Spatial Variability of Arsenic in Groundwater (Case Study of Bangladesh)

by

Haneysa bt Abu Hassan

Dissertation submitted in partial fulfilment of
the requirements for the
Bachelor of Engineering (Hons)
(Civil Engineering)

JANUARY 2008

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CERTIFICATION OF APPROVAL

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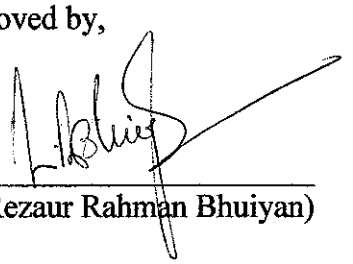
Approved by,



(Dr Rezaur Rahman Bhuiyan)

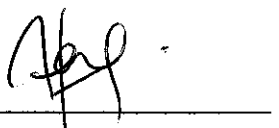
UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

January 2008

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



HANEYSA BT ABU HASSAN

ACKNOWLEDGEMENT

All praise be upon Allah s.w.t Almighty and peace upon Peophet Muhammad s.a.w. I would like to express my gratitude to all people that have been involved with this project, directly or indirectly.

First, my appreciation is to Dr Rezaur Rahman Bhuiyan, Lecturers of Civil Engineering Department, Universiti Teknologi Petronas, for their guidance, helps and understanding concerning this project.

I would also like like to extend my personal thanks to my friends for their help, support and willingness to share his experience and guided me through this project.

Finally, I would like to thanks to my lovely parent for their continuous support and who has been my strength during my time of need.

ABSTRACT

The spatial variability study of arsenic concentration in Bangladesh has been characterized in using Geostatistical method. The study involved 1636 sample points of groundwater in 41 of 64 districts in Bangladesh. Based on the sample points, approximately 54% and 90% of them are exceeding the Bangladesh drinking standard (<50μg/L) and WHO drinking standard (<10μg/L) respectively. Geostatistical characterization by semivariogram analysis indicated distances over which data are correlated (range), the extent of variability (sill) and degree of spatial dependencies (nugget to sill ratio). Based on the analysis, all the parameters suggested that all the spatial dependencies, variability and autocorrelation are influenced by increasing depth segments. It is shown that there are moderate to weak dependency (all above 50%), higher variability and farther distant or range towards increasing depth segments of wells. Kriging interpolated these data points and produced a smoothed contour map that estimates unavailable data points in the map. This study indicates that geostatistical analysis could reveal spatial variability nature of the arsenic in groundwater in Bangladesh.

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CHAPTER 1

INTRODUCTION

1.0 BACKGROUND

The attention towards severity of arsenic problem in groundwater is increasing. Concern and attention are paid due to its ill effects on human health, cost involved in avoiding or treatment of groundwater supplies. Besides, there is also a huge dependency on groundwater in some of the affected countries.

Arsenic contamination in groundwater is affecting many countries in the world. About 20 countries are reported to be affected, with severity in order starting with Bangladesh, India (West Bengal), Inner Mongolia and Taiwan. Other countries affected are also Argentina, Canada, Hungary, United States of America and Chile (Rahman et. al., 2001) Hence, million of people around the world is at risk of consuming arsenic contaminated groundwater. Exposure to arsenic comes from both natural sources and anthropogenic activities, including industrial sources. However, exposure to arsenic from the natural sources has lead to the largest incident of poisoning. (Rahman et. al., 2001)

In Bangladesh, the groundwater is extensively used for drinking water and irrigation purpose since surface water is barely unavailable. An estimate of 6-11 million tube wells all found in the country, including the privately owned wells in rural areas. Furthermore, as many as 35 million people are estimated to be drinking the arsenic-contaminated groundwater in Bangladesh. (Smedley and Kinniburgh, 2002).

It is very important to understand the affects of arsenic to human health. Arsenic is known to be carcinogenic and can cause severe health effects to human body. Therefore, million of people around the world expose and depend on the

untreated groundwater contaminated by arsenic are continuously endangering their health.

1.2 PROBLEM STATEMENT

To conduct this spatial variability study, a set of arsenic concentration data points were obtained from the British Geological Survey. Previously, classical statistical method with parameters such as mean, distribution and deviation has been widely used to examine the spatial variability and characterization of this data points. However, this method is probably not accurate since it assumes that the data are independent of one another regardless their location (Rezaur et al., 2001). Therefore, classical statistical methods may be inadequate for interpolation of spatially dependent variables, because they assume random variation and do not consider spatial correlation and relative location of samples (Vauclin et al., 1983, Goderya et al., 1996)

1.3 OBJECTIVES

1. To produce a spatial variability map of arsenic concentration in Bangladesh.
2. To examine the correlation between depth and level of arsenic concentration in groundwater.

1.4 SCOPE OF STUDY

This study is examining the spatial variability of arsenic concentration using geostatistical method –parameters in semivariogram. From the semivariogram analysis, a spatial distribution map of arsenic concentration can be produced. The spatial variability study however, will not be identifying the causes behind the spatial variability pattern in the study area.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION TO ARSENIC

Arsenic is the third most toxic substance, after lead and mercury according to the US Toxic Substances and Disease Registry. It is a semi metallic chemical element, odorless and tasteless. Generally, the inorganic arsenic is more toxic that the organic arsenic. Organic arsenics are found in the groundwater wells with different level of variation due to several factors.

2.2 ARSENIC AND HEALTH

Human exposure to arsenic occurs primarily by ingestion, lesser extent in comparison to inhalation and dermal contact. In most countries, the major source of arsenic inhalation enters the body by water contaminated with arsenic. According to Ranjit N Ratnaike (2006) in Managing Arsenic in the Environment, the clinical feature of arsenic toxicity differs according to individuals, population groups and geographical areas. The chronic adverse affect of arsenic are mainly

- skin
- gastroenterological system
- cardiovascular system
- neurological system
- genitourinary system
- respiratory system
- endoctrine and hematological system
- malignant disease

The adverse health effects of arsenic also time-dependent and dose-dependent (Chappell et al., 1997). Ongoing research is suggesting that arsenic is carcinogenic and demonstrated significantly higher standardized mortality rates for cancer such as bladder, kidney, skin and liver in many arsenic-contaminated areas (Centeno et al.,)

2.3 OTHER ARSENIC EFFECTS

Other than drinking, the groundwater in Bangladesh is extensively used for irrigation purpose. Groundwater in Bangladesh is widely being used in irrigation system during latter part of the dry season that is from February to April (Smedley et al., 2002). The irrigation system mainly supports the corps as a wide source of staple food in Bangladesh. This enables the people in the country to grow rice. The arsenic contaminated groundwater used in the irrigation system is entering the corps intake; therefore interfere with the food chain, generally.

2.4 ARSENIC OCCURRENCE

Arsenic is found in the atmosphere; soils, rocks, natural water and organism (Smedley and Kinniburgh, 2002) under natural condition, the highest concentration of arsenic are found in the groundwater. Arsenic is present in groundwater due to anthropogenic, natural causes and industrial causes (Mandal and Suzuki, 2002)

2.4.1 Natural Sources

Generally, the natural sources caused arsenic contamination in the groundwater by soil, water and the atmosphere. Arsenic presents in soil and sediment is influenced by the parent rock and human activities. While in lakes, rivers and groundwater, occurrence is due to dissolved arsenic from rocks or mineral deposits. In groundwater for example, high arsenic may due to close distance to geological or industrial sources rich in arsenic content. The countries that are badly affected by arsenic contamination from natural sources are Argentina (Astolfi et al., 1981), Bangladesh (Wylie, 1937), Canada (Feiguenbaun and Hevia, 1970) and China (Lianfang and Jianghoung, 1994).

2.4.2 Anthropogenic Sources

Anthropogenic factor is affecting an area larger than well's immediate contributing area but smaller than regional groundwater flow system. Thus, it alters the local geochemistry, thus mobilizes arsenic from aquifer sediments to groundwater (Ryker, 2001). In agricultural areas, historical use of arsenic pesticides and defoliants may have increased the arsenic concerntration in soils (Aurelius, 1998; Chorman, 1985; D'Angelo et al., 1996, Frost et al., 1993; Peryea, 1998). According to Barringer et al., (2001); Peryea and Kammereck (1997), other agricultural practice such as application of phosphate fertilizer may also mobilize the arsenic from soils into shallow groundwater.

2.5 ARSENIC IN DRINKING WATER

The World Health Organization (WHO) has reduced the allowable drinking limit from 50μg/L to 10μg/L in 1993 (WHO, 1993). Adapting to this new guidelines, several countries had also lower down the arsenic-contaminated drinking limit to 10μg/L too. They are Japan, European Union, Jordan and Laos. However, they are also countries that still remained at the limit of 50μg/L, for example Bangladesh, China, India and Egypt.

2.6 GROUNDWATER OCCURRENCE AROUND THE WORLD

Arsenic contamination in groundwater has become a global threat as many countries around the world are facing serious arsenic contamination. Figure 2.1 shows the distributions of world regions with arsenic concentration in major aquifers. According to Smeldey and Kinniburgh (2002), the identified countries that are badly affected by arsenic contamination in groundwater are Argentina, Bangladesh, Canade, Chile, China, Hungary, Illinois, India (West Bengal), Mexico, Romania, Thailand, Taiwan, Vietnam and United States of America.

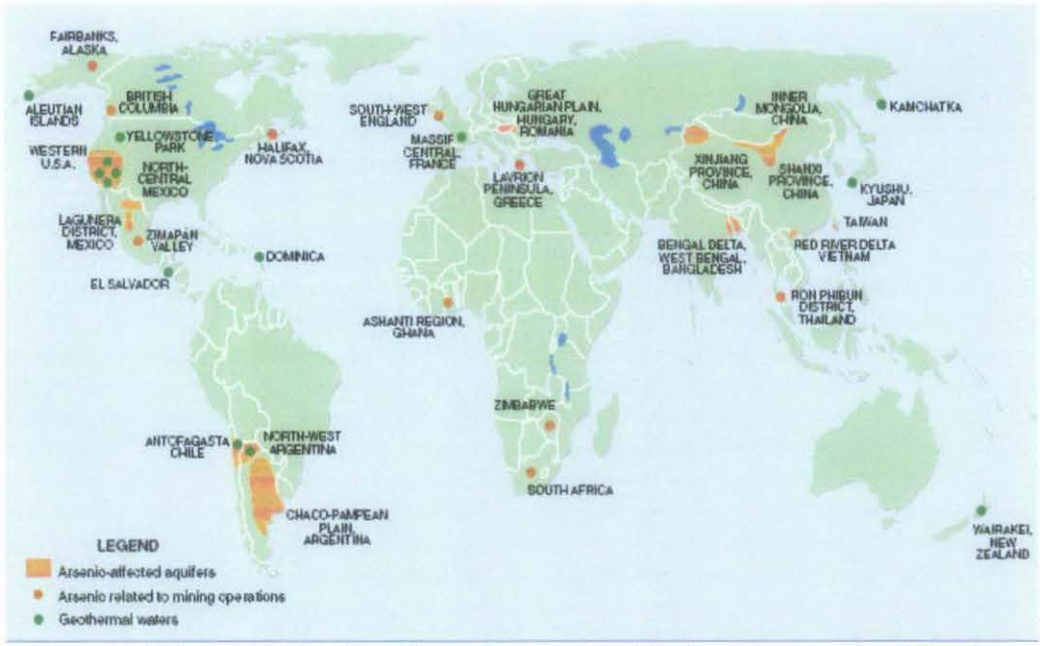

Figure 2.1 World distribution of arsenic concentration in major aquifers (Smedley and Kinniburgh, 2002)

2.6.1 West Bengal, India

The first arsenic problem recognized in West Bengal is found in 1983 (Chakraborti and Saha, 1987). On the basis of 15 years surveying by Chakraborti and his co-researchers, 129 552 tube well water samples were analyzed from arsenic-affected districts in West Bengal, India (Rahman et. al., 2006). With population of approximately 80 million, number of arsenic-affected district are 9 from 18 districts in West Bengal.

Based on sample analyzed, 49.6% samples are exceeding WHO drinking limit (10μg/L) and 24.7% exceeds the country drinking limit- 50μg/L (Chakraborti et al., 2004).

2.6.2 Taiwan

High arsenic concentration also being identified in 2 areas of Taiwan, that are the south-west coastal region (Kuo, 1968, Tsang et al., 1968) and the north-east coastal region (Hsu et al., 1997). Kuo (1968) observed arsenic concentration samples from south west Taiwan ranging between 10μg/L and 1800μg/L with half of the samples analyzed having concentration of 400-700μg/L.

2.6.3 China

As in many countries, the drinking limit of arsenic in China is 50μg/L. Arsenic poisoning occurred as a result of drinking arsenic contaminated water in some villages and towns in China (Lianfang and Jianghoung, 1994). In 41 well samples collected from depth 2-30 meter, the mean concentration is 18μg/L, and ranging from 0-68μg/L (Lianfang and Jianghoung, 1994). In this country, it is observed that arsenic concentration in water samples collected from artesian wells at depth 70-400 meters increase with depth (Lianfang and Jianghoung, 1994).

2.6.4 United States of America

Half of the population in the United States relies on groundwater for drinking water (Solley et. al., 1998). In United States, widespread high concentrations of arsenic in groundwater (>10μg/L) have been documented in drinking water aquifers in the West, the Great Lakes region and the New England (Ryker, 2001).

2.6.5 Arsenic occurrence in Bangladesh

Groundwater is used for drinking and domestic purpose in Bangladesh. An estimate pf 6-11 million tube wells are present in Bangladesh at the moment. (Smedley and Kinniburgh, 2003) Today many as 35 million people may be drinking arsenic-affected groundwater according to Smedley and Kinniburgh (2003). Surveys in Bangladesh that had been carried out by Chakraborty and Saha (1987) indicated that one third of existing wells yield groundwater that does not meet the Bangaldesh drinking standard of 50μg/L (Dhar et al., 1997; DPHE et al., 1999; BGS-DPHE; Macarthur et al., 2001).

2.7 SPATIAL VARIABILITY OF ARSENIC BY OTHER STUDIES

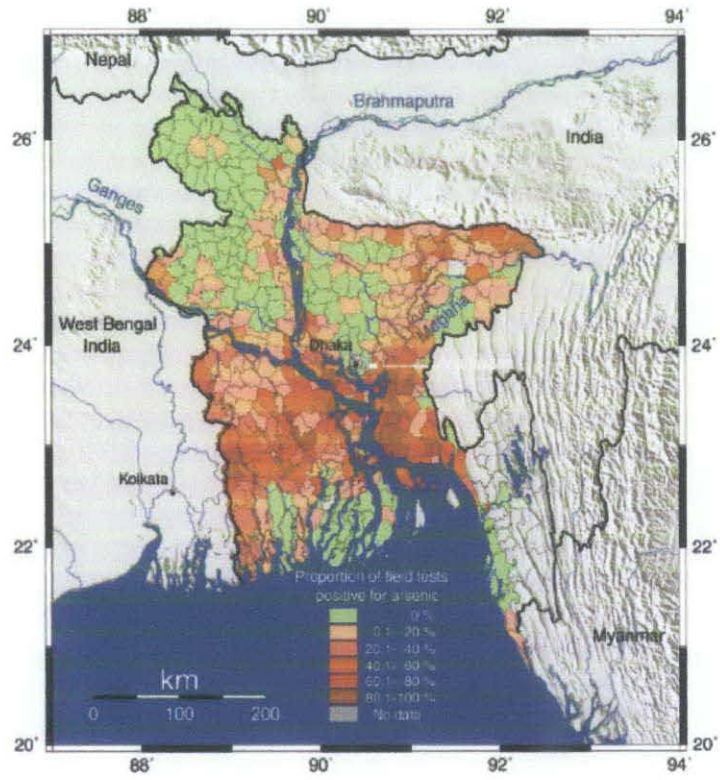

Figure 2.2 Proportion of wells tested positive for Arsenic in upazillas of Bangladesh

It is important to look at other studies, using several other data samples to compare the relevancy of the result at the end of the study. Referring to Figure 2.2, a compilation of 51000 field tests for arsenic conducted in Bangladesh by Department for Public Health Engineering and UNICEF showed that approximately one third of

the country is not affected but 60% of tube wells are tested positive for concentration higher than 100μg/L (Bngladeh Rural Advance Comission, 2001).

According to study been carried out by Van Geen et al., (2003) in Spatial Variability of arsenic in 6000 tube wells in 25km^2 area of Bangladesh showed that 25% contain ≤10μg/L arsenic with most wells are located at the north-western portion of the study area. This study also suggested mitigation actions that should be taken.

2.8 GEOSTATISTICAL ANALYSIS

Geostatistical method is used to study the spatial variability characterization of arsenic concentration in groundwater of Bangladesh. It is a tool for analyzing and interpolating the spatially correlated data, according to Isaak and Srivastava (1989). By definition from Olea (1998), geostatistic can be regarded as a collection of numerical techniques that deal with the characterization of spatial attributes, employing random models in a manner similar to the way in which time series analysis characterizes temporal data. However, this study will not be covering the correlation between time (temporal) changes, but only with regard to separation distance and well depth. Geostatistics has also been successfully applied in dealing with spatial variability data for examples pore-water pressure (Rezaur et. al., 2002) bulk density and field capacity of ferralsols (Utset et. al., 2000) and soil moisture patterns (Western et. al., 1998).

Since the variation of these spatially distributed data is correlated in space, classical statistical method may be inadequate for interpolation. This is because classical statistical method assumes that the data points in the field study are independent of on another and do not consider spatial correlation (Rezaur et. al., 2002). Therefore, geostatistical method can overcome this difficulty and provide appropriate tool in examining the data points.

The geostatistical analysis is important in this study of spatial variability of arsenic concentration in order to

- Producing the best fitted semivariogram models for the arsenic concentration.
- Determine the semivariogram parameters namely the sill, nugget and range and to find the characterization of the spatial data.
- Producing a smooth Kriging map of arsenic distribution using the method of interpolation.

2.8.1 Semivariogram Characteristics

Semivariogram is on of the geostatistical tool to indicate spatial correlation in data points of arsenic concentration measured at sample locations. It is represented as a graph that showed the variance with distance between all pairs of sampled locations. The semivariogram is later used to develop the interpolation of unavailable sample points by applying the method of Kriging. All these geostatistical method can be achieved by using the Gamma Design Software (GS+).

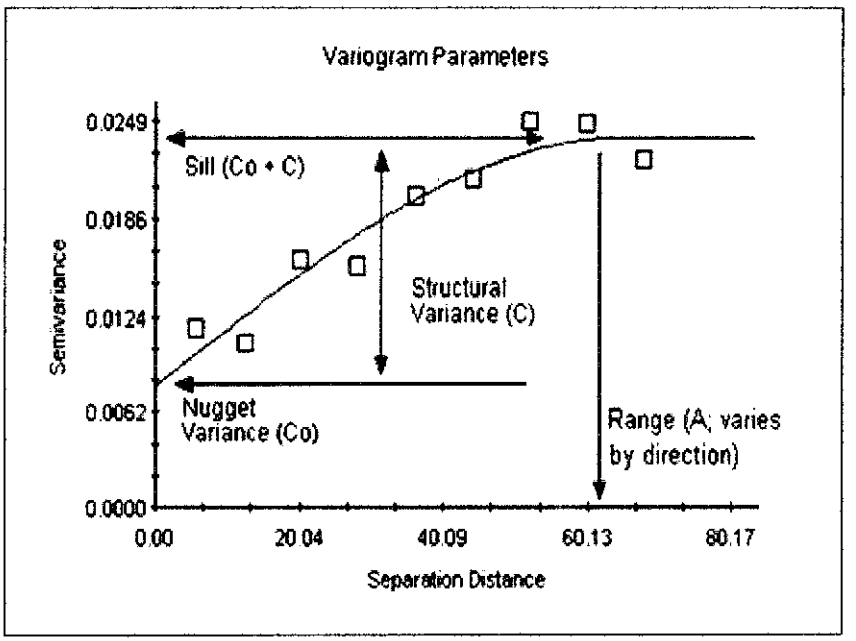

Figure 2.3 Best fitted semivariogram and its parameters

Figure 2.2 shows the best fitted semivariogram model with the parameters. Semivariance rises with increasing lag then levels off. The lag, at which the plateau is achieved is called *range* and the semivariance value of the plateau is called *sill. Sill,* (Co+C) is the semivariance at the plateau. It is the measure of variability in the data. *Range,* (Ao) is the lag distance at which the semivariogram reaches the sill value. It represents the distance where the points are spatially dependent. *Nugget,* (Co) is the discontinuity at the origin - the measurement and sampling error and spatial variance of scales less than minimum sampling distance.

Nugget-to-sill ratio represents the indication of the spatial dependency of the data. Less than 25% is strong dependencies, 25%-75% moderate dependencies and >75% weak dependencies. *Autocorrelated / spatial dependent* means probability in similar data values in neighboring sample points. *Isotropic* means spatial structure does not change direction. Therefore, there is another semivariogram analysis, that is *anisotropic*, that assumes spatial direction is viewed from many angles, namely east and west.

The semivariance (γ) for lag h is given by Goovaerts, 1997

$$\gamma(h) = 1/2N(h) \sum_{i=1}^{N(h)} [z(x_i)-z(x_i+h)]^2$$

where,

$z(x_i)$ = measured sample points at x_i

$z(x_i+h)$ = measured sample at point x_i+h

N(h) = number of pairs separated by lag *h*

The data is spatially autocorrelated or spatially dependent if the probability in similar data values is higher for neighbouring sample points than for points that are far form each other. Therefore, the value at $z(x_i)$ correlates with the value at $z(x_i+h)$, with h (lag) being the distance between these two points. This correlation is called the spatial structure of the property. This study will examine the isotropic semivariogram which means that the spatial structure does not change in direction (Bruckner et. al., 1999)

CHAPTER 3

HAZARD ANALYSIS

3.1 GOOD SITTING POSTURE

The most important issue to be paid attention is the sitting position while doing computer-works. The correct sitting posture is important to eliminate any risks of lower back pain, since the project involved long hours in front of computers.

3.2 EYE LEVEL

Eye level is equally important as this project requires a lot of computer usage. This is to avoid eye deterioration of performance in the long run.

For the entire duration of this project, there are and will be no outdoor activities involved. This project depends solely on computers, therefore the hazard analysis will only concern on ergonomics issue such as sitting posture and appropriate distance of the eyes when using computers.

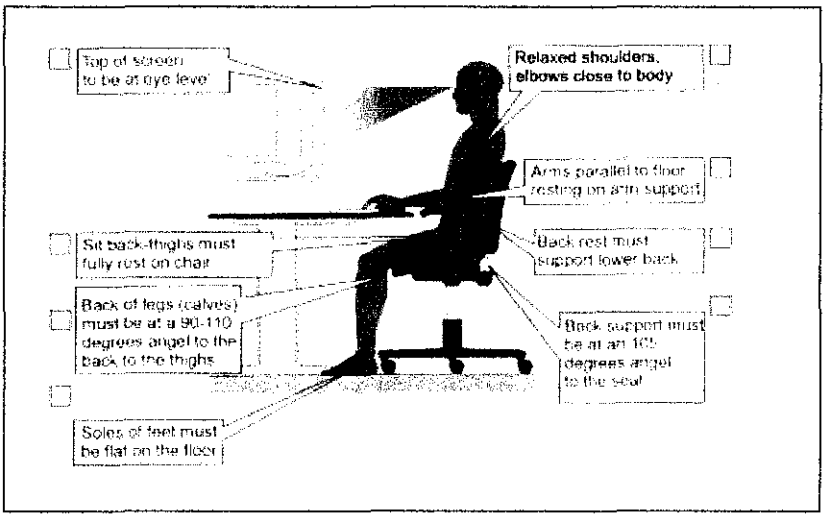

Figure 3.1 Good sitting posture

CHAPTER 4

METHODOLOGY

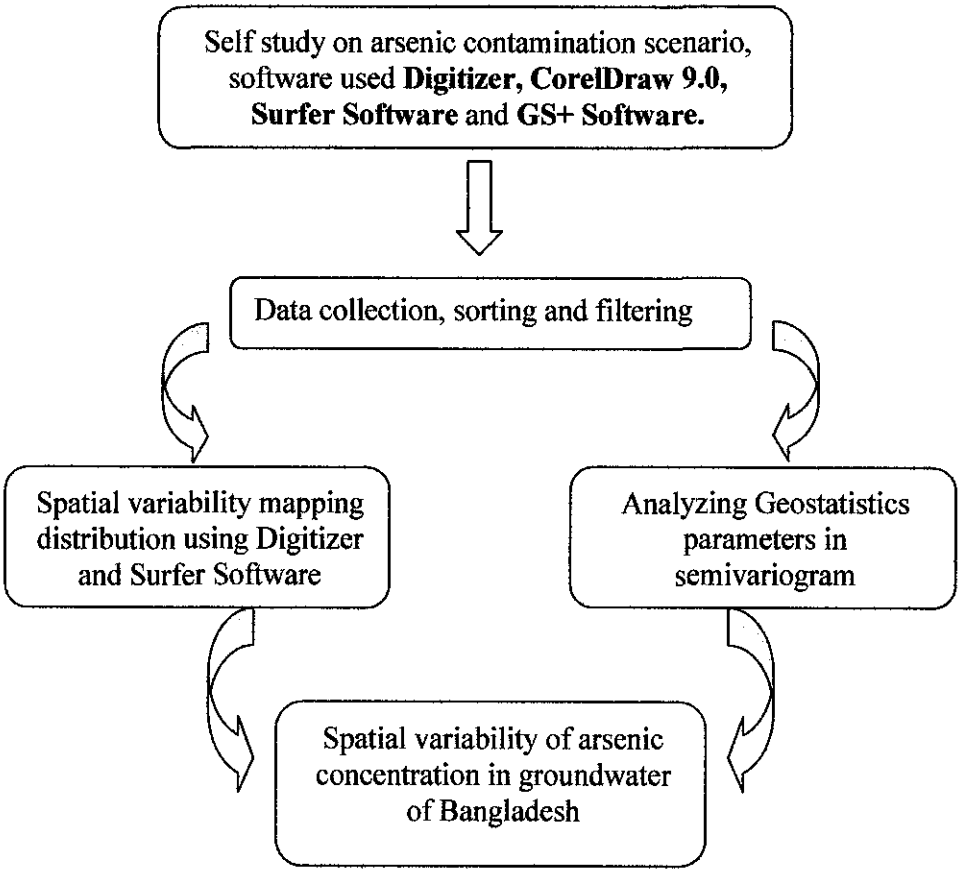

Figure 4.1 Methodology Flow Chart

4.1 DATA COLLECTION

The data points of arsenic concentration in groundwater of Bangladesh were obtained from the British Geological Survey (BGS) website. They cover 41 out of 64 districts in Bangladesh, taken from March to June 1998. The sampling prepared by the BGS is representing uniform spatial coverage and range of well types and depths. The sampling data points were then published in the website in 'Groundwater studies for arsenic contamination in Bangladesh-Phase 1'.

Initially altogether there are 3534 data points located at different location across the country. Each data record contains these information – sample ID, sample field ID, sample date, latitude and longitude coordinates, year of construction, owner, well type, well depth (in meter), division, district, Thana, Union, Mouza, geological code and level of arsenic concentration (μg/L).

4.1.1 Filtering the Data Points

After a thorough observation of the all 3534 data points available, author had to filter out some of the points to proceed with the spatial variability analysis. The data that had been filtered out are points that are less than 6μg/L and 0.5μg/L because they do not have specific value of concentration. They will eventually affect the analysis since they are not solid numbers. Very high and out of range data points of arsenic concentration data points are also being filtered out so that a better representative of arsenic mapping can be obtained.

Subsequently, from 3534 data points, the author filtered out down to only 1636 points. For all the 1636 filtered data points, refer Appendix I. All the data points then were sorted in 5 classes of depth. The depths are taken from 0-66 feet, 66-90 feet, 90-130 feet, 130-195 feet, and 195-1089 feet. Each class of depth range contains the fair distribution of data points.

4.2 DIGITIZING THE MAP

The map of Bangladesh needs to be digitized by Digitizer Software in order to produce a boundary file. The boundary file acts as an outline of the case study. In this study, an appropriate map of Bangladesh is chosen as the boundary file. The chosen map consists of latitude and longitude. The map chosen is as in Appendix B. Then the map is defined by the mapping region to allow the points coordinates to be identified. The tracing will outlined the boundary of the map (Refer Appendix C)

Then, the red dots around is the traced/digitized coordinates that is extracted from the original bitmap file (Appendix D). When the whole tracing and digitizing is completed, the file is saved as text file. This is to allow it to be compatible to Microsoft Excel.

4.3 MAPPING ARSENIC DISTRIBUTION

The mapping of arsenic distribution concerns two variables – the arsenic level of concentration (μg/l) and depth of well (feet). To produce the distribution map, these steps are involved

4.3.1 Boundary File

The boundary file is obtained from the tracing and digitizing the map. The boundary map outlines the study area. Refer Appendix E for the Bangladesh boundary map.

4.3.2 Classed post and Legend

As said before the two variables in the mapping is the arsenic concentration and the well depth. Classed post and legend allows these two variables to be impose onto the map, thus the pattern of distribution can be observed. The Surfer software will generate the distribution, and the shading and coloring can be done to enhance the distribution mapping.

4.4 GEOSTATISTICS

Semivariogram is one of geostatistical tools generated in this analysis involved isotropic (direction independent) and spatial structure and dependency will be evaluated based on parameters (range, nugget, and sill). GS+ Software will be generating the best fitted semivariogram from these five models

1. Spherical Isotropic Model

$\gamma(h) = C_0+C\left[2/3(h/A_0)-0.5(h/A_0)^3\right]$ for $h \leq A_0$

$\gamma(h) = C_0+C$

2. Exponential Isotropic Model

$\gamma(h) = C_0+C\left[1-\exp(-h/A_0)\right]$

3. Linear Isotropic Model

$\gamma(h) = C_0+\left[h(C/A_0)\right]$

4. Linear to Sill Isotropic Model

$\gamma(h) = C_0+\left[h(C/A_0)\right]$ for $h \leq A_0$

$\gamma(h) = C_0+C$ for $h < A_0$

Based from the Semivariogram value, Kriging interpolation is done to produce an estimate of concentration at unavailable data points. The smoothed Kriging map is produced using the Geostatistical Software, Surfer Software or GS+ Software.

CHAPTER 5

RESULTS AND DISCUSSION

5.1 DISTRIBUTION OF ARSENIC MAPPING

5.1.1 Map of arsenic distribution-level of concentration

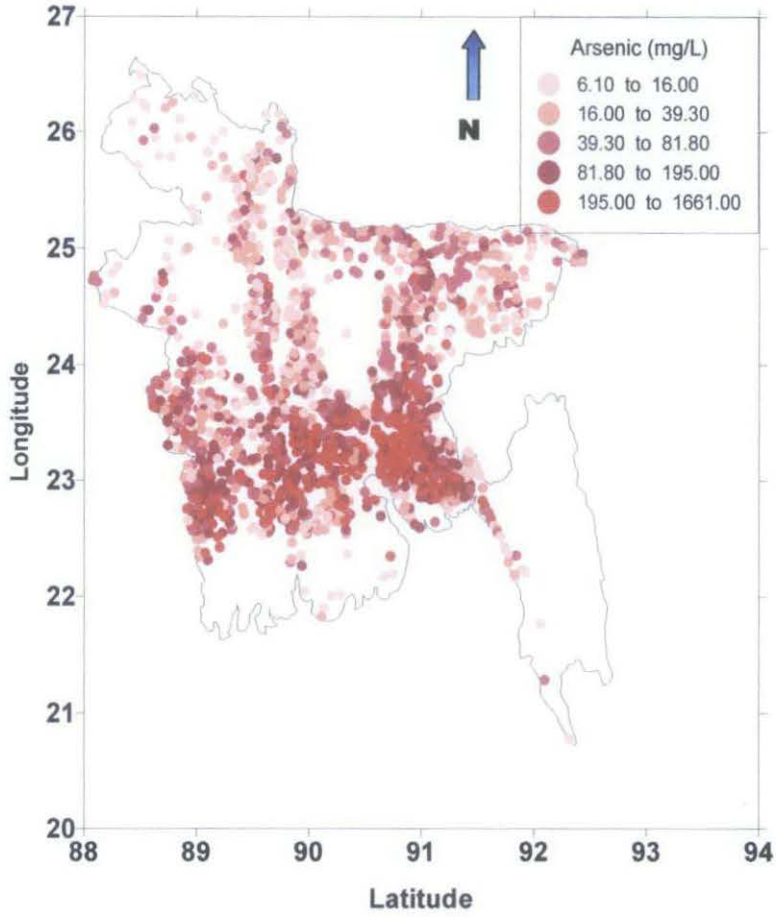

Figure 5.1 Distribution of arsenic contaminated wells in Bangladesh

The mapping of arsenic distribution gives the instant graphical outcome based on the 1636 data points collected in 41 out of 64 districts of Bangladesh, downloaded from the British Geological Survey website (BGS) during the *Groundwater Studies for Arsenic Contamination in Bangladesh-Phase 1*.

arsenic concentration in the Bangladesh. The distribution can be identified by the level of shading.

The level of arsenic concentration started at 6.1μg/L. This is because the raw data had been filtered and sorted to 1636 data only. This is to ensure the data can be processes and some level of concentration (<6μg/L, <1μg/L and <0.5μg/L) are being filtered out.

According to the observed data points across the country, approximately 54% of the groundwater wells in the data points are exceeding the minimum requirement of Bangladesh standard (50μg/L). Thus, the percentage of wells exceeding the WHO requirement (10μg/L) becomes larger, that is 90% of the overall data observed. Most of them are located near the Bengal Basin, where it is densely populated because of the agricultural activities.

5.1.2 Map of arsenic distribution- well depth (feet)

Figure 5.2 is showing the distribution of well according to depth. The depth (in feet) is classified to 5 classes- 0-66 feet, 66-90 feet, 90-130 feet13 0-195 feet, 195-1089 feet. Darker yellow shade represents the deeper well (the deepest well is at 1089 feet) and the lighter shade is for the shallower wells. The distribution of wells in each class is fair so the data can be observed. The distribution pattern observed from the map can help in identifying the correlation between well depth and arsenic concentration.

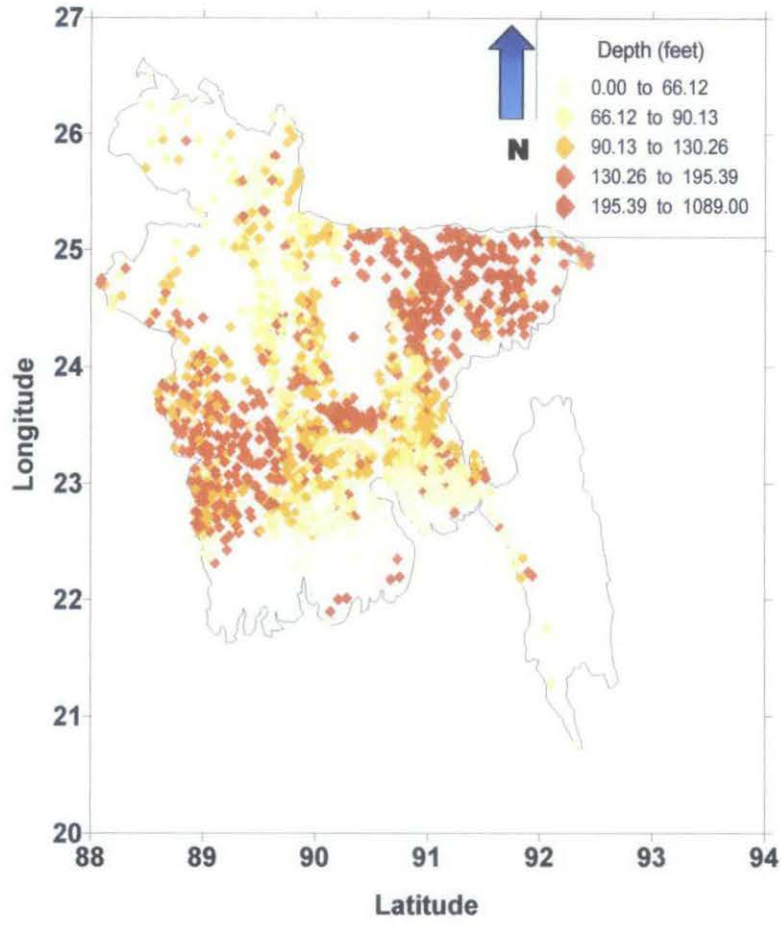

Figure 5.2 Distribution of well according to depth

Based on the sorted data, 69% of the well depth is more at shallow depth (<150m) all 100% exceeding the WHO standard (10μg/L) and 67% of them exceeding the Bangladesh standard (50μg/L). Comparing both Figure 5.1 and Figure 5.2, the high arsenic concentration can be observed at the areas where the depths of wells are relatively shallow. Thus, it supported the theory that high arsenic concentration does vary with depth.

5.2 Geostatistical Analysis

The data were analyzed to examine 3 different spatial structures

1. Spatial autocorrelation in the horizontal direction (horizontal plane).
2. Spatial autocorrelation in the vertical direction (arsenic as primary variable).
3. Spatial autocorrelation in vertical direction with depth as covariate (arsenic as primary variable and depth as covariate).

When data of arsenic reading is transferred to the worksheet, GS+ Software will determine the best fitted semivariogram based on the five models- Spherical, Exponential, Linear, Linear to Sill and Gaussian model. The software will determine the optimal model based on the value of Regression Coefficient, r^2 and Residual Sums of Squares, RSS. These parameters are used for indication on how well the semivariogram fits.

To examine the spatial structure, the ration of the nugget to sill $[C_0/(C_0+C)]$ provides a measure of proportion of sample variance (C_0+C) that is explained by spatially structures variance C. It also gives a measure the degree of the spatial dependence of the data.

Figure 5.3 (a-e) are the best fitted semivariogram at the selected soil depths. The figures showed the parameters and the coefficients – nugget effect (C_0), sill (C_0+C), range (A_0), regression coefficient (r^2) and residual sums of squares RSS. Figure 5.4 (a-e) are the best fitted semivariogram at selected soil depth, as arsenic as the primary variable and depth as the covariate. This is to observe the influence of depth in the spatial structure

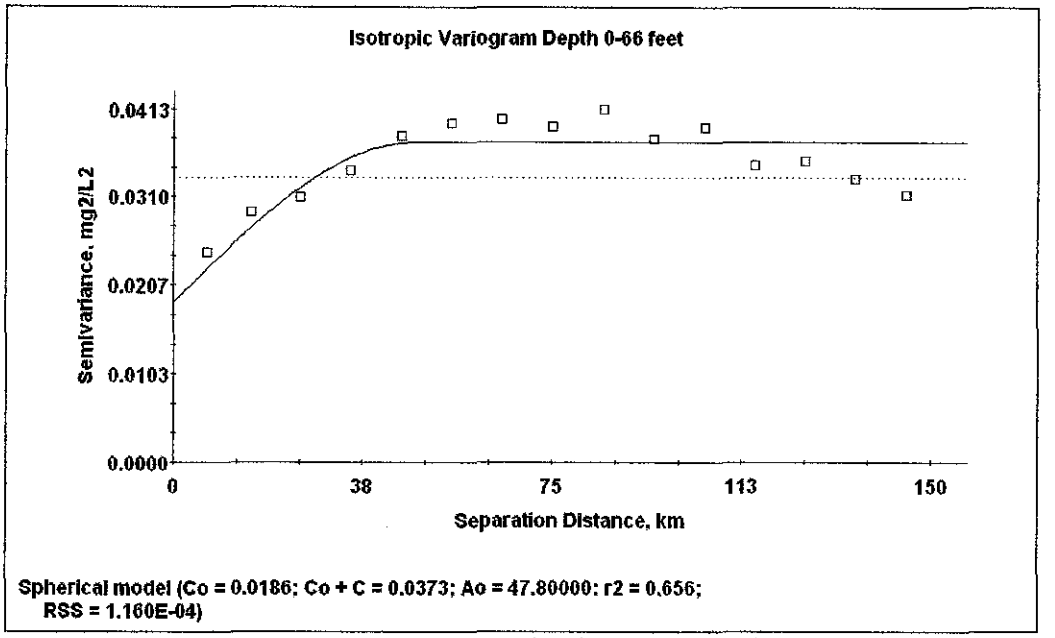

Figure 5.3(a) Isotropic semivariogram at depth 0-66 feet

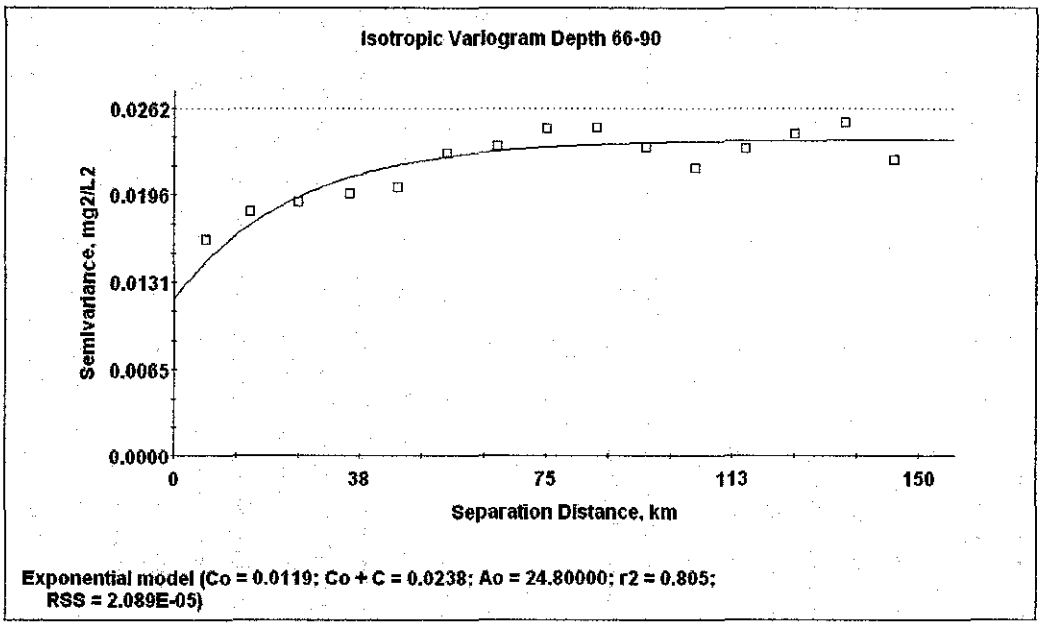

Figure 5.3(b) Isotropic semivariogram at depth 66-90 feet

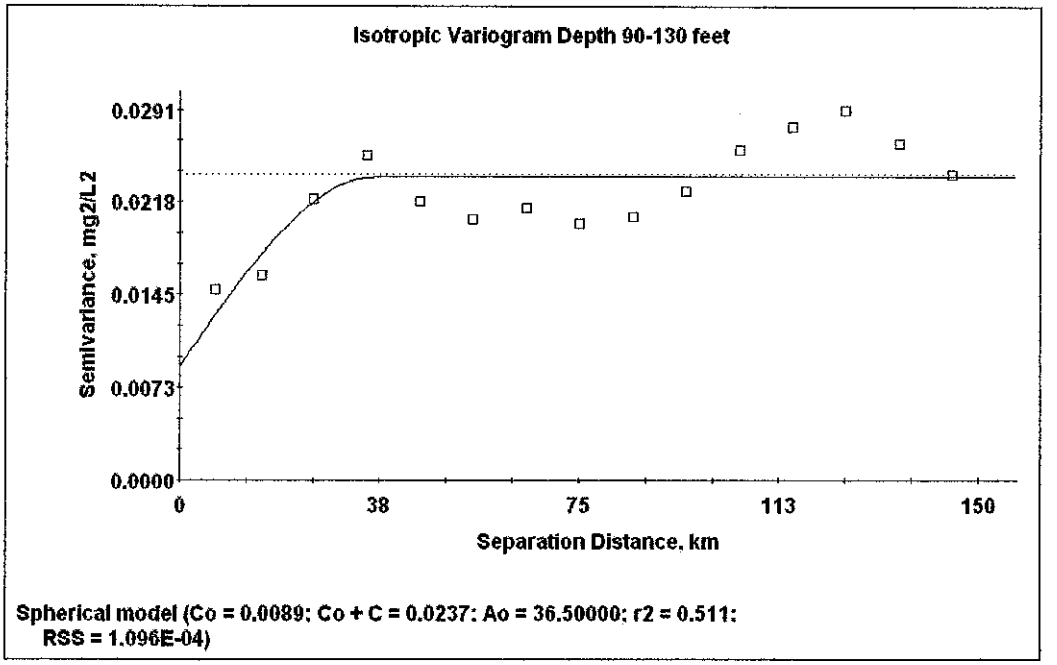

Figure 5.3(c) Isotropic semivariogram at depth 90-130 feet

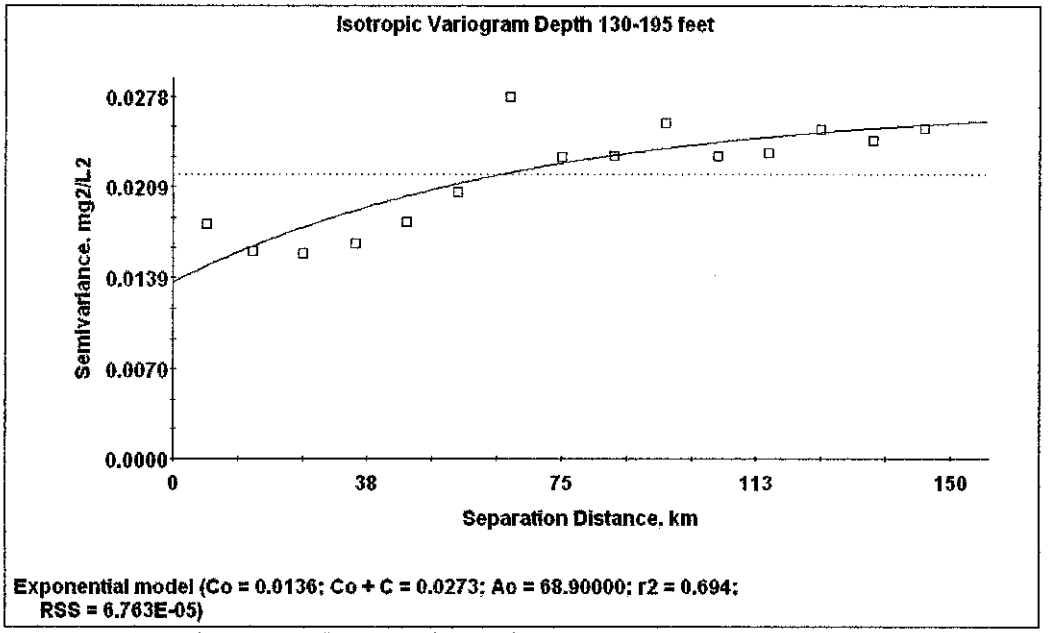

Figure 5.3(d) Isotropic semivariogram at depth 130-195 feet

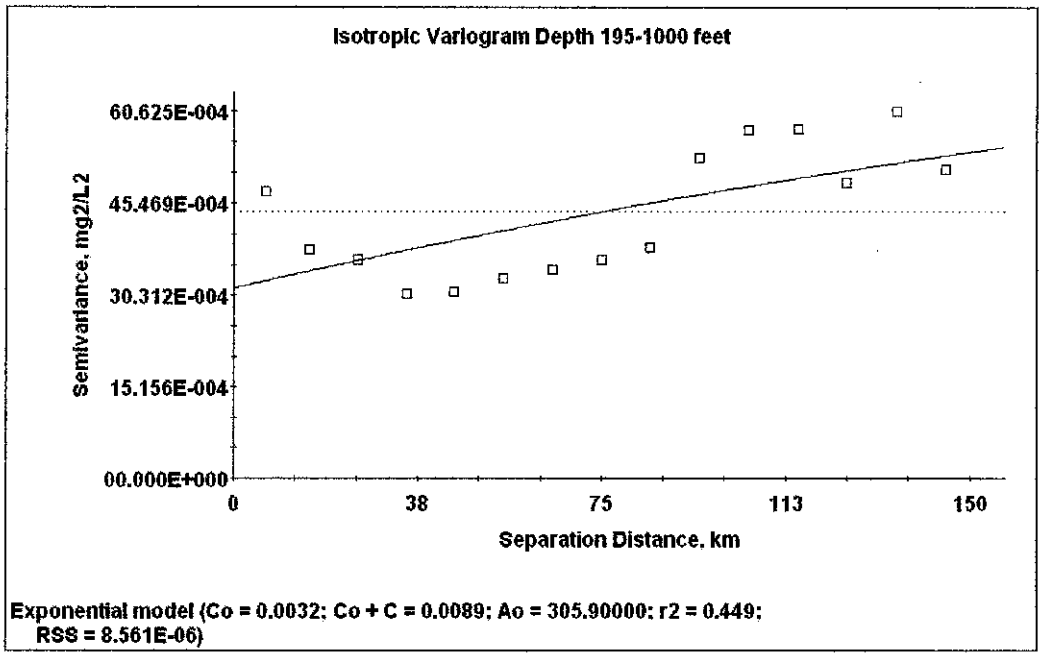

Figure 5.3(e) Isotropic semivariogram at depth 1950-1000 feet

Figure 5.3 (a-e) Semivariogram models showing horizontal spatial structure of arsenic concentrations with fitted models and parameters.

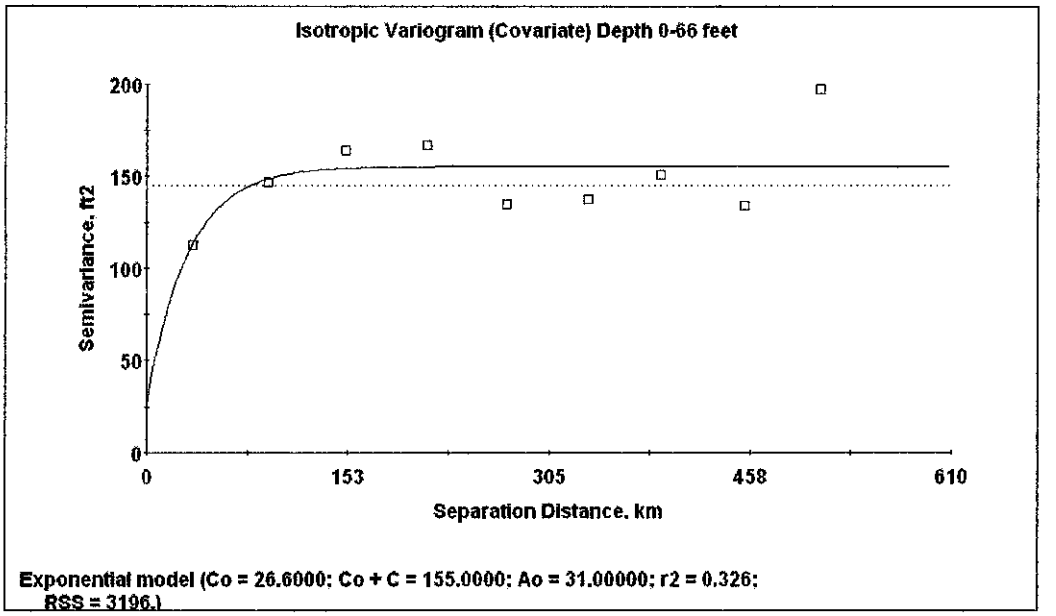

Figure 5.4(a) Isotropic semivariogram at depth 0-66 feet with depth as covariate

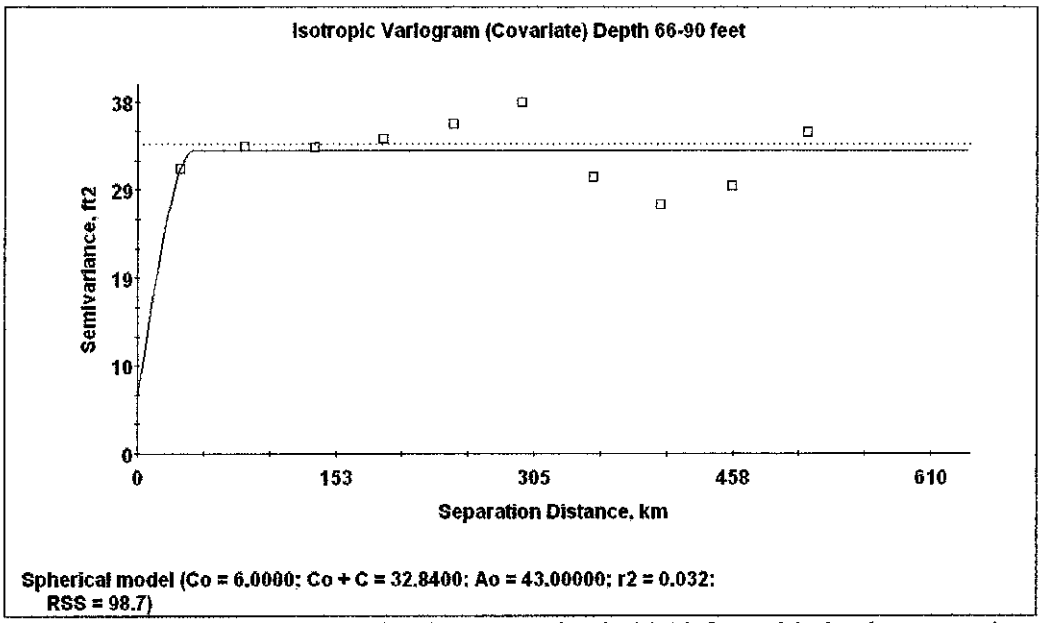

Figure 5.4(b) Isotropic semivariogram at depth 66-90 feet with depth as covariate

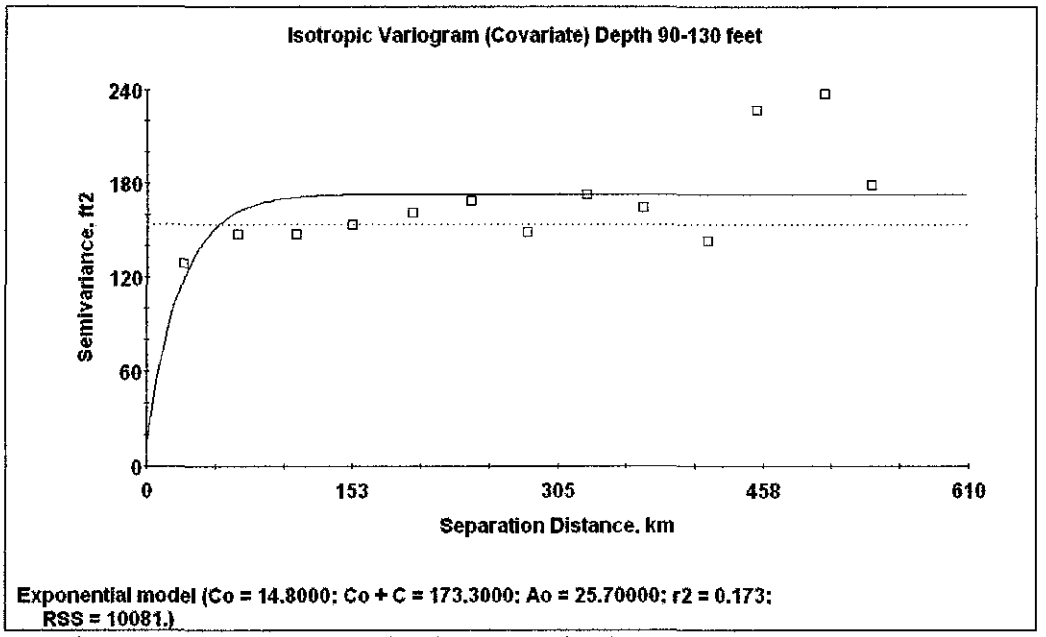

Figure 5.4(c) Isotropic semivariogram at depth 90-130 feet with depth as covariate

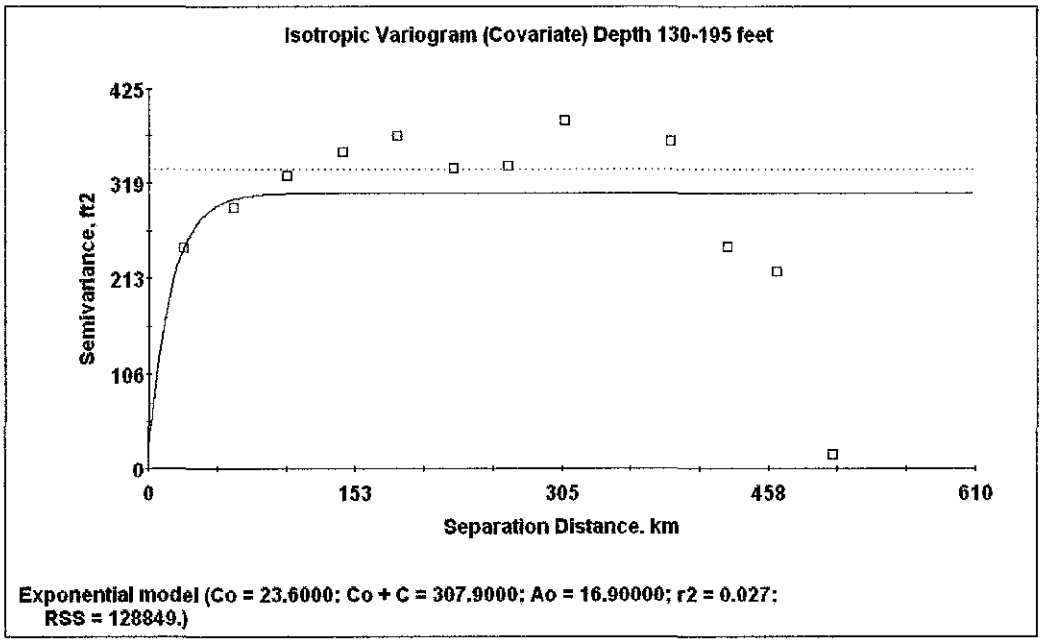

Figure 5.4(d) Isotropic semivariogram at depth 130-195 feet with depth as covariate

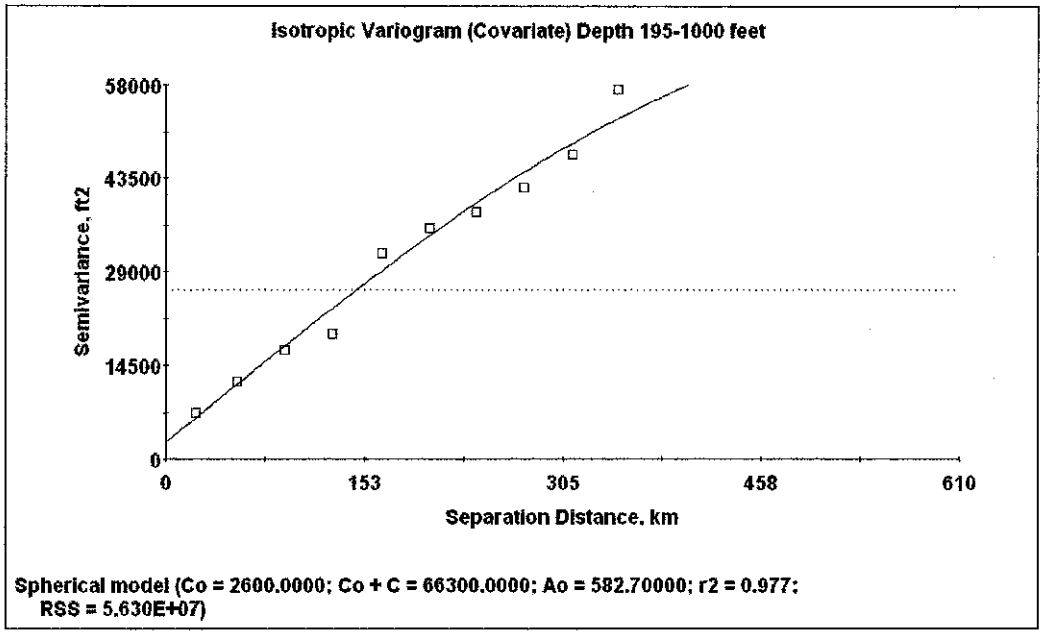

Figure 5.4(e) Isotropic semivariogram at depth 195-1000 feet with depth as covariate

Figure 5.4 (a-e) Semivariogram models showing horizontal spatial structure of arsenic concentrations with fitted models and parameters (with depth as covariate)

No	Depth, ft	Model *	Nugget Co	Sill Co+C	Range Ao	r2	RSS	Ratio Co/Co+c
1	0 -66	S	0.01862	0.03734	47.8	0.656	1.16E-04	0.501
2	66 -90	E	0.01185	0.0238	24.8	0.805	2.09E-05	0.502
3	90 -130	S	0.00891	0.02392	36.5	0.511	1.10E-04	0.624
4	130 -195	E	0.01359	0.02728	68.9	0.694	6.76E-05	0.502
5	195- 1000	E	0.00315	0.00891	305.9	0.449	8.56E-06	0.646

Table 5.1 Estimated parameters of the isotropic semivariogram models of arsenic concentration calculated with lag 150km

No	Depth, ft	Model *	Nugget Co	Sill Co+C	Range Ao	r2	RSS	Ratio Co/Co+c
1	0 -66	E	26.6	155	31	0.326	3.20E+03	0.828
2	66 -90	S	6	32.84	43	0.032	9.87E+01	0.817
3	90 -130	E	14.8	173	25.7	0.173	1.01E+04	0.915
4	130- 195	E	23.6	307.9	16.9	0.027	1.29E+05	0.923
5	195- 1000	S	2600	66300	582.7	0.977	5.63E+07	0.961

Table 5.2 Estimated parameters of the isotropic semivariogram models of arsenic concentration calculated with lag 610km

Models*

E = Exponential Model

S = Spherical Model

The semivariogram presented in Figure 5.3 and Figure 5.4 is generated by GS+ Software. According to Rezaur at al. (2002), the fitting of semivariogram is the larger the number of pairs used in calculating the semivariance at a particular leg. Therefore by increasing the active lag will increase the interval and consequently increasing the number of pairs. This will help smoothen the variogram and reduce the noise.

There are 5 models namely spherical, linear, linear-sill, exponential, and Gaussian model. The most fitted semivariogram is determined by the lowest value of coefficient of determination r^2 and residual sums of squares (RSS) values.

The best fitted models based on Figure 5.4(a-e) and Figure 5.4(a-e) is the spherical and exponential model. There are defined as

1. Spherical Isotropic Model

$\gamma(h) = C_0+C\ [2/3(h/A_0)-0.5(h/A_0)^3]$ for $h \leq A_0$

$\gamma(h) = C_0+C$

2. Exponential Isotropic Model

$\gamma(h) = C_0+C[1-\exp(-h/A_0)]$

Having the best fitted models to represent each classes of different depth, now it is possible to examine the spatial dependencies based on the coefficients and parameters. The parameters of the semivariogram -the nugget to sill ratio, nugget variation, sill variation, and range variation will be used to examine the spatial variability of the data.

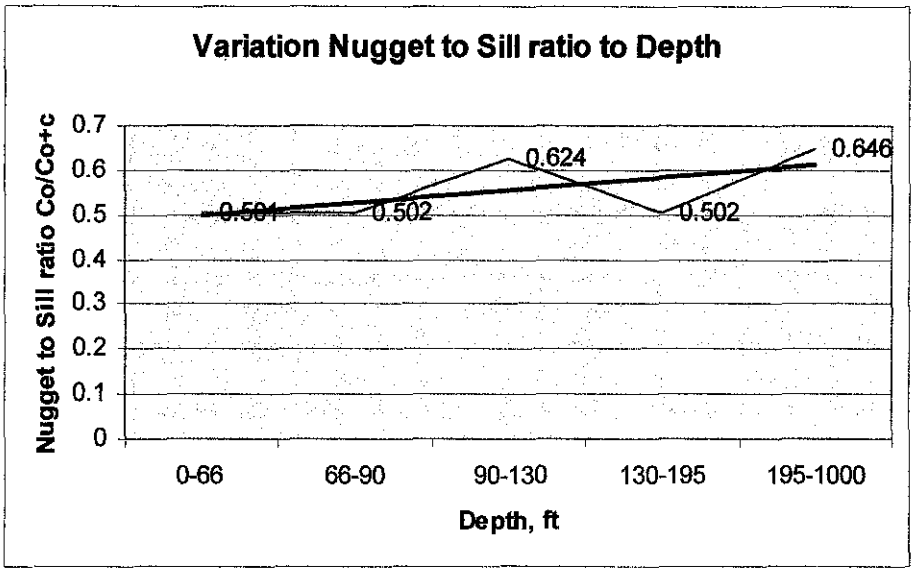

Figure 5.5 Variation of semivariogram nugget to sill (C_0/C_0+C) with depth (isotropic variogram analysis)

Nugget to Sill ratio, C_0/C_0+C measures the spatial dependency of the data. According to Rezaur et. al., (2002), the higher the value of the ratio, the stronger the spatial dependency. A ratio of 25 % indicates strong dependence, between 25% and 75% indicates moderate dependence and greater than 75% indicates weak dependence.

Referring to Figure 5.5, the ratio is ranging from 50% to 65%. It shows that there are moderate to weak dependence of spatial variability. At every classes of depth, the percentage of variation is about the same, with variation of 14%. Thus, the small variation suggests that the spatial dependence along the depth are moderate with variation ranging from 50% to 65%.

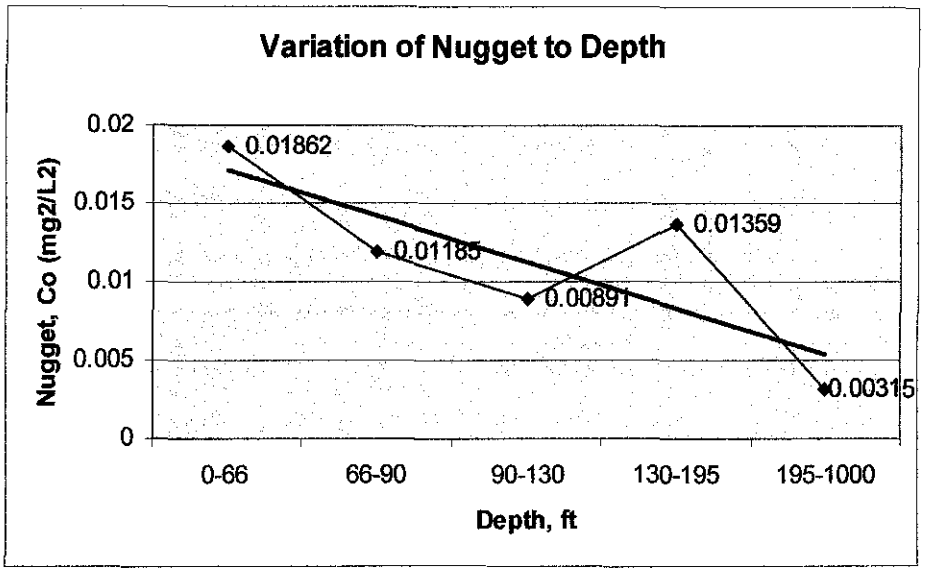

Figure 5.6 Variation of nugget (C_0) to depth (isotropic variogram analysis)

The semivariogram models do not intersect at zero. It intersects at certain coordinate and this continuity is called the nugget C_0. Nugget represents all unaccounted spatial variability at distances smaller than the smallest lag while the semivariogram models the structural spatial dependence (Goovaerts, 1997). Furthermore, value for nugget is representing the sampling error and any small scale variability. As in Figure 5.6, the nugget value is can be said that the value of nugget is decreasing towards deeper depth. However, at depth 130-195 feet, the nugget value is 0.0359 mg^2/L^2. This maybe because there are less variation at small distances that is less than the smallest lag that is 150 km. However, apart from that, the nugget value decreases as the number of observation increases deeper depth, 195-1089 feet depth.

The nugget effect is seen as consequence of limited number of observations with small distance. Positive nugget can be explained by sampling error, short range, random and inherent variability. The fact that the data points were collected covering only 41 from 64 districts in Bangladesh may also contribute to sampling and measurement errors.

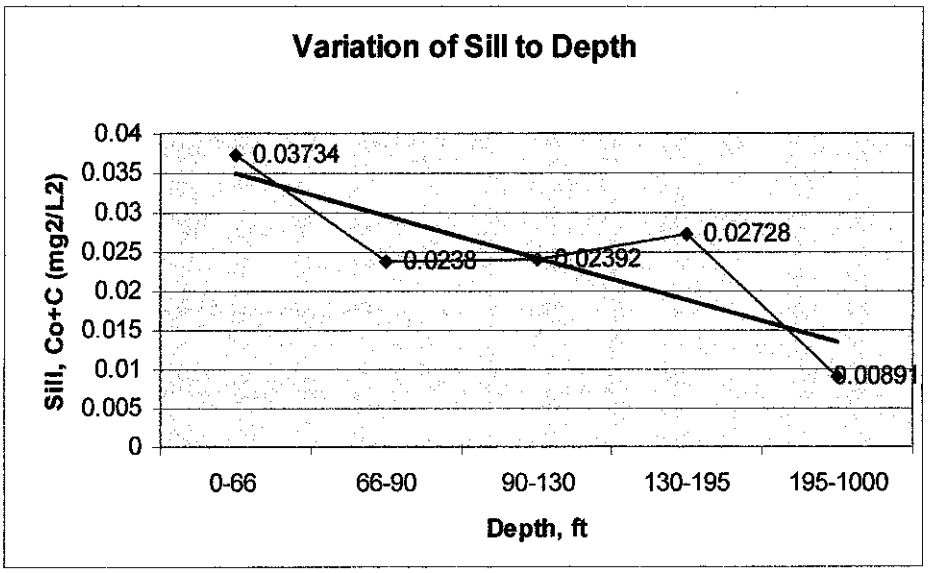

Figure 5.7 Variation of sill (C_0+C) to depth (isotropic variogram analysis)

The best fitted semivariogram models reach the sill distances at points are considered spatially auto correlated. The sill value is the sample variance of the data. It represents the spatially independence variance. The data locations are separated by a distance beyond which the semivariance does not change, thus spatially independent of one another.

Larger sill value is a direct indication of larger spatial variability in arsenic concentration. In Figure 5.7, the variation of sill value is decreasing with vertical depth. Hence, it suggests that the spatial variability (variation of concentration) of arsenic concentration is generally high at shallower well depth (0-66 feet) and decreasing towards deeper depth.

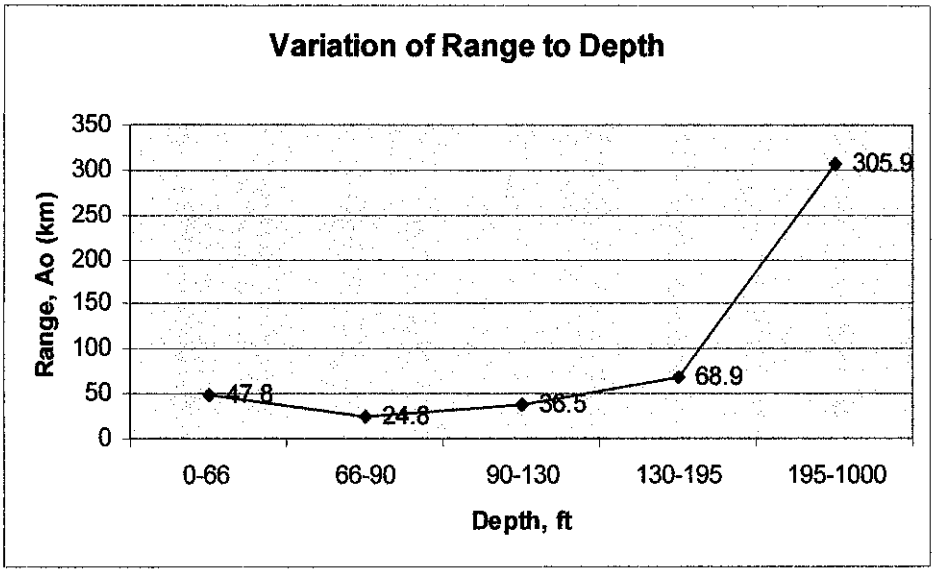

Figure 5.8 Variation of range (A_0) to depth (isotropic variogram analysis)

The range value A_0 is a measurement related to the distance of influence of a variable. Points within the range are considered spatially auto correlated whereas points outside the range are spatially independent. Therefore, the range values in Figure 5.8 indicate the distance where the arsenic of same concentration occurs.

Thus, based on Figure 5.8, it is clear that range at shallower wells are far nearer than deeper wells. For example, at depth 66-90 feet. The possibility to find another well that is the same concentration is only in range 24.8km in distant. Whereas, at depth 195-1000 feet, the possibility to find the same concentration of arsenic is far more farther to each other, that is 305.9km.

Thus, it can be concluded that at shallow depth, the spatial dependency smaller (moderate in value), the variability is higher, and the arsenic concentration are correlated in smaller distant in relative comparison to deeper depth.

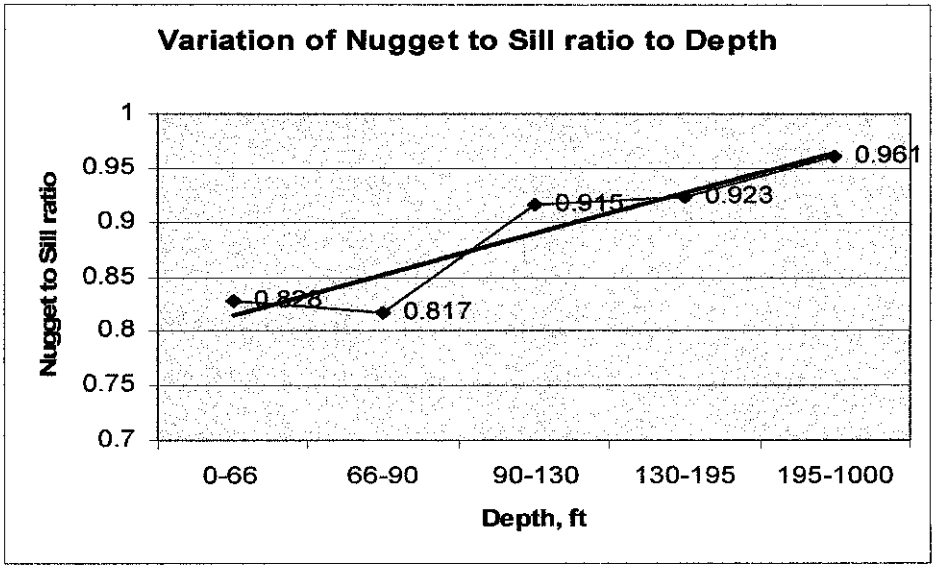

Figure 5.9 Variation of semivariogram nugget to sill (C_0/C_0+C) with depth (isotropic variogram analysis) with depth as covariate

Referring to Figure 5.9, the ratio of nugget to sill along the horizontal depth is ranging from 82% to 96%. It clearly shows that the spatial dependence along the horizontal depth is more than 75% that is weak. The weakest spatial dependency for arsenic is at depth of 66-90 feet, and the strongest dependency is at depth 195-1000 feet. Therefore, in general, it can be concluded that at shallow depth, the arsenic concentration in the wells have higher relationship with each other (higher dependency), with taking into consideration the depth of each wells.

From Figure 5.2, it is clearly shown that the depth of the wells does influence the level of arsenic concentration. Based on previous studies also suggested that shallow wells, that are less than 100-150m deep are badly affected than deep wells. (Smedley and Kinniburgh, 2002, Van et al., 2003). However, based on Figure 5.9, the spatial dependency does not vary significantly with horizontal depth. This maybe because earlier the lower value of concentration (<0.5μg/L and <6μg/L) had been filtered out and not being considered in plotting the semivariogram.

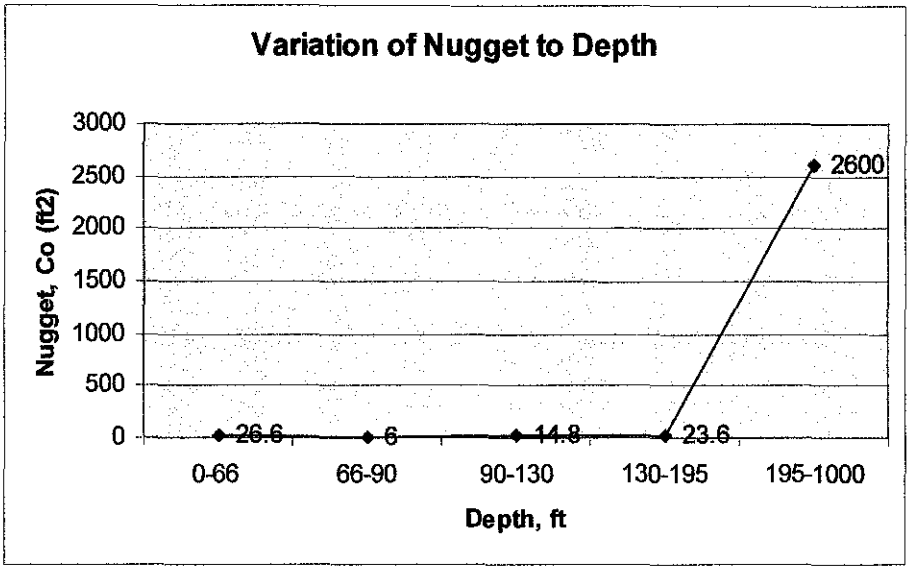

Figure 5.10 Variation of semivariogram nugget (C_0) with depth (isotropic variogram analysis) with depth as covariate

Based on Figure 5.10, it is clear that the nugget value increase with continuous depth. The maximum value of nugget is at 195-1089 feet, that is 2600 feet^2, and the lowest nugget value is at 66-90 feet, that is 6 feet^2. This indicates that the sampling and measurement errors increasing as the number of data points increasing. The measurement and sampling errors may be due to equipment restraints, geological factors, measurement errors due to technical errors and inaccuracy in sampling. Thus, it suggests that the measurement and sampling errors rises significantly for higher depth as a result of difficulties in sampling.

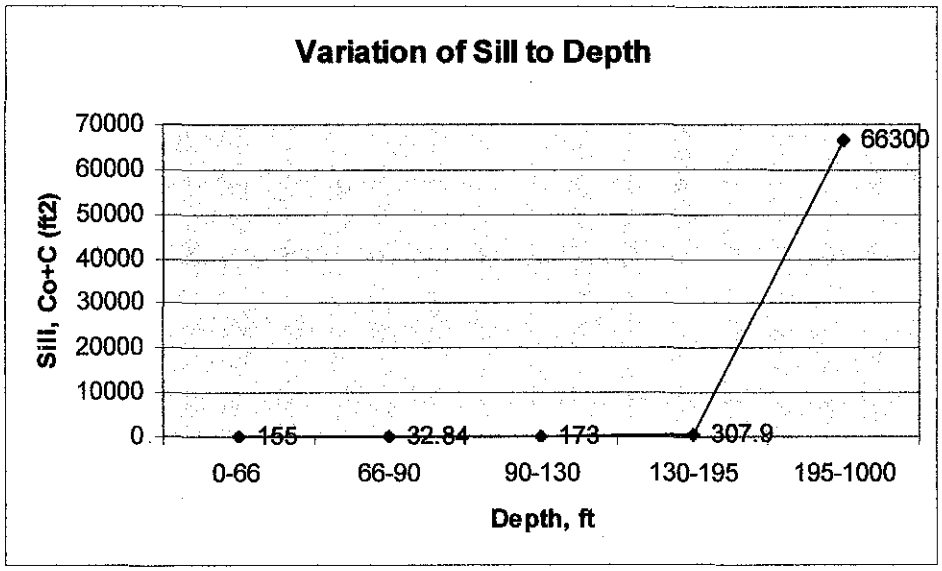

Figure 5.11 Variation of semivariogram sill (C_0+C) with depth (isotropic variogram analysis) with depth as covariate

The sill value indicates the sample variance of the variable. Thus, it is direct indication that variability of the points within every classes. Figure 5.11 is showing the spatial variability of well depths where the samples are taken in terms of the semivariogram parameter sill across soil depths in horizontal direction. Looking at Figure 5.11, the shallow depth represents lower variability than the deeper depth.

Based on the figure above, the shallow depth has lower sill value, thus indicates smaller variability than the deeper depth. Based on Figure 5.11 also, the sill value is increasing with depth, with the maximum value of 66300 feet^2 at depth 195-1089 feet. Hence, the lowest sill value is at the 66-90 feet. Therefore it can be concluded that the sill value is increasing and heavily influenced by rising depth of wells.

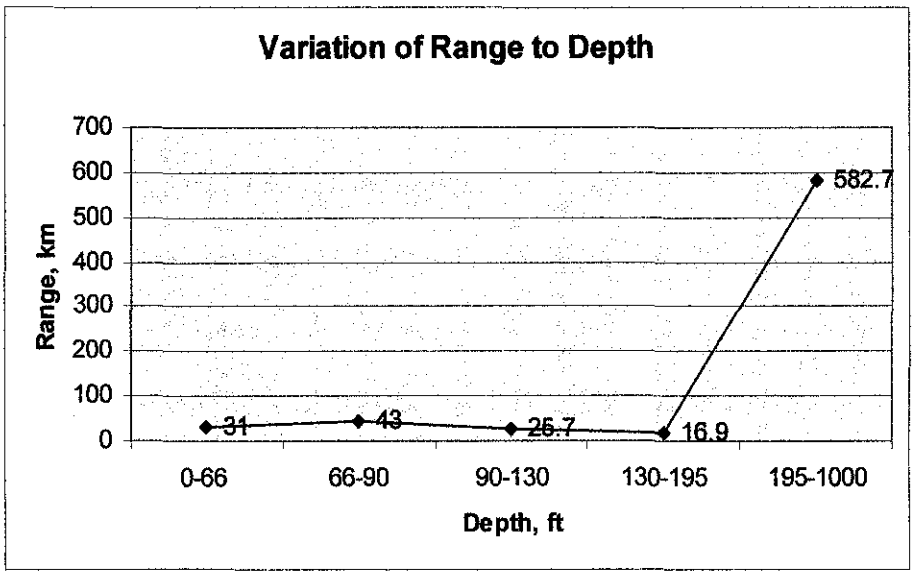

Figure 5.12 Variation of range (A_0) with depth (isotropic variogram analysis) with depth as covariate

Range is the distance where the similar concentration of wells is presence. Figure 5.12 shows the dependencies of range values (in kilometers) in accordance to well depths. The pattern indicates that the range value is highest at 195-1000 feet and being the lowest at 90-130 feet. Therefore, at depth 90-130 feet, it is known that to find another similar well with the same level of concentration is only 25.7 km in distance.

The range value is helpful in determining the possibility of the same arsenic level of concentration being present in the area. Since before the author had observed that for shallow wells (<150 meters) 100% of them are exceeding the WHO standard (10μg/L) and 67% exceeding the Bangladesh drinking limit, precautions can be made if a well is to be drilled at certain depth.

With arsenic concentration being the primary variate and the depth of wells being the covariate, it can be observed that spatial dependency of arsenic is weak (becoming weaker at deeper wells), rising variability towards deeper depth, and wider range at deeper depth.

5.3 Kriging Interpolation

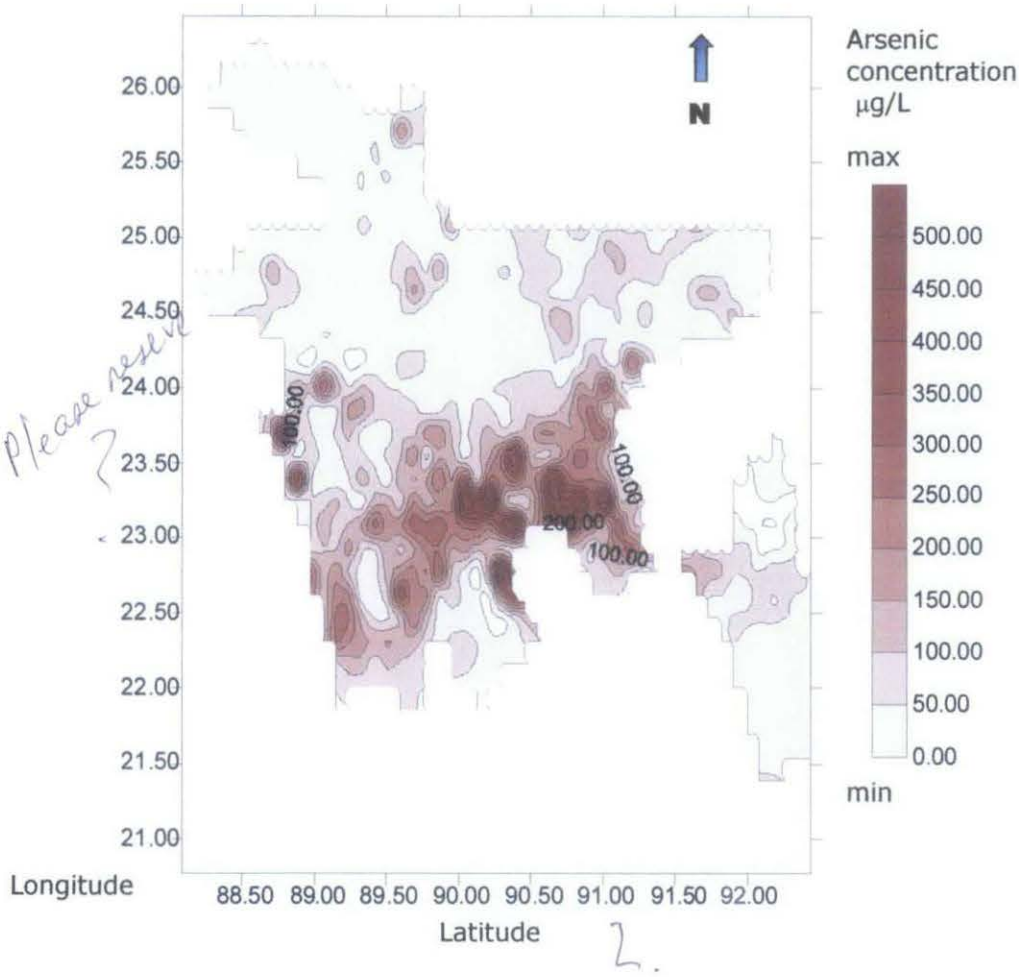

Figure 5.13 Smoothed-Kriging arsenic distributions in Bangladesh

Kriging map is a contour-smoothed distribution developed derived from the semivariogram value. Kriging interpolates the unavailable data points based on the neighbouring sample using the Surfer Software or GS+ Software. It is a strong tool to determine the estimate of arsenic level of concentration at any location in the country. Based on Figure 5.13, it can be observed that the highest arsenic level is located near the Bengal basin. Furthermore, safe level of arsenic concentration can also be identified based on this unbiased interpolation.

CHAPTER 6
CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

From the 1636 data points collected in 41 of 64 districts in Bangladesh, the author had managed to understand the spatial variability pattern of the arsenic concentration using the Geostatistical tool-semivariogram. By plotting the arsenic distribution mapping, it is known that approximately 54% of the groundwater wells in the data points have exceeding the minimum requirement of Bangladesh drinking standard (50μg/L). Thus, the percentage of wells exceeding the WHO drinking requirement (10μg/L) becomes larger, that is 90% from all the groundwater data points. Furthermore, with regards to the depth of wells, the author had observed that for shallow wells (<150 meters) 100% of them are exceeding the WHO standard (10μg/L) and 67% exceeding the Bangladesh drinking limit.

It has been shown that semivariogram parameters is an important tools in determining the spatial variability characteristics of arsenic concentration in Bangladesh. The variations of range, nugget effect, sill and nugget to sill ratio are important for structural description of the spatial data, after being evaluated with both vertical and horizontal depths. Geostatistical characterization indicated distances over which data are correlated (range), the extent of variability (sill) and degree of spatial dependencies (nugget to sill ratio). Based on the analysis, all the parameters suggested that all the spatial dependencies, variability and autocorrelated are influenced by depth.

6.2 RECOMMENDATION

The spatial variability study do not consider time related factor in examining the spatial variability pattern. Therefore the author would like to suggest that this study is further extended to temporal variability study in arsenic concentration in Bangladesh. Having to consider time related factor, it can be possible that the level or arsenic concentration in wells may have relationship to the age of the wells. Thus, any correlation between arsenic concentration and age of well can be identified.

Further important subjects for future investigations concern the potential to allow, adopt, and design the efficient and appropriate removal measures or arsenic in the country. The value of nugget also recommends that perhaps the data collection method can be improved, especially at deeper wells.

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<http://images.google.com.my/imgres?imgurl=http://international.usgs.gov/images/projects/big_pics/bg-map>

Appendix 4-1
1636 sample data points of groundwater from British Geological Survey

ID	LAT_DEG	LAT_km	LONG_DEG	LONG_km	WELL_DEPTH m	WELL DEPTH f	As µg/L	As mg/L
1	22.8731	2543.26	90.7844	10094.32	10.7	35.19736842	13	0.013
2	23.0194	2559.527	90.8786	10104.79	12.2	40.13157895	256	0.256
3	22.965	2553.478	90.9597	10113.81	12.2	40.13157895	38	0.038
4	22.9253	2549.064	90.9744	10115.44	262.1	862.1710526	8	0.008
7	22.8567	2541.436	90.8642	10103.19	7.9	25.98684211	15	0.015
8	22.9322	2549.831	90.7767	10093.46	7.9	25.98684211	65	0.065
10	22.9414	2550.854	90.8644	10103.21	14	46.05263158	142	0.142
11	23.5331	2616.645	89.79	9983.75	26.2	86.18421053	41	0.041
12	23.5347	2616.823	89.8675	9992.367	32	105.2631579	162	0.162
13	23.5969	2623.739	89.8769	9993.413	20.1	66.11842105	57	0.057
14	23.6603	2630.789	89.7639	9980.848	28	92.10526316	245	0.245
18	23.5753	2621.338	89.7178	9975.722	18.3	60.19736842	132	0.132
19	23.6139	2625.63	89.7936	9984.15	15.8	51.97368421	10	0.01
21	24.6017	2735.463	88.2767	9815.486	34	111.8421053	35	0.035
26	24.5736	2732.339	88.2067	9807.703	33.5	110.1973684	8	0.008
28	24.5022	2724.4	88.1817	9804.923	21.3	70.06578947	14	0.014
31	23.642	2628.754	90.609	10074.81	41	134.8684211	324	0.324
37	23.617	2625.974	90.499	10062.58	62	203.9473684	9	0.009
40	23.847	2651.548	89.829	9988.087	52	171.0526316	41	0.041
41	23.968	2665.002	89.83	9988.198	82	269.7368421	46	0.046
42	23.771	2643.097	89.915	9997.649	31	101.9736842	60	0.06
43	23.856	2652.549	89.939	10000.32	44	144.7368421	89	0.089
44	23.99	2667.448	90.044	10011.99	24	78.94736842	20	0.02
48	23.616	2625.863	90.125	10021	60	197.3684211	184	0.184
49	23.651	2629.755	90.132	10021.78	20	65.78947368	133	0.133
52	22.576	2510.225	89.325	9932.047	49	161.1842105	130	0.13
53	22.811	2536.355	89.038	9900.135	34	111.8421053	109	0.109
54	22.932	2549.809	89.668	9970.185	26	85.52631579	114	0.114
55	22.576	2510.225	89.499	9951.394	41	134.8684211	12	0.012
56	22.8	2535.132	89.645	9967.628	131	430.9210526	89	0.089
59	22.871	2543.026	89.508	9952.395	60	197.3684211	73	0.073
61	22.778	2532.686	89.706	9974.41	39	128.2894737	121	0.121
62	22.52	2503.999	89.021	9898.245	20	65.78947368	100	0.1
63	22.639	2517.23	89.041	9900.469	39	128.2894737	176	0.176
64	22.824	2537.801	89.748	9979.08	34	111.8421053	124	0.124
65	22.546	2506.89	89.652	9968.406	26	85.52631579	505	0.505
66	23.373	2598.844	89.371	9937.161	115	378.2894737	78	0.078
67	22.86	2541.803	89.04	9900.358	39	128.2894737	147	0.147
69	22.75	2529.573	89.259	9924.708	22	72.36842105	106	0.106
70	22.538	2506	89.24	9922.596	56	184.2105263	155	0.155
71	22.763	2531.018	89.855	9990.977	45	148.0263158	217	0.217
72	22.565	2509.002	89.845	9989.866	20	65.78947368	92	0.092
74	22.642	2517.564	89.814	9986.419	20	65.78947368	301	0.301
75	23.402	2602.068	89.602	9962.846	98	322.3684211	61	0.061
76	23.17	2576.272	89.042	9900.58	45	148.0263158	111	0.111
77	23.042	2562.04	89.391	9939.385	50	164.4736842	136	0.136

78	23.27	2587.391	89.246	9923.263	51	167.7631579	9	0.009
79	23.419	2603.959	88.821	9876.007	94	309.2105263	30	0.03
80	23.399	2601.735	88.977	9893.353	44	144.7368421	45	0.045
82	23.611	2625.307	89.021	9898.245	39	128.2894737	71	0.071
84	22.722	2526.459	89.847	9990.088	18	59.21052632	59	0.059
86	23.121	2570.824	89.649	9968.072	50	164.4736842	152	0.152
92	23.12	2570.713	88.974	9893.019	22	72.36842105	54	0.054
93	22.906	2546.918	89.216	9919.927	49	161.1842105	166	0.166
94	23.603	2624.418	88.774	9870.781	40	131.5789474	50	0.05
95	23.678	2632.757	88.869	9881.344	39	128.2894737	41	0.041
96	23.781	2644.209	88.734	9866.333	39	128.2894737	33	0.033
97	23.404	2602.291	89.221	9920.483	49	161.1842105	55	0.055
98	23.181	2577.495	89.543	9956.286	54	177.6315789	198	0.198
99	23.26	2586.279	89.024	9898.579	118	388.1578947	49	0.049
100	22.963	2553.256	89.23	9921.484	67	220.3947368	168	0.168
101	23.222	2582.054	89.408	9941.276	50	164.4736842	152	0.152
102	23.76	2641.874	88.942	9889.461	82	269.7368421	35	0.035
103	23.352	2596.509	88.918	9886.792	123	404.6052632	74	0.074
104	23.659	2630.644	88.62	9853.658	39	128.2894737	72	0.072
111	22.041	2450.739	89.972	10003.99	12	39.47368421	11	0.011
117	23.076	2565.82	90.436	10055.58	35	115.1315789	248	0.248
123	22.568	2509.336	90.148	10023.56	12	39.47368421	17	0.017
124	22.647	2518.12	90.231	10032.78	15	49.34210526	16	0.016
125	22.639	2517.23	90.18	10027.11	306	1006.578947	7	0.007
127	23.138	2572.714	90.444	10056.47	63	207.2368421	77	0.077
128	23.229	2582.833	90.533	10066.36	27	88.81578947	30	0.03
129	23.2	2579.608	90.469	10059.25	33	108.5526316	49	0.049
130	23.301	2590.838	90.409	10052.58	39	128.2894737	275	0.275
131	22.906	2546.918	89.899	9995.87	14	46.05263158	22	0.022
132	23.144	2573.381	89.763	9980.748	39	128.2894737	76	0.076
134	22.987	2555.925	90.006	10007.77	29	95.39473684	193	0.193
136	23.298	2590.505	89.701	9973.854	58	190.7894737	203	0.203
137	23.327	2593.729	89.71	9974.855	20	65.78947368	74	0.074
138	23.387	2600.401	89.984	10005.32	82	269.7368421	238	0.238
139	23.698	2634.981	89.719	9975.856	29	95.39473684	161	0.161
140	23.331	2594.174	90.324	10043.13	21	69.07894737	72	0.072
141	22.994	2556.703	89.816	9986.641	22	72.36842105	188	0.188
142	23.472	2609.852	90.029	10010.32	38	125	272	0.272
143	23.795	2645.766	89.421	9942.721	56	184.2105263	8	0.008
144	23.481	2610.852	89.498	9951.283	58	190.7894737	61	0.061
145	23.419	2603.959	89.897	9995.647	34	111.8421053	188	0.188
146	23.554	2618.969	89.934	9999.761	26	85.52631579	220	0.22
154	24.361	2708.7	88.706	9863.22	32	105.2631579	21	0.021
164	24.072	2676.566	89.626	9965.515	26	85.52631579	10	0.01
168	24.16	2686.35	89.026	9898.801	24	78.94736842	9	0.009
170	23.536	2616.968	90.716	10086.71	25	82.23684211	411	0.411
171	23.489	2611.742	91.007	10119.07	125	411.1842105	118	0.118
172	23.713	2636.648	90.878	10104.72	24	78.94736842	278	0.278
173	23.18	2577.384	91.244	10145.42	23	75.65789474	64	0.064
174	23.207	2580.386	90.688	10083.6	20	65.78947368	641	0.641

175	23.553	2618.858	91.128	10132.52	35	115.1315789	9	0.009
176	23.702	2635.425	91.047	10123.52	30	98.68421053	127	0.127
178	23.682	2633.202	90.784	10094.27	25	82.23684211	73	0.073
179	23.235	2583.5	91.117	10131.3	98	322.3684211	98	0.098
181	23.34	2595.175	90.89	10106.06	98	322.3684211	30	0.03
182	23.432	2605.404	90.604	10074.26	25	82.23684211	391	0.391
186	23.25	2585.168	90.878	10104.72	98	322.3684211	194	0.194
189	23.031	2560.817	90.694	10084.27	14	46.05263158	375	0.375
191	22.829	2538.357	91.094	10128.74	14	46.05263158	143	0.143
192	23.191	2578.607	90.958	10113.62	23	75.65789474	233	0.233
193	22.87	2542.915	91.276	10148.98	9	29.60526316	33	0.033
194	23.039	2561.706	91.52	10176.11	244	802.6315789	13	0.013
196	22.945	2551.255	91.06	10124.96	14	46.05263158	66	0.066
197	23.061	2564.153	90.969	10114.84	14	46.05263158	71	0.071
199	23.029	2560.595	91.404	10163.21	18	59.21052632	16	0.016
200	23.188	2578.274	91.435	10166.66	22	72.36842105	22	0.022
201	22.958	2552.7	91.289	10150.42	15	49.34210526	98	0.098
206	22.936	2550.254	91.376	10160.1	20	65.78947368	166	0.166
207	22.228	2471.531	91.902	10218.58	44	144.7368421	8	0.008
209	22.29	2478.425	91.783	10205.35	21	69.07894737	16	0.016
214	22.347	2484.763	91.852	10213.02	30	98.68421053	80	0.08
217	24.43	2716.372	91.904	10218.81	49	161.1842105	254	0.254
218	24.431	2716.483	91.934	10222.14	54	177.6315789	8	0.008
219	24.814	2759.069	91.759	10202.68	56	184.2105263	53	0.053
220	24.88	2766.407	92.369	10270.51	27	88.81578947	80	0.08
221	24.593	2734.496	91.691	10195.12	113	371.7105263	133	0.133
222	24.522	2726.601	91.859	10213.8	58	190.7894737	91	0.091
223	24.652	2741.056	91.823	10209.8	91	299.3421053	139	0.139
225	24.308	2702.807	91.738	10200.35	105	345.3947368	15	0.015
229	25.01	2780.862	92.258	10258.17	47	154.6052632	151	0.151
230	25.089	2789.646	91.76	10202.79	79	259.8684211	73	0.073
231	25.057	2786.088	91.39	10161.65	134	440.7894737	50	0.05
232	25.031	2783.197	91.663	10192.01	110	361.8421053	246	0.246
236	24.794	2756.845	91.578	10182.56	126	414.4736842	23	0.023
241	24.397	2712.702	91.427	10165.77	50	164.4736842	17	0.017
242	24.575	2732.494	91.513	10175.33	144	473.6842105	50	0.05
243	24.122	2682.125	91.083	10127.52	43	141.4473684	8	0.008
244	23.984	2666.781	91.109	10130.41	53	174.3421053	105	0.105
245	23.672	2632.09	91.159	10135.97	29	95.39473684	8	0.008
248	23.467	2609.296	90.334	10044.24	92	302.6315789	133	0.133
249	23.542	2617.635	90.607	10074.59	13	42.76315789	120	0.12
250	23.572	2620.971	90.374	10048.69	55	180.9210526	529	0.529
252	23.552	2618.747	90.209	10030.34	60	197.3684211	104	0.104
253	23.543	2617.746	90.463	10058.58	47	154.6052632	263	0.263
254	23.769	2642.875	90.76	10091.6	28	92.10526316	115	0.115
255	23.808	2647.212	90.888	10105.84	29	95.39473684	326	0.326
256	22.613	2514.339	91.645	10190.01	19	62.5	151	0.151
257	22.777	2532.575	91.57	10181.67	15	49.34210526	229	0.229
260	25.091	2789.868	91.984	10227.7	63	207.2368421	21.3	0.0213
262	23.041	2561.929	89.635	9966.516	57	187.5	20.9	0.0209

263	22.651	2518.565	89.882	9993.98	24	78.94736842	18.8	0.0188
264	22.747	2529.239	89.84	9989.31	29	95.39473684	176	0.176
266	23.486	2611.408	89.421	9942.721	54	177.6315789	37.5	0.0375
267	22.715	2525.681	90.352	10046.24	22	72.36842105	279	0.279
269	23.546	2618.08	89.163	9914.034	125	411.1842105	26.3	0.0263
270	23.967	2664.891	89.043	9900.691	62	203.9473684	26.5	0.0265
271	23.051	2563.041	90.201	10029.45	46	151.3157895	26.4	0.0264
273	22.773	2532.13	90.142	10022.89	21	69.07894737	11.5	0.0115
276	22.707	2524.791	89.977	10004.54	11	36.18421053	270	0.27
278	22.814	2536.689	90.363	10047.46	16	52.63157895	35.4	0.0354
284	23.453	2607.739	90.203	10029.67	46	151.3157895	375	0.375
288	23.482	2610.964	89.881	9993.868	23	75.65789474	99.6	0.0996
289	23.725	2637.983	89.753	9979.636	16	52.63157895	10.1	0.0101
292	24.294	2701.25	88.74	9867.001	53	174.3421053	15.7	0.0157
296	24.042	2673.23	89.542	9956.175	41	134.8684211	21	0.021
297	23.831	2649.769	90.9	10107.17	30	98.68421053	406	0.406
298	23.169	2576.161	91.129	10132.63	20	65.78947368	350	0.35
300	22.683	2522.123	90.648	10079.15	14	46.05263158	163	0.163
303	23.624	2626.753	90.611	10075.04	30	98.68421053	224	0.224
304	23.673	2632.201	90.631	10077.26	30	98.68421053	311	0.311
305	23.727	2638.205	90.634	10077.59	25	82.23684211	175	0.175
310	23.875	2654.661	90.581	10071.7	39	128.2894737	31.9	0.0319
312	23.787	2644.877	90.605	10074.37	16	52.63157895	180	0.18
313	23.787	2644.877	90.659	10080.37	39	128.2894737	70.8	0.0708
316	23.751	2640.874	90.667	10081.26	39	128.2894737	76.6	0.0766
320	23.764	2642.319	90.165	10025.45	38	125	9.6	0.0096
323	23.833	2649.991	90.085	10016.55	22	72.36842105	45.6	0.0456
325	23.591	2623.083	90.501	10062.81	46	151.3157895	25.7	0.0257
327	23.869	2653.994	90.023	10009.66	17	55.92105263	12.9	0.0129
328	23.851	2651.993	90.001	10007.21	115	378.2894737	43.6	0.0436
329	23.88	2655.217	90.071	10014.99	34	111.8421053	12.8	0.0128
331	23.802	2646.544	90.02	10009.32	18	59.21052632	9.1	0.0091
332	23.757	2641.541	90.019	10009.21	24	78.94736842	51.9	0.0519
333	23.847	2651.548	89.829	9988.087	118	388.1578947	14.8	0.0148
334	23.897	2657.107	89.8	9984.862	47	154.6052632	43.2	0.0432
336	23.823	2648.879	89.792	9983.972	59	194.0789474	30.4	0.0304
339	23.744	2640.095	89.978	10004.65	105	345.3947368	65	0.065
340	23.748	2640.54	90.016	10008.88	34	111.8421053	12.9	0.0129
341	23.764	2642.319	89.962	10002.87	39	128.2894737	82.7	0.0827
342	23.771	2643.097	89.91	9997.093	36	118.4210526	88.8	0.0888
344	23.877	2654.884	89.91	9997.093	50	164.4736842	20.2	0.0202
345	23.893	2656.663	89.878	9993.535	112	368.4210526	15.4	0.0154
346	23.926	2660.332	89.859	9991.422	39	128.2894737	35	0.035
347	23.893	2656.663	89.89	9994.869	42	138.1578947	18.6	0.0186
348	23.871	2654.216	89.839	9989.198	52	171.0526316	30.6	0.0306
349	23.801	2646.433	89.96	10002.65	35	115.1315789	20.1	0.0201
350	23.975	2665.78	89.906	9996.648	34	111.8421053	14.7	0.0147
352	23.919	2659.554	89.835	9988.754	49	161.1842105	13.2	0.0132
353	23.937	2661.555	89.783	9982.972	18	59.21052632	12.2	0.0122
355	23.972	2665.447	90.041	10011.66	28	92.10526316	18.2	0.0182

357	23.994	2667.893	89.96	10002.65	23	75.65789474	8.2	0.0082
359	23.95	2663.001	90.023	10009.66	26	85.52631579	31.2	0.0312
361	23.918	2659.442	89.979	10004.77	26	85.52631579	62.8	0.0628
362	23.899	2657.33	90.041	10011.66	20	65.78947368	14.9	0.0149
365	23.995	2668.004	90.081	10016.11	62	203.9473684	21.2	0.0212
367	23.946	2662.556	90.115	10019.89	55	180.9210526	29.9	0.0299
369	23.893	2656.663	90.13	10021.55	38	125	107	0.107
378	23.73	2638.539	90.339	10044.79	44	144.7368421	13.3	0.0133
380	23.732	2638.761	90.276	10037.79	25	82.23684211	43.3	0.0433
381	23.687	2633.758	90.287	10039.01	85	279.6052632	98.4	0.0984
385	23.632	2627.642	90.081	10016.11	51	167.7631579	262	0.262
386	23.642	2628.754	90.047	10012.33	65	213.8157895	11.7	0.0117
387	23.595	2623.528	90.139	10022.56	63	207.2368421	107	0.107
388	23.577	2621.527	90.148	10023.56	57	187.5	65	0.065
389	23.538	2617.19	90.176	10026.67	61	200.6578947	81.1	0.0811
390	23.659	2630.644	90.166	10025.56	56	184.2105263	94.2	0.0942
391	23.644	2628.976	90.179	10027	59	194.0789474	95.6	0.0956
392	23.631	2627.531	90.21	10030.45	49	161.1842105	58.7	0.0587
393	23.622	2626.53	90.226	10032.23	54	177.6315789	70.4	0.0704
394	23.649	2629.532	90.204	10029.78	56	184.2105263	262	0.262
395	23.641	2628.643	90.215	10031.01	61	200.6578947	81.2	0.0812
397	24.405	2713.592	91.858	10213.69	44	144.7368421	47.1	0.0471
398	24.404	2713.481	91.846	10212.36	67	220.3947368	7.3	0.0073
400	24.354	2707.921	91.846	10212.36	44	144.7368421	13.8	0.0138
402	24.278	2699.471	91.864	10214.36	46	151.3157895	18.4	0.0184
403	24.356	2708.144	91.858	10213.69	41	134.8684211	8.7	0.0087
404	24.518	2726.156	91.976	10226.81	59	194.0789474	17.6	0.0176
406	24.502	2724.377	92.03	10232.82	26	85.52631579	7.4	0.0074
407	24.502	2724.377	92.03	10232.82	64	210.5263158	32.2	0.0322
408	24.528	2727.268	92.038	10233.71	59	194.0789474	39	0.039
416	24.79	2756.4	91.661	10191.79	99	325.6578947	29.9	0.0299
417	24.784	2755.733	91.713	10197.57	108	355.2631579	23	0.023
418	24.916	2770.41	91.722	10198.57	105	345.3947368	10	0.01
420	24.891	2767.63	92.373	10270.95	39	128.2894737	29.3	0.0293
421	24.944	2773.523	92.385	10272.29	46	151.3157895	50.8	0.0508
422	24.577	2732.717	91.689	10194.9	100	328.9473684	74.5	0.0745
423	24.484	2722.376	91.682	10194.12	100	328.9473684	58.5	0.0585
424	24.486	2722.598	91.633	10188.67	34	111.8421053	23.7	0.0237
425	24.461	2719.819	91.65	10190.56	67	220.3947368	27.6	0.0276
426	24.49	2723.043	91.75	10201.68	84	276.3157895	11.5	0.0115
429	24.519	2726.268	91.779	10204.91	72	236.8421053	56.9	0.0569
431	24.605	2735.83	91.85	10212.8	39	128.2894737	7.3	0.0073
432	24.556	2730.382	91.853	10213.14	57	187.5	25	0.025
438	24.705	2746.949	91.802	10207.46	62	203.9473684	10.1	0.0101
439	24.712	2747.727	91.799	10207.13	148	486.8421053	17.1	0.0171
440	24.632	2738.832	91.688	10194.79	137	450.6578947	157	0.157
441	24.67	2743.057	91.749	10201.57	59	194.0789474	71.9	0.0719
442	24.719	2748.506	91.695	10195.57	251	825.6578947	29.8	0.0298
443	24.718	2748.394	91.695	10195.57	60	197.3684211	19.4	0.0194
444	24.75	2751.953	91.829	10210.47	65	213.8157895	26.8	0.0268

445	24.754	2752.397	91.786	10205.69	72	236.8421053	24.1	0.0241
452	24.4	2713.036	91.637	10189.12	29	95.39473684	9.5	0.0095
453	24.3	2701.917	91.666	10192.34	59	194.0789474	21.4	0.0214
454	24.373	2710.034	91.751	10201.79	41	134.8684211	14.6	0.0146
460	24.655	2741.389	92.148	10245.94	61	200.6578947	18.4	0.0184
466	24.741	2750.952	91.926	10221.25	49	161.1842105	12.4	0.0124
474	25.044	2784.642	92.2	10251.72	71	233.5526316	50.1	0.0501
477	24.99	2778.638	92.348	10268.17	62	203.9473684	11	0.011
478	24.995	2779.194	92.271	10259.61	52	171.0526316	35.8	0.0358
479	25.108	2791.759	91.762	10203.02	11	36.18421053	8.6	0.0086
480	25.108	2791.759	91.761	10202.91	71	233.5526316	24.7	0.0247
481	25.044	2784.642	91.804	10207.69	50	164.4736842	24.8	0.0248
482	24.944	2773.523	92.442	10278.63	46	151.3157895	83.3	0.0833
484	24.874	2765.74	92.436	10277.96	53	174.3421053	35.7	0.0357
486	25.134	2794.649	91.95	10223.92	65	213.8157895	58	0.058
487	25.043	2784.531	91.988	10228.15	66	217.1052632	20.2	0.0202
488	24.996	2779.305	91.992	10228.59	20	65.78947368	6.2	0.0062
489	24.926	2771.522	91.494	10173.22	127	417.7631579	60.7	0.0607
490	24.887	2767.186	91.479	10171.55	150	493.4210526	36	0.036
491	24.916	2770.41	91.428	10165.88	97	319.0789474	55.9	0.0559
492	24.922	2771.077	91.411	10163.99	136	447.3684211	51.7	0.0517
493	24.876	2765.962	91.351	10157.32	136	447.3684211	44.4	0.0444
494	24.978	2777.304	91.368	10159.21	115	378.2894737	27.2	0.0272
495	25.093	2790.091	91.428	10165.88	114	375	32.8	0.0328
496	24.939	2772.967	91.685	10194.46	153	503.2894737	15.9	0.0159
497	24.999	2779.639	91.664	10192.12	177	582.2368421	8.2	0.0082
498	24.927	2771.633	91.692	10195.23	119	391.4473684	24.3	0.0243
501	24.88	2766.407	92.214	10253.27	51	167.7631579	51.9	0.0519
504	25.156	2797.096	92.108	10241.49	13	42.76315789	14.3	0.0143
505	25.092	2789.979	92.107	10241.38	18	59.21052632	19	0.019
506	25.064	2786.866	92.116	10242.38	39	128.2894737	6.7	0.0067
508	24.91	2769.743	91.77	10203.91	54	177.6315789	9.2	0.0092
510	24.919	2770.744	91.961	10225.14	79	259.8684211	7.1	0.0071
513	24.802	2757.734	91.915	10220.03	94	309.2105263	29.7	0.0297
515	24.804	2757.957	91.547	10179.11	151	496.7105263	19.4	0.0194
516	24.767	2753.843	91.532	10177.44	143	470.3947368	15.8	0.0158
517	24.753	2752.286	91.571	10181.78	115	378.2894737	10.8	0.0108
519	24.77	2754.176	91.555	10180	139	457.2368421	12.5	0.0125
520	24.787	2756.067	91.638	10189.23	77	253.2894737	33.8	0.0338
521	24.791	2756.511	91.664	10192.12	98	322.3684211	34.7	0.0347
522	24.926	2771.522	91.511	10175.11	163	536.1842105	58.7	0.0587
523	24.942	2773.301	91.589	10183.78	123	404.6052632	37.2	0.0372
524	24.939	2772.967	91.651	10190.67	128	421.0526316	28.1	0.0281
525	25.077	2788.312	91.779	10204.91	72	236.8421053	70.3	0.0703
527	25.064	2786.866	91.87	10215.03	69	226.9736842	61.4	0.0614
530	24.258	2697.247	91.536	10177.89	36	118.4210526	34.2	0.0342
531	24.271	2698.692	91.476	10171.22	76	250	33.3	0.0333
532	24.269	2698.47	91.479	10171.55	51	167.7631579	20.3	0.0203
536	24.286	2700.36	91.26	10147.2	59	194.0789474	39.6	0.0396
537	24.261	2697.581	91.254	10146.53	60	197.3684211	10.6	0.0106

539	24.298	2701.695	91.518	10175.89	50	164.4736842	19.1	0.0191
541	24.363	2708.922	91.523	10176.44	51	167.7631579	16	0.016
543	24.105	2680.235	91.273	10148.64	46	151.3157895	11	0.011
548	24.355	2708.032	91.447	10167.99	44	144.7368421	17.3	0.0173
549	24.307	2702.695	91.432	10166.32	56	184.2105263	8.1	0.0081
551	24.303	2702.251	91.45	10168.33	35	115.1315789	18.7	0.0187
555	24.575	2732.494	91.513	10175.33	66	217.1052632	10.7	0.0107
556	24.628	2738.387	91.541	10178.44	54	177.6315789	25.6	0.0256
560	24.542	2728.825	91.56	10180.56	50	164.4736842	6.7	0.0067
561	24.489	2722.932	91.474	10170.99	64	210.5263158	12.1	0.0121
565	24.05	2674.12	91.176	10137.86	31	101.9736842	11.9	0.0119
566	24.045	2673.564	91.067	10125.74	46	151.3157895	316	0.316
569	23.77	2642.986	91.071	10126.18	34	111.8421053	105	0.105
570	23.746	2640.318	91.078	10126.96	35	115.1315789	24.7	0.0247
574	24.039	2672.896	91.005	10118.85	33	108.5526316	382	0.382
575	23.985	2666.892	90.979	10115.96	33	108.5526316	42.2	0.0422
578	24.285	2700.249	91.495	10173.33	47	154.6052632	38.5	0.0385
581	24.164	2686.795	91.229	10143.75	47	154.6052632	357	0.357
586	23.84	2650.77	91.153	10135.3	74	243.4210526	110	0.11
591	24.04	2673.008	91.143	10134.19	51	167.7631579	31.5	0.0315
595	24.024	2671.229	91.09	10128.3	43	141.4473684	68.4	0.0684
597	23.866	2653.661	91.149	10134.86	43	141.4473684	230	0.23
599	23.468	2609.407	90.333	10044.13	66	217.1052632	87.6	0.0876
600	23.481	2610.852	90.367	10047.91	43	141.4473684	318	0.318
601	23.468	2609.407	90.321	10042.79	46	151.3157895	274	0.274
602	23.478	2610.519	90.305	10041.01	56	184.2105263	111	0.111
603	23.473	2609.963	90.279	10038.12	46	151.3157895	347	0.347
604	23.474	2610.074	90.256	10035.56	58	190.7894737	192	0.192
605	23.544	2617.857	90.624	10076.48	27	88.81578947	293	0.293
606	23.56	2619.636	90.653	10079.71	23	75.65789474	188	0.188
607	23.54	2617.413	90.673	10081.93	24	78.94736842	47.9	0.0479
608	23.594	2623.417	90.63	10077.15	21	69.07894737	312	0.312
609	23.588	2622.75	90.6	10073.81	54	177.6315789	224	0.224
610	23.572	2620.971	90.374	10048.69	108	355.2631579	14.3	0.0143
611	23.543	2617.746	90.389	10050.35	52	171.0526316	501	0.501
612	23.556	2619.192	90.428	10054.69	77	253.2894737	253	0.253
613	23.571	2620.859	90.424	10054.24	50	164.4736842	458	0.458
614	23.603	2624.418	90.359	10047.02	55	180.9210526	218	0.218
615	23.627	2627.086	90.312	10041.79	51	167.7631579	187	0.187
616	23.614	2625.641	90.335	10044.35	79	259.8684211	129	0.129
620	23.519	2615.078	90.505	10063.25	41	134.8684211	56.3	0.0563
621	23.524	2615.634	90.514	10064.25	56	184.2105263	11.7	0.0117
622	23.488	2611.631	90.511	10063.92	86	282.8947368	57.6	0.0576
623	23.565	2620.192	90.518	10064.7	76	250	11.7	0.0117
624	23.521	2615.3	90.209	10030.34	60	197.3684211	143	0.143
625	23.519	2615.078	90.257	10035.68	70	230.2631579	475	0.475
626	23.539	2617.301	90.289	10039.23	56	184.2105263	193	0.193
627	23.516	2614.744	90.287	10039.01	39	128.2894737	319	0.319
628	23.546	2618.08	90.337	10044.57	56	184.2105263	517	0.517
629	23.576	2621.415	90.307	10041.24	56	184.2105263	130	0.13

630	23.596	2623.639	90.272	10037.34	60	197.3684211	167	0.167
631	23.519	2615.078	90.443	10056.36	51	167.7631579	292	0.292
632	23.501	2613.076	90.438	10055.8	52	171.0526316	216	0.216
633	23.505	2613.521	90.468	10059.14	51	167.7631579	226	0.226
634	23.474	2610.074	90.456	10057.8	20	65.78947368	212	0.212
635	23.489	2611.742	90.469	10059.25	51	167.7631579	70.2	0.0702
636	23.429	2605.071	90.493	10061.92	26	85.52631579	76.1	0.0761
637	23.441	2606.405	90.491	10061.69	26	85.52631579	76.8	0.0768
638	23.472	2609.852	90.501	10062.81	51	167.7631579	108	0.108
641	22.969	2553.923	89.477	9948.948	77	253.2894737	259	0.259
642	22.984	2555.591	89.446	9945.501	49	161.1842105	97.3	0.0973
651	22.716	2525.792	89.581	9960.511	26	85.52631579	538	0.538
654	22.567	2509.225	89.322	9931.713	51	167.7631579	68	0.068
655	22.617	2514.784	89.317	9931.157	22	72.36842105	8.7	0.0087
656	22.624	2515.563	89.304	9929.712	50	164.4736842	97	0.097
658	22.71	2525.125	89.306	9929.934	41	134.8684211	88.3	0.0883
662	22.816	2536.911	89.567	9958.955	74	243.4210526	46.8	0.0468
665	22.826	2538.023	89.011	9897.133	43	141.4473684	501	0.501
667	22.915	2547.919	89.625	9965.404	22	72.36842105	18.6	0.0186
668	22.9	2546.251	89.656	9968.851	21	69.07894737	36.8	0.0368
669	22.87	2542.915	89.634	9966.404	24	78.94736842	109	0.109
671	22.587	2511.449	89.518	9953.506	33	108.5526316	15.8	0.0158
673	22.8	2535.132	89.643	9967.405	30	98.68421053	39.5	0.0395
674	22.812	2536.466	89.645	9967.628	69	226.9736842	55.9	0.0559
677	22.797	2534.798	89.589	9961.401	75	246.7105263	87.4	0.0874
679	22.826	2538.023	89.575	9959.844	62	203.9473684	137	0.137
681	22.83	2538.468	89.606	9963.291	67	220.3947368	18.7	0.0187
689	22.628	2516.007	89.122	9909.475	12	39.47368421	40.1	0.0401
690	22.685	2522.345	89.122	9909.475	223	733.5526316	108	0.108
691	22.711	2525.236	89.107	9907.807	23	75.65789474	72.9	0.0729
692	22.887	2544.806	89.535	9955.397	55	180.9210526	168	0.168
696	22.896	2545.806	89.508	9952.395	61	200.6578947	39.4	0.0394
698	22.753	2529.906	89.419	9942.499	44	144.7368421	33.8	0.0338
699	22.698	2523.791	89.434	9944.166	43	141.4473684	36.2	0.0362
700	22.825	2537.912	89.274	9926.376	53	174.3421053	65.7	0.0657
701	22.823	2537.689	89.331	9932.714	20	65.78947368	39.6	0.0396
705	22.672	2520.9	89.618	9964.625	16	52.63157895	127	0.127
706	22.709	2525.014	89.635	9966.516	23	75.65789474	15	0.015
707	22.739	2528.349	89.652	9968.406	31	101.9736842	453	0.453
708	22.751	2529.684	89.714	9975.3	16	52.63157895	571	0.571
709	22.78	2532.908	89.726	9976.634	36	118.4210526	355	0.355
714	22.855	2541.247	89.542	9956.175	39	128.2894737	39	0.039
715	22.865	2542.359	89.525	9954.285	49	161.1842105	62.8	0.0628
716	22.483	2499.885	89.011	9897.133	20	65.78947368	24.5	0.0245
718	22.392	2489.766	89.015	9897.578	24	78.94736842	15.4	0.0154
720	22.376	2487.987	89.031	9899.357	15	49.34210526	18.5	0.0185
722	22.49	2500.663	89.059	9902.47	10	32.89473684	24	0.024
724	22.607	2513.672	88.999	9895.799	44	144.7368421	221	0.221
725	22.558	2508.224	89.007	9896.688	35	115.1315789	192	0.192
726	22.564	2508.891	88.981	9893.797	26	85.52631579	73.5	0.0735

727	22.576	2510.225	88.965	9892.018	31	101.9736842	58.7	0.0587
728	22.605	2513.45	88.961	9891.574	45	148.0263158	315	0.315
730	22.902	2546.473	89.768	9981.304	18	59.21052632	317	0.317
731	22.927	2549.253	89.81	9985.974	25	82.23684211	103	0.103
732	22.898	2546.029	89.81	9985.974	18	59.21052632	128	0.128
733	22.855	2541.247	89.819	9986.975	21	69.07894737	46.9	0.0469
734	22.869	2542.804	89.748	9979.08	23	75.65789474	252	0.252
735	22.575	2510.114	89.659	9969.184	24	78.94736842	148	0.148
737	22.579	2510.559	89.665	9969.851	14	46.05263158	129	0.129
738	22.597	2512.56	89.641	9967.183	15	49.34210526	37.6	0.0376
739	22.629	2516.119	89.61	9963.736	22	72.36842105	424	0.424
740	22.677	2521.456	89.652	9968.406	24	78.94736842	472	0.472
741	22.642	2517.564	89.643	9967.405	23	75.65789474	339	0.339
742	23.374	2598.955	89.369	9936.939	46	151.3157895	216	0.216
743	23.411	2603.069	89.292	9928.377	49	161.1842105	49.5	0.0495
745	23.329	2593.952	89.345	9934.271	49	161.1842105	64.7	0.0647
748	23.041	2561.929	89.635	9966.516	251	825.6578947	13.2	0.0132
749	23.048	2562.707	89.644	9967.516	31	101.9736842	200	0.2
750	23.02	2559.594	89.716	9975.522	41	134.8684211	165	0.165
751	23.02	2559.594	89.664	9969.74	50	164.4736842	228	0.228
752	22.751	2529.684	89.02	9898.134	36	118.4210526	73.5	0.0735
753	22.745	2529.017	88.925	9887.571	30	98.68421053	262	0.262
754	22.751	2529.684	88.941	9889.35	92	302.6315789	266	0.266
756	22.693	2523.235	88.985	9894.242	43	141.4473684	136	0.136
757	22.683	2522.123	89.024	9898.579	39	128.2894737	82.8	0.0828
758	22.647	2518.12	88.934	9888.571	203	667.7631579	9.4	0.0094
759	22.86	2541.803	89.04	9900.358	148	486.8421053	187	0.187
760	22.917	2548.141	89.014	9897.467	44	144.7368421	92.5	0.0925
761	22.923	2548.808	89.096	9906.584	39	128.2894737	106	0.106
762	22.873	2543.249	89.084	9905.25	31	101.9736842	181	0.181
763	22.836	2539.135	89.011	9897.133	46	151.3157895	453	0.453
764	22.841	2539.691	88.974	9893.019	52	171.0526316	328	0.328
765	22.901	2546.362	88.949	9890.239	46	151.3157895	88	0.088
767	22.305	2480.093	89.11	9908.141	43	141.4473684	168	0.168
769	22.333	2483.206	89.04	9900.358	9	29.60526316	17.4	0.0174
770	22.711	2525.236	89.107	9907.807	44	144.7368421	143	0.143
772	22.703	2524.347	89.054	9901.914	30	98.68421053	227	0.227
773	22.57	2509.558	89.076	9904.36	46	151.3157895	56.2	0.0562
774	22.733	2527.682	89.297	9928.933	45	148.0263158	75.8	0.0758
775	22.782	2533.131	89.251	9923.819	182	598.6842105	16.6	0.0166
776	22.782	2533.131	89.251	9923.819	48	157.8947368	15.5	0.0155
777	22.778	2532.686	89.205	9918.704	49	161.1842105	270	0.27
778	22.679	2521.678	89.256	9924.375	39	128.2894737	233	0.233
779	22.721	2526.348	89.207	9918.926	49	161.1842105	291	0.291
780	22.765	2531.24	89.143	9911.81	38	125	108	0.108
781	22.795	2534.576	89.12	9909.253	41	134.8684211	319	0.319
782	22.504	2502.22	89.199	9918.037	55	180.9210526	330	0.33
783	22.414	2492.213	89.217	9920.038	59	194.0789474	261	0.261
785	22.535	2505.667	89.12	9909.253	13	42.76315789	86.2	0.0862
786	22.615	2514.562	89.15	9912.589	46	151.3157895	236	0.236

787	22.666	2520.233	89.876	9993.312	24	78.94736842	103	0.103
788	22.689	2522.79	89.865	9992.089	14	46.05263158	16.4	0.0164
789	22.606	2513.561	89.85	9990.422	9	29.60526316	45.6	0.0456
790	22.602	2513.116	89.887	9994.536	21	69.07894737	10.1	0.0101
791	22.608	2513.784	89.844	9989.754	18	59.21052632	177	0.177
792	22.782	2533.131	89.877	9993.424	22	72.36842105	480	0.48
793	22.841	2539.691	89.849	9990.31	25	82.23684211	96.9	0.0969
794	22.857	2541.47	89.872	9992.868	29	95.39473684	269	0.269
795	22.366	2486.876	89.071	9903.804	9	29.60526316	10	0.01
796	22.365	2486.764	89.086	9905.472	15	49.34210526	509	0.509
797	22.561	2508.558	89.863	9991.867	20	65.78947368	81.3	0.0813
799	22.601	2513.005	89.893	9995.203	25	82.23684211	472	0.472
800	22.583	2511.004	89.959	10002.54	29	95.39473684	27.2	0.0272
801	22.456	2496.883	89.859	9991.422	13	42.76315789	30.2	0.0302
803	22.287	2478.092	89.844	9989.754	10	32.89473684	60.1	0.0601
804	22.313	2480.982	89.854	9990.866	10	32.89473684	24.8	0.0248
805	22.663	2519.899	89.774	9981.971	29	95.39473684	130	0.13
806	22.715	2525.681	89.667	9970.074	19	62.5	635	0.635
808	22.704	2524.458	89.688	9972.409	15	49.34210526	234	0.234
809	22.732	2527.571	89.754	9979.747	30	98.68421053	26.2	0.0262
810	22.664	2520.01	89.783	9982.972	25	82.23684211	299	0.299
811	22.662	2519.788	89.798	9984.64	30	98.68421053	10.8	0.0108
815	23.16	2575.16	89.444	9945.278	55	180.9210526	203	0.203
816	23.161	2575.272	89.482	9949.504	52	171.0526316	40.4	0.0404
817	23.154	2574.493	89.511	9952.728	71	233.5526316	20	0.02
818	23.173	2576.606	89.505	9952.061	58	190.7894737	184	0.184
820	23.508	2613.855	89.341	9933.826	49	161.1842105	28.9	0.0289
822	23.409	2602.847	89.399	9940.275	53	174.3421053	106	0.106
824	23.374	2598.955	89.508	9952.395	58	190.7894737	9.1	0.0091
826	23.486	2611.408	89.428	9943.499	148	486.8421053	33.3	0.0333
827	23.485	2611.297	89.429	9943.611	20	65.78947368	10.8	0.0108
828	23.401	2601.957	89.6	9962.624	72	236.8421053	168	0.168
834	23.45	2607.406	89.573	9959.622	72	236.8421053	7.5	0.0075
835	23.119	2570.602	89.081	9904.916	35	115.1315789	107	0.107
836	23.104	2568.934	89.112	9908.363	92	302.6315789	72.4	0.0724
838	23.051	2563.041	89.055	9902.025	25	82.23684211	201	0.201
839	23.005	2557.926	89.038	9900.135	37	121.7105263	83.6	0.0836
840	22.979	2555.035	89.074	9904.138	40	131.5789474	107	0.107
841	22.965	2553.478	89.021	9898.245	40	131.5789474	49.6	0.0496
844	22.981	2555.257	89.392	9939.496	35	115.1315789	77.7	0.0777
846	23.046	2562.485	89.398	9940.164	49	161.1842105	355	0.355
847	23.019	2559.483	89.407	9941.164	55	180.9210526	283	0.283
849	23.191	2578.607	89.217	9920.038	22	72.36842105	77.8	0.0778
850	23.13	2571.825	89.306	9929.934	62	203.9473684	121	0.121
851	23.419	2603.959	88.822	9876.118	44	144.7368421	98.7	0.0987
852	23.43	2605.182	88.779	9871.337	40	131.5789474	15.5	0.0155
853	23.474	2610.074	88.836	9877.675	44	144.7368421	44.6	0.0446
855	23.44	2606.294	88.92	9887.015	50	164.4736842	67.2	0.0672
856	23.461	2608.629	88.961	9891.574	49	161.1842105	9.6	0.0096
857	23.501	2613.076	88.956	9891.018	43	141.4473684	131	0.131

858	23.433	2605.515	89.052	9901.692	45	148.0263158	37.2	0.0372
863	23.663	2631.089	89.356	9935.494	49	161.1842105	21.2	0.0212
864	23.68	2632.979	89.239	9922.484	24	78.94736842	83.8	0.0838
867	23.711	2636.426	89.151	9912.7	49	161.1842105	14.8	0.0148
868	23.693	2634.425	89.178	9915.702	49	161.1842105	281	0.281
869	23.643	2628.865	89.201	9918.259	54	177.6315789	30.8	0.0308
870	23.653	2629.977	89.048	9901.247	49	161.1842105	15.8	0.0158
871	23.719	2637.316	89.077	9904.472	44	144.7368421	18.9	0.0189
874	23.606	2624.751	89.075	9904.249	45	148.0263158	135	0.135
875	23.579	2621.749	89.129	9910.254	40	131.5789474	11.7	0.0117
877	23.901	2657.552	89.259	9924.708	35	115.1315789	377	0.377
878	23.906	2658.108	89.225	9920.928	37	121.7105263	11.7	0.0117
881	22.86	2541.803	89.877	9993.424	19	62.5	398	0.398
882	22.82	2537.356	89.874	9993.09	25	82.23684211	186	0.186
883	22.803	2535.466	89.901	9996.092	21	69.07894737	170	0.17
884	22.791	2534.131	89.876	9993.312	20	65.78947368	134	0.134
885	22.532	2505.333	89.59	9961.512	13	42.76315789	14	0.014
895	23.636	2628.087	89.374	9937.495	43	141.4473684	15.2	0.0152
899	24.011	2669.783	88.877	9882.234	39	128.2894737	135	0.135
900	24.096	2679.234	88.924	9887.46	31	101.9736842	665	0.665
906	22.715	2525.681	90.352	10046.24	292	960.5263158	42.8	0.0428
909	22.696	2523.568	90.377	10049.02	27	88.81578947	385	0.385
911	22.702	2524.235	90.357	10046.79	331	1088.815789	54	0.054
912	22.893	2545.473	90.506	10063.36	14	46.05263158	41.5	0.0415
914	23.546	2618.08	89.163	9914.034	45	148.0263158	24.3	0.0243
915	23.664	2631.2	89.132	9910.587	30	98.68421053	11.9	0.0119
921	24.058	2675.009	88.992	9895.02	49	161.1842105	1660	1.66
922	24.102	2679.901	88.985	9894.242	35	115.1315789	212	0.212
923	24.102	2679.901	88.985	9894.242	97	319.0789474	9.9	0.0099
924	24.01	2669.672	88.931	9888.238	41	134.8684211	75.7	0.0757
925	24.07	2676.343	88.96	9891.462	45	148.0263158	52.7	0.0527
926	24.024	2671.229	88.959	9891.351	36	118.4210526	98.4	0.0984
928	23.863	2653.327	88.975	9893.13	41	134.8684211	32.8	0.0328
929	23.891	2656.44	89.064	9903.026	36	118.4210526	63.6	0.0636
931	23.044	2562.262	89.603	9962.958	51	167.7631579	255	0.255
932	23.118	2570.49	88.93	9888.127	40	131.5789474	30.7	0.0307
933	23.056	2563.597	88.953	9890.684	199	654.6052632	21.7	0.0217
934	23.056	2563.597	88.953	9890.684	39	128.2894737	7.8	0.0078
936	23.011	2558.593	88.9	9884.791	41	134.8684211	38.4	0.0384
937	22.945	2551.255	88.936	9888.794	39	128.2894737	57.3	0.0573
938	23.015	2559.038	88.964	9891.907	44	144.7368421	15.7	0.0157
939	22.855	2541.247	89.19	9917.036	26	85.52631579	40.4	0.0404
940	22.826	2538.023	89.161	9913.812	51	167.7631579	308	0.308
941	22.907	2547.029	89.168	9914.59	39	128.2894737	93.2	0.0932
942	22.891	2545.25	89.267	9925.598	39	128.2894737	170	0.17
946	23.262	2586.502	89.178	9915.702	34	111.8421053	172	0.172
947	23.222	2582.054	89.149	9912.477	49	161.1842105	90.3	0.0903
948	23.17	2576.272	89.138	9911.254	25	82.23684211	132	0.132
950	23.178	2577.162	89.195	9917.592	148	486.8421053	10.5	0.0105
954	23.601	2624.195	88.775	9870.892	92	302.6315789	64.6	0.0646

955	23.544	2617.857	88.758	9869.002	38	125	130	0.13
956	23.498	2612.743	88.749	9868.001	45	148.0263158	119	0.119
957	23.617	2625.974	88.658	9857.883	40	131.5789474	120	0.12
958	23.599	2623.973	88.728	9865.666	30	98.68421053	33.5	0.0335
959	23.693	2634.425	88.799	9873.561	45	148.0263158	497	0.497
960	23.654	2630.088	88.713	9863.998	37	121.7105263	24	0.024
962	23.618	2626.085	88.92	9887.015	39	128.2894737	47.5	0.0475
964	23.644	2628.976	88.844	9878.564	115	378.2894737	70.4	0.0704
965	23.644	2628.976	88.844	9878.564	30	98.68421053	45.3	0.0453
966	23.816	2648.101	88.748	9867.89	20	65.78947368	12.8	0.0128
967	23.816	2648.101	88.748	9867.89	105	345.3947368	13.2	0.0132
969	23.91	2658.553	88.855	9879.787	39	128.2894737	38.2	0.0382
970	23.898	2657.219	88.734	9866.333	33	108.5526316	62.5	0.0625
971	23.851	2651.993	88.654	9857.438	39	128.2894737	58.4	0.0584
972	23.364	2597.843	89.193	9917.37	51	167.7631579	29.4	0.0294
974	23.295	2590.171	89.159	9913.589	51	167.7631579	90.9	0.0909
977	23.406	2602.513	89.131	9910.476	55	180.9210526	15.4	0.0154
978	23.406	2602.513	89.131	9910.476	134	440.7894737	7.4	0.0074
980	23.505	2613.521	89.046	9901.025	49	161.1842105	34.6	0.0346
981	23.566	2620.304	89.048	9901.247	49	161.1842105	30.4	0.0304
982	23.543	2617.746	89.074	9904.138	30	98.68421053	27.6	0.0276
983	23.044	2562.262	89.679	9971.408	49	161.1842105	248	0.248
985	23.258	2586.057	89.591	9961.623	61	200.6578947	37.2	0.0372
987	23.181	2577.495	89.645	9967.628	60	197.3684211	149	0.149
988	23.267	2587.058	89.021	9898.245	45	148.0263158	59	0.059
989	23.3	2590.727	88.99	9894.798	44	144.7368421	23.2	0.0232
990	23.274	2587.836	88.992	9895.02	48	157.8947368	52.6	0.0526
991	23.324	2593.396	89.031	9899.357	51	167.7631579	39.9	0.0399
992	23.3	2590.727	89.068	9903.471	42	138.1578947	27.8	0.0278
993	23.221	2581.943	89.048	9901.247	54	177.6315789	86.7	0.0867
994	23.248	2584.945	89.061	9902.693	40	131.5789474	68.6	0.0686
997	22.924	2548.92	89.354	9935.271	33	108.5526316	30.1	0.0301
998	23.001	2557.481	89.311	9930.49	57	187.5	71.9	0.0719
999	23.066	2564.709	89.285	9927.599	43	141.4473684	178	0.178
1000	23.066	2564.709	89.23	9921.484	53	174.3421053	96.8	0.0968
1001	23.018	2559.371	89.139	9911.365	34	111.8421053	224	0.224
1002	23.067	2564.82	89.118	9909.03	60	197.3684211	40.1	0.0401
1003	22.959	2552.811	89.136	9911.032	44	144.7368421	88.9	0.0889
1004	23.181	2577.495	89.4	9940.386	46	151.3157895	61.8	0.0618
1006	23.219	2581.721	89.346	9934.382	40	131.5789474	27.5	0.0275
1008	23.276	2588.058	89.381	9938.273	51	167.7631579	27.5	0.0275
1010	23.321	2593.062	89.267	9925.598	47	154.6052632	26.3	0.0263
1011	23.76	2641.874	88.942	9889.461	39	128.2894737	41.1	0.0411
1013	23.675	2632.423	88.943	9889.572	44	144.7368421	70.6	0.0706
1014	23.714	2636.76	88.913	9886.236	39	128.2894737	150	0.15
1015	23.732	2638.761	88.87	9881.455	42	138.1578947	103	0.103
1016	23.694	2634.536	88.802	9873.894	37	121.7105263	538	0.538
1017	23.761	2641.986	88.829	9876.897	41	134.8684211	30.4	0.0304
1020	23.564	2620.081	88.884	9883.012	13	42.76315789	36.4	0.0364
1021	23.523	2615.522	88.918	9886.792	13	42.76315789	66.2	0.0662

1022	23.536	2616.968	88.851	9879.343	40	131.5789474	22	0.022
1023	23.596	2623.639	88.842	9878.342	14	46.05263158	99.7	0.0997
1024	23.678	2632.757	88.684	9860.774	16	52.63157895	189	0.189
1025	23.628	2627.197	88.627	9854.436	148	486.8421053	228	0.228
1026	23.628	2627.197	88.627	9854.436	43	141.4473684	482	0.482
1027	23.717	2637.093	88.615	9853.102	40	131.5789474	70.8	0.0708
1028	23.817	2648.212	88.676	9859.884	44	144.7368421	357	0.357
1029	23.838	2650.547	88.642	9856.104	42	138.1578947	76.6	0.0766
1030	23.769	2642.875	88.598	9851.212	39	128.2894737	43.4	0.0434
1032	23.3	2590.727	88.91	9885.903	43	141.4473684	51.8	0.0518
1033	23.255	2585.723	88.886	9883.234	44	144.7368421	24	0.024
1034	23.282	2588.726	88.818	9875.673	44	144.7368421	10.4	0.0104
1036	23.295	2590.171	88.753	9868.446	38	125	96.9	0.0969
1038	23.388	2600.512	88.909	9885.792	50	164.4736842	557	0.557
1039	23.37	2598.51	88.974	9893.019	34	111.8421053	67.1	0.0671
1041	23.491	2611.964	89.28	9927.043	44	144.7368421	12.6	0.0126
1042	23.524	2615.634	89.299	9929.156	52	171.0526316	148	0.148
1043	23.562	2619.859	89.277	9926.71	44	144.7368421	33.2	0.0332
1044	23.54	2617.413	89.209	9919.149	37	121.7105263	129	0.129
1045	23.861	2653.105	89.037	9900.024	38	125	9	0.009
1047	23.744	2640.095	89.059	9902.47	36	118.4210526	35	0.035
1050	23.753	2641.096	89.127	9910.031	56	184.2105263	61.6	0.0616
1053	23.903	2657.775	89.121	9909.364	115	378.2894737	42.3	0.0423
1054	23.903	2657.775	89.121	9909.364	41	134.8684211	18.3	0.0183
1055	23.924	2660.11	88.969	9892.463	45	148.0263158	57.1	0.0571
1056	23.892	2656.551	88.935	9888.683	37	121.7105263	1030	1.03
1057	23.84	2650.77	88.913	9886.236	45	148.0263158	174	0.174
1060	22.713	2525.458	90.297	10040.12	28	92.10526316	248	0.248
1061	22.67	2520.677	90.325	10043.24	32	105.2631579	227	0.227
1062	22.997	2557.036	90.228	10032.45	20	65.78947368	359	0.359
1063	22.996	2556.925	90.213	10030.78	22	72.36842105	163	0.163
1064	22.965	2553.478	90.199	10029.23	23	75.65789474	44.7	0.0447
1067	22.939	2550.587	90.24	10033.79	22	72.36842105	290	0.29
1068	22.929	2549.476	90.242	10034.01	22	72.36842105	69.4	0.0694
1069	22.899	2546.14	90.3	10040.46	273	898.0263158	8.6	0.0086
1071	22.532	2505.333	90.342	10045.13	17	55.92105263	26	0.026
1073	22.566	2509.114	90.338	10044.68	17	55.92105263	137	0.137
1079	22.774	2532.241	90.159	10024.78	22	72.36842105	389	0.389
1081	22.798	2534.91	90.187	10027.89	23	75.65789474	149	0.149
1082	22.808	2536.022	90.187	10027.89	272	894.7368421	10.8	0.0108
1083	22.789	2533.909	90.152	10024	18	59.21052632	23.4	0.0234
1090	22.971	2554.145	90.153	10024.11	15	49.34210526	107	0.107
1093	22.989	2556.147	90.135	10022.11	34	111.8421053	319	0.319
1096	22.965	2553.478	90.086	10016.66	38	125	207	0.207
1097	22.931	2549.698	90.199	10029.23	23	75.65789474	80.6	0.0806
1098	22.961	2553.034	90.191	10028.34	22	72.36842105	248	0.248
1099	22.821	2537.467	90.252	10035.12	17	55.92105263	59.2	0.0592
1101	22.881	2544.138	90.246	10034.45	16	52.63157895	257	0.257
1102	22.892	2545.361	90.199	10029.23	318	1046.052632	8.4	0.0084
1103	22.892	2545.361	90.2	10029.34	23	75.65789474	23.4	0.0234

1104	22.835	2539.024	90.213	10030.78	23	75.65789474	21.4	0.0214
1112	22.357	2485.875	90.352	10046.24	17	55.92105263	11.8	0.0118
1127	22.638	2517.119	90.078	10015.77	15	49.34210526	7.2	0.0072
1128	22.604	2513.339	90.082	10016.22	14	46.05263158	26.4	0.0264
1129	22.575	2510.114	90.057	10013.44	17	55.92105263	11.6	0.0116
1138	22.993	2556.592	90.34	10044.9	15	49.34210526	667	0.667
1148	21.893	2434.283	90.141	10022.78	247	812.5	6.5	0.0065
1149	21.816	2425.721	90.126	10021.11	266	875	12.9	0.0129
1150	21.814	2425.499	90.124	10020.89	9	29.60526316	17.4	0.0174
1152	21.996	2445.735	90.211	10030.56	296	973.6842105	7.6	0.0076
1153	22.008	2447.07	90.285	10038.79	271	891.4473684	8.6	0.0086
1169	22.257	2474.756	89.946	10001.1	13	42.76315789	159	0.159
1171	22.346	2484.652	89.939	10000.32	11	36.18421053	7.3	0.0073
1173	22.743	2528.794	90.099	10018.11	14	46.05263158	21.1	0.0211
1177	22.73	2527.349	90.105	10018.77	16	52.63157895	14.6	0.0146
1178	22.727	2527.015	90.089	10017	13	42.76315789	11.8	0.0118
1185	23.34	2595.175	90.173	10026.34	20	65.78947368	86.7	0.0867
1186	23.287	2589.282	90.17	10026	19	62.5	289	0.289
1187	23.329	2593.952	90.209	10030.34	20	65.78947368	74.6	0.0746
1188	23.378	2599.4	90.16	10024.89	21	69.07894737	113	0.113
1189	23.411	2603.069	90.176	10026.67	19	62.5	66.8	0.0668
1190	23.387	2600.401	90.111	10019.44	18	59.21052632	82.4	0.0824
1191	23.365	2597.954	90.11	10019.33	21	69.07894737	62.4	0.0624
1193	23.084	2566.71	90.407	10052.35	22	72.36842105	576	0.576
1195	23.076	2565.82	90.384	10049.8	30	98.68421053	287	0.287
1196	23.038	2561.595	90.438	10055.8	24	78.94736842	290	0.29
1197	23.087	2567.044	90.462	10058.47	29	95.39473684	31.2	0.0312
1198	23.099	2568.378	90.483	10060.8	30	98.68421053	214	0.214
1216	22.533	2505.444	89.992	10006.21	22	72.36842105	53.2	0.0532
1217	22.55	2507.335	89.983	10005.21	33	108.5526316	14.5	0.0145
1218	22.582	2510.893	89.999	10006.99	14	46.05263158	246	0.246
1219	22.58	2510.67	89.966	10003.32	19	62.5	12.1	0.0121
1220	22.683	2522.123	89.963	10002.99	19	62.5	42	0.042
1222	22.606	2513.561	89.993	10006.32	17	55.92105263	8	0.008
1228	22.555	2507.89	90.086	10016.66	13	42.76315789	20.1	0.0201
1231	22.68	2521.789	90.285	10038.79	15	49.34210526	7.9	0.0079
1233	22.815	2536.8	89.947	10001.21	17	55.92105263	225	0.225
1235	22.791	2534.131	89.956	10002.21	18	59.21052632	50.3	0.0503
1237	22.698	2523.791	89.998	10006.88	21	69.07894737	66.6	0.0666
1238	22.713	2525.458	89.953	10001.87	19	62.5	110	0.11
1239	22.64	2517.342	90.181	10027.23	17	55.92105263	15.4	0.0154
1243	22.724	2526.682	90.234	10033.12	15	49.34210526	6.1	0.0061
1245	22.688	2522.679	90.204	10029.78	16	52.63157895	68.7	0.0687
1247	22.68	2521.789	90.175	10026.56	20	65.78947368	14	0.014
1253	23.174	2576.717	90.291	10039.46	23	75.65789474	128	0.128
1255	23.264	2586.724	90.227	10032.34	30	98.68421053	527	0.527
1256	23.185	2577.94	90.248	10034.68	19	62.5	447	0.447
1257	23.205	2580.164	90.05	10012.66	61	200.6578947	67.1	0.0671
1258	23.189	2578.385	90.09	10017.11	34	111.8421053	305	0.305
1259	23.184	2577.829	90.055	10013.22	57	187.5	80.2	0.0802

1261	23.227	2582.61	90.035	10010.99	29	95.39473684	627	0.627
1262	23.239	2583.944	90.036	10011.1	30	98.68421053	531	0.531
1263	23.197	2579.274	89.986	10005.54	58	190.7894737	103	0.103
1270	22.637	2517.008	90.278	10038.01	18	59.21052632	29.4	0.0294
1271	22.643	2517.675	90.334	10044.24	18	59.21052632	550	0.55
1272	23.16	2575.16	90.14	10022.67	35	115.1315789	233	0.233
1273	23.179	2577.273	90.101	10018.33	37	121.7105263	325	0.325
1274	23.223	2582.165	90.159	10024.78	39	128.2894737	552	0.552
1275	23.164	2575.605	90.172	10026.22	34	111.8421053	348	0.348
1276	23.081	2566.376	90.302	10040.68	37	121.7105263	369	0.369
1277	23.071	2565.264	90.256	10035.56	25	82.23684211	466	0.466
1279	23.073	2565.487	90.238	10033.56	25	82.23684211	152	0.152
1283	23.102	2568.711	90.191	10028.34	19	62.5	458	0.458
1284	23.217	2581.498	90.499	10062.58	29	95.39473684	98.2	0.0982
1285	23.197	2579.274	90.49	10061.58	39	128.2894737	200	0.2
1286	23.196	2579.163	90.45	10057.14	33	108.5526316	135	0.135
1288	23.182	2577.607	90.458	10058.03	52	171.0526316	104	0.104
1289	23.189	2578.385	90.419	10053.69	39	128.2894737	124	0.124
1291	23.31	2591.839	90.435	10055.47	20	65.78947368	253	0.253
1292	23.262	2586.502	90.475	10059.92	28	92.10526316	108	0.108
1293	23.276	2588.058	90.485	10061.03	22	72.36842105	216	0.216
1294	23.288	2589.393	90.43	10054.91	25	82.23684211	298	0.298
1295	23.271	2587.502	90.393	10050.8	24	78.94736842	111	0.111
1296	23.237	2583.722	90.416	10053.36	20	65.78947368	27.2	0.0272
1297	22.887	2544.806	89.903	9996.315	18	59.21052632	224	0.224
1299	22.876	2543.582	89.925	9998.761	34	111.8421053	263	0.263
1300	22.916	2548.03	89.86	9991.533	24	78.94736842	315	0.315
1303	22.985	2555.702	89.883	9994.091	29	95.39473684	145	0.145
1304	23.159	2575.049	89.805	9985.418	30	98.68421053	69.6	0.0696
1305	23.182	2577.607	89.789	9983.639	34	111.8421053	49.5	0.0495
1306	23.193	2578.83	89.735	9977.635	39	128.2894737	65.3	0.0653
1308	23.211	2580.831	89.718	9975.744	34	111.8421053	380	0.38
1309	23.238	2583.833	89.773	9981.86	34	111.8421053	132	0.132
1310	23.289	2589.504	89.756	9979.97	39	128.2894737	98.6	0.0986
1311	23.168	2576.05	90.354	10046.46	22	72.36842105	540	0.54
1312	23.19	2578.496	90.317	10042.35	15	49.34210526	84.2	0.0842
1313	23.175	2576.828	90.302	10040.68	15	49.34210526	330	0.33
1314	23.206	2580.275	90.325	10043.24	16	52.63157895	133	0.133
1316	23.241	2584.167	90.358	10046.91	49	161.1842105	99.9	0.0999
1317	23.251	2585.279	90.343	10045.24	22	72.36842105	84.2	0.0842
1318	23.198	2579.386	90.339	10044.79	20	65.78947368	288	0.288
1320	23.112	2569.823	90.021	10009.43	66	217.1052632	86.2	0.0862
1321	23.033	2561.039	90.033	10010.77	37	121.7105263	521	0.521
1322	22.927	2549.253	90.005	10007.66	26	85.52631579	206	0.206
1324	22.992	2556.48	90.046	10012.21	28	92.10526316	166	0.166
1325	22.997	2557.036	89.985	10005.43	24	78.94736842	231	0.231
1326	23.236	2583.611	89.9	9995.981	68	223.6842105	228	0.228
1327	23.284	2588.948	89.929	9999.206	53	174.3421053	145	0.145
1328	23.229	2582.833	89.712	9975.077	45	148.0263158	346	0.346
1329	23.265	2586.835	89.676	9971.074	20	65.78947368	41.6	0.0416

1330	23.288	2589.393	89.706	9974.41	53	174.3421053	278	0.278
1331	23.332	2594.285	89.658	9969.073	39	128.2894737	48.6	0.0486
1332	23.336	2594.73	89.631	9966.071	53	174.3421053	12.3	0.0123
1333	23.32	2592.951	89.758	9980.192	33	108.5526316	181	0.181
1334	23.459	2608.406	89.986	10005.54	29	95.39473684	191	0.191
1335	23.407	2602.624	90.043	10011.88	34	111.8421053	285	0.285
1336	23.367	2598.177	90.074	10015.33	24	78.94736842	307	0.307
1337	23.307	2591.505	90.071	10014.99	25	82.23684211	143	0.143
1338	23.329	2593.952	90.006	10007.77	25	82.23684211	468	0.468
1339	23.38	2599.622	89.986	10005.54	31	101.9736842	233	0.233
1340	23.376	2599.177	89.957	10002.32	21	69.07894737	103	0.103
1341	23.594	2623.417	89.716	9975.522	44	144.7368421	58.8	0.0588
1342	23.648	2629.421	89.702	9973.965	22	72.36842105	7.2	0.0072
1343	23.69	2634.091	89.676	9971.074	20	65.78947368	25	0.025
1344	23.14	2572.937	90.459	10058.14	32	105.2631579	86.6	0.0866
1346	23.121	2570.824	90.418	10053.58	31	101.9736842	590	0.59
1348	23.164	2575.605	90.407	10052.35	44	144.7368421	21.1	0.0211
1350	23.367	2598.177	90.256	10035.56	24	78.94736842	461	0.461
1351	23.348	2596.064	90.283	10038.57	20	65.78947368	107	0.107
1353	23.305	2591.283	90.303	10040.79	25	82.23684211	128	0.128
1354	23.33	2594.063	90.402	10051.8	25	82.23684211	540	0.54
1355	23.331	2594.174	90.37	10048.24	15	49.34210526	52.8	0.0528
1356	22.944	2551.143	89.83	9988.198	29	95.39473684	602	0.602
1357	23.108	2569.379	89.749	9979.191	34	111.8421053	562	0.562
1358	23.063	2564.375	89.763	9980.748	39	128.2894737	122	0.122
1359	23.072	2565.376	89.853	9990.755	29	95.39473684	301	0.301
1360	23.137	2572.603	89.934	9999.761	24	78.94736842	160	0.16
1361	23.097	2568.155	89.893	9995.203	34	111.8421053	321	0.321
1362	23.034	2561.15	89.819	9986.975	34	111.8421053	199	0.199
1363	23.026	2560.261	89.905	9996.537	82	269.7368421	175	0.175
1364	23.043	2562.151	89.86	9991.533	24	78.94736842	121	0.121
1365	23.316	2592.506	89.872	9992.868	53	174.3421053	119	0.119
1366	23.316	2592.506	89.872	9992.868	75	246.7105263	281	0.281
1367	23.234	2583.388	90.013	10008.55	63	207.2368421	135	0.135
1368	23.268	2587.169	90.018	10009.1	24	78.94736842	346	0.346
1369	23.318	2592.728	89.948	10001.32	39	128.2894737	588	0.588
1371	23.363	2597.732	89.755	9979.858	30	98.68421053	132	0.132
1372	23.328	2593.84	89.716	9975.522	20	65.78947368	66.3	0.0663
1373	23.368	2598.288	89.658	9969.073	57	187.5	77.8	0.0778
1375	23.445	2606.85	89.637	9966.738	60	197.3684211	101	0.101
1377	23.474	2610.074	89.713	9975.188	39	128.2894737	152	0.152
1378	23.501	2613.076	89.733	9977.412	25	82.23684211	35.2	0.0352
1379	23.472	2609.852	90.029	10010.32	138	453.9473684	21	0.021
1380	23.472	2609.852	90.029	10010.32	148	486.8421053	6.7	0.0067
1381	23.448	2607.183	90.081	10016.11	34	111.8421053	240	0.24
1382	23.531	2616.412	90.028	10010.21	29	95.39473684	20.7	0.0207
1383	23.487	2611.52	89.961	10002.76	44	144.7368421	290	0.29
1384	23.523	2615.522	89.958	10002.43	29	95.39473684	77.9	0.0779
1387	23.677	2632.646	89.537	9955.619	52	171.0526316	15.6	0.0156
1391	23.823	2648.879	89.364	9936.383	17	55.92105263	13.6	0.0136

1394	23.872	2654.328	89.384	9938.607	35	115.1315789	158	0.158
1396	23.677	2632.646	89.454	9946.39	43	141.4473684	8.7	0.0087
1398	23.505	2613.521	89.593	9961.846	50	164.4736842	7.7	0.0077
1399	23.534	2616.745	89.568	9959.066	67	220.3947368	104	0.104
1402	23.533	2616.634	89.677	9971.186	26	85.52631579	228	0.228
1403	23.584	2622.305	89.708	9974.633	34	111.8421053	128	0.128
1404	23.388	2600.512	89.874	9993.09	25	82.23684211	284	0.284
1405	23.373	2598.844	89.901	9996.092	35	115.1315789	95.6	0.0956
1406	23.42	2604.07	89.916	9997.76	29	95.39473684	280	0.28
1407	23.45	2607.406	89.874	9993.09	35	115.1315789	151	0.151
1408	23.484	2611.186	89.881	9993.868	44	144.7368421	103	0.103
1409	23.503	2613.299	89.899	9995.87	38	125	204	0.204
1410	23.526	2615.856	89.88	9993.757	15	49.34210526	924	0.924
1411	23.583	2622.194	89.938	10000.21	29	95.39473684	427	0.427
1412	23.576	2621.415	89.962	10002.87	19	62.5	6.6	0.0066
1416	23.722	2637.649	89.512	9952.839	44	144.7368421	41	0.041
1417	23.764	2642.319	89.493	9950.727	42	138.1578947	62.6	0.0626
1420	23.743	2639.984	89.798	9984.64	24	78.94736842	314	0.314
1421	23.726	2638.094	89.752	9979.525	21	69.07894737	31.3	0.0313
1422	23.754	2641.207	89.736	9977.746	24	78.94736842	33.8	0.0338
1424	23.734	2638.983	89.675	9970.963	19	62.5	220	0.22
1425	23.775	2643.542	89.7	9973.743	26	85.52631579	83.3	0.0833
1426	23.78	2644.098	89.618	9964.625	49	161.1842105	27.3	0.0273
1428	23.76	2641.874	89.642	9967.294	19	62.5	359	0.359
1435	22.764	2531.129	90.526	10065.59	20	65.78947368	120	0.12
1437	22.821	2537.467	90.599	10073.7	20	65.78947368	862	0.862
1438	22.815	2536.8	90.53	10066.03	16	52.63157895	345	0.345
1439	22.808	2536.022	90.306	10041.12	19	62.5	550	0.55
1441	22.801	2535.243	90.328	10043.57	22	72.36842105	140	0.14
1443	22.831	2538.579	90.323	10043.01	21	69.07894737	106	0.106
1444	22.776	2532.463	90.309	10041.46	23	75.65789474	546	0.546
1447	22.782	2533.131	90.267	10036.79	14	46.05263158	735	0.735
1449	24.698	2746.171	88.125	9798.619	39	128.2894737	58.6	0.0586
1450	24.708	2747.283	88.084	9794.06	42	138.1578947	63.9	0.0639
1451	24.747	2751.619	88.095	9795.283	46	151.3157895	40.5	0.0405
1453	24.583	2733.384	88.199	9806.847	27	88.81578947	6.4	0.0064
1470	24.773	2754.51	88.258	9813.407	27	88.81578947	9.9	0.0099
1478	24.836	2761.515	88.309	9819.078	45	148.0263158	8.9	0.0089
1495	24.369	2709.589	88.762	9869.447	22	72.36842105	19.4	0.0194
1496	24.381	2710.923	88.797	9873.338	41	134.8684211	12.2	0.0122
1498	24.366	2709.256	88.875	9882.011	47	154.6052632	63.8	0.0638
1506	24.562	2731.049	88.647	9856.66	38	125	58.2	0.0582
1509	24.63	2738.61	88.669	9859.106	42	138.1578947	14.1	0.0141
1511	24.555	2730.27	88.791	9872.671	23	75.65789474	14.3	0.0143
1518	24.279	2699.582	88.79	9872.56	33	108.5526316	41.2	0.0412
1529	24.224	2693.467	88.847	9878.898	39	128.2894737	15.4	0.0154
1532	24.378	2710.59	88.526	9843.206	40	131.5789474	62.8	0.0628
1535	24.45	2718.596	88.55	9845.875	24	78.94736842	73.5	0.0735
1536	24.454	2719.04	88.582	9849.433	40	131.5789474	91.8	0.0918
1541	24.451	2718.707	88.763	9869.558	40	131.5789474	40.6	0.0406

1571	24.339	2706.253	89.246	9923.263	31	101.9736842	17.8	0.0178
1585	24.418	2715.037	89.001	9896.021	41	134.8684211	11.6	0.0116
1599	23.865	2653.549	89.626	9965.515	24	78.94736842	80.7	0.0807
1600	23.881	2655.328	89.665	9969.851	16	52.63157895	65.5	0.0655
1601	23.917	2659.331	89.646	9967.739	21	69.07894737	80.6	0.0806
1602	23.951	2663.112	89.652	9968.406	23	75.65789474	25.5	0.0255
1603	23.961	2664.224	89.612	9963.958	25	82.23684211	30.5	0.0305
1604	24.037	2672.674	89.606	9963.291	21	69.07894737	58.6	0.0586
1605	24.054	2674.564	89.641	9967.183	39	128.2894737	47.7	0.0477
1612	23.96	2664.112	89.599	9962.513	20	65.78947368	57.8	0.0578
1618	24.151	2685.35	89.496	9951.06	38	125	10.1	0.0101
1631	24.073	2676.677	89.187	9916.703	43	141.4473684	15.5	0.0155
1632	24.02	2670.784	89.23	9921.484	36	118.4210526	27.2	0.0272
1639	24.052	2674.342	89.055	9902.025	31	101.9736842	493	0.493
1640	24.03	2671.896	89.094	9906.362	31	101.9736842	390	0.39
1641	24.03	2671.896	89.102	9907.251	30	98.68421053	326	0.326
1643	24.135	2683.571	89.141	9911.588	34	111.8421053	56.1	0.0561
1645	24.053	2674.453	89.548	9956.842	44	144.7368421	51.3	0.0513
1646	24.075	2676.899	89.53	9954.841	44	144.7368421	64.6	0.0646
1653	23.96	2664.112	89.607	9963.402	23	75.65789474	341	0.341
1654	24.076	2677.01	89.606	9963.291	28	92.10526316	213	0.213
1655	23.614	2625.641	91.102	10129.63	24	78.94736842	134	0.134
1657	23.715	2636.871	91.061	10125.07	36	118.4210526	159	0.159
1659	23.626	2626.975	91.147	10134.63	34	111.8421053	83.4	0.0834
1661	23.536	2616.968	90.716	10086.71	100	328.9473684	72.7	0.0727
1662	23.494	2612.298	90.719	10087.05	29	95.39473684	698	0.698
1663	23.484	2611.186	90.786	10094.5	29	95.39473684	208	0.208
1664	23.608	2624.974	90.799	10095.94	24	78.94736842	181	0.181
1665	23.574	2621.193	90.786	10094.5	24	78.94736842	134	0.134
1666	23.53	2616.301	90.755	10091.05	29	95.39473684	276	0.276
1667	23.53	2616.301	90.78	10093.83	29	95.39473684	222	0.222
1668	23.533	2616.634	90.831	10099.5	18	59.21052632	260	0.26
1669	23.489	2611.742	91.007	10119.07	28	92.10526316	203	0.203
1670	23.462	2608.74	91.022	10120.74	30	98.68421053	96.4	0.0964
1671	23.478	2610.519	90.955	10113.29	25	82.23684211	396	0.396
1672	23.444	2606.738	90.957	10113.51	31	101.9736842	243	0.243
1673	23.403	2602.18	90.963	10114.18	30	98.68421053	259	0.259
1674	23.361	2597.51	90.945	10112.17	25	82.23684211	157	0.157
1675	23.425	2604.626	90.911	10108.39	25	82.23684211	340	0.34
1676	23.476	2610.296	90.909	10108.17	31	101.9736842	407	0.407
1677	23.639	2628.42	90.933	10110.84	105	345.3947368	70.8	0.0708
1678	23.639	2628.42	90.933	10110.84	30	98.68421053	327	0.327
1679	23.768	2642.764	90.954	10113.18	38	125	259	0.259
1680	23.754	2641.207	90.995	10117.73	27	88.81578947	388	0.388
1681	23.717	2637.093	90.985	10116.62	28	92.10526316	387	0.387
1682	23.615	2625.752	90.986	10116.73	25	82.23684211	143	0.143
1683	23.616	2625.863	90.921	10109.51	24	78.94736842	331	0.331
1684	23.555	2619.08	90.909	10108.17	20	65.78947368	412	0.412
1685	23.845	2651.326	90.791	10095.05	25	82.23684211	210	0.21
1686	23.848	2651.659	90.841	10100.61	23	75.65789474	233	0.233

1687	23.824	2648.991	90.787	10094.61	22	72.36842105	41.9	0.0419
1688	23.775	2643.542	90.802	10096.27	22	72.36842105	735	0.735
1689	23.702	2635.425	90.778	10093.61	30	98.68421053	200	0.2
1690	23.18	2577.384	91.244	10145.42	98	322.3684211	11.6	0.0116
1691	23.144	2573.381	91.238	10144.75	16	52.63157895	77	0.077
1692	23.098	2568.267	91.247	10145.75	15	49.34210526	68	0.068
1693	23.079	2566.154	91.204	10140.97	15	49.34210526	110	0.11
1695	23.138	2572.714	91.145	10134.41	15	49.34210526	668	0.668
1696	23.163	2575.494	91.199	10140.42	52	171.0526316	44.7	0.0447
1697	23.152	2574.271	90.691	10083.93	20	65.78947368	384	0.384
1704	23.488	2611.631	91.057	10124.63	28	92.10526316	63.2	0.0632
1705	23.677	2632.646	91.012	10119.62	28	92.10526316	274	0.274
1706	23.647	2629.31	90.999	10118.18	28	92.10526316	164	0.164
1707	23.607	2624.862	90.991	10117.29	29	95.39473684	115	0.115
1708	23.604	2624.529	90.988	10116.96	75	246.7105263	6.1	0.0061
1709	23.585	2622.416	90.96	10113.84	29	95.39473684	452	0.452
1710	23.577	2621.527	91.041	10122.85	29	95.39473684	114	0.114
1711	23.552	2618.747	90.932	10110.73	33	108.5526316	182	0.182
1712	23.495	2612.409	90.977	10115.73	29	95.39473684	202	0.202
1713	23.532	2616.523	91.007	10119.07	28	92.10526316	115	0.115
1714	23.552	2618.747	90.987	10116.84	35	115.1315789	261	0.261
1715	23.071	2565.264	91.338	10155.87	21	69.07894737	10.4	0.0104
1716	23.125	2571.269	91.331	10155.09	15	49.34210526	108	0.108
1717	23.142	2573.159	91.286	10150.09	22	72.36842105	110	0.11
1719	23.249	2585.056	91.267	10147.98	39	128.2894737	87.4	0.0874
1720	23.324	2593.396	91.218	10142.53	39	128.2894737	138	0.138
1721	23.299	2590.616	91.264	10147.64	39	128.2894737	18.8	0.0188
1723	23.829	2649.547	90.941	10111.73	52	171.0526316	328	0.328
1724	23.84	2650.77	90.98	10116.07	24	78.94736842	70.7	0.0707
1725	23.888	2656.107	90.968	10114.73	30	98.68421053	66.2	0.0662
1726	23.938	2661.666	91.008	10119.18	30	98.68421053	376	0.376
1727	23.916	2659.22	91.004	10118.73	47	154.6052632	51.5	0.0515
1728	23.793	2645.544	90.992	10117.4	43	141.4473684	388	0.388
1729	23.72	2637.427	90.798	10095.83	15	49.34210526	213	0.213
1730	23.732	2638.761	90.799	10095.94	18	59.21052632	154	0.154
1732	23.672	2632.09	90.818	10098.05	25	82.23684211	105	0.105
1734	23.657	2630.422	90.786	10094.5	20	65.78947368	68.1	0.0681
1735	23.722	2637.649	90.851	10101.72	15	49.34210526	160	0.16
1736	23.111	2569.712	91.115	10131.08	29	95.39473684	188	0.188
1737	23.111	2569.712	91.082	10127.41	24	78.94736842	525	0.525
1738	23.151	2574.16	91.051	10123.96	20	65.78947368	276	0.276
1739	23.193	2578.83	91.096	10128.96	26	85.52631579	148	0.148
1740	23.264	2586.724	91.169	10137.08	40	131.5789474	170	0.17
1741	23.299	2590.616	91.13	10132.74	22	72.36842105	102	0.102
1742	23.331	2594.174	91.143	10134.19	23	75.65789474	12.8	0.0128
1743	23.27	2587.391	91.045	10123.29	25	82.23684211	311	0.311
1755	23.34	2595.175	90.89	10106.06	22	72.36842105	51.3	0.0513
1756	23.35	2596.287	90.828	10099.17	21	69.07894737	395	0.395
1757	23.342	2595.397	90.841	10100.61	33	108.5526316	284	0.284
1758	23.39	2600.734	90.85	10101.61	22	72.36842105	199	0.199

1759	23.46	2608.517	90.824	10098.72	22	72.36842105	278	0.278
1760	23.429	2605.071	90.845	10101.06	23	75.65789474	398	0.398
1761	23.371	2598.621	90.917	10109.06	22	72.36842105	234	0.234
1762	23.306	2591.394	90.949	10112.62	23	75.65789474	414	0.414
1763	23.262	2586.502	90.995	10117.73	20	65.78947368	383	0.383
1764	23.396	2601.401	90.601	10073.93	20	65.78947368	278	0.278
1766	23.38	2599.622	90.65	10079.37	20	65.78947368	508	0.508
1767	23.338	2594.952	90.64	10078.26	19	62.5	579	0.579
1768	23.136	2572.492	90.746	10090.05	15	49.34210526	229	0.229
1769	23.083	2566.599	90.77	10092.72	23	75.65789474	571	0.571
1770	23.111	2569.712	90.767	10092.38	15	49.34210526	475	0.475
1771	23.119	2570.602	90.731	10088.38	15	49.34210526	523	0.523
1772	23.161	2575.272	90.721	10087.27	18	59.21052632	367	0.367
1773	23.209	2580.609	90.734	10088.71	21	69.07894737	502	0.502
1774	23.204	2580.053	90.799	10095.94	15	49.34210526	128	0.128
1775	23.169	2576.161	90.831	10099.5	18	59.21052632	123	0.123
1776	23.166	2575.828	90.762	10091.83	21	69.07894737	644	0.644
1777	23.345	2595.731	90.707	10085.71	59	194.0789474	466	0.466
1778	23.349	2596.175	90.755	10091.05	20	65.78947368	644	0.644
1779	23.371	2598.621	90.773	10093.05	34	111.8421053	225	0.225
1780	23.32	2592.951	90.685	10083.27	24	78.94736842	407	0.407
1781	23.097	2568.155	90.86	10102.72	19	62.5	126	0.126
1782	23.1	2568.489	90.882	10105.17	19	62.5	816	0.816
1783	23.126	2571.38	90.936	10111.17	15	49.34210526	527	0.527
1784	23.145	2573.493	90.858	10102.5	24	78.94736842	559	0.559
1785	23.162	2575.383	90.656	10080.04	28	92.10526316	458	0.458
1786	23.204	2580.053	90.643	10078.6	29	95.39473684	609	0.609
1788	23.225	2582.388	90.661	10080.6	39	128.2894737	471	0.471
1789	23.259	2586.168	90.678	10082.49	34	111.8421053	496	0.496
1790	23.294	2590.06	90.666	10081.15	24	78.94736842	374	0.374
1791	23.26	2586.279	90.696	10084.49	29	95.39473684	175	0.175
1792	23.253	2585.501	90.751	10090.6	31	101.9736842	604	0.604
1793	23.428	2604.959	91.06	10124.96	22	72.36842105	191	0.191
1794	23.41	2602.958	91.027	10121.29	30	98.68421053	288	0.288
1796	23.374	2598.955	91.053	10124.18	50	164.4736842	14.2	0.0142
1797	23.382	2599.845	90.986	10116.73	33	108.5526316	151	0.151
1798	23.345	2595.731	90.982	10116.29	29	95.39473684	320	0.32
1799	23.287	2589.282	91.033	10121.96	20	65.78947368	171	0.171
1800	23.327	2593.729	91.057	10124.63	24	78.94736842	114	0.114
1801	23.347	2595.953	91.095	10128.85	47	154.6052632	56.9	0.0569
1802	23.217	2581.498	90.878	10104.72	25	82.23684211	526	0.526
1803	23.224	2582.277	90.795	10095.5	24	78.94736842	434	0.434
1804	23.261	2586.391	90.788	10094.72	24	78.94736842	414	0.414
1805	23.307	2591.505	90.788	10094.72	24	78.94736842	456	0.456
1806	23.208	2580.498	90.862	10102.95	24	78.94736842	490	0.49
1807	23.244	2584.5	90.854	10102.06	23	75.65789474	586	0.586
1808	23.261	2586.391	90.817	10097.94	26	85.52631579	205	0.205
1809	23.086	2566.932	90.644	10078.71	18	59.21052632	322	0.322
1810	23.046	2562.485	90.646	10078.93	25	82.23684211	203	0.203
1811	23.11	2569.601	90.656	10080.04	16	52.63157895	529	0.529

1812	22.651	2518.565	90.92	10109.39	9	29.60526316	20.4	0.0204
1813	22.587	2511.449	90.997	10117.96	9	29.60526316	82.6	0.0826
1819.2	23.15493	2574.597	90.74588	10090.03	21.72644816	71.46857946	407.422	0.407422
1820.5	23.15152	2574.217	90.74237	10089.64	21.62299732	71.12828066	409.996	0.409996
1821.8	23.1481	2573.837	90.73885	10089.25	21.51954649	70.78798186	412.571	0.412571
1823	23.14468	2573.457	90.73534	10088.86	21.41609565	70.44768306	415.145	0.415145
1824.3	23.14127	2573.078	90.73182	10088.47	21.31264482	70.10738426	417.719	0.417719
1825.6	23.13785	2572.698	90.72831	10088.08	21.20919398	69.76708546	420.294	0.420294
1826.9	23.13443	2572.318	90.7248	10087.69	21.10574315	69.42678666	422.868	0.422868
1828.1	23.13102	2571.938	90.72128	10087.3	21.00229231	69.08648786	425.442	0.425442
1829.4	23.1276	2571.558	90.71777	10086.91	20.89884148	68.74618907	428.017	0.428017
1830.7	23.12418	2571.178	90.71426	10086.52	20.79539064	68.40589027	430.591	0.430591
1832	23.12077	2570.798	90.71074	10086.13	20.69193981	68.06559147	433.165	0.433165
1833.2	23.11735	2570.418	90.70723	10085.74	20.58848897	67.72529267	435.74	0.43574
1834.5	23.11393	2570.038	90.70372	10085.35	20.48503814	67.38499387	438.314	0.438314
1835.8	23.11052	2569.658	90.7002	10084.96	20.3815873	67.04469507	440.888	0.440888
1837.1	23.1071	2569.279	90.69669	10084.56	20.27813647	66.70439627	443.463	0.443463
1838.3	23.10368	2568.899	90.69317	10084.17	20.17468563	66.36409747	446.037	0.446037
1839.6	23.10027	2568.519	90.68966	10083.78	20.0712348	66.02379867	448.611	0.448611
1840.9	23.09685	2568.139	90.68615	10083.39	19.96778396	65.68349988	451.186	0.451186
1842.1	23.09343	2567.759	90.68263	10083	19.86433313	65.34320108	453.76	0.45376
1843.4	23.09002	2567.379	90.67912	10082.61	19.76088229	65.00290228	456.334	0.456334
1844.7	23.0866	2566.999	90.67561	10082.22	19.65743146	64.66260348	458.908	0.458908
1846	23.08318	2566.619	90.67209	10081.83	19.55398062	64.32230468	461.483	0.461483
1847.2	23.07977	2566.239	90.66858	10081.44	19.45052979	63.98200588	464.057	0.464057
1848.5	23.07635	2565.859	90.66506	10081.05	19.34707895	63.64170708	466.631	0.466631
1849.8	23.07293	2565.48	90.66155	10080.66	19.24362812	63.30140828	469.206	0.469206
1851.1	23.06952	2565.1	90.65804	10080.27	19.14017728	62.96110948	471.78	0.47178
1852.3	23.0661	2564.72	90.65452	10079.88	19.03672645	62.62081068	474.354	0.474354
1853.6	23.06268	2564.34	90.65101	10079.49	18.93327561	62.28051189	476.929	0.476929
1854.9	23.05927	2563.96	90.6475	10079.1	18.82982478	61.94021309	479.503	0.479503
1856.2	23.05585	2563.58	90.64398	10078.7	18.72637394	61.59991429	482.077	0.482077
1857.4	23.05243	2563.2	90.64047	10078.31	18.62292311	61.25961549	484.652	0.484652
1858.7	23.04902	2562.82	90.63695	10077.92	18.51947227	60.91931669	487.226	0.487226
1860	23.0456	2562.44	90.63344	10077.53	18.41602144	60.57901789	489.8	0.4898
1861.3	23.04218	2562.06	90.62993	10077.14	18.3125706	60.23871909	492.375	0.492375
1862.5	23.03877	2561.681	90.62641	10076.75	18.20911977	59.89842029	494.949	0.494949
1863.8	23.03535	2561.301	90.6229	10076.36	18.10566893	59.55812149	497.523	0.497523
1865.1	23.03193	2560.921	90.61939	10075.97	18.0022181	59.2178227	500.098	0.500098
1866.3	23.02852	2560.541	90.61587	10075.58	17.89876726	58.8775239	502.672	0.502672
1867.6	23.0251	2560.161	90.61236	10075.19	17.79531643	58.5372251	505.246	0.505246
1868.9	23.02168	2559.781	90.60884	10074.8	17.69186559	58.1969263	507.821	0.507821
1870.2	23.01827	2559.401	90.60533	10074.41	17.58841476	57.8566275	510.395	0.510395
1871.4	23.01485	2559.021	90.60182	10074.02	17.48496392	57.5163287	512.969	0.512969
1872.7	23.01143	2558.641	90.5983	10073.63	17.38151309	57.1760299	515.544	0.515544
1874	23.00802	2558.261	90.59479	10073.23	17.27806226	56.8357311	518.118	0.518118
1875.3	23.0046	2557.882	90.59128	10072.84	17.17461142	56.4954323	520.692	0.520692
1876.5	23.00118	2557.502	90.58776	10072.45	17.07116059	56.1551335	523.266	0.523266
1877.8	22.99777	2557.122	90.58425	10072.06	16.96770975	55.81483471	525.841	0.525841
1879.1	22.99435	2556.742	90.58074	10071.67	16.86425892	55.47453591	528.415	0.528415

1880.4	22.99093	2556.362	90.57722	10071.28	16.76080808	55.13423711	530.989	0.530989
1881.6	22.98752	2555.982	90.57371	10070.89	16.65735725	54.79393831	533.564	0.533564
1882.9	22.9841	2555.602	90.57019	10070.5	16.55390641	54.45363951	536.138	0.536138
1912	23.026	2560.261	90.906	10107.84	12	39.47368421	645	0.64
1913	23.008	2558.26	90.944	10112.06	12	39.47368421	189	0.18
1914	22.996	2556.925	90.984	10116.51	11	36.18421053	649	0.64
1915	23.11	2569.601	90.982	10116.29	13	42.76315789	131	0.13
1916	23.11	2569.601	90.982	10116.29	281	924.3421053	10.3	0.010
1917	23.093	2567.711	91.025	10121.07	20	65.78947368	187	0.18
1918	22.995	2556.814	91.235	10144.42	14	46.05263158	85	0.08
1919	22.958	2552.7	91.221	10142.86	13	42.76315789	272	0.27
1920	22.931	2549.698	91.222	10142.97	14	46.05263158	478	0.47
1921	22.899	2546.14	91.247	10145.75	12	39.47368421	337	0.33
1922	22.945	2551.255	91.255	10146.64	12	39.47368421	107	0.10
1923	23.041	2561.929	91.232	10144.09	18	59.21052632	82.3	0.082
1924	23.04	2561.818	91.201	10140.64	16	52.63157895	330	0.3
1925	23.037	2561.484	91.152	10135.19	14	46.05263158	73.5	0.073
1926	23.042	2562.04	91.377	10160.21	21	69.07894737	8.7	0.008
1929	22.94	2550.699	91.406	10163.43	23	75.65789474	164	0.16
1930	22.956	2552.478	91.441	10167.32	15	49.34210526	87	0.08
1931	22.94	2550.699	91.308	10152.54	15	49.34210526	47.6	0.047
1933	22.87	2542.915	91.44	10167.21	28	92.10526316	13.3	0.013
1935	23.011	2558.593	91.404	10163.21	22	72.36842105	114	0.11
1936	23.019	2559.483	91.401	10162.88	51	167.7631579	7.1	0.007
1937	23.22	2581.832	91.434	10166.55	21	69.07894737	6.1	0.006
1938	23.246	2584.723	91.421	10165.1	30	98.68421053	14.1	0.014
1942	22.909	2547.252	91.279	10149.31	16	52.63157895	307	0.30
1943	22.931	2549.698	91.332	10155.21	15	49.34210526	136	0.13
1944	22.949	2551.699	91.313	10153.09	15	49.34210526	103	0.10
1946	22.995	2556.814	91.344	10156.54	20	65.78947368	119	0.11
1947	23.027	2560.372	91.287	10150.2	20	65.78947368	200	0.
1948	23.013	2558.815	91.311	10152.87	16	52.63157895	420	0.4
1962	23.056	2563.597	91.443	10167.55	38	125	14.6	0.014
1963	23.11	2569.601	91.431	10166.21	38	125	7.9	0.007
1965	23.121	2570.824	91.489	10172.66	52	171.0526316	15.4	0.015
1966	23.153	2574.382	91.472	10170.77	22	72.36842105	8.9	0.008
1969	23.151	2574.16	91.422	10165.21	33	108.5526316	21.4	0.021
1970	22.913	2547.696	91.365	10158.87	18	59.21052632	121	0.12
1971	22.871	2543.026	91.357	10157.98	9	29.60526316	61.7	0.061
1972	22.842	2539.802	91.366	10158.99	14	46.05263158	38.3	0.038
1974	22.849	2540.58	91.393	10161.99	12	39.47368421	127	0.12
1975	22.862	2542.026	91.428	10165.88	15	49.34210526	67.8	0.067
1976	22.872	2543.138	91.408	10163.66	15	49.34210526	101	0.10
1977	22.904	2546.696	91.396	10162.32	14	46.05263158	83.9	0.083
1978	22.914	2547.808	91.443	10167.55	15	49.34210526	40.5	0.040
1980	22.157	2463.637	91.842	10211.91	12	39.47368421	6.2	0.006
1981	22.182	2466.417	91.835	10211.13	39	128.2894737	34	0.03
1984	22.199	2468.307	91.936	10222.36	44	144.7368421	7.5	0.007
1988	22.367	2486.987	91.775	10204.46	20	65.78947368	15.9	0.015
1993	21.753	2418.716	92.07	10237.26	22	72.36842105	12.9	0.012
1998	21.276	2365.678	92.104	10241.04	25	82.23684211	70.1	0.070
2016	20.769	2309.305	92.326	10265.73	7	23.02631579	9.6	0.009

2027	22.668	2520.455	91.624	10187.67	13	42.76315789	196	0.19
2028	22.602	2513.116	91.652	10190.79	140	460.5263158	12.6	0.012
2029	22.574	2510.003	91.68	10193.9	10	32.89473684	16.4	0.016
2030	22.546	2506.89	91.684	10194.34	17	55.92105263	65.1	0.065
2031	22.511	2502.998	91.712	10197.46	7	23.02631579	9.9	0.009
2032	22.425	2493.436	91.749	10201.57	19	62.5	9.7	0.009
2033	22.402	2490.878	91.753	10202.02	20	65.78947368	7.4	0.007
2034	22.714	2525.57	91.608	10185.89	8	26.31578947	44.8	0.044
2035	22.739	2528.349	91.565	10181.11	7	23.02631579	75.7	0.075
2036	22.818	2537.133	91.553	10179.78	16	52.63157895	344	0.34
2038	22.928	2549.364	91.554	10179.89	22	72.36842105	16.7	0.016
2053	24.3388	2706.231	90.6658	10081.13	51.8	170.3947368	23.5	0.023
2057	24.3373	2706.064	90.6905	10083.88	15.2	50	273	0.27
2058	24.434	2716.816	90.79	10094.94	30.5	100.3289474	158	0.15
2063	24.4041	2713.492	90.8043	10096.53	33.5	110.1973684	121	0.12
2065	24.1005	2679.735	90.927	10110.17	78	256.5789474	11.6	0.011
2066	24.1009	2679.779	90.927	10110.17	18.3	60.19736842	160	0.1
2067	24.1296	2682.97	90.9447	10112.14	51.8	170.3947368	46.7	0.046
2068	24.0928	2678.878	90.9595	10113.79	80.8	265.7894737	26.3	0.026
2071	24.0632	2675.587	90.9811	10116.19	121.9	400.9868421	32	0.03
2072	24.062	2675.454	90.9812	10116.2	47.2	155.2631579	505	0.50
2073	24.0645	2675.732	90.9816	10116.24	45.7	150.3289474	300	0.
2077	24.4626	2719.996	90.7069	10085.7	21.3	70.06578947	195	0.19
2080	24.391	2712.035	90.7164	10086.76	7.6	25	19.2	0.019
2082	24.4654	2720.308	90.7855	10094.44	32	105.2631579	172	0.17
2083	24.4644	2720.197	90.7858	10094.47	33.5	110.1973684	8.6	0.008
2084	24.464	2720.152	90.7863	10094.53	80.8	265.7894737	10.3	0.010
2085	24.4451	2718.051	90.7778	10093.58	94.5	310.8552632	8.7	0.008
2089	24.2148	2692.444	90.9625	10114.12	20.1	66.11842105	143	0.14
2091	24.2161	2692.588	90.9663	10114.54	73.2	240.7894737	38.9	0.038
2093	24.2227	2693.322	90.9821	10116.3	21.6	71.05263158	60.6	0.060
2094	24.2117	2692.099	90.9391	10111.52	21.3	70.06578947	233	0.23
2095	24.247	2696.024	90.9107	10108.36	76.8	252.6315789	12.5	0.012
2097	24.218	2692.799	90.8909	10106.16	29	95.39473684	75.9	0.075
2098	24.2332	2694.49	90.8876	10105.79	73.2	240.7894737	573	0.57
2099	24.24	2695.246	90.8473	10101.31	68.6	225.6578947	18.7	0.018
2100	24.5679	2731.705	90.9034	10107.55	75.6	248.6842105	13.5	0.013
2101	24.5698	2731.916	90.9077	10108.03	32	105.2631579	31.6	0.031
2102	24.5665	2731.549	90.9014	10107.33	60.7	199.6710526	14.4	0.014
2103	24.557	2730.493	90.8915	10106.23	102.1	335.8552632	9.8	0.009
2104	24.5498	2729.692	90.8864	10105.66	56.4	185.5263158	52.8	0.052
2106	24.5608	2730.915	90.8392	10100.41	69.2	227.6315789	31.2	0.031
2107	24.4636	2720.108	90.8688	10103.7	7.6	25	169	0.16
2108	24.45	2718.596	90.8667	10103.47	89.9	295.7236842	78.8	0.078
2109	24.4097	2714.115	90.9102	10108.31	77.7	255.5921053	26.1	0.026
2110	24.3776	2710.545	90.8747	10104.36	72.2	237.5	29.5	0.029
2111	24.4475	2718.318	90.8491	10101.51	80.5	264.8026316	17.7	0.017
2112	24.9565	2774.913	90.3563	10046.72	56.7	186.5131579	43.6	0.043
2115	24.9121	2769.976	90.3557	10046.65	54	177.6315789	21.2	0.021
2118	24.906	2769.298	90.4906	10061.65	46.3	152.3026316	76.5	0.076
2123	25.0378	2783.953	90.2876	10039.08	61	200.6578947	13	0.01
2125	25.118	2792.87	90.3393	10044.83	69.5	228.6184211	29.5	0.029

2126	25.1799	2799.753	90.3399	10044.89	16.8	55.26315789	23.1	0.0231
2127	25.1757	2799.286	90.3219	10042.89	36.6	120.3947368	78.6	0.0786
2128	25.1246	2793.604	90.3866	10050.09	21.9	72.03947368	55.6	0.0556
2129	25.1246	2793.604	90.3866	10050.09	71.6	235.5263158	44.3	0.0443
2130	25.0903	2789.79	90.4476	10056.87	69.5	228.6184211	110	0.11
2131	25.0964	2790.469	90.467	10059.03	61	200.6578947	14.8	0.0148
2132	25.0857	2789.279	90.4797	10060.44	53.3	175.3289474	54.6	0.0546
2133	25.0855	2789.257	90.4798	10060.45	69.5	228.6184211	76.6	0.0766
2134	25.1389	2795.194	90.5753	10071.07	45.7	150.3289474	200	0.2
2135	25.1413	2795.461	90.5726	10070.77	53.3	175.3289474	83.6	0.0836
2136	25.0903	2789.79	90.5161	10064.49	68.6	225.6578947	69.5	0.0695
2137	25.1319	2794.416	90.4839	10060.9	60	197.3684211	171	0.171
2138	25.1319	2794.416	90.4839	10060.9	67.1	220.7236842	19.8	0.0198
2140	24.7639	2753.498	90.2659	10036.67	12.2	40.13157895	65.6	0.0656
2155	24.6345	2739.11	90.7178	10086.91	91.4	300.6578947	26.8	0.0268
2162	24.7221	2748.85	90.1826	10027.4	52.4	172.3684211	7.9	0.0079
2170	24.6362	2739.299	89.9735	10004.15	32.3	106.25	9.8	0.0098
2171	24.6085	2736.219	90.0213	10009.47	36.3	119.4078947	21.2	0.0212
2172	24.4846	2722.443	89.9724	10004.03	36.6	120.3947368	45.5	0.0455
2173	24.5193	2726.301	89.974	10004.21	31.4	103.2894737	41	0.041
2174	24.4187	2715.115	89.9971	10006.78	31.4	103.2894737	8.1	0.0081
2183	24.3977	2712.78	89.8165	9986.697	18.3	60.19736842	15.2	0.0152
2184	24.4493	2718.518	89.8292	9988.109	25.3	83.22368421	9.4	0.0094
2185	24.4642	2720.174	89.8337	9988.609	22.3	73.35526316	8	0.008
2188	24.4166	2714.882	89.8811	9993.88	40.5	133.2236842	6.8	0.0068
2190	24.0518	2674.32	90.0047	10007.62	29	95.39473684	14.5	0.0145
2191	24.0518	2674.32	90.0047	10007.62	22.9	75.32894737	6.6	0.0066
2192	24.0455	2673.619	90.0293	10010.36	24.4	80.26315789	131	0.13
2193	24.0455	2673.619	90.0293	10010.36	29.6	97.36842105	76.5	0.0765
2198	24.0941	2679.023	90.1042	10018.69	25.9	85.19736842	11.9	0.0119
2200	24.1407	2684.204	90.0208	10009.41	36.6	120.3947368	10.9	0.0109
2201	24.1635	2686.74	90.0319	10010.65	27.4	90.13157895	24.7	0.0247
2202	24.2313	2694.278	90.0488	10012.53	38.1	125.3289474	22.9	0.0229
2203	24.2568	2697.114	90.0583	10013.58	35.1	115.4605263	23.8	0.0238
2204	24.267	2698.248	90.0351	10011	27.4	90.13157895	92.6	0.0926
2205	24.2314	2694.289	90.0423	10011.8	23.8	78.28947368	14.1	0.0141
2207	24.2106	2691.977	89.9805	10004.93	32	105.2631579	21.4	0.0214
2209	24.0611	2675.354	89.882	9993.98	36	118.4210526	20.2	0.0202
2210	24.0463	2673.708	89.8485	9990.255	24.4	80.26315789	7.1	0.007
2229	23.9317	2660.966	90.5707	10070.56	39	128.2894737	155	0.15
2231	24.7285	2749.562	89.6067	9963.369	25.9	85.19736842	75.9	0.075
2232	24.7358	2750.374	89.5744	9959.778	18.3	60.19736842	53.5	0.053
2234	24.7207	2748.695	89.4976	9951.238	25.6	84.21052632	73.5	0.073
2235	24.6827	2744.469	89.542	9956.175	20.1	66.11842105	7.7	0.007
2236	24.5944	2734.651	89.5466	9956.686	25.3	83.22368421	24.6	0.024
2237	24.6033	2735.641	89.5109	9952.717	25.3	83.22368421	63	0.06
2253	25.032	2783.308	89.4675	9947.891	17.7	58.22368421	28.2	0.028
2256	25.0099	2780.851	89.5566	9957.798	17.7	58.22368421	13.9	0.013
2257	24.9869	2778.293	89.5613	9958.321	17.7	58.22368421	12.8	0.012
2258	24.9916	2778.816	89.5046	9952.016	17.7	58.22368421	23.8	0.023
2272	25.7982	2868.502	89.553	9957.398	13.7	45.06578947	68	0.06
2273	25.7339	2861.352	89.582	9960.623	14	46.05263158	420	0.4

2448	25.1667	2798.285	91.1795	10138.25	73.2	240.7894737	45	0.04
2449	25.1028	2791.18	91.1161	10131.2	131.1	431.25	20.5	0.020
2450	25.0937	2790.169	91.1615	10136.25	112.8	371.0526316	68	0.06
2456	24.9148	2770.277	90.6924	10084.09	59.4	195.3947368	20.3	0.020
2462	24.9746	2776.926	90.6259	10076.69	76.2	250.6578947	37.1	0.037
2463	24.9843	2778.004	90.6893	10083.74	64	210.5263158	44.6	0.044
2466	25.0723	2787.789	90.8792	10104.86	143.3	471.3815789	262	0.26
2467	25.0579	2786.188	90.9129	10108.61	78.3	257.5657895	15.6	0.015
2468	25.1117	2792.17	90.8244	10098.77	69.2	227.6315789	87	0.08
2469	25.1537	2796.84	90.7819	10094.04	41.1	135.1973684	60.1	0.060
2470	25.0864	2789.357	90.7932	10095.3	85.3	280.5921053	47.3	0.047
2471	25.0736	2787.934	90.8811	10105.07	90.5	297.6973684	134	0.13
2472	25.0241	2782.43	90.8584	10102.55	82.3	270.7236842	54.4	0.054
2474	25.0324	2783.353	90.9349	10111.05	81.7	268.75	87.6	0.087
2475	25.0221	2782.207	90.6468	10079.02	77.7	255.5921053	37.6	0.037
2476	25.087	2789.424	90.6621	10080.72	56.4	185.5263158	17.5	0.017
2477	25.0655	2787.033	90.6955	10084.43	46.6	153.2894737	176	0.17
2479	25.125	2793.649	90.7266	10087.89	18.3	60.19736842	21.7	0.021
2480	25.1389	2795.194	90.6406	10078.33	32	105.2631579	20.8	0.020
2481	24.8641	2764.639	90.9687	10114.81	109.7	360.8552632	83	0.08
2483	24.8459	2762.616	91.0468	10123.49	97.5	320.7236842	145	0.14
2485	24.8642	2764.65	90.9687	10114.81	27.4	90.13157895	41.1	0.041
2486	24.8657	2764.817	90.9455	10112.23	106.1	349.0131579	52.3	0.052
2487	24.786	2755.955	91.0677	10125.82	106.7	350.9868421	105	0.10
2488	24.7929	2756.723	91.0147	10119.92	101.2	332.8947368	31.7	0.031
2489	24.7928	2756.711	90.9688	10114.82	71.6	235.5263158	8.5	0.008
2490	24.8955	2768.131	91.0146	10119.91	114.3	375.9868421	79.4	0.079
2491	24.9389	2772.956	91.006	10118.96	103.9	341.7763158	116	0.11
2492	24.9528	2774.502	90.997	10117.96	100.6	330.9210526	145	0.14
2493	25.0111	2780.984	90.9635	10114.23	144.8	476.3157895	35.3	0.035
2494	24.9458	2773.724	91.0878	10128.05	146.3	481.25	101	0.10
2495	24.9681	2776.203	91.1369	10133.51	134.1	441.1184211	78	0.07
2496	24.8865	2767.13	90.7329	10088.59	159.7	525.3289474	18.8	0.018
2498	25.0335	2783.475	89.9486	10001.38	38.1	125.3289474	38.8	0.038
2502	24.9383	2772.89	90.0698	10014.86	14	46.05263158	7.6	0.007
2507	24.9887	2778.494	89.9563	10002.24	13.7	45.06578947	115	0.11
2508	24.9494	2774.124	89.9616	10002.83	37.2	122.3684211	19.7	0.019
2509	25.0692	2787.444	90.1308	10021.64	36.6	120.3947368	12.3	0.012
2511	25.0877	2789.501	90.1834	10027.49	12.5	41.11842105	17.3	0.017
2512	25.0476	2785.043	90.1667	10025.64	22.9	75.32894737	17.7	0.017
2513	25.0595	2786.366	90.2337	10033.09	19.8	65.13157895	36.5	0.036
2514	25.1376	2795.05	90.1918	10028.43	48.8	160.5263158	137	0.13
2515	25.1376	2795.05	90.1918	10028.43	25.9	85.19736842	33.2	0.033
2516	25.1119	2792.192	90.108	10019.11	29.3	96.38157895	9.1	0.009
2517	25.1601	2797.552	90.1284	10021.38	41.1	135.1973684	49.7	0.049
2518	25.1826	2800.053	90.1624	10025.16	10.7	35.19736842	56.1	0.056
2519	25.2125	2803.378	89.9042	9996.448	31.4	103.2894737	19.3	0.019
2521	25.2485	2807.381	89.9298	9999.294	14.3	47.03947368	15.2	0.015
2523	25.2248	2804.746	89.9629	10002.97	26.8	88.15789474	14.8	0.014
2526	24.7817	2755.477	89.8495	9990.366	80.8	265.7894737	14.7	0.014
2527	24.7828	2755.6	89.8506	9990.488	21.3	70.06578947	230	0.2
2528	24.7572	2752.753	89.8647	9992.056	26.2	86.18421053	7.4	0.007

2532	24.8458	2762.605	89.8375	9989.032	25.3	83.22368421	30.5	0.030
2533	24.9662	2775.992	89.8107	9986.052	32.9	108.2236842	13.1	0.013
2534	24.9472	2773.879	89.8348	9988.731	27.1	89.14473684	25.9	0.025
2536	24.8942	2767.986	89.8643	9992.012	27.1	89.14473684	11.6	0.011
2538	25.0847	2789.168	89.7811	9982.761	35.7	117.4342105	9.2	0.009
2540	25.1268	2793.849	89.7203	9976	18	59.21052632	13.9	0.013
2542	25.025	2782.53	89.7333	9977.446	40.2	132.2368421	16.3	0.016
2546	25.1391	2795.217	89.7678	9981.282	18.3	60.19736842	45.8	0.045
2547	24.8585	2764.017	89.9048	9996.515	41.1	135.1973684	22.4	0.022
2548	24.8515	2763.238	89.8705	9992.701	22.9	75.32894737	50.6	0.050
2549	24.7664	2753.776	89.9316	9999.495	21.3	70.06578947	8.2	0.008
2552	23.9836	2666.736	90.9562	10113.42	22.9	75.32894737	43.1	0.043
2553	23.9535	2663.39	90.8762	10104.52	21.3	70.06578947	206	0.20
2555	23.8861	2655.895	90.8502	10101.63	17.7	58.22368421	153	0.15
2558	24.0899	2678.556	90.6537	10079.78	21	69.07894737	24.7	0.024
2559	24.0957	2679.201	90.6993	10084.86	28	92.10526316	53.4	0.053
2561	24.1673	2687.162	90.6923	10084.08	15.2	50	68.6	0.068
2562	24.2332	2694.49	90.6916	10084	31.7	104.2763158	36	0.03
2568	23.9899	2667.437	90.9034	10107.55	22.3	73.35526316	53.9	0.053
2569	24.0169	2670.439	90.9367	10111.25	22.6	74.34210526	194	0.19
2570	23.9858	2666.981	90.869	10103.72	21.3	70.06578947	284	0.28
2571	23.8101	2647.445	90.7935	10095.33	22.3	73.35526316	89.4	0.089
2572	24.0397	2672.974	90.9166	10109.02	26.8	88.15789474	35.4	0.035
2575	23.9749	2665.769	90.6798	10082.69	29	95.39473684	21.2	0.021
2576	24.0086	2669.516	90.6656	10081.11	42.7	140.4605263	51.9	0.051
2581	24.2614	2697.625	89.6775	9971.241	19	62.5	10.5	0.010
2582	24.2675	2698.303	89.6974	9973.454	21.3	70.06578947	41.2	0.041
2583	24.2986	2701.761	89.6901	9972.642	91.4	300.6578947	16.6	0.016
2585	24.3138	2703.451	89.6984	9973.565	21.9	72.03947368	28.2	0.028
2586	24.3309	2705.353	89.6855	9972.131	23.5	77.30263158	25.5	0.025
2587	24.3575	2708.31	89.6994	9973.676	21.9	72.03947368	53.6	0.053
2590	24.4679	2720.586	89.3527	9935.127	21	69.07894737	10.8	0.010
2598	24.3124	2703.296	89.5623	9958.432	74.4	244.7368421	20.4	0.020
2599	24.3364	2705.964	89.5701	9959.299	23	75.65789474	25.6	0.025
2601	24.2722	2698.826	89.579	9960.289	23.8	78.28947368	12.5	0.012
2603	24.2697	2698.548	89.4717	9948.358	25.3	83.22368421	26.4	0.026
2604	24.2905	2700.861	89.5189	9953.606	26.8	88.15789474	16.7	0.016
2605	24.3369	2706.02	89.5251	9954.296	25.3	83.22368421	15.9	0.015
2606	24.3548	2708.01	89.4616	9947.235	25.3	83.22368421	28.4	0.028
2607	24.3873	2711.624	89.4581	9946.846	24.1	79.27631579	37	0.03
2608	24.3865	2711.535	89.4569	9946.713	16.8	55.26315789	25.2	0.025
2616	24.2246	2693.533	89.6955	9973.243	15.2	50	36	0.03
2617	24.2388	2695.112	89.6959	9973.287	17.1	56.25	12.6	0.012
2618	24.4428	2717.795	89.6689	9970.285	18	59.21052632	65.9	0.065
2619	24.4438	2717.906	89.669	9970.296	12.5	41.11842105	18.7	0.018
2620	24.4606	2719.774	89.6651	9969.862	22.6	74.34210526	52.4	0.052
2621	24.4975	2723.877	89.6716	9970.585	24.1	79.27631579	55.1	0.055
2622	24.5156	2725.89	89.6671	9970.085	20.7	68.09210526	49.4	0.049
2623	24.5099	2725.256	89.6469	9967.839	22.6	74.34210526	87.2	0.087
2624	25.3755	2821.502	89.469	9948.058	17.8	58.55263158	72.4	0.072
2625	25.4382	2828.473	89.4481	9945.734	13	42.76315789	84.1	0.084
2628	25.4101	2825.349	89.3978	9940.141	14.3	47.03947368	20	0.0

2632	25.3539	2819.1	89.4183	9942.421	13.1	43.09210526	8	0.00
2634	25.1418	2795.517	89.3586	9935.783	29.9	98.35526316	11.1	0.011
2638	25.1438	2795.739	89.3521	9935.06	17.7	58.22368421	9.4	0.009
2640	25.0993	2790.791	89.4325	9944	18.3	60.19736842	45.2	0.045
2643	25.0789	2788.523	89.3626	9936.227	28.3	93.09210526	27.5	0.027
2644	25.1542	2796.895	89.4155	9942.109	28.3	93.09210526	54.4	0.054
2645	25.1853	2800.354	89.4502	9945.968	28.3	93.09210526	24.5	0.024
2650	25.0901	2789.768	89.5002	9951.527	29	95.39473684	15.5	0.015
2653	25.1863	2800.465	89.5767	9960.033	21	69.07894737	13.3	0.013
2663	25.7727	2865.667	89.2418	9922.796	22.6	74.34210526	21.6	0.021
2666	25.5106	2836.524	89.378	9937.94	30.5	100.3289474	22.3	0.022
2667	25.5108	2836.546	89.3783	9937.973	19.8	65.13157895	14.1	0.014
2676	25.5943	2845.83	89.2436	9922.996	22.6	74.34210526	7.5	0.007
2677	25.5803	2844.274	89.3186	9931.335	28.7	94.40789474	10.8	0.010
2678	25.59	2845.352	89.3547	9935.349	28.7	94.40789474	46.3	0.046
2679	25.5905	2845.408	89.354	9935.271	51.8	170.3947368	16.3	0.016
2681	25.6612	2853.269	89.2788	9926.91	23.8	78.28947368	17	0.01
2689	25.6981	2857.372	89.1449	9912.021	14	46.05263158	34.9	0.034
2691	25.8145	2870.314	89.1079	9907.907	26.8	88.15789474	14.5	0.014
2700	25.7792	2866.389	88.6739	9859.651	22.6	74.34210526	11	0.01
2721	25.7712	2865.5	88.7816	9871.626	32	105.2631579	13.4	0.013
2730	25.3261	2816.009	88.9613	9891.607	22.6	74.34210526	8	0.00
2734	25.428	2827.339	89.0934	9906.295	25.3	83.22368421	31.6	0.031
2755	24.9651	2775.869	88.9033	9885.158	27.4	90.13157895	14.9	0.014
2761	24.991	2778.749	88.9303	9888.16	29.9	98.35526316	16.4	0.016
2763	24.9124	2770.01	88.7404	9867.045	27.1	89.14473684	6.6	0.006
2791	24.4874	2722.754	90.9998	10118.27	73.8	242.7631579	9.4	0.009
2792	24.6191	2737.398	91.1199	10131.62	74.7	245.7236842	31.2	0.031
2793	24.5582	2730.626	91.1131	10130.87	68.6	225.6578947	16.6	0.016
2794	24.5266	2727.113	91.1008	10129.5	72.5	238.4868421	66.3	0.066
2795	24.5552	2730.293	91.01	10119.4	65.5	215.4605263	81.4	0.081
2796	24.5834	2733.428	90.9794	10116	65.5	215.4605263	29.6	0.029
2798	24.4901	2723.054	91.0689	10125.95	68.9	226.6447368	27.4	0.027
2799	24.4495	2718.54	91.0812	10127.32	71.6	235.5263158	86.8	0.086
2800	24.4002	2713.058	91.0644	10125.45	73.2	240.7894737	82.7	0.082
2802	24.3992	2712.947	91.1168	10131.28	76.2	250.6578947	11.4	0.011
2803	24.1662	2687.04	90.9259	10110.05	56.4	185.5263158	217	0.21
2804	24.1586	2686.195	90.9326	10110.8	115.8	380.9210526	21	0.02
2805	24.1883	2689.497	90.9133	10108.65	81.7	268.75	31.6	0.031
2806	24.1689	2687.34	90.8376	10100.23	72.5	238.4868421	32.9	0.032
2807	24.1413	2684.271	90.8733	10104.2	68	223.6842105	49.6	0.049
2808	24.1227	2682.203	90.919	10109.28	72.5	238.4868421	89.6	0.089
2810	24.1334	2683.393	90.9304	10110.55	69.5	228.6184211	162	0.16
2813	24.3265	2704.864	90.8923	10106.31	46.3	152.3026316	32.9	0.032
2814	24.3392	2706.276	90.8274	10099.1	80.2	263.8157895	19	0.01
2818	24.3225	2704.419	90.9305	10110.56	86.9	285.8552632	42.9	0.042
2819	24.3125	2703.307	90.9145	10108.78	76.2	250.6578947	98.3	0.098
2820	24.3685	2709.534	90.9184	10109.22	76.2	250.6578947	94.8	0.094
2821	24.3743	2710.178	90.9798	10116.04	68.6	225.6578947	23.6	0.023
2822	24.2669	2698.237	90.9492	10112.64	73.2	240.7894737	11	0.01
2823	24.2868	2700.449	91.0845	10127.69	70.7	232.5657895	77.5	0.077
2826	24.2751	2699.148	91.1112	10130.65	73.2	240.7894737	9.4	0.009

2827	24.2723	2698.837	91.1043	10129.89	36.6	120.3947368	11.3	0.011
2828	24.4648	2720.241	90.8734	10104.21	100.6	330.9210526	92	0.09
2829	24.464	2720.152	90.8684	10103.66	71.9	236.5131579	54	0.05
2830	24.3692	2709.611	90.8672	10103.52	57	187.5	176	0.17
2831	24.4798	2721.909	90.9465	10112.34	77.4	254.6052632	21.6	0.021
2832	24.4752	2721.397	90.9316	10110.68	71.9	236.5131579	26.8	0.026
2865	24.759	2752.953	90.6342	10077.62	39.6	130.2631579	109	0.10
2870	24.5716	2732.116	90.6886	10083.67	94.5	310.8552632	7.8	0.007
2871	24.584	2733.495	90.7353	10088.86	91.4	300.6578947	29.1	0.029
2873	24.5799	2733.039	90.7492	10090.4	78	256.5789474	24.5	0.024
2874	24.5368	2728.247	90.7491	10090.39	68.6	225.6578947	7.3	0.007
2875	24.5311	2727.613	90.704	10085.38	54.9	180.5921053	60.8	0.060
2883	24.7676	2753.909	90.4441	10056.48	59.4	195.3947368	36.1	0.036
2884	24.7784	2755.11	90.4361	10055.59	40.2	132.2368421	59.4	0.059
2885	24.7935	2756.789	90.4067	10052.32	48.8	160.5263158	45.7	0.045
2888	24.578	2732.828	89.9731	10004.11	36	118.4210526	39.9	0.039
2889	24.5708	2732.027	89.8565	9991.144	36	118.4210526	11.8	0.011
2891	24.6017	2735.463	89.8819	9993.968	27.4	90.13157895	33.8	0.033
2893	24.5482	2729.514	89.9262	9998.894	76.2	250.6578947	33.5	0.033
2894	24.5404	2728.647	89.8984	9995.803	32.6	107.2368421	6.6	0.006
2896	24.3595	2708.533	90.0447	10012.07	36.6	120.3947368	39.3	0.039
2897	24.3083	2702.84	90.0311	10010.56	36.6	120.3947368	17.3	0.017
2898	24.3873	2711.624	89.991	10006.1	36.6	120.3947368	14.1	0.014
2899	24.389	2711.813	89.9906	10006.05	106.7	350.9868421	9.7	0.009
2900	24.389	2711.813	89.9906	10006.05	56.4	185.5263158	16.7	0.016
2901	24.372	2709.923	89.9611	10002.77	36.6	120.3947368	45.5	0.045
2902	24.4068	2713.792	89.9116	9997.271	24.4	80.26315789	14.7	0.014
2903	24.3833	2711.179	89.8675	9992.367	36.6	120.3947368	7	0.00
2906	24.2827	2699.993	89.9546	10002.05	31.4	103.2894737	21.5	0.021
2907	24.2582	2697.269	89.904	9996.426	21.3	70.06578947	144	0.14
2908	24.204	2691.243	89.8893	9994.791	35.7	117.4342105	17.4	0.017
2909	24.2293	2694.056	89.8663	9992.234	35.7	117.4342105	30.6	0.030
2912	24.2593	2697.392	89.8477	9990.166	40.5	133.2236842	83.6	0.083
2913	24.3242	2704.608	89.8861	9994.435	17.1	56.25	21.8	0.021
2914	24.2942	2701.272	89.9195	9998.149	51.8	170.3947368	40.4	0.040
2915	24.2468	2696.002	89.9359	9999.973	24.4	80.26315789	14.7	0.014
2923	24.1526	2685.528	89.9904	10006.03	22.9	75.32894737	16.2	0.016
2924	24.1751	2688.029	89.952	10001.76	40.2	132.2368421	38.9	0.038
2925	24.2051	2691.365	89.9368	10000.07	40.5	133.2236842	153	0.15
2926	24.1856	2689.197	89.913	9997.426	34.1	112.1710526	73.7	0.073
2928	24.0611	2675.354	89.882	9993.98	22.9	75.32894737	149	0.14
2929	24.0868	2678.211	89.8785	9993.59	31.4	103.2894737	30.3	0.030
2930	24.2469	2696.013	89.9108	9997.182	0	0	20.1	0.020
2957	24.9388	2772.945	89.4081	9941.287	19.8	65.13157895	632	0.63
2958	24.967	2776.081	89.4357	9944.355	21.9	72.03947368	20.1	0.020
2959	24.9051	2769.198	89.5066	9952.239	21.9	72.03947368	10.8	0.010
2960	24.8636	2764.584	89.4956	9951.016	14	46.05263158	35.2	0.035
2961	24.8796	2766.363	89.4467	9945.579	32	105.2631579	19.4	0.019
2963	24.811	2758.735	89.4849	9949.826	22.9	75.32894737	8.6	0.008
2981	25.0069	2780.517	89.3176	9931.224	26.5	87.17105263	88	0.08
2984	25.0165	2781.585	89.2838	9927.466	36.6	120.3947368	6.3	0.006
2986	25.0693	2787.455	89.3269	9932.258	25.3	83.22368421	91.7	0.091

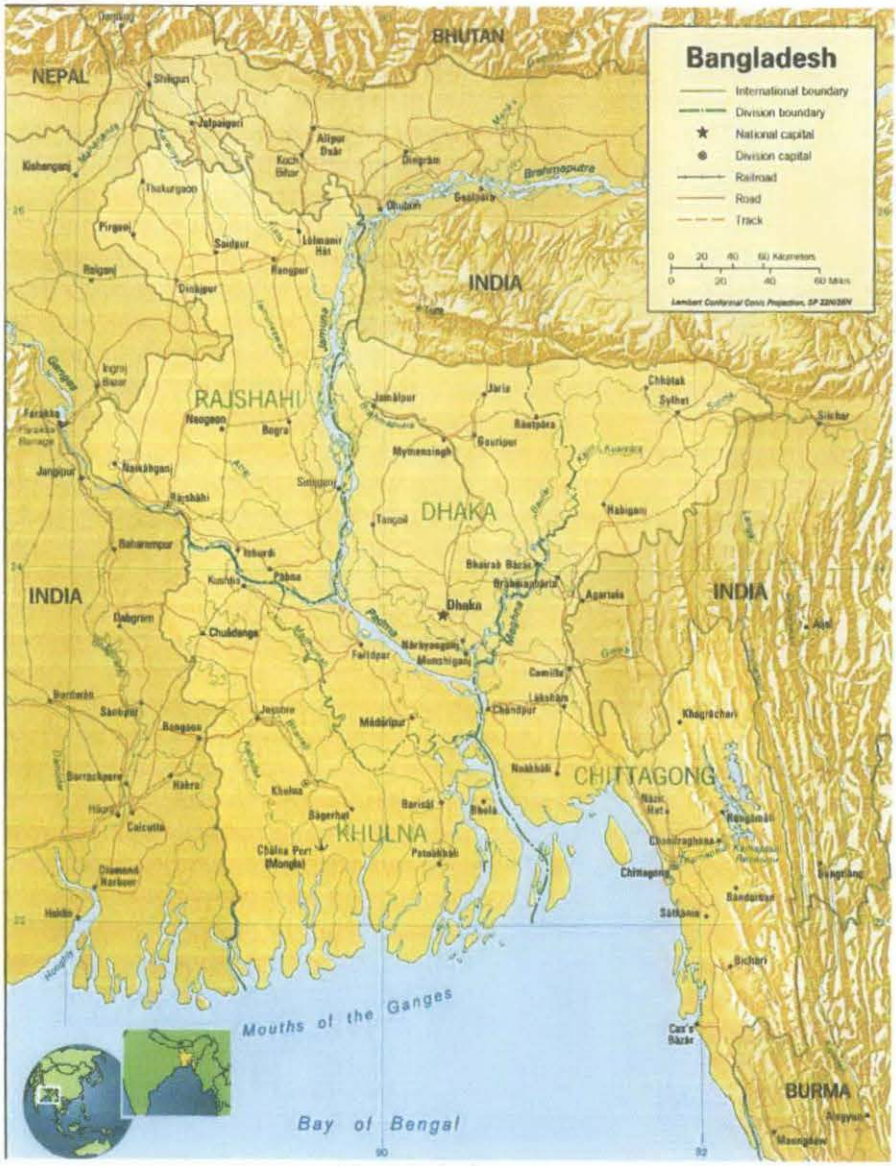
2989	25.0168	2781.618	89.368	9936.828	36.6	120.3947368	41.5	0.041
2997	24.886	2767.074	89.5631	9958.521	11	36.18421053	150	0.1
2998	24.9102	2769.765	89.5415	9956.119	25.3	83.22368421	37.3	0.037
3001	24.9102	2769.765	89.5415	9956.119	14	46.05263158	23.7	0.023
3004	24.9537	2774.602	89.3673	9936.75	25.3	83.22368421	16.5	0.016
3005	24.9038	2769.054	89.3762	9937.74	18.3	60.19736842	37.7	0.037
3010	25.5969	2846.119	89.6167	9964.481	54.9	180.5921053	14.3	0.014
3011	25.759	2864.143	89.7181	9975.756	12.5	41.11842105	187	0.18
3014	25.7369	2861.686	89.6272	9965.648	13.7	45.06578947	24.4	0.024
3016	25.6716	2854.425	89.5527	9957.365	27.4	90.13157895	17.6	0.017
3023	25.9182	2881.845	89.7497	9979.269	29.9	98.35526316	11.1	0.011
3026	25.9717	2887.793	89.8069	9985.629	31.7	104.2763158	62.9	0.062
3037	26.1556	2908.241	89.7373	9977.89	10.7	35.19736842	9.3	0.009
3038	26.0674	2898.434	89.7684	9981.348	24.7	81.25	23.6	0.023
3040	26.0326	2894.565	89.762	9980.637	29.9	98.35526316	42.1	0.042
3041	26.1447	2907.029	89.6222	9965.092	22.6	74.34210526	10.3	0.010
3062	25.9916	2890.006	89.2417	9922.785	31.7	104.2763158	9.2	0.009
3074	25.9445	2884.769	88.9561	9891.029	23.5	77.30263158	22.8	0.022
3076	25.9343	2883.635	88.8476	9878.965	39.6	130.2631579	14.5	0.014
3096	26.1978	2912.933	88.7296	9865.844	21.9	72.03947368	33.8	0.033
3106	26.2855	2922.685	88.444	9834.088	17.7	58.22368421	12.8	0.012
3130	26.0694	2898.657	88.4319	9832.743	18.9	62.17105263	6.5	0.006
3142	25.0509	2785.41	89.1767	9915.557	25.3	83.22368421	7.7	0.007
3156	24.5484	2729.537	91.3159	10153.41	27.1	89.14473684	136	0.13
3157	24.5645	2731.327	91.2835	10149.81	60	197.3684211	42.6	0.042
3158	24.564	2731.271	91.2797	10149.39	21.3	70.06578947	72.6	0.072
3160	24.5968	2734.918	91.2738	10148.73	67.1	220.7236842	18.9	0.018
3161	24.5981	2735.063	91.2786	10149.27	67.1	220.7236842	14.2	0.014
3162	24.4893	2722.965	91.1905	10139.47	67.1	220.7236842	16.4	0.016
3163	25.0698	2787.511	91.4765	10171.27	79.2	260.5263158	10	0.0
3164	25.0817	2788.834	91.5135	10175.39	54.9	180.5921053	15.7	0.015
3165	25.0738	2787.956	91.52	10176.11	22.9	75.32894737	8.1	0.008
3167	25.047	2784.976	91.5601	10180.57	53.3	175.3289474	204	0.20
3168	25.0435	2784.587	91.5682	10181.47	106.7	350.9868421	53.4	0.053
3169	25.0069	2780.517	91.5629	10180.88	50.6	166.4473684	145	0.14
3170	24.7925	2756.678	91.3544	10157.7	132.3	435.1973684	94.1	0.094
3171	24.7775	2755.01	91.3811	10160.66	119.5	393.0921053	59.1	0.059
3172	24.7428	2751.152	91.3956	10162.28	137.2	451.3157895	57.5	0.057
3173	24.7431	2751.185	91.4057	10163.4	146.3	481.25	54.8	0.054
3174	24.7573	2752.764	91.4126	10164.17	121.9	400.9868421	55.6	0.055
3175	24.8031	2757.857	91.3338	10155.41	127.1	418.0921053	78.2	0.078
3176	24.7018	2746.593	91.3344	10155.47	114.3	375.9868421	57.2	0.057
3177	24.7173	2748.317	91.3051	10152.21	114.3	375.9868421	70.6	0.070
3178	24.7005	2746.449	91.2761	10148.99	109.7	360.8552632	61	0.06
3179	24.6499	2740.822	91.2738	10148.73	109.7	360.8552632	49.1	0.049
3180	24.672	2743.28	91.2696	10148.27	140.2	461.1842105	43	0.04
3181	24.7334	2750.107	91.2086	10141.48	131.1	431.25	44.3	0.044
3188	24.6595	2741.89	90.8458	10101.14	21.3	70.06578947	33.6	0.033
3189	24.6197	2737.464	90.8597	10102.69	33.5	110.1973684	79.5	0.079
3190	24.7182	2748.417	90.9442	10112.09	86.9	285.8552632	15.9	0.015
3191	24.7232	2748.973	90.9747	10115.48	78	256.5789474	154	0.15
3192	24.7198	2748.595	91.0127	10119.7	85.3	280.5921053	92.5	0.092

3193	24.6683	2742.868	90.9613	10113.99	70.1	230.5921053	105	0.10
3194	24.6317	2738.799	90.9674	10114.67	74.7	245.7236842	54.9	0.054
3195	24.704	2746.838	90.9279	10110.27	82.6	271.7105263	67.7	0.067
3197	24.735	2750.285	90.9456	10112.24	105.2	346.0526316	216	0.21
3198	24.7979	2757.279	90.806	10096.72	66.4	218.4210526	7.7	0.007
3205	24.8961	2768.197	90.8837	10105.36	20.1	66.11842105	21.6	0.021
3207	24.913	2770.076	90.9017	10107.36	76.2	250.6578947	10.9	0.010
3209	24.9277	2771.711	90.9384	10111.44	88.1	289.8026316	27.2	0.027
3210	24.9424	2773.345	90.8357	10100.02	68.3	224.6710526	29.8	0.029
3211	24.9834	2777.904	90.8394	10100.43	81.7	268.75	12.6	0.012
3212	24.7076	2747.238	91.082	10127.41	77.1	253.6184211	135	0.13
3213	24.7509	2752.053	91.0838	10127.61	78.6	258.5526316	125	0.12
3214	24.6911	2745.403	91.1408	10133.95	118.3	389.1447368	44.8	0.044
3215	24.6997	2746.36	91.1754	10137.79	0.6	1.973684211	34.7	0.034
3216	24.671	2743.168	91.1654	10136.68	109.1	358.8815789	28.2	0.028
3217	24.6572	2741.634	91.0503	10123.88	83.8	275.6578947	127	0.12
3223	24.9182	2770.655	90.2144	10030.94	22.6	74.34210526	17.2	0.017
3226	24.9531	2774.535	90.1519	10023.99	22.3	73.35526316	54.4	0.054
3227	25.1043	2791.347	90.0416	10011.73	36	118.4210526	6.7	0.006
3231	25.1921	2801.11	90.069	10014.77	37.8	124.3421053	36	0.03
3232	25.192	2801.098	90.0672	10014.57	10.7	35.19736842	19.9	0.019
3234	25.1896	2800.832	90.1184	10020.26	36.3	119.4078947	19	0.01
3235	25.1531	2796.773	90.0887	10016.96	36.6	120.3947368	46.1	0.046
3236	25.1474	2796.139	89.9353	9999.906	23.5	77.30263158	11.4	0.011
3237	25.106	2791.536	89.9278	9999.072	23.5	77.30263158	99.5	0.099
3238	25.0878	2789.512	89.9651	10003.22	34.1	112.1710526	168	0.16
3240	25.0832	2789.001	90.0006	10007.17	34.1	112.1710526	6.5	0.006
3243	24.8368	2761.604	89.7539	9979.736	22.6	74.34210526	8.2	0.008
3244	24.8568	2763.828	89.783	9982.972	22.3	73.35526316	13.3	0.013
3246	24.8969	2768.286	89.7303	9977.112	22.3	73.35526316	15.4	0.015
3249	24.9601	2775.314	89.7407	9978.268	18	59.21052632	12.1	0.012
3251	24.9811	2777.649	89.8319	9988.409	23.8	78.28947368	8.2	0.008
3255	24.9579	2775.069	89.8534	9990.8	37.8	124.3421053	12.8	0.012
3259	25.0381	2783.986	89.8339	9988.631	22.6	74.34210526	9.4	0.009
3260	25.1349	2794.75	89.8822	9994.002	22.6	74.34210526	23.6	0.023
3261	25.1823	2800.02	89.8712	9992.779	27.1	89.14473684	11.4	0.011
3264	25.2348	2805.857	89.8859	9994.413	26.8	88.15789474	113	0.11
3265	25.2699	2809.76	89.8703	9992.679	22.6	74.34210526	17.3	0.017
3266	25.2904	2812.04	89.8344	9988.687	22.6	74.34210526	98.7	0.098
3270	25.2564	2808.259	89.7845	9983.139	22.9	75.32894737	6.5	0.006
3277	23.9723	2665.48	90.7251	10087.72	36.3	119.4078947	17	0.01
3278	24.0382	2672.807	90.7176	10086.89	29	95.39473684	71.3	0.071
3280	24.0206	2670.851	90.6728	10081.91	24.4	80.26315789	43.9	0.043
3281	24.0711	2676.466	90.6934	10084.2	53	174.3421053	48	0.04
3283	24.0401	2673.019	90.7374	10089.09	26.8	88.15789474	42.2	0.042
3288	23.9309	2660.877	90.7372	10089.07	40.5	133.2236842	20.5	0.020
3292	23.8136	2647.834	90.6704	10081.64	22.3	73.35526316	84.6	0.084
3294	23.8212	2648.679	90.734	10088.71	20.4	67.10526316	192	0.19
3295	23.8889	2656.207	90.8016	10096.23	22.9	75.32894737	45.9	0.045
3296	23.9808	2666.425	90.7279	10088.04	31.4	103.2894737	52.4	0.052
3298	24.1246	2682.414	90.8287	10099.24	46.3	152.3026316	6.3	0.006
3299	24.1292	2682.926	90.8357	10100.02	29	95.39473684	120	0.1

3303	24.0634	2675.609	90.8805	10105	26.8	88.15789474	48.5	0.048
3304	24.0676	2676.076	90.9223	10109.65	22.3	73.35526316	163	0.16
3313	24.373	2710.034	89.6363	9966.66	23.5	77.30263158	55.8	0.055
3316	24.3713	2709.845	89.6885	9972.464	22.6	74.34210526	62.2	0.062
3317	24.4005	2713.092	89.6536	9968.584	22.6	74.34210526	92.5	0.092
3318	24.4397	2717.45	89.6168	9964.492	22.6	74.34210526	12.8	0.012
3320	24.3629	2708.911	89.6585	9969.129	72.8	239.4736842	51.9	0.051
3322	24.465	2720.263	89.5967	9962.257	23.8	78.28947368	46.8	0.046
3323	24.5102	2725.289	89.5233	9954.096	21	69.07894737	28.7	0.028
3324	24.2542	2696.824	90.3413	10045.05	59.4	195.3947368	8.5	0.008
3326	24.4814	2722.087	89.4628	9947.369	21	69.07894737	13.1	0.013
3329	24.4143	2714.626	89.5096	9952.572	21	69.07894737	50.1	0.050
3330	24.4512	2718.729	89.5452	9956.531	21	69.07894737	14.2	0.014
3331	24.15	2685.239	89.588	9961.29	25.9	85.19736842	81.8	0.081
3332	24.134	2683.459	89.5928	9961.823	119.8	394.0789474	61.7	0.061
3333	24.0887	2678.423	89.639	9966.96	25.9	85.19736842	187	0.18
3334	24.1799	2688.563	89.5915	9961.679	12.8	42.10526316	39.9	0.039
3335	24.1996	2690.754	89.5608	9958.265	22.9	75.32894737	26.8	0.026
3336	24.2257	2693.656	89.5768	9960.044	22.9	75.32894737	50.1	0.050
3337	24.2201	2693.033	89.5931	9961.857	22.9	75.32894737	195	0.19
3338	24.222	2693.244	89.6206	9964.915	23.5	77.30263158	51.5	0.051
3339	24.1661	2687.029	89.6232	9965.204	24.4	80.26315789	80.6	0.080
3342	24.6491	2740.733	89.642	9967.294	17.1	56.25	52.6	0.052
3343	24.6495	2740.778	89.6417	9967.261	18.3	60.19736842	63.6	0.063
3344	24.6569	2741.601	89.6445	9967.572	14	46.05263158	384	0.38
3346	24.6588	2741.812	89.5496	9957.02	18.9	62.17105263	11.9	0.011
3351	24.5665	2731.549	89.6371	9966.749	22.6	74.34210526	39.4	0.039
3352	24.5904	2734.207	89.6436	9967.472	14	46.05263158	118	0.11
3354	24.4457	2718.117	89.7149	9975.4	82.3	270.7236842	23.1	0.023
3355	24.4861	2722.609	89.7039	9974.177	18	59.21052632	12.1	0.012
3358	24.3892	2711.835	89.715	9975.411	22.6	74.34210526	10.4	0.010
3364	25.3272	2816.131	89.5899	9961.501	18.3	60.19736842	11.7	0.011
3365	25.2494	2807.481	89.5546	9957.576	21	69.07894737	12	0.01
3367	25.3248	2815.865	89.5486	9956.909	106.7	350.9868421	23.4	0.023
3368	25.2984	2812.929	89.4949	9950.938	21	69.07894737	11.2	0.011
3370	25.3348	2816.976	89.5338	9955.263	109.7	360.8552632	22	0.02
3373	25.244	2806.88	89.3111	9930.501	33.5	110.1973684	10	0.0
3374	25.2478	2807.303	89.372	9937.273	30.5	100.3289474	12.9	0.012
3375	25.2823	2811.139	89.3547	9935.349	30.5	100.3289474	7.9	0.007
3376	25.287	2811.662	89.389	9939.163	15.2	50	30.7	0.030
3377	25.3135	2814.608	89.4341	9944.178	29.9	98.35526316	84	0.08
3378	25.2539	2807.981	89.4918	9950.593	15.2	50	6.5	0.006
3379	25.2409	2806.536	89.5037	9951.916	15.2	50	15.6	0.015
3381	25.2829	2811.206	89.356	9935.494	106.7	350.9868421	18	0.01
3386	25.1903	2800.909	89.5903	9961.545	29.9	98.35526316	26.6	0.026
3391	25.5659	2842.672	89.526	9954.396	18	59.21052632	7.2	0.007
3393	25.4985	2835.178	89.5957	9962.146	21.9	72.03947368	8.8	0.008
3395	25.4801	2833.132	89.5568	9957.821	22.9	75.32894737	8.8	0.008
3397	25.5141	2836.913	89.4846	9949.793	18.9	62.17105263	33.6	0.033
3398	25.5962	2846.041	89.4541	9946.401	19.8	65.13157895	708	0.70
3399	25.5818	2844.44	89.5172	9953.417	19.8	65.13157895	18	0.0
3402	25.7596	2864.21	89.4491	9945.845	11	36.18421053	9.5	0.009

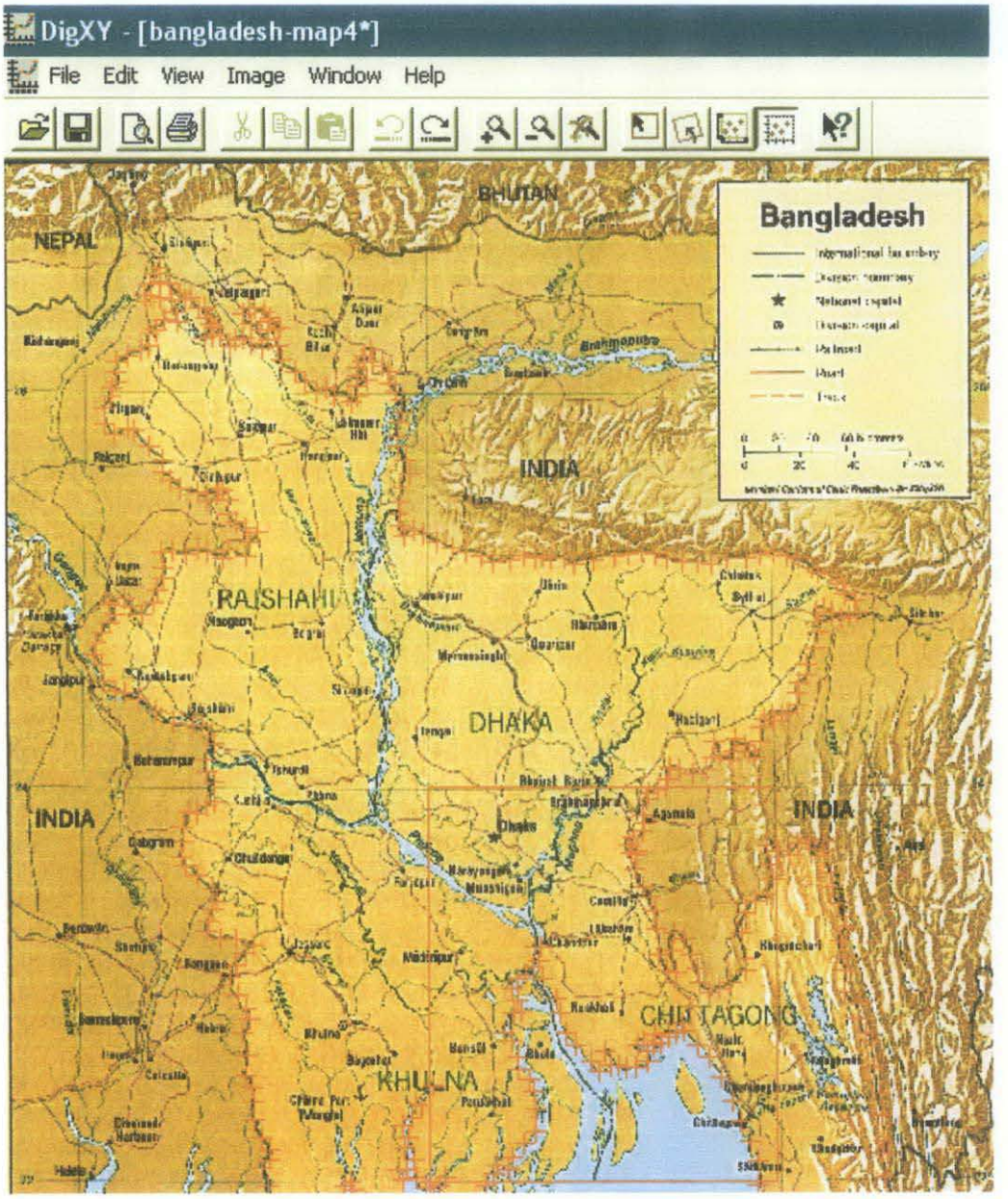
3416	25.9182	2881.845	89.1606	9913.767	22.9	75.32894737	7.8	0.007
3423	25.4789	2832.999	89.364	9936.383	45.4	149.3421053	36	0.03
3424	25.4789	2832.999	89.364	9936.383	19.8	65.13157895	7.7	0.007
3433	25.6124	2847.843	89.4135	9941.887	22.6	74.34210526	24.5	0.024
3434	25.6163	2848.276	89.4343	9944.2	14	46.05263158	298	0.29
3435	25.5972	2846.153	89.4826	9949.57	19.8	65.13157895	15.6	0.015
3436	25.6433	2851.279	89.4919	9950.604	18	59.21052632	14.2	0.014
3438	25.7018	2857.783	89.4812	9949.415	18	59.21052632	6.9	0.006
3453	25.6952	2857.049	88.4874	9838.914	29.9	98.35526316	9.2	0.009
3459	25.9122	2881.178	88.5345	9844.151	23.5	77.30263158	50.9	0.050
3460	25.9438	2884.691	88.64	9855.882	29.9	98.35526316	6.1	0.006
3461	26.0203	2893.197	88.6286	9854.614	23.5	77.30263158	54.2	0.054
3491	25.0546	2785.821	88.7627	9869.525	24.4	80.26315789	6.6	0.006
3524	24.7042	2746.86	88.65	9856.994	34.4	113.1578947	9.1	0.009
3526	24.6992	2746.304	88.7117	9863.854	34.4	113.1578947	244	0.24
3527	24.7692	2754.087	88.7083	9863.476	34.4	113.1578947	164	0.16
3529	24.8117	2758.813	88.7683	9870.147	33.5	110.1973684	14.2	0.014

Appendix 4-2



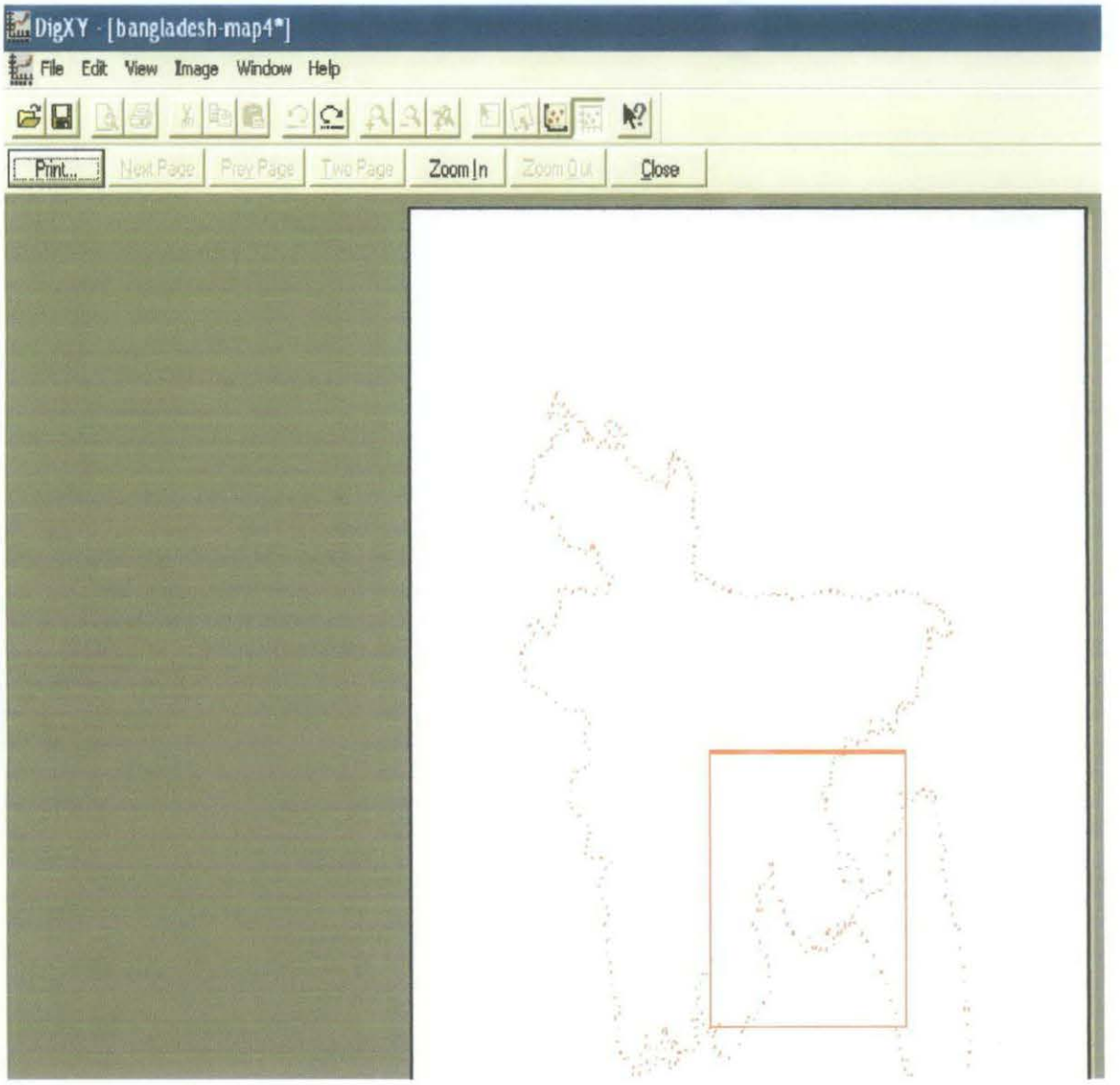
Bangladesh map

Appendix 4-3



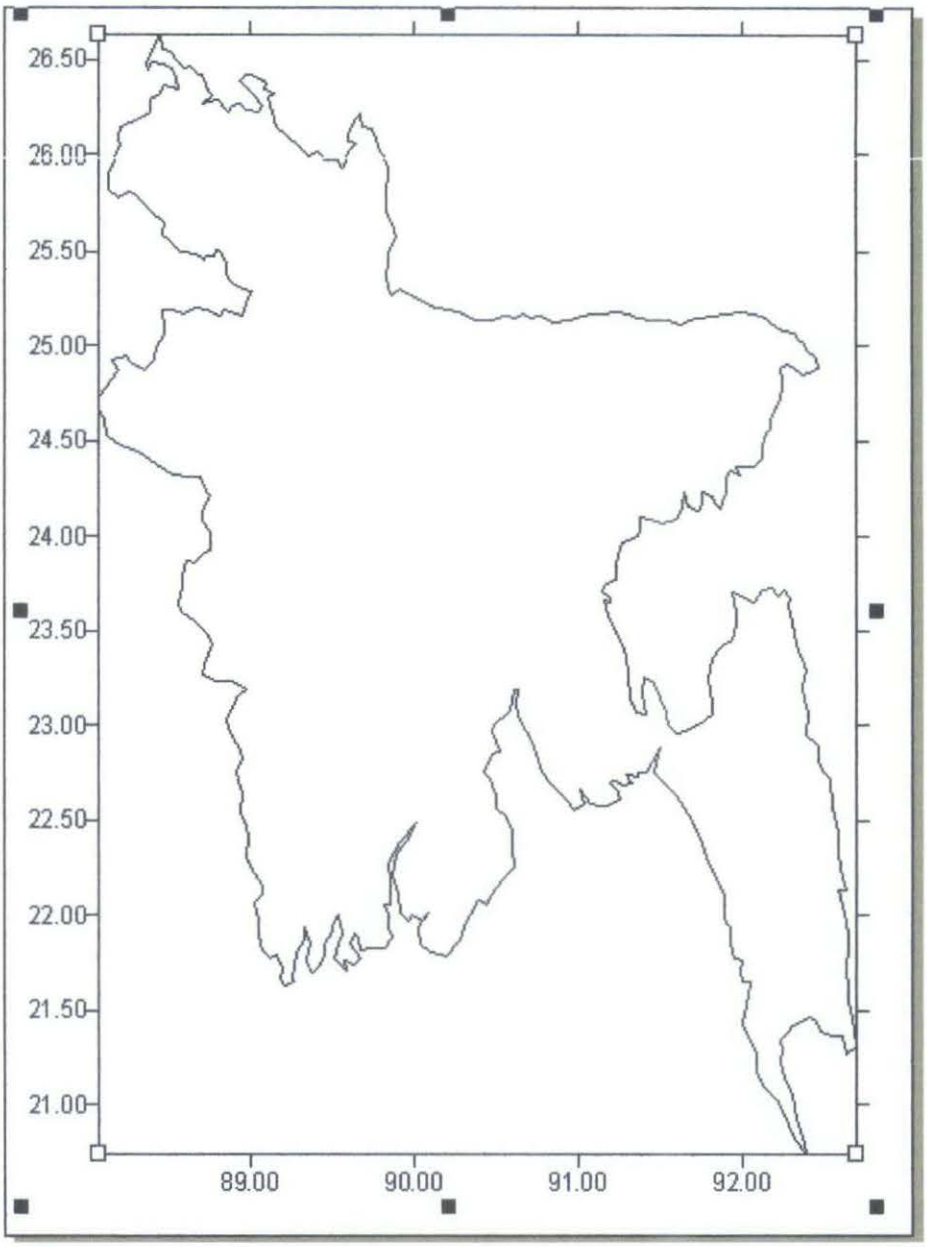
Tracing of map using Digitizer

Appendix 4-4



Traced or digitized coordinates

Appendix 4-5



The boundary file