

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-18T08:15:21.440
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 52121700178108288
 2Mass ID (if available) : 04063012+2043301

ICRS Star Coord at Epoch: 04h 06m 30.12964s +20:43:29.95349s

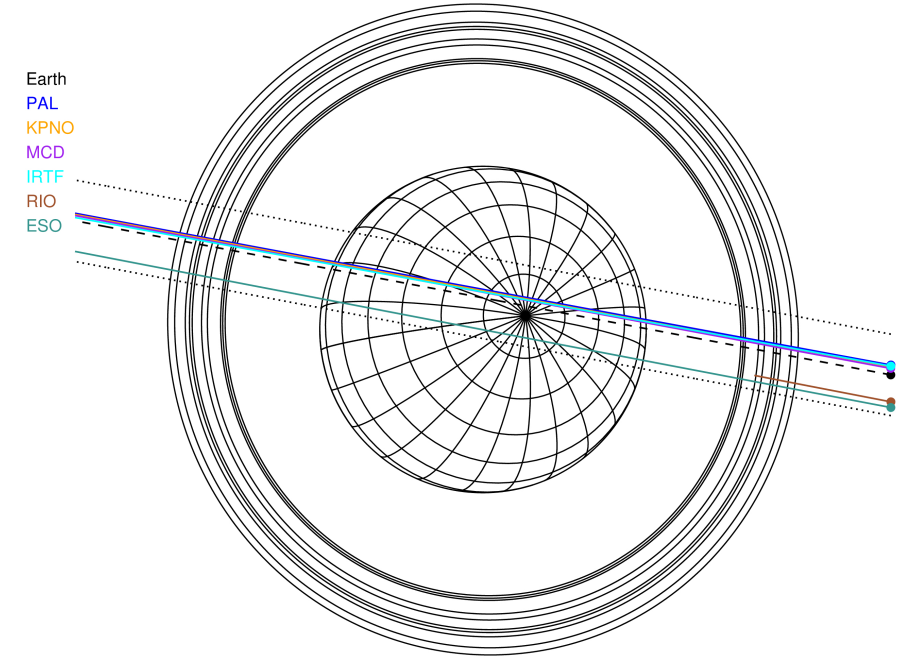
RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.801
 G magnitude : 15.532
 RP magnitude : 14.703
 BP magnitude : 16.251
 DUPflag : 0
 Distance (au) : 18.453
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.16
 Sun-Target sep (deg) : 172.02
 Sun-Moon sep (deg) : 88.36
 B (ring opening deg) : 74.09
 PA of pole (deg) : -72.16

#	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



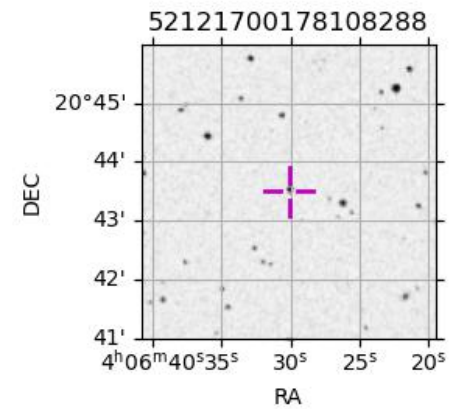
2026-11-18T08:15:21.4400 cc: 04 06 30.1296 s : +20 43 29.953 C/A 0.968° PA 169.31 deg v_sky -23.16 km/s D 18.45 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2026-11-18T08:15:21 K12.80 G15.53 PgtRgt

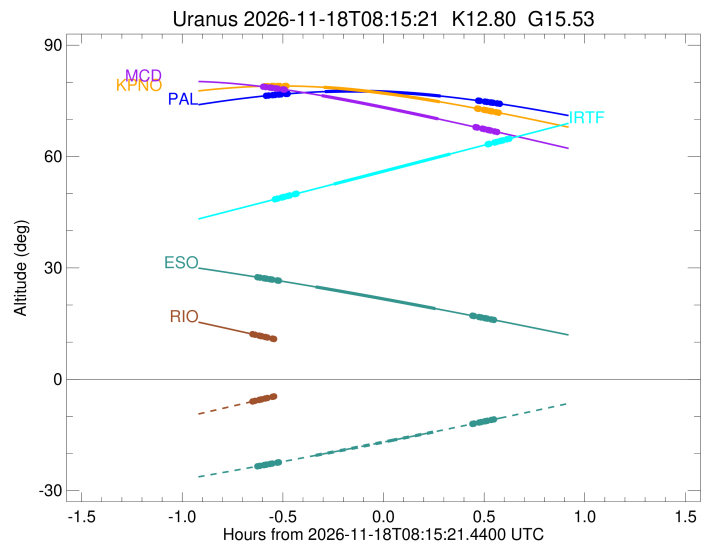
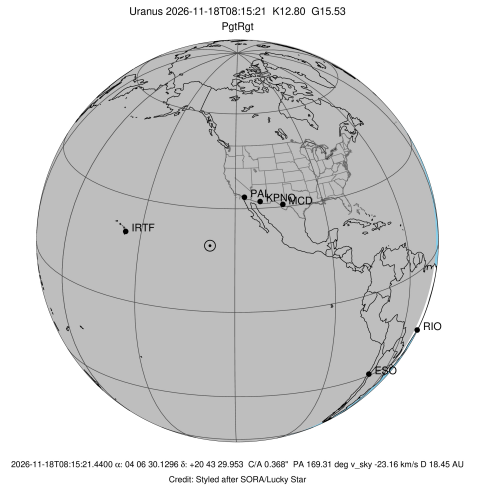


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

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	+++++	+ +	+++++	NOV 18 07:40 - NOV 18 08:49	PieRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	NOV 18 07:39 - NOV 18 08:49	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	NOV 18 07:39 - NOV 18 08:49	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	NOV 18 07:42 - NOV 18 08:52	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++			NOV 18 07:36 - NOV 18 07:40	PnnRin
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	NOV 18 07:37 - NOV 18 08:48	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



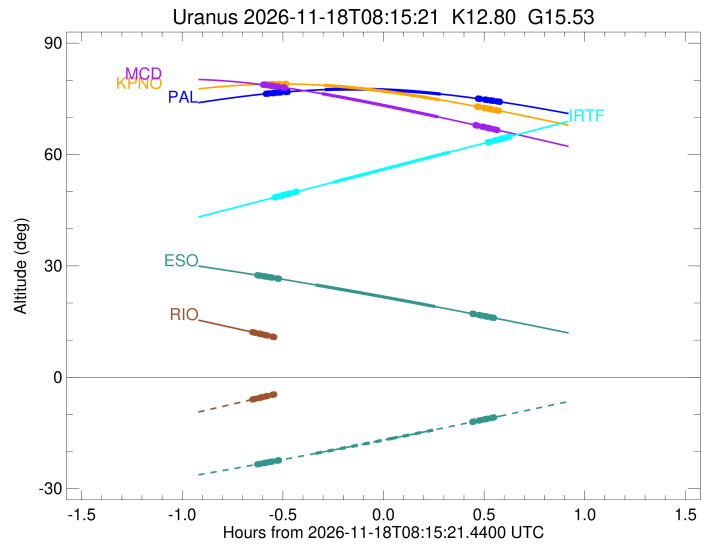
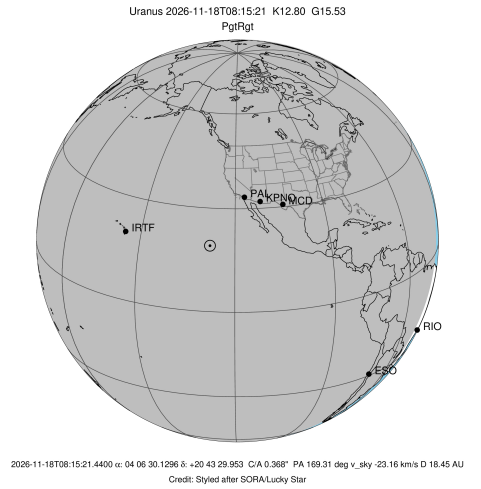
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-18T08:15:02.400
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 52121700178108288
 2Mass ID (if available) : 04063012+2043301
 ICRS Star Coord at Epoch: 04h 06m 30.12964s +20:43:29.95349s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.801
 G magnitude : 15.532
 RP magnitude : 14.703
 BP magnitude : 16.251
 DUPflag : 0
 Distance (au) : 18.453
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.16
 Sun-Target sep (deg) : 172.02
 Sun-Moon sep (deg) : 89.26
 B (ring opening deg) : 74.09
 PA of pole (deg) : -72.16
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.462
 C/A sky separation (km) : 6176.8
 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	2026-11-18T07:40:12.224		76.35	-75.97	51332.05	-24.06		
lambda	I	2026-11-18T07:41:06.440		76.44	-75.94	50026.71	-24.07		
delta	I	2026-11-18T07:42:18.176		76.54	-75.90	48300.35	-24.06		
gamma	I	2026-11-18T07:42:46.101		76.58	-75.89	47628.60	-24.05		
eta	I	2026-11-18T07:43:04.915		76.61	-75.88	47176.12	-24.05		
beta	I	2026-11-18T07:44:08.732		76.70	-75.83	45641.06	-24.03		
alpha	I	2026-11-18T07:44:48.492		76.75	-75.81	44689.57	-24.02		
4	I	2026-11-18T07:46:15.733		76.86	-75.74	42591.60	-23.99		
5	I	2026-11-18T07:46:32.944		76.88	-75.73	42187.30	-23.99		
6	I	2026-11-18T07:46:48.818		76.90	-75.71	41801.72	-23.99		
Uranus	I	2026-11-18T07:57:51.407		77.49	-74.97	25048.65		15.42	16.11
Uranus	E	2026-11-18T08:32:22.614		76.29	-70.72	25260.78		-11.65	-12.19
6	E	2026-11-18T08:43:35.706		75.05	-68.91	41878.09	24.00		
5	E	2026-11-18T08:43:51.710		75.02	-68.87	42261.42	24.00		
4	E	2026-11-18T08:44:03.603		75.00	-68.84	42539.90	24.00		
alpha	E	2026-11-18T08:45:35.083		74.80	-68.58	44741.39	24.03		
beta	E	2026-11-18T08:46:14.311		74.72	-68.47	45680.51	24.04		
eta	E	2026-11-18T08:47:16.472		74.58	-68.29	47176.12	24.05		
gamma	E	2026-11-18T08:47:35.143		74.54	-68.24	47625.25	24.06		
delta	E	2026-11-18T08:48:03.202		74.48	-68.16	48300.35	24.06		
lambda	E	2026-11-18T08:49:14.923		74.31	-67.95	50026.71	24.08		
epsilon	E	2026-11-18T08:49:50.351		74.23	-67.85	50879.85	24.07		

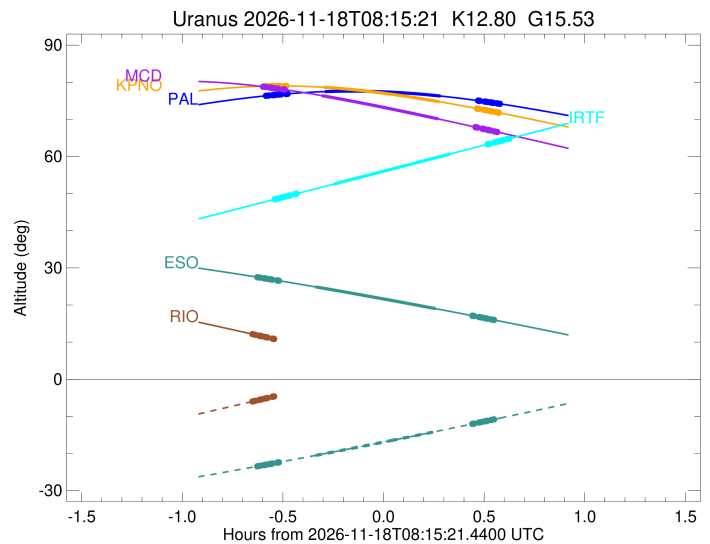
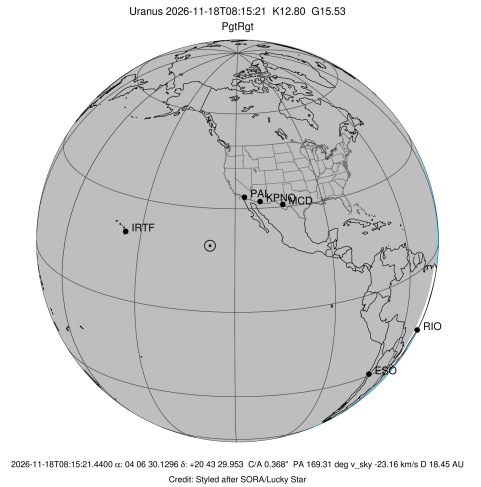
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch             : 2026-11-18T08:14:42.470
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        : 52121700178108288
2Mass ID (if available) : 04063012+2043301
ICRS Star Coord at Epoch: 04h 06m 30.12964s +20:43:29.95349s
RUWE (>1.4 is poor)  : 0.98
K magnitude           : 12.801
G magnitude           : 15.532
RP magnitude          : 14.703
BP magnitude          : 16.251
DUPflag              : 0
Distance (au)         : 18.453
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : -23.16
Sun-Target sep (deg)  : 172.02
Sun-Moon sep (deg)    : 89.26
B (ring opening deg)  : 74.09
PA of pole (deg)      : -72.16
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.445
C/A sky separation (km) : 5952.7
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_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	2026-11-18T07:39:51.479		78.95	-75.94	51333.83	-24.09		
lambda	I	2026-11-18T07:40:45.715		78.97	-75.84	50026.71	-24.10		
delta	I	2026-11-18T07:41:57.380		78.99	-75.72	48300.35	-24.08		
gamma	I	2026-11-18T07:42:25.277		78.99	-75.67	47628.58	-24.08		
eta	I	2026-11-18T07:42:44.070		79.00	-75.63	47176.12	-24.07		
beta	I	2026-11-18T07:43:47.819		79.00	-75.51	45641.05	-24.06		
alpha	I	2026-11-18T07:44:27.532		79.01	-75.44	44689.67	-24.05		
4	I	2026-11-18T07:45:54.666		79.01	-75.27	42591.84	-24.02		
5	I	2026-11-18T07:46:11.850		79.00	-75.24	42187.69	-24.02		
6	I	2026-11-18T07:46:27.731		79.00	-75.21	41801.58	-24.02		
Uranus	I	2026-11-18T07:57:29.285		78.66	-73.76	25051.12		15.38	16.07
Uranus	E	2026-11-18T08:32:04.659		74.76	-68.00	25256.17		-11.74	-12.28
6	E	2026-11-18T08:43:16.650		72.93	-65.89	41878.03	24.02		
5	E	2026-11-18T08:43:32.656		72.88	-65.84	42261.79	24.02		
4	E	2026-11-18T08:43:44.532		72.85	-65.80	42540.06	24.02		
alpha	E	2026-11-18T08:45:15.942		72.59	-65.51	44741.51	24.05		
beta	E	2026-11-18T08:45:55.139		72.47	-65.39	45680.54	24.05		
eta	E	2026-11-18T08:46:57.259		72.29	-65.19	47176.12	24.07		
gamma	E	2026-11-18T08:47:15.918		72.24	-65.13	47625.23	24.07		
delta	E	2026-11-18T08:47:43.960		72.16	-65.04	48300.35	24.08		
lambda	E	2026-11-18T08:48:55.640		71.94	-64.80	50026.71	24.09		
epsilon	E	2026-11-18T08:49:31.099		71.84	-64.69	50881.05	24.08		

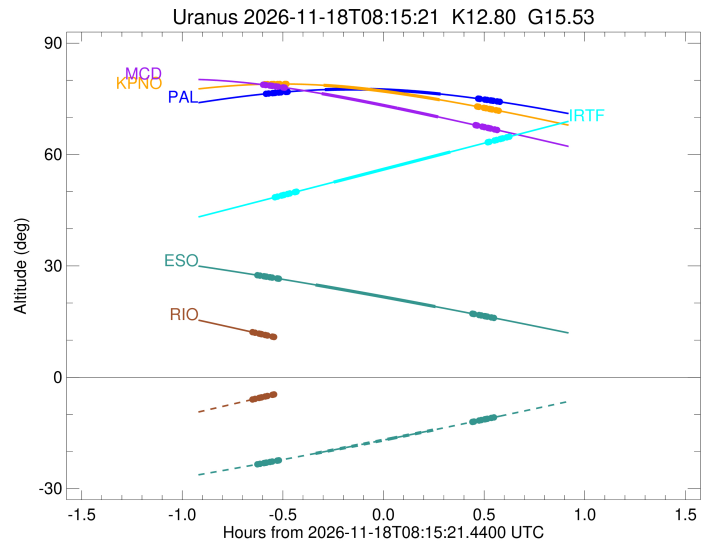
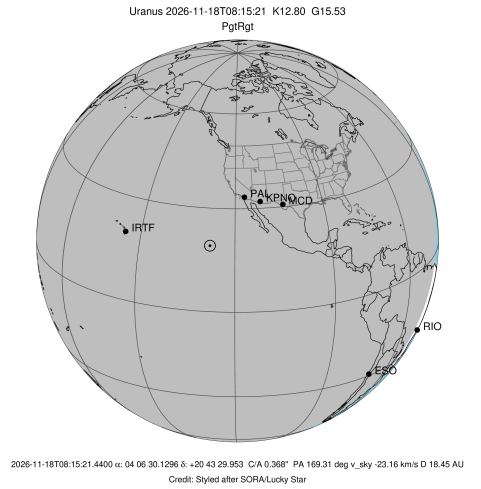
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-18T08:14:12.830
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 52121700178108288
 2Mass ID (if available) : 04063012+2043301
 ICRS Star Coord at Epoch: 04h 06m 30.12964s +20:43:29.95349s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.801
 G magnitude : 15.532
 RP magnitude : 14.703
 BP magnitude : 16.251
 DUPflag : 0
 Distance (au) : 18.453
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.16
 Sun-Target sep (deg) : 172.02
 Sun-Moon sep (deg) : 89.25
 B (ring opening deg) : 74.09
 PA of pole (deg) : -72.16
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.428
 C/A sky separation (km) : 5732.7
 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_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	2026-11-18T07:39:20.594		78.82	-72.70	51335.68	-24.10		
lambda	I	2026-11-18T07:40:14.865		78.72	-72.55	50026.71	-24.11		
delta	I	2026-11-18T07:41:26.473		78.58	-72.34	48300.35	-24.10		
gamma	I	2026-11-18T07:41:54.349		78.53	-72.26	47628.56	-24.10		
eta	I	2026-11-18T07:42:13.126		78.49	-72.20	47176.12	-24.09		
beta	I	2026-11-18T07:43:16.822		78.36	-72.02	45641.05	-24.08		
alpha	I	2026-11-18T07:43:56.495		78.27	-71.90	44689.77	-24.07		
4	I	2026-11-18T07:45:23.543		78.09	-71.64	42592.08	-24.05		
5	I	2026-11-18T07:45:40.704		78.05	-71.59	42188.08	-24.04		
6	I	2026-11-18T07:45:56.598		78.02	-71.54	41801.44	-24.05		
Uranus	I	2026-11-18T07:56:57.318		76.41	-69.52	25053.70		15.34	16.03
Uranus	E	2026-11-18T08:31:37.195		70.15	-62.66	25251.83		-11.83	-12.37
6	E	2026-11-18T08:42:48.390		67.92	-60.35	41877.98	24.03		
5	E	2026-11-18T08:43:04.402		67.86	-60.29	42262.13	24.03		
4	E	2026-11-18T08:43:16.268		67.82	-60.25	42540.21	24.03		
alpha	E	2026-11-18T08:44:47.645		67.52	-59.94	44741.61	24.05		
beta	E	2026-11-18T08:45:26.828		67.38	-59.80	45680.56	24.06		
eta	E	2026-11-18T08:46:28.933		67.17	-59.58	47176.12	24.07		
gamma	E	2026-11-18T08:46:47.587		67.11	-59.52	47625.21	24.08		
delta	E	2026-11-18T08:47:15.625		67.01	-59.42	48300.35	24.08		
lambda	E	2026-11-18T08:48:27.294		66.77	-59.17	50026.71	24.09		
epsilon	E	2026-11-18T08:49:02.795		66.65	-59.05	50882.14	24.08		

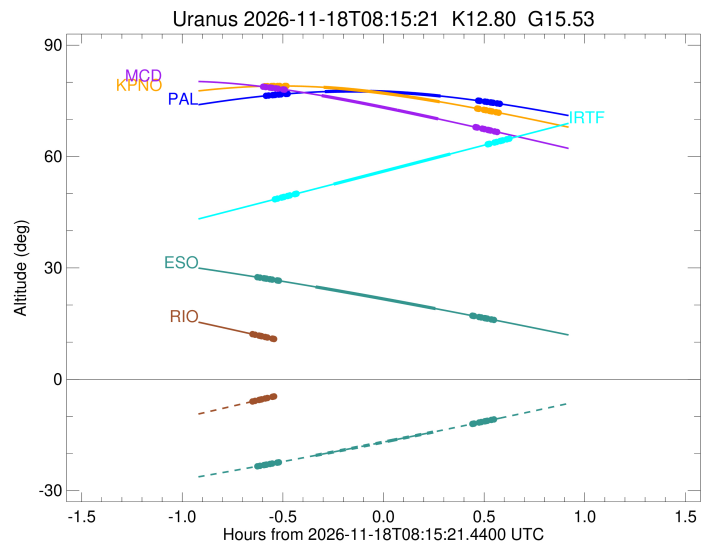
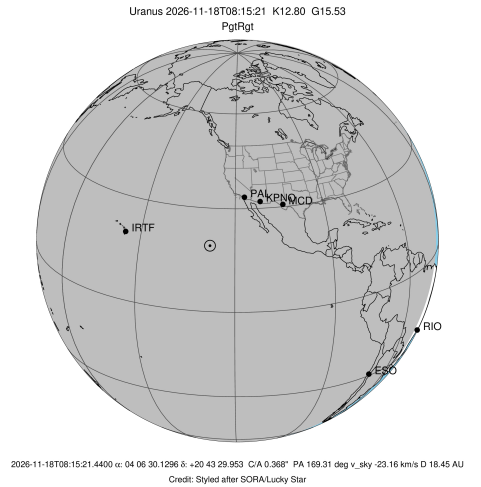
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2026-11-18T08:17:49.430
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      : 52121700178108288
2Mass ID (if available) : 04063012+2043301
ICRS Star Coord at Epoch: 04h 06m 30.12964s +20:43:29.95349s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 12.801
G magnitude          : 15.532
RP magnitude         : 14.703
BP magnitude         : 16.251
DUPflag             : 0
Distance (au)       : 18.453
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -23.16
Sun-Target sep (deg) : 172.02
Sun-Moon sep (deg)  : 89.12
B (ring opening deg) : 74.09
PA of pole (deg)    : -72.16
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.432
C/A sky separation (km) : 5784.7
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_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```



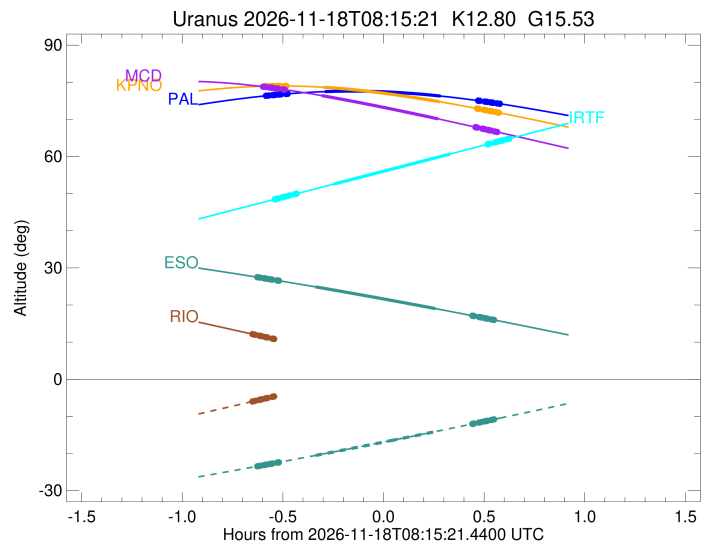
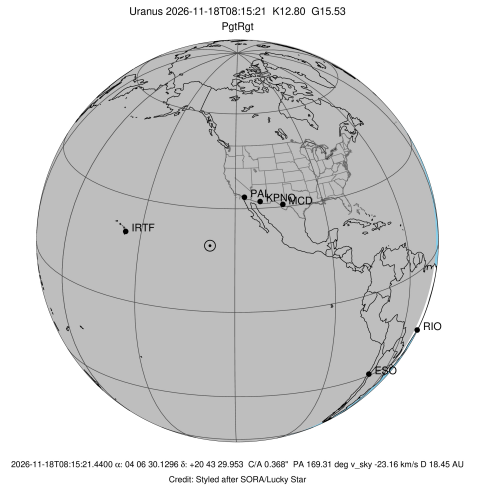
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2026-11-18T07:42:50.698		48.45	-56.08	51333.63	-24.00		
lambda	I	2026-11-18T07:43:45.128		48.66	-56.29	50026.71	-24.01		
delta	I	2026-11-18T07:44:57.053		48.94	-56.57	48300.35	-24.00		
gamma	I	2026-11-18T07:45:25.050		49.05	-56.68	47628.58	-23.99		
eta	I	2026-11-18T07:45:43.910		49.13	-56.75	47176.12	-23.99		
beta	I	2026-11-18T07:46:47.881		49.37	-57.00	45641.06	-23.98		
alpha	I	2026-11-18T07:47:27.729		49.53	-57.16	44689.67	-23.97		
4	I	2026-11-18T07:48:55.152		49.87	-57.50	42591.84	-23.95		
5	I	2026-11-18T07:49:12.391		49.94	-57.57	42187.70	-23.94		
6	I	2026-11-18T07:49:28.324		50.00	-57.63	41801.57	-23.95		
Uranus	I	2026-11-18T08:00:31.568		52.57	-60.22	25051.82		15.37	16.06
Uranus	E	2026-11-18T08:35:15.005		60.69	-68.38	25250.19		-11.86	-12.41
6	E	2026-11-18T08:46:26.741		63.31	-71.01	41877.93	24.02		
5	E	2026-11-18T08:46:42.771		63.37	-71.07	42262.42	24.02		
4	E	2026-11-18T08:46:54.635		63.42	-71.12	42540.33	24.02		
alpha	E	2026-11-18T08:48:26.041		63.77	-71.48	44741.71	24.05		
beta	E	2026-11-18T08:49:05.230		63.93	-71.63	45680.58	24.06		
eta	E	2026-11-18T08:50:07.344		64.17	-71.88	47176.12	24.07		
gamma	E	2026-11-18T08:50:26.000		64.24	-71.95	47625.19	24.07		
delta	E	2026-11-18T08:50:54.041		64.35	-72.06	48300.35	24.08		
lambda	E	2026-11-18T08:52:05.713		64.63	-72.34	50026.71	24.09		
epsilon	E	2026-11-18T08:52:41.264		64.77	-72.48	50883.39	24.08		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-18T08:11:42.590
 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 : 52121700178108288
 2Mass ID (if available) : 04063012+2043301
 ICRS Star Coord at Epoch: 04h 06m 30.12964s +20:43:29.95349s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.801
 G magnitude : 15.532
 RP magnitude : 14.703
 BP magnitude : 16.251
 DUPflag : 0
 Distance (au) : 18.453
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.16
 Sun-Target sep (deg) : 172.02
 Sun-Moon sep (deg) : 88.44
 B (ring opening deg) : 74.09
 PA of pole (deg) : -72.16
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.077
 C/A sky separation (km) : 1035.3
 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	2026-11-18T07:36:08.526		12.19	-6.02	51370.64	-24.06		
lambda	I	2026-11-18T07:37:04.382		12.00	-5.82	50026.71	-24.06		
delta	I	2026-11-18T07:38:16.139		11.76	-5.57	48300.35	-24.06		
gamma	I	2026-11-18T07:38:44.086		11.66	-5.47	47628.03	-24.06		
eta	I	2026-11-18T07:39:02.873		11.60	-5.40	47176.12	-24.05		
beta	I	2026-11-18T07:40:06.650		11.38	-5.18	45641.18	-24.05		
alpha	I	2026-11-18T07:40:46.276		11.25	-5.04	44691.98	-24.05		
4	I	2026-11-18T07:42:13.241		10.95	-4.73x	42596.69	-24.05		
5	I	2026-11-18T07:42:30.234		10.90	-4.67x	42196.15	-24.05		
6	I	2026-11-18T07:42:46.663		10.84	-4.61x	41798.95	-24.05		
Uranus	I	2026-11-18T07:53:45.888		8.59	-2.27x	25122.37		14.20	14.85
Uranus	E	2026-11-18T08:29:42.292		1.06x	5.50x	25159.55		-13.56	-14.18
6	E	2026-11-18T08:40:48.312		-1.31x	7.93x	41876.44	23.95		
5	E	2026-11-18T08:41:04.696		-1.37x	7.99x	42269.98	23.95		
4	E	2026-11-18T08:41:16.460		-1.41x	8.04x	42543.85	23.94		
alpha	E	2026-11-18T08:42:48.182		-1.74x	8.37x	44743.97	23.94		
beta	E	2026-11-18T08:43:27.479		-1.88x	8.52x	45680.97	23.94		
eta	E	2026-11-18T08:44:29.896		-2.10x	8.75x	47176.12	23.94		
gamma	E	2026-11-18T08:44:48.636		-2.17x	8.81x	47624.74	23.94		
delta	E	2026-11-18T08:45:16.858		-2.27x	8.92x	48300.35	23.94		
lambda	E	2026-11-18T08:46:28.975		-2.53x	9.18x	50026.71	23.94		
epsilon	E	2026-11-18T08:47:05.855		-2.66x	9.32x	50909.52	23.93		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2026-11-18T08:12:59.450
 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 : 52121700178108288
 2Mass ID (if available) : 04063012+2043301
 ICRS Star Coord at Epoch: 04h 06m 30.12964s +20:43:29.95349s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 12.801
 G magnitude : 15.532
 RP magnitude : 14.703
 BP magnitude : 16.251
 DUPflag : 0
 Distance (au) : 18.453
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.16
 Sun-Target sep (deg) : 172.02
 Sun-Moon sep (deg) : 88.71
 B (ring opening deg) : 74.09
 PA of pole (deg) : -72.16
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.003
 C/A sky separation (km) : 40.1
 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	2026-11-18T07:37:36.284		27.52	-23.47	51376.81	-24.20		
lambda	I	2026-11-18T07:38:32.065		27.38	-23.32	50026.71	-24.20		
delta	I	2026-11-18T07:39:43.397		27.21	-23.12	48300.35	-24.20		
gamma	I	2026-11-18T07:40:11.181		27.14	-23.04	47627.93	-24.20		
eta	I	2026-11-18T07:40:29.851		27.09	-22.99	47176.12	-24.20		
beta	I	2026-11-18T07:41:33.243		26.94	-22.81	45641.24	-24.20		
alpha	I	2026-11-18T07:42:12.612		26.84	-22.70	44692.44	-24.20		
4	I	2026-11-18T07:43:39.026		26.63	-22.46	42597.53	-24.19		
5	I	2026-11-18T07:43:55.878		26.58	-22.41	42197.76	-24.20		
6	I	2026-11-18T07:44:12.307		26.54	-22.37	41798.53	-24.20		
Uranus	I	2026-11-18T07:55:07.830		24.88	-20.50	25139.73		13.91	14.54
Uranus	E	2026-11-18T08:30:51.970		19.03	-14.09	25138.53		-13.93	-14.56
6	E	2026-11-18T08:41:52.213		17.12	-12.03	41875.96	24.13		
5	E	2026-11-18T08:42:08.557		17.07	-11.98	42272.02	24.13		
4	E	2026-11-18T08:42:20.199		17.04	-11.94	42544.88	24.12		
alpha	E	2026-11-18T08:43:51.221		16.77	-11.65	44744.57	24.12		
beta	E	2026-11-18T08:44:30.204		16.65	-11.53	45681.05	24.12		
eta	E	2026-11-18T08:45:32.150		16.47	-11.33	47176.12	24.12		
gamma	E	2026-11-18T08:45:50.744		16.42	-11.28	47624.60	24.12		
delta	E	2026-11-18T08:46:18.759		16.33	-11.19	48300.35	24.12		
lambda	E	2026-11-18T08:47:30.336		16.12	-10.96	50026.71	24.12		
epsilon	E	2026-11-18T08:48:07.267		16.01	-10.84	50917.44	24.12		