

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:22:15.230  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456

Uranus 2035-12-29T09:22:15 K14.67 G15.97 PgtRgt

ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s

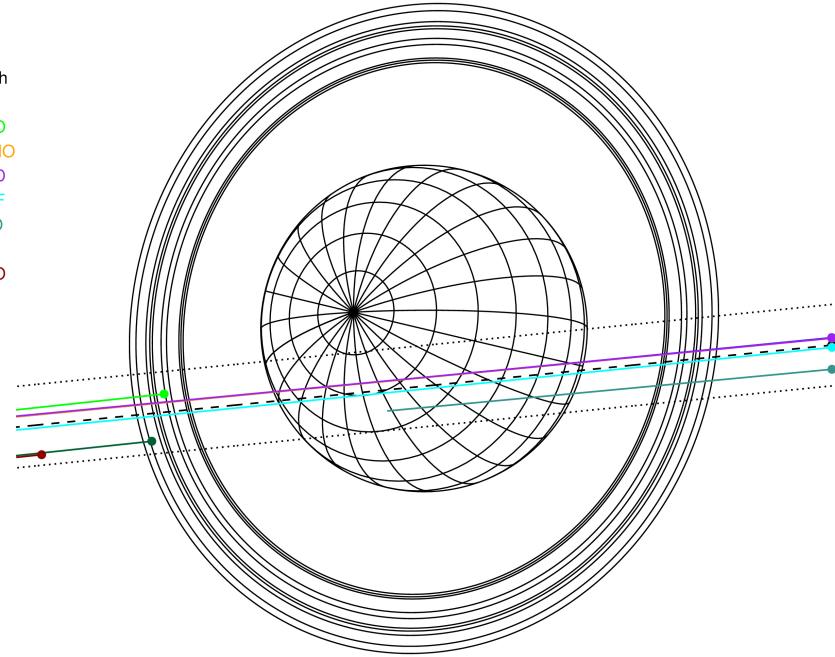
RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 170.76  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03

Uranus 2035-12-29T09:22:15 K14.67 G15.97  
 PgtRgt



2035-12-29T09:22:15.2300 α: 06 55 39.0150 δ: +23 12 45.311 C/A 0.686° PA 5.74 deg v\_sky -23.21 km/s D 17.85 AU  
 Credit: Styled after SORA/Lucky Star

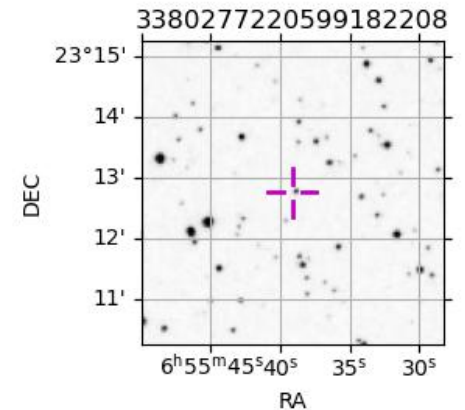
Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 ESO  
 AAT  
 MSO



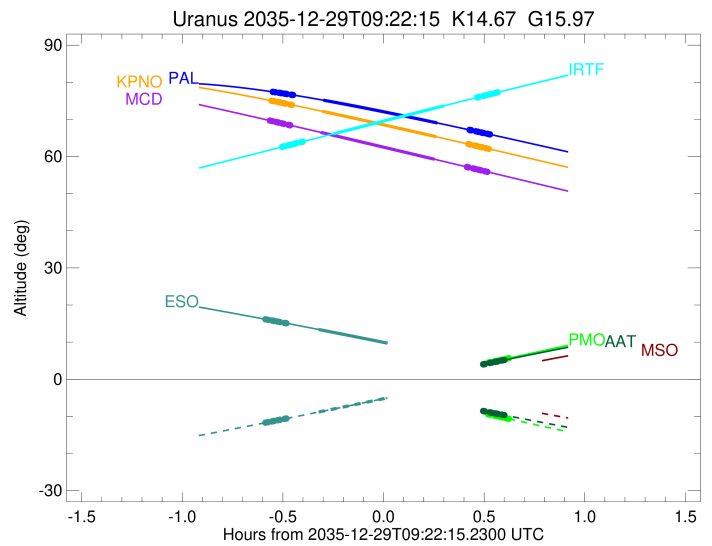
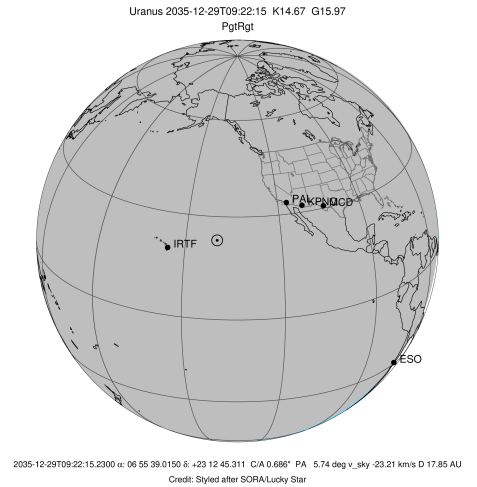
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	DEC 29 08:49 - DEC 29 09:54	PieRie
PMO	Purple Mtn Obs. Nanki	32.1	118.8			++++	DEC 29 09:57 - DEC 29 09:59	PnnRne
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	DEC 29 08:49 - DEC 29 09:53	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	DEC 29 08:48 - DEC 29 09:53	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	DEC 29 08:52 - DEC 29 09:56	PieRie
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	+++++	+		DEC 29 08:47 - DEC 29 09:02	PinRin
AAT	Siding Spring (AAT)	-31.3	149.1			++	DEC 29 09:57 - DEC 29 09:58	PnnRne
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

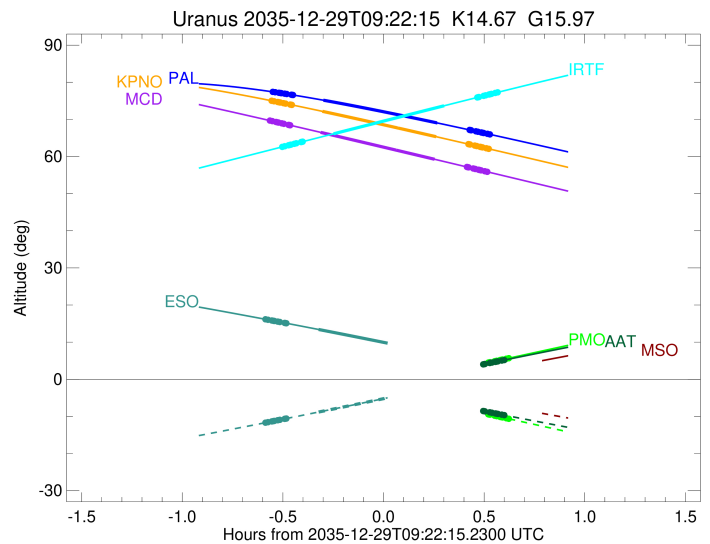
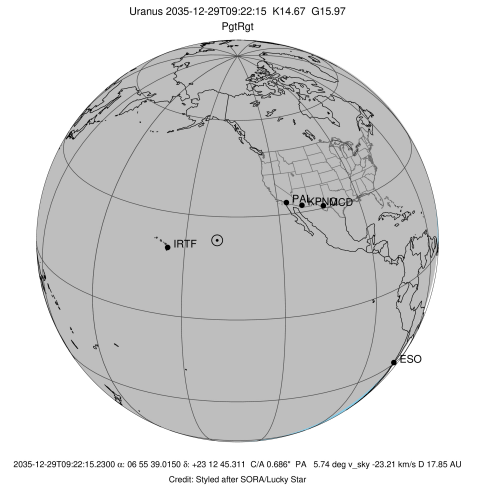


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:21:16.110  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PAL  
 Location : Palomar Mt (200")  
 Latitude (deg) : 33.35622  
 E. Longitude (deg) : 243.13601  
 Altitude (km) : 1.706  
 Gaia source ID : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456  
 ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s  
 RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 171.15  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.590  
 C/A sky separation (km) : 7634.8  
 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



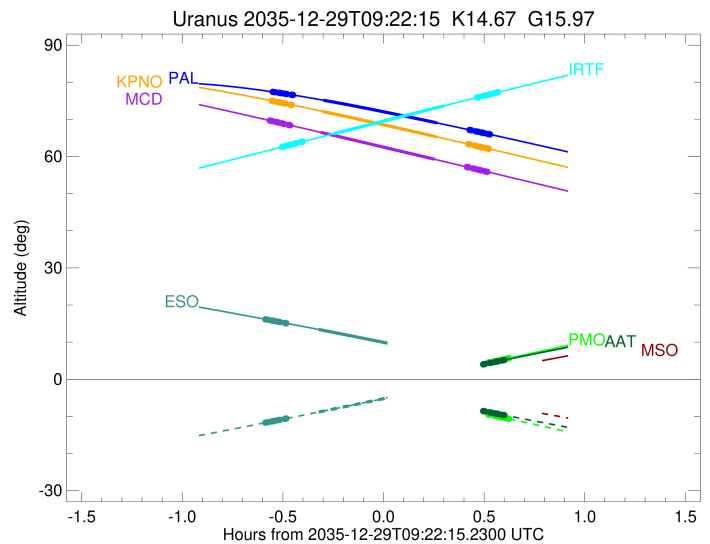
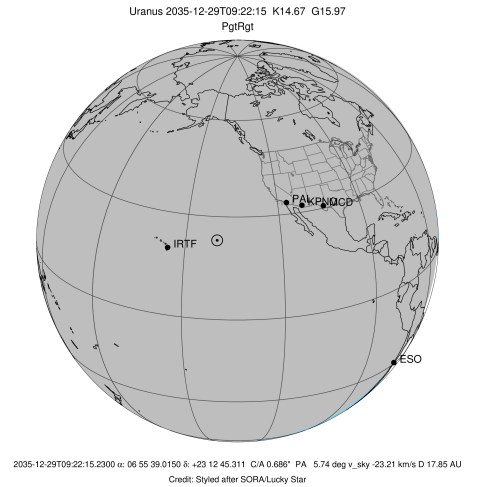
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-29T08:49:30.333	77.39	-73.44	50748.59	-25.73			
lambda	I	2035-12-29T08:49:58.386	77.32	-73.36	50026.71	-25.73			
delta	I	2035-12-29T08:51:05.516	77.17	-73.16	48300.35	-25.70			
gamma	I	2035-12-29T08:51:31.923	77.11	-73.08	47621.68	-25.69			
eta	I	2035-12-29T08:51:49.266	77.07	-73.03	47176.12	-25.69			
beta	I	2035-12-29T08:52:48.639	76.93	-72.85	45652.28	-25.66			
alpha	I	2035-12-29T08:53:24.196	76.85	-72.75	44736.74	-25.65			
4	I	2035-12-29T08:54:47.632	76.65	-72.50	42607.24	-25.61			
5	I	2035-12-29T08:55:05.269	76.60	-72.45	42169.91	-25.60			
6	I	2035-12-29T08:55:16.423	76.58	-72.41	41879.73	-25.60			
Uranus	I	2035-12-29T09:04:22.301	75.17	-70.73	25089.43			-26.32	-27.39
Uranus	E	2035-12-29T09:38:17.411	69.05	-64.10	25249.43			21.00	21.90
6	E	2035-12-29T09:47:52.916	67.18	-62.16	41798.04	25.57			
5	E	2035-12-29T09:48:11.346	67.12	-62.09	42278.96	25.58			
4	E	2035-12-29T09:48:22.448	67.08	-62.06	42547.29	25.58			
alpha	E	2035-12-29T09:49:47.070	66.80	-61.77	44710.99	25.62			
beta	E	2035-12-29T09:50:24.171	66.68	-61.64	45663.52	25.63			
eta	E	2035-12-29T09:51:23.193	66.48	-61.44	47176.12	25.66			
gamma	E	2035-12-29T09:51:40.871	66.43	-61.38	47629.77	25.66			
delta	E	2035-12-29T09:52:06.995	66.34	-61.29	48300.35	25.67			
lambda	E	2035-12-29T09:53:14.207	66.12	-61.06	50026.71	25.70			
epsilon	E	2035-12-29T09:54:12.002	65.93	-60.87	51512.34	25.70			

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:26:12.470  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : PMO  
 Location : Purple Mtn Obs. Nanking  
 Latitude (deg) : 32.06667  
 E. Longitude (deg) : 118.82089  
 Altitude (km) : 0.364  
 Gaia source ID : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456  
 ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s  
 RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 170.26  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.452  
 C/A sky separation (km) : 5845.8  
 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



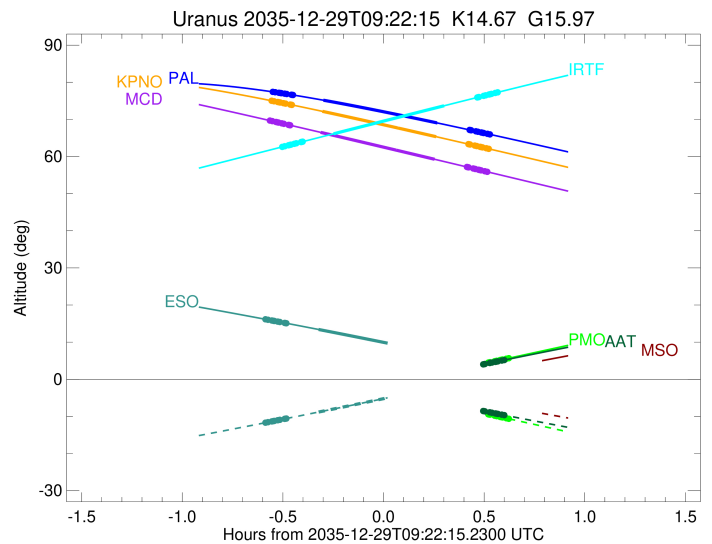
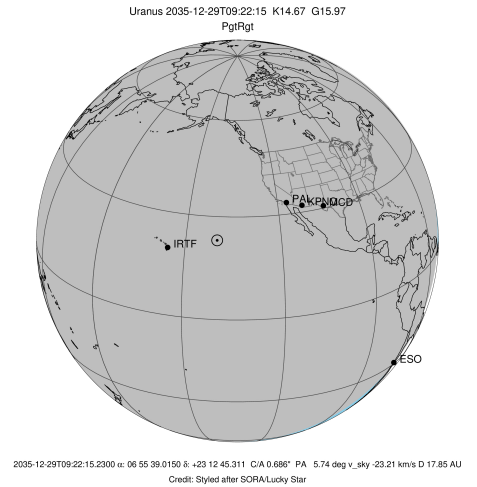
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-29T08:53:30.758	-6.72x	2.06x	50751.84	-25.27			
lambda	I	2035-12-29T08:53:59.454	-6.64x	1.97x	50026.71	-25.27			
delta	I	2035-12-29T08:55:07.796	-6.43x	1.76x	48300.35	-25.25			
gamma	I	2035-12-29T08:55:34.666	-6.35x	1.68x	47621.81	-25.25			
eta	I	2035-12-29T08:55:52.319	-6.30x	1.62x	47176.12	-25.25			
beta	I	2035-12-29T08:56:52.684	-6.12x	1.44x	45653.18	-25.23			
alpha	I	2035-12-29T08:57:28.940	-6.01x	1.33x	44735.29	-25.23			
4	I	2035-12-29T08:58:53.704	-5.75x	1.06x	42605.76	-25.21			
5	I	2035-12-29T08:59:11.479	-5.70x	1.01x	42172.45	-25.21			
6	I	2035-12-29T08:59:22.878	-5.67x	0.97x	41879.61	-25.20			
Uranus	I	2035-12-29T09:08:35.865	-3.99x	-0.76x	25093.74	-26.19		-27.25	
Uranus	E	2035-12-29T09:43:53.416	2.64x	-7.55	25222.32	21.96		22.90	
6	E	2035-12-29T09:53:27.286	4.48x	-9.43	41797.50	25.30			
5	E	2035-12-29T09:53:46.032	4.54x	-9.49	42281.19	25.31			
4	E	2035-12-29T09:53:57.117	4.58x	-9.53	42546.03	25.31			
alpha	E	2035-12-29T09:55:22.698	4.85x	-9.81	44709.96	25.34			
beta	E	2035-12-29T09:56:00.278	4.97x	-9.93	45664.12	25.34			
eta	E	2035-12-29T09:56:59.958	5.17	-10.13	47176.12	25.36			
gamma	E	2035-12-29T09:57:17.849	5.22	-10.19	47629.88	25.36			
delta	E	2035-12-29T09:57:44.278	5.31	-10.28	48300.35	25.37			
lambda	E	2035-12-29T09:58:52.299	5.53	-10.50	50026.71	25.39			
epsilon	E	2035-12-29T09:59:50.982	5.72	-10.69	51516.90	25.39			

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:20:55.080  
 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 : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456  
 ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s  
 RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 171.21  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.593  
 C/A sky separation (km) : 7671.4  
 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	2035-12-29T08:49:09.269		74.98	-70.16	50748.51	-25.73		
lambda	I	2035-12-29T08:49:37.324		74.89	-70.06	50026.71	-25.72		
delta	I	2035-12-29T08:50:44.467		74.69	-69.84	48300.35	-25.70		
gamma	I	2035-12-29T08:51:10.880		74.61	-69.75	47621.67	-25.69		
eta	I	2035-12-29T08:51:28.226		74.55	-69.69	47176.12	-25.68		
beta	I	2035-12-29T08:52:27.613		74.37	-69.50	45652.26	-25.66		
alpha	I	2035-12-29T08:53:03.175		74.26	-69.38	44736.78	-25.64		
4	I	2035-12-29T08:54:26.633		74.00	-69.10	42607.28	-25.60		
5	I	2035-12-29T08:54:44.278		73.95	-69.04	42169.85	-25.59		
6	I	2035-12-29T08:54:55.433		73.91	-69.00	41879.73	-25.59		
Uranus	I	2035-12-29T09:04:01.518		72.18	-67.16	25089.40		-26.32	-27.39
Uranus	E	2035-12-29T09:37:56.279		65.35	-60.11	25249.86		20.98	21.88
6	E	2035-12-29T09:47:32.263		63.35	-58.09	41798.05	25.55		
5	E	2035-12-29T09:47:50.704		63.29	-58.03	42278.94	25.56		
4	E	2035-12-29T09:48:01.814		63.25	-57.99	42547.31	25.57		
alpha	E	2035-12-29T09:49:26.487		62.95	-57.69	44711.00	25.60		
beta	E	2035-12-29T09:50:03.610		62.83	-57.56	45663.52	25.62		
eta	E	2035-12-29T09:51:02.667		62.62	-57.35	47176.12	25.64		
gamma	E	2035-12-29T09:51:20.356		62.56	-57.29	47629.77	25.65		
delta	E	2035-12-29T09:51:46.496		62.47	-57.20	48300.35	25.66		
lambda	E	2035-12-29T09:52:53.748		62.23	-56.96	50026.71	25.68		
epsilon	E	2035-12-29T09:53:51.576		62.03	-56.76	51512.30	25.68		

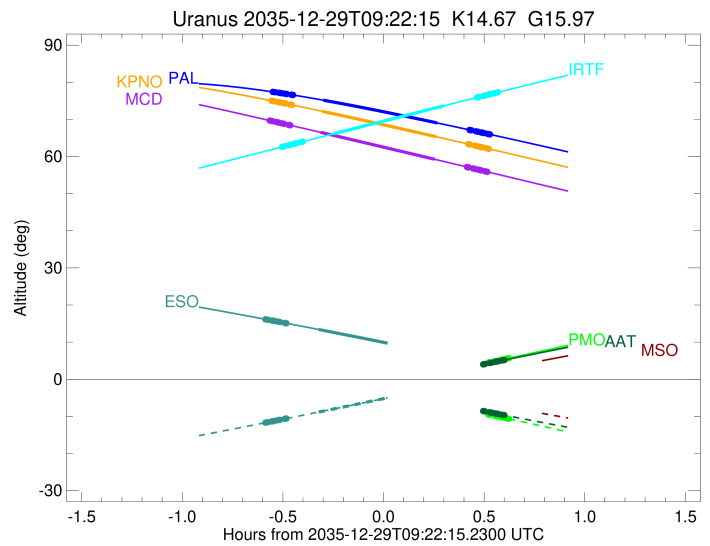
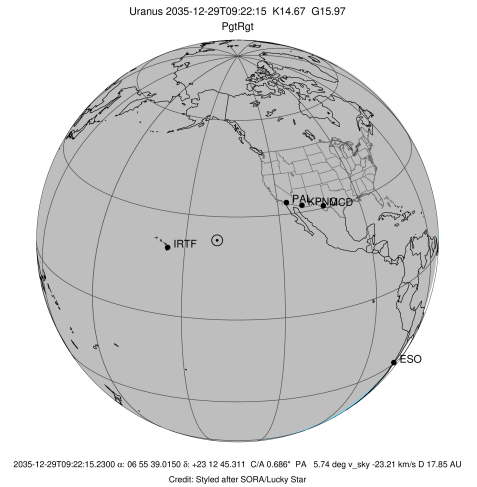
target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:20:26.420  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : MCD  
 Location : McDonald Obs. 2.7m  
 Latitude (deg) : 30.67158  
 E. Longitude (deg) : 255.97844  
 Altitude (km) : 2.075  
 Gaia source ID : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456  
 ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s  
 RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 171.29  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.589  
 C/A sky separation (km) : 7620.0  
 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	2035-12-29T08:48:38.943		69.63	-64.32	50748.53	-25.72		
lambda	I	2035-12-29T08:49:07.007		69.53	-64.22	50026.71	-25.72		
delta	I	2035-12-29T08:50:14.171		69.30	-63.99	48300.35	-25.69		
gamma	I	2035-12-29T08:50:40.592		69.21	-63.89	47621.68	-25.68		
eta	I	2035-12-29T08:50:57.944		69.15	-63.83	47176.12	-25.67		
beta	I	2035-12-29T08:51:57.349		68.94	-63.62	45652.27	-25.65		
alpha	I	2035-12-29T08:52:32.923		68.82	-63.50	44736.77	-25.63		
4	I	2035-12-29T08:53:56.406		68.53	-63.20	42607.26	-25.60		
5	I	2035-12-29T08:54:14.054		68.47	-63.14	42169.88	-25.59		
6	I	2035-12-29T08:54:25.214		68.43	-63.10	41879.73	-25.58		
Uranus	I	2035-12-29T09:03:31.415		66.51	-61.16	25089.42		-26.32	-27.39
Uranus	E	2035-12-29T09:37:29.169		59.26	-53.86	25248.60		21.03	21.93
6	E	2035-12-29T09:47:05.231		57.20	-51.80	41798.02	25.53		
5	E	2035-12-29T09:47:23.693		57.13	-51.73	42279.06	25.54		
4	E	2035-12-29T09:47:34.804		57.09	-51.69	42547.24	25.55		
alpha	E	2035-12-29T09:48:59.547		56.79	-51.39	44710.94	25.58		
beta	E	2035-12-29T09:49:36.703		56.65	-51.25	45663.55	25.60		
eta	E	2035-12-29T09:50:35.809		56.44	-51.04	47176.12	25.62		
gamma	E	2035-12-29T09:50:53.513		56.38	-50.98	47629.78	25.63		
delta	E	2035-12-29T09:51:19.675		56.28	-50.88	48300.35	25.64		
lambda	E	2035-12-29T09:52:26.987		56.04	-50.64	50026.71	25.66		
epsilon	E	2035-12-29T09:53:24.878		55.83	-50.43	51512.60	25.66		

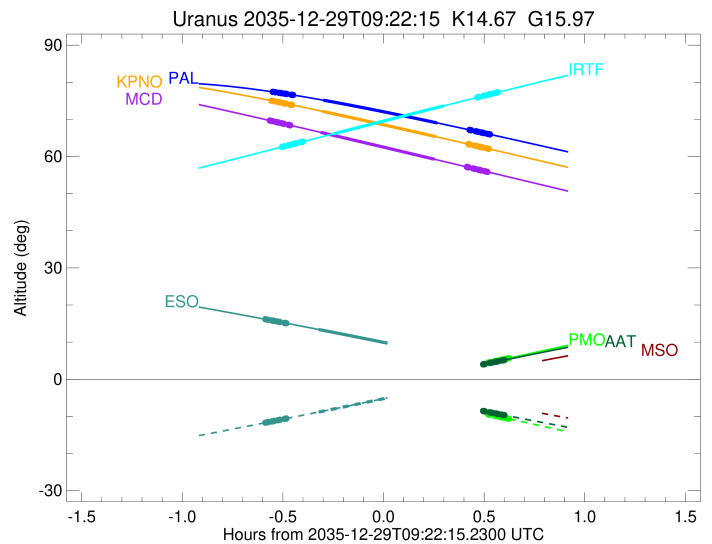
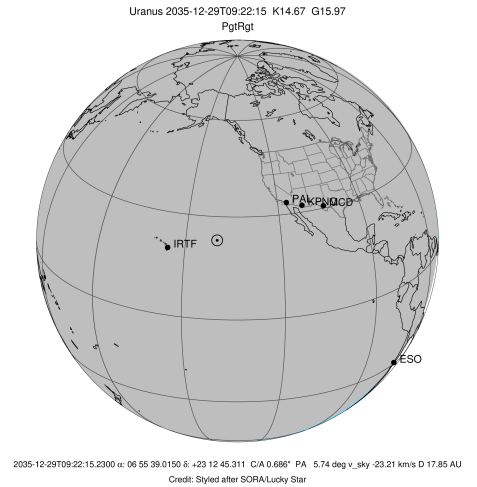


target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:23:47.390  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : IRTF  
 Location : Mauna Kea/IRTF  
 Latitude (deg) : 19.82622  
 E. Longitude (deg) : 204.52800  
 Altitude (km) : 4.168  
 Gaia source ID : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456  
 ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s  
 RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 170.60  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.729  
 C/A sky separation (km) : 9432.3  
 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



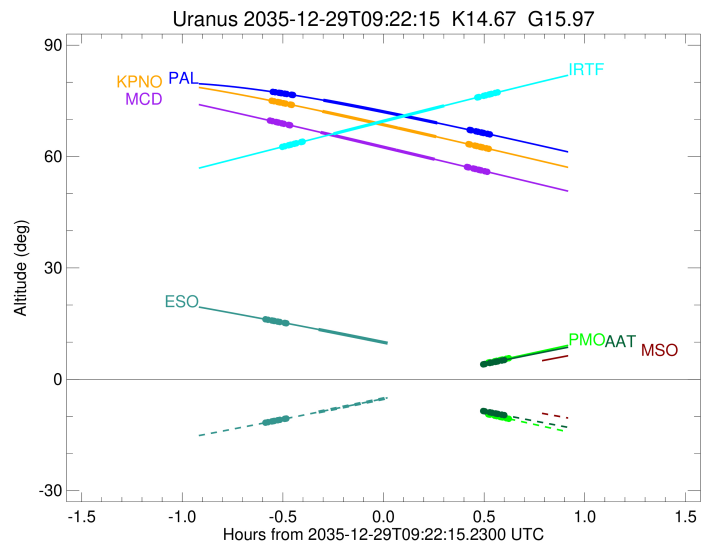
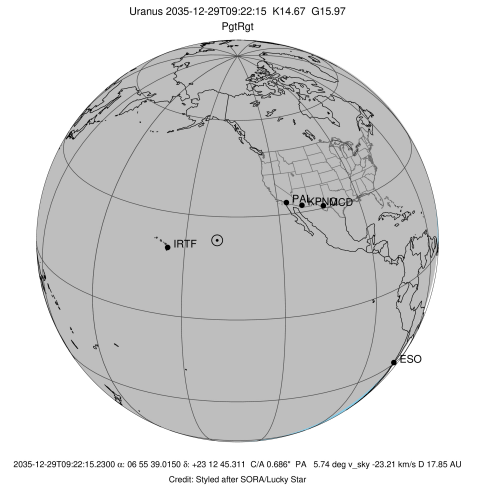
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2035-12-29T08:52:20.268		62.66	-68.48	50746.74	-25.57		
lambda	I	2035-12-29T08:52:48.425		62.77	-68.59	50026.71	-25.57		
delta	I	2035-12-29T08:53:55.998		63.03	-68.85	48300.35	-25.53		
gamma	I	2035-12-29T08:54:22.591		63.13	-68.95	47621.59	-25.52		
eta	I	2035-12-29T08:54:40.053		63.20	-69.01	47176.12	-25.51		
beta	I	2035-12-29T08:55:39.886		63.43	-69.24	45651.63	-25.47		
alpha	I	2035-12-29T08:56:15.645		63.57	-69.38	44737.80	-25.45		
4	I	2035-12-29T08:57:39.797		63.89	-69.70	42608.30	-25.39		
5	I	2035-12-29T08:57:57.686		63.96	-69.77	42168.09	-25.37		
6	I	2035-12-29T08:58:08.895		64.00	-69.81	41879.74	-25.37		
Uranus	I	2035-12-29T09:07:22.609		66.13	-71.91	25090.86		-26.28	-27.34
Uranus	E	2035-12-29T09:40:20.610		73.68	-79.32	25285.44		19.66	20.52
6	E	2035-12-29T09:50:10.762		75.91	-81.45	41798.88	25.41		
5	E	2035-12-29T09:50:29.133		75.98	-81.51	42275.70	25.42		
4	E	2035-12-29T09:50:40.497		76.03	-81.55	42549.15	25.43		
alpha	E	2035-12-29T09:52:05.545		76.35	-81.85	44712.49	25.49		
beta	E	2035-12-29T09:52:42.743		76.48	-81.98	45662.64	25.51		
eta	E	2035-12-29T09:53:42.062		76.71	-82.18	47176.12	25.55		
gamma	E	2035-12-29T09:53:59.806		76.77	-82.25	47629.60	25.56		
delta	E	2035-12-29T09:54:26.038		76.87	-82.34	48300.35	25.58		
lambda	E	2035-12-29T09:55:33.485		77.12	-82.57	50026.71	25.61		
epsilon	E	2035-12-29T09:56:31.160		77.34	-82.76	51504.80	25.62		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:18:30.510  
 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 : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456  
 ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s  
 RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 171.17  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.952  
 C/A sky separation (km) : 12328.1  
 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	2035-12-29T08:47:20.169		16.11	-11.65	50744.25	-25.08		
lambda	I	2035-12-29T08:47:48.791		16.03	-11.56	50026.71	-25.06		
delta	I	2035-12-29T08:48:57.772		15.83	-11.35	48300.35	-24.99		
gamma	I	2035-12-29T08:49:24.949		15.75	-11.27	47621.42	-24.97		
eta	I	2035-12-29T08:49:42.790		15.70	-11.22	47176.12	-24.95		
beta	I	2035-12-29T08:50:44.036		15.53	-11.04	45650.36	-24.88		
alpha	I	2035-12-29T08:51:20.508		15.42	-10.93	44739.83	-24.85		
4	I	2035-12-29T08:52:46.841		15.18	-10.67	42610.23	-24.74		
5	I	2035-12-29T08:53:05.376		15.12	-10.61	42164.82	-24.71		
6	I	2035-12-29T08:53:16.821		15.09	-10.58	41879.57	-24.70		
Uranus	I	2035-12-29T09:02:55.506		13.41	-8.82	25106.24		-25.80	-26.85
Uranus	E	2035-12-29T09:34:17.984		7.73	-2.94x	25340.79		17.46	18.23
6	E	2035-12-29T09:44:47.262		5.76	-0.92x	41800.16	24.61		
5	E	2035-12-29T09:45:05.970		5.70	-0.86x	42271.12	24.63		
4	E	2035-12-29T09:45:17.970		5.67	-0.82x	42551.74	24.65		
alpha	E	2035-12-29T09:46:45.562		5.39	-0.53x	44714.53	24.76		
beta	E	2035-12-29T09:47:23.734		5.27	-0.41x	45661.44	24.79		
eta	E	2035-12-29T09:48:24.794		5.08	-0.21x	47176.12	24.86		
gamma	E	2035-12-29T09:48:43.023		5.02	-0.15x	47629.36	24.87		
delta	E	2035-12-29T09:49:09.986		4.94x	-0.07x	48300.35	24.90		
lambda	E	2035-12-29T09:50:19.243		4.72x	0.16x	50026.71	24.96		
epsilon	E	2035-12-29T09:51:17.990		4.53x	0.35x	51494.14	24.97		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2035-12-29T09:25:43.240  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : AAT  
 Location : Siding Spring (AAT)  
 Latitude (deg) : -31.27703  
 E. Longitude (deg) : 149.06608  
 Altitude (km) : 1.164  
 Gaia source ID : 3380277220599182208  
 2Mass ID (if available) : 06553900+2312456  
 ICRS Star Coord at Epoch: 06h 55m 39.01496s +23:12:45.31148s  
 RUWE (>1.4 is poor) : 0.94  
 K magnitude : 14.670  
 G magnitude : 15.974  
 RP magnitude : 15.477  
 BP magnitude : 16.302  
 DUPflag : 0  
 Distance (au) : 17.848  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -23.21  
 Sun-Target sep (deg) : 174.19  
 Sun-Moon sep (deg) : 169.88  
 B (ring opening deg) : 63.67  
 PA of pole (deg) : 77.03  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 1.008  
 C/A sky separation (km) : 13051.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ural11.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ural11.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	2035-12-29T08:54:32.712	-7.02x	2.10x	50744.18	-24.78			
lambda	I	2035-12-29T08:55:01.672	-6.92x	2.01x	50026.71	-24.76			
delta	I	2035-12-29T08:56:11.482	-6.69x	1.79x	48300.35	-24.70			
gamma	I	2035-12-29T08:56:38.990	-6.60x	1.70x	47621.41	-24.67			
eta	I	2035-12-29T08:56:57.049	-6.54x	1.64x	47176.12	-24.65			
beta	I	2035-12-29T08:57:59.054	-6.34x	1.44x	45650.27	-24.58			
alpha	I	2035-12-29T08:58:35.972	-6.22x	1.32x	44739.97	-24.54			
4	I	2035-12-29T09:00:03.410	-5.93x	1.05x	42610.38	-24.42			
5	I	2035-12-29T09:00:22.200	-5.87x	0.99x	42164.56	-24.39			
6	I	2035-12-29T09:00:33.790	-5.83x	0.95x	41879.54	-24.38			
Uranus	I	2035-12-29T09:10:22.616	-3.91x	-0.92x	25109.93	-25.68		-26.73	
Uranus	E	2035-12-29T09:41:15.462	2.01x	-6.63	25361.96	16.55		17.29	
6	E	2035-12-29T09:51:56.574	4.01x	-8.55	41800.80	24.47			
5	E	2035-12-29T09:52:15.272	4.07x	-8.60	42268.96	24.49			
4	E	2035-12-29T09:52:27.469	4.10x	-8.64	42552.96	24.52			
alpha	E	2035-12-29T09:53:55.489	4.38x	-8.90	44715.50	24.64			
beta	E	2035-12-29T09:54:33.781	4.49x	-9.01	45660.87	24.68			
eta	E	2035-12-29T09:55:35.124	4.68x	-9.19	47176.12	24.76			
gamma	E	2035-12-29T09:55:53.420	4.74x	-9.25	47629.24	24.78			
delta	E	2035-12-29T09:56:20.490	4.82x	-9.33	48300.35	24.81			
lambda	E	2035-12-29T09:57:29.984	5.04	-9.53	50026.71	24.88			
epsilon	E	2035-12-29T09:58:28.674	5.22	-9.70	51488.32	24.90			