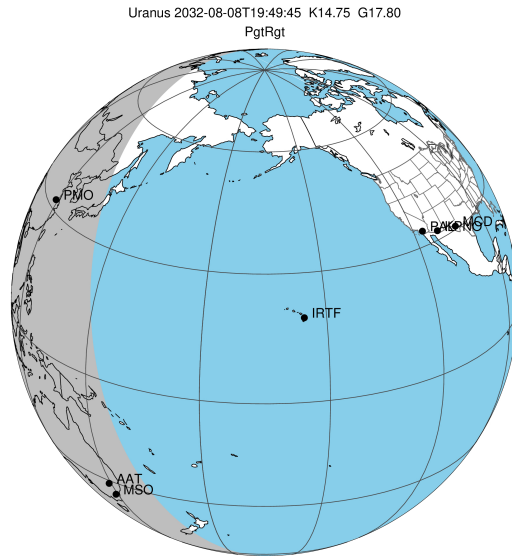


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-08-08T19:49:45.000
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3424869009879284352
 2Mass ID (if available) : 05590249+2336484

ICRS Star Coord at Epoch: 05h 59m 02.50636s +23:36:48.45041s

RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.751
 G magnitude : 17.798
 RP magnitude : 16.869
 BP magnitude : 18.637
 DUPflag : 0
 Distance (au) : 19.726
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.84
 Sun-Target sep (deg) : 46.58
 Sun-Moon sep (deg) : 75.06
 B (ring opening deg) : 75.55
 PA of pole (deg) : 56.51

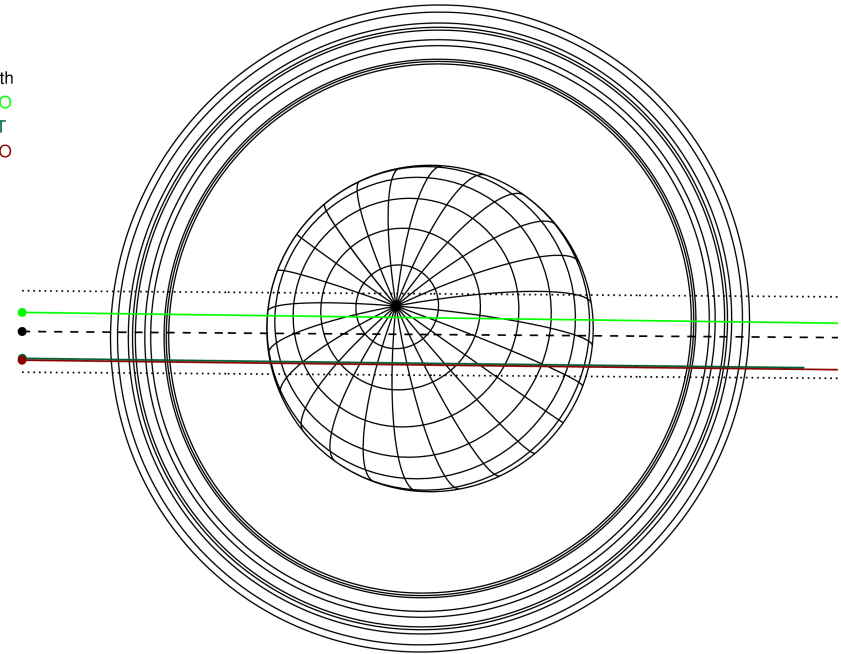
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2032-08-08T19:49:45.0000 cc: 05 59 02.5064 s: +23 36 48.450 C/A 0.061" PA 359.55 deg v_sky +26.84 km/s D 19.73 AU
 Credit: Styled after SORA/Lucky Star

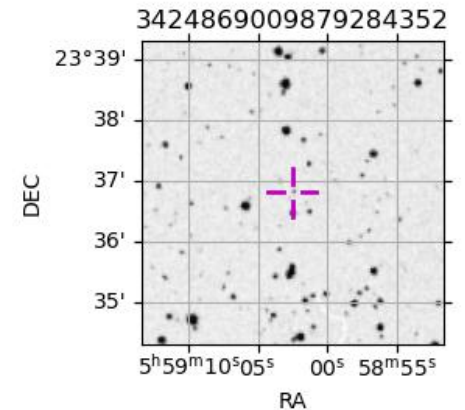
Uranus 2032-08-08T19:49:45 K14.75 G17.80 PgtRgt

Earth
 PMO
 AAT
 MSO



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

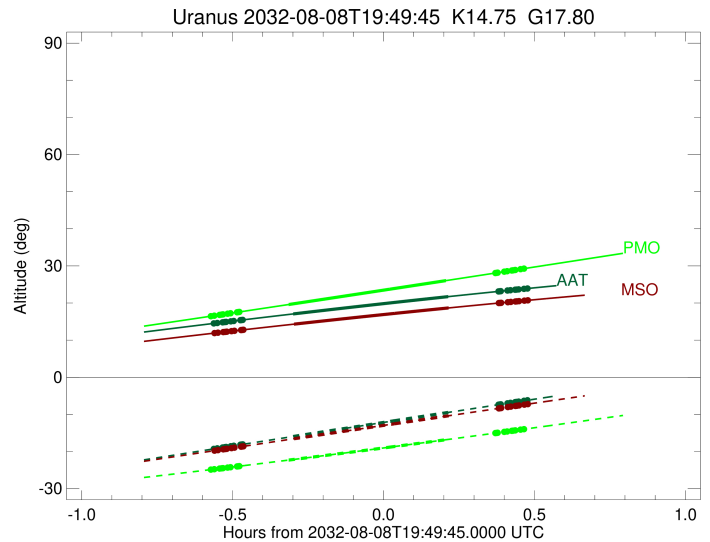
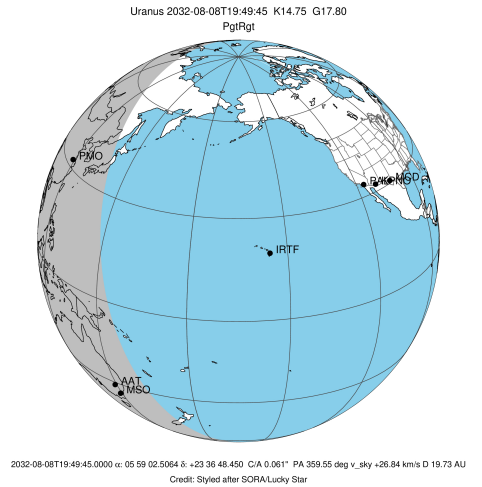
Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	AUG 08 19:15 - AUG 08 20:17	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					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	+++++	+ +	+++++	AUG 08 19:16 - AUG 08 20:18	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	AUG 08 19:16 - AUG 08 20:18	PieRie



3424869009879284352

23°39'
 38'
 37'
 36'
 35'
 5h59m10s05s 00s 58m55s
 RA

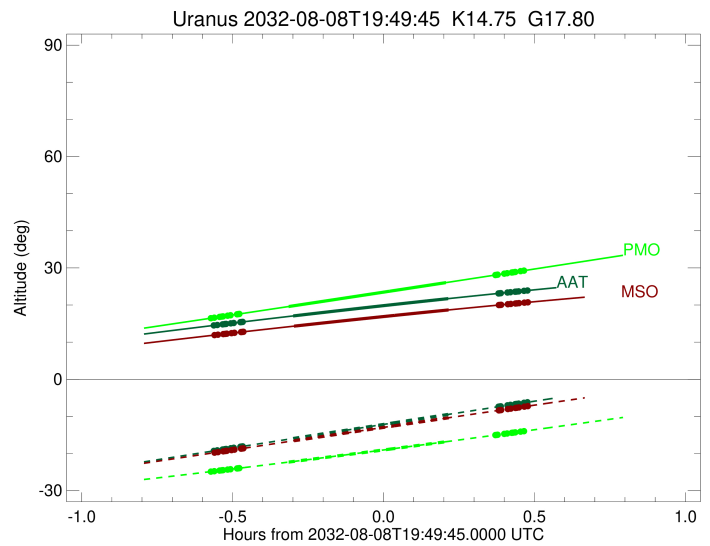
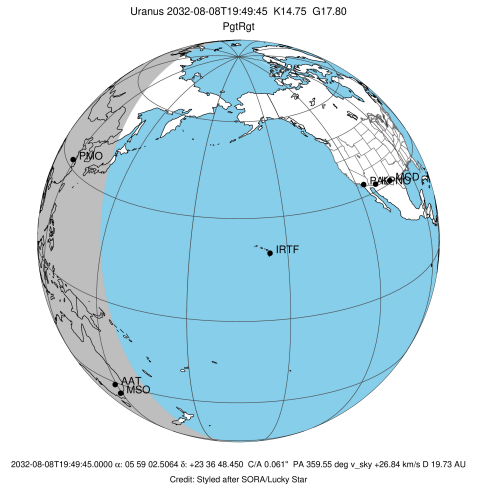
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-08-08T19:46:29.400
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3424869009879284352
 2Mass ID (if available) : 05590249+2336484
 ICRS Star Coord at Epoch: 05h 59m 02.5064s +23:36:48.45041s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.751
 G magnitude : 17.798
 RP magnitude : 16.869
 BP magnitude : 18.637
 DUPflag : 0
 Distance (au) : 19.726
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.84
 Sun-Target sep (deg) : 46.58
 Sun-Moon sep (deg) : 75.60
 B (ring opening deg) : 75.55
 PA of pole (deg) : 56.51
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.117
 C/A sky separation (km) : 1670.3
 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



b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

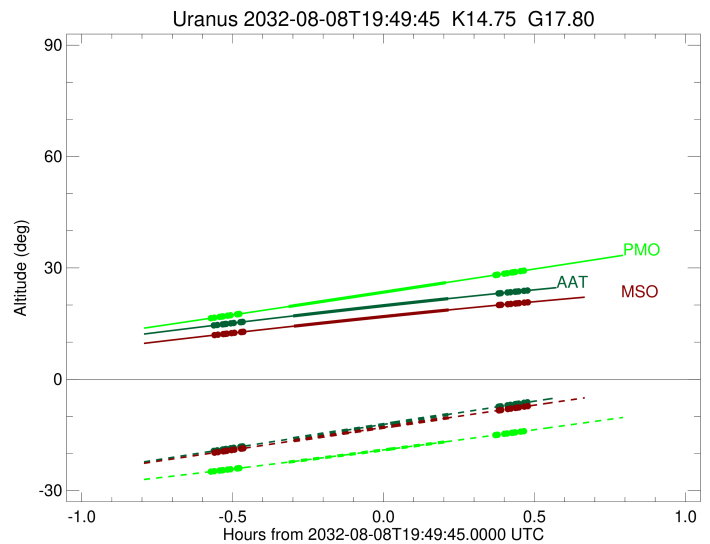
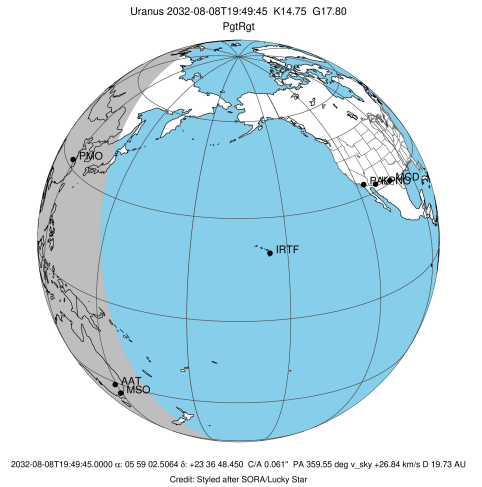
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2032-08-08T19:15:28.540		16.46	-24.87	51094.96	-27.41		
lambda	I	2032-08-08T19:16:07.506		16.59	-24.76	50026.71	-27.41		
delta	I	2032-08-08T19:17:10.486		16.80	-24.59	48300.35	-27.41		
gamma	I	2032-08-08T19:17:34.941		16.88	-24.53	47630.06	-27.41		
eta	I	2032-08-08T19:17:51.504		16.94	-24.48	47176.12	-27.41		
beta	I	2032-08-08T19:18:46.484		17.13	-24.33	45669.90	-27.40		
alpha	I	2032-08-08T19:19:20.778		17.24	-24.24	44730.60	-27.40		
4	I	2032-08-08T19:20:41.085		17.51	-24.02	42528.74	-27.39		
5	I	2032-08-08T19:20:53.008		17.55	-23.98	42207.82	-27.40		
6	I	2032-08-08T19:21:04.645		17.59	-23.95	41879.38	-27.39		
Uranus	I	2032-08-08T19:30:52.578		19.59	-22.31	25135.09		12.61	13.19
Uranus	E	2032-08-08T20:02:09.738		26.04	-16.83	25200.38		-11.56	-12.10
6	E	2032-08-08T20:11:57.483		28.07	-15.04	41795.68	27.29		
5	E	2032-08-08T20:12:14.450		28.13	-14.99	42267.82	27.30		
4	E	2032-08-08T20:12:27.311		28.18	-14.95	42612.40	27.29		
alpha	E	2032-08-08T20:13:44.056		28.44	-14.71	44708.78	27.29		
beta	E	2032-08-08T20:14:18.683		28.56	-14.61	45653.70	27.29		
eta	E	2032-08-08T20:15:14.483		28.76	-14.44	47176.12	27.29		
gamma	E	2032-08-08T20:15:30.846		28.81	-14.39	47622.74	27.29		
delta	E	2032-08-08T20:15:55.673		28.90	-14.31	48300.35	27.29		
lambda	E	2032-08-08T20:16:58.926		29.12	-14.11	50026.71	27.29		
epsilon	E	2032-08-08T20:17:40.858		29.27	-13.98	51171.18	27.29		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-08-08T19:47:15.970
 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 : 3424869009879284352
 2Mass ID (if available) : 05590249+2336484
 ICRS Star Coord at Epoch: 05h 59m 02.5064s +23:36:48.45041s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.751
 G magnitude : 17.798
 RP magnitude : 16.869
 BP magnitude : 18.637
 DUPflag : 0
 Distance (au) : 19.726
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.84
 Sun-Target sep (deg) : 46.58
 Sun-Moon sep (deg) : 75.48
 B (ring opening deg) : 75.55
 PA of pole (deg) : 56.51
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.381
 C/A sky separation (km) : 5452.1
 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_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	2032-08-08T19:16:01.662		14.51	-19.29	51152.39	-27.09		
lambda	I	2032-08-08T19:16:43.251		14.62	-19.15	50026.71	-27.06		
delta	I	2032-08-08T19:17:47.062		14.80	-18.92	48300.35	-27.05		
gamma	I	2032-08-08T19:18:11.869		14.87	-18.83	47629.46	-27.04		
eta	I	2032-08-08T19:18:28.635		14.91	-18.77	47176.12	-27.04		
beta	I	2032-08-08T19:19:24.490		15.07	-18.58	45666.93	-27.02		
alpha	I	2032-08-08T19:19:59.338		15.16	-18.45	44725.32	-27.01		
4	I	2032-08-08T19:21:20.502		15.38	-18.17	42532.02	-26.99		
5	I	2032-08-08T19:21:33.237		15.42	-18.12	42195.32	-26.98		
6	I	2032-08-08T19:21:44.700		15.45	-18.08	41877.79	-26.97		
Uranus	I	2032-08-08T19:31:47.214		17.06	-15.95	25282.39		10.12	10.58
Uranus	E	2032-08-08T20:02:37.497		21.72	-9.47	25073.84		-13.54	-14.15
6	E	2032-08-08T20:12:34.641		23.12	-7.40	41794.78	26.90		
5	E	2032-08-08T20:12:51.371		23.16	-7.34	42255.02	26.90		
4	E	2032-08-08T20:13:04.928		23.19	-7.29	42614.99	26.91		
alpha	E	2032-08-08T20:14:22.472		23.37	-7.02	44703.74	26.93		
beta	E	2032-08-08T20:14:57.668		23.45	-6.90	45650.89	26.93		
eta	E	2032-08-08T20:15:54.298		23.58	-6.70	47176.12	26.95		
gamma	E	2032-08-08T20:16:10.850		23.62	-6.65	47622.19	26.95		
delta	E	2032-08-08T20:16:36.011		23.67	-6.56	48300.35	26.96		
lambda	E	2032-08-08T20:17:40.043		23.82	-6.34	50026.71	26.97		
epsilon	E	2032-08-08T20:18:24.555		23.92	-6.19	51227.21	27.00		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2032-08-08T19:47:22.510
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 3424869009879284352
 2Mass ID (if available) : 05590249+2336484
 ICRS Star Coord at Epoch: 05h 59m 02.5064s +23:36:48.45041s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 14.751
 G magnitude : 17.798
 RP magnitude : 16.869
 BP magnitude : 18.637
 DUPflag : 0
 Distance (au) : 19.726
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 26.84
 Sun-Target sep (deg) : 46.58
 Sun-Moon sep (deg) : 75.44
 B (ring opening deg) : 75.55
 PA of pole (deg) : 56.51
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.400
 C/A sky separation (km) : 5727.2
 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	2032-08-08T19:16:09.754		11.90	-19.77	51154.69	-27.09		
lambda	I	2032-08-08T19:16:51.439		12.01	-19.63	50026.71	-27.06		
delta	I	2032-08-08T19:17:55.266		12.17	-19.41	48300.35	-27.04		
gamma	I	2032-08-08T19:18:20.081		12.24	-19.33	47629.43	-27.03		
eta	I	2032-08-08T19:18:36.852		12.28	-19.27	47176.12	-27.03		
beta	I	2032-08-08T19:19:32.730		12.42	-19.08	45666.81	-27.01		
alpha	I	2032-08-08T19:20:07.594		12.51	-18.96	44725.10	-27.00		
4	I	2032-08-08T19:21:28.781		12.72	-18.69	42532.17	-26.98		
5	I	2032-08-08T19:21:41.546		12.75	-18.65	42194.84	-26.97		
6	I	2032-08-08T19:21:53.002		12.78	-18.61	41877.70	-26.96		
Uranus	I	2032-08-08T19:31:56.284		14.31	-16.57	25288.60		10.00	10.46
Uranus	E	2032-08-08T20:02:41.080		18.68	-10.37	25070.03		-13.59	-14.21
6	E	2032-08-08T20:12:38.752		19.99	-8.39	41794.77	26.88		
5	E	2032-08-08T20:12:55.469		20.02	-8.33	42254.52	26.89		
4	E	2032-08-08T20:13:09.050		20.05	-8.29	42615.06	26.90		
alpha	E	2032-08-08T20:14:26.610		20.22	-8.03	44703.55	26.92		
beta	E	2032-08-08T20:15:01.818		20.29	-7.91	45650.79	26.93		
eta	E	2032-08-08T20:15:58.464		20.41	-7.72	47176.12	26.94		
gamma	E	2032-08-08T20:16:15.019		20.45	-7.67	47622.17	26.95		
delta	E	2032-08-08T20:16:40.185		20.50	-7.59	48300.35	26.95		
lambda	E	2032-08-08T20:17:44.225		20.64	-7.37	50026.71	26.96		
epsilon	E	2032-08-08T20:18:28.819		20.73	-7.23	51229.32	27.00		