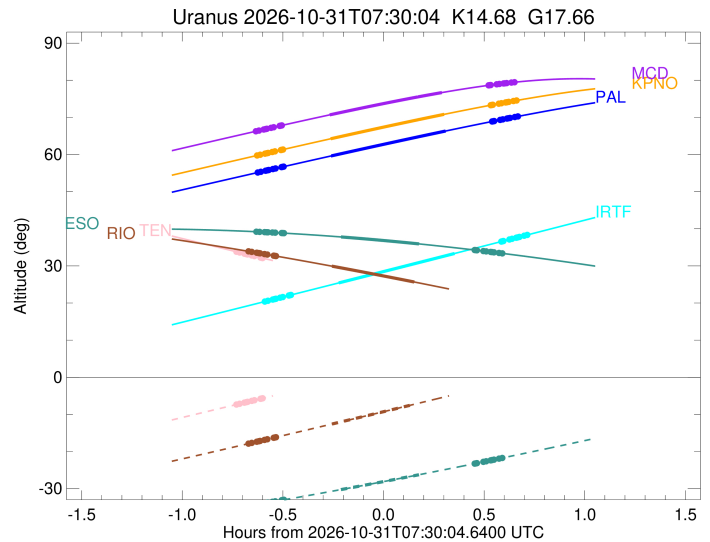
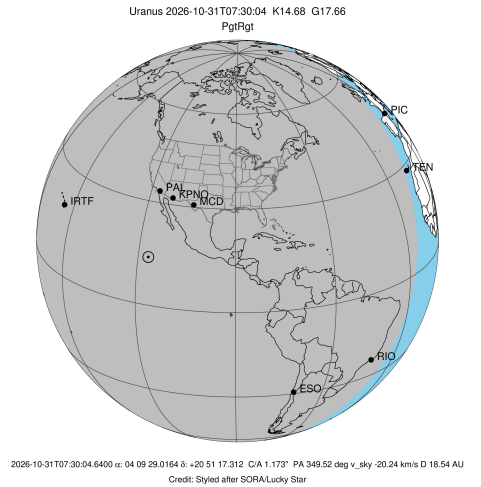
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-10-31T07:31:44.650
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 52019887975678208
 2Mass ID (if available) : 04092900+2051172
 ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 14.682
 G magnitude : 17.663
 RP magnitude : 16.763
 BP magnitude : 18.528
 DUPflag : 0
 Distance (au) : 18.544
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.24
 Sun-Target sep (deg) : 153.20
 Sun-Moon sep (deg) : 43.94
 B (ring opening deg) : 74.71
 PA of pole (deg) : -70.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.030
 C/A sky separation (km) : 13852.5
 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_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	2026-10-31T06:52:27.265		55.13	-69.03	51319.58	-20.34		
lambda	I	2026-10-31T06:53:31.024		55.35	-69.13	50026.71	-20.26		
delta	I	2026-10-31T06:54:56.377		55.64	-69.26	48300.35	-20.19		
gamma	I	2026-10-31T06:55:29.633		55.76	-69.31	47629.18	-20.17		
eta	I	2026-10-31T06:55:52.106		55.83	-69.34	47176.12	-20.15		
beta	I	2026-10-31T06:57:08.350		56.09	-69.45	45641.46	-20.08		
alpha	I	2026-10-31T06:57:56.071		56.26	-69.52	44686.29	-20.04		
4	I	2026-10-31T06:59:41.309		56.62	-69.66	42576.98	-19.94		
5	I	2026-10-31T07:00:01.900		56.69	-69.69	42167.81	-19.92		
6	I	2026-10-31T07:00:20.302		56.75	-69.71	41812.93	-19.89		
Uranus	I	2026-10-31T07:14:26.963		59.62	-70.59	25439.53		7.00	7.33
Uranus	E	2026-10-31T07:48:36.889		66.34	-70.55	25016.95		-15.25	-15.94
6	E	2026-10-31T08:02:26.302		68.90	-69.68	41834.21	19.95		
5	E	2026-10-31T08:02:50.757		68.97	-69.65	42314.90	19.98		
4	E	2026-10-31T08:03:05.067		69.01	-69.63	42594.44	20.00		
alpha	E	2026-10-31T08:04:52.243		69.34	-69.48	44750.73	20.11		
beta	E	2026-10-31T08:05:38.358		69.47	-69.41	45674.83	20.15		
eta	E	2026-10-31T08:06:52.673		69.69	-69.30	47176.12	20.22		
gamma	E	2026-10-31T08:07:14.682		69.76	-69.27	47621.37	20.24		
delta	E	2026-10-31T08:07:48.208		69.86	-69.22	48300.35	20.27		
lambda	E	2026-10-31T08:09:13.255		70.10	-69.09	50026.71	20.33		
epsilon	E	2026-10-31T08:10:10.465		70.27	-69.00	51190.96	20.42		

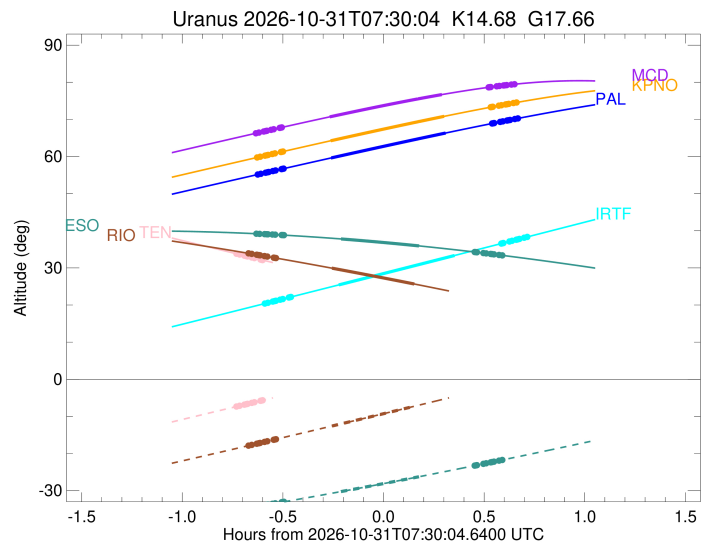
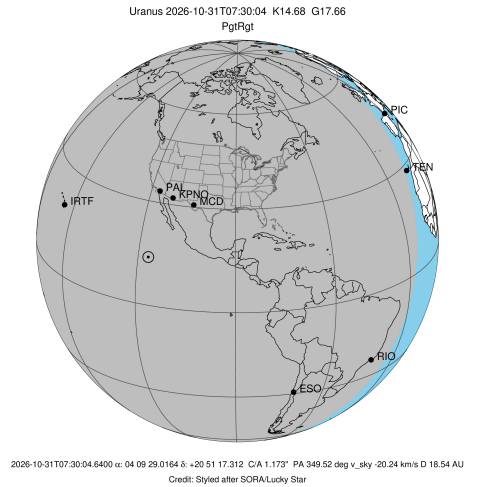
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2026-10-31T07:31:26.900
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       : 52019887975678208
2Mass ID (if available) : 04092900+2051172
ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 14.682
G magnitude          : 17.663
RP magnitude         : 16.763
BP magnitude         : 18.528
DUPflag             : 0
Distance (au)        : 18.544
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -20.24
Sun-Target sep (deg) : 153.20
Sun-Moon sep (deg)   : 43.93
B (ring opening deg) : 74.71
PA of pole (deg)     : -70.66
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.052
C/A sky separation (km) : 14142.7
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
    
```



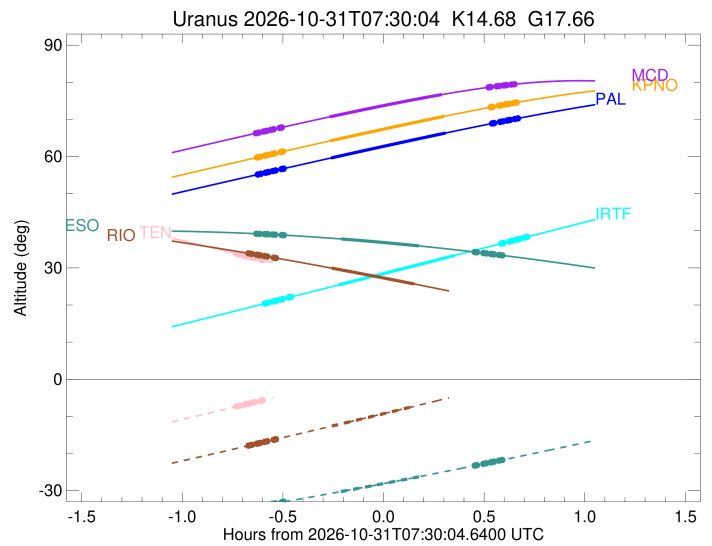
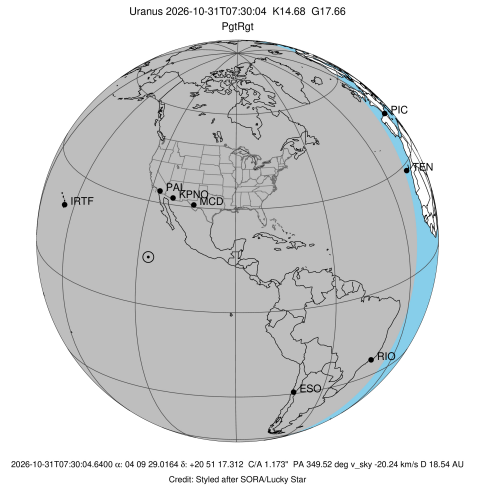
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-10-31T06:52:15.636		59.72	-71.88	51321.87	-20.33		
lambda	I	2026-10-31T06:53:19.540		59.94	-71.93	50026.71	-20.25		
delta	I	2026-10-31T06:54:44.946		60.24	-72.00	48300.35	-20.18		
gamma	I	2026-10-31T06:55:18.227		60.35	-72.02	47629.15	-20.15		
eta	I	2026-10-31T06:55:40.716		60.43	-72.04	47176.12	-20.14		
beta	I	2026-10-31T06:56:57.029		60.69	-72.09	45641.43	-20.07		
alpha	I	2026-10-31T06:57:44.792		60.86	-72.12	44686.36	-20.02		
4	I	2026-10-31T06:59:30.146		61.22	-72.18	42577.33	-19.91		
5	I	2026-10-31T06:59:50.763		61.29	-72.19	42168.15	-19.89		
6	I	2026-10-31T07:00:09.219		61.35	-72.20	41812.67	-19.86		
Uranus	I	2026-10-31T07:14:19.280		64.25	-72.32	25445.76		6.82	7.14
Uranus	E	2026-10-31T07:48:08.706		70.82	-70.32	25018.08		-15.23	-15.92
6	E	2026-10-31T08:02:01.434		73.29	-68.73	41833.90	19.91		
5	E	2026-10-31T08:02:25.940		73.36	-68.67	42314.84	19.94		
4	E	2026-10-31T08:02:40.294		73.40	-68.64	42594.71	19.96		
alpha	E	2026-10-31T08:04:27.627		73.70	-68.41	44750.66	20.08		
beta	E	2026-10-31T08:05:13.806		73.83	-68.31	45674.73	20.12		
eta	E	2026-10-31T08:06:28.223		74.03	-68.14	47176.12	20.20		
gamma	E	2026-10-31T08:06:50.259		74.09	-68.09	47621.36	20.21		
delta	E	2026-10-31T08:07:23.825		74.18	-68.02	48300.35	20.24		
lambda	E	2026-10-31T08:08:48.964		74.41	-67.82	50026.71	20.31		
epsilon	E	2026-10-31T08:09:46.339		74.56	-67.69	51193.21	20.40		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-10-31T07:30:57.560
 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 : 52019887975678208
 2Mass ID (if available) : 04092900+2051172
 ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 14.682
 G magnitude : 17.663
 RP magnitude : 16.763
 BP magnitude : 18.528
 DUPflag : 0
 Distance (au) : 18.544
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.24
 Sun-Target sep (deg) : 153.20
 Sun-Moon sep (deg) : 43.88
 B (ring opening deg) : 74.71
 PA of pole (deg) : -70.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.076
 C/A sky separation (km) : 14474.4
 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_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	2026-10-31T06:51:53.353		66.24	-73.39	51324.57	-20.32		
lambda	I	2026-10-31T06:52:57.426		66.46	-73.35	50026.71	-20.23		
delta	I	2026-10-31T06:54:22.893		66.75	-73.29	48300.35	-20.16		
gamma	I	2026-10-31T06:54:56.204		66.86	-73.26	47629.12	-20.14		
eta	I	2026-10-31T06:55:18.712		66.94	-73.24	47176.12	-20.12		
beta	I	2026-10-31T06:56:35.107		67.20	-73.18	45641.40	-20.04		
alpha	I	2026-10-31T06:57:22.919		67.36	-73.13	44686.46	-20.00		
4	I	2026-10-31T06:59:08.411		67.72	-73.03	42577.73	-19.88		
5	I	2026-10-31T06:59:29.058		67.79	-73.01	42168.55	-19.85		
6	I	2026-10-31T06:59:47.578		67.85	-72.99	41812.35	-19.82		
Uranus	I	2026-10-31T07:14:01.715		70.69	-71.83	25452.89		6.60	6.91
Uranus	E	2026-10-31T07:47:27.192		76.69	-67.41	25019.60		-15.21	-15.90
6	E	2026-10-31T08:01:24.004		78.64	-65.10	41833.57	19.86		
5	E	2026-10-31T08:01:48.574		78.69	-65.03	42314.78	19.90		
4	E	2026-10-31T08:02:02.980		78.72	-64.99	42595.01	19.92		
alpha	E	2026-10-31T08:03:50.517		78.93	-64.67	44750.58	20.04		
beta	E	2026-10-31T08:04:36.781		79.01	-64.54	45674.63	20.09		
eta	E	2026-10-31T08:05:51.331		79.15	-64.32	47176.12	20.16		
gamma	E	2026-10-31T08:06:13.402		79.19	-64.26	47621.34	20.18		
delta	E	2026-10-31T08:06:47.021		79.24	-64.16	48300.35	20.21		
lambda	E	2026-10-31T08:08:12.283		79.39	-63.90	50026.71	20.28		
epsilon	E	2026-10-31T08:09:09.857		79.48	-63.73	51195.69	20.37		

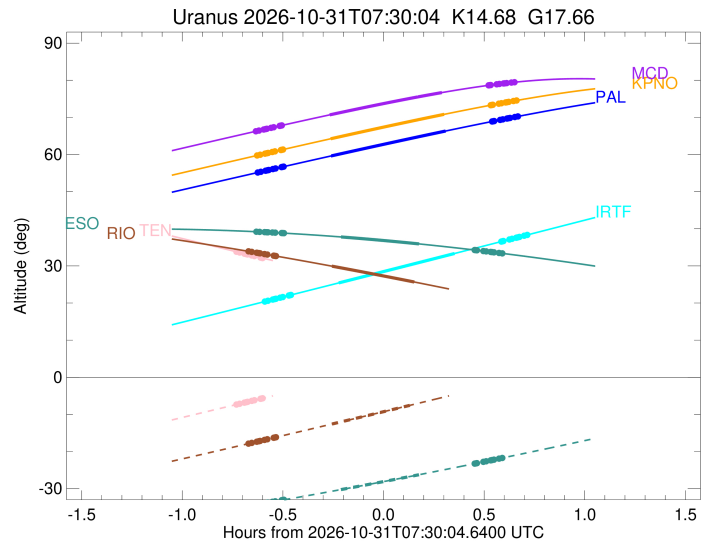
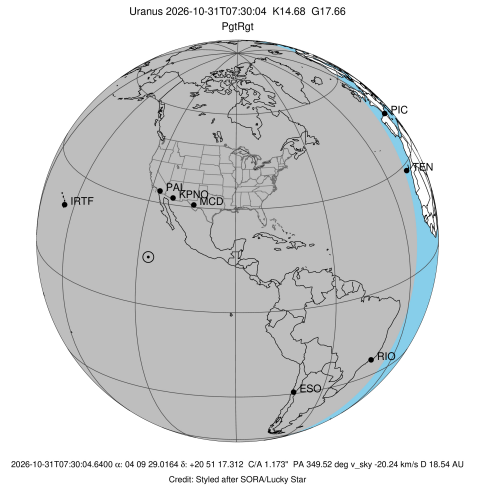
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-10-31T07:25:29.900
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 52019887975678208
 2Mass ID (if available) : 04092900+2051172
 ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 14.682
 G magnitude : 17.663
 RP magnitude : 16.763
 BP magnitude : 18.528
 DUPflag : 0
 Distance (au) : 18.544
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.24
 Sun-Target sep (deg) : 153.20
 Sun-Moon sep (deg) : 42.72
 B (ring opening deg) : 74.71
 PA of pole (deg) : -70.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.088
 C/A sky separation (km) : 14638.9
 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_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	2026-10-31T06:46:05.803		33.85	-7.37	51329.60	-20.16		
lambda	I	2026-10-31T06:47:10.649		33.61	-7.14	50026.71	-20.07		
delta	I	2026-10-31T06:48:36.831		33.30	-6.83	48300.35	-19.99		
gamma	I	2026-10-31T06:49:10.430		33.17	-6.71	47629.05	-19.96		
eta	I	2026-10-31T06:49:33.129		33.09	-6.63	47176.12	-19.94		
beta	I	2026-10-31T06:50:50.198		32.81	-6.35	45641.35	-19.87		
alpha	I	2026-10-31T06:51:38.426		32.63	-6.18	44686.62	-19.82		
4	I	2026-10-31T06:53:24.873		32.24	-5.80	42578.38	-19.69		
5	I	2026-10-31T06:53:45.710		32.17	-5.72	42169.21	-19.67		
6	I	2026-10-31T06:54:04.460		32.10	-5.66	41811.85	-19.64		
Uranus	I	2026-10-31T07:08:28.938		28.95	-2.57x	25460.75		6.34	6.64
Uranus	E	2026-10-31T07:42:05.505		21.67	4.52x	25019.33		-15.21	-15.90
6	E	2026-10-31T07:56:16.456		18.62	7.47x	41833.82	19.55		
5	E	2026-10-31T07:56:41.418		18.53	7.55x	42314.83	19.58		
4	E	2026-10-31T07:56:56.041		18.48	7.60x	42594.78	19.60		
alpha	E	2026-10-31T07:58:45.330		18.09	7.98x	44750.65	19.72		
beta	E	2026-10-31T07:59:32.345		17.92	8.14x	45674.72	19.77		
eta	E	2026-10-31T08:00:48.098		17.65	8.40x	47176.12	19.84		
gamma	E	2026-10-31T08:01:10.528		17.57	8.48x	47621.36	19.86		
delta	E	2026-10-31T08:01:44.691		17.45	8.59x	48300.35	19.89		
lambda	E	2026-10-31T08:03:11.341		17.14	8.89x	50026.71	19.96		
epsilon	E	2026-10-31T08:04:09.717		16.93	9.09x	51192.92	20.05		

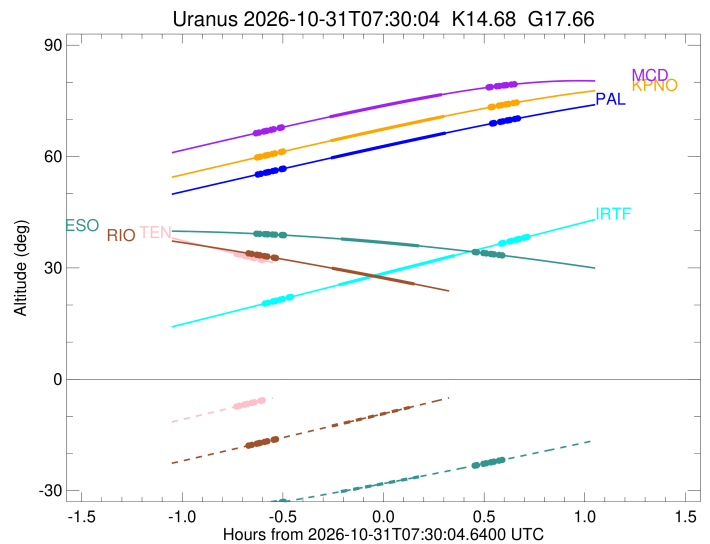
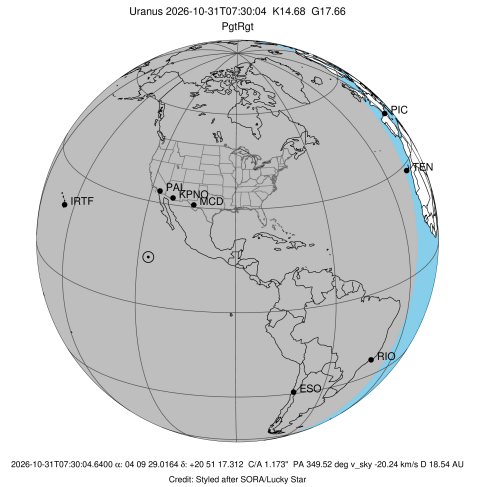
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2026-10-31T07:34:13.760
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 52019887975678208
2Mass ID (if available) : 04092900+2051172
ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 14.682
G magnitude           : 17.663
RP magnitude          : 16.763
BP magnitude          : 18.528
DUPflag              : 0
Distance (au)        : 18.544
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -20.24
Sun-Target sep (deg) : 153.20
Sun-Moon sep (deg)   : 44.00
B (ring opening deg) : 74.71
PA of pole (deg)     : -70.66
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.023
C/A sky separation (km) : 13760.9
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
    
```



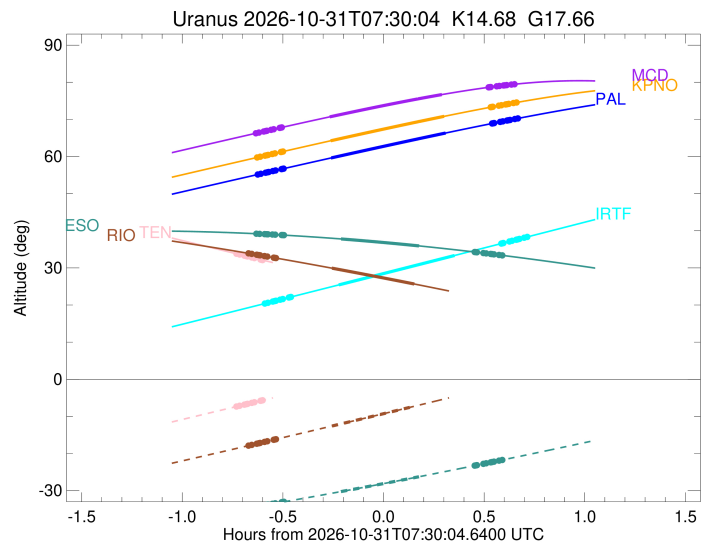
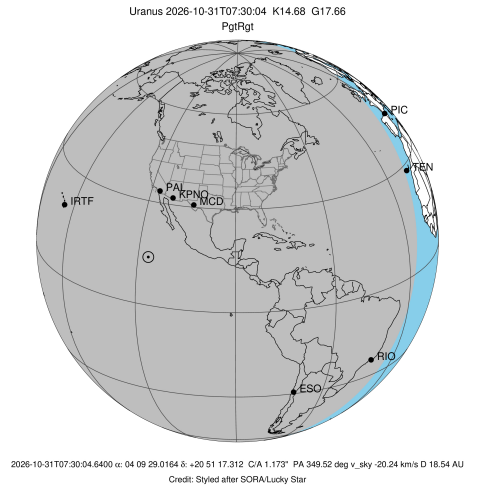
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-10-31T06:54:33.846		20.37	-44.13	51318.16	-20.15		
lambda	I	2026-10-31T06:55:38.134		20.61	-44.38	50026.71	-20.07		
delta	I	2026-10-31T06:57:04.282		20.94	-44.72	48300.35	-20.01		
gamma	I	2026-10-31T06:57:37.844		21.06	-44.85	47629.20	-19.98		
eta	I	2026-10-31T06:58:00.524		21.15	-44.94	47176.12	-19.97		
beta	I	2026-10-31T06:59:17.464		21.44	-45.24	45641.48	-19.90		
alpha	I	2026-10-31T07:00:05.621		21.62	-45.43	44686.24	-19.86		
4	I	2026-10-31T07:01:51.806		22.03	-45.85	42576.79	-19.76		
5	I	2026-10-31T07:02:12.581		22.10	-45.93	42167.62	-19.74		
6	I	2026-10-31T07:02:31.130		22.17	-46.00	41813.09	-19.71		
Uranus	I	2026-10-31T07:16:44.288		25.42	-49.35	25436.57		7.09	7.42
Uranus	E	2026-10-31T07:51:17.003		33.35	-57.47	25016.81		-15.25	-15.94
6	E	2026-10-31T08:05:11.058		36.55	-60.73	41834.19	19.83		
5	E	2026-10-31T08:05:35.658		36.65	-60.83	42314.89	19.86		
4	E	2026-10-31T08:05:50.054		36.70	-60.88	42594.45	19.88		
alpha	E	2026-10-31T08:07:37.866		37.12	-61.30	44750.73	19.99		
beta	E	2026-10-31T08:08:24.254		37.30	-61.49	45674.82	20.03		
eta	E	2026-10-31T08:09:39.009		37.58	-61.78	47176.12	20.10		
gamma	E	2026-10-31T08:10:01.149		37.67	-61.86	47621.37	20.12		
delta	E	2026-10-31T08:10:34.872		37.80	-61.99	48300.35	20.15		
lambda	E	2026-10-31T08:12:00.420		38.13	-62.33	50026.71	20.21		
epsilon	E	2026-10-31T08:12:57.980		38.35	-62.55	51191.28	20.30		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-10-31T07:27:17.110
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 52019887975678208
 2Mass ID (if available) : 04092900+2051172
 ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 14.682
 G magnitude : 17.663
 RP magnitude : 16.763
 BP magnitude : 18.528
 DUPflag : 0
 Distance (au) : 18.544
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.24
 Sun-Target sep (deg) : 153.20
 Sun-Moon sep (deg) : 43.07
 B (ring opening deg) : 74.71
 PA of pole (deg) : -70.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.509
 C/A sky separation (km) : 20290.5
 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_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	2026-10-31T06:49:38.964		33.95	-17.92	51370.31	-19.46		
lambda	I	2026-10-31T06:50:48.399		33.78	-17.68	50026.71	-19.30		
delta	I	2026-10-31T06:52:18.180		33.54	-17.36	48300.35	-19.16		
gamma	I	2026-10-31T06:52:53.311		33.45	-17.24	47628.46	-19.09		
eta	I	2026-10-31T06:53:17.025		33.39	-17.15	47176.12	-19.05		
beta	I	2026-10-31T06:54:37.886		33.18	-16.87	45641.07	-18.90		
alpha	I	2026-10-31T06:55:28.510		33.05	-16.69	44688.47	-18.80		
4	I	2026-10-31T06:57:20.947		32.76	-16.30	42584.74	-18.55		
5	I	2026-10-31T06:57:42.997		32.70	-16.22	42176.57	-18.50		
6	I	2026-10-31T06:58:03.531		32.64	-16.15	41807.11	-18.43		
Uranus	I	2026-10-31T07:14:41.906		29.93	-12.60	25549.51		1.96	2.06
Uranus	E	2026-10-31T07:39:16.355		25.66	-7.27	25101.59		-13.95	-14.58
6	E	2026-10-31T07:55:33.702		22.69	-3.70x	41827.38	18.37		
5	E	2026-10-31T07:56:00.314		22.60	-3.60x	42312.67	18.44		
4	E	2026-10-31T07:56:16.292		22.55	-3.54x	42600.31	18.49		
alpha	E	2026-10-31T07:58:11.370		22.20	-3.12x	44748.80	18.74		
beta	E	2026-10-31T07:59:00.763		22.04	-2.93x	45672.55	18.84		
eta	E	2026-10-31T08:00:20.206		21.79	-2.64x	47176.12	18.99		
gamma	E	2026-10-31T08:00:43.620		21.72	-2.56x	47621.13	19.03		
delta	E	2026-10-31T08:01:19.262		21.61	-2.42x	48300.35	19.09		
lambda	E	2026-10-31T08:02:49.377		21.33	-2.09x	50026.71	19.23		
epsilon	E	2026-10-31T08:03:52.409		21.13	-1.86x	51241.42	19.38		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-10-31T07:29:20.130
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 52019887975678208
 2Mass ID (if available) : 04092900+2051172
 ICRS Star Coord at Epoch: 04h 09m 29.01642s +20:51:17.31173s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 14.682
 G magnitude : 17.663
 RP magnitude : 16.763
 BP magnitude : 18.528
 DUPflag : 0
 Distance (au) : 18.544
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -20.24
 Sun-Target sep (deg) : 153.20
 Sun-Moon sep (deg) : 43.47
 B (ring opening deg) : 74.71
 PA of pole (deg) : -70.66
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.550
 C/A sky separation (km) : 20845.9
 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_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	2026-10-31T06:51:59.291		39.21	-34.31	51373.11	-19.40		
lambda	I	2026-10-31T06:53:09.097		39.16	-34.13	50026.71	-19.23		
delta	I	2026-10-31T06:54:39.201		39.10	-33.90	48300.35	-19.08		
gamma	I	2026-10-31T06:55:14.472		39.07	-33.81	47628.42	-19.02		
eta	I	2026-10-31T06:55:38.282		39.05	-33.75	47176.12	-18.97		
beta	I	2026-10-31T06:56:59.499		38.99	-33.54	45641.06	-18.81		
alpha	I	2026-10-31T06:57:50.357		38.95	-33.41	44688.64	-18.71		
4	I	2026-10-31T06:59:43.395		38.86	-33.12	42585.24	-18.44		
5	I	2026-10-31T07:00:05.567		38.84	-33.06	42177.21	-18.38		
6	I	2026-10-31T07:00:26.275		38.82	-33.00	41806.76	-18.31		
Uranus	I	2026-10-31T07:17:23.586		37.80	-30.26	25553.66		1.47	1.54
Uranus	E	2026-10-31T07:40:39.649		35.93	-26.26	25118.57		-13.67	-14.29
6	E	2026-10-31T07:57:13.922		34.28	-23.27	41826.60	18.30		
5	E	2026-10-31T07:57:40.642		34.23	-23.18	42312.27	18.37		
4	E	2026-10-31T07:57:56.742		34.21	-23.14	42600.95	18.42		
alpha	E	2026-10-31T07:59:52.136		34.00	-22.78	44748.53	18.69		
beta	E	2026-10-31T08:00:41.647		33.91	-22.63	45672.26	18.79		
eta	E	2026-10-31T08:02:01.257		33.76	-22.38	47176.12	18.96		
gamma	E	2026-10-31T08:02:24.706		33.72	-22.31	47621.11	19.00		
delta	E	2026-10-31T08:03:00.397		33.65	-22.20	48300.35	19.06		
lambda	E	2026-10-31T08:04:30.596		33.49	-21.92	50026.71	19.21		
epsilon	E	2026-10-31T08:05:33.976		33.37	-21.73	51247.56	19.38		