Mid-Holocene Record of Lake Level Fluctuations and Episodic Eolian Activity, Lake Winnibigoshish North Central Minnesota

A THESIS SUBMITTED TO THE FACULTY OF THE UNIVERSITY OF MINNESOTA BY

LISA BRODERIUS

IN PARTIAL FULFILLMENT OF THE REQUIRERMENTS FOR THE DEGREEE OF MASTERS OF SCIENCE OF GEOLOGY

HOWARD MOOERS, Adviser

OCTOBER 2015

Acknowledgements

I would like to thank a number of people for their support in completing this thesis. My co-advisers, Howard Mooers and Phil Larson suggested this project and accompanied me in the field. Euan Reave provided valuable insight into the identification of diatoms and interpretation of paleoenvironments from diatom assemblages. Byron Steinman was helpful in many aspects of Mid-Holocen reconstruction and in building the age model for interpretation of the sediment core. I want to thank Wally at the Large Lakes Observatory for X-Ray Florescence analysis and many others for the use of laboratory facilities for diatom analysis. My family was extremely supportive during this endeavor and special thanks to my father for accompanying me in the field to sample lake sediments and aid in building the Broderius grid tray.

Abstract

Approximately 1000 to 1500 years ago the Mississippi River diverted its flow path to Lake Winnibigoshish. This change had a dramatic effect on lake conditions. Prior to the diversion, due to its large size and its few inputs and outputs, Lake Winnibigoshish was sensitve to evaporation. This is evident in the Sr/Ca ratio, and indicator of evaporative stress. The largest peak in Sr/Ca occurs at 8000 cal yr BP, and there are numerous oscillations in the Sr/Ca ratio that occur on timescales of 20-89 years. This suggests evaporative stress caused the lake level to drop and expose the nearshore lake sediment which eroded to form the large sand dunes on its SE shore. This means that diversion stabilized water levels and salinity. In addition, the new source of inflow induced a change in the nutrient budget.

Table of Contents

List of Tables

List of Figures

Introduction

Lake Winnibigoshish is a large, relatively shallow body of water occupying a low relief sandy glaciolacustrine basin (Figure 1). Sand dunes are ubiquitous features of this landscape (Grigal et al., 1976; Mooers and Dobbs, 1993; Marlow, 2004) with the largest most well developed dunes located immediately to the east of the lake. Grigal et al. (1976) noted that dune forms indicated prevailing winds from the northwest and that the only source of sand for dunes along the eastern shore was the shallow lacustrine environment. A sequence of five buried soils within the dunes indicates multiple episodes of dune formation. Radiocarbon dates on charcoal from within the soils bracket these episodes of eolian activity between 7910 ± 155 B.P. (1-6796) and 5040 ± 105 B.P. (1-6797), suggesting a prolonged mid-Holocene period of episodic eolian activity characterized by lower lake level, which exposed the nearshore environment to deflation (Grigal et al., 1976).

Recent investigations have documented a dramatic Late Holocene stream capture event that rerouted the Mississippi River through Lake Winnibigoshish (Mooers and Larson, 2003). Prior to about 1000 – 1500 years BP (Mooers and Dobbs, 1993; Mooers and Larson, 2003), the Mississippi River flowed from Lake Bemidji southward to Leech Lake (Figure 2). Headward erosion of a small tributary of the Mississippi River intercepted and captured Lake Winnibigoshish. This capture resulted in approximately a 4-meter drop in bothe lake level (Larson and Mooers 2003) and regional water table (Mooers and Dobbs, 1993). As a result of the lowering of Lake Winnibigoshish, a small tributary on the west side of lake (now the present course of the Mississippi River) eroded headward and captured Cass Lake in what was most likely a catastrophic event (Mooers and Larson, 2003). In addition to increasing the size of the watershed, this event also had a dramatic effect on ecology of Lake Winnibigoshish. Prior to the diversion, the lake was predominantly groundwater-fed with a small watershed. The hydrologic diversion increased the watershed of Lake Winnibigoshish by about a four-fold.

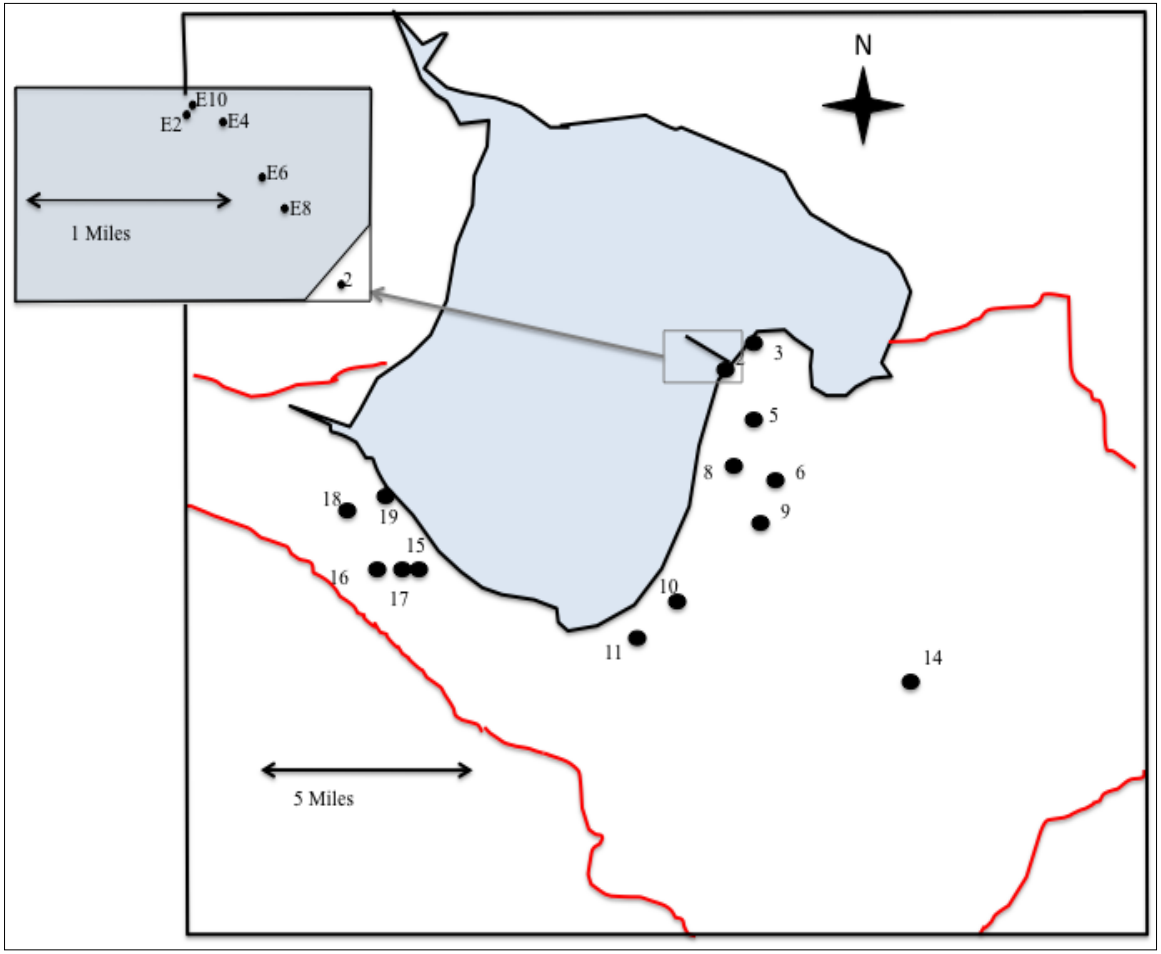


Figure 1: Map of Lake Winnibigoshish with dune field outlined in red and sediment sites marked.

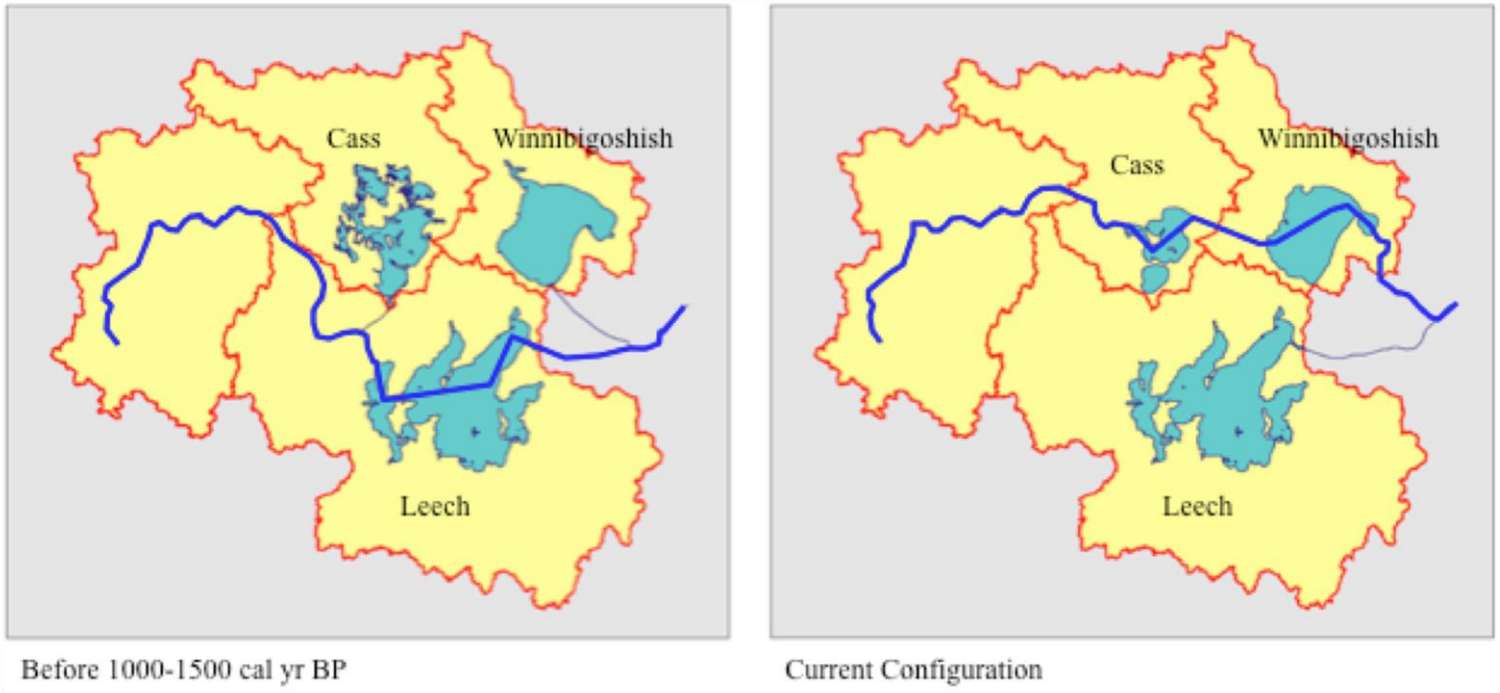


Figure 2: Early Holocene and Late Holocene Mississippi River Flow paths, dark blue. As found in Larson and Mooers (2003).

To examine the effects of the hydrologic diversion on the lake ecosystem, a 6-meter sediment core was recovered from a depth of 25 meters offshore from the mouth of the Mississippi River in Lake Winnibigoshish (Mooers and Larson, 2003). The diversion layer consists of a fining upward sequence grading from sand to mud. Prior to the diversion, Lake Winnibigoshish sediments are predominantly marl (> 60% carbonate) (Mooers and Larson, 2003), which is formed by the precipitation of calcium carbonate (Wright, 1993). Above the diversion layer lake sediment is predominantly organic carbon (gyttja) with <12% carbonate (Mooers and Larson, 2003). Larson (pers. Comm.) noted from XRD analyses of the sediment that low-Mg calcite in the pre-diversion section has elevated Mg concentrations indicating that the lake was subjected to evaporative stress. Low-Mg calcite in the post-diversion marl is low in Mg indicating that the hydrologic diversion relieved a tremendous amount of ongoing evaporative stress (Phil Larson, Personal Communication, 2015).

This study focuses on the paleoenvironmental record from Lake Winnibigoshish interpreted from the sediment core and analysis of nearshore and adjacent sand dune sediments. Analysis of diatoms and elemental chemistry were used to reconstruct the lake environment and examine the magnitude and frequency of periodic evaporative stress and evaluate whether the lake was periodically subjected to extended periods of evaporative stress. In addition, comparison of nearshore lacustrine sediment and adjacent dune sands, addresses the assertion of Grigal et al. that the source of dune sand was the lake bottom (Grigal et al., 1976) and distinct from widespread late glacial dunes (Marlow, 2004).

Study Area

Lake Winnibigoshish is located in the Upper Mississippi River Headwaters Watershed on the border of Cass and Itasca Counties, within the near the Chippewa National Forest. The surface area of Lake Winnibigoshish is 231 km^2 (Grigal et al., 1976) and the lake has two deep basins with a maximum depth around 21 m. Lake level is currently raised about four meters by by a dam built in 1884 (Grigal et al, 1976).

The watershed of Lake Winnibigoshish is characterized by level to gently rolling topography and is covered by a veneer of glaciolacustrine and glacioluvial sediment. Sand dunes are ubiquitous features on this landscape (Grigal et al., 1976; Mooers and Dobbs, 1993; Marlow, 2004). The largest of the dune fields lies on the southeast side of the lake and covers an area of 58,000 ha. Parabolic, transverse, and longitudinal dunes are numerous and their orientation suggests a predominant wind direction from the northwest (Mooers and Dobbs, 1993). Previous investigations suggest that these and similar dunes formed on lake bed sediment with relatively short eolian transport distances (Marlow, 2004; Mooers and Dobbs, 1993). However, it was recognized early on (Grigal et al., 1976; Mooers and Larson 2003) that the dunes immediately adjacent to the southeast shore of Lake Winnibigoshish on the east are generally taller than dunes on much of the lacustrine plain. These larger dunes have morphologies suggesting a NW wind and are composed of fine to very fine sand similar to the sediments of the watershed. Within these larger dunes, Grigal et al., 1976) reported 5 buried soils. Two of these soils had charcoal fragments that were dated 7910 +/- 155 14C BP (8773 cal yr BP) and 5040 +/- 105 14C BP (5787 cal yr BP) respectively (Grigal et al., 1976). Grigal et al. (1976) proposed that these large dunes could only have been formed during periods of prolonged drought that lowered the lake level and exposed the lake bed to deflation by wind erosion; the only nearby source of sand is the shallow-water lacustrine environment of Lake Winnibigoshish (Grigal et al., 1976). Grigal et al. (1976) further suggested that mid-Holocene dune formation was regionally widespread and potentially lasted for several thousand years (Grigal et al., 1976).

Currently the dune field and surrounding area are vegetated mainly by a mixed aspen/birch/pine assemblage (Pinus banksiana - jack pine and Pinus resinosa - red pine) (Grigal et al., 1976), with some relict prairie plants (*Andropogon sp*.) intermixed into the low-lying area in between the dunes.

The glacial history and postglacial environmental succession of northern Minnesota are reasonably well documented. Rapid ice retreat between about 13ka and 11ka (14C BP) was followed by the invasion of pioneering plant communities with tundra-like affinities, which quickly gave way to a boreal forest community (Wright et al., 2004). Continued postglacial warming allowed the boreal forest to transition to a temperate deciduous community. Between about 9,000 and 6,000 cal yr BP the prairie forest border moved eastward into north central and even northeastern Minnesota. At this time paleoenvironmental records indicate the region was warmer and significantly drier than at present (Filby, 2002; Bartlein et al, 1984; Wright et al., 2004; Jelersma, 1962; Williams et al, 2009). The mid-Holocene was characterized by relatively frequent and extended periods of drought. By about 2,000 cal yr BP the climate and vegetation assemblages had attained their current configuration (Williams et al., 2009).

The Late Wisconsinan

The northern Minnesota geologic record records repeated glaciations during the Pleistocene (Meyer, 1998). However, the present landscape results from Late Wisconsin ice advances (Hewitt, St. Croix-Itasca and Alborn phases(Wright, 1972)), and the final advance of which culminated at about 13 ka 14C BP (~16,500 cal yr BP) (Larson et al., 2014; Mooers and Lehr, 1997; Bromwich et al., 2004).

The Rainy and Superior lobes advanced from the Northeast out of the Labradoran accumulation center and traversed the Hudson and James Bay lowlands, respectively. The Superior lobe advance trended along the relatively deep Lake Superior basin and was prone to surging. The Rainy lobe advanced parallel to the Superior lobe across the topographically higher terrain of northeastern Minnesota. This advance of the Rainy lobe culminated during the Hewitt phase about 23-21 ka 14C BP (~28,000 – 26,000 cal yr BP) (Mooers and Lehr, 1997). Ice then retreated and re-advanced during the St. Croix phase (16-15.5 14C BP; ~18,500 -19,000 cal yr BP) (Wright, 1972; Mooers and Lehr, 1997).

Continued retreat of the Rainy lobe exposed the Lake Winnibigoshish region and allowed the St. Louis sublobe to advance across from northwest to southeast (Larson et al., 2014; Knaeble et al., 2005) (Figure 3). Advance of the St. Louis sublobe culminated about 13ka 14C years BP (~16,500 cal yr BP). Rather than undergoing a systematic ice margin retreat, the St. Louis Sublobe stagnated and wasted away. Three prominent glacial lakes formed in this area: Glacial Lakes Upham II and Aitkin II to the southeast (Wright, 1972) and Glacial Lake Sucre to the northwest in the area around Lake Winnibigoshish (Larson et al., 2014). Meltwater from ice to the north and west of the study area passed through Glacial Lake Sucre, into Glacial Lakes Aitkin II and Upham II (Fig. 3, Larson et al., 2014) and ultimately to the Mississippi River or to Lake Superior (Wright, 1972).

Late Glacial and Holocene Vegetation

The present study area was free of glacial ice by about 14.5 cal yr BP. The barren landscape quickly gave way to a mixture of boreal (mainly spruce) and temperate taxa (Wright, 2004). By about 10 ka cal yrs BP the boreal assemblage gave way to pine/birch/elm parkland (Wright, 2004; Barlein and Whitlok, 1993). Between 9 and 8 ka cal yr BP pine rapidly gave way to oak and prairie plants reached their maximum abundance (Wright et al., 2004). This prairie assemblage was present until about 3.4 cal yr BP after which oak dramatically decreased in abundance and was replaced by pine and birch (Wright et al., 2004).

The prairie gradually expanded eastward from modern North Dakota beginning around 11,000 cal yr BP with the limit of the expansion was the prairie-forest ecotone in eastern Minnesota lasting from about 7,000 to 6,000 cal yr BP (Williams et al., 2009, Wright 1993; Whitelock et al. 1993). At Elk Lake (78 km southwest of Lake Winnibigoshish) the mid-Holocene Hypsithermal dates between about 8,500 and 4,000 cal yr BP (Bradbury and Dieterich-Rurup 1993; Barlein and Whitlok, 1993), and was characterized by about 100 mm less annual precipitation and July temperatures ~2 ºC warmer than present (Bartlein and Whitlock, 1993 and Filby, 2002). The lowest annual precipitation during

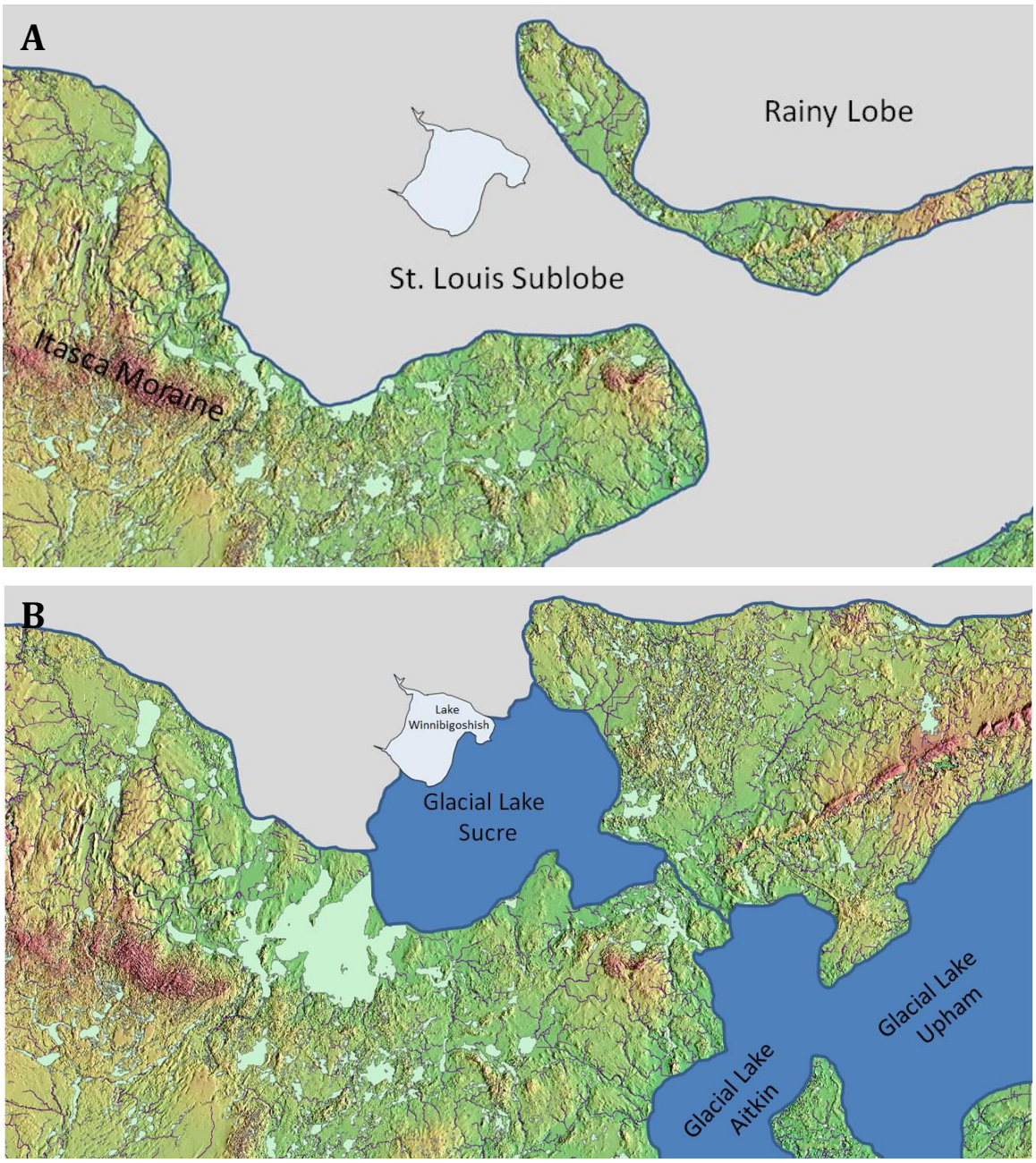


Figure 3: A. relationship of the retreating Rainy lobe and the limit of the St. Louis sublobe. B. The St. Louis sublobe quickly melted exposing glacial lakes Aitkin, Upham, and Sucre. Lake Sucre was likely very shallow and characterized by rapid through flow of sediment-laden glacial meltwater. Current Lake Winnibigoshish location outlined.

the Holocene was 250 mm less than modern Minnesota, occurring around 7.7 ka 14C yr BP (~7,500 cal yr BP). During that time, temperatures were around 4 °C warmer in July and around 3.5 °C warmer in January than they are currently (Fillby, 2002). At 6,000 cal yr BP in northern Minnesota the prairie was fully established and oak was common. During the Late Holocene (from 3,400 to 2,700 cal yr BP) the region transitioned to a moister climate. As this occurred, pine forest moved in, and peaking about 2,700 to 2,200 cal yr BP. At 2,200 cal yr BP pine species declined. By the 1880s agricultural species populations emerged in northern Minnesota, and pine species declined again slightly, due to selective logging (Wright, 2004).

The prairie vegetation of the mid-Holocene was the result of a tongue of drier air moving eastward. This was most likely caused by the retreat of Arctic air masses, which were replaced by warmer and drier Pacific air masses (Bartlein et al. 1984). After 6,000 yr BP the tongue of Pacific air retreated, most likely due to an increase in the duration of cold dry Arctic-type air masses in the northern Midwest region and of Atlantic-type air masses in the southern Midwest region (Bartlein et al., 1984). This triggered the westward retreat of the prairie and expansion of forests between 6,000 cal yr BP and 2,000 cal yr BP (when the prairie forest border reached its present location) (Williams et al., 2009). In Minnesota, the forest expansion that followed can be attributed to increased moisture availability; this is indicated by higher lake-levels, reduced lake salinity, and reduced eolian activity (Williams et al., 2009). The paleohydrological effect on forest composition and tree expansion in the Great Lakes region seems to vary on a centennial to millennial timescale (Williams et al., 2009).

Williams et al. (2008) show that, overall, the pollen record reveals abrupt landscape change. The record also showed local patterns of abrupt deforestation and gradual reforestation along the prairie-forest ecotone during the Holocene. Possible causes, in addition to climate change, that may have affected the rapid forest-to-prairie conversion (up to 6,000 cal yr BP in Minnesota) include loss of forest cover leading to drying of the continental interior, altered regional hydrology caused by the drainage of Lake Agassiz,

positive vegetation feedbacks to summer precipitation (Williams et al., 2009), and increased fire severity and frequency (Williams et al., 2009; Clark, 1993). Currently at Lake Winnibigoshish, the vegetation consists of upland coniferous forests with relict prairie vegetation assemblages common in swales between the dunes.

Indicators of Evaporative stress

Sr/Ca

Precipitation has high concentrations of dissolved CO_2 and O_2 (Ito, 2002). Groundwater discharging into a lake brings with it cations such as Na^{+}, Ca^{2+}, Mg^{2+}, Si^{4+}, and Sr^{2+} and anions or anion complexes like Cl^{-} or $SO_4{}^2$ and HCO_3-. The concentrations of these will depend on factors such as chemical reactivity (H2CO3 concentration), lithology, mineralogy, permeability of the aquifer, source of the recharge, and climate (Ito, 2002).

Carbonate mineral precipitation from lake water often occurs due to an increase in evaporation and a resulting rise in the concentration of solutes. When carbonate minerals precipitate, they selectively remove different elements, resulting in a change in ionic ratios in the lake water and in the mineral chemistry of the carbonate precipitate itself (Haskel et al, 1996). The Sr/Ca record of lake sediment can provide hydrochemical information: for instance, whether the lake had a high enough Mg/Ca ratio to precipitate aragonite instead of calcite (Ito, 2002). If low Mg calcite input is not at equilibrium evaporative concentration, the Mg/Ca ratio of the water will increase, and the Mg/Ca ratio in the precipitation of bulk carbonate will increase (Ito, 2002 and Haskell et al., 1996). As the salinity increases, the aragonite/calcite ratio in the calcite precipitation increases,as aragonite has a high affinity for Sr. Sr is removed preferentially from the water, resulting in an increase in the Sr/Ca ratio of the precipitate and a decrease in the Sr concentration of the water (Haskel et al., 1996).

Diatoms

Diatoms assemblage analysis was used to reconstruct environmental characteristics of Lake Winnibigoshish before and after the diversion of the Mississippi River into the lake. Diatoms are microscopic, unicellular plates which are usually well preserved because their cell walls are composed of silica (Barber and Haworth,1981 and Hall and Smol, 1999). Diatoms also rapidly respond to their environment and have narrow ecological tolerances (Dixit et al., 1992). They are useful tools when constructing paleoclimate records (Pienitz, Smol and Birks, 1995). Diatoms cannot be directly used to get paleoclimate readings, but can be used to gather information that correlates with or is driven by climate factors (Dixit et al., 1992; Laird et al., 1998; Stone and Fritz, 2006; Fritz et al., 1991).

This study focused on the diatoms assemblage the observation of the assemblage pre- and post-diversion. Diatoms have short generation times and therefore show rapid response to environmental changes. Diatoms can be divided into planktonic and benthic groupings. According to Wolin and Duthie (1999), as lake-levels fall, the relative area of shallow water habitat increases, allowing for an increase in benthic and epiphytic forms (Wolin and Duthie, 1999). In contrast, an increase in planktonic diatoms is interpreted as an increase in production or depth (Anderson, 1989). The assemblage response to physical or chemical variations can also signal water level changes (Wolin and Duthie, 1999) and, thereby, climate changes. In addition, diatom assemblages can be used to infer water temperature, nutrient levels, and pH. (Anderson, 1989; Bradbury and Dieterich-Rurup, 1993).

Methods

Core description and sampling

This study used a sediment core collected in 2001 by Larson, archived in cold storage at the University of Minnesota Large Lakes Observatory in cold storage. The core was

collected using a Livingston corer and totals 580 cm in length, in seven sections. Section I, 0-85 cm; Section II, 85-185; Section III, 185-285 cm; Section IV, 285-385 cm; Section V, 385-481 cm; Section VI, 475-533 cm; and Section VII, 533-580 cm. From The Mississippi River diversion layer occurs at the bottom of Section III at a depth of 2.60 m. Cores were unwrapped, measured, described using a Munsell color chart, and described by sediment type. All core sections were analyzed by the iTRAX XRF scanner with 2 mm resolution at the Large Lakes Observatory (LLO), University of Minnesota Duluth, sedimentology, and analytical facility; this was performed by LLO technicians.

The diversion of the Mississippi River into Lake Winnibigoshish is marked by a distinct medium grained sand layer at a depth of 275 cm. Since this investigation focuses on the changing lake conditions prior to and after the Mississippi River diversion, only the core sections III and IV (185 to 385 cm depth) were sub-sampled for detailed analysis of diatom assemblages. Sampling intervals in the two core sections varied. Core section III was sub-sampled every 4 cm. Core section IV was sub-sampled every 5 cm, with every other sub-sample corresponding to samples collected for Mooers and Larson in 2003.

Age Model

An age-depth model for the core was created from ^{14}C dates provided by Mooers and Larson (2003) (Table 1). The dates were calibrated using the latest version (7.1) of CALIB Radiocarbon Calibration, and the dates were obtained from the 2-sigma median age output given by the program. Age-depth models were created on either side of the diversion layer. For each age model, the dates were plotted in Microsoft Excel, and a linear best fit line was added using Excel graph functions. The equation outputted for each section became the age model. The pos-diversion age-depth model indicates the top of the core to be 363 years younger than when it was obtained. This was assumed to be our reservoir carbon effect, so the age models (both pre and post-diversion) were corrected by 363 years to account for it.

AMS Lab Code	Depth	dC13	C14	Fm Error	Age Cal yr BP	Error
AA47852	32	-28.60	0.9634	0.0043	300	36
AA53421	247.5	-27.40	0.8829	0.0039	1000	35
AA58058	280	-27.01	0.5292	0.0024	5112	37
AA58059	415	-26.57	0.4101	0.0026	7159	52
AA56906	578	-25.97	0.3295	0.0017	8918	41

Table 1: ^{14}C dates obtained by Mooers and Larson (2003).

X-ray fluorescence (XRF) scanning

The core was scanned at the LLO using the ITRAX for XRF analysis. The purpose of this scan was to obtain elemental data, analysis of which could provide evidence for evaporative stress via Sr/Ca ratios. XRF is a technique that uses excitation of electrons to estimate the abundance of elements in rocks and sediments (Weltje and Tjallingii, 2008). XRF analysis allows researchers to obtain non-destructive, high-resolution geochemical data for terrestrial and marine sediments, and drilled rock cores (Croudace et al., 2006). The ITRAX scanner is controlled by computer with a Windows WPXP platform and the program Q-Spec. Q-Spec is a spectral analysis software that is used to determine individual elemental peaks from the spectrum. The data output from this scan is a Microsoft Excel file that reports the elemental data as raw counts per minute (Croudace et al., 2006).

The core was scanned with every 2 mm, corresponding to a time interval of approximately 2 years according to the age-depth model. XRF scan element counts were normalized, before dividing Sr by Ca to get the ratio. Sr/Ca was smoothed to a 10 and a 50 year running average. The raw elemental counts and normalized Sr/Ca are tabulated in Appendix 1.

Diatom analysis

This study followed an adaptation of the Environmental Protection Agency's Standard Operating Procedure for diatom analysis, found in the Standard Operating Procedure for Phytoplankton Analysis (http://www.epa.gov/greatlakes/lmmb/methods/phy.pdf).
The sub-samples were digested to remove organic material by placing each sub-sample in a 300-milliliter (ml) beaker with 225 ml of deionized water and 20 ml of nitric acid. The beaker was set on a hotplate until the total volume was reduced to 50 ml. Once the beaker was removed from the hotplate, the total volume was brought up to 100 ml with DI water, after which 25 ml of 30 percent hydrogen peroxide and a few crystals of potassium dichromate were added. The beaker was then placed back on the hotplate and reduced to 10 - 15 ml.

The solution remaining in the beaker was poured into a 50 ml conical, graduated centrifuge tube. The beaker was rinsed three times with deionized water and the rinse was added to the centrifuge tube to ensure no material was left behind. The total volume of the centrifuge tube was brought up to 35 ml and allowed to settle overnight. From there the sample underwent a series of rinses. For each rinse cycle all but 5 ml of supernatant was drawn off, replaced with deionized water, then shaken until homogenous and placed in a centrifuge at 2000 rpm for 15 minutes. This rinse process was done a total of eight times per sample.

The end product of the rinse was a clear solution with a white diatomaceous pellet settled at the bottom of the centrifuge tube. The volume was drawn down to exactly 5 ml (without disturbing the pellet). Then the contents were homogenized, and a portion was drawn off and diluted with a known amount of DI water to achieve desired concentration on finished slide.

For slide preparations of the diatom slurry a gridded tray composed two pieces of Plexiglas® was used. One piece of Plexiglas had 18 diameter mm circular wells that were

spaced 3.81 cm apart. The piece with the wells was placed on top of other, which was gridded off and numbered. The pieces were held together using binder clips. The grid tray depicted in figure 4, allowed for the sample to sit evenly on top cover slip without spilling.

After the samples were dry and the two pieces of Plexiglas could be easily separated, a microscope slide with Meltmount, heated to a lower viscosity on a hotplate at the lowest temperature setting for approximately 30 s, could easily be inverted and pressed over a coverslip to lift it. The slide was then set back on the hotplate to further warm the Meltmount to liquid consistency, and a tweezer was used to gently press the coverslip onto the slide. The slide was then allowed to cool.

Counting was done using oil immersion at 1000x magnification. Frustule must be over 50 percent intact and in viewfield to be countable; the minimum count for each sample was 500. Counting would start from one edge (recorded on data sheet) of the coverslip to the other. This counted as one transect the start and endpoints of each transect were recorded. If the minimum count had not been reached by that point, the view would be moved up the height of the viewfield, to complete another transect. This was repeated till the minimum count had been achieved by the completion of a transect. Counted diatoms were tallied on data sheet, and each time a new species was encountered a picture was taken using the microscope's camera (picture number was recorded on data sheet)(There were several cases where similar species of diatoms from the same genre were mistakenly identified in these cases the species were lumped together as there was no way to separate this out). Primary identification reference was the series Süßwasserflora von Mitteleuropa by Krammer, K. and H. Lang-Bertalot (1986, 1988, and 1991).

Dune and Lake-bed Sampling

Sediment sampling of sand dunes and nearshore lacustrine sediment was done to evaluate whether the source of sediment for the large dunes was the nearby lacustrine environment

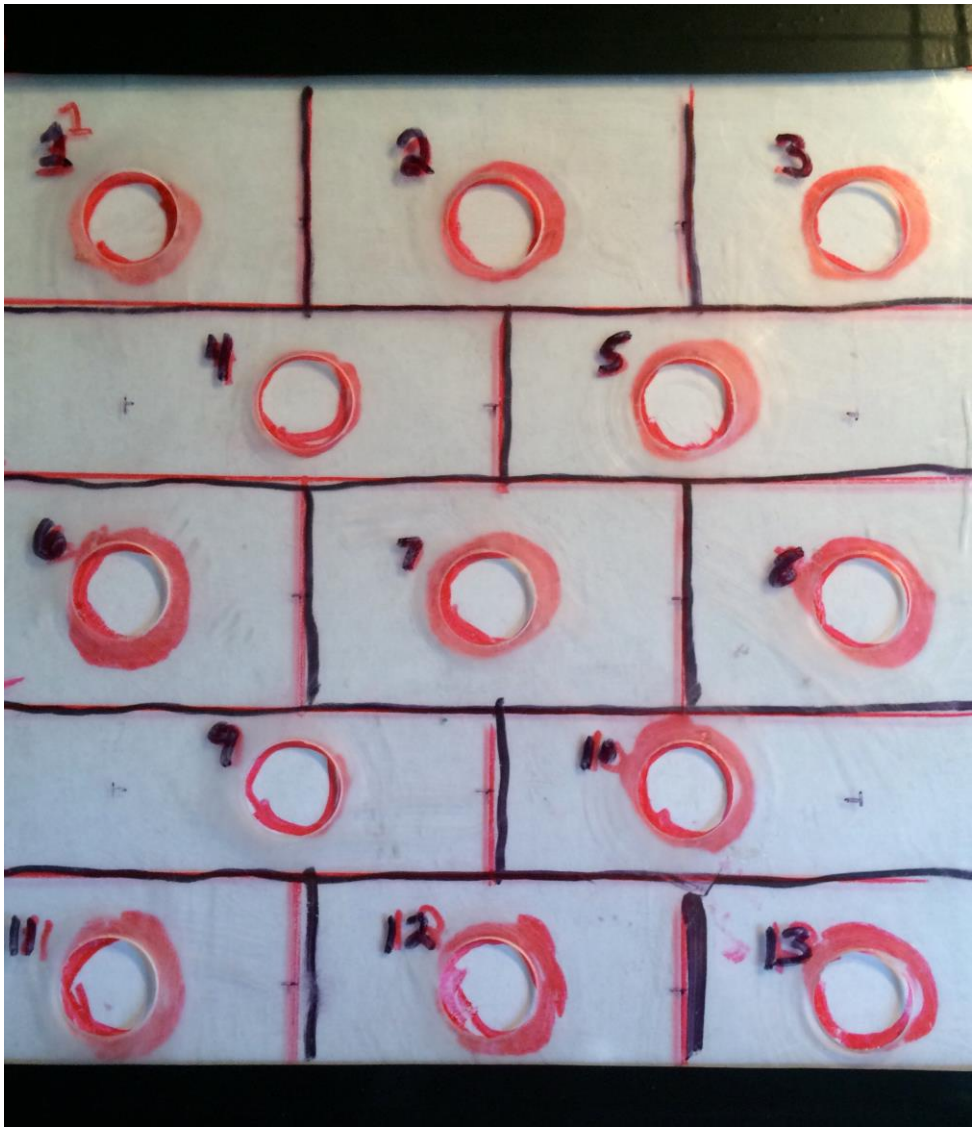


Figure 4: Broderius Grid Tray. Used for drying diatom slurry. Composed of two pieces of Plexiglas®, one with 18 mm circular wells spaced 3.81 cm apart, held tight together with clips.

(Grigal et al., 1976). Dunes were selected using from a LiDAR altimetry-derived digital elevation model from the Minnesota Department of Natural Resources (DNR) data deli. Sample sites from each dune were chosen using two criteria: site location near the crest of the dune (for consistency), and site accessibility by or close to roads/forest service roads. Sites were distributed between the large, higher amplitude Middle Holocene dunes adjacent to the southeast shore of Lake Winnibigoshish and the smaller, low amplitude dunes, presumably Early Holocene in age, located southwest of Lake Winnibigoshish. The nearshore lake bottom samples were taken using an Ekman dredge along a transect runnin from the shore out to approximately 20 ft depth, offshore of the eastern side of Lake Winnibigoshish near Tamarack point. One sample was grabbed for approximately every other foot decrease in lake depth. The sediment was placed into a Whirlpack® and allowed to dry, in an open bag, over a period of several days. All sample sites are shown in figure 1. For all sediment samples color was recorded using a Munsell color chart, and sediment sorting was accomplished by an ultrasonic sieve. Statistics (mean, median, and mode) were obtained using the methodology of Folk (1974).

Results

Core description

The sediment core recovered in 2001 and maintained in cold storage at the University of Minnesota Duluth Large Lakes Observatory was described in detail. There is some apparent compaction in each section (figure 5). This compaction shows as gaps between sections; the standard method is to treat it as a disconformity loss. The most visible gap exists between Sections III and IV (274.4-285); this seems even more dramatic after the age model is applied, as the diversion layer occurs 0.5 cm above the end of core III before this gap.

The diversion layer is a 27 cm fining upward sequence occurring from 274 to 254 cm depth, with medium sand in the lower 1.5 cm and clayey sediments in the top 7.3 cm. Above the diversion, the sediment is composed primarily of organic organic material (gyttja). Below the diversion layer the sediment is composed of silty marl.

XRF

Data from the XRF scan are tabulated in Appendix 1. From the age-depth model, the pre-diversion sedimentation rate was 0.71 mm/year, and the post-diversion the sedimentation rate was 0.4 mm/year. Because of the objective of this investication, to evaluate evaporative stress of the XRF geochemical data, only Sr and Ca were examined. Pre-diversion Lake Winnibigoshish had a wider Sr/Ca range than the post-diversion record, and Sr/Ca shows significant temporal variation during the early Holocene. The the largest peak in Sr/Ca occurs at 8000 cal yr BP, signifying a period of high evaporative stress (Fig. 6). There are numerous oscillations in the Sr/Ca ratio that occur on timescales of 20-80 years and can be described by a long term peaks and dip trends with small scale, decadal oscillations. The post-diversion section shows oscillation, but not nearly as extreme as the oscillations in the pre-diversion sediments.

Diatoms

In a preliminary survey of sedimentary diatoms by Euan Reavie (unpublished data) three zones were identified in the Lake Winnibigoshish core. Two of these zones, one above and one below the diversion layer, (represented by the red bar in figure 7) pertain to this study. One diatom included in this study, *Aulacoseira ambigua* (group 1, table 2), occurs in relatively high percentage in both the post- and pre-diversion sections. Species abundant solely in the pre-diversion are *Amphora pediculus* and *inariensis, Pseudostraurosira brevistriata,* and *Staurosirella pinnata* and *martya* (group 3). Species that, despite some spikes in the diversion and post-diversion, are more abundant in the pre-diversion are *Amphora thumensis, Cocconeis neothumensis, Cymbella subaequalis, Fragilaria capucina, and Gyrosigma acuminatum* (group 4). Species that occur in higher

abundance in the post-diversion environment are *Aulacoseira granulata, Cyclotella bodanica /c. atomus, Fragilaria crotonensis, Stephanodiscus niagarae, s. hantzschii,* and *Tabellaria flocculosa* (group 2). Diatoms in groups 1 and 2 of table 2 tend to be those with correlated with high phosphorus (TP). In general the diatoms in the pre-diversion zone have lower phosphorus requirements and indicate oligatrophic conditions. Where the post diversion diatoms have high phosphorus requirements and are mostly planktonic species. Suggesting the Mississippi River diversion brought in more nutrients from upstream and allowed for deeper water level conditions. It is also important to note that two of the species (Aulacoseira ambigua and A. granulata) require sufficient turbulence to stay in the photic zone. Lake Winnibigoshish sees a lot of sediment suspension on windy days from Langmuir circulation.

Sediment

The mean grain size versus standard deviation of the dune and nearshore lake bottom sediments are plotted in figure 8, and tabulated in Appendix 4. From figure 8, the mean grain size for the large dunes (sites 2, 3, 5, 6, 8, and 9) ranges from 1.9 to 2.8 ϕ (fine sand) with a standard deviation range from 0.64 to 0.79 ϕ. The mean grain size for the small dunes (sites 10, 11,14, 16, 17, 18, and 19) ranges from 0.45 to 2.6 ϕ (medium to very fine sand) with a standard deviation range of 0.77 to 1.7 ϕ. The Ekman dredge samples are shown in the zoomed in transect in figure 5, the mean grain size ranged from 0.47 to 1.2 ϕ with a standard deviation range of 0.83 and 2.4 ϕ, except for E11 which was taken directly off the dock. The points cluster around a mean from 1.9 to 2.8 ϕ and a standard deviation from 0.47 to 1.1 ϕ. The overall, the composition of the sediments (large dunes, small dunes, and Ekman) are > 90 percent sand.

Figure 5: Core description: length, sediment type and sediment color.

Section	Corrected Depth		Sediment Type	Munsel Color
	top cm	to cm		
01-LW-01L-1	0.0	3.5	organic	SYR/2.5V/1C
0-85 cm	3.0	4.5		10Yr/6/3
	4.5	8.5		5YR/2.5/1
	8.5	9.5		10YR/6/3
	9.5	12.8		5YR/2.5/1
	12.8	14.5		10YR/6/3
	14.5	15.2		5YR/2.5/1
	15.2	16.4		10YR/6/3
	16.4	72.2		2.5YR/2.5/1
	72.2	85.0	compaction loss	
01-LW-01L-II	85.0	105.7		5YR/2.5/1
85-185	105.7	115.2	shell fragment	5YR/2.5/1
	115.2	118.5		10Yr/2/1
	118.5	121.7		5YR/2.5/1
	121.7	121.9		10YR/6/3
	121.9	133.4		5YR/2.5/1
	133.4	133.9		10Yr/6/3
	133.9	144.7		5YR/2.5/1
	144.7	145.7		20YR/6/3
	105.7	168.5		5YR/2.5/1
	168.5	185.0	compaction loss	
01-Lw-01L-III	185.0	202.5		white/N/8V
185-285 cm	202.5	220.0		5YR/2.5/1
	220.0	221.7		10Yr/6/3
	221.7	232.4		5YR/2.5/1
	232.4	247.0		5YR/3/1
	247.0	254.3	clayey	10YR/3/1
	254.3	272.5	sandy/grainy	2.5Y/4/2
	272.5	274.0	gravel layer	2.5Y/4/1
	274.0	274.4	Marl	2.5Y/4/1
	274.4	285.0	compaction loss	
01-LW-01L-IV	285.0	289.4		2.5Y/2.5/1
285-385 cm	289.4	382.4		2.5Y/4/1
	382.4	385.0	compaction loss	
01-LW-01L-V	385.0	477.7		2.5Y/4/2
385-481	475.0	477.7	**overlap**	<----------
01-LW-01L-VI	475.0	482.2		2.5Y/5/2
475-533	482.2	524.2		2.5/4/1
	524.2	533.0	compaction loss	
01-LW-01L-VII	533.0	533.5	misssing	
533-580	533.5	575.5		2.5Y/4/1
	576.0	580.0	compaction loss	

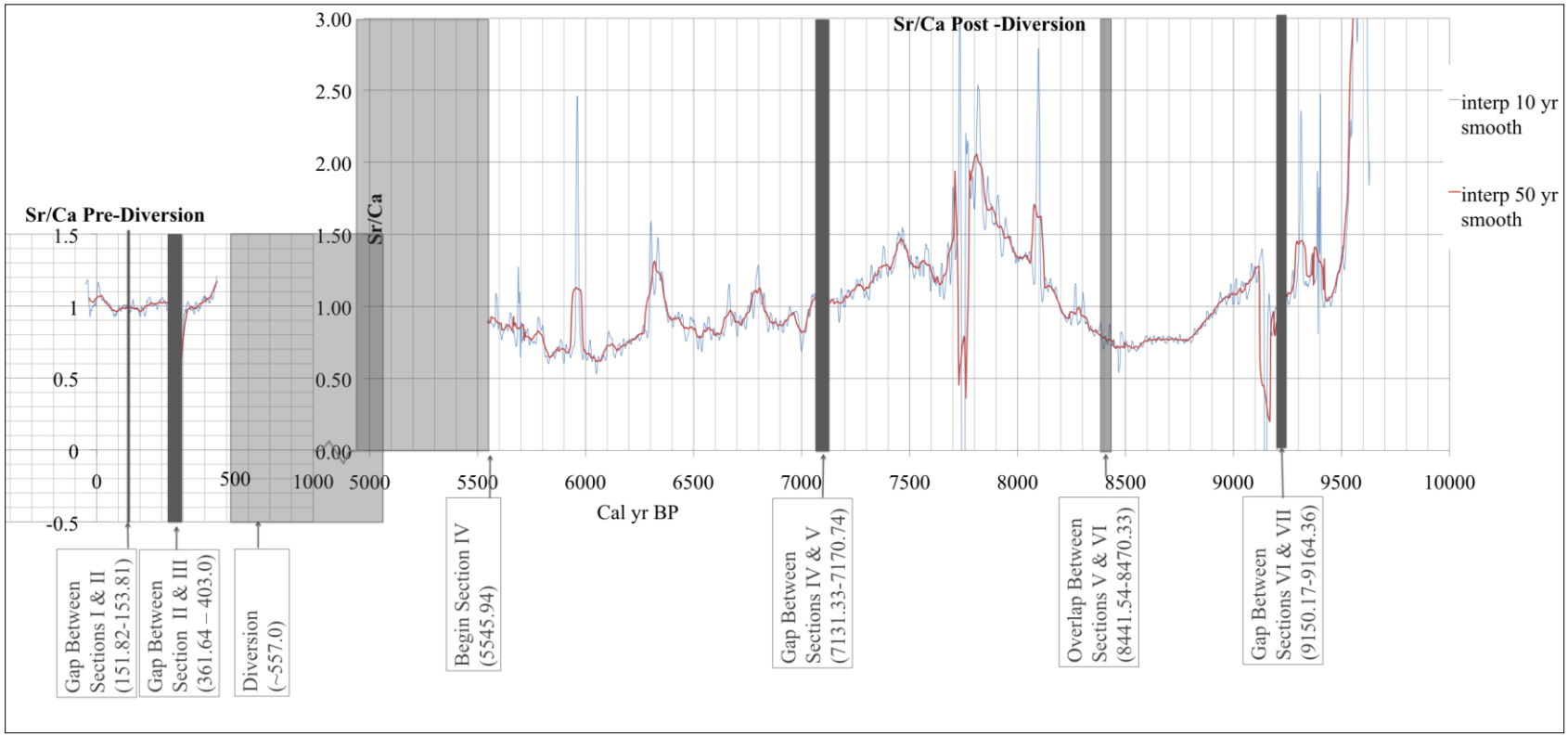


Figure 6: Sr/Ca ratio, from XRF scan of sediment core. A higher Sr/Ca indicates more evaporative stress. Gray bars represent gaps or overlaps in the sediment record. Red line represents a 50 year running average, blue line represents a 10 year running average.

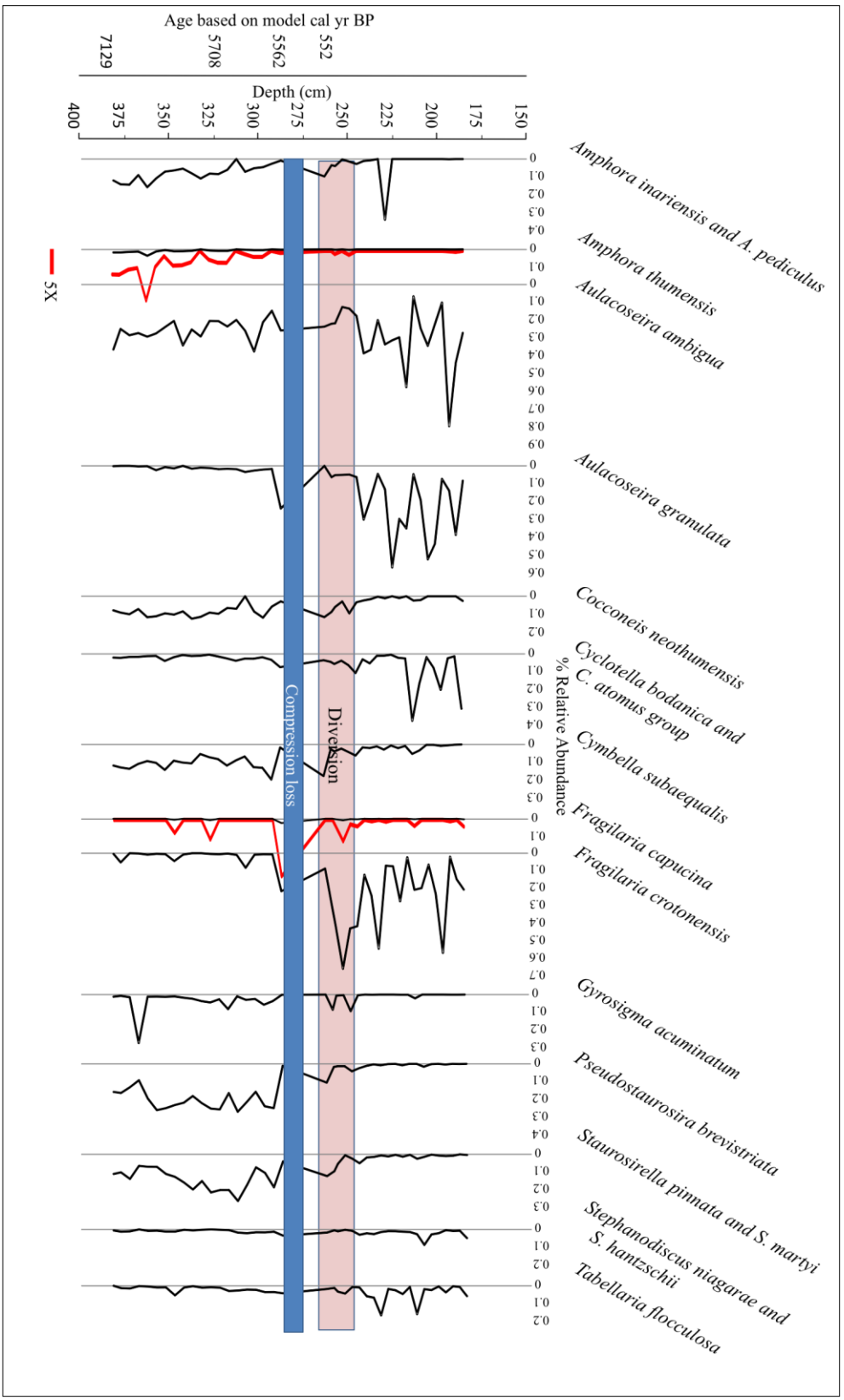
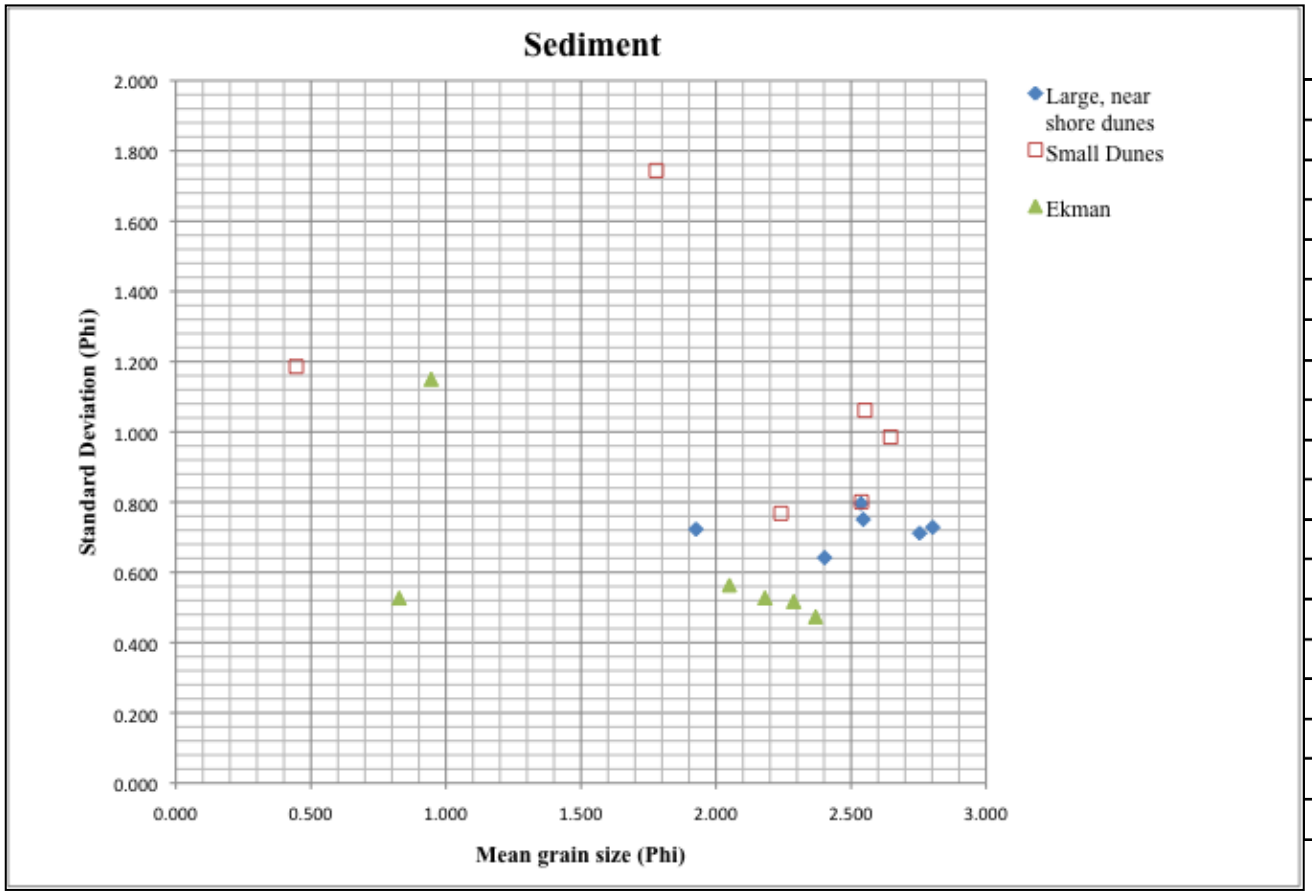


Figure 7: Diatom species that have greater than one percent relative abundance. Red bar represents diversion layer.

		Type	Salinity optimum g*L^(-1)	Range from	Range to	TP optimum ug*L^(-1)	Range from	Range to	Additional Information
1	Aulacoseira ambigua	Planktonic				16.8	7.4	38	Summer diatom that requires: moderate to high light, high Si, strong turbulence to support it in the epilimnion, nutrient rich water, moderate loadings of phosphorus, intermediate light levels, and reflects increased summer precipitation.
2	Aulacoseira granulata	Planktonic				23.3	8.7	62	Requires:high silicon, turbulence to keep, typically occurs in shallow, turbid, eutrophic lakes. *needs more phosphorus than a. ambigua
	cyclotella bodanica	Planktonic				11.7	5.3	26	
	and adomis								
	Fragilaria crotonensis		0.18	0	2.8	13.8	6.7	28	Requires: increased silicon low phosphorus (high Si:P), high light, lake stratification early in the season, and low phosphorus in epilimnion
	stephanodiscus niagarae					14.9	7	32	Reflects eutrophic conditions
	Stephanodiscus hantzschii	Planktonic	0.33	0	3.8	12.9	7.5	22	Dominates in prarie lakes requires high phosphorus,and precipitation
	Tabellaria flocculosa	Planktonic				17.5	9.4	33	
3	Amphora pediculus					10.4	5.6	19	Periphytic species
	and inariensis								
	Pseudostaurosira brevistriata	Planktonic							
	Staurosirella pinnata								
4	Amphora thumensis					9.7	5.6	17	
	Cocconeis neothumensis	Benthic							oligotraphentic/ oligo basin indifferent
	Cymbella subaequalis								Species of ca-mg-co3 lakes, and freshwater/oligosaline lakes.
	Fragilaria capucina	Planktonic	0.3	0.1	0.8				
	Gyrosigma acuminatum		20.6	5.1	83				

Table 2: Summary of diatom species information from Bradbury and Dieteric-Rurp Bradbury and Dieterich-Rurup, 1993; Bradbury, 1999; Cumming et al., 1995; Fritz et al., 1991; Fritz et al., 1993; Fritz et al.,1999; Gell et al., 2007; Hall and Smol, 1999; Kelly and Whitton, 1995; Malgorzata and Malgorzata, 2011; Nappo et al., 2007; Pienitz et al., 1995; Puusepp, 2011; 0 and Yang et al., 2003



Site	Mean	S.D.
2	2.5	0.8
3	1.9	0.7
5	2.8	0.7
6	2.5	0.8
8	2.8	0.7
9	2.4	0.6
10	1.8	1.7
11	2.6	1.0
14	2.6	1.1
15	0.4	1.2
16	2.5	0.8
18	2.2	0.8
E11	0.9	1.2
E10	2.4	0.5
E8	2.0	0.6
E6	0.8	0.5
E4	2.3	0.5
E2	2.2	0.5

Figure 8: Sediment standard deviation (S.D.) versus mean grain size chart and graph for the sand dunes (Lanrge Dunes and Small Dunes) and nearshore lacustrine material (Ekman).

Discussion and Conclusions

Lake Winnibigoshish and the surrounding area have undergone hydrological and environmental changes throughout the post-glacial period. Wright et al. (2004) document the ecological succession of the area and infer the associated climate. The mid-Holocene climate record indicates conditions considerably warmer and drier than modern and these conditions have been associated with widespread formation of sand dunes (Grigal et al., 1976; Keen and Shane, 1990). In contrast, Marlow (2004) and Mooers and Larson (2003) further suggest that the large, high amplitude dunes immediately adjacent to Lake Winnibigoshish are anomalous with respect to the widespread occurrence of dune sin the upper Midwest.

Buried soils in sand dunes in the Lake Winnibigoshish area provided a record of the eolian activity. Grigal et al. (1976) surmised that much of the eolian activity and dune formation was due to movement of fine, sandy, lacustrine material and that the large dunes (as much as 10 meters of wind-blown sand) could only have a source in the lake basin itself. The morphology and stratigraphy suggest episodes of fluctuating lake level. Moreover, we know from previous studies (Mooers and Larson, 2003) that while the lake level is currently stabilized by the Mississippi River, the path formerly bypassed Lake Winnibigoshish and went through Leech Lake instead. Regardless of the timing of dune formation, the mid-Holocene was a time of drier and warmer conditions with frequent persistent drought. Given the previous nature of Lake Winnibigoshish before the diversion at 557 cal yr BP (the first post diversion deposition using the age model for this study)—a large shallow lake with a small watershed—it is possible that lake level and the regional water table were particularly susceptible to large fluctuations during extended drought. In addition, samples from this study show that the shallow water sediments in Lake Winnibigoshish have similar grain size distribution as the dunes.

The results of this study show that Lake Winnibigoshish, and therefore the surrounding environment, was subjected to episodic, often severe drought conditions. Analysis of Sr/Ca ratios of marl in the pre-diversion section of sediment core reveals periodic evaporative stress. This record shows both large-scale and small-scale variability that is consistent with both episodic drought on the scale of 20-80 years and with more prolonged warm/dry conditions, particularly at the mid-Holocene hypsithermal (~7000 cal yr BP Filby et al.,2002). In addition, the pre-diversion diatom assemblage indicates species characteristic of relatively nutrient-poor, environments. In contrast, the post-diversion section has a relatively stable Sr/Ca record, and a diatom assemblage that indicates high nutrient availability. These conditions indicate that the Mississippi River diversion greatly increased the nutrient input to the lake. To support this, the unconfined and upper confined aquifers in the region have low Phosphorus levels (under 1.1 and 0.31 mg/L respectfully) (Lingren, 1996), leaving the Mississippi River as the potential phosphorus source to support the requirements of the current diatom assemblage. These factors, diatom assemblages, Sr/Ca, and sediment analysis, show that prior to the diversion lake conditions were much different, and Lake Winnibigoshish was under evaporational environmental stress resulting in periodic drawdown of the lake; a condition that allowed for the deflation of the nearshore sediment and episodic dune formation. The conditions in the lake indicated by the Sr/Ca ratios and the diatom assemblages are consistent with the formation of the large dunes along the east shore of the lake occurring sporadically, which is corroborated by the buried soils and the radiocarbon dates. These local conditions, however, do not apply to the regionally extensive fields of low amplitude dunes that could not have had a sand source in the lake basin.

Following the diversion, the evaporative stress was clearly relieved, as the diatoms and the Sr/Ca indicate. There is, however, an issue with the current age-depth model. This model suggests that there is a large unconformity in the sediment core, corresponding to the diversion layer, although there is no particular reason that such an unconformity should exist. Additional dates would clarify the age-depth model. The indication of

persistent evaporative stress occurs within Lake Winnibigoshish up to the diversion layer, implying that episodic evaporative stress and drought conditions (indicated by Sr/Ca ratios and diatoms) occurred in the basin after climate had attained its modern characteristics. The episodic evaporative stress was only relieved by the diversion of the Mississippi River, which dramatically increased the lake watershed.

Bibliography

Anderson, N. J. (1989). A whole-basin diatom accumulation rate for a small eutrophic lake in Northern Ireland and its palaeoecological implications. The Journal of Ecology, 926-946.

Barber, H.G. and Haworth, E.Y. (1981). a Guide to the Morphology of the Diatom frustules. Ambleside, Cumbria: Freshwater Biological Association.

Bartlein, P. J., Webb III, T., and Fleri, E. (1984). Holocene climatic change in the northern Midwest: pollen-derived estimates. Quaternary Research, 22(3), 361-374.

Bartlein, P. J. and Whitlock, C. (1993). Paleoclimate Interpretion of the Elk Lake Pollen Record. In J. P. Bradbury and W. E. Dean (Eds.), Elk Lake, Minnesota: Evidence for Rapid climate Change in the North-Central United States (pp. 275-294). Boulder, CO: The Geological Society of America Inc.

Battarbee, R. W. (1986). Diatom Analysis. In B. E. Berglund (ed.), Handbook of Holocene Palaeoecology and Palaeohydrology (pp. 527-570). Caldwell, New Jersey: The Blackburn Press.

Bradbury, J. P. (1999). Continental diatoms as indicators of long-term environmental change. In Stoermer, E. F. and Smol, J. P. (Eds.), The diatoms: applications for the environmental and earth sciences 1(69-182). Cambridge, UK: Cambridge University Press.

Bradbury, J. P. and Dieterich-Rurup, K. V. (1993). Holocene Diatom Paleolimnology of Elk Lake, Minnesota. In J. P. Bradbury and W. E. Dean (Eds.), Elk Lake, Minnesota: Evidence for Rapid climate Change in the North-Central United States (pp. 215-238). Boulder, CO: The Geological Society of America Inc.

Clark, J. S. (1993). Fire, Climate Change, and Forest Process During the Past 2000 Years. In J. P. Bradbury and W. E. Dean (Eds.), Elk Lake, Minnesota: Evidence for Rapid climate Change in the North-Central United States (pp. 295-308). Boulder, CO: The Geological Society of America Inc.

Croudace, I. W., Rindby, A., and Rothwell, R. G. (2006). ITRAX: description and evaluation of a new multi-function X-ray core scanner. SPECIAL PUBLICATION-GEOLOGICAL SOCIETY OF LONDON, 267, 51.

Cumming, B. F., Wilson, S. E., Hall, R. I., and Smol, J. P. (1995). Diatoms from British Columbia (Canada) lakes and their relationship to salinity, nutrients and other limnological variables. Bibliotheca Diatomologica 31: 1-207.

Dixit, S. S., Smol, J. P., Kingston, J. C., and Charles, D. F. (1992). Diatoms: powerful indicators of environmental change. Environmental science & technology, 26(1), 22-33.
Filby, S. K., Locke, S. M., Person, M. A., Winter, T. C., Rosenberry, D. O., Nieber, J. L., ... and Ito, E. (2002). Mid-Holocene hydrologic model of the Shingobee watershed, Minnesota. Quaternary Research, 58(3), 246-254.

Folk, R.L. 1981, The Petrology of Sedimentary Rocks. Hemphill, 182 pp.

Fritz, S. C., Cumming, B. F., Gasse, F. and Laird, K. R. (1999). Diatoms as indicators of hydrologic and climatic change in saline lakes. In Stoermer, E. F. and Smol, J. P. (Eds), The diatoms: applications for the environmental and earth sciences, (pp. 41-72). United Kingdom: Cambride University Press.

Fritz, S. C., Juggins, S., Battarbee, R. W., and Engstrom, D. R. (1991). Reconstruction of past changes in salinity and climate using a diatom-based transfer function. Nature, 352(6337), 706-708.

Fritz, S. C., Kingston, J. C., and Engstrom, D. R. (1993). Quantitative trophic reconstruction from sedimentary diatom assemblages: a cautionary tale*. Freshwater Biology, 30(1), 1-23.

Gell, P., Tibby, J., Little, F., Baldwin, D., & Hancock, G. (2007). The impact of regulation and salinisation on floodplain lakes: the lower River Murray, Australia. Hydrobiologia, 591(1), 135-146.

Grigal, D. F., Severson, R. C., and Goltz, G. E. (1976). Evidence of eolian activity in north-central Minnesota 8,000 to 5,000 yr ago. Geological Society of America Bulletin, 87(9), 1251- 1254.

Hall, R. I., and Smol, J. P. (1999). Diatoms as indicators of lake eutrophication. In Stoermer, E. F. and Smol, J. P. (Eds.), The diatoms: applications for the environmental and earth sciences 1(128-168). Cambridge, UK: Cambridge University Press.

Haskell, B. J., Engstrom, D. R., and Fritz, S. C. (1996). Late Quaternary paleohydrology in the North American Great Plains inferred from the geochemistry of endogenic carbonate and fossil ostracodes from Devils Lake, North Dakota, USA. Palaeogeography, Palaeoclimatology, Palaeoecology, 124(3), 179-193.

Ito, E. (2002). Mg/Ca, Sr/Ca, δ18O and δ13C chemistry of Quaternary lacustrine ostracode shells from the North American continental interior. The Ostracoda: Applications in Quaternary Research, 267-278.

Jelgersma, S. (1962). A late-glacial pollen diagram from Madelia, south-central Minnesota. American Journal of Science, 260(7), 522-529.

Kelly, M. G. and Whitton, B. A. (1995). The Trophic Diatom Index: a new index for monitoring eutrophication in rivers. Journal of Applied Phycology 7, 433-444.

Knaeble, A., Meyer, G., Marlow, L., Larson, P., and Mooers, H., (2005). Field Trip 3: Deposits and Landforms in the region glaciated by the St. Louis Sublobe. In Robinson, I. (edit) (2005). Field trip guidebook for selected geology in Minnesota and Wisconsin: Minnesota Geological Survey Guidebook 21, 278 p.

Krammer, K. and H. Lang-Bertalot, 1986. Bacillariophyceae. 2. Teli: Naviculaceae. In Ettle, H., G. Gärtner, J. Gerloff, H. hynig & D. Mollenhauer (eds), Süßwasserflora von Mitteleuropa, Band 2/2, Spektrum Akademischer Verlag 596 p.

Krammer, K. and H. Lang-Bertalot, 1988. Bacillariophyceae. 1. Teli: Bacillariaceae, Epithemiaceae, Surrirellaceae. In Ettle, H., G. Gärtner, J. Gerloff, H. hynig & D. Mollenhauer (eds), Süßwasserflora von Mitteleuropa, Band 2/1, Spektrum Akademischer Verlag, 876 p.

Krammer, K. and H. Lang-Bertalot, 1991a. Bacillariophyceae. 3. Teli: Centrales, Fragilariaceae, Eunotiaceae. In Ettle, H., G. Gärtner, J. Gerloff, H. hynig & D. Mollenhauer (eds), Süßwasserflora von Mitteleuropa, Band 2/3, Spektrum Akademischer Verlag, 876 p.

Krammer, K. and H. Lang-Bertalot, 1991b. Bacillariophyceae. 4. Teli: Achnanthaceae Kritische Ergänzungen zu Navicula (Lineolatae) und Gomphonema. In Ettle, H., G. Gärtner, J. Gerloff, H. hynig & D. Mollenhauer (eds), Süßwasserflora von Mitteleuropa, Band 2/4, Spektrum Akademischer Verlag, 876 p.

Larson, p., Knaeble, A., Mooers, H., and Marlow, L., (2014). Field Trip 6: The St. Louis Sublobe and Glacial Lake Upham. In Jirsa, M., Boerboom T., and Radakovich, A., (2014). Institute on Lake Superior geology: Hibing, Minnesota: Annual meeting

proceedings volume 60-part 2 Field trip guidebook, Precambrian Research Center, University of Minnesota Duluth, and Minnesota Geological Survey, 159 p.

Laird, K. R., Fritz, S. C., and Cumming, B. F. (1998). A diatom-based reconstruction of drought intensity, duration, and frequency from Moon Lake, North Dakota: a sub-decadal record of the last 2300 years. Journal of Paleolimnology, 19(2), 161-179.

Larson, P. C. and Mooers, H. D. 2003. Holocene drainage evolution of the Mississippi Headwaters, Minnesota: Implications for mid-Holocene eolian activity in the North American midcontinent. Geological Society of America Abstracts with Programs 35 (6): 482.

Lindgreen, R. J., 1996, Hydrogeology and Ground-Water Quality of Glacial-Drift Aquifers, Leech Lake Indian Reservation, North-Central Minnesota. U. S. Geological Survey Report 95-4077, 78 p.

Marlow, L.M., 2004, Late Glacial And Early Holocene History Of The Glacial Lakes Aitkin And Upham Basin , North-Central Minnesota : Implications For The Timing Of Post Glacial Eolian Activity, M.S. Thesis, University of Minnesota, 84 pp.

Malgorzata, L. and Malgorzata, W. (2001). Diatoms as indicators of eutrophication in the SW port of the Gulf of Gdansk, the Baltic Sea. Oceanological and Hydrobiological Studies, 40 (1), 69-81.

Mooers, H. D., and Dobbs, C. A. (1993). Holocene landscape evolution and the development of models for human interaction with the environment: An example from the Mississippi Headwaters region. Geoarchaeology, 8(6), 475-492.

Mooers, H. D. and Larson, P. C. 2003. Paleohydrologic response of the Mississippi Headwaters watershed to Holocene climate change. University of Minnesota Water Resources Center Progress Report, 9p.

Mooers, H. D., and Lehr, J. D. (1997). Terrestrial record of Laurentide Ice Sheet reorganization during Heinrich events. Geology, 25(11), 987-990.

Nappo, M., Avila, C. and Zupo, V. (2007). Production of cocconeis neouthumensis (Bacillariophyceae) biomass in batch cultures and bioreactors for biotechnological applications: light and nutrient requirements. Journal of Applied Phycology 19, 383-391.
Pienitz, R., Smol, J. P., and Birks, H. J. B. (1995). Assessment of freshwater diatoms as quantitative indicators of past climatic change in the Yukon and Northwest Territories, Canada. Journal of Paleolimnology, 13(1), 21-49.

Ponader, K. C., Charles, D. T. and Belton, T. J. (2007). Diatom based TP and TN inference modeles and indices for monitoring nutrient enrichment of New Jersey streams. Ecological Inidcators 7, 79-93.

PUUSEPP, L. (2011). Spatio-Temporal Variability of Diatom Assemblages in Lake Sediments. Narva, mnt. Tallinn University. (pp. 60).

Schelske, C. L., Coveney, M. F., Aldridge, F. J., Kenney, W. F., and Cable, J. E. (2000). Wind or nutrients: historic development of hypereutrophy in Lake Apopka, Florida. Advances in limnology. Stuttgart, (55), 543-563.

Stone, J. R., and Fritz, S. C. (2006). Multidecadal drought and Holocene climate instability in the Rocky Mountains. Geology, 34(5), 409-412.
Weltje, G. J., and Tjallingii, R. (2008). Calibration of XRF core scanners for quantitative geochemical logging of sediment cores: Theory and application. Earth and Planetary Science Letters, 274(3), 423-438.

Whitelock, C., Bartlein, P. J., Zeeb, B. A. and Smol, J. P. (1993). Vegitational History of Elk Lake. In J. P. Bradbury and W. E. Dean (Eds.), Elk Lake, Minnesota: Evidence for Rapid climate Change in the North-Central United States (pp. 251-274). Boulder, CO: The Geological Society of America Inc.

Williams, J. W., Shuman, B., and Bartlein, P. J. (2009). Rapid responses of the prairie-forest ecotone to early Holocene aridity in mid-continental North America. Global and Planetary Change, 66(3), 195-207.

Wolin, J. A., and Duthie, H. C. (1999). Diatoms as indicators of water level change in freshwater lakes. In Stoermer, E. F. and Smol, J. P. (Eds.), The diatoms: applications for the environmental and earth sciences 1(183-202). Cambridge, UK: Cambridge University Press.

Wright Jr, H. E., Stefanova, I., Tian, J., Brown, T. A., and Hu, F. S. (2004). A chronological framework for the Holocene vegetational history of central Minnesota: the Steel Lake pollen record. Quaternary Science Reviews, 23(5), 611-626.

Wright, H. E. Jr. (1993). History of the Landscape in the Itasca Region. In J. P. Bradbury and W. E. Dean (Eds.), Elk Lake, Minnesota: Evidence for Rapid climate Change in the North-Central United States (pp. 7-18). Boulder, CO: The Geological Society of America Inc.

Wright, H. E. (1972). Quaternary history of Minnesota. P. K. Sims (Ed.). Minnesota Geological Survey. (pp. 516-547).

Yang, X., Kamenik, C., Schmidt, R. and Wang, S. (2003). Diatom-based conductivity and water-level inference models from eastern Tibetan (Oinghai-Xizang) Plateau lakes. Journal of Paleolimnology 30, 1-19

Appendix 1A: XRF Data

Depth (cm)	Ca	Sr	Mo coh	Ca/Coh	Sr/Coh	Ca/Coh DEV	Sr/Coh DEV
0	1303	0	47597	27.38	0.00	-1.22	-1.43
0.2	1027	393	49140	20.90	8.00	-1.22	-1.36
0.4	973	0	51987	18.72	0.00	-1.22	-1.43
0.6	1068	46	53813	19.85	0.85	-1.22	-1.43
0.8	1298	354	50214	25.85	7.05	-1.22	-1.37
1	1082	0	48644	22.24	0.00	-1.22	-1.43
1.2	1170	465	50424	23.20	9.22	-1.22	-1.34
1.4	1396	287	51828	26.94	5.54	-1.22	-1.38
1.6	1439	49	52140	27.60	0.94	-1.22	-1.42
1.8	1902	551	51708	36.78	10.66	-1.22	-1.33
2	1537	418	50044	30.71	8.35	-1.22	-1.35
2.2	1495	0	50833	29.41	0.00	-1.22	-1.43
2.4	1091	309	51761	21.08	5.97	-1.22	-1.38
2.6	1224	0	52205	23.45	0.00	-1.22	-1.43
2.8	1344	20	52028	25.83	0.38	-1.22	-1.43
3	1382	0	51797	26.68	0.00	-1.22	-1.43
3.2	1341	104	51737	25.92	2.01	-1.22	-1.41
3.4	1359	0	50612	26.85	0.00	-1.22	-1.43
3.6	1337	302	52238	25.59	5.78	-1.22	-1.38
3.8	1305	283	51197	25.49	5.53	-1.22	-1.38
4	1344	0	52073	25.81	0.00	-1.22	-1.43
4.2	1309	0	51406	25.46	0.00	-1.22	-1.43
4.4	1286	0	51900	24.78	0.00	-1.22	-1.43
4.6	1364	0	51650	26.41	0.00	-1.22	-1.43
4.8	1209	118	52707	22.94	2.24	-1.22	-1.41
5	1236	391	52297	23.63	7.48	-1.22	-1.36
5.2	1297	0	52340	24.78	0.00	-1.22	-1.43
5.4	1453	379	51792	28.05	7.32	-1.22	-1.36
5.6	1295	0	52282	24.77	0.00	-1.22	-1.43
5.8	1331	30	53053	25.09	0.57	-1.22	-1.43
6	1344	61	52057	25.82	1.17	-1.22	-1.42
6.2	1374	0	51749	26.55	0.00	-1.22	-1.43
6.4	1336	0	52400	25.50	0.00	-1.22	-1.43
6.6	1539	426	51831	29.69	8.22	-1.22	-1.35

6.8	2771	0	51033	54.30	0.00	-1.21	-1.43
7	5333	54	51953	102.65	1.04	-1.19	-1.42
7.2	8594	90	51775	165.99	1.74	-1.16	-1.42
7.4	10128	0	51763	195.66	0.00	-1.15	-1.43
7.6	10677	136	51630	206.80	2.63	-1.15	-1.41
7.8	7570	584	50882	148.78	11.48	-1.17	-1.32
8	5579	0	51323	108.70	0.00	-1.19	-1.43
8.2	7758	162	53545	144.89	3.03	-1.17	-1.40
8.4	13007	439	56297	231.04	7.80	-1.14	-1.36
8.6	14499	912	61849	234.43	14.75	-1.14	-1.29
8.8	5819	876	51346	113.33	17.06	-1.19	-1.27
9	603	996	25824	23.35	38.57	-1.22	-1.06
9.2	21	774	18556	1.13	41.71	-1.23	-1.03
9.4	25	600	17161	1.46	34.96	-1.23	-1.09
9.6	21	744	16203	1.30	45.92	-1.23	-0.98
9.8	37	812	15493	2.39	52.41	-1.23	-0.92
10	0	623	15322	0.00	40.66	-1.23	-1.04
10.2	16	611	15344	1.04	39.82	-1.23	-1.04
10.4	21	500	15267	1.38	32.75	-1.23	-1.11
10.6	21	551	13303	1.58	41.42	-1.23	-1.03
10.8	0	147	7709	0.00	19.07	-1.23	-1.25
11	14	106	7056	1.98	15.02	-1.23	-1.29
11.2	18	237	12224	1.47	19.39	-1.23	-1.24
11.4	527	435	20687	25.47	21.03	-1.22	-1.23
11.6	2852	670	28933	98.57	23.16	-1.19	-1.21
11.8	3991	909	32570	122.54	27.91	-1.18	-1.16
12	4430	973	33752	131.25	28.83	-1.18	-1.15
12.2	5095	1068	36067	141.26	29.61	-1.17	-1.14
12.4	4852	933	36140	134.26	25.82	-1.18	-1.18
12.6	5573	1124	35398	157.44	31.75	-1.17	-1.12
12.8	5522	1175	37060	149.00	31.71	-1.17	-1.12
13	5379	1145	36349	147.98	31.50	-1.17	-1.13
13.2	5637	1354	37273	151.24	36.33	-1.17	-1.08
13.4	5228	1088	36942	141.52	29.45	-1.17	-1.15
13.6	5183	1261	37704	137.47	33.44	-1.18	-1.11
13.8	4852	705	38924	124.65	18.11	-1.18	-1.26

14	5359	937	39647	135.17	23.63	-1.18	-1.20
14.2	5093	1427	39517	128.88	36.11	-1.18	-1.08
14.4	5449	1197	39475	138.04	30.32	-1.18	-1.14
14.6	5706	1257	38328	148.87	32.80	-1.17	-1.11
14.8	6132	1284	38345	159.92	33.49	-1.17	-1.11
15	6460	987	39960	161.66	24.70	-1.17	-1.19
15.2	6586	1321	39870	165.19	33.13	-1.16	-1.11
15.4	7035	986	40653	173.05	24.25	-1.16	-1.20
15.6	6592	860	40747	161.78	21.11	-1.17	-1.23
15.8	6035	1232	40892	147.58	30.13	-1.17	-1.14
16	6120	980	41175	148.63	23.80	-1.17	-1.20
16.2	6811	1086	40167	169.57	27.04	-1.16	-1.17
16.4	7292	804	39895	182.78	20.15	-1.16	-1.24
16.6	6964	852	41079	169.53	20.74	-1.16	-1.23
16.8	6578	726	40511	162.38	17.92	-1.17	-1.26
17	6803	930	40215	169.17	23.13	-1.16	-1.21
17.2	6858	1072	39858	172.06	26.90	-1.16	-1.17
17.4	6914	1443	39779	173.81	36.28	-1.16	-1.08
17.6	6919	1499	40154	172.31	37.33	-1.16	-1.07
17.8	6447	1232	39927	161.47	30.86	-1.17	-1.13
18	6359	842	39769	159.90	21.17	-1.17	-1.23
18.2	6706	850	40215	166.75	21.14	-1.16	-1.23
18.4	7306	1132	39397	185.45	28.73	-1.16	-1.15
18.6	7903	1079	38994	202.67	27.67	-1.15	-1.16
18.8	8118	991	38368	211.58	25.83	-1.15	-1.18
19	7682	1421	38286	200.65	37.12	-1.15	-1.07
19.2	8624	1179	39078	220.69	30.17	-1.14	-1.14
19.4	8164	1252	40145	203.36	31.19	-1.15	-1.13
19.6	8500	1198	39781	213.67	30.11	-1.14	-1.14
19.8	8163	744	39915	204.51	18.64	-1.15	-1.25
20	8126	837	40131	202.49	20.86	-1.15	-1.23
20.2	7199	1129	40232	178.94	28.06	-1.16	-1.16
20.4	7191	794	40804	176.23	19.46	-1.16	-1.24
20.6	7487	533	40759	183.69	13.08	-1.16	-1.31
20.8	8428	801	40693	207.11	19.68	-1.15	-1.24
21	8276	929	40486	204.42	22.95	-1.15	-1.21

21.2	7749	888	40372	191.94	22.00	-1.15	-1.22
21.4	7775	1010	40770	190.70	24.77	-1.15	-1.19
21.6	7285	1210	39612	183.91	30.55	-1.16	-1.13
21.8	7366	1246	39932	184.46	31.20	-1.16	-1.13
22	7350	1059	39165	187.67	27.04	-1.16	-1.17
22.2	7060	1214	39799	177.39	30.50	-1.16	-1.14
22.4	7997	1586	40529	197.32	39.13	-1.15	-1.05
22.6	8078	1401	42929	188.17	32.64	-1.16	-1.11
22.8	8298	1221	44176	187.84	27.64	-1.16	-1.16
23	8548	556	45040	189.79	12.34	-1.15	-1.31
23.2	6840	771	44583	153.42	17.29	-1.17	-1.26
23.4	7413	900	44172	167.82	20.37	-1.16	-1.23
23.6	7558	1037	45151	167.39	22.97	-1.16	-1.21
23.8	7590	793	45969	165.11	17.25	-1.16	-1.27
24	7806	482	45947	169.89	10.49	-1.16	-1.33
24.2	8780	484	46244	189.86	10.47	-1.15	-1.33
24.4	7995	282	46617	171.50	6.05	-1.16	-1.37
24.6	7902	204	46636	169.44	4.37	-1.16	-1.39
24.8	7843	380	46797	167.60	8.12	-1.16	-1.35
25	7381	508	47008	157.02	10.81	-1.17	-1.33
25.2	7686	475	46316	165.95	10.26	-1.16	-1.33
25.4	7266	722	46907	154.90	15.39	-1.17	-1.28
25.6	7757	543	48402	160.26	11.22	-1.17	-1.32
25.8	8017	416	47079	170.29	8.84	-1.16	-1.35
26	8192	1001	47395	172.85	21.12	-1.16	-1.23
26.2	9462	929	48074	196.82	19.32	-1.15	-1.24
26.4	11132	367	47449	234.61	7.73	-1.14	-1.36
26.6	9080	510	48629	186.72	10.49	-1.16	-1.33
26.8	8266	292	50196	164.67	5.82	-1.16	-1.38
27	8178	77	49244	166.07	1.56	-1.16	-1.42
27.2	6558	160	50342	130.27	3.18	-1.18	-1.40
27.4	6594	0	49002	134.57	0.00	-1.18	-1.43
27.6	5841	463	48336	120.84	9.58	-1.18	-1.34
27.8	6328	586	47945	131.98	12.22	-1.18	-1.31
28	6597	693	47098	140.07	14.71	-1.17	-1.29
28.2	8161	560	47243	172.75	11.85	-1.16	-1.32

28.4	8640	966	47502	181.89	20.34	-1.16	-1.23
28.6	9542	1258	47644	200.28	26.40	-1.15	-1.18
28.8	9423	1062	47470	198.50	22.37	-1.15	-1.21
29	10070	700	47383	212.52	14.77	-1.15	-1.29
29.2	9756	816	47095	207.16	17.33	-1.15	-1.26
29.4	8926	992	48328	184.70	20.53	-1.16	-1.23
29.6	8956	784	47235	189.61	16.60	-1.15	-1.27
29.8	9537	661	47054	202.68	14.05	-1.15	-1.30
30	11090	925	48524	228.55	19.06	-1.14	-1.25
30.2	11077	1423	47281	234.28	30.10	-1.14	-1.14
30.4	10745	925	47266	227.33	19.57	-1.14	-1.24
30.6	10529	1057	46708	225.42	22.63	-1.14	-1.21
30.8	10433	983	47878	217.91	20.53	-1.14	-1.23
31	10591	1148	47882	221.19	23.98	-1.14	-1.20
31.2	10249	1233	47293	216.71	26.07	-1.14	-1.18
31.4	10640	1229	46641	228.13	26.35	-1.14	-1.18
31.6	9776	1320	46858	208.63	28.17	-1.15	-1.16
31.8	9103	781	46036	197.74	16.96	-1.15	-1.27
32	9122	1342	47567	191.77	28.21	-1.15	-1.16
32.2	9027	1249	46583	193.78	26.81	-1.15	-1.17
32.4	8972	1359	46332	193.65	29.33	-1.15	-1.15
32.6	8878	820	46745	189.92	17.54	-1.15	-1.26
32.8	8693	1048	46695	186.17	22.44	-1.16	-1.21
33	10480	1010	47556	220.37	21.24	-1.14	-1.23
33.2	12279	1175	48147	255.03	24.40	-1.13	-1.19
33.4	11799	1227	47575	248.01	25.79	-1.13	-1.18
33.6	11685	1217	47604	245.46	25.57	-1.13	-1.18
33.8	11568	1387	47407	244.01	29.26	-1.13	-1.15
34	8927	995	46364	192.54	21.46	-1.15	-1.22
34.2	8400	989	46877	179.19	21.10	-1.16	-1.23
34.4	8051	693	46097	174.65	15.03	-1.16	-1.29
34.6	7929	902	47184	168.04	19.12	-1.16	-1.25
34.8	8379	1281	47729	175.55	26.84	-1.16	-1.17
35	8550	1046	46155	185.25	22.66	-1.16	-1.21
35.2	8438	1111	47062	179.30	23.61	-1.16	-1.20
35.4	8734	1325	46039	189.71	28.78	-1.15	-1.15

35.6	8272	984	47096	175.64	20.89	-1.16	-1.23
35.8	7650	1091	46535	164.39	23.44	-1.16	-1.20
36	8123	1014	46451	174.87	21.83	-1.16	-1.22
36.2	7989	1024	46339	172.40	22.10	-1.16	-1.22
36.4	8449	1296	46320	182.41	27.98	-1.16	-1.16
36.6	8409	1624	45709	183.97	35.53	-1.16	-1.09
36.8	9509	1141	46984	202.39	24.28	-1.15	-1.20
37	9039	1191	47484	190.36	25.08	-1.15	-1.19
37.2	8458	1083	47408	178.41	22.84	-1.16	-1.21
37.4	7750	885	46929	165.14	18.86	-1.16	-1.25
37.6	8020	957	46944	170.84	20.39	-1.16	-1.23
37.8	7804	1185	47210	165.30	25.10	-1.16	-1.19
38	7847	1124	46992	166.99	23.92	-1.16	-1.20
38.2	7756	714	47345	163.82	15.08	-1.16	-1.29
38.4	7248	1167	47221	153.49	24.71	-1.17	-1.19
38.6	6689	1301	47058	142.14	27.65	-1.17	-1.16
38.8	6811	1151	48022	141.83	23.97	-1.17	-1.20
39	6436	1575	46730	137.73	33.70	-1.18	-1.10
39.2	6428	923	46933	136.96	19.67	-1.18	-1.24
39.4	6831	973	47434	144.01	20.51	-1.17	-1.23
39.6	6965	756	47221	147.50	16.01	-1.17	-1.28
39.8	6956	797	47397	146.76	16.82	-1.17	-1.27
40	7331	1181	46845	156.49	25.21	-1.17	-1.19
40.2	7411	1085	47455	156.17	22.86	-1.17	-1.21
40.4	7489	1052	48084	155.75	21.88	-1.17	-1.22
40.6	7561	863	47288	159.89	18.25	-1.17	-1.26
40.8	8047	919	46208	174.15	19.89	-1.16	-1.24
41	7476	1214	45704	163.57	26.56	-1.16	-1.17
41.2	7700	986	46779	164.60	21.08	-1.16	-1.23
41.4	7528	1474	46547	161.73	31.67	-1.17	-1.12
41.6	7926	875	46821	169.28	18.69	-1.16	-1.25
41.8	7642	944	47233	161.79	19.99	-1.17	-1.24
42	7343	1373	46682	157.30	29.41	-1.17	-1.15
42.2	8132	1123	46358	175.42	24.22	-1.16	-1.20
42.4	7609	1345	46148	164.88	29.15	-1.16	-1.15
42.6	7137	1299	47659	149.75	27.26	-1.17	-1.17

42.8	6722	1215	47548	141.37	25.55	-1.17	-1.18
43	6370	1131	47436	134.29	23.84	-1.18	-1.20
43.2	5389	1135	46309	116.37	24.51	-1.18	-1.19
43.4	5827	1054	47375	123.00	22.25	-1.18	-1.22
43.6	5799	1270	46362	125.08	27.39	-1.18	-1.17
43.8	6534	1178	46751	139.76	25.20	-1.17	-1.19
44	6200	1067	47592	130.27	22.42	-1.18	-1.21
44.2	6829	1054	47819	142.81	22.04	-1.17	-1.22
44.4	6082	781	47152	128.99	16.56	-1.18	-1.27
44.6	6997	1282	46718	149.77	27.44	-1.17	-1.17
44.8	7362	1388	46800	157.31	29.66	-1.17	-1.14
45	7994	1339	46278	172.74	28.93	-1.16	-1.15
45.2	9228	1796	45757	201.67	39.25	-1.15	-1.05
45.4	8463	1616	46440	182.24	34.80	-1.16	-1.09
45.6	7807	1667	47147	165.59	35.36	-1.16	-1.09
45.8	7180	1021	46343	154.93	22.03	-1.17	-1.22
46	6985	1053	46072	151.61	22.86	-1.17	-1.21
46.2	6894	1400	46204	149.21	30.30	-1.17	-1.14
46.4	7311	1034	46263	158.03	22.35	-1.17	-1.22
46.6	7357	1393	45580	161.41	30.56	-1.17	-1.13
46.8	7462	1261	44911	166.15	28.08	-1.16	-1.16
47	7478	1263	46655	160.28	27.07	-1.17	-1.17
47.2	7780	1134	45957	169.29	24.68	-1.16	-1.19
47.4	7750	1285	46336	167.26	27.73	-1.16	-1.16
47.6	7944	1039	45832	173.33	22.67	-1.16	-1.21
47.8	7604	1630	46247	164.42	35.25	-1.16	-1.09
48	8003	1103	46444	172.32	23.75	-1.16	-1.20
48.2	6993	1019	45886	152.40	22.21	-1.17	-1.22
48.4	8122	1023	46304	175.41	22.09	-1.16	-1.22
48.6	8989	1088	46547	193.12	23.37	-1.15	-1.21
48.8	8609	1090	46052	186.94	23.67	-1.16	-1.20
49	8252	1029	46042	179.23	22.35	-1.16	-1.22
49.2	7885	1164	46906	168.10	24.82	-1.16	-1.19
49.4	7884	1048	46826	168.37	22.38	-1.16	-1.21
49.6	7554	1172	47065	160.50	24.90	-1.17	-1.19
49.8	7626	1598	46582	163.71	34.31	-1.16	-1.10

50	7269	1652	47931	151.66	34.47	-1.17	-1.10
50.2	7948	1332	45975	172.88	28.97	-1.16	-1.15
50.4	9870	1158	46368	212.86	24.97	-1.15	-1.19
50.6	10384	1643	46748	222.13	35.15	-1.14	-1.09
50.8	11587	1544	46117	251.25	33.48	-1.13	-1.11
51	12196	1460	47316	257.76	30.86	-1.13	-1.13
51.2	11582	1511	46436	249.42	32.54	-1.13	-1.12
51.4	11006	1958	46559	236.39	42.05	-1.14	-1.02
51.6	11617	1467	47033	247.00	31.19	-1.13	-1.13
51.8	11695	1620	46983	248.92	34.48	-1.13	-1.10
52	11324	1234	47297	239.42	26.09	-1.13	-1.18
52.2	10092	862	46330	217.83	18.61	-1.14	-1.25
52.4	9265	1348	45657	202.93	29.52	-1.15	-1.14
52.6	8476	1781	46250	183.26	38.51	-1.16	-1.06
52.8	8155	1390	45966	177.41	30.24	-1.16	-1.14
53	10109	2018	46337	218.16	43.55	-1.14	-1.01
53.2	10908	2553	47096	231.61	54.21	-1.14	-0.90
53.4	12295	1903	47175	260.63	40.34	-1.13	-1.04
53.6	12014	2359	46805	256.68	50.40	-1.13	-0.94
53.8	11484	1546	46632	246.27	33.15	-1.13	-1.11
54	11957	1769	46350	257.97	38.17	-1.13	-1.06
54.2	11268	1414	46447	242.60	30.44	-1.13	-1.14
54.4	11351	1532	46562	243.78	32.90	-1.13	-1.11
54.6	11852	1600	47196	251.12	33.90	-1.13	-1.10
54.8	11636	1963	47293	246.04	41.51	-1.13	-1.03
55	10443	1499	47422	220.21	31.61	-1.14	-1.12
55.2	10219	1390	45789	223.18	30.36	-1.14	-1.14
55.4	10223	1922	47058	217.24	40.84	-1.14	-1.03
55.6	9478	1609	46251	204.93	34.79	-1.15	-1.09
55.8	8653	1778	46087	187.75	38.58	-1.16	-1.06
56	8862	1367	47039	188.40	29.06	-1.15	-1.15
56.2	9644	1814	45650	211.26	39.74	-1.15	-1.04
56.4	10498	1619	47431	221.33	34.13	-1.14	-1.10
56.6	11066	2154	47433	233.30	45.41	-1.14	-0.99
56.8	10430	1810	47314	220.44	38.26	-1.14	-1.06
57	9631	1637	46141	208.73	35.48	-1.15	-1.09

57.2	9854	2321	47042	209.47	49.34	-1.15	-0.95
57.4	9739	2076	46626	208.87	44.52	-1.15	-1.00
57.6	10134	1625	47426	213.68	34.26	-1.14	-1.10
57.8	9171	1659	47637	192.52	34.83	-1.15	-1.09
58	9380	1709	46897	200.01	36.44	-1.15	-1.08
58.2	8727	1735	46727	186.77	37.13	-1.16	-1.07
58.4	7992	947	47678	167.62	19.86	-1.16	-1.24
58.6	7267	1947	47010	154.58	41.42	-1.17	-1.03
58.8	7475	1725	47328	157.94	36.45	-1.17	-1.08
59	8148	1157	46743	174.31	24.75	-1.16	-1.19
59.2	8813	1422	47239	186.56	30.10	-1.16	-1.14
59.4	9011	1338	47118	191.24	28.40	-1.15	-1.16
59.6	8973	1761	47216	190.04	37.30	-1.15	-1.07
59.8	8841	1256	47296	186.93	26.56	-1.16	-1.17
60	7749	1126	46877	165.30	24.02	-1.16	-1.20
60.2	7305	1551	47523	153.72	32.64	-1.17	-1.11
60.4	6996	1442	47204	148.21	30.55	-1.17	-1.13
60.6	6619	1281	46433	142.55	27.59	-1.17	-1.16
60.8	7875	1602	47637	165.31	33.63	-1.16	-1.10
61	9753	1671	46638	209.12	35.83	-1.15	-1.08
61.2	10158	1491	46508	218.41	32.06	-1.14	-1.12
61.4	11238	1749	47580	236.19	36.76	-1.14	-1.07
61.6	12296	1414	47468	259.04	29.79	-1.13	-1.14
61.8	12991	2115	47350	274.36	44.67	-1.12	-1.00
62	12046	1651	47090	255.81	35.06	-1.13	-1.09
62.2	10950	1237	46722	234.36	26.48	-1.14	-1.17
62.4	10055	1433	46667	215.46	30.71	-1.14	-1.13
62.6	10097	993	47329	213.34	20.98	-1.14	-1.23
62.8	9445	1466	46831	201.68	31.30	-1.15	-1.13
63	10440	1659	46895	222.63	35.38	-1.14	-1.09
63.2	10853	1682	47177	230.05	35.65	-1.14	-1.08
63.4	11743	1503	47557	246.92	31.60	-1.13	-1.12
63.6	12915	1649	47110	274.15	35.00	-1.12	-1.09
63.8	13459	1601	48171	279.40	33.24	-1.12	-1.11
64	12515	1758	47515	263.39	37.00	-1.12	-1.07
64.2	12149	1567	46835	259.40	33.46	-1.13	-1.11

64.4	11250	1146	46738	240.70	24.52	-1.13	-1.19
64.6	10591	1413	46542	227.56	30.36	-1.14	-1.14
64.8	10559	1686	47482	222.38	35.51	-1.14	-1.09
65	11703	1598	47279	247.53	33.80	-1.13	-1.10
65.2	10337	1376	46534	222.14	29.57	-1.14	-1.14
65.4	9165	1784	47202	194.17	37.80	-1.15	-1.06
65.6	9271	1673	47808	193.92	34.99	-1.15	-1.09
65.8	9073	1356	48000	189.02	28.25	-1.15	-1.16
66	9065	1278	47381	191.32	26.97	-1.15	-1.17
66.2	9000	1694	47760	188.44	35.47	-1.15	-1.09
66.4	8614	1325	46434	185.51	28.54	-1.16	-1.15
66.6	8077	1384	46213	174.78	29.95	-1.16	-1.14
66.8	7918	1445	47072	168.21	30.70	-1.16	-1.13
67	8478	1482	46489	182.37	31.88	-1.16	-1.12
67.2	8712	1721	46219	188.49	37.24	-1.15	-1.07
67.4	9810	1948	46990	208.77	41.46	-1.15	-1.03
67.6	9447	1537	47641	198.30	32.26	-1.15	-1.12
67.8	9487	1024	47442	199.97	21.58	-1.15	-1.22
68	9833	1514	46931	209.52	32.26	-1.15	-1.12
68.2	9669	1325	46433	208.24	28.54	-1.15	-1.15
68.4	10358	1975	47522	217.96	41.56	-1.14	-1.03
68.6	11064	1389	46053	240.24	30.16	-1.13	-1.14
68.8	11321	1748	46109	245.53	37.91	-1.13	-1.06
69	10943	1686	46024	237.77	36.63	-1.13	-1.08
69.2	9325	1147	46459	200.71	24.69	-1.15	-1.19
69.4	10081	2031	46133	218.52	44.02	-1.14	-1.00
69.6	10879	1083	46215	235.40	23.43	-1.14	-1.20
69.8	10933	1581	45544	240.05	34.71	-1.13	-1.09
70	11273	1510	46518	242.34	32.46	-1.13	-1.12
70.2	11383	1077	47344	240.43	22.75	-1.13	-1.21
70.4	12257	1549	46827	261.75	33.08	-1.13	-1.11
70.6	12293	1311	47539	258.59	27.58	-1.13	-1.16
70.8	13374	1714	46689	286.45	36.71	-1.12	-1.07
71	14439	1594	48214	299.48	33.06	-1.11	-1.11
71.2	15969	1401	47677	334.94	29.39	-1.10	-1.15
71.4	13637	1696	47328	288.14	35.84	-1.11	-1.08

71.6	9566	1683	46452	205.93	36.23	-1.15	-1.08
71.8	10453	1463	46576	224.43	31.41	-1.14	-1.13
72	10610	1709	46760	226.90	36.55	-1.14	-1.08
72.2	10983	1535	46955	233.90	32.69	-1.14	-1.11
72.4	10337	1570	46720	221.25	33.60	-1.14	-1.10
72.6	12777	1534	46294	276.00	33.14	-1.12	-1.11
72.8	14198	1456	47733	297.45	30.50	-1.11	-1.14
73	14425	1277	46654	309.19	27.37	-1.11	-1.17
73.2	13972	1190	47911	291.62	24.84	-1.11	-1.19
73.4	11996	1331	47283	253.71	28.15	-1.13	-1.16
73.6	11450	1567	47405	241.54	33.06	-1.13	-1.11
73.8	11469	1603	47505	241.43	33.74	-1.13	-1.10
74	15749	1718	46277	340.32	37.12	-1.09	-1.07
74.2	19391	1534	46713	415.11	32.84	-1.06	-1.11
74.4	20303	2098	46918	432.73	44.72	-1.06	-1.00
74.6	21181	1547	47344	447.39	32.68	-1.05	-1.11
74.8	17809	1184	46947	379.34	25.22	-1.08	-1.19
75	13913	1459	48119	289.14	30.32	-1.11	-1.14
75.2	14619	1507	47703	306.46	31.59	-1.11	-1.12
75.4	14958	1703	48374	309.22	35.20	-1.11	-1.09
75.6	14544	1785	48208	301.69	37.03	-1.11	-1.07
75.8	13747	1845	48643	282.61	37.93	-1.12	-1.06
76	13907	1480	48130	288.95	30.75	-1.11	-1.13
76.2	14203	1851	46794	303.52	39.56	-1.11	-1.05
76.4	14382	1707	48101	299.00	35.49	-1.11	-1.09
76.6	15385	1911	46354	331.90	41.23	-1.10	-1.03
76.8	19763	1665	45888	430.68	36.28	-1.06	-1.08
77	24194	1503	47309	511.40	31.77	-1.02	-1.12
77.2	18411	1847	47541	387.27	38.85	-1.07	-1.05
77.4	14868	1580	47735	311.47	33.10	-1.11	-1.11
77.6	14048	1567	47828	293.72	32.76	-1.11	-1.11
77.8	13146	1769	47477	276.89	37.26	-1.12	-1.07
78	12534	1729	47868	261.85	36.12	-1.13	-1.08
78.2	12920	2079	48770	264.92	42.63	-1.12	-1.02
78.4	14146	2073	48389	292.34	42.84	-1.11	-1.01
78.6	14582	1644	48342	301.64	34.01	-1.11	-1.10

78.8	14249	1344	47816	298.00	28.11	-1.11	-1.16
79	14525	1798	47554	305.44	37.81	-1.11	-1.06
79.2	13946	1558	46967	296.93	33.17	-1.11	-1.11
79.4	12311	1483	47555	258.88	31.18	-1.13	-1.13
79.6	13402	1440	46414	288.75	31.03	-1.11	-1.13
79.8	13659	1783	47089	290.07	37.86	-1.11	-1.06
80	15447	1601	49033	315.03	32.65	-1.10	-1.11
80.2	17370	1624	47084	368.92	34.49	-1.08	-1.10
80.4	17422	1772	47400	367.55	37.38	-1.08	-1.07
80.6	16879	1966	48605	347.27	40.45	-1.09	-1.04
80.8	14896	1612	48516	307.03	33.23	-1.11	-1.11
81	13366	1416	47620	280.68	29.74	-1.12	-1.14
81.2	11894	2286	46076	258.14	49.61	-1.13	-0.95
81.4	14766	1647	46007	320.95	35.80	-1.10	-1.08
81.6	16368	1489	46579	351.40	31.97	-1.09	-1.12
81.8	17044	1834	48075	354.53	38.15	-1.09	-1.06
82	16379	1750	46952	348.85	37.27	-1.09	-1.07
82.2	13307	1833	46604	285.53	39.33	-1.12	-1.05
82.4	12604	1695	47075	267.74	36.01	-1.12	-1.08
82.6	13575	1690	46590	291.37	36.27	-1.11	-1.08
82.8	12508	1537	45873	272.67	33.51	-1.12	-1.11
83	13377	1083	46196	289.57	23.44	-1.11	-1.20
83.2	12944	1287	45428	284.93	28.33	-1.12	-1.16
83.4	13034	1512	44891	290.35	33.68	-1.11	-1.10
83.6	12217	1721	48116	253.91	35.77	-1.13	-1.08
83.8	15645	1395	49536	315.83	28.16	-1.10	-1.16
84	12579	1939	46187	272.35	41.98	-1.12	-1.02
84.2	22944	1818	36021	636.96	50.47	-0.97	-0.94
						-1.23	-1.43
85	12504	1780	41281	302.90	43.12	-1.11	-1.01
85.2	13888	1827	43538	318.99	41.96	-1.10	-1.02
85.4	12279	1835	44206	277.77	41.51	-1.12	-1.03
85.6	12319	1667	43094	285.86	38.68	-1.12	-1.06
85.8	15515	1856	45264	342.77	41.00	-1.09	-1.03
86	16229	1993	43125	376.32	46.21	-1.08	-0.98
86.2	12008	1384	41902	286.57	33.03	-1.12	-1.11

86.4	14713	1668	43785	336.03	38.10	-1.10	-1.06
86.6	16830	1710	45708	368.21	37.41	-1.08	-1.07
86.8	18297	1794	44860	407.87	39.99	-1.07	-1.04
87	17418	2051	46399	375.40	44.20	-1.08	-1.00
87.2	15556	1595	45141	344.61	35.33	-1.09	-1.09
87.4	16282	1430	46990	346.50	30.43	-1.09	-1.14
87.6	17842	1385	47399	376.42	29.22	-1.08	-1.15
87.8	18208	1642	45669	398.69	35.95	-1.07	-1.08
88	15708	1455	46427	338.34	31.34	-1.09	-1.13
88.2	15984	2098	46717	342.15	44.91	-1.09	-0.99
88.4	17553	1914	46002	381.57	41.61	-1.08	-1.03
88.6	17946	1702	47853	375.02	35.57	-1.08	-1.09
88.8	17215	1550	46973	366.49	33.00	-1.08	-1.11
89	17392	938	47059	369.58	19.93	-1.08	-1.24
89.2	18005	1447	47087	382.38	30.73	-1.08	-1.13
89.4	20143	1630	46735	431.00	34.88	-1.06	-1.09
89.6	19192	1941	44979	426.69	43.15	-1.06	-1.01
89.8	18525	2010	44795	413.55	44.87	-1.06	-0.99
90	22633	1802	45456	497.91	39.64	-1.03	-1.05
90.2	20275	1656	45238	448.19	36.61	-1.05	-1.08
90.4	18984	1015	46015	412.56	22.06	-1.06	-1.22
90.6	16749	1504	45007	372.14	33.42	-1.08	-1.11
90.8	19484	1672	45334	429.79	36.88	-1.06	-1.07
91	19315	2191	46167	418.37	47.46	-1.06	-0.97
91.2	24467	2191	45434	538.52	48.22	-1.01	-0.96
91.4	26709	1833	47556	561.63	38.54	-1.00	-1.06
91.6	27657	1576	48862	566.02	32.25	-1.00	-1.12
91.8	22135	1547	48508	456.32	31.89	-1.05	-1.12
92	19926	1274	48501	410.84	26.27	-1.07	-1.18
92.2	19100	1367	46921	407.07	29.13	-1.07	-1.15
92.4	14997	1400	44594	336.30	31.39	-1.10	-1.13
92.6	16682	1404	45415	367.32	30.91	-1.08	-1.13
92.8	15863	1793	46632	340.17	38.45	-1.09	-1.06
93	18052	1791	47622	379.07	37.61	-1.08	-1.07
93.2	18812	2065	46928	400.87	44.00	-1.07	-1.00
93.4	18376	1540	48060	382.36	32.04	-1.08	-1.12

93.6	17048	1777	47970	355.39	37.04	-1.09	-1.07
93.8	16300	2209	47689	341.80	46.32	-1.09	-0.98
94	18134	1725	47707	380.11	36.16	-1.08	-1.08
94.2	17988	1791	45295	397.13	39.54	-1.07	-1.05
94.4	15640	1955	46552	335.97	42.00	-1.10	-1.02
94.6	17512	1897	47182	371.16	40.21	-1.08	-1.04
94.8	16993	1902	47269	359.50	40.24	-1.09	-1.04
95	15221	1775	46744	325.62	37.97	-1.10	-1.06
95.2	17514	1598	47178	371.23	33.87	-1.08	-1.10
95.4	18922	1681	46703	405.16	35.99	-1.07	-1.08
95.6	18133	1961	46246	392.10	42.40	-1.07	-1.02
95.8	18820	1339	46396	405.64	28.86	-1.07	-1.15
96	19186	1462	46160	415.64	31.67	-1.06	-1.12
96.2	19042	1725	46267	411.57	37.28	-1.06	-1.07
96.4	19375	1659	46717	414.73	35.51	-1.06	-1.09
96.6	19101	1955	47491	402.20	41.17	-1.07	-1.03
96.8	20623	1956	47386	435.21	41.28	-1.06	-1.03
97	22271	1975	47346	470.39	41.71	-1.04	-1.03
97.2	22530	1956	46130	488.40	42.40	-1.03	-1.02
97.4	22289	1716	46697	477.31	36.75	-1.04	-1.07
97.6	21152	1838	46624	453.67	39.42	-1.05	-1.05
97.8	22533	1875	45842	491.54	40.90	-1.03	-1.03
98	21304	1951	45827	464.88	42.57	-1.04	-1.02
98.2	21537	1908	47137	456.90	40.48	-1.05	-1.04
98.4	21988	1867	47849	459.53	39.02	-1.05	-1.05
98.6	21681	2143	47889	452.73	44.75	-1.05	-1.00
98.8	24873	2264	48624	511.54	46.56	-1.02	-0.98
99	21357	2198	45841	465.89	47.95	-1.04	-0.96
99.2	15056	1873	44156	340.97	42.42	-1.09	-1.02
99.4	11723	1634	43223	271.22	37.80	-1.12	-1.06
99.6	10138	1591	43483	233.15	36.59	-1.14	-1.08
99.8	11704	1560	43543	268.79	35.83	-1.12	-1.08
100	12133	1896	45409	267.19	41.75	-1.12	-1.02
100.2	12999	1453	46947	276.89	30.95	-1.12	-1.13
100.4	10678	1477	45674	233.79	32.34	-1.14	-1.12
100.6	8995	1196	44358	202.78	26.96	-1.15	-1.17

100.8	10525	1231	45335	232.16	27.15	-1.14	-1.17
101	12551	1468	46263	271.30	31.73	-1.12	-1.12
101.2	11674	718	44863	260.21	16.00	-1.13	-1.28
101.4	8215	1275	44587	184.25	28.60	-1.16	-1.15
101.6	11831	1296	44593	265.31	29.06	-1.12	-1.15
101.8	13607	1994	45681	297.87	43.65	-1.11	-1.01
102	13862	2005	45881	302.13	43.70	-1.11	-1.01
102.2	14761	1926	47022	313.92	40.96	-1.10	-1.03
102.4	18044	1981	47751	377.88	41.49	-1.08	-1.03
102.6	16676	1985	47061	354.35	42.18	-1.09	-1.02
102.8	16736	2093	48714	343.56	42.97	-1.09	-1.01
103	16700	2403	47080	354.72	51.04	-1.09	-0.93
103.2	17862	2322	46772	381.90	49.65	-1.08	-0.95
103.4	18379	2575	45851	400.84	56.16	-1.07	-0.88
103.6	17750	2824	47400	374.47	59.58	-1.08	-0.85
103.8	18088	2315	46987	384.96	49.27	-1.08	-0.95
104	18606	2191	47351	392.94	46.27	-1.07	-0.98
104.2	20365	1980	46825	434.92	42.29	-1.06	-1.02
104.4	21507	1827	47883	449.16	38.16	-1.05	-1.06
104.6	20580	1559	47498	433.28	32.82	-1.06	-1.11
104.8	13378	2026	45074	296.80	44.95	-1.11	-0.99
105	14779	1597	46312	319.12	34.48	-1.10	-1.10
105.2	16926	1562	45662	370.68	34.21	-1.08	-1.10
105.4	11387	1780	38461	296.07	46.28	-1.11	-0.98
105.6	9748	1505	37805	257.85	39.81	-1.13	-1.04
105.8	10950	1827	40562	269.96	45.04	-1.12	-0.99
106	11943	1814	40991	291.36	44.25	-1.11	-1.00
106.2	11519	1929	43354	265.70	44.49	-1.12	-1.00
106.4	14833	1383	45356	327.04	30.49	-1.10	-1.14
106.6	17012	1670	44306	383.97	37.69	-1.08	-1.06
106.8	17317	1637	44660	387.75	36.65	-1.07	-1.07
107	17283	1884	46413	372.37	40.59	-1.08	-1.04
107.2	17206	1806	47404	362.97	38.10	-1.08	-1.06
107.4	15436	1447	47497	324.99	30.47	-1.10	-1.14
107.6	16041	1130	47985	334.29	23.55	-1.10	-1.20
107.8	15431	1423	47563	324.43	29.92	-1.10	-1.14

108	15920	1728	46046	345.74	37.53	-1.09	-1.07
108.2	16414	1843	46366	354.01	39.75	-1.09	-1.04
108.4	16722	1773	46619	358.69	38.03	-1.09	-1.06
108.6	15279	1783	46990	325.15	37.94	-1.10	-1.06
108.8	15395	1854	47249	325.83	39.24	-1.10	-1.05
109	15084	1987	47560	317.16	41.78	-1.10	-1.02
109.2	16075	1766	48506	331.40	36.41	-1.10	-1.08
109.4	14879	2069	48636	305.93	42.54	-1.11	-1.02
109.6	14414	1995	47116	305.93	42.34	-1.11	-1.02
109.8	12545	2189	47585	263.63	46.00	-1.12	-0.98
110	18027	2134	49461	364.47	43.15	-1.08	-1.01
110.2	15039	1854	46919	320.53	39.51	-1.10	-1.05
110.4	13978	1436	44072	317.16	32.58	-1.10	-1.11
110.6	13706	1454	43010	318.67	33.81	-1.10	-1.10
110.8	8343	1372	42791	194.97	32.06	-1.15	-1.12
111	7789	1314	42463	183.43	30.94	-1.16	-1.13
111.2	8391	1873	42847	195.84	43.71	-1.15	-1.01
111.4	9663	1247	40665	237.62	30.67	-1.14	-1.13
111.6	7703	1078	39671	194.17	27.17	-1.15	-1.17
111.8	7367	1564	38514	191.28	40.61	-1.15	-1.04
112	7452	1551	38913	191.50	39.86	-1.15	-1.04
112.2	7708	1463	37371	206.26	39.15	-1.15	-1.05
112.4	7026	1585	34977	200.87	45.32	-1.15	-0.99
112.6	8133	826	33959	239.49	24.32	-1.13	-1.20
112.8	6379	1306	35980	177.29	36.30	-1.16	-1.08
113	11945	1546	38646	309.09	40.00	-1.11	-1.04
113.2	14828	1685	37659	393.74	44.74	-1.07	-1.00
113.4	14274	2698	36084	395.58	74.77	-1.07	-0.70
113.6	13424	2734	36203	370.80	75.52	-1.08	-0.69
113.8	9907	1706	38411	257.92	44.41	-1.13	-1.00
114	13841	2164	41399	334.33	52.27	-1.10	-0.92
114.2	19485	2126	42091	462.93	50.51	-1.04	-0.94
114.4	22878	1995	43696	523.57	45.66	-1.02	-0.99
114.6	23184	1800	45068	514.42	39.94	-1.02	-1.04
114.8	20847	1534	46515	448.18	32.98	-1.05	-1.11
115	18676	1596	45885	407.02	34.78	-1.07	-1.09

115.2	16369	1421	45394	360.60	31.30	-1.09	-1.13
115.4	15186	1289	44461	341.56	28.99	-1.09	-1.15
115.6	16354	1693	44499	367.51	38.05	-1.08	-1.06
115.8	17226	1237	46387	371.35	26.67	-1.08	-1.17
116	17394	1826	45911	378.86	39.77	-1.08	-1.04
116.2	17755	1208	46032	385.71	26.24	-1.08	-1.18
116.4	15134	1597	45139	335.28	35.38	-1.10	-1.09
116.6	15351	1995	46144	332.68	43.23	-1.10	-1.01
116.8	16992	1659	45924	370.00	36.12	-1.08	-1.08
117	21113	1529	45574	463.27	33.55	-1.04	-1.11
117.2	22677	1566	46447	488.23	33.72	-1.03	-1.10
117.4	19546	1291	46292	422.23	27.89	-1.06	-1.16
117.6	13682	979	46818	292.24	20.91	-1.11	-1.23
117.8	15284	1279	46868	326.11	27.29	-1.10	-1.17
118	17812	1325	46636	381.94	28.41	-1.08	-1.16
118.2	13663	1152	46540	293.58	24.75	-1.11	-1.19
118.4	11437	1275	47768	239.43	26.69	-1.13	-1.17
118.6	12348	1438	47991	257.30	29.96	-1.13	-1.14
118.8	13529	1544	47299	286.03	32.64	-1.12	-1.11
119	16126	1630	47560	339.07	34.27	-1.09	-1.10
119.2	16835	1857	47485	354.53	39.11	-1.09	-1.05
119.4	15685	1739	49470	317.06	35.15	-1.10	-1.09
119.6	15882	1345	48763	325.70	27.58	-1.10	-1.16
119.8	14906	1565	48860	305.08	32.03	-1.11	-1.12
120	15660	901	47618	328.87	18.92	-1.10	-1.25
120.2	17355	1145	47203	367.67	24.26	-1.08	-1.20
120.4	18769	1623	47479	395.31	34.18	-1.07	-1.10
120.6	19754	1569	47105	419.36	33.31	-1.06	-1.11
120.8	17756	1429	47666	372.51	29.98	-1.08	-1.14
121	14068	998	47084	298.79	21.20	-1.11	-1.23
121.2	14308	1028	47728	299.78	21.54	-1.11	-1.22
121.4	15859	1304	46736	339.33	27.90	-1.09	-1.16
121.6	15924	1699	46668	341.22	36.41	-1.09	-1.08
121.8	17744	1339	46505	381.55	28.79	-1.08	-1.15
122	18313	1136	46468	394.10	24.45	-1.07	-1.19
122.2	19053	1503	46195	412.45	32.54	-1.06	-1.12

122.4	18926	1629	45255	418.21	36.00	-1.06	-1.08
122.6	17996	1965	45619	394.48	43.07	-1.07	-1.01
122.8	18087	1572	45815	394.78	34.31	-1.07	-1.10
123	17061	1398	46234	369.01	30.24	-1.08	-1.14
123.2	16661	1517	45999	362.20	32.98	-1.08	-1.11
123.4	16945	1595	45195	374.93	35.29	-1.08	-1.09
123.6	15730	1405	45373	346.68	30.97	-1.09	-1.13
123.8	16057	1403	45407	353.62	30.90	-1.09	-1.13
124	16271	1341	45334	358.91	29.58	-1.09	-1.14
124.2	16845	1671	44140	381.63	37.86	-1.08	-1.06
124.4	17842	1747	45109	395.53	38.73	-1.07	-1.05
124.6	17949	1918	44856	400.15	42.76	-1.07	-1.02
124.8	14710	1671	44940	327.33	37.18	-1.10	-1.07
125	13489	1567	45252	298.09	34.63	-1.11	-1.09
125.2	14672	1378	45375	323.35	30.37	-1.10	-1.14
125.4	15680	1414	46699	335.77	30.28	-1.10	-1.14
125.6	13640	1561	45385	300.54	34.39	-1.11	-1.10
125.8	12801	1642	45912	278.82	35.76	-1.12	-1.08
126	12710	1538	44960	282.70	34.21	-1.12	-1.10
126.2	14653	1688	44942	326.04	37.56	-1.10	-1.07
126.4	16693	1887	46128	361.88	40.91	-1.08	-1.03
126.6	18991	1490	47348	401.09	31.47	-1.07	-1.13
126.8	20244	1775	45838	441.64	38.72	-1.05	-1.05
127	21230	1543	45942	462.10	33.59	-1.04	-1.10
127.2	21770	1836	46046	472.79	39.87	-1.04	-1.04
127.4	21407	1468	46368	461.68	31.66	-1.04	-1.12
127.6	19796	1930	46619	424.63	41.40	-1.06	-1.03
127.8	18507	1390	48286	383.28	28.79	-1.08	-1.15
128	19701	1468	47238	417.06	31.08	-1.06	-1.13
128.2	20383	1869	46720	436.28	40.00	-1.05	-1.04
128.4	20676	1718	47218	437.88	36.38	-1.05	-1.08
128.6	19455	1621	46445	418.88	34.90	-1.06	-1.09
128.8	20206	1958	45725	441.90	42.82	-1.05	-1.01
129	19481	1360	45934	424.11	29.61	-1.06	-1.14
129.2	18949	1572	44438	426.41	35.38	-1.06	-1.09
129.4	19305	1601	44534	433.49	35.95	-1.06	-1.08

129.6	18386	1687	43617	421.53	38.68	-1.06	-1.06
129.8	14541	1384	42406	342.90	32.64	-1.09	-1.11
130	13390	1526	43930	304.80	34.74	-1.11	-1.09
130.2	12732	1862	46165	275.79	40.33	-1.12	-1.04
130.4	13245	1461	45518	290.98	32.10	-1.11	-1.12
130.6	12263	1515	45202	271.29	33.52	-1.12	-1.11
130.8	11349	1426	45514	249.35	31.33	-1.13	-1.13
131	11329	1544	46295	244.71	33.35	-1.13	-1.11
131.2	12220	1536	46392	263.41	33.11	-1.12	-1.11
131.4	12288	1715	46792	262.61	36.65	-1.12	-1.07
131.6	12406	1609	46664	265.86	34.48	-1.12	-1.10
131.8	13927	1407	45298	307.45	31.06	-1.11	-1.13
132	14820	1743	44517	332.91	39.15	-1.10	-1.05
132.2	18081	1586	44174	409.31	35.90	-1.07	-1.08
132.4	28693	1571	44754	641.13	35.10	-0.97	-1.09
132.6	18478	1603	45629	404.96	35.13	-1.07	-1.09
132.8	11322	1107	44979	251.72	24.61	-1.13	-1.19
133	10118	1353	45175	223.97	29.95	-1.14	-1.14
133.2	10832	1203	44913	241.18	26.79	-1.13	-1.17
133.4	11493	1221	45419	253.04	26.88	-1.13	-1.17
133.6	10721	1281	46188	232.12	27.73	-1.14	-1.16
133.8	10709	1482	45800	233.82	32.36	-1.14	-1.12
134	11256	1592	44470	253.11	35.80	-1.13	-1.08
134.2	11239	2177	43874	256.17	49.62	-1.13	-0.95
134.4	11233	1741	45332	247.79	38.41	-1.13	-1.06
134.6	12496	1594	45194	276.50	35.27	-1.12	-1.09
134.8	11420	1476	45108	253.17	32.72	-1.13	-1.11
135	11299	1186	44995	251.12	26.36	-1.13	-1.18
135.2	10172	1574	45989	221.18	34.23	-1.14	-1.10
135.4	10610	1767	45614	232.60	38.74	-1.14	-1.05
135.6	10525	1561	46409	226.79	33.64	-1.14	-1.10
135.8	11145	1430	46755	238.37	30.58	-1.13	-1.13
136	9414	1818	45913	205.04	39.60	-1.15	-1.05
136.2	10117	1649	45543	222.14	36.21	-1.14	-1.08
136.4	12560	1647	45671	275.01	36.06	-1.12	-1.08
136.6	14114	1612	45234	312.02	35.64	-1.10	-1.08

136.8	14048	1601	46182	304.19	34.67	-1.11	-1.09
137	14953	1258	45802	326.47	27.47	-1.10	-1.16
137.2	12022	1412	46567	258.17	30.32	-1.13	-1.14
137.4	10504	1622	46420	226.28	34.94	-1.14	-1.09
137.6	8843	1429	46879	188.63	30.48	-1.15	-1.14
137.8	8480	1449	46427	182.65	31.21	-1.16	-1.13
138	9168	1316	46408	197.55	28.36	-1.15	-1.16
138.2	8041	1286	46136	174.29	27.87	-1.16	-1.16
138.4	6879	1353	45076	152.61	30.02	-1.17	-1.14
138.6	9090	1272	47164	192.73	26.97	-1.15	-1.17
138.8	10030	1124	44973	223.02	24.99	-1.14	-1.19
139	9496	1306	45287	209.68	28.84	-1.15	-1.15
139.2	9792	1457	46793	209.26	31.14	-1.15	-1.13
139.4	10112	1612	45368	222.89	35.53	-1.14	-1.09
139.6	10388	1075	47107	220.52	22.82	-1.14	-1.21
139.8	10761	1423	45451	236.76	31.31	-1.14	-1.13
140	11336	1329	45876	247.10	28.97	-1.13	-1.15
140.2	11447	1180	46328	247.09	25.47	-1.13	-1.18
140.4	11610	1047	46360	250.43	22.58	-1.13	-1.21
140.6	11623	1218	45844	253.53	26.57	-1.13	-1.17
140.8	12185	1411	45361	268.62	31.11	-1.12	-1.13
141	11819	812	44750	264.11	18.15	-1.12	-1.26
141.2	11690	1081	45441	257.26	23.79	-1.13	-1.20
141.4	11353	1157	44829	253.25	25.81	-1.13	-1.18
141.6	11318	1508	46196	245.00	32.64	-1.13	-1.11
141.8	10634	1626	46839	227.03	34.71	-1.14	-1.09
142	10660	1165	46717	228.18	24.94	-1.14	-1.19
142.2	10151	1568	46849	216.67	33.47	-1.14	-1.11
142.4	9493	1329	45400	209.10	29.27	-1.15	-1.15
142.6	8292	1006	44457	186.52	22.63	-1.16	-1.21
142.8	10033	1026	45679	219.64	22.46	-1.14	-1.21
143	9661	1378	45656	211.60	30.18	-1.15	-1.14
143.2	8747	1571	45510	192.20	34.52	-1.15	-1.10
143.4	8961	1356	45465	197.10	29.83	-1.15	-1.14
143.6	10502	1439	45956	228.52	31.31	-1.14	-1.13
143.8	10378	1062	47734	217.41	22.25	-1.14	-1.22

144	9788	1241	47014	208.19	26.40	-1.15	-1.18
144.2	11214	1354	47852	234.35	28.30	-1.14	-1.16
144.4	11578	871	46851	247.12	18.59	-1.13	-1.25
144.6	11723	782	46597	251.58	16.78	-1.13	-1.27
144.8	8340	244	46839	178.06	5.21	-1.16	-1.38
145	9882	636	46458	212.71	13.69	-1.15	-1.30
145.2	10566	862	47135	224.16	18.29	-1.14	-1.25
145.4	9785	656	46555	210.18	14.09	-1.15	-1.30
145.6	11273	1364	46518	242.34	29.32	-1.13	-1.15
145.8	11491	1464	47000	244.49	31.15	-1.13	-1.13
146	11731	1303	45833	255.95	28.43	-1.13	-1.16
146.2	11282	1310	45955	245.50	28.51	-1.13	-1.15
146.4	8456	1022	42775	197.69	23.89	-1.15	-1.20
146.6	7227	1209	42462	170.20	28.47	-1.16	-1.16
146.8	10250	1199	44140	232.22	27.16	-1.14	-1.17
147	12648	1410	45052	280.74	31.30	-1.12	-1.13
147.2	13094	1827	44144	296.62	41.39	-1.11	-1.03
147.4	13753	1828	45666	301.16	40.03	-1.11	-1.04
147.6	15323	1563	44947	340.91	34.77	-1.09	-1.09
147.8	14854	1477	44287	335.40	33.35	-1.10	-1.11
148	14322	1540	44986	318.37	34.23	-1.10	-1.10
148.2	14947	1346	45231	330.46	29.76	-1.10	-1.14
148.4	16335	1122	47082	346.95	23.83	-1.09	-1.20
148.6	15745	1602	46082	341.67	34.76	-1.09	-1.09
148.8	15124	1815	46809	323.10	38.77	-1.10	-1.05
149	15653	1400	46344	337.76	30.21	-1.09	-1.14
149.2	15357	1281	45325	338.82	28.26	-1.09	-1.16
149.4	13504	1321	45624	295.98	28.95	-1.11	-1.15
149.6	12699	1189	45681	277.99	26.03	-1.12	-1.18
149.8	11847	1226	45011	263.20	27.24	-1.12	-1.17
150	12343	1344	45127	273.52	29.78	-1.12	-1.14
150.2	13510	1373	44920	300.76	30.57	-1.11	-1.13
150.4	14005	1335	45886	305.21	29.09	-1.11	-1.15
150.6	14473	1368	45890	315.38	29.81	-1.10	-1.14
150.8	14623	1111	45848	318.95	24.23	-1.10	-1.20
151	15812	1503	44290	357.01	33.94	-1.09	-1.10

151.2	14699	1470	45432	323.54	32.36	-1.10	-1.12
151.4	15841	1737	45705	346.59	38.00	-1.09	-1.06
151.6	15515	1540	46609	332.88	33.04	-1.10	-1.11
151.8	14831	1754	46117	321.60	38.03	-1.10	-1.06
152	14440	1729	45361	318.34	38.12	-1.10	-1.06
152.2	14647	1608	46497	315.01	34.58	-1.10	-1.10
152.4	14446	1772	46907	307.97	37.78	-1.11	-1.06
152.6	14595	1567	46520	313.74	33.68	-1.10	-1.10
152.8	14622	1486	46070	317.39	32.26	-1.10	-1.12
153	14714	1610	45234	325.29	35.59	-1.10	-1.09
153.2	13902	1378	45856	303.17	30.05	-1.11	-1.14
153.4	12612	1486	46780	269.60	31.77	-1.12	-1.12
153.6	12679	1118	46460	272.90	24.06	-1.12	-1.20
153.8	11274	1173	45968	245.26	25.52	-1.13	-1.18
154	10988	1750	46159	238.05	37.91	-1.13	-1.06
154.2	10886	1681	45806	237.65	36.70	-1.14	-1.07
154.4	11041	1354	45532	242.49	29.74	-1.13	-1.14
154.6	10694	1380	44837	238.51	30.78	-1.13	-1.13
154.8	9638	1601	44600	216.10	35.90	-1.14	-1.08
155	10401	1591	44748	232.43	35.55	-1.14	-1.09
155.2	10059	1804	46239	217.54	39.01	-1.14	-1.05
155.4	10815	1598	44618	242.39	35.82	-1.13	-1.08
155.6	11923	1420	44121	270.23	32.18	-1.12	-1.12
155.8	13523	1846	45079	299.98	40.95	-1.11	-1.03
156	14890	1321	46131	322.78	28.64	-1.10	-1.15
156.2	13557	929	46867	289.27	19.82	-1.11	-1.24
156.4	11833	1314	44850	263.84	29.30	-1.12	-1.15
156.6	12130	1640	46123	262.99	35.56	-1.12	-1.09
156.8	12679	904	46349	273.55	19.50	-1.12	-1.24
157	11618	1065	46736	248.59	22.79	-1.13	-1.21
157.2	12048	1022	46064	261.55	22.19	-1.13	-1.22
157.4	11494	990	46510	247.13	21.29	-1.13	-1.23
157.6	10345	1179	46457	222.68	25.38	-1.14	-1.19
157.8	10706	1399	45123	237.26	31.00	-1.14	-1.13
158	11328	1637	46418	244.04	35.27	-1.13	-1.09
158.2	11542	1412	45864	251.66	30.79	-1.13	-1.13

158.4	12113	1214	45962	263.54	26.41	-1.12	-1.18
158.6	11802	975	46548	253.54	20.95	-1.13	-1.23
158.8	12761	1327	43970	290.22	30.18	-1.11	-1.14
159	14369	1172	44089	325.91	26.58	-1.10	-1.17
159.2	13625	1532	43541	312.92	35.19	-1.10	-1.09
159.4	11887	1650	45830	259.37	36.00	-1.13	-1.08
159.6	10278	1211	46468	221.18	26.06	-1.14	-1.18
159.8	9704	1356	46000	210.96	29.48	-1.15	-1.15
160	10162	920	45680	222.46	20.14	-1.14	-1.24
160.2	11227	1291	46010	244.01	28.06	-1.13	-1.16
160.4	11749	1220	45368	258.97	26.89	-1.13	-1.17
160.6	14462	1130	45764	316.01	24.69	-1.10	-1.19
160.8	14221	723	45241	314.34	15.98	-1.10	-1.28
161	9786	1106	45070	217.13	24.54	-1.14	-1.19
161.2	9319	1351	45815	203.40	29.49	-1.15	-1.15
161.4	9572	1152	45744	209.25	25.18	-1.15	-1.19
161.6	11868	1188	45948	258.29	25.86	-1.13	-1.18
161.8	12075	1315	45809	263.59	28.71	-1.12	-1.15
162	12778	1314	45545	280.56	28.85	-1.12	-1.15
162.2	13324	1243	45065	295.66	27.58	-1.11	-1.16
162.4	14379	1295	45467	316.25	28.48	-1.10	-1.15
162.6	13111	1259	45797	286.29	27.49	-1.12	-1.16
162.8	12121	1609	46856	258.69	34.34	-1.13	-1.10
163	12825	1241	47087	272.37	26.36	-1.12	-1.18
163.2	11105	1589	46165	240.55	34.42	-1.13	-1.10
163.4	10924	1164	45341	240.93	25.67	-1.13	-1.18
163.6	9884	1448	45377	217.82	31.91	-1.14	-1.12
163.8	9527	707	45982	207.19	15.38	-1.15	-1.28
164	10529	1461	45672	230.54	31.99	-1.14	-1.12
164.2	10884	1310	46563	233.75	28.13	-1.14	-1.16
164.4	11435	1523	47009	243.25	32.40	-1.13	-1.12
164.6	12453	1126	45666	272.70	24.66	-1.12	-1.19
164.8	11541	1483	44857	257.28	33.06	-1.13	-1.11
165	12095	1663	46147	262.10	36.04	-1.13	-1.08
165.2	12935	1031	46269	279.56	22.28	-1.12	-1.22
165.4	12799	1098	46438	275.61	23.64	-1.12	-1.20

165.6	11582	1434	46644	248.31	30.74	-1.13	-1.13
165.8	12132	1630	45818	264.79	35.58	-1.12	-1.09
166	13157	1067	46133	285.20	23.13	-1.12	-1.21
166.2	16173	1634	45655	354.24	35.79	-1.09	-1.08
166.4	16760	1838	45555	367.91	40.35	-1.08	-1.04
166.6	17701	1773	46852	377.81	37.84	-1.08	-1.06
166.8	16296	1837	46499	350.46	39.51	-1.09	-1.05
167	18887	2028	47176	400.35	42.99	-1.07	-1.01
167.2	17432	1386	45748	381.04	30.30	-1.08	-1.14
167.4	15810	1811	45711	345.87	39.62	-1.09	-1.05
167.6	15068	1727	47327	318.38	36.49	-1.10	-1.08
167.8	12849	1850	49720	258.43	37.21	-1.13	-1.07
168	8091	1990	42622	189.83	46.69	-1.15	-0.98
168.2	53786	1743	35170	1529.31	49.56	-0.61	-0.95
168.4	83855	1071	9091	9223.96	117.81	2.50	-0.28
						-1.23	-1.43
185	19996	2530	51871	385.49	48.77	-1.08	-0.96
185.2	29151	2396	50545	576.73	47.40	-1.00	-0.97
185.4	25781	2033	50008	515.54	40.65	-1.02	-1.04
185.6	26849	1978	51143	524.98	38.68	-1.02	-1.06
185.8	25799	1813	51334	502.57	35.32	-1.03	-1.09
186	26803	2385	50873	526.86	46.88	-1.02	-0.97
186.2	29629	2128	51162	579.12	41.59	-1.00	-1.03
186.4	26646	2336	51054	521.92	45.76	-1.02	-0.99
186.6	21068	2168	50991	413.17	42.52	-1.06	-1.02
186.8	20962	2057	50159	417.91	41.01	-1.06	-1.03
187	25560	2214	51299	498.26	43.16	-1.03	-1.01
187.2	24779	2473	49385	501.75	50.08	-1.03	-0.94
187.4	23727	2649	47789	496.50	55.43	-1.03	-0.89
187.6	22554	2501	48743	462.71	51.31	-1.04	-0.93
187.8	14373	2594	44649	321.91	58.10	-1.10	-0.86
188	17014	2142	44779	379.95	47.83	-1.08	-0.97
188.2	14243	1818	39135	363.95	46.45	-1.08	-0.98
188.4	15873	1568	37441	423.95	41.88	-1.06	-1.02
188.6	20601	1560	41375	497.91	37.70	-1.03	-1.06
188.8	24364	1885	42865	568.39	43.98	-1.00	-1.00

189	23994	2186	46906	511.53	46.60	-1.02	-0.98
189.2	28828	2550	50956	565.74	50.04	-1.00	-0.94
189.4	30665	2015	52603	582.95	38.31	-1.00	-1.06
189.6	29801	2165	51522	578.41	42.02	-1.00	-1.02
189.8	27967	1442	50378	555.14	28.62	-1.01	-1.15
190	23073	1386	51540	447.67	26.89	-1.05	-1.17
190.2	23706	2612	50849	466.20	51.37	-1.04	-0.93
190.4	23732	1705	52257	454.14	32.63	-1.05	-1.11
190.6	20860	2159	51216	407.29	42.15	-1.07	-1.02
190.8	24805	1527	49476	501.35	30.86	-1.03	-1.13
191	24835	1849	49506	501.66	37.35	-1.03	-1.07
191.2	26756	1975	50613	528.64	39.02	-1.02	-1.05
191.4	29361	2257	48460	605.88	46.57	-0.99	-0.98
191.6	27186	2024	48664	558.65	41.59	-1.01	-1.03
191.8	28066	1946	49711	564.58	39.15	-1.00	-1.05
192	28842	2090	49312	584.89	42.38	-0.99	-1.02
192.2	31086	2209	50807	611.84	43.48	-0.98	-1.01
192.4	31061	1716	49724	624.67	34.51	-0.98	-1.10
192.6	29402	2179	50491	582.32	43.16	-1.00	-1.01
192.8	28049	1607	50851	551.59	31.60	-1.01	-1.12
193	26506	2208	50341	526.53	43.86	-1.02	-1.00
193.2	27581	1923	50059	550.97	38.41	-1.01	-1.06
193.4	24944	1643	49255	506.43	33.36	-1.03	-1.11
193.6	24042	1867	50484	476.23	36.98	-1.04	-1.07
193.8	25443	1821	52001	489.28	35.02	-1.03	-1.09
194	24591	2215	51467	477.80	43.04	-1.04	-1.01
194.2	23190	2124	52125	444.89	40.75	-1.05	-1.03
194.4	23896	2201	51658	462.58	42.61	-1.04	-1.02
194.6	21104	2034	51232	411.93	39.70	-1.06	-1.05
194.8	21760	1878	50302	432.59	37.33	-1.06	-1.07
195	22237	2156	52135	426.53	41.35	-1.06	-1.03
195.2	22193	1893	51259	432.96	36.93	-1.06	-1.07
195.4	22602	2290	51007	443.12	44.90	-1.05	-0.99
195.6	23639	1944	50976	463.73	38.14	-1.04	-1.06
195.8	22625	1939	51179	442.08	37.89	-1.05	-1.06
196	24335	2214	51133	475.92	43.30	-1.04	-1.01

196.2	23855	2199	50907	468.60	43.20	-1.04	-1.01
196.4	22473	1692	51344	437.69	32.95	-1.05	-1.11
196.6	19528	1795	50930	383.43	35.24	-1.08	-1.09
196.8	22119	1680	50163	440.94	33.49	-1.05	-1.11
197	22213	2112	50499	439.87	41.82	-1.05	-1.02
197.2	22135	1668	51931	426.24	32.12	-1.06	-1.12
197.4	19803	2121	52542	376.90	40.37	-1.08	-1.04
197.6	15531	1788	52336	296.76	34.16	-1.11	-1.10
197.8	19680	1770	50373	390.69	35.14	-1.07	-1.09
198	23099	1532	50375	458.54	30.41	-1.05	-1.14
198.2	24510	2429	51022	480.38	47.61	-1.04	-0.97
198.4	22959	2014	51148	448.87	39.38	-1.05	-1.05
198.6	21279	1958	51299	414.80	38.17	-1.06	-1.06
198.8	22189	2218	50925	435.72	43.55	-1.05	-1.01
199	21990	2305	50342	436.81	45.79	-1.05	-0.99
199.2	21341	2294	51193	416.87	44.81	-1.06	-0.99
199.4	20868	2517	50639	412.09	49.70	-1.06	-0.95
199.6	22081	2397	50327	438.75	47.63	-1.05	-0.97
199.8	23704	1847	50451	469.84	36.61	-1.04	-1.08
200	22945	2455	49033	467.95	50.07	-1.04	-0.94
200.2	20472	2290	49603	412.72	46.17	-1.06	-0.98
200.4	18423	1579	48672	378.51	32.44	-1.08	-1.12
200.6	18793	1807	50411	372.80	35.85	-1.08	-1.08
200.8	20867	1587	49100	424.99	32.32	-1.06	-1.12
201	21764	2072	49828	436.78	41.58	-1.05	-1.03
201.2	18790	2110	50946	368.82	41.42	-1.08	-1.03
201.4	18854	1580	51522	365.94	30.67	-1.08	-1.13
201.6	17954	1596	49639	361.69	32.15	-1.08	-1.12
201.8	18118	1651	50161	361.20	32.91	-1.09	-1.11
202	17203	1988	51439	334.43	38.65	-1.10	-1.06
202.2	17982	1756	50639	355.10	34.68	-1.09	-1.09
202.4	18298	1888	49995	366.00	37.76	-1.08	-1.06
202.6	18973	2545	49734	381.49	51.17	-1.08	-0.93
202.8	20075	2594	49859	402.64	52.03	-1.07	-0.92
203	18761	3182	49535	378.74	64.24	-1.08	-0.80
203.2	18156	2500	50044	362.80	49.96	-1.08	-0.94

203.4	19241	2801	50173	383.49	55.83	-1.08	-0.89
203.6	19281	2462	50630	380.82	48.63	-1.08	-0.96
203.8	22653	1950	51306	441.53	38.01	-1.05	-1.06
204	23033	2126	50896	452.55	41.77	-1.05	-1.02
204.2	22208	2195	49265	450.79	44.55	-1.05	-1.00
204.4	21372	2081	48908	436.98	42.55	-1.05	-1.02
204.6	22809	2240	49799	458.02	44.98	-1.05	-0.99
204.8	23678	2362	48202	491.22	49.00	-1.03	-0.95
205	21410	2929	49449	432.97	59.23	-1.06	-0.85
205.2	20241	2010	49866	405.91	40.31	-1.07	-1.04
205.4	20306	2021	50899	398.95	39.71	-1.07	-1.05
205.6	21566	1545	51389	419.66	30.06	-1.06	-1.14
205.8	21054	1792	51636	407.74	34.70	-1.07	-1.09
206	19713	2221	50934	387.03	43.61	-1.07	-1.01
206.2	14153	2116	52748	268.31	40.12	-1.12	-1.04
206.4	11453	967	52813	216.86	18.31	-1.14	-1.25
206.6	12715	1314	52507	242.16	25.03	-1.13	-1.19
206.8	14297	1055	52184	273.97	20.22	-1.12	-1.24
207	13558	971	52321	259.13	18.56	-1.13	-1.25
207.2	16672	1175	51755	322.13	22.70	-1.10	-1.21
207.4	21588	1716	51722	417.39	33.18	-1.06	-1.11
207.6	23533	1943	51353	458.26	37.84	-1.05	-1.06
207.8	23487	1922	50198	467.89	38.29	-1.04	-1.06
208	22039	1502	51067	431.57	29.41	-1.06	-1.15
208.2	20139	1776	52741	381.85	33.67	-1.08	-1.10
208.4	19186	1863	51087	375.56	36.47	-1.08	-1.08
208.6	17435	1806	51276	340.02	35.22	-1.09	-1.09
208.8	17903	1736	52105	343.59	33.32	-1.09	-1.11
209	18639	1300	52141	357.47	24.93	-1.09	-1.19
209.2	18460	1689	51715	356.96	32.66	-1.09	-1.11
209.4	18632	1867	52987	351.63	35.24	-1.09	-1.09
209.6	18408	2233	52424	351.14	42.59	-1.09	-1.02
209.8	17634	1656	52095	338.50	31.79	-1.09	-1.12
210	17984	2139	52112	345.10	41.05	-1.09	-1.03
210.2	16379	2123	51076	320.68	41.57	-1.10	-1.03
210.4	17926	1903	51783	346.18	36.75	-1.09	-1.07

210.6	18153	2098	52329	346.90	40.09	-1.09	-1.04
210.8	17290	2404	52454	329.62	45.83	-1.10	-0.98
211	17458	2206	53122	328.64	41.53	-1.10	-1.03
211.2	17758	2042	53133	334.22	38.43	-1.10	-1.06
211.4	17805	1880	50460	352.85	37.26	-1.09	-1.07
211.6	17031	2028	50076	340.10	40.50	-1.09	-1.04
211.8	17316	1512	50450	343.23	29.97	-1.09	-1.14
212	16987	2047	50954	333.38	40.17	-1.10	-1.04
212.2	17214	1923	51113	336.78	37.62	-1.09	-1.07
212.4	16305	2245	52681	309.50	42.61	-1.11	-1.02
212.6	16804	1823	52544	319.81	34.69	-1.10	-1.09
212.8	18429	2215	51975	354.57	42.62	-1.09	-1.02
213	18344	2383	52643	348.46	45.27	-1.09	-0.99
213.2	18180	2342	51686	351.74	45.31	-1.09	-0.99
213.4	17379	2193	50888	341.51	43.09	-1.09	-1.01
213.6	17283	2093	52888	326.78	39.57	-1.10	-1.05
213.8	16634	1766	53084	313.35	33.27	-1.10	-1.11
214	17762	1647	51054	347.91	32.26	-1.09	-1.12
214.2	13998	1495	52618	266.03	28.41	-1.12	-1.16
214.4	15534	1823	52876	293.78	34.48	-1.11	-1.10
214.6	16047	1934	52017	308.50	37.18	-1.11	-1.07
214.8	15832	1634	52129	303.71	31.35	-1.11	-1.13
215	15032	1727	52048	288.81	33.18	-1.11	-1.11
215.2	14046	895	53750	261.32	16.65	-1.13	-1.27
215.4	13244	1237	51472	257.30	24.03	-1.13	-1.20
215.6	14870	1036	50848	292.44	20.37	-1.11	-1.23
215.8	17150	1954	51356	333.94	38.05	-1.10	-1.06
216	17759	1933	53568	331.52	36.08	-1.10	-1.08
216.2	19624	2301	52485	373.90	43.84	-1.08	-1.00
216.4	20942	2227	51692	405.13	43.08	-1.07	-1.01
216.6	21980	2423	52448	419.08	46.20	-1.06	-0.98
216.8	21390	2458	52163	410.06	47.12	-1.07	-0.97
217	21257	2522	51336	414.08	49.13	-1.06	-0.95
217.2	21580	2538	51826	416.39	48.97	-1.06	-0.95
217.4	21467	1922	50739	423.09	37.88	-1.06	-1.06
217.6	22256	1918	51705	430.44	37.10	-1.06	-1.07

217.8	18410	1803	52909	347.96	34.08	-1.09	-1.10
218	20492	2001	53840	380.61	37.17	-1.08	-1.07
218.2	23775	1762	52363	454.04	33.65	-1.05	-1.10
218.4	26979	1595	51732	521.51	30.83	-1.02	-1.13
218.6	29375	1864	51272	572.92	36.36	-1.00	-1.08
218.8	24941	1897	53431	466.79	35.50	-1.04	-1.09
219	24245	1641	53381	454.19	30.74	-1.05	-1.13
219.2	27449	1981	52168	526.17	37.97	-1.02	-1.06
219.4	29000	1881	51370	564.53	36.62	-1.00	-1.08
219.6	28653	2064	51612	555.16	39.99	-1.01	-1.04
219.8	29399	2373	52018	565.17	45.62	-1.00	-0.99
220	29502	2043	51793	569.61	39.45	-1.00	-1.05
220.2	29278	2132	51646	566.90	41.28	-1.00	-1.03
220.4	25274	2109	50690	498.60	41.61	-1.03	-1.03
220.6	28642	1531	51075	560.78	29.98	-1.00	-1.14
220.8	30930	2194	52070	594.01	42.14	-0.99	-1.02
221	28570	1691	50885	561.46	33.23	-1.00	-1.11
221.2	25486	1144	52581	484.70	21.76	-1.04	-1.22
221.4	23250	1774	52079	446.44	34.06	-1.05	-1.10
221.6	25237	2113	51280	492.14	41.21	-1.03	-1.03
221.8	26548	1910	51249	518.02	37.27	-1.02	-1.07
222	27443	1792	50556	542.82	35.45	-1.01	-1.09
222.2	30489	2182	50868	599.37	42.90	-0.99	-1.01
222.4	31619	2321	50878	621.47	45.62	-0.98	-0.99
222.6	29380	2381	50647	580.09	47.01	-1.00	-0.97
222.8	36144	2196	51050	708.01	43.02	-0.94	-1.01
223	42750	2318	50898	839.92	45.54	-0.89	-0.99
223.2	40845	1877	50384	810.67	37.25	-0.90	-1.07
223.4	38911	1664	49673	783.34	33.50	-0.91	-1.11
223.6	38319	2441	50780	754.61	48.07	-0.93	-0.96
223.8	33988	2160	52018	653.39	41.52	-0.97	-1.03
224	30991	1806	49838	621.83	36.24	-0.98	-1.08
224.2	35731	2347	51046	699.98	45.98	-0.95	-0.98
224.4	35705	2709	50306	709.76	53.85	-0.94	-0.91
224.6	31299	2154	48702	642.66	44.23	-0.97	-1.00
224.8	34852	2675	50397	691.55	53.08	-0.95	-0.91

225	33084	2065	50708	652.44	40.72	-0.97	-1.04
225.2	35554	2268	50582	702.90	44.84	-0.95	-0.99
225.4	32005	2609	49646	644.66	52.55	-0.97	-0.92
225.6	33354	2053	50250	663.76	40.86	-0.96	-1.03
225.8	33019	2403	50815	649.79	47.29	-0.97	-0.97
226	34853	2322	50852	685.38	45.66	-0.95	-0.99
226.2	36205	2451	50132	722.19	48.89	-0.94	-0.96
226.4	37824	1924	50769	745.02	37.90	-0.93	-1.06
226.6	33752	1921	52259	645.86	36.76	-0.97	-1.07
226.8	27981	1578	51974	538.37	30.36	-1.01	-1.14
227	28005	1919	51607	542.66	37.18	-1.01	-1.07
227.2	28009	2295	51924	539.42	44.20	-1.01	-1.00
227.4	28628	2104	50862	562.86	41.37	-1.00	-1.03
227.6	29787	2240	52040	572.39	43.04	-1.00	-1.01
227.8	32286	2564	51363	628.58	49.92	-0.98	-0.94
228	33492	2396	50744	660.02	47.22	-0.96	-0.97
228.2	31201	1857	52137	598.44	35.62	-0.99	-1.09
228.4	30632	1553	51472	595.12	30.17	-0.99	-1.14
228.6	29638	1896	52010	569.85	36.45	-1.00	-1.08
228.8	26404	1302	51526	512.44	25.27	-1.02	-1.19
229	26770	2320	52519	509.72	44.17	-1.03	-1.00
229.2	25878	2289	52710	490.95	43.43	-1.03	-1.01
229.4	24205	2494	52680	459.47	47.34	-1.05	-0.97
229.6	24693	1778	53873	458.36	33.00	-1.05	-1.11
229.8	27977	1871	52306	534.87	35.77	-1.01	-1.08
230	28520	1993	51822	550.35	38.46	-1.01	-1.06
230.2	29644	2121	51957	570.55	40.82	-1.00	-1.03
230.4	29173	2039	51854	562.60	39.32	-1.00	-1.05
230.6	25808	1917	52037	495.95	36.84	-1.03	-1.07
230.8	23012	1886	52702	436.64	35.79	-1.05	-1.08
231	23170	1699	52466	441.62	32.38	-1.05	-1.12
231.2	19500	1672	52472	371.63	31.86	-1.08	-1.12
231.4	17980	1836	52990	339.31	34.65	-1.09	-1.09
231.6	16789	1793	52538	319.56	34.13	-1.10	-1.10
231.8	16836	1925	52981	317.77	36.33	-1.10	-1.08
232	17240	1914	52859	326.15	36.21	-1.10	-1.08

232.2	17854	1484	52383	340.84	28.33	-1.09	-1.16
232.4	16996	1807	51987	326.93	34.76	-1.10	-1.09
232.6	18674	1576	53165	351.25	29.64	-1.09	-1.14
232.8	20844	1903	52442	397.47	36.29	-1.07	-1.08
233	29446	2470	51743	569.08	47.74	-1.00	-0.97
233.2	37603	2498	51087	736.06	48.90	-0.93	-0.95
233.4	40437	2220	50363	802.91	44.08	-0.91	-1.00
233.6	37613	2338	50796	740.47	46.03	-0.93	-0.98
233.8	38726	2183	50008	774.40	43.65	-0.92	-1.01
234	40308	2543	51227	786.85	49.64	-0.91	-0.95
234.2	37916	2475	50406	752.21	49.10	-0.93	-0.95
234.4	37936	2717	50445	752.03	53.86	-0.93	-0.91
234.6	43964	2639	51633	851.47	51.11	-0.89	-0.93
234.8	41362	2784	52023	795.07	53.51	-0.91	-0.91
235	43840	3107	51870	845.19	59.90	-0.89	-0.85
235.2	49033	2563	50915	963.04	50.34	-0.84	-0.94
235.4	48742	2646	50408	966.95	52.49	-0.84	-0.92
235.6	53238	2950	48811	1090.70	60.44	-0.79	-0.84
235.8	48967	2911	49683	985.59	58.59	-0.83	-0.86
236	53670	2741	49375	1086.99	55.51	-0.79	-0.89
236.2	56721	2686	49995	1134.53	53.73	-0.77	-0.91
236.4	53887	2532	51235	1051.76	49.42	-0.81	-0.95
236.6	47823	2698	50630	944.56	53.29	-0.85	-0.91
236.8	47016	2489	51418	914.39	48.41	-0.86	-0.96
237	44327	2501	51317	863.79	48.74	-0.88	-0.96
237.2	36992	2231	50960	725.90	43.78	-0.94	-1.01
237.4	37840	1582	51921	728.80	30.47	-0.94	-1.14
237.6	44757	2327	51513	868.85	45.17	-0.88	-0.99
237.8	44070	2789	51196	860.81	54.48	-0.88	-0.90
238	43783	2829	51675	847.28	54.75	-0.89	-0.90
238.2	44842	3215	50422	889.33	63.76	-0.87	-0.81
238.4	42873	3324	50288	852.55	66.10	-0.89	-0.79
238.6	43569	2754	50882	856.28	54.13	-0.88	-0.90
238.8	45958	2085	50573	908.75	41.23	-0.86	-1.03
239	45674	2506	51922	879.67	48.26	-0.88	-0.96
239.2	35734	2584	51751	690.50	49.93	-0.95	-0.94

239.4	30792	1783	52390	587.75	34.03	-0.99	-1.10
239.6	31744	2290	51585	615.37	44.39	-0.98	-1.00
239.8	33651	2483	51302	655.94	48.40	-0.97	-0.96
240	37019	2147	50870	727.72	42.21	-0.94	-1.02
240.2	30621	1998	51180	598.30	39.04	-0.99	-1.05
240.4	38729	2872	50680	764.19	56.67	-0.92	-0.88
240.6	49455	2644	50926	971.11	51.92	-0.84	-0.93
240.8	56454	2681	50892	1109.29	52.68	-0.78	-0.92
241	59592	3266	50004	1191.74	65.31	-0.75	-0.79
241.2	63688	3251	51293	1241.65	63.38	-0.73	-0.81
241.4	65474	3580	50339	1300.66	71.12	-0.71	-0.74
241.6	64822	3109	50247	1290.07	61.87	-0.71	-0.83
241.8	68952	3465	49617	1389.68	69.83	-0.67	-0.75
242	62169	3449	49208	1263.39	70.09	-0.72	-0.75
242.2	62143	2945	50135	1239.51	58.74	-0.73	-0.86
242.4	61202	3254	49732	1230.64	65.43	-0.73	-0.79
242.6	56934	2729	50518	1127.00	54.02	-0.78	-0.90
242.8	58964	3048	49252	1197.19	61.89	-0.75	-0.83
243	58501	3106	50344	1162.03	61.70	-0.76	-0.83
243.2	56017	3113	49852	1123.67	62.44	-0.78	-0.82
243.4	54010	2960	49052	1101.08	60.34	-0.79	-0.84
243.6	60947	3338	49404	1233.65	67.57	-0.73	-0.77
243.8	67818	3237	49598	1367.35	65.26	-0.68	-0.79
244	73308	3457	48554	1509.82	71.20	-0.62	-0.74
244.2	83562	3937	48152	1735.38	81.76	-0.53	-0.63
244.4	74229	3236	48573	1528.19	66.62	-0.61	-0.78
244.6	62026	3294	48997	1265.91	67.23	-0.72	-0.78
244.8	61194	2721	49132	1245.50	55.38	-0.73	-0.89
245	66408	3337	47953	1384.86	69.59	-0.67	-0.75
245.2	67903	3614	48162	1409.89	75.04	-0.66	-0.70
245.4	68875	3404	49223	1399.24	69.15	-0.67	-0.76
245.6	74044	3837	48794	1517.48	78.64	-0.62	-0.66
245.8	80438	3753	48151	1670.54	77.94	-0.56	-0.67
246	85359	3807	47474	1798.02	80.19	-0.50	-0.65
246.2	89309	3612	47863	1865.93	75.47	-0.48	-0.69
246.4	85525	3758	47699	1793.01	78.79	-0.51	-0.66

246.6	81919	3621	47475	1725.52	76.27	-0.53	-0.69
246.8	78645	3618	48248	1630.02	74.99	-0.57	-0.70
247	77202	3897	48602	1588.45	80.18	-0.59	-0.65
247.2	83259	4001	48018	1733.91	83.32	-0.53	-0.62
247.4	81143	3918	46565	1742.57	84.14	-0.53	-0.61
247.6	74104	3406	46236	1602.73	73.67	-0.58	-0.71
247.8	79345	3945	46856	1693.38	84.19	-0.55	-0.61
248	83210	3910	46752	1779.82	83.63	-0.51	-0.61
248.2	81363	3699	47133	1726.24	78.48	-0.53	-0.67
248.4	78232	3585	47478	1647.75	75.51	-0.56	-0.69
248.6	78219	4062	47119	1660.03	86.21	-0.56	-0.59
248.8	78282	3760	47206	1658.31	79.65	-0.56	-0.65
249	83606	3690	47040	1777.34	78.44	-0.51	-0.67
249.2	83417	3625	47883	1742.10	75.71	-0.53	-0.69
249.4	79715	3403	47656	1672.72	71.41	-0.55	-0.73
249.6	77991	3436	47183	1652.95	72.82	-0.56	-0.72
249.8	82268	3762	49052	1677.16	76.69	-0.55	-0.68
250	77339	4013	47759	1619.36	84.03	-0.58	-0.61
250.2	73554	3890	48184	1526.52	80.73	-0.61	-0.64
250.4	70287	3641	47654	1474.94	76.40	-0.63	-0.69
250.6	70285	3877	47283	1486.48	82.00	-0.63	-0.63
250.8	69693	3966	47389	1470.66	83.69	-0.64	-0.61
251	70736	3723	47237	1497.47	78.82	-0.63	-0.66
251.2	71157	3603	47375	1501.99	76.05	-0.62	-0.69
251.4	76263	3685	47126	1618.28	78.19	-0.58	-0.67
251.6	74922	3653	47813	1566.98	76.40	-0.60	-0.69
251.8	76266	3686	47329	1611.40	77.88	-0.58	-0.67
252	74976	3715	46684	1606.03	79.58	-0.58	-0.65
252.2	73070	4243	46063	1586.31	92.11	-0.59	-0.53
252.4	77599	3777	46647	1663.54	80.97	-0.56	-0.64
252.6	79686	3993	46353	1719.11	86.14	-0.54	-0.59
252.8	85730	4085	46912	1827.46	87.08	-0.49	-0.58
253	82824	3743	46330	1787.70	80.79	-0.51	-0.64
253.2	77546	4329	45932	1688.28	94.25	-0.55	-0.51
253.4	70120	4588	46090	1521.37	99.54	-0.62	-0.46
253.6	70052	4062	45997	1522.97	88.31	-0.62	-0.57

253.8	71551	3322	45645	1567.55	72.78	-0.60	-0.72
254	64449	3835	47189	1365.76	81.27	-0.68	-0.64
254.2	62149	3459	47104	1319.40	73.43	-0.70	-0.71
254.4	61097	3440	47013	1299.58	73.17	-0.71	-0.72
254.6	62668	3254	47270	1325.75	68.84	-0.70	-0.76
254.8	62108	2923	47528	1306.77	61.50	-0.70	-0.83
255	67006	3284	46972	1426.51	69.91	-0.65	-0.75
255.2	79313	3252	47757	1660.76	68.09	-0.56	-0.77
255.4	76042	3871	48012	1583.81	80.63	-0.59	-0.64
255.6	81404	4324	47714	1706.08	90.62	-0.54	-0.55
255.8	83440	3947	47491	1756.96	83.11	-0.52	-0.62
256	78153	3447	46157	1693.20	74.68	-0.55	-0.70
256.2	81427	3940	46531	1749.95	84.67	-0.52	-0.60
256.4	95254	4174	45599	2088.95	91.54	-0.39	-0.54
256.6	92895	4536	43730	2124.29	103.73	-0.37	-0.42
256.8	81046	4614	43513	1862.57	106.04	-0.48	-0.39
257	85206	4944	44270	1924.69	111.68	-0.45	-0.34
257.2	86646	4584	43675	1983.88	104.96	-0.43	-0.41
257.4	92912	5511	42998	2160.84	128.17	-0.36	-0.18
257.6	91501	5699	44903	2037.75	126.92	-0.41	-0.19
257.8	92094	5095	45720	2014.30	111.44	-0.42	-0.34
258	93551	5665	46659	2004.99	121.41	-0.42	-0.24
258.2	81667	5845	46358	1761.66	126.08	-0.52	-0.20
258.4	69136	4724	38644	1789.05	122.24	-0.51	-0.24
258.6	49887	5449	32348	1542.20	168.45	-0.61	0.22
258.8	15571	4080	20414	762.76	199.86	-0.92	0.52
259	16921	4797	21374	791.66	224.43	-0.91	0.77
259.2	61152	8162	32798	1864.50	248.86	-0.48	1.00
259.4	63442	8410	35992	1762.67	233.66	-0.52	0.86
259.6	126616	7613	33131	3821.68	229.78	0.31	0.82
259.8	170541	9469	35027	4868.84	270.33	0.74	1.22
260	189806	8848	37529	5057.58	235.76	0.81	0.88
260.2	201043	7869	38414	5233.59	204.85	0.88	0.57
260.4	202390	8096	38488	5258.52	210.35	0.89	0.63
260.6	212379	8258	38420	5527.82	214.94	1.00	0.67
260.8	204999	8158	38610	5309.48	211.29	0.92	0.64

261	216564	8468	38604	5609.88	219.36	1.04	0.72
261.2	217681	8218	38394	5669.66	214.04	1.06	0.66
261.4	216402	7942	38188	5666.75	207.97	1.06	0.60
261.6	215351	7901	38717	5562.18	204.07	1.02	0.57
261.8	216160	8137	38177	5662.05	213.14	1.06	0.65
262	221238	7883	38741	5710.69	203.48	1.08	0.56
262.2	215777	7942	37848	5701.15	209.84	1.07	0.62
262.4	217309	8452	39020	5569.17	216.61	1.02	0.69
262.6	221728	8646	39364	5632.76	219.64	1.05	0.72
262.8	219060	8543	39184	5590.55	218.02	1.03	0.70
263	221553	7884	38917	5692.96	202.58	1.07	0.55
263.2	223168	8209	38733	5761.70	211.94	1.10	0.64
263.4	214956	8545	38752	5546.97	220.50	1.01	0.73
263.6	221366	8477	39286	5634.73	215.78	1.05	0.68
263.8	220503	8416	39058	5645.53	215.47	1.05	0.68
264	224208	8506	39635	5656.82	214.61	1.06	0.67
264.2	221532	8276	40069	5528.76	206.54	1.00	0.59
264.4	210199	8253	38684	5433.75	213.34	0.97	0.66
264.6	212513	8101	38783	5479.54	208.88	0.98	0.61
264.8	210524	8358	39432	5338.91	211.96	0.93	0.64
265	209991	7939	38964	5389.36	203.75	0.95	0.56
265.2	206060	8225	38411	5364.61	214.13	0.94	0.66
265.4	212715	7727	38923	5465.02	198.52	0.98	0.51
265.6	206353	8639	39281	5253.25	219.93	0.89	0.72
265.8	215166	8556	38783	5547.95	220.61	1.01	0.73
266	201357	8054	37912	5311.17	212.44	0.92	0.65
266.2	206123	7691	37814	5450.97	203.39	0.97	0.56
266.4	211179	7820	37651	5608.86	207.70	1.04	0.60
266.6	213944	7767	38009	5628.77	204.35	1.04	0.57
266.8	213068	7934	38591	5521.18	205.59	1.00	0.58
267	215626	8031	38605	5585.44	208.03	1.03	0.60
267.2	218282	8075	38670	5644.74	208.82	1.05	0.61
267.4	213555	8288	38871	5493.94	213.22	0.99	0.66
267.6	208520	7862	39320	5303.15	199.95	0.91	0.53
267.8	216223	7857	38663	5592.50	203.22	1.03	0.56
268	227459	8312	39882	5703.30	208.41	1.07	0.61

268.2	233588	8266	40558	5759.36	203.81	1.10	0.56
268.4	236515	8607	40425	5850.71	212.91	1.13	0.65
268.6	225867	8823	38911	5804.71	226.75	1.12	0.79
268.8	212862	8447	37798	5631.57	223.48	1.05	0.76
269	216230	8410	38942	5552.62	215.96	1.01	0.68
269.2	235927	9295	42559	5543.53	218.40	1.01	0.71
285	17822	1890	35307	504.77	53.53	-1.03	-0.91
285.2	19664	2030	39152	502.25	51.85	-1.03	-0.93
285.4	23353	2172	42428	550.41	51.19	-1.01	-0.93
285.6	23676	2324	43546	543.70	53.37	-1.01	-0.91
285.8	24674	2264	41657	592.31	54.35	-0.99	-0.90
286	28311	2496	41649	679.75	59.93	-0.96	-0.85
286.2	22293	2511	43224	515.76	58.09	-1.02	-0.86
286.4	23415	2288	44003	532.12	52.00	-1.02	-0.92
286.6	26868	2599	41872	641.67	62.07	-0.97	-0.83
286.8	28909	2952	42216	684.79	69.93	-0.95	-0.75
287	42794	2543	40781	1049.36	62.36	-0.81	-0.82
287.2	45455	3264	37820	1201.88	86.30	-0.75	-0.59
287.4	91895	4256	33119	2774.69	128.51	-0.11	-0.17
287.6	163044	6767	32426	5028.19	208.69	0.80	0.61
287.8	163905	7002	33530	4888.31	208.83	0.75	0.61
288	163319	7125	33218	4916.58	214.49	0.76	0.67
288.2	165269	7230	33823	4886.29	213.76	0.74	0.66
288.4	165619	7197	33372	4962.81	215.66	0.78	0.68
288.6	171555	7090	34101	5030.79	207.91	0.80	0.60
288.8	167984	6989	34350	4890.36	203.46	0.75	0.56
289	166408	6955	33115	5025.15	210.03	0.80	0.62
289.2	164827	7211	33567	4910.39	214.82	0.75	0.67
289.4	161462	6829	33418	4831.59	204.35	0.72	0.57
289.6	167550	7121	33429	5012.12	213.02	0.80	0.65
289.8	166527	7367	34269	4859.41	214.98	0.73	0.67
290	166230	7264	33814	4916.01	214.82	0.76	0.67
290.2	165928	7142	33945	4888.14	210.40	0.74	0.63
290.4	163950	7067	33914	4834.29	208.38	0.72	0.61
290.6	163817	6883	33518	4887.43	205.35	0.74	0.58

290.8	165915	7363	33256	4989.02	221.40	0.79	0.74
291	166503	7377	34072	4886.80	216.51	0.74	0.69
291.2	169061	7761	34253	4935.66	226.58	0.76	0.79
291.4	168255	7398	33466	5027.64	221.06	0.80	0.73
291.6	165297	7099	33992	4862.82	208.84	0.73	0.61
291.8	170863	7424	34175	4999.65	217.23	0.79	0.69
292	169275	6869	34562	4897.72	198.74	0.75	0.51
292.2	168986	7602	34632	4879.48	219.51	0.74	0.72
292.4	180434	7153	34667	5204.78	206.33	0.87	0.59
292.6	186423	7542	34772	5361.30	216.90	0.94	0.69
292.8	176133	7214	34192	5151.29	210.99	0.85	0.63
293	185704	7561	35925	5169.21	210.47	0.86	0.63
293.2	180923	7381	35853	5046.24	205.87	0.81	0.58
293.4	79264	4815	20962	3781.32	229.70	0.30	0.82
293.6	7192	2007	10045	715.98	199.80	-0.94	0.52
293.8	96843	4796	25775	3757.25	186.07	0.29	0.39
294	144009	6100	31657	4549.04	192.69	0.61	0.45
294.2	166742	6681	33536	4972.03	199.22	0.78	0.52
294.4	174795	7332	34073	5130.01	215.19	0.84	0.67
294.6	170548	7277	33490	5092.51	217.29	0.83	0.70
294.8	172316	6999	33480	5146.83	209.05	0.85	0.61
295	169528	7550	33736	5025.14	223.80	0.80	0.76
295.2	170091	7284	33199	5123.38	219.40	0.84	0.72
295.4	177393	7019	34543	5135.43	203.20	0.84	0.56
295.6	172592	7618	33510	5150.46	227.34	0.85	0.79
295.8	170453	7510	34502	4940.38	217.67	0.77	0.70
296	179413	7212	33913	5290.39	212.66	0.91	0.65
296.2	177309	7046	34208	5183.26	205.98	0.86	0.58
296.4	179022	7418	34250	5226.92	216.58	0.88	0.69
296.6	182964	7496	35119	5209.83	213.45	0.88	0.66
296.8	183524	7756	34435	5329.58	225.24	0.92	0.77
297	183947	7293	34246	5371.34	212.96	0.94	0.65
297.2	184320	7471	34052	5412.90	219.40	0.96	0.72
297.4	183724	7563	34612	5308.10	218.51	0.91	0.71
297.6	180642	7389	34704	5205.22	212.91	0.87	0.65
297.8	182569	7415	34040	5363.37	217.83	0.94	0.70

298	187020	7618	35341	5291.87	215.56	0.91	0.68
298.2	191379	7538	34908	5482.38	215.94	0.99	0.68
298.4	187320	8050	35224	5317.97	228.54	0.92	0.81
298.6	176357	7899	34496	5112.39	228.98	0.84	0.81
298.8	174538	7775	34491	5060.39	225.42	0.81	0.77
299	180165	7611	34388	5239.18	221.33	0.89	0.73
299.2	187137	8158	35482	5274.14	229.92	0.90	0.82
299.4	187871	7767	35647	5270.32	217.89	0.90	0.70
299.6	186849	7963	35340	5287.18	225.33	0.91	0.77
299.8	183991	7866	34994	5257.79	224.78	0.89	0.77
300	180935	7960	34387	5261.73	231.48	0.90	0.83
300.2	184094	7488	35036	5254.42	213.72	0.89	0.66
300.4	210186	7969	35064	5994.35	227.27	1.19	0.79
300.6	210826	7685	35551	5930.24	216.17	1.17	0.68
300.8	209294	8051	35522	5891.95	226.65	1.15	0.79
301	209014	8097	35201	5937.73	230.02	1.17	0.82
301.2	211866	7801	35750	5926.32	218.21	1.16	0.70
301.4	214481	7691	36336	5902.71	211.66	1.16	0.64
301.6	212363	8018	35739	5942.05	224.35	1.17	0.76
301.8	210441	8057	36371	5785.96	221.52	1.11	0.74
302	210426	7920	36103	5828.49	219.37	1.13	0.72
302.2	205505	7897	35656	5763.55	221.48	1.10	0.74
302.4	205422	7744	36135	5684.85	214.31	1.07	0.67
302.6	206554	8254	36364	5680.18	226.98	1.07	0.79
302.8	205246	7981	35835	5727.53	222.72	1.08	0.75
303	205462	7701	35812	5737.24	215.04	1.09	0.67
303.2	202630	7622	35944	5637.38	212.05	1.05	0.64
303.4	207778	7986	35434	5863.80	225.38	1.14	0.77
303.6	202877	8011	35007	5795.33	228.84	1.11	0.81
303.8	195669	7577	36723	5328.24	206.33	0.92	0.59
304	189778	7950	35684	5318.29	222.79	0.92	0.75
304.2	189240	7107	34535	5479.66	205.79	0.98	0.58
304.4	191028	7767	34946	5466.38	222.26	0.98	0.74
304.6	186498	7616	34555	5397.14	220.40	0.95	0.73
304.8	186414	7542	34462	5409.26	218.85	0.96	0.71
305	184223	7754	34745	5302.14	223.17	0.91	0.75

305.2	187652	7498	35623	5267.72	210.48	0.90	0.63
305.4	185775	7422	34891	5324.44	212.72	0.92	0.65
305.6	184663	6756	34863	5296.82	193.79	0.91	0.46
305.8	188609	7086	34791	5421.20	203.67	0.96	0.56
306	187240	7691	35119	5331.59	219.00	0.92	0.71
306.2	183105	7266	33876	5405.15	214.49	0.95	0.67
306.4	191138	7844	35900	5324.18	218.50	0.92	0.71
306.6	193820	7595	36107	5367.93	210.35	0.94	0.63
306.8	193626	7639	35611	5437.25	214.51	0.97	0.67
307	194145	7817	35624	5449.84	219.43	0.97	0.72
307.2	198996	7680	35984	5530.12	213.43	1.00	0.66
307.4	201647	7793	36930	5460.25	211.02	0.98	0.63
307.6	197188	7495	36528	5398.27	205.19	0.95	0.58
307.8	195012	7682	35382	5511.62	217.12	1.00	0.69
308	188199	7626	36068	5217.89	211.43	0.88	0.64
308.2	188087	7420	36095	5210.89	205.57	0.88	0.58
308.4	192814	7974	36505	5281.85	218.44	0.90	0.71
308.6	201660	8047	37679	5352.05	213.57	0.93	0.66
308.8	195417	7801	37125	5263.76	210.13	0.90	0.63
309	133926	6779	33768	3966.06	200.75	0.37	0.53
309.2	98162	5652	29474	3330.46	191.76	0.12	0.45
309.4	109537	5996	30005	3650.62	199.83	0.24	0.52
309.6	130600	6422	32628	4002.70	196.82	0.39	0.49
309.8	153817	6985	34450	4464.93	202.76	0.57	0.55
310	164338	6988	34339	4785.75	203.50	0.70	0.56
310.2	175971	7111	34371	5119.75	206.89	0.84	0.59
310.4	181548	7413	33258	5458.78	222.89	0.98	0.75
310.6	188937	7227	35068	5387.73	206.09	0.95	0.59
310.8	197505	7394	35726	5528.33	206.96	1.00	0.59
311	198229	7634	35716	5550.15	213.74	1.01	0.66
311.2	196841	7860	35471	5549.35	221.59	1.01	0.74
311.4	200375	8026	36351	5512.23	220.79	1.00	0.73
311.6	198276	7633	35567	5574.72	214.61	1.02	0.67
311.8	197519	7616	36017	5484.05	211.46	0.99	0.64
312	200562	7575	35486	5651.86	213.46	1.05	0.66
312.2	201456	7619	36540	5513.30	208.51	1.00	0.61

312.4	199870	7809	37159	5378.78	210.15	0.94	0.63
312.6	204991	8051	36702	5585.28	219.36	1.03	0.72
312.8	160040	6924	34042	4701.25	203.40	0.67	0.56
313	158407	6786	34398	4605.12	197.28	0.63	0.50
313.2	168366	6503	33942	4960.40	191.59	0.77	0.44
313.4	176303	6771	34100	5170.18	198.56	0.86	0.51
313.6	181980	7144	34865	5219.56	204.90	0.88	0.57
313.8	178478	7072	34991	5100.68	202.11	0.83	0.55
314	179068	7208	35192	5088.32	204.82	0.83	0.57
314.2	178989	7008	35073	5103.33	199.81	0.83	0.52
314.4	183993	6802	34025	5407.58	199.91	0.95	0.52
314.6	180173	6330	32827	5488.56	192.83	0.99	0.46
314.8	186768	6949	34710	5380.81	200.20	0.94	0.53
315	189282	7552	35154	5384.37	214.83	0.95	0.67
315.2	186402	7336	35045	5318.93	209.33	0.92	0.62
315.4	190040	7154	34725	5472.71	206.02	0.98	0.58
315.6	192057	7276	34579	5554.15	210.42	1.01	0.63
315.8	196798	7615	34756	5662.27	219.10	1.06	0.71
316	203731	7651	36252	5619.86	211.05	1.04	0.63
316.2	203356	7541	35777	5683.99	210.78	1.07	0.63
316.4	205909	8099	36197	5688.57	223.75	1.07	0.76
316.6	207693	7817	36224	5733.57	215.80	1.09	0.68
316.8	200683	7789	36158	5550.17	215.42	1.01	0.68
317	209220	7928	37370	5598.61	212.15	1.03	0.64
317.2	217450	8034	37020	5873.85	217.02	1.14	0.69
317.4	204629	7754	36906	5544.60	210.10	1.01	0.62
317.6	204334	8440	37685	5422.16	223.96	0.96	0.76
317.8	176914	7574	34881	5071.93	217.14	0.82	0.69
318	158382	6651	31758	4987.15	209.43	0.79	0.62
318.2	133323	5883	30194	4415.55	194.84	0.55	0.48
318.4	159634	6796	33746	4730.46	201.39	0.68	0.54
318.6	176987	7107	34518	5127.38	205.89	0.84	0.58
318.8	186124	7907	34283	5429.05	230.64	0.96	0.83
319	191440	7929	35238	5432.77	225.01	0.97	0.77
319.2	197815	7615	35701	5540.88	213.30	1.01	0.66
319.4	194036	7674	35796	5420.61	214.38	0.96	0.67

319.6	195740	7427	35075	5580.61	211.75	1.02	0.64
319.8	203098	7783	36130	5621.31	215.42	1.04	0.68
320	198050	7550	35669	5552.44	211.67	1.01	0.64
320.2	189161	7697	35350	5351.09	217.74	0.93	0.70
320.4	192183	7586	35269	5449.06	215.09	0.97	0.67
320.6	197958	7738	35480	5579.43	218.09	1.02	0.70
320.8	190412	7875	35596	5349.25	221.23	0.93	0.73
321	190591	7780	35298	5399.48	220.41	0.95	0.73
321.2	191875	7579	35638	5384.00	212.67	0.95	0.65
321.4	188231	7478	35444	5310.66	210.98	0.92	0.63
321.6	195605	7335	36330	5384.12	201.90	0.95	0.54
321.8	181623	7365	34675	5237.87	212.40	0.89	0.65
322	186381	7517	34970	5329.74	214.96	0.92	0.67
322.2	178860	7740	34598	5169.66	223.71	0.86	0.76
322.4	184420	7307	33562	5494.90	217.72	0.99	0.70
322.6	190873	7490	35410	5390.37	211.52	0.95	0.64
322.8	199017	7925	36534	5447.45	216.92	0.97	0.69
323	189832	7869	35014	5421.60	224.74	0.96	0.77
323.2	191507	7612	36079	5307.99	210.98	0.91	0.63
323.4	187266	7658	35656	5252.02	214.77	0.89	0.67
323.6	177517	7590	35647	4979.86	212.92	0.78	0.65
323.8	182333	7402	36181	5039.47	204.58	0.81	0.57
324	187181	7800	35432	5282.82	220.14	0.90	0.72
324.2	185262	7390	35607	5202.97	207.54	0.87	0.60
324.4	180466	7489	36135	4994.22	207.25	0.79	0.60
324.6	184906	7577	35826	5161.22	211.49	0.86	0.64
324.8	188734	8098	36022	5239.41	224.81	0.89	0.77
325	181236	7106	34412	5266.65	206.50	0.90	0.59
325.2	171943	7267	33884	5074.46	214.47	0.82	0.67
325.4	177641	7447	34537	5143.50	215.62	0.85	0.68
325.6	183862	7611	34992	5254.40	217.51	0.89	0.70
325.8	185549	7653	35472	5230.86	215.75	0.88	0.68
326	185266	7825	35643	5197.82	219.54	0.87	0.72
326.2	183231	7855	36130	5071.44	217.41	0.82	0.70
326.4	183750	7357	35896	5118.95	204.95	0.84	0.57
326.6	181543	7690	34971	5191.24	219.90	0.87	0.72

326.8	187699	7701	36345	5164.37	211.89	0.86	0.64
327	183462	7559	35940	5104.67	210.32	0.83	0.63
327.2	181292	7745	35845	5057.66	216.07	0.81	0.68
327.4	181867	7699	36125	5034.38	213.12	0.80	0.65
327.6	179454	7847	36238	4952.09	216.54	0.77	0.69
327.8	175886	7696	35673	4930.51	215.74	0.76	0.68
328	177908	7642	35385	5027.78	215.97	0.80	0.68
328.2	179545	7463	35707	5028.29	209.01	0.80	0.61
328.4	175634	7734	36743	4780.07	210.49	0.70	0.63
328.6	189930	7954	37658	5043.55	211.22	0.81	0.64
328.8	196769	8243	37230	5285.23	221.41	0.91	0.74
329	189405	7649	36624	5171.61	208.85	0.86	0.61
329.2	179311	7791	35862	5000.03	217.25	0.79	0.69
329.4	168923	7470	35500	4758.39	210.42	0.69	0.63
329.6	142817	7357	34743	4110.67	211.75	0.43	0.64
329.8	123376	6745	33544	3678.03	201.08	0.26	0.54
330	137983	6753	33819	4080.04	199.68	0.42	0.52
330.2	151002	7458	34617	4362.08	215.44	0.53	0.68
330.4	149036	7241	35294	4222.70	205.16	0.48	0.58
330.6	147268	6993	33631	4378.94	207.93	0.54	0.60
330.8	149031	6970	33502	4448.42	208.05	0.57	0.60
331	147540	6781	32710	4510.55	207.31	0.59	0.60
331.2	138990	6756	32490	4277.93	207.94	0.50	0.60
331.4	129341	6334	31716	4078.10	199.71	0.42	0.52
331.6	126698	6461	31449	4028.68	205.44	0.40	0.58
331.8	119592	6132	29778	4016.12	205.92	0.39	0.58
332	122849	6384	30961	3967.86	206.19	0.37	0.59
332.2	134580	6557	32081	4195.01	204.39	0.46	0.57
332.4	139220	6584	32657	4263.10	201.61	0.49	0.54
332.6	150907	7228	34164	4417.13	211.57	0.55	0.64
332.8	146380	7309	33813	4329.10	216.16	0.52	0.68
333	147324	7259	33462	4402.73	216.93	0.55	0.69
333.2	151553	7293	34196	4431.89	213.27	0.56	0.66
333.4	150972	7273	34204	4413.87	212.64	0.55	0.65
333.6	160824	7627	34426	4671.59	221.55	0.66	0.74
333.8	168006	7590	34609	4854.40	219.31	0.73	0.71

334	172353	7632	35040	4918.75	217.81	0.76	0.70
334.2	172822	7976	34735	4975.44	229.62	0.78	0.82
334.4	168971	7604	35041	4822.09	217.00	0.72	0.69
334.6	170291	7360	35392	4811.57	207.96	0.71	0.60
334.8	173336	7467	35170	4928.52	212.31	0.76	0.65
335	171197	7717	35909	4767.52	214.90	0.70	0.67
335.2	176052	7774	35226	4997.79	220.69	0.79	0.73
335.4	177819	7772	36145	4919.60	215.02	0.76	0.67
335.6	175710	7965	35549	4942.76	224.06	0.77	0.76
335.8	177723	7684	35512	5004.59	216.38	0.79	0.69
336	177240	7511	35828	4946.97	209.64	0.77	0.62
336.2	177094	7637	35299	5016.97	216.35	0.80	0.69
336.4	176017	7797	35561	4949.72	219.26	0.77	0.71
336.6	178751	7901	35684	5009.28	221.42	0.79	0.74
336.8	176584	7702	36140	4886.11	213.12	0.74	0.65
337	174393	8042	35824	4868.05	224.49	0.74	0.77
337.2	172214	7413	35970	4787.71	206.09	0.70	0.59
337.4	176348	7776	35743	4933.78	217.55	0.76	0.70
337.6	175791	7980	35400	4965.85	225.42	0.78	0.77
337.8	174340	7808	35109	4965.68	222.39	0.78	0.75
338	181471	8093	35815	5066.90	225.97	0.82	0.78
338.2	179542	7702	35935	4996.30	214.33	0.79	0.67
338.4	176769	7796	35465	4984.32	219.82	0.78	0.72
338.6	179902	8126	36395	4943.04	223.27	0.77	0.75
338.8	178018	7893	35136	5066.54	224.64	0.82	0.77
339	180030	7951	35366	5090.48	224.82	0.83	0.77
339.2	182347	7774	35789	5095.06	217.22	0.83	0.69
339.4	184234	7722	35777	5149.51	215.84	0.85	0.68
339.6	184438	7761	34779	5303.14	223.15	0.91	0.75
339.8	191816	7636	35954	5335.04	212.38	0.93	0.65
340	189125	7787	35913	5266.20	216.83	0.90	0.69
340.2	184428	7713	35194	5240.33	219.16	0.89	0.71
340.4	176412	7482	34911	5053.19	214.32	0.81	0.67
340.6	180345	7520	36190	4983.28	207.79	0.78	0.60
340.8	178367	7693	36303	4913.29	211.91	0.76	0.64
341	179532	7853	36634	4900.69	214.36	0.75	0.67

341.2	163083	7404	34309	4753.36	215.80	0.69	0.68
341.4	160259	7192	35248	4546.61	204.04	0.61	0.57
341.6	184268	7786	36412	5060.64	213.83	0.81	0.66
341.8	184425	8309	36734	5020.55	226.19	0.80	0.78
342	181512	7847	36458	4978.66	215.23	0.78	0.68
342.2	186123	8173	36263	5132.59	225.38	0.84	0.77
342.4	185662	8034	36115	5140.86	222.46	0.85	0.75
342.6	186321	7899	35350	5270.75	223.45	0.90	0.76
342.8	191307	8079	35973	5318.07	224.59	0.92	0.77
343	194016	7972	36510	5314.05	218.35	0.92	0.71
343.2	195519	7656	37094	5270.91	206.39	0.90	0.59
343.4	196752	7931	37020	5314.75	214.24	0.92	0.67
343.6	185641	7304	35265	5264.17	207.12	0.90	0.60
343.8	153233	6931	33536	4569.21	206.67	0.62	0.59
344	179841	7542	35321	5091.62	213.53	0.83	0.66
344.2	184092	7118	35000	5259.77	203.37	0.90	0.56
344.4	181639	7337	34914	5202.47	210.14	0.87	0.63
344.6	181495	7175	34876	5204.01	205.73	0.87	0.58
344.8	182344	7613	35050	5202.40	217.20	0.87	0.69
345	176768	7618	34794	5080.42	218.95	0.82	0.71
345.2	154437	7111	33725	4579.30	210.85	0.62	0.63
345.4	164959	7011	34426	4791.70	203.65	0.71	0.56
345.6	175268	7335	34156	5131.40	214.75	0.84	0.67
345.8	160296	7019	33081	4845.56	212.18	0.73	0.65
346	164014	7232	34198	4796.01	211.47	0.71	0.64
346.2	157182	6830	33559	4683.75	203.52	0.66	0.56
346.4	155180	7187	33947	4571.24	211.71	0.62	0.64
346.6	166104	7247	33994	4886.27	213.18	0.74	0.65
346.8	173852	7245	35507	4896.27	204.04	0.75	0.57
347	177539	7424	35504	5000.54	209.10	0.79	0.61
347.2	177069	7415	35645	4967.57	208.02	0.78	0.60
347.4	184603	7480	35321	5226.44	211.77	0.88	0.64
347.6	176537	7743	35573	4962.67	217.67	0.78	0.70
347.8	169565	7271	34707	4885.61	209.50	0.74	0.62
348	169831	7270	34245	4959.29	212.29	0.77	0.65
348.2	166022	7161	34501	4812.09	207.56	0.71	0.60

348.4	175706	7322	35089	5007.44	208.67	0.79	0.61
348.6	178243	7638	34996	5093.24	218.25	0.83	0.70
348.8	182789	7383	35384	5165.87	208.65	0.86	0.61
349	173653	7729	35503	4891.22	217.70	0.75	0.70
349.2	177636	7379	35474	5007.50	208.01	0.79	0.60
349.4	179417	7475	35802	5011.37	208.79	0.79	0.61
349.6	184812	7435	35140	5259.31	211.58	0.90	0.64
349.8	180058	7751	35738	5038.28	216.88	0.81	0.69
350	185714	7666	35923	5169.78	213.40	0.86	0.66
350.2	183428	7825	35436	5176.32	220.82	0.86	0.73
350.4	182048	7868	36284	5017.31	216.84	0.80	0.69
350.6	190023	7707	35999	5278.56	214.09	0.90	0.66
350.8	182514	7601	36477	5003.54	208.38	0.79	0.61
351	181791	7790	36750	4946.69	211.97	0.77	0.64
351.2	181630	8083	36403	4989.42	222.04	0.79	0.74
351.4	181261	7667	36525	4962.66	209.91	0.78	0.62
351.6	171844	7513	36480	4710.64	205.95	0.67	0.58
351.8	157795	7632	34787	4536.03	219.39	0.60	0.72
352	160440	7269	35391	4533.36	205.39	0.60	0.58
352.2	163953	7742	35832	4575.60	216.06	0.62	0.68
352.4	162239	8250	36120	4491.67	228.41	0.58	0.80
352.6	163636	7615	36513	4481.58	208.56	0.58	0.61
352.8	163959	6911	35147	4664.95	196.63	0.65	0.49
353	163658	7156	34511	4742.20	207.35	0.69	0.60
353.2	154760	7021	34404	4498.31	204.08	0.59	0.57
353.4	152977	6777	34881	4385.68	194.29	0.54	0.47
353.6	154022	6910	34936	4408.69	197.79	0.55	0.50
353.8	152792	7036	35413	4314.57	198.68	0.51	0.51
354	153543	6850	35020	4384.44	195.60	0.54	0.48
354.2	151844	7044	35619	4263.01	197.76	0.49	0.50
354.4	153335	6755	33508	4576.07	201.59	0.62	0.54
354.6	160144	6520	34605	4627.77	188.41	0.64	0.41
354.8	157119	6851	34933	4497.72	196.12	0.59	0.49
355	158779	7036	35064	4528.26	200.66	0.60	0.53
355.2	159046	7068	35642	4462.32	198.31	0.57	0.51
355.4	163774	7322	35325	4636.21	207.28	0.64	0.60

355.6	162988	7380	34940	4664.80	211.22	0.65	0.64
355.8	162581	7290	35634	4562.52	204.58	0.61	0.57
356	162746	7140	35801	4545.85	199.44	0.61	0.52
356.2	163149	7032	35814	4555.45	196.35	0.61	0.49
356.4	167040	7496	35754	4671.92	209.65	0.66	0.62
356.6	164871	7388	35167	4688.23	210.08	0.66	0.62
356.8	165609	7314	35527	4661.50	205.87	0.65	0.58
357	165385	7292	34842	4746.71	209.29	0.69	0.62
357.2	162883	6798	34664	4698.91	196.11	0.67	0.49
357.4	160486	7067	34419	4662.72	205.32	0.65	0.58
357.6	168929	7599	36091	4680.64	210.55	0.66	0.63
357.8	166998	7742	35796	4665.27	216.28	0.65	0.69
358	163079	7492	35694	4568.81	209.90	0.62	0.62
358.2	158316	7264	36333	4357.36	199.93	0.53	0.53
358.4	163573	7307	36622	4466.52	199.52	0.57	0.52
358.6	155412	7122	35891	4330.11	198.43	0.52	0.51
358.8	156553	7619	35372	4425.90	215.40	0.56	0.68
359	156606	7570	35901	4362.16	210.86	0.53	0.63
359.2	166535	7238	35580	4680.58	203.43	0.66	0.56
359.4	162644	7231	36480	4458.44	198.22	0.57	0.51
359.6	161272	7279	36148	4461.44	201.37	0.57	0.54
359.8	152278	7021	34556	4406.70	203.18	0.55	0.56
360	148778	7060	36349	4093.04	194.23	0.42	0.47
360.2	153595	7533	37015	4149.53	203.51	0.45	0.56
360.4	156200	7703	35577	4390.48	216.52	0.54	0.69
360.6	156962	7512	36228	4332.62	207.35	0.52	0.60
360.8	139275	6928	34451	4042.70	201.10	0.40	0.54
361	137125	6868	34537	3970.38	198.86	0.37	0.51
361.2	146698	7085	34818	4213.28	203.49	0.47	0.56
361.4	152211	7046	34525	4408.72	204.08	0.55	0.57
361.6	152169	6821	34066	4466.89	200.23	0.57	0.53
361.8	150732	7096	34154	4413.30	207.76	0.55	0.60
362	158757	7281	34112	4653.99	213.44	0.65	0.66
362.2	157695	7245	35012	4504.03	206.93	0.59	0.59
362.4	162492	7577	34502	4709.64	219.61	0.67	0.72
362.6	156275	7378	34287	4557.85	215.18	0.61	0.67

362.8	160113	7716	35009	4573.48	220.40	0.62	0.73
363	164365	7330	35342	4650.70	207.40	0.65	0.60
363.2	166785	7244	34906	4778.12	207.53	0.70	0.60
363.4	171909	7663	35524	4839.24	215.71	0.73	0.68
363.6	169851	7612	35525	4781.17	214.27	0.70	0.67
363.8	161450	6822	33450	4826.61	203.95	0.72	0.56
364	158725	6481	33298	4766.80	194.64	0.70	0.47
364.2	157151	7295	33083	4750.20	220.51	0.69	0.73
364.4	168291	7330	34538	4872.63	212.23	0.74	0.65
364.6	171602	7643	35185	4877.14	217.22	0.74	0.69
364.8	168375	7795	34533	4875.77	225.73	0.74	0.78
365	175819	7548	34490	5097.68	218.85	0.83	0.71
365.2	178641	7656	34924	5115.14	219.22	0.84	0.71
365.4	181700	7625	35225	5158.27	216.47	0.85	0.69
365.6	177057	7728	34782	5090.48	222.18	0.83	0.74
365.8	175401	7794	35193	4983.97	221.46	0.78	0.74
366	174518	7495	34235	5097.65	218.93	0.83	0.71
366.2	173266	7778	33964	5101.46	229.01	0.83	0.81
366.4	184623	7951	35706	5170.64	222.68	0.86	0.75
366.6	189380	8005	36777	5149.41	217.66	0.85	0.70
366.8	191550	8173	36780	5207.99	222.21	0.87	0.74
367	192537	8079	35640	5402.27	226.68	0.95	0.79
367.2	191258	8127	36555	5232.06	222.32	0.88	0.74
367.4	182329	8437	35766	5097.83	235.89	0.83	0.88
367.6	184223	7777	36105	5102.42	215.40	0.83	0.68
367.8	181350	7851	35895	5052.24	218.72	0.81	0.71
368	186614	8169	36470	5116.92	223.99	0.84	0.76
368.2	191752	7740	35350	5424.38	218.95	0.96	0.71
368.4	175917	7362	34356	5120.42	214.29	0.84	0.67
368.6	175037	7661	34960	5006.78	219.14	0.79	0.71
368.8	172425	7633	34761	4960.30	219.59	0.77	0.72
369	180694	7956	35273	5122.73	225.55	0.84	0.78
369.2	180269	7773	34901	5165.15	222.72	0.86	0.75
369.4	172899	7594	34961	4945.48	217.21	0.77	0.69
369.6	173617	7298	33617	5164.56	217.09	0.86	0.69
369.8	151626	6547	30418	4984.75	215.23	0.78	0.68

370	161239	7397	34389	4688.68	215.10	0.66	0.67
370.2	162813	7465	33367	4879.46	223.72	0.74	0.76
370.4	165350	7492	32384	5105.92	231.35	0.83	0.83
370.6	166333	7435	33259	5001.14	223.55	0.79	0.76
370.8	173590	7671	33173	5232.87	231.24	0.88	0.83
371	174510	7594	33923	5144.30	223.86	0.85	0.76
371.2	172127	7707	34217	5030.45	225.24	0.80	0.77
371.4	169304	7581	34032	4974.85	222.76	0.78	0.75
371.6	167682	7595	33395	5021.17	227.43	0.80	0.79
371.8	167942	7275	33909	4952.73	214.54	0.77	0.67
372	164841	7560	34184	4822.17	221.16	0.72	0.73
372.2	172247	7833	34496	4993.25	227.07	0.79	0.79
372.4	167827	7336	33468	5014.55	219.19	0.80	0.71
372.6	169263	7583	33829	5003.49	224.16	0.79	0.76
372.8	165660	7508	33527	4941.09	223.94	0.77	0.76
373	165871	7102	33607	4935.61	211.33	0.76	0.64
373.2	162276	6944	33566	4834.53	206.88	0.72	0.59
373.4	163826	6940	33546	4883.62	206.88	0.74	0.59
373.6	167947	6669	31977	5252.12	208.56	0.89	0.61
373.8	161477	6314	30770	5247.87	205.20	0.89	0.58
374	162174	6547	32626	4970.70	200.67	0.78	0.53
374.2	168660	7165	33210	5078.59	215.75	0.82	0.68
374.4	175641	7169	33487	5245.05	214.08	0.89	0.66
374.6	172610	7132	32603	5294.30	218.75	0.91	0.71
374.8	163387	7270	33630	4858.37	216.18	0.73	0.68
375	166993	6915	33351	5007.14	207.34	0.79	0.60
375.2	165471	7023	33138	4993.39	211.93	0.79	0.64
375.4	162629	7005	32716	4970.93	214.12	0.78	0.66
375.6	164902	7345	32406	5088.63	226.66	0.83	0.79
375.8	157471	7383	31860	4942.59	231.73	0.77	0.84
376	163576	7284	32773	4991.18	222.26	0.79	0.74
376.2	174557	7507	32308	5402.90	232.36	0.95	0.84
376.4	147002	6453	30551	4811.69	211.22	0.71	0.64
376.6	148310	6915	31539	4702.43	219.25	0.67	0.71
376.8	153353	7251	31947	4800.23	226.97	0.71	0.79
377	155432	7221	32207	4826.03	224.21	0.72	0.76

377.2	158636	7407	31747	4996.88	233.31	0.79	0.85
377.4	161983	7372	32582	4971.55	226.26	0.78	0.78
377.6	162811	7675	32483	5012.19	236.28	0.80	0.88
377.8	138210	6641	30290	4562.89	219.25	0.61	0.71
378	142804	6558	30460	4688.25	215.30	0.66	0.68
378.2	156695	7234	31702	4942.75	228.19	0.77	0.80
378.4	157079	6915	31767	4944.72	217.68	0.77	0.70
378.6	150571	6894	31437	4789.61	219.30	0.71	0.71
378.8	142843	7227	30785	4640.02	234.76	0.64	0.87
379	144252	6701	30569	4718.90	219.21	0.68	0.71
379.2	145320	6733	30108	4826.62	223.63	0.72	0.76
379.4	156611	7079	31356	4994.61	225.76	0.79	0.78
379.6	153471	7297	32082	4783.71	227.45	0.70	0.79
379.8	163074	7511	32694	4987.89	229.74	0.79	0.82
380	149757	6973	31538	4748.46	221.10	0.69	0.73
380.2	150432	7044	30247	4973.45	232.88	0.78	0.85
380.4	149874	6799	30720	4878.71	221.32	0.74	0.73
380.6	158658	7429	31459	5043.33	236.15	0.81	0.88
380.8	164082	7134	32318	5077.11	220.74	0.82	0.73
381	163115	7437	32860	4963.94	226.32	0.78	0.78
381.2	162108	7162	32083	5052.77	223.23	0.81	0.75
381.4	149615	6551	30351	4929.49	215.84	0.76	0.68
381.6	156990	7303	32501	4830.31	224.70	0.72	0.77
381.8	168931	7802	35099	4812.99	222.29	0.71	0.74
382	81517	6185	33853	2407.97	182.70	-0.26	0.36
382.2	69014	2276	25602	2695.65	88.90	-0.14	-0.56
382.4	68261	927	6751	10111.24	137.31	2.86	-0.09
383.6						-1.23	-1.43
385	106914	5035	27325	3912.68	184.26	0.35	0.37
385.2	163570	6455	31420	5205.92	205.44	0.87	0.58
385.4	157884	6841	31641	4989.85	216.21	0.79	0.68
385.6	137155	6640	31944	4293.61	207.86	0.50	0.60
385.8	156741	7196	32309	4851.31	222.72	0.73	0.75
386	145986	7066	32192	4534.85	219.50	0.60	0.72
386.2	156537	7297	33034	4738.66	220.89	0.68	0.73
386.4	169625	7664	34431	4926.52	222.59	0.76	0.75

386.6	174028	8145	34023	5115.01	239.40	0.84	0.91
386.8	187720	8163	35228	5328.72	231.72	0.92	0.84
387	191076	8725	35707	5351.22	244.35	0.93	0.96
387.2	190351	8665	35443	5370.62	244.48	0.94	0.96
387.4	200026	9323	36313	5508.39	256.74	1.00	1.08
387.6	184416	8758	34859	5290.34	251.24	0.91	1.03
387.8	174930	8012	33367	5242.60	240.12	0.89	0.92
388	185894	9000	34691	5358.57	259.43	0.94	1.11
388.2	188553	8654	35706	5280.71	242.37	0.90	0.94
388.4	194877	9276	36239	5377.55	255.97	0.94	1.07
388.6	182541	8230	35550	5134.77	231.50	0.84	0.83
388.8	188033	8948	35084	5359.51	255.05	0.94	1.07
389	186222	8958	35920	5184.35	249.39	0.86	1.01
389.2	191869	8292	35695	5375.23	232.30	0.94	0.84
389.4	187051	8941	35108	5327.87	254.67	0.92	1.06
389.6	187440	8738	36249	5170.90	241.05	0.86	0.93
389.8	187654	8877	35658	5262.61	248.95	0.90	1.01
390	190946	8846	35411	5392.28	249.81	0.95	1.01
390.2	187380	8956	36086	5192.60	248.18	0.87	1.00
390.4	194472	9175	35043	5549.52	261.82	1.01	1.13
390.6	181988	8900	34335	5300.36	259.21	0.91	1.11
390.8	180604	8972	35636	5068.02	251.77	0.82	1.03
391	188621	8832	35413	5326.32	249.40	0.92	1.01
391.2	188777	9063	35005	5392.86	258.91	0.95	1.10
391.4	187585	8868	35771	5244.05	247.91	0.89	1.00
391.6	188037	9151	35753	5259.33	255.95	0.90	1.07
391.8	189385	8867	35502	5334.49	249.76	0.93	1.01
392	183580	9121	35111	5228.56	259.78	0.88	1.11
392.2	187898	8999	35810	5247.08	251.30	0.89	1.03
392.4	187137	9152	35574	5260.50	257.27	0.90	1.09
392.6	191311	9040	35653	5365.92	253.56	0.94	1.05
392.8	190575	8997	35603	5352.78	252.70	0.93	1.04
393	193033	8649	36034	5356.97	240.02	0.93	0.92
393.2	185210	8457	34028	5442.87	248.53	0.97	1.00
393.4	184162	9073	35004	5261.17	259.20	0.90	1.11
393.6	186838	8674	34492	5416.85	251.48	0.96	1.03

393.8	183280	8476	34885	5253.83	242.97	0.89	0.95
394	185754	8724	34613	5366.60	252.04	0.94	1.04
394.2	180526	8350	34206	5277.61	244.11	0.90	0.96
394.4	184497	8375	34802	5301.33	240.65	0.91	0.92
394.6	185560	8421	34717	5344.93	242.56	0.93	0.94
394.8	176745	8639	34240	5161.95	252.31	0.86	1.04
395	166980	8279	34315	4866.09	241.26	0.74	0.93
395.2	169361	8714	35160	4816.87	247.84	0.72	0.99
395.4	170652	8384	36187	4715.84	231.69	0.68	0.84
395.6	173505	8298	35764	4851.39	232.02	0.73	0.84
395.8	169644	7860	35544	4772.79	221.13	0.70	0.73
396	163914	8034	35972	4556.71	223.34	0.61	0.75
396.2	169147	8441	35917	4709.39	235.01	0.67	0.87
396.4	168807	8368	35458	4760.76	236.00	0.69	0.88
396.6	168105	8003	35216	4773.54	227.25	0.70	0.79
396.8	165192	8146	35106	4705.52	232.04	0.67	0.84
397	169026	8047	36575	4621.35	220.01	0.64	0.72
397.2	169824	8158	35888	4732.06	227.32	0.68	0.79
397.4	170444	8444	35891	4748.93	235.27	0.69	0.87
397.6	170321	8492	35105	4851.76	241.90	0.73	0.94
397.8	171056	8452	35455	4824.59	238.39	0.72	0.90
398	170784	8225	35585	4799.33	231.14	0.71	0.83
398.2	173061	8236	34961	4950.12	235.58	0.77	0.87
398.4	169254	8401	34478	4909.04	243.66	0.75	0.95
398.6	166284	8592	35159	4729.49	244.38	0.68	0.96
398.8	165974	8319	34534	4806.10	240.89	0.71	0.93
399	166466	8881	35213	4727.40	252.21	0.68	1.04
399.2	167075	8725	35542	4700.78	245.48	0.67	0.97
399.4	171367	8526	34914	4908.26	244.20	0.75	0.96
399.6	167545	8456	35024	4783.72	241.43	0.70	0.93
399.8	169674	8394	34369	4936.83	244.23	0.76	0.96
400	172460	8477	35373	4875.47	239.65	0.74	0.91
400.2	174110	8428	35252	4939.01	239.08	0.77	0.91
400.4	174979	8584	35571	4919.15	241.32	0.76	0.93
400.6	176068	8512	35839	4912.75	237.51	0.75	0.89
400.8	173657	8961	35598	4878.28	251.73	0.74	1.03

401	174730	8715	35302	4949.58	246.87	0.77	0.99
401.2	176887	8598	35733	4950.24	240.62	0.77	0.92
401.4	179036	8749	35872	4990.97	243.89	0.79	0.96
401.6	176913	8674	34878	5072.34	248.70	0.82	1.00
401.8	175017	8722	35852	4881.65	243.28	0.74	0.95
402	175706	8560	35991	4881.94	237.84	0.74	0.90
402.2	174425	8804	35471	4917.40	248.20	0.76	1.00
402.4	174566	8658	36140	4830.27	239.57	0.72	0.91
402.6	173154	8539	34424	5030.04	248.05	0.80	1.00
402.8	166955	8538	34707	4810.41	246.00	0.71	0.98
403	166363	8725	35883	4636.26	243.15	0.64	0.95
403.2	166812	8759	35573	4689.29	246.23	0.66	0.98
403.4	163738	8720	35738	4581.62	244.00	0.62	0.96
403.6	172141	8828	36370	4733.05	242.73	0.68	0.94
403.8	155050	8488	35026	4426.71	242.33	0.56	0.94
404	168229	8836	35881	4688.53	246.26	0.66	0.98
404.2	166433	8530	35334	4710.28	241.41	0.67	0.93
404.4	163154	8596	34937	4669.95	246.04	0.66	0.98
404.6	166311	8814	35792	4646.60	246.26	0.65	0.98
404.8	183043	9057	36350	5035.57	249.16	0.80	1.01
405	142095	8083	34393	4131.51	235.02	0.44	0.87
405.2	161367	8445	34315	4702.52	246.10	0.67	0.98
405.4	165560	8229	33907	4882.77	242.69	0.74	0.94
405.6	168528	8670	34909	4827.64	248.36	0.72	1.00
405.8	163596	8705	34568	4732.59	251.82	0.68	1.03
406	168066	8729	34927	4811.92	249.92	0.71	1.01
406.2	171419	8778	35404	4841.80	247.94	0.73	1.00
406.4	173335	8551	34307	5052.47	249.25	0.81	1.01
406.6	172125	9434	35763	4812.94	263.79	0.71	1.15
406.8	167446	8294	33552	4990.64	247.20	0.79	0.99
407	174478	8386	34028	5127.48	246.44	0.84	0.98
407.2	174544	8768	35069	4977.16	250.02	0.78	1.02
407.4	171700	8748	35874	4786.20	243.85	0.70	0.96
407.6	173777	8722	34989	4966.62	249.28	0.78	1.01
407.8	171104	8948	35474	4823.36	252.24	0.72	1.04
408	176544	8628	35336	4996.15	244.17	0.79	0.96

408.2	176795	8504	35110	5035.46	242.21	0.80	0.94
408.4	178832	8866	35960	4973.08	246.55	0.78	0.98
408.6	181609	8888	36203	5016.41	245.50	0.80	0.97
408.8	179021	8344	35311	5069.84	236.30	0.82	0.88
409	172107	8807	35942	4788.46	245.03	0.70	0.97
409.2	170447	8282	34956	4876.04	236.93	0.74	0.89
409.4	153056	8237	34775	4401.32	236.87	0.55	0.89
409.6	166503	8079	34739	4792.97	232.56	0.71	0.84
409.8	161553	8055	34653	4662.02	232.45	0.65	0.84
410	163997	8348	34745	4720.02	240.26	0.68	0.92
410.2	168231	7837	35302	4765.48	222.00	0.70	0.74
410.4	168784	8419	35041	4816.76	240.26	0.72	0.92
410.6	170602	8397	35230	4842.52	238.35	0.73	0.90
410.8	172940	8302	35634	4853.23	232.98	0.73	0.85
411	160622	8530	35405	4536.70	240.93	0.60	0.93
411.2	167295	8319	34630	4830.93	240.23	0.72	0.92
411.4	172473	8388	36279	4754.07	231.21	0.69	0.83
411.6	172248	8426	34980	4924.19	240.88	0.76	0.93
411.8	168924	8072	35741	4726.34	225.85	0.68	0.78
412	166815	8627	35258	4731.27	244.68	0.68	0.96
412.2	162715	8816	34954	4655.12	252.22	0.65	1.04
412.4	165421	8404	35417	4670.67	237.29	0.66	0.89
412.6	167264	8435	35910	4657.87	234.89	0.65	0.87
412.8	168374	8836	35527	4739.33	248.71	0.68	1.00
413	163257	8462	34856	4683.76	242.77	0.66	0.94
413.2	161586	8151	35332	4573.36	230.70	0.62	0.83
413.4	170866	8630	34814	4907.97	247.89	0.75	1.00
413.6	174183	8081	34809	5003.96	232.15	0.79	0.84
413.8	174795	8341	34339	5090.28	242.90	0.83	0.95
414	178731	8258	35059	5098.01	235.55	0.83	0.87
414.2	177117	8673	34951	5067.58	248.15	0.82	1.00
414.4	175630	8848	35517	4944.96	249.12	0.77	1.01
414.6	175517	8767	36387	4823.62	240.94	0.72	0.93
414.8	165076	8191	34177	4830.03	239.66	0.72	0.91
415	172293	8293	33839	5091.55	245.07	0.83	0.97
415.2	167681	8307	34634	4841.51	239.85	0.73	0.92

415.4	168268	7713	33073	5087.78	233.21	0.83	0.85
415.6	171217	8461	35391	4837.87	239.07	0.72	0.91
415.8	179513	8434	35388	5072.71	238.33	0.82	0.90
416	180586	8969	35440	5095.54	253.08	0.83	1.05
416.2	181720	8731	35505	5118.15	245.91	0.84	0.98
416.4	179184	9016	35553	5039.91	253.59	0.81	1.05
416.6	190109	8704	35921	5292.42	242.31	0.91	0.94
416.8	196320	8841	35761	5489.78	247.22	0.99	0.99
417	187676	8502	35619	5268.99	238.69	0.90	0.90
417.2	161156	8378	34573	4661.33	242.33	0.65	0.94
417.4	166314	8578	34335	4843.86	249.83	0.73	1.01
417.6	162814	8012	33559	4851.57	238.74	0.73	0.91
417.8	165295	7588	33036	5003.48	229.69	0.79	0.82
418	161982	7278	33444	4843.38	217.62	0.73	0.70
418.2	174387	8163	35021	4979.50	233.09	0.78	0.85
418.4	177998	8416	34970	5090.02	240.66	0.83	0.92
418.6	178882	8621	34745	5148.42	248.12	0.85	1.00
418.8	181432	8445	35480	5113.64	238.02	0.84	0.90
419	176500	9070	35504	4971.27	255.46	0.78	1.07
419.2	186240	9395	35858	5193.82	262.01	0.87	1.13
419.4	171722	8471	34735	4943.77	243.88	0.77	0.96
419.6	136772	7675	33276	4110.23	230.65	0.43	0.83
419.8	175710	8514	34836	5043.92	244.40	0.81	0.96
420	168993	8204	34042	4964.25	241.00	0.78	0.93
420.2	167363	8078	33566	4986.09	240.66	0.78	0.92
420.4	186780	8457	35436	5270.91	238.66	0.90	0.90
420.6	155071	8149	33918	4571.94	240.26	0.62	0.92
420.8	145597	7888	32701	4452.37	241.22	0.57	0.93
421	141631	8197	32468	4362.17	252.46	0.53	1.04
421.2	132177	7790	31973	4134.02	243.64	0.44	0.95
421.4	169793	8538	34214	4962.68	249.55	0.78	1.01
421.6	178485	8868	35529	5023.64	249.60	0.80	1.01
421.8	165691	8246	34396	4817.16	239.74	0.72	0.92
422	162581	8422	34405	4725.51	244.79	0.68	0.96
422.2	165405	8557	34798	4753.29	245.90	0.69	0.98
422.4	170289	8890	36471	4669.16	243.76	0.66	0.95

422.6	166939	9111	38355	4352.47	237.54	0.53	0.89
422.8	171135	8688	36475	4691.84	238.19	0.67	0.90
423	154333	8298	36117	4273.14	229.75	0.50	0.82
423.2	128531	8316	36895	3483.70	225.40	0.18	0.77
423.4	111609	7694	33835	3298.63	227.40	0.10	0.79
423.6	62521	6511	30555	2046.18	213.09	-0.40	0.65
423.8	50031	6218	29023	1723.84	214.24	-0.53	0.67
424	42424	5640	28183	1505.30	200.12	-0.62	0.53
424.2	46849	6512	29841	1569.95	218.22	-0.60	0.70
424.4	50277	4904	23230	2164.31	211.11	-0.36	0.63
424.6	67419	5392	23602	2856.50	228.46	-0.08	0.80
424.8	122335	7443	32203	3798.87	231.13	0.30	0.83
425	137529	8657	34539	3981.85	250.64	0.38	1.02
425.2	146882	8207	34309	4281.15	239.21	0.50	0.91
425.4	142965	7714	34209	4179.16	225.50	0.46	0.78
425.6	137851	8359	34682	3974.71	241.02	0.38	0.93
425.8	145801	8544	36122	4036.35	236.53	0.40	0.88
426	147886	8434	35637	4149.79	236.66	0.45	0.89
426.2	148787	8436	34909	4262.14	241.66	0.49	0.93
426.4	148439	8418	34250	4333.99	245.78	0.52	0.97
426.6	151886	8521	35124	4324.28	242.60	0.52	0.94
426.8	154943	8569	35259	4394.42	243.03	0.55	0.95
427	167356	8946	36090	4637.18	247.88	0.64	0.99
427.2	141879	8187	34480	4114.82	237.44	0.43	0.89
427.4	137594	7874	33596	4095.55	234.37	0.42	0.86
427.6	151319	8439	34509	4384.91	244.54	0.54	0.96
427.8	149189	8040	34389	4338.28	233.80	0.52	0.86
428	152649	7950	36301	4205.09	219.00	0.47	0.71
428.2	158599	8869	36912	4296.68	240.27	0.51	0.92
428.4	154298	8596	34335	4493.90	250.36	0.59	1.02
428.6	125680	7244	31101	4041.03	232.92	0.40	0.85
428.8	144710	9180	34941	4141.55	262.73	0.44	1.14
429	143242	8475	35019	4090.41	242.01	0.42	0.94
429.2	140026	8750	35607	3932.54	245.74	0.36	0.97
429.4	141799	8783	36157	3921.76	242.91	0.35	0.95
429.6	148450	8937	35781	4148.85	249.77	0.45	1.01

429.8	148368	9021	35649	4161.91	253.05	0.45	1.05
430	152330	8918	35579	4281.46	250.65	0.50	1.02
430.2	154763	8683	36003	4298.61	241.17	0.51	0.93
430.4	155380	8887	35318	4399.46	251.63	0.55	1.03
430.6	157844	8720	34802	4535.49	250.56	0.60	1.02
430.8	161778	8841	34822	4645.86	253.89	0.65	1.05
431	166284	8993	35314	4708.73	254.66	0.67	1.06
431.2	167287	9009	35432	4721.35	254.26	0.68	1.06
431.4	166180	8733	35061	4739.74	249.08	0.68	1.01
431.6	164795	8786	35604	4628.55	246.77	0.64	0.98
431.8	163580	8776	35606	4594.17	246.48	0.63	0.98
432	156457	8458	35160	4449.86	240.56	0.57	0.92
432.2	148781	8837	35291	4215.83	250.40	0.47	1.02
432.4	158962	9082	35245	4510.20	257.68	0.59	1.09
432.6	160917	9272	35157	4577.10	263.73	0.62	1.15
432.8	161766	8902	34957	4627.57	254.66	0.64	1.06
433	155998	8412	35067	4448.57	239.88	0.57	0.92
433.2	155376	8762	35998	4316.24	243.40	0.51	0.95
433.4	161947	8832	35526	4558.55	248.61	0.61	1.00
433.6	165899	9136	36468	4549.17	250.52	0.61	1.02
433.8	163696	8962	36080	4537.03	248.39	0.60	1.00
434	169491	8834	35570	4765.00	248.36	0.70	1.00
434.2	168539	9051	35495	4748.25	254.99	0.69	1.06
434.4	165845	9240	36012	4605.27	256.58	0.63	1.08
434.6	175412	9267	37677	4655.68	245.96	0.65	0.98
434.8	171003	9190	36569	4676.17	251.31	0.66	1.03
435	174166	9394	36231	4807.10	259.28	0.71	1.11
435.2	171395	9619	35933	4769.85	267.69	0.70	1.19
435.4	172442	9604	36418	4735.08	263.72	0.68	1.15
435.6	145459	8308	33357	4360.67	249.06	0.53	1.01
435.8	163347	9187	35164	4645.29	261.26	0.65	1.13
436	165214	9375	35115	4704.94	266.98	0.67	1.18
436.2	169744	9360	35041	4844.15	267.12	0.73	1.18
436.4	168050	8933	34756	4835.14	257.02	0.72	1.08
436.6	174751	9070	34685	5038.23	261.50	0.81	1.13
436.8	178616	9080	35953	4968.04	252.55	0.78	1.04

437	176922	9064	35697	4956.21	253.91	0.77	1.05
437.2	174286	8748	34270	5085.67	255.27	0.82	1.07
437.4	178178	9369	35744	4984.84	262.11	0.78	1.13
437.6	179207	9061	35145	5099.08	257.82	0.83	1.09
437.8	173019	9333	35410	4886.16	263.57	0.74	1.15
438	169638	9396	35431	4787.84	265.19	0.70	1.16
438.2	169790	9273	34788	4880.71	266.56	0.74	1.18
438.4	170302	9494	34965	4870.64	271.53	0.74	1.23
438.6	169893	9218	33745	5034.61	273.17	0.80	1.24
438.8	167819	8848	34153	4913.74	259.07	0.76	1.10
439	167210	8960	34206	4888.32	261.94	0.75	1.13
439.2	164808	8905	33302	4948.89	267.40	0.77	1.19
439.4	174710	9094	34441	5072.73	264.05	0.82	1.15
439.6	181369	9424	35378	5126.60	266.38	0.84	1.18
439.8	170857	9231	34820	4906.86	265.11	0.75	1.16
440	171263	9188	34587	4951.66	265.65	0.77	1.17
440.2	175628	9329	33992	5166.75	274.45	0.86	1.26
440.4	176000	8806	34188	5148.01	257.58	0.85	1.09
440.6	174029	9157	34783	5003.28	263.26	0.79	1.15
440.8	175758	9034	33769	5204.71	267.52	0.87	1.19
441	178472	9292	34921	5110.74	266.09	0.83	1.17
441.2	176271	9455	33947	5192.54	278.52	0.87	1.30
441.4	182057	8904	34285	5310.11	259.71	0.92	1.11
441.6	180304	9109	34584	5213.51	263.39	0.88	1.15
441.8	179636	9116	35037	5127.04	260.18	0.84	1.12
442	181104	9217	35250	5137.70	261.48	0.85	1.13
442.2	180755	9502	35458	5097.72	267.98	0.83	1.19
442.4	182583	8938	34026	5365.98	262.68	0.94	1.14
442.6	183272	9340	34666	5286.79	269.43	0.91	1.21
442.8	182083	9315	35197	5173.25	264.65	0.86	1.16
443	189161	9606	34836	5430.04	275.75	0.96	1.27
443.2	185290	9703	35618	5202.14	272.42	0.87	1.24
443.4	188590	9465	35122	5369.57	269.49	0.94	1.21
443.6	193606	9812	34721	5576.05	282.60	1.02	1.34
443.8	193412	9981	35560	5439.03	280.68	0.97	1.32
444	191609	9766	35218	5440.66	277.30	0.97	1.28

444.2	188762	9721	36072	5232.92	269.49	0.88	1.21
444.4	190256	9647	35443	5367.94	272.18	0.94	1.23
444.6	190491	9738	34735	5484.12	280.35	0.99	1.31
444.8	176504	9383	33916	5204.15	276.65	0.87	1.28
445	182918	9190	33642	5437.19	273.17	0.97	1.24
445.2	167043	8804	33603	4971.07	262.00	0.78	1.13
445.4	182890	9049	33851	5402.79	267.32	0.95	1.19
445.6	179528	9104	33521	5355.69	271.59	0.93	1.23
445.8	178771	9219	34078	5245.94	270.53	0.89	1.22
446	178756	9338	33883	5275.68	275.60	0.90	1.27
446.2	178543	9085	34344	5198.67	264.53	0.87	1.16
446.4	177624	9264	34038	5218.40	272.17	0.88	1.23
446.6	180683	9394	34495	5237.95	272.33	0.89	1.23
446.8	183143	9399	34836	5257.29	269.81	0.89	1.21
447	180830	9353	34887	5183.31	268.09	0.86	1.19
447.2	192263	9793	34880	5512.13	280.76	1.00	1.32
447.4	196266	9424	34761	5646.16	271.11	1.05	1.22
447.6	203542	9558	34809	5847.40	274.58	1.13	1.26
447.8	205094	9881	36278	5653.40	272.37	1.05	1.23
448	212877	10277	37316	5704.71	275.40	1.08	1.26
448.2	241440	11526	39883	6053.71	289.00	1.22	1.40
448.4	178541	8875	34553	5167.16	256.85	0.86	1.08
448.6	128274	7910	31800	4033.77	248.74	0.40	1.00
448.8	138360	8216	32158	4302.51	255.49	0.51	1.07
449	132810	8340	32338	4106.93	257.90	0.43	1.09
449.2	131477	7784	32404	4057.43	240.22	0.41	0.92
449.4	101750	6795	28086	3622.80	241.94	0.23	0.94
449.6	119447	7132	29122	4101.61	244.90	0.43	0.97
449.8	164565	8504	32531	5058.71	261.41	0.81	1.13
450	188581	8932	33670	5600.86	265.28	1.03	1.17
450.2	189989	8879	34175	5559.30	259.81	1.02	1.11
450.4	189233	8450	33027	5729.65	255.85	1.09	1.07
450.6	193369	8853	34610	5587.08	255.79	1.03	1.07
450.8	191314	8687	34618	5526.43	250.94	1.00	1.02
451	196439	9148	35204	5580.02	259.86	1.02	1.11
451.2	193842	9383	35035	5532.81	267.82	1.01	1.19

451.4	190762	9246	35677	5346.92	259.16	0.93	1.11
451.6	195482	9451	35401	5521.93	266.97	1.00	1.18
451.8	197797	9823	36600	5404.29	268.39	0.95	1.20
452	192364	9253	35212	5463.02	262.78	0.98	1.14
452.2	188734	8959	34770	5428.07	257.66	0.96	1.09
452.4	195954	8866	35120	5579.56	252.45	1.02	1.04
452.6	185063	8867	34738	5327.39	255.25	0.92	1.07
452.8	182504	8493	34094	5352.97	249.11	0.93	1.01
453	182727	9006	34206	5341.96	263.29	0.93	1.15
453.2	176503	8580	33712	5235.61	254.51	0.89	1.06
453.4	181054	8411	34014	5322.93	247.28	0.92	0.99
453.6	183799	9265	34935	5261.17	265.21	0.90	1.16
453.8	188517	8677	34442	5473.46	251.93	0.98	1.03
454	183834	8674	33624	5467.34	257.97	0.98	1.09
454.2	185399	8703	34717	5340.29	250.68	0.93	1.02
454.4	182277	8591	33352	5465.25	257.59	0.98	1.09
454.6	184692	8627	33851	5456.03	254.85	0.97	1.06
454.8	185178	8674	33808	5477.34	256.57	0.98	1.08
455	188386	8915	34647	5437.30	257.31	0.97	1.09
455.2	185200	9001	33961	5453.31	265.04	0.97	1.16
455.4	192944	9170	34737	5554.42	263.98	1.01	1.15
455.6	198685	8896	34885	5695.43	255.01	1.07	1.06
455.8	199250	9036	34860	5715.72	259.21	1.08	1.11
456	196203	9182	35012	5603.88	262.25	1.03	1.14
456.2	199626	8977	35190	5672.80	255.10	1.06	1.07
456.4	200447	9036	35632	5625.48	253.59	1.04	1.05
456.6	213333	9132	35499	6009.55	257.25	1.20	1.09
456.8	205871	9371	35241	5841.80	265.91	1.13	1.17
457	202513	8937	35367	5726.04	252.69	1.08	1.04
457.2	204593	8921	34479	5933.84	258.74	1.17	1.10
457.4	196730	8880	35025	5616.85	253.53	1.04	1.05
457.6	194818	8644	33626	5793.67	257.06	1.11	1.08
457.8	199779	8537	34349	5816.15	248.54	1.12	1.00
458	202480	8881	34514	5866.60	257.32	1.14	1.09
458.2	204393	8914	34761	5879.95	256.44	1.15	1.08
458.4	211640	8816	34237	6181.62	257.50	1.27	1.09

458.6	202347	8794	34179	5920.21	257.29	1.16	1.09
458.8	209251	8868	35113	5959.36	252.56	1.18	1.04
459	207304	8795	35489	5841.36	247.82	1.13	0.99
459.2	200732	8581	34991	5736.68	245.23	1.09	0.97
459.4	206114	8937	34684	5942.62	257.67	1.17	1.09
459.6	211720	9009	34591	6120.67	260.44	1.24	1.12
459.8	208698	9464	35596	5862.96	265.87	1.14	1.17
460	209252	9144	35178	5948.38	259.94	1.17	1.11
460.2	212610	8861	35080	6060.72	252.59	1.22	1.04
460.4	210484	8928	35355	5953.44	252.52	1.18	1.04
460.6	210401	8505	35357	5950.76	240.55	1.17	0.92
460.8	207527	9239	34197	6068.57	270.17	1.22	1.21
461	204744	9120	34818	5880.41	261.93	1.15	1.13
461.2	202707	8647	34205	5926.24	252.80	1.16	1.04
461.4	202187	8743	34216	5909.14	255.52	1.16	1.07
461.6	203213	8884	33211	6118.85	267.50	1.24	1.19
461.8	181722	9597	33189	5475.37	289.16	0.98	1.40
462	192890	9532	33552	5748.99	284.10	1.09	1.35
462.2	201289	9002	33782	5958.47	266.47	1.18	1.18
462.4	205911	8573	33932	6068.34	252.65	1.22	1.04
462.6	208296	8629	34182	6093.73	252.44	1.23	1.04
462.8	206315	8589	33900	6085.99	253.36	1.23	1.05
463	205005	8977	33285	6159.08	269.70	1.26	1.21
463.2	207429	8545	34219	6061.81	249.72	1.22	1.01
463.4	205017	8865	34002	6029.56	260.72	1.21	1.12
463.6	213618	8880	34152	6254.92	260.01	1.30	1.11
463.8	219626	9197	34341	6395.45	267.81	1.35	1.19
464	196428	8750	34134	5754.61	256.34	1.10	1.08
464.2	170782	8033	31817	5367.63	252.48	0.94	1.04
464.4	173260	7777	31780	5451.86	244.71	0.97	0.96
464.6	144515	6870	29011	4981.39	236.81	0.78	0.89
464.8	148651	7302	30022	4951.40	243.22	0.77	0.95
465	194990	7889	32936	5920.27	239.53	1.16	0.91
465.2	195704	8553	32935	5942.13	259.69	1.17	1.11
465.4	202386	8493	33032	6126.97	257.11	1.25	1.09
465.6	196257	8154	33142	5921.70	246.03	1.16	0.98

465.8	203135	8723	33204	6117.79	262.71	1.24	1.14
466	204393	8557	33298	6138.30	256.98	1.25	1.08
466.2	211363	9036	34595	6109.64	261.19	1.24	1.13
466.4	213487	8947	35291	6049.33	253.52	1.21	1.05
466.6	219690	8773	34349	6395.82	255.41	1.35	1.07
466.8	206021	8250	33300	6186.82	247.75	1.27	0.99
467	206922	8809	34323	6028.67	256.65	1.21	1.08
467.2	208774	8472	33578	6217.58	252.31	1.28	1.04
467.4	213156	9216	34199	6232.81	269.48	1.29	1.21
467.6	222635	9050	35293	6308.19	256.42	1.32	1.08
467.8	215208	8893	35279	6100.17	252.08	1.23	1.04
468	203252	8265	32697	6216.23	252.78	1.28	1.04
468.2	191998	7803	31671	6062.27	246.38	1.22	0.98
468.4	192858	7700	31545	6113.74	244.10	1.24	0.96
468.6	190724	7863	32849	5806.08	239.37	1.12	0.91
468.8	192647	7781	32911	5853.57	236.43	1.14	0.88
469	193996	8058	32490	5970.94	248.01	1.18	1.00
469.2	188953	8046	31575	5984.26	254.82	1.19	1.06
469.4	199947	7886	31850	6277.77	247.60	1.31	0.99
469.6	202395	8229	32901	6151.64	250.11	1.26	1.02
469.8	201549	8484	33352	6043.09	254.38	1.21	1.06
470	213111	8786	34251	6222.04	256.52	1.28	1.08
470.2	210231	8407	32994	6371.79	254.80	1.34	1.06
470.4	189398	7994	31169	6076.49	256.47	1.23	1.08
470.6	183610	7913	30946	5933.24	255.70	1.17	1.07
470.8	193779	8364	32342	5991.56	258.61	1.19	1.10
471	212987	8805	34074	6250.72	258.41	1.30	1.10
471.2	221469	8587	34306	6455.69	250.31	1.38	1.02
471.4	221846	8396	32973	6728.11	254.63	1.49	1.06
471.6	224717	8271	32425	6930.36	255.08	1.57	1.07
471.8	210930	8060	32718	6446.91	246.35	1.38	0.98
472	229831	8695	34913	6582.96	249.05	1.43	1.01
472.2	219090	8717	34751	6304.57	250.84	1.32	1.02
472.4	208899	8297	32804	6368.10	252.93	1.34	1.04
472.6	209990	8234	33303	6305.44	247.24	1.32	0.99
472.8	221483	8866	34265	6463.83	258.75	1.38	1.10

473	225216	8618	32587	6911.22	264.46	1.56	1.16
473.2	222454	8126	32465	6852.12	250.30	1.54	1.02
473.4	218835	8659	34010	6434.43	254.60	1.37	1.06
473.6	222763	8961	34065	6539.35	263.06	1.41	1.14
473.8	208440	9219	33907	6147.40	271.89	1.25	1.23
474	191407	8072	31623	6052.78	255.26	1.22	1.07
474.2	185444	7661	30493	6081.53	251.24	1.23	1.03
474.4	210233	7872	32303	6508.16	243.69	1.40	0.95
474.6	219075	8522	33590	6522.03	253.71	1.41	1.05
474.8	219728	8363	33460	6566.89	249.94	1.42	1.02
475	221635	8514	33462	6623.48	254.44	1.45	1.06
475.2	224997	9082	33383	6739.87	272.05	1.49	1.23
475.4	225355	8724	34068	6614.86	256.08	1.44	1.08
475.6	232656	9248	35006	6646.17	264.18	1.46	1.15
475.8	234473	8509	33223	7057.55	256.12	1.62	1.08
476	200904	8004	30721	6539.63	260.54	1.41	1.12
476.2	233126	8588	33762	6904.98	254.37	1.56	1.06
476.4	221108	8244	32535	6796.00	253.39	1.52	1.05
476.6	223242	8374	32383	6893.80	258.59	1.56	1.10
476.8	225544	8732	31743	7105.31	275.08	1.64	1.26
477	214291	8539	33569	6383.60	254.37	1.35	1.06
477.2	86282	5319	35415	2436.31	150.19	-0.25	0.04
						-1.23	-1.43
475	190458	7810	33767	5640.36	231.29	1.05	0.83
475.2	166021	8152	34379	4829.14	237.12	0.72	0.89
475.4	158872	8225	34662	4583.46	237.29	0.62	0.89
475.6	167528	8824	33713	4969.24	261.74	0.78	1.13
475.8	175140	9000	35453	4940.06	253.86	0.77	1.05
476	177192	8812	35269	5024.02	249.85	0.80	1.01
476.2	177493	8884	35196	5042.99	252.42	0.81	1.04
476.4	176905	8499	35461	4988.72	239.67	0.79	0.91
476.6	186456	8658	34534	5399.20	250.71	0.95	1.02
476.8	190847	8407	34955	5459.79	240.51	0.98	0.92
477	198254	8816	34013	5828.77	259.20	1.13	1.11
477.2	202102	8865	34583	5843.97	256.34	1.13	1.08
477.4	200095	8649	34605	5782.26	249.93	1.11	1.02

477.6	198730	8178	34551	5751.79	236.69	1.09	0.89
477.8	198323	8178	34191	5800.44	239.19	1.11	0.91
478	200890	8137	33988	5910.62	239.41	1.16	0.91
478.2	202002	8440	34127	5919.13	247.31	1.16	0.99
478.4	206132	8460	34606	5956.54	244.47	1.18	0.96
478.6	206144	8306	33975	6067.52	244.47	1.22	0.96
478.8	206607	7960	33694	6131.86	236.24	1.25	0.88
479	213641	7990	34197	6247.36	233.65	1.29	0.86
479.2	217484	8441	34495	6304.80	244.70	1.32	0.96
479.4	213718	8281	34083	6270.52	242.97	1.30	0.95
479.6	206835	8224	34006	6082.31	241.84	1.23	0.94
479.8	209882	8413	33707	6226.66	249.59	1.29	1.01
480	216003	8508	33783	6393.84	251.84	1.35	1.03
480.2	219703	8305	33925	6476.14	244.80	1.39	0.96
480.4	221698	8178	33474	6622.99	244.31	1.45	0.96
480.6	217260	8344	33798	6428.19	246.88	1.37	0.99
480.8	216441	8033	33864	6391.48	237.21	1.35	0.89
481	217272	8179	33642	6458.36	243.12	1.38	0.95
481.2	215679	8187	34207	6305.11	239.34	1.32	0.91
481.4	216347	8522	34469	6276.57	247.24	1.31	0.99
481.6	217580	8345	34147	6371.86	244.38	1.34	0.96
481.8	217351	8344	32916	6603.20	253.49	1.44	1.05
482	218362	9072	34267	6372.37	264.74	1.34	1.16
482.2	216510	8429	34525	6271.11	244.14	1.30	0.96
482.4	219577	8160	33995	6459.10	240.04	1.38	0.92
482.6	226221	8720	34857	6489.97	250.16	1.39	1.02
482.8	225176	8645	34187	6586.60	252.87	1.43	1.04
483	220146	8365	34264	6424.99	244.13	1.37	0.96
483.2	223387	8094	33829	6603.42	239.26	1.44	0.91
483.4	224472	8613	34258	6552.40	251.42	1.42	1.03
483.6	219364	8394	34083	6436.17	246.28	1.37	0.98
483.8	218247	8152	33502	6514.45	243.33	1.40	0.95
484	221037	8563	33638	6571.05	254.56	1.43	1.06
484.2	224585	8345	34088	6588.39	244.81	1.43	0.96
484.4	212995	8286	34681	6141.55	238.92	1.25	0.91
484.6	210104	8266	34604	6071.67	238.87	1.22	0.91

484.8	214443	8497	33763	6351.42	251.67	1.34	1.03
485	223069	8755	34633	6440.94	252.79	1.37	1.04
485.2	222413	8593	34372	6470.76	250.00	1.38	1.02
485.4	218080	8241	34010	6412.23	242.31	1.36	0.94
485.6	216865	8372	34172	6346.28	245.00	1.33	0.97
485.8	219379	8429	34131	6427.56	246.96	1.37	0.99
486	217826	8585	34387	6334.55	249.66	1.33	1.01
486.2	215033	8347	34749	6188.18	240.21	1.27	0.92
486.4	209301	8669	33965	6162.26	255.23	1.26	1.07
486.6	212945	8339	34066	6250.95	244.79	1.30	0.96
486.8	212942	8709	34341	6200.81	253.60	1.28	1.05
487	213841	8628	34023	6285.19	253.59	1.31	1.05
487.2	219482	8813	34309	6397.21	256.87	1.36	1.08
487.4	216189	8629	34477	6270.53	250.28	1.30	1.02
487.6	213446	8074	33846	6306.39	238.55	1.32	0.90
487.8	212376	8328	34192	6211.28	243.57	1.28	0.95
488	205215	8444	32963	6225.62	256.17	1.29	1.08
488.2	204688	8080	33350	6137.57	242.28	1.25	0.94
488.4	208113	8395	33983	6124.03	247.04	1.24	0.99
488.6	214562	8526	33329	6437.70	255.81	1.37	1.07
488.8	218179	8320	34553	6314.33	240.79	1.32	0.93
489	223446	8472	34505	6475.76	245.53	1.39	0.97
489.2	222264	8750	34506	6441.31	253.58	1.37	1.05
489.4	219229	8657	34082	6432.40	254.01	1.37	1.06
489.6	213882	8770	34122	6268.16	257.02	1.30	1.08
489.8	208820	8586	34019	6138.33	252.39	1.25	1.04
490	211849	8267	33255	6370.44	248.59	1.34	1.00
490.2	212086	8381	34119	6216.07	245.64	1.28	0.97
490.4	211657	8353	33538	6310.96	249.06	1.32	1.01
490.6	211495	8227	33202	6369.95	247.79	1.34	0.99
490.8	215022	8357	33479	6422.59	249.62	1.37	1.01
491	212516	8587	33821	6283.55	253.90	1.31	1.05
491.2	210612	8384	34110	6174.49	245.79	1.27	0.97
491.4	216665	8813	33648	6439.16	261.92	1.37	1.13
491.6	218315	8427	33238	6568.24	253.54	1.42	1.05
491.8	216365	8669	34130	6339.44	254.00	1.33	1.05

492	217019	8873	33959	6390.62	261.29	1.35	1.13
492.2	211137	8482	34636	6095.88	244.89	1.23	0.97
492.4	210938	8083	34126	6181.15	236.86	1.27	0.89
492.6	211281	8199	34757	6078.80	235.89	1.23	0.88
492.8	211727	8762	34167	6196.83	256.45	1.27	1.08
493	214360	8831	34958	6131.93	252.62	1.25	1.04
493.2	209539	8352	33233	6305.15	251.32	1.32	1.03
493.4	210075	8073	33582	6255.58	240.40	1.30	0.92
493.6	210546	8339	34112	6172.20	244.46	1.26	0.96
493.8	211454	8345	34317	6161.79	243.17	1.26	0.95
494	215865	8557	34677	6225.02	246.76	1.29	0.98
494.2	208854	8184	34405	6070.45	237.87	1.22	0.90
494.4	216371	8340	34521	6267.81	241.59	1.30	0.93
494.6	212213	8473	34561	6140.24	245.16	1.25	0.97
494.8	210314	8505	34129	6162.33	249.20	1.26	1.01
495	212393	8565	33737	6295.55	253.88	1.31	1.05
495.2	207998	8461	34069	6105.20	248.35	1.24	1.00
495.4	211142	8396	33948	6219.57	247.32	1.28	0.99
495.6	214345	8589	34633	6189.04	248.00	1.27	1.00
495.8	207881	8217	33287	6245.11	246.85	1.29	0.98
496	208418	8552	33631	6197.20	254.29	1.27	1.06
496.2	215848	8514	34194	6312.45	248.99	1.32	1.01
496.4	216991	8664	34172	6349.96	253.54	1.34	1.05
496.6	211389	8363	33745	6264.31	247.83	1.30	0.99
496.8	214395	8453	34111	6285.22	247.81	1.31	0.99
497	215252	8276	33840	6360.87	244.56	1.34	0.96
497.2	216809	8597	33584	6455.72	255.98	1.38	1.07
497.4	215043	8504	33906	6342.33	250.81	1.33	1.02
497.6	213533	8348	32913	6487.80	253.64	1.39	1.05
497.8	209742	8664	34297	6115.46	252.62	1.24	1.04
498	213914	8542	34063	6279.95	250.77	1.31	1.02
498.2	211465	8261	34290	6166.96	240.92	1.26	0.93
498.4	207029	8230	33923	6102.91	242.61	1.24	0.94
498.6	208307	7996	33830	6157.46	236.36	1.26	0.88
498.8	212559	8395	33972	6256.89	247.12	1.30	0.99
499	212234	8760	34646	6125.79	252.84	1.25	1.04

499.2	208469	8360	33843	6159.89	247.02	1.26	0.99
499.4	209804	8740	34651	6054.77	252.23	1.22	1.04
499.6	213208	8394	34636	6155.68	242.35	1.26	0.94
499.8	210077	8068	34291	6126.30	235.28	1.25	0.87
500	208243	8465	34141	6099.50	247.94	1.23	1.00
500.2	207946	8475	34336	6056.21	246.83	1.22	0.98
500.4	210055	8172	34472	6093.50	237.06	1.23	0.89
500.6	207584	8046	34931	5942.69	230.34	1.17	0.82
500.8	206408	8558	34007	6069.57	251.65	1.22	1.03
501	203140	7761	33767	6015.93	229.84	1.20	0.82
501.2	205462	8295	33754	6087.04	245.75	1.23	0.97
501.4	210747	8415	34083	6183.35	246.90	1.27	0.99
501.6	210766	8208	34077	6184.99	240.87	1.27	0.93
501.8	211805	8711	34474	6143.91	252.68	1.25	1.04
502	211916	8380	34441	6153.02	243.31	1.26	0.95
502.2	214412	8297	33701	6362.19	246.19	1.34	0.98
502.4	206793	8189	33459	6180.49	244.75	1.27	0.96
502.6	210618	8713	33622	6264.29	259.15	1.30	1.11
502.8	210107	8274	34839	6030.80	237.49	1.21	0.89
503	209989	8249	33691	6232.79	244.84	1.29	0.97
503.2	215997	8352	34098	6334.59	244.94	1.33	0.97
503.4	213314	8640	34459	6190.37	250.73	1.27	1.02
503.6	207237	7974	33811	6129.28	235.84	1.25	0.88
503.8	209083	8448	34094	6132.55	247.79	1.25	0.99
504	210467	8300	33954	6198.59	244.45	1.27	0.96
504.2	207618	8408	33904	6123.70	247.99	1.24	1.00
504.4	204504	8660	33738	6061.53	256.68	1.22	1.08
504.6	208663	8504	33431	6241.60	254.37	1.29	1.06
504.8	208544	8787	34059	6123.02	257.99	1.24	1.09
505	210094	8538	34156	6151.01	249.97	1.26	1.02
505.2	212588	8603	34240	6208.76	251.26	1.28	1.03
505.4	211009	8451	34607	6097.29	244.20	1.23	0.96
505.6	205996	8435	34024	6054.43	247.91	1.22	1.00
505.8	210448	8645	34885	6032.62	247.81	1.21	0.99
506	211033	8609	34663	6088.13	248.36	1.23	1.00
506.2	207033	8530	34319	6032.61	248.55	1.21	1.00

506.4	205638	8835	34253	6003.50	257.93	1.20	1.09
506.6	203759	8517	34644	5881.51	245.84	1.15	0.98
506.8	206926	8559	34548	5989.52	247.74	1.19	0.99
507	207311	8820	34600	5991.65	254.91	1.19	1.06
507.2	212710	8788	35561	5981.55	247.12	1.19	0.99
507.4	207307	8696	36000	5758.53	241.56	1.10	0.93
507.6	203162	8578	35319	5752.20	242.87	1.09	0.95
507.8	203216	8728	35091	5791.11	248.72	1.11	1.00
508	201220	8742	34271	5871.44	255.08	1.14	1.07
508.2	195271	8335	34201	5709.51	243.71	1.08	0.95
508.4	200090	7890	35220	5681.15	224.02	1.07	0.76
508.6	201289	8706	35082	5737.67	248.16	1.09	1.00
508.8	202451	8777	34317	5899.44	255.76	1.15	1.07
509	203502	8661	36033	5647.66	240.36	1.05	0.92
509.2	181761	8208	33579	5412.94	244.44	0.96	0.96
509.4	191522	8772	34551	5543.17	253.89	1.01	1.05
509.6	199239	8755	34181	5828.94	256.14	1.13	1.08
509.8	201376	8556	34908	5768.76	245.10	1.10	0.97
510	200249	8304	34397	5821.70	241.42	1.12	0.93
510.2	200151	8844	35030	5713.70	252.47	1.08	1.04
510.4	205733	8994	34976	5882.12	257.15	1.15	1.09
510.6	196530	8691	34533	5691.08	251.67	1.07	1.03
510.8	189445	8318	33668	5626.86	247.06	1.04	0.99
511	188413	8144	33309	5656.52	244.50	1.06	0.96
511.2	191190	8225	33381	5727.51	246.40	1.08	0.98
511.4	193932	8410	33664	5760.81	249.82	1.10	1.01
511.6	195027	8597	34597	5637.11	248.49	1.05	1.00
511.8	203147	9202	35437	5732.62	259.67	1.09	1.11
512	196470	8953	34760	5652.19	257.57	1.05	1.09
512.2	185680	8145	34095	5445.96	238.89	0.97	0.91
512.4	186945	8143	34247	5458.73	237.77	0.98	0.90
512.6	190042	8591	34407	5523.35	249.69	1.00	1.01
512.8	193423	8344	34823	5554.46	239.61	1.01	0.91
513	192890	8595	35144	5488.56	244.57	0.99	0.96
513.2	190478	8672	34644	5498.15	250.32	0.99	1.02
513.4	190902	8547	34936	5464.33	244.65	0.98	0.96

513.6	191740	8572	34957	5485.02	245.22	0.99	0.97
513.8	188286	8461	34754	5417.68	243.45	0.96	0.95
514	179117	8510	34830	5142.61	244.33	0.85	0.96
514.2	184280	8650	35390	5207.12	244.42	0.87	0.96
514.4	180692	8512	34792	5193.49	244.65	0.87	0.96
514.6	179059	8395	34007	5265.36	246.86	0.90	0.98
514.8	185988	8261	35096	5299.41	235.38	0.91	0.87
515	188072	8637	34900	5388.88	247.48	0.95	0.99
515.2	186767	8683	34866	5356.71	249.04	0.93	1.01
515.4	188991	8513	34691	5447.84	245.40	0.97	0.97
515.6	185767	8772	34647	5361.71	253.18	0.94	1.05
515.8	187799	8570	34284	5477.74	249.97	0.98	1.02
516	183070	8529	34687	5277.77	245.88	0.90	0.98
516.2	181946	8229	34010	5349.78	241.96	0.93	0.94
516.4	185014	8659	34787	5318.48	248.91	0.92	1.01
516.6	189800	8342	35028	5418.52	238.15	0.96	0.90
516.8	196210	8756	35446	5535.46	247.02	1.01	0.99
517	194591	9070	35339	5506.41	256.66	0.99	1.08
517.2	191644	9200	35425	5409.85	259.70	0.96	1.11
517.4	190966	8582	35571	5368.59	241.26	0.94	0.93
517.6	193947	9236	36007	5386.37	256.51	0.95	1.08
517.8	196078	8715	35973	5450.70	242.27	0.97	0.94
518	184821	8827	34351	5380.37	256.96	0.94	1.08
518.2	180357	8628	34869	5172.42	247.44	0.86	0.99
518.4	175274	8825	34455	5087.04	256.13	0.83	1.08
518.6	178040	8299	34418	5172.87	241.12	0.86	0.93
518.8	181566	8041	34092	5325.77	235.86	0.92	0.88
519	185007	8549	34741	5325.32	246.08	0.92	0.98
519.2	189041	8357	35641	5304.03	234.48	0.91	0.86
519.4	189054	8838	35415	5338.25	249.56	0.93	1.01
519.6	192945	8742	36319	5312.51	240.70	0.92	0.92
519.8	191423	8609	36410	5257.43	236.45	0.89	0.88
520	166155	8251	34694	4789.16	237.82	0.70	0.90
520.2	164916	8441	33651	4900.78	250.84	0.75	1.02
520.4	177265	8394	34537	5132.61	243.04	0.84	0.95
520.6	184699	8592	34765	5312.79	247.15	0.92	0.99

520.8	191189	8621	35484	5388.03	242.95	0.95	0.95
521	189633	8726	34965	5423.51	249.56	0.96	1.01
521.2	195291	8658	35344	5525.44	244.96	1.00	0.97
521.4	192202	8753	36065	5329.32	242.70	0.92	0.94
521.6	192942	9029	36189	5331.51	249.50	0.92	1.01
521.8	194906	8643	35871	5433.53	240.95	0.97	0.93
522	190998	9151	36162	5281.73	253.06	0.90	1.05
522.2	182034	8539	35884	5072.85	237.96	0.82	0.90
522.4	180234	9024	35381	5094.09	255.05	0.83	1.07
522.6	187285	8950	36059	5193.85	248.20	0.87	1.00
522.8	189375	9005	36151	5238.44	249.09	0.89	1.01
523	185769	8754	35115	5290.30	249.30	0.91	1.01
523.2	181102	8590	34713	5217.12	247.46	0.88	0.99
523.4	181797	8722	34223	5312.13	254.86	0.92	1.06
523.6	186745	9100	34941	5344.58	260.44	0.93	1.12
523.8	184163	8952	34596	5323.25	258.76	0.92	1.10
524	185641	8688	35630	5210.24	243.84	0.88	0.96
524.2	190974	8719	35253	5417.24	247.33	0.96	0.99
524.4	193085	8987	35360	5460.55	254.16	0.98	1.06
524.6	199430	9022	35920	5552.06	251.17	1.01	1.03
524.8	199516	9158	36109	5525.38	253.62	1.00	1.05
525	194910	9381	35970	5418.68	260.80	0.96	1.12
525.2	192350	9074	35880	5360.93	252.90	0.94	1.04
525.4	190072	8839	35507	5353.09	248.94	0.93	1.01
525.6	194173	9238	36911	5260.57	250.28	0.90	1.02
525.8	183229	8841	36075	5079.11	245.07	0.82	0.97
526	165104	8404	34664	4762.98	242.44	0.69	0.94
526.2	162338	8398	34209	4745.48	245.49	0.69	0.97
526.4	173259	8673	34288	5053.05	252.95	0.81	1.04
526.6	181176	8676	34834	5201.13	249.07	0.87	1.01
526.8	183494	8730	34893	5258.76	250.19	0.89	1.02
527	178978	8689	35033	5108.84	248.02	0.83	1.00
527.2	174774	8777	34867	5012.59	251.73	0.80	1.03
527.4	171823	8643	35152	4888.00	245.88	0.74	0.98
527.6	176292	9008	34991	5038.21	257.44	0.81	1.09
527.8	183597	8825	35367	5191.20	249.53	0.87	1.01

528	182596	8693	35019	5214.20	248.24	0.88	1.00
528.2	188830	8853	36041	5239.31	245.64	0.89	0.97
528.4	172183	8566	34800	4947.79	246.15	0.77	0.98
528.6	175997	8373	35807	4915.16	233.84	0.76	0.86
528.8	178289	8692	35377	5039.69	245.70	0.81	0.97
529	175507	8981	34944	5022.52	257.01	0.80	1.08
529.2	170159	8403	35257	4826.25	238.34	0.72	0.90
529.4	170749	8687	35793	4770.46	242.70	0.70	0.94
529.6	176858	9033	34843	5075.85	259.25	0.82	1.11
529.8	170728	8666	35836	4764.15	241.82	0.69	0.94
530	167633	8617	34881	4805.85	247.04	0.71	0.99
530.2	175026	8883	36081	4850.92	246.20	0.73	0.98
530.4	160892	8569	34587	4651.81	247.75	0.65	0.99
530.6	168413	8574	35074	4801.65	244.45	0.71	0.96
530.8	182292	8868	35484	5137.30	249.92	0.85	1.01
531	188794	9059	35613	5301.27	254.37	0.91	1.06
531.2	178434	8663	36174	4932.66	239.48	0.76	0.91
531.4	183882	9428	36946	4977.05	255.18	0.78	1.07
531.6	111390	9037	38756	2874.14	233.18	-0.07	0.85
531.8	68508	6063	44508	1539.23	136.22	-0.61	-0.10
						-1.23	-1.43
533	177306	8887	31630	5605.63	280.97	1.04	1.32
533.2	184899	8785	31417	5885.32	279.63	1.15	1.31
533.4	204348	8593	31810	6424.02	270.14	1.37	1.21
533.6	223408	9049	31067	7191.17	291.27	1.68	1.42
533.8	229944	9041	31367	7330.76	288.23	1.73	1.39
534	231693	9116	31408	7376.88	290.24	1.75	1.41
534.2	226274	8808	30858	7332.75	285.44	1.73	1.36
534.4	225214	8661	31295	7196.49	276.75	1.68	1.28
534.6	221031	9034	31449	7028.24	287.26	1.61	1.38
534.8	211098	8845	31240	6757.30	283.13	1.50	1.34
535	206696	8701	31388	6585.19	277.21	1.43	1.28
535.2	206351	8808	31633	6523.28	278.44	1.41	1.29
535.4	202868	9186	30988	6546.66	296.44	1.42	1.47
535.6	201760	9348	31890	6326.75	293.13	1.33	1.44
535.8	206862	9020	31280	6613.24	288.36	1.44	1.39

536	207604	8745	31887	6510.62	274.25	1.40	1.25
536.2	206949	9182	31606	6547.78	290.51	1.42	1.41
536.4	206160	9146	32039	6434.66	285.46	1.37	1.36
536.6	201107	9151	32370	6212.76	282.70	1.28	1.34
536.8	208311	9317	32462	6417.07	287.01	1.36	1.38
537	172436	10140	35543	4851.48	285.29	0.73	1.36
537.2	37992	3958	17196	2209.35	230.17	-0.34	0.82
537.4	3406	428	7048	483.26	60.73	-1.04	-0.84
537.6	3017	165	4939	610.85	33.41	-0.98	-1.11
537.8	2745	11	3083	890.37	3.57	-0.87	-1.40
538	2482	0	2257	1099.69	0.00	-0.79	-1.43
538.2	85488	3565	12930	6611.60	275.72	1.44	1.27
538.4	188629	7902	30074	6272.16	262.75	1.30	1.14
538.6	191745	8619	31884	6013.83	270.32	1.20	1.21
538.8	184178	8350	32587	5651.89	256.24	1.05	1.08
539	182437	8467	32492	5614.83	260.59	1.04	1.12
539.2	181344	8411	32656	5553.16	257.56	1.01	1.09
539.4	183778	8720	32471	5659.76	268.55	1.06	1.20
539.6	184827	8559	32301	5722.02	264.98	1.08	1.16
539.8	190289	8647	32464	5861.54	266.36	1.14	1.18
540	185738	8679	32561	5704.31	266.55	1.07	1.18
540.2	190236	8547	32363	5878.19	264.10	1.15	1.15
540.4	186532	8619	31900	5847.40	270.19	1.13	1.21
540.6	186979	8559	32739	5711.20	261.43	1.08	1.13
540.8	192767	8338	32467	5937.32	256.81	1.17	1.08
541	193061	8669	31919	6048.47	271.59	1.21	1.23
541.2	193714	8841	32514	5957.86	271.91	1.18	1.23
541.4	183457	8581	32094	5716.24	267.37	1.08	1.19
541.6	150703	7130	26075	5779.60	273.44	1.11	1.25
541.8	171918	7775	28965	5935.37	268.43	1.17	1.20
542	186666	8596	32393	5762.54	265.37	1.10	1.17
542.2	167127	8647	33102	5048.85	261.22	0.81	1.13
542.4	161077	8347	33024	4877.57	252.76	0.74	1.04
542.6	183846	8789	32972	5575.82	266.56	1.02	1.18
542.8	188595	8856	32818	5746.69	269.85	1.09	1.21
543	193442	9087	33334	5803.14	272.60	1.11	1.24

543.2	180927	7377	27323	6621.78	269.99	1.45	1.21
543.4	165969	7841	28714	5780.07	273.07	1.11	1.24
543.6	179158	8634	32066	5587.16	269.26	1.03	1.20
543.8	174429	8325	31909	5466.45	260.90	0.98	1.12
544	174560	8103	30964	5637.51	261.69	1.05	1.13
544.2	170216	8501	31700	5369.59	268.17	0.94	1.19
544.4	173006	8398	32099	5389.76	261.63	0.95	1.13
544.6	157487	8323	32220	4887.86	258.32	0.74	1.10
544.8	160983	8177	31922	5043.01	256.16	0.81	1.08
545	170661	8672	32769	5208.00	264.64	0.87	1.16
545.2	154476	8122	32458	4759.26	250.23	0.69	1.02
545.4	138474	8073	32850	4215.34	245.75	0.47	0.97
545.6	127038	7956	32874	3864.39	242.01	0.33	0.94
545.8	124926	8091	32716	3818.50	247.31	0.31	0.99
546	145922	8110	32592	4477.23	248.83	0.58	1.00
546.2	157626	7982	32313	4878.10	247.02	0.74	0.99
546.4	162941	7833	32259	5051.02	242.82	0.81	0.95
546.6	171530	8575	32337	5304.45	265.18	0.91	1.16
546.8	174220	8067	32100	5427.41	251.31	0.96	1.03
547	173722	8309	31937	5439.52	260.17	0.97	1.12
547.2	176353	8410	31846	5537.68	264.08	1.01	1.15
547.4	169529	8269	32063	5287.37	257.90	0.91	1.09
547.6	179997	8420	33208	5420.29	253.55	0.96	1.05
547.8	178210	8602	33083	5386.75	260.01	0.95	1.11
548	178735	8938	33408	5350.07	267.54	0.93	1.19
548.2	183189	8478	32674	5606.57	259.47	1.04	1.11
548.4	179987	8354	33753	5332.47	247.50	0.92	0.99
548.6	180302	8792	33537	5376.21	262.16	0.94	1.13
548.8	180755	8597	33357	5418.80	257.73	0.96	1.09
549	180015	8746	33201	5421.98	263.43	0.96	1.15
549.2	178204	8466	33791	5273.71	250.54	0.90	1.02
549.4	176962	8598	32287	5480.91	266.30	0.98	1.18
549.6	174493	8778	33322	5236.57	263.43	0.89	1.15
549.8	163989	8262	32081	5111.72	257.54	0.84	1.09
550	166037	8694	33231	4996.45	261.62	0.79	1.13
550.2	172397	8838	33385	5163.91	264.73	0.86	1.16

550.4	166548	8591	31660	5260.52	271.35	0.90	1.22
550.6	171053	8718	31257	5472.47	278.91	0.98	1.30
550.8	167565	7946	30892	5424.22	257.22	0.96	1.09
551	178411	8524	30429	5863.19	280.13	1.14	1.31
551.2	181761	8973	32755	5549.11	273.94	1.01	1.25
551.4	186967	8636	32500	5752.83	265.72	1.09	1.17
551.6	179844	8840	32348	5559.66	273.28	1.02	1.24
551.8	182044	8973	32228	5648.63	278.42	1.05	1.29
552	182719	8816	32342	5649.59	272.59	1.05	1.24
552.2	167680	8309	31610	5304.65	262.86	0.91	1.14
552.4	158415	8335	32136	4929.52	259.37	0.76	1.11
552.6	117329	8057	32888	3567.53	244.98	0.21	0.97
552.8	59247	6872	33287	1779.88	206.45	-0.51	0.59
553	74528	6751	32283	2308.58	209.12	-0.30	0.62
553.2	108638	7565	32670	3325.31	231.56	0.11	0.84
553.4	167635	8470	32959	5086.17	256.99	0.83	1.08
553.6	173517	8506	33000	5258.09	257.76	0.89	1.09
553.8	174545	8343	32875	5309.35	253.78	0.92	1.05
554	183577	8512	33325	5508.69	255.42	1.00	1.07
554.2	181653	8619	33118	5485.02	260.25	0.99	1.12
554.4	184654	8351	32928	5607.81	253.61	1.04	1.05
554.6	185106	8434	32900	5626.32	256.35	1.04	1.08
554.8	187544	8273	33376	5619.13	247.87	1.04	0.99
555	187859	8398	33203	5657.89	252.93	1.06	1.04
555.2	186969	8401	33773	5536.05	248.75	1.01	1.00
555.4	183538	8182	33254	5519.28	246.05	1.00	0.98
555.6	184687	8618	34081	5419.06	252.87	0.96	1.04
555.8	185374	8845	33624	5513.15	263.06	1.00	1.14
556	186856	8496	33757	5535.33	251.68	1.01	1.03
556.2	185518	8484	33008	5620.40	257.03	1.04	1.08
556.4	186478	8328	33727	5529.04	246.92	1.00	0.99
556.6	188302	8800	33414	5635.42	263.36	1.05	1.15
556.8	190132	8876	33467	5681.18	265.22	1.07	1.16
557	190855	8737	33900	5629.94	257.73	1.04	1.09
557.2	189001	8779	33428	5653.97	262.62	1.05	1.14
557.4	187481	8520	32899	5698.68	258.97	1.07	1.10

557.6	189998	8490	33037	5751.07	256.98	1.09	1.08
557.8	189209	8771	32056	5902.45	273.61	1.16	1.25
558	191602	8190	32817	5838.50	249.57	1.13	1.01
558.2	189448	8614	33784	5607.62	254.97	1.04	1.06
558.4	188663	8663	33577	5618.82	258.00	1.04	1.09
558.6	188211	8931	33966	5541.16	262.94	1.01	1.14
558.8	185708	8716	33749	5502.62	258.26	0.99	1.10
559	186230	8782	33818	5506.83	259.68	1.00	1.11
559.2	183698	8728	33987	5404.95	256.80	0.95	1.08
559.4	183445	8257	33685	5445.90	245.12	0.97	0.97
559.6	182082	8638	33740	5396.62	256.02	0.95	1.07
559.8	183178	8572	33243	5510.27	257.86	1.00	1.09
560	176385	8405	33576	5253.31	250.33	0.89	1.02
560.2	176566	8344	33460	5276.93	249.37	0.90	1.01
560.4	177036	8303	33857	5228.93	245.24	0.88	0.97
560.6	174353	8829	33335	5230.33	264.86	0.88	1.16
560.8	172791	8436	34022	5078.80	247.96	0.82	1.00
561	175369	8515	34066	5147.92	249.96	0.85	1.02
561.2	177704	8944	34198	5196.33	261.54	0.87	1.13
561.4	172019	8548	33547	5127.70	254.81	0.84	1.06
561.6	168497	8440	33450	5037.28	252.32	0.81	1.04
561.8	170679	8668	33725	5060.90	257.02	0.81	1.08
562	170707	8567	33578	5083.89	255.14	0.82	1.07
562.2	168461	8544	33144	5082.70	257.78	0.82	1.09
562.4	168895	8900	33345	5065.08	266.91	0.82	1.18
562.6	168967	8735	33098	5105.05	263.91	0.83	1.15
562.8	169798	8609	34330	4946.05	250.77	0.77	1.02
563	171399	9574	35477	4831.27	269.86	0.72	1.21
563.2	118394	5132	20512	5771.94	250.20	1.10	1.02
563.4	158004	7605	28610	5522.68	265.82	1.00	1.17
563.6	134900	6564	24725	5456.02	265.48	0.97	1.17
563.8	164677	8871	33185	4962.39	267.32	0.78	1.19
564	171681	8960	33833	5074.37	264.83	0.82	1.16
564.2	167201	8425	33237	5030.57	253.48	0.80	1.05
564.4	153572	8342	33152	4632.36	251.63	0.64	1.03
564.6	154408	8539	33946	4548.64	251.55	0.61	1.03

564.8	153449	8319	33585	4568.97	247.70	0.62	0.99
565	150173	8205	33618	4467.04	244.07	0.57	0.96
565.2	153201	8634	33744	4540.10	255.87	0.60	1.07
565.4	146379	7626	32454	4510.35	234.98	0.59	0.87
565.6	128156	8350	32216	3978.02	259.19	0.38	1.11
565.8	146556	8812	33309	4399.89	264.55	0.55	1.16
566	146206	8951	33226	4400.35	269.40	0.55	1.21
566.2	144484	8581	33910	4260.81	253.05	0.49	1.05
566.4	146765	9004	33914	4327.56	265.50	0.52	1.17
566.6	143984	8544	33865	4251.71	252.30	0.49	1.04
566.8	137160	8233	33304	4118.42	247.21	0.43	0.99
567	135272	8190	33480	4040.38	244.62	0.40	0.96
567.2	125919	8321	32698	3850.97	254.48	0.33	1.06
567.4	113337	7971	32358	3502.60	246.34	0.18	0.98
567.6	111744	7626	31959	3496.48	238.62	0.18	0.90
567.8	109684	7668	32011	3426.45	239.54	0.15	0.91
568	111764	7726	31021	3602.85	249.06	0.23	1.01
568.2	119110	8022	31621	3766.80	253.69	0.29	1.05
568.4	125272	8201	32432	3862.60	252.87	0.33	1.04
568.6	128329	7607	32111	3996.42	236.90	0.38	0.89
568.8	121986	7814	31078	3925.16	251.43	0.36	1.03
569	127393	8035	31509	4043.07	255.01	0.40	1.06
569.2	113496	7263	30377	3736.25	239.10	0.28	0.91
569.4	118926	8220	32380	3672.82	253.86	0.25	1.05
569.6	115566	7400	31282	3694.33	236.56	0.26	0.88
569.8	112949	7048	29968	3768.99	235.18	0.29	0.87
570	106581	7023	29347	3631.75	239.31	0.24	0.91
570.2	115175	7548	30617	3761.80	246.53	0.29	0.98
570.4	110957	7230	29420	3771.48	245.75	0.29	0.97
570.6	108080	6440	28681	3768.35	224.54	0.29	0.77
570.8	113653	6823	30112	3774.34	226.59	0.29	0.79
571	121151	7894	33337	3634.13	236.79	0.24	0.89
571.2	124023	8032	32647	3798.91	246.03	0.30	0.98
571.4	120749	7506	33400	3615.24	224.73	0.23	0.77
571.6	123976	8099	34862	3556.19	232.32	0.21	0.84
571.8	131048	8156	34290	3821.76	237.85	0.31	0.90

572	139306	8871	35238	3953.29	251.75	0.37	1.03
572.2	125974	7587	31904	3948.53	237.81	0.37	0.90
572.4	95000	6772	29178	3255.88	232.09	0.09	0.84
572.6	118439	7463	31496	3760.45	236.95	0.29	0.89
572.8	115568	7491	31829	3630.90	235.35	0.24	0.87
573	124896	7312	31282	3992.58	233.74	0.38	0.86
573.2	130146	7342	31955	4072.79	229.76	0.42	0.82
573.4	125796	7485	31402	4005.99	238.36	0.39	0.90
573.6	134801	7967	31729	4248.51	251.10	0.49	1.03
573.8	143040	8055	31633	4521.86	254.64	0.60	1.06
574	150088	7842	32165	4666.19	243.81	0.66	0.96
574.2	161150	9009	34352	4691.14	262.26	0.67	1.14
574.4	107205	6711	29159	3676.57	230.15	0.26	0.82

Appendix 1B: Sr/Ca Ratio

Age interpolated	Sr/Ca interpolated	10 yr smooth	50 yr smooth
-58.000	1.180		
-56.000	1.121		
-54.000	1.168	1.152	
-52.000	1.132	1.150	
-50.000	1.161	1.157	
-48.000	1.170	1.158	
-46.000	1.156	1.164	
-44.000	1.170	1.176	
-42.000	1.164	1.184	
-40.000	1.222	1.161	
-38.000	1.209	1.086	
-36.000	1.041	1.031	1.058
-34.000	0.792	0.988	1.053
-32.000	0.890	0.942	1.051
-30.000	1.010	0.926	1.043
-28.000	0.978	0.961	1.035
-26.000	0.960	0.976	1.031
-24.000	0.966	0.968	1.031
-22.000	0.965	0.977	1.030
-20.000	0.969	0.999	1.030
-18.000	1.025	0.992	1.030
-16.000	1.069	1.000	1.029
-14.000	0.934	1.005	1.026
-12.000	1.003	1.009	1.028
-10.000	0.994	1.010	1.041
-8.000	1.048	1.019	1.048
-6.000	1.070	1.004	1.049
-4.000	0.980	1.020	1.050
-2.000	0.928	1.040	1.054
0.000	1.072	1.056	1.057
2.000	1.150	1.090	1.061
4.000	1.152	1.140	1.063

6.000	1.148	1.166	1.064
8.000	1.179	1.159	1.063
10.000	1.203	1.147	1.067
12.000	1.114	1.140	1.067
14.000	1.092	1.120	1.069
16.000	1.114	1.085	1.069
18.000	1.075	1.064	1.067
20.000	1.030	1.058	1.071
22.000	1.010	1.041	1.073
24.000	1.061	1.043	1.071
26.000	1.028	1.041	1.067
28.000	1.088	1.049	1.060
30.000	1.017	1.043	1.055
32.000	1.050	1.045	1.047
34.000	1.034	1.028	1.039
36.000	1.036	1.035	1.036
38.000	1.001	1.032	1.035
40.000	1.054	1.031	1.028
42.000	1.033	1.037	1.024
44.000	1.030	1.036	1.019
46.000	1.066	1.030	1.022
48.000	0.997	1.031	1.016
50.000	1.024	1.022	1.013
52.000	1.037	1.011	1.009
54.000	0.987	1.009	1.005
56.000	1.011	1.006	0.999
58.000	0.987	1.006	0.996
60.000	1.007	1.018	0.992
62.000	1.038	1.007	0.988
64.000	1.048	1.003	0.986
66.000	0.956	0.985	0.983
68.000	0.966	0.995	0.979
70.000	0.915	0.964	0.972
72.000	1.090	0.965	0.975
74.000	0.894	0.968	0.973
76.000	0.962	0.967	0.971

78.000	0.980	0.933	0.971
80.000	0.910	0.943	0.971
82.000	0.917	0.941	0.970
84.000	0.948	0.924	0.966
86.000	0.951	0.941	0.965
88.000	0.891	0.948	0.961
90.000	1.000	0.947	0.961
92.000	0.952	0.935	0.964
94.000	0.940	0.970	0.966
96.000	0.890	0.968	0.961
98.000	1.068	0.974	0.968
100.000	0.990	0.982	0.968
102.000	0.983	1.004	0.972
104.000	0.981	0.987	0.974
106.000	1.001	0.970	0.976
108.000	0.979	0.973	0.980
110.000	0.907	0.969	0.981
112.000	0.999	0.962	0.985
114.000	0.961	0.970	0.985
116.000	0.963	0.982	0.988
118.000	1.020	0.977	0.988
120.000	0.965	0.996	0.992
122.000	0.978	0.998	0.988
124.000	1.054	1.007	0.988
126.000	0.972	1.010	0.987
128.000	1.068	1.004	0.984
130.000	0.978	1.008	0.981
132.000	0.950	1.005	0.981
134.000	1.071	0.992	0.987
136.000	0.960	0.997	0.984
138.000	1.004	1.008	0.990
140.000	1.003	0.987	0.990
142.000	1.004	0.989	0.990
144.000	0.962	0.984	0.995
146.000	0.973	0.979	0.998
148.000	0.977	0.969	0.994

150.000	0.979	0.960	0.994
152.000	0.955	0.951	0.989
154.000	0.918	0.953	0.989
156.000	0.928	0.967	0.992
158.000	0.986	0.962	0.988
160.000	1.048	0.999	0.989
162.000	0.927	1.008	0.987
164.000	1.106	1.014	0.985
166.000	0.971	1.021	0.985
168.000	1.015	1.046	0.989
170.000	1.084	1.018	0.987
172.000	1.055	1.014	0.985
174.000	0.965	1.003	0.978
176.000	0.952	0.982	0.980
178.000	0.960	0.973	0.984
180.000	0.978	0.978	0.982
182.000	1.011	0.984	0.983
184.000	0.990	0.982	0.984
186.000	0.983	0.977	0.986
188.000	0.950	0.973	0.980
190.000	0.950	0.991	0.978
192.000	0.991	0.977	0.977
194.000	1.083	0.974	0.974
196.000	0.910	0.944	0.966
198.000	0.933	0.945	0.965
200.000	0.803	0.931	0.961
202.000	0.998	0.928	0.965
204.000	1.011	0.941	0.965
206.000	0.894	0.996	0.965
208.000	0.997	0.992	0.968
210.000	1.082	0.983	0.971
212.000	0.975	0.988	0.973
214.000	0.968	0.984	0.977
216.000	0.917	0.969	0.979
218.000	0.976	0.948	0.980
220.000	1.008	0.941	0.988

222.000	0.871	0.927	0.991
224.000	0.932	0.943	1.001
226.000	0.848	0.939	1.000
228.000	1.054	0.965	1.001
230.000	0.989	0.992	1.004
232.000	1.002	1.037	1.004
234.000	1.069	1.026	1.000
236.000	1.069	1.039	1.002
238.000	1.001	1.046	1.004
240.000	1.056	1.052	1.007
242.000	1.033	1.060	1.008
244.000	1.100	1.063	1.007
246.000	1.109	1.060	1.016
248.000	1.018	1.049	1.020
250.000	1.040	1.035	1.024
252.000	0.979	1.010	1.022
254.000	1.030	1.007	1.021
256.000	0.980	0.994	1.020
258.000	1.004	1.002	1.017
260.000	0.976	1.002	1.014
262.000	1.021	1.003	1.015
264.000	1.029	1.002	1.015
266.000	0.984	1.003	1.016
268.000	0.998	1.020	1.015
270.000	0.986	1.021	1.011
272.000	1.106	1.012	1.012
274.000	1.032	1.012	1.011
276.000	0.938	1.010	1.016
278.000	0.999	0.982	1.019
280.000	0.976	0.975	1.021
282.000	0.964	0.988	1.022
284.000	0.999	0.994	1.023
286.000	1.000	1.007	1.024
288.000	1.030	1.027	1.025
290.000	1.042	1.040	1.027
292.000	1.062	1.043	1.029

294.000	1.064	1.045	1.029
296.000	1.019	1.039	1.024
298.000	1.038	1.049	1.023
300.000	1.012	1.059	1.024
302.000	1.113	1.059	1.022
304.000	1.111	1.056	1.021
306.000	1.020	1.054	1.022
308.000	1.022	1.043	1.025
310.000	1.004	1.032	1.025
312.000	1.060	1.032	1.026
314.000	1.052	1.038	1.024
316.000	1.020	1.035	1.024
318.000	1.055	1.018	1.023
320.000	0.987	1.011	1.024
322.000	0.979	0.996	1.023
324.000	1.016	0.975	1.026
326.000	0.945	0.971	1.022
328.000	0.950	0.973	1.021
330.000	0.964	0.986	1.021
332.000	0.993	0.994	1.018
334.000	1.080	1.014	1.017
336.000	0.982	1.023	0.970
338.000	1.049	1.038	0.926
340.000	1.013	1.027	0.885
342.000	1.064	1.039	0.845
344.000	1.025	1.033	0.809
346.000	1.042	1.045	0.775
348.000	1.021	1.039	0.742
350.000	1.072	1.050	0.714
352.000	1.036	1.046	0.687
354.000	1.076	1.032	0.662
356.000	1.024	1.010	0.638
358.000	0.953	0.782	0.612
360.000	0.958	0.556	0.592
362.000	-0.101	0.351	0.571
364.000	-0.053	0.169	0.553

366.000	-0.005	-0.005	0.536
368.000	0.044	0.044	0.522
370.000	0.092	0.092	0.509
372.000	0.140	0.140	0.499
374.000	0.189	0.189	0.488
376.000	0.237	0.237	0.482
378.000	0.286	0.286	0.479
380.000	0.334	0.334	0.479
382.000	0.382	0.382	0.480
384.000	0.431	0.431	0.474
386.000	0.479	0.479	0.519
388.000	0.527	0.527	0.563
390.000	0.576	0.576	0.600
392.000	0.624	0.624	0.639
394.000	0.672	0.672	0.678
396.000	0.721	0.721	0.713
398.000	0.769	0.769	0.749
400.000	0.817	0.837	0.778
402.000	0.866	0.898	0.806
404.000	1.010	0.940	0.833
406.000	1.029	0.936	0.858
408.000	0.979	0.968	0.879
410.000	0.794	0.978	0.898
412.000	1.028	0.953	0.914
414.000	1.058	0.965	0.931
416.000	0.904	1.015	0.947
418.000	1.039	1.016	0.962
420.000	1.047	1.019	0.973
422.000	1.032	1.034	0.974
424.000	1.073	1.022	0.981
426.000	0.979	1.013	0.984
428.000	0.978	1.010	0.984
430.000	1.003	0.989	0.982
432.000	1.017	0.982	0.987
434.000	0.966	0.973	0.997
436.000	0.945	0.972	0.996

438.000	0.932	0.971	0.993
440.000	1.001	0.987	0.995
442.000	1.012	0.998	0.991
444.000	1.045	0.969	0.989
446.000	1.002	0.969	0.986
448.000	0.784	0.954	0.981
450.000	1.001	0.947	0.982
452.000	0.940	0.945	0.986
454.000	1.009	1.009	0.985
456.000	0.988	1.017	0.981
458.000	1.106	1.030	0.982
460.000	1.042	1.022	0.988
462.000	1.004	1.015	0.993
464.000	0.972	0.983	0.993
466.000	0.950	0.975	0.996
468.000	0.948	0.967	0.995
470.000	1.000	0.960	0.996
472.000	0.964	0.972	1.010
474.000	0.939	0.995	1.014
476.000	1.011	0.990	1.016
478.000	1.062	0.980	1.016
480.000	0.975	0.994	1.021
482.000	0.915	1.008	1.017
484.000	1.005	1.007	1.015
486.000	1.082	1.016	1.021
488.000	1.058	1.048	1.023
490.000	1.019	1.051	1.026
492.000	1.076	1.038	1.030
494.000	1.021	1.058	1.029
496.000	1.018	1.071	1.031
498.000	1.153	1.052	1.037
500.000	1.085	1.054	1.036
502.000	0.985	1.070	1.037
504.000	1.029	1.042	1.042
506.000	1.099	1.025	1.050
508.000	1.012	1.055	1.055

510.000	0.998	1.054	1.048
512.000	1.136	1.041	1.045
514.000	1.024	1.048	1.048
516.000	1.037	1.044	1.051
518.000	1.045	1.021	1.057
520.000	0.980	1.031	1.060
522.000	1.019	1.021	1.056
524.000	1.071	1.030	1.060
526.000	0.990	1.055	1.070
528.000	1.089	1.071	1.071
530.000	1.104	1.086	1.080
532.000	1.104	1.067	1.088
534.000	1.143	1.050	1.097
536.000	0.896	1.045	1.100
538.000	1.003	1.057	1.108
540.000	1.078	1.060	1.115
542.000	1.163	1.099	1.122
544.000	1.160	1.110	1.132
546.000	1.088	1.132	1.140
548.000	1.062	1.145	1.146
550.000	1.189	1.127	1.155
552.000	1.224	1.171	1.160
554.000	1.071	1.203	1.165
556.000	1.310	1.209	1.169
5546.000	0.890	0.894	0.893
5548.000	0.896	0.899	0.891
5550.000	0.903	0.904	0.888
5552.000	0.915	0.906	0.886
5554.000	0.914	0.908	0.889
5556.000	0.902	0.909	0.890
5558.000	0.905	0.905	0.887
5560.000	0.909	0.899	0.900
5562.000	0.897	0.890	0.925
5564.000	0.882	0.884	0.929
5566.000	0.859	0.883	0.925
5568.000	0.871	0.880	0.922

5570.000	0.906	0.872	0.920
5572.000	0.879	0.861	0.919
5574.000	0.844	0.854	0.919
5576.000	0.804	0.868	0.917
5578.000	0.838	0.878	0.916
5580.000	0.976	0.869	0.914
5582.000	0.929	0.955	0.908
5584.000	0.797	1.086	0.902
5586.000	1.235	1.092	0.896
5588.000	1.493	1.062	0.891
5590.000	1.008	1.065	0.889
5592.000	0.777	0.987	0.889
5594.000	0.812	0.865	0.887
5596.000	0.846	0.840	0.883
5598.000	0.880	0.862	0.882
5600.000	0.886	0.877	0.883
5602.000	0.888	0.875	0.885
5604.000	0.882	0.851	0.882
5606.000	0.837	0.824	0.881
5608.000	0.762	0.797	0.884
5610.000	0.750	0.774	0.868
5612.000	0.752	0.768	0.842
5614.000	0.769	0.789	0.835
5616.000	0.804	0.809	0.836
5618.000	0.868	0.818	0.836
5620.000	0.852	0.825	0.840
5622.000	0.794	0.830	0.842
5624.000	0.806	0.835	0.843
5626.000	0.832	0.847	0.847
5628.000	0.890	0.867	0.852
5630.000	0.912	0.879	0.856
5632.000	0.894	0.881	0.861
5634.000	0.868	0.871	0.864
5636.000	0.840	0.854	0.868
5638.000	0.840	0.835	0.872
5640.000	0.830	0.828	0.869

5642.000	0.795	0.845	0.865
5644.000	0.833	0.863	0.869
5646.000	0.926	0.883	0.870
5648.000	0.930	0.922	0.865
5650.000	0.928	0.956	0.860
5652.000	0.992	0.957	0.854
5654.000	1.002	0.947	0.847
5656.000	0.932	0.927	0.841
5658.000	0.878	0.900	0.836
5660.000	0.832	0.871	0.831
5662.000	0.858	0.833	0.836
5664.000	0.854	0.812	0.888
5666.000	0.743	0.833	0.929
5668.000	0.774	0.828	0.892
5670.000	0.937	0.792	0.866
5672.000	0.831	0.786	0.882
5674.000	0.673	0.779	0.885
5676.000	0.714	0.740	0.874
5678.000	0.740	0.721	0.862
5680.000	0.740	0.732	0.853
5682.000	0.736	0.734	0.850
5684.000	0.730	0.778	0.849
5686.000	0.725	1.057	0.848
5688.000	0.956	1.275	0.844
5690.000	2.136	1.109	0.846
5692.000	1.826	1.021	0.851
5694.000	-0.098	1.097	0.850
5696.000	0.286	0.867	0.851
5698.000	1.334	0.648	0.853
5700.000	0.984	0.806	0.853
5702.000	0.735	0.892	0.858
5704.000	0.688	0.783	0.866
5706.000	0.716	0.750	0.873
5708.000	0.792	0.769	0.876
5710.000	0.821	0.783	0.876
5712.000	0.827	0.796	0.865

5714.000	0.757	0.821	0.808
5716.000	0.782	0.838	0.765
5718.000	0.916	0.842	0.800
5720.000	0.906	0.837	0.819
5722.000	0.846	0.823	0.797
5724.000	0.735	0.813	0.791
5726.000	0.711	0.817	0.790
5728.000	0.868	0.830	0.791
5730.000	0.923	0.845	0.792
5732.000	0.911	0.846	0.791
5734.000	0.811	0.811	0.789
5736.000	0.716	0.767	0.786
5738.000	0.692	0.738	0.786
5740.000	0.707	0.730	0.784
5742.000	0.766	0.737	0.778
5744.000	0.767	0.760	0.771
5746.000	0.753	0.780	0.766
5748.000	0.805	0.771	0.766
5750.000	0.810	0.761	0.771
5752.000	0.722	0.759	0.773
5754.000	0.712	0.751	0.775
5756.000	0.747	0.742	0.777
5758.000	0.761	0.749	0.782
5760.000	0.768	0.756	0.787
5762.000	0.756	0.757	0.794
5764.000	0.750	0.755	0.802
5766.000	0.750	0.751	0.805
5768.000	0.750	0.742	0.806
5770.000	0.747	0.738	0.809
5772.000	0.712	0.757	0.811
5774.000	0.732	0.790	0.813
5776.000	0.843	0.834	0.819
5778.000	0.915	0.883	0.828
5780.000	0.968	0.924	0.831
5782.000	0.959	0.927	0.829
5784.000	0.932	0.915	0.826

5786.000	0.862	0.902	0.821
5788.000	0.856	0.880	0.815
5790.000	0.903	0.850	0.811
5792.000	0.846	0.843	0.808
5794.000	0.786	0.843	0.806
5796.000	0.827	0.834	0.804
5798.000	0.853	0.843	0.799
5800.000	0.858	0.871	0.789
5802.000	0.890	0.869	0.774
5804.000	0.927	0.843	0.760
5806.000	0.815	0.809	0.748
5808.000	0.727	0.759	0.737
5810.000	0.685	0.692	0.729
5812.000	0.641	0.657	0.720
5814.000	0.594	0.648	0.710
5816.000	0.639	0.650	0.703
5818.000	0.683	0.656	0.697
5820.000	0.694	0.659	0.690
5822.000	0.669	0.647	0.685
5824.000	0.611	0.621	0.679
5826.000	0.576	0.606	0.671
5828.000	0.557	0.602	0.660
5830.000	0.616	0.612	0.652
5832.000	0.652	0.627	0.647
5834.000	0.658	0.644	0.645
5836.000	0.652	0.652	0.647
5838.000	0.640	0.654	0.652
5840.000	0.658	0.648	0.655
5842.000	0.661	0.651	0.653
5844.000	0.631	0.670	0.654
5846.000	0.664	0.681	0.660
5848.000	0.735	0.685	0.663
5850.000	0.713	0.686	0.665
5852.000	0.681	0.677	0.672
5854.000	0.639	0.652	0.677
5856.000	0.617	0.638	0.682

5858.000	0.611	0.639	0.685
5860.000	0.644	0.654	0.689
5862.000	0.684	0.672	0.696
5864.000	0.714	0.680	0.701
5866.000	0.706	0.695	0.703
5868.000	0.653	0.721	0.706
5870.000	0.720	0.714	0.707
5872.000	0.813	0.698	0.700
5874.000	0.677	0.712	0.693
5876.000	0.626	0.720	0.689
5878.000	0.727	0.710	0.690
5880.000	0.760	0.724	0.696
5882.000	0.760	0.750	0.700
5884.000	0.748	0.766	0.703
5886.000	0.755	0.771	0.706
5888.000	0.808	0.761	0.707
5890.000	0.785	0.752	0.705
5892.000	0.708	0.738	0.707
5894.000	0.705	0.690	0.706
5896.000	0.686	0.639	0.703
5898.000	0.567	0.613	0.704
5900.000	0.531	0.606	0.705
5902.000	0.573	0.622	0.702
5904.000	0.673	0.653	0.697
5906.000	0.764	0.690	0.691
5908.000	0.723	0.728	0.687
5910.000	0.718	0.738	0.685
5912.000	0.760	0.719	0.681
5914.000	0.725	0.711	0.678
5916.000	0.671	0.708	0.677
5918.000	0.683	0.702	0.677
5920.000	0.701	0.698	0.681
5922.000	0.731	0.694	0.688
5924.000	0.703	0.687	0.695
5926.000	0.650	0.675	0.700
5928.000	0.650	0.653	0.710

5930.000	0.642	0.641	0.734
5932.000	0.619	0.650	0.811
5934.000	0.644	0.664	0.930
5936.000	0.697	0.679	1.007
5938.000	0.717	0.691	1.054
5940.000	0.719	0.702	1.082
5942.000	0.678	0.717	1.100
5944.000	0.701	0.723	1.110
5946.000	0.772	0.721	1.115
5948.000	0.743	0.726	1.118
5950.000	0.709	0.771	1.121
5952.000	0.703	0.889	1.124
5954.000	0.927	1.268	1.129
5956.000	1.361	1.867	1.131
5958.000	2.641	2.262	1.130
5960.000	3.701	2.456	1.126
5962.000	2.678	2.461	1.122
5964.000	1.898	2.159	1.119
5966.000	1.387	1.608	1.120
5968.000	1.130	1.244	1.121
5970.000	0.950	1.019	1.120
5972.000	0.854	0.887	1.118
5974.000	0.777	0.808	1.115
5976.000	0.723	0.771	1.113
5978.000	0.737	0.735	1.102
5980.000	0.764	0.702	1.073
5982.000	0.674	0.677	0.992
5984.000	0.613	0.652	0.868
5986.000	0.595	0.630	0.786
5988.000	0.615	0.635	0.737
5990.000	0.651	0.658	0.709
5992.000	0.699	0.685	0.694
5994.000	0.730	0.702	0.690
5996.000	0.730	0.701	0.688
5998.000	0.698	0.692	0.687
6000.000	0.650	0.674	0.683

6002.000	0.650	0.654	0.677
6004.000	0.644	0.637	0.670
6006.000	0.626	0.629	0.668
6008.000	0.616	0.627	0.670
6010.000	0.610	0.632	0.672
6012.000	0.639	0.645	0.675
6014.000	0.667	0.672	0.676
6016.000	0.691	0.717	0.674
6018.000	0.752	0.751	0.670
6020.000	0.835	0.769	0.664
6022.000	0.812	0.755	0.656
6024.000	0.755	0.721	0.649
6026.000	0.623	0.674	0.644
6028.000	0.581	0.637	0.641
6030.000	0.599	0.616	0.643
6032.000	0.628	0.623	0.646
6034.000	0.651	0.641	0.649
6036.000	0.657	0.659	0.648
6038.000	0.670	0.665	0.646
6040.000	0.688	0.659	0.643
6042.000	0.658	0.641	0.638
6044.000	0.619	0.611	0.631
6046.000	0.571	0.567	0.624
6048.000	0.520	0.538	0.618
6050.000	0.466	0.530	0.617
6052.000	0.513	0.550	0.619
6054.000	0.580	0.585	0.623
6056.000	0.670	0.626	0.625
6058.000	0.697	0.650	0.624
6060.000	0.673	0.655	0.624
6062.000	0.633	0.644	0.624
6064.000	0.603	0.632	0.621
6066.000	0.615	0.631	0.619
6068.000	0.636	0.632	0.619
6070.000	0.666	0.633	0.621
6072.000	0.638	0.629	0.627

6074.000	0.607	0.627	0.640
6076.000	0.596	0.634	0.652
6078.000	0.629	0.640	0.663
6080.000	0.701	0.646	0.668
6082.000	0.668	0.658	0.673
6084.000	0.635	0.663	0.680
6086.000	0.659	0.648	0.688
6088.000	0.654	0.637	0.695
6090.000	0.624	0.633	0.699
6092.000	0.615	0.624	0.703
6094.000	0.611	0.629	0.710
6096.000	0.617	0.659	0.718
6098.000	0.676	0.701	0.725
6100.000	0.778	0.747	0.728
6102.000	0.822	0.785	0.730
6104.000	0.842	0.812	0.729
6106.000	0.806	0.828	0.729
6108.000	0.813	0.828	0.729
6110.000	0.856	0.815	0.728
6112.000	0.822	0.797	0.728
6114.000	0.776	0.784	0.728
6116.000	0.716	0.783	0.731
6118.000	0.748	0.784	0.737
6120.000	0.851	0.784	0.740
6122.000	0.827	0.778	0.741
6124.000	0.777	0.761	0.737
6126.000	0.687	0.729	0.734
6128.000	0.664	0.695	0.732
6130.000	0.688	0.666	0.730
6132.000	0.656	0.657	0.727
6134.000	0.633	0.653	0.720
6136.000	0.645	0.642	0.715
6138.000	0.643	0.650	0.711
6140.000	0.631	0.671	0.706
6142.000	0.699	0.683	0.702
6144.000	0.739	0.692	0.697

6146.000	0.703	0.704	0.693
6148.000	0.690	0.714	0.693
6150.000	0.690	0.723	0.699
6152.000	0.749	0.736	0.705
6154.000	0.784	0.744	0.706
6156.000	0.766	0.744	0.707
6158.000	0.732	0.732	0.709
6160.000	0.690	0.709	0.711
6162.000	0.690	0.676	0.716
6164.000	0.667	0.658	0.722
6166.000	0.600	0.666	0.723
6168.000	0.643	0.674	0.722
6170.000	0.730	0.694	0.723
6172.000	0.730	0.745	0.727
6174.000	0.765	0.777	0.732
6176.000	0.856	0.773	0.732
6178.000	0.805	0.764	0.730
6180.000	0.708	0.747	0.732
6182.000	0.684	0.716	0.732
6184.000	0.680	0.706	0.732
6186.000	0.705	0.723	0.734
6188.000	0.752	0.731	0.738
6190.000	0.792	0.736	0.744
6192.000	0.725	0.744	0.751
6194.000	0.707	0.751	0.755
6196.000	0.743	0.757	0.754
6198.000	0.790	0.761	0.752
6200.000	0.818	0.767	0.750
6202.000	0.745	0.777	0.750
6204.000	0.738	0.767	0.754
6206.000	0.793	0.744	0.758
6208.000	0.742	0.743	0.762
6210.000	0.699	0.747	0.764
6212.000	0.742	0.738	0.766
6214.000	0.757	0.753	0.768
6216.000	0.750	0.780	0.773

6218.000	0.817	0.773	0.775
6220.000	0.835	0.765	0.774
6222.000	0.707	0.777	0.773
6224.000	0.717	0.774	0.773
6226.000	0.809	0.767	0.774
6228.000	0.804	0.782	0.774
6230.000	0.796	0.794	0.773
6232.000	0.784	0.786	0.776
6234.000	0.776	0.786	0.781
6236.000	0.771	0.792	0.784
6238.000	0.802	0.804	0.788
6240.000	0.827	0.805	0.793
6242.000	0.846	0.790	0.796
6244.000	0.777	0.787	0.798
6246.000	0.699	0.783	0.803
6248.000	0.784	0.765	0.807
6250.000	0.807	0.760	0.806
6252.000	0.759	0.772	0.809
6254.000	0.750	0.778	0.811
6256.000	0.760	0.783	0.812
6258.000	0.815	0.793	0.813
6260.000	0.830	0.814	0.813
6262.000	0.812	0.840	0.810
6264.000	0.854	0.855	0.809
6266.000	0.890	0.864	0.810
6268.000	0.890	0.872	0.815
6270.000	0.875	0.862	0.831
6272.000	0.851	0.843	0.857
6274.000	0.803	0.840	0.897
6276.000	0.796	0.836	0.946
6278.000	0.875	0.824	0.975
6280.000	0.854	0.824	0.995
6282.000	0.791	0.821	1.013
6284.000	0.803	0.791	1.029
6286.000	0.785	0.779	1.044
6288.000	0.724	0.797	1.056

6290.000	0.791	0.816	1.064
6292.000	0.883	0.877	1.071
6294.000	0.901	1.021	1.077
6296.000	1.087	1.225	1.086
6298.000	1.442	1.445	1.101
6300.000	1.812	1.557	1.118
6302.000	1.983	1.591	1.134
6304.000	1.463	1.557	1.156
6306.000	1.257	1.442	1.183
6308.000	1.269	1.283	1.210
6310.000	1.235	1.218	1.240
6312.000	1.192	1.187	1.272
6314.000	1.137	1.146	1.292
6316.000	1.099	1.106	1.304
6318.000	1.068	1.079	1.312
6320.000	1.031	1.089	1.314
6322.000	1.061	1.115	1.304
6324.000	1.183	1.155	1.283
6326.000	1.229	1.228	1.255
6328.000	1.269	1.310	1.247
6330.000	1.398	1.371	1.245
6332.000	1.469	1.432	1.241
6334.000	1.488	1.481	1.238
6336.000	1.533	1.462	1.236
6338.000	1.516	1.403	1.235
6340.000	1.302	1.325	1.231
6342.000	1.174	1.245	1.227
6344.000	1.101	1.179	1.222
6346.000	1.130	1.177	1.220
6348.000	1.188	1.201	1.214
6350.000	1.292	1.231	1.204
6352.000	1.293	1.245	1.189
6354.000	1.254	1.242	1.168
6356.000	1.199	1.217	1.143
6358.000	1.170	1.188	1.118
6360.000	1.170	1.157	1.095

6362.000	1.144	1.120	1.072
6364.000	1.102	1.078	1.057
6366.000	1.016	1.028	1.046
6368.000	0.958	0.999	1.039
6370.000	0.921	0.985	1.033
6372.000	0.997	0.977	1.022
6374.000	1.032	0.968	1.005
6376.000	0.976	0.953	0.986
6378.000	0.912	0.924	0.969
6380.000	0.850	0.894	0.955
6382.000	0.850	0.888	0.945
6384.000	0.881	0.894	0.935
6386.000	0.948	0.907	0.927
6388.000	0.940	0.917	0.919
6390.000	0.916	0.926	0.914
6392.000	0.898	0.933	0.916
6394.000	0.926	0.929	0.918
6396.000	0.988	0.918	0.911
6398.000	0.919	0.902	0.905
6400.000	0.858	0.883	0.903
6402.000	0.821	0.859	0.906
6404.000	0.832	0.856	0.911
6406.000	0.864	0.871	0.916
6408.000	0.907	0.893	0.919
6410.000	0.930	0.907	0.917
6412.000	0.930	0.915	0.914
6414.000	0.904	0.933	0.912
6416.000	0.902	0.940	0.914
6418.000	1.001	0.920	0.915
6420.000	0.962	0.915	0.914
6422.000	0.832	0.921	0.915
6424.000	0.879	0.918	0.918
6426.000	0.930	0.922	0.922
6428.000	0.986	0.947	0.922
6430.000	0.982	0.962	0.921
6432.000	0.959	0.959	0.916

6434.000	0.953	0.931	0.912
6436.000	0.915	0.912	0.906
6438.000	0.847	0.906	0.898
6440.000	0.884	0.909	0.891
6442.000	0.930	0.919	0.882
6444.000	0.967	0.937	0.876
6446.000	0.964	0.947	0.875
6448.000	0.940	0.942	0.872
6450.000	0.934	0.919	0.866
6452.000	0.906	0.890	0.859
6454.000	0.851	0.863	0.853
6456.000	0.820	0.839	0.850
6458.000	0.802	0.813	0.848
6460.000	0.815	0.783	0.850
6462.000	0.777	0.768	0.855
6464.000	0.703	0.763	0.856
6466.000	0.742	0.759	0.853
6468.000	0.777	0.765	0.849
6470.000	0.795	0.788	0.849
6472.000	0.809	0.796	0.848
6474.000	0.816	0.800	0.845
6476.000	0.785	0.810	0.845
6478.000	0.795	0.823	0.848
6480.000	0.845	0.841	0.850
6482.000	0.872	0.878	0.852
6484.000	0.908	0.912	0.853
6486.000	0.970	0.928	0.855
6488.000	0.965	0.924	0.859
6490.000	0.925	0.914	0.860
6492.000	0.851	0.912	0.856
6494.000	0.858	0.903	0.851
6496.000	0.964	0.892	0.848
6498.000	0.917	0.903	0.843
6500.000	0.869	0.912	0.841
6502.000	0.906	0.895	0.845
6504.000	0.904	0.883	0.847

6506.000	0.880	0.876	0.843
6508.000	0.855	0.861	0.834
6510.000	0.837	0.841	0.821
6512.000	0.831	0.816	0.811
6514.000	0.800	0.781	0.802
6516.000	0.755	0.749	0.796
6518.000	0.681	0.729	0.793
6520.000	0.679	0.706	0.787
6522.000	0.729	0.701	0.786
6524.000	0.687	0.749	0.790
6526.000	0.731	0.789	0.791
6528.000	0.917	0.800	0.787
6530.000	0.883	0.796	0.784
6532.000	0.781	0.781	0.782
6534.000	0.669	0.741	0.784
6536.000	0.655	0.703	0.786
6538.000	0.718	0.686	0.790
6540.000	0.690	0.708	0.795
6542.000	0.699	0.743	0.804
6544.000	0.780	0.774	0.818
6546.000	0.828	0.831	0.827
6548.000	0.875	0.881	0.833
6550.000	0.975	0.886	0.835
6552.000	0.945	0.879	0.829
6554.000	0.808	0.867	0.825
6556.000	0.794	0.846	0.825
6558.000	0.812	0.836	0.829
6560.000	0.874	0.854	0.832
6562.000	0.895	0.868	0.837
6564.000	0.895	0.889	0.844
6566.000	0.864	0.921	0.850
6568.000	0.915	0.931	0.852
6570.000	1.033	0.922	0.853
6572.000	0.946	0.905	0.851
6574.000	0.854	0.876	0.845
6576.000	0.779	0.826	0.838

6578.000	0.769	0.793	0.838
6580.000	0.780	0.774	0.839
6582.000	0.780	0.765	0.836
6584.000	0.763	0.777	0.834
6586.000	0.731	0.798	0.835
6588.000	0.831	0.810	0.831
6590.000	0.884	0.825	0.827
6592.000	0.841	0.846	0.822
6594.000	0.835	0.848	0.809
6596.000	0.840	0.834	0.802
6598.000	0.840	0.820	0.801
6600.000	0.815	0.817	0.803
6602.000	0.771	0.812	0.803
6604.000	0.819	0.790	0.805
6606.000	0.817	0.792	0.808
6608.000	0.729	0.821	0.812
6610.000	0.823	0.818	0.814
6612.000	0.918	0.808	0.811
6614.000	0.805	0.816	0.806
6616.000	0.764	0.798	0.805
6618.000	0.770	0.764	0.806
6620.000	0.732	0.772	0.809
6622.000	0.749	0.782	0.811
6624.000	0.843	0.784	0.810
6626.000	0.814	0.804	0.814
6628.000	0.782	0.826	0.820
6630.000	0.832	0.830	0.834
6632.000	0.858	0.824	0.847
6634.000	0.866	0.818	0.854
6636.000	0.784	0.805	0.860
6638.000	0.749	0.795	0.877
6640.000	0.768	0.793	0.901
6642.000	0.808	0.821	0.915
6644.000	0.858	0.847	0.924
6646.000	0.921	0.854	0.924
6648.000	0.879	0.862	0.923

6650.000	0.805	0.885	0.926
6652.000	0.849	0.936	0.933
6654.000	0.974	0.972	0.936
6656.000	1.175	1.009	0.937
6658.000	1.056	1.055	0.938
6660.000	0.990	1.106	0.945
6662.000	1.078	1.140	0.955
6664.000	1.233	1.157	0.961
6666.000	1.345	1.147	0.966
6668.000	1.137	1.081	0.972
6670.000	0.940	1.000	0.973
6672.000	0.751	0.909	0.970
6674.000	0.825	0.872	0.965
6676.000	0.893	0.867	0.960
6678.000	0.950	0.892	0.955
6680.000	0.913	0.907	0.943
6682.000	0.876	0.918	0.936
6684.000	0.901	0.927	0.932
6686.000	0.948	0.929	0.926
6688.000	0.994	0.940	0.914
6690.000	0.925	0.962	0.899
6692.000	0.931	0.959	0.891
6694.000	1.013	0.925	0.891
6696.000	0.933	0.875	0.895
6698.000	0.822	0.835	0.896
6700.000	0.676	0.800	0.892
6702.000	0.730	0.788	0.890
6704.000	0.836	0.801	0.891
6706.000	0.874	0.844	0.894
6708.000	0.890	0.881	0.894
6710.000	0.890	0.902	0.892
6712.000	0.916	0.921	0.888
6714.000	0.941	0.932	0.884
6716.000	0.966	0.938	0.877
6718.000	0.948	0.929	0.870
6720.000	0.918	0.908	0.869

6722.000	0.874	0.877	0.874
6724.000	0.834	0.867	0.888
6726.000	0.811	0.871	0.900
6728.000	0.899	0.885	0.907
6730.000	0.940	0.900	0.912
6732.000	0.940	0.916	0.916
6734.000	0.909	0.916	0.917
6736.000	0.892	0.891	0.918
6738.000	0.899	0.853	0.921
6740.000	0.813	0.841	0.929
6742.000	0.752	0.844	0.939
6744.000	0.848	0.856	0.949
6746.000	0.909	0.897	0.952
6748.000	0.956	0.954	0.953
6750.000	1.019	0.987	0.957
6752.000	1.037	1.004	0.957
6754.000	1.012	1.007	0.958
6756.000	0.998	0.988	0.961
6758.000	0.971	0.969	0.967
6760.000	0.920	0.970	0.976
6762.000	0.945	1.002	0.989
6764.000	1.013	1.048	1.007
6766.000	1.159	1.098	1.027
6768.000	1.202	1.100	1.040
6770.000	1.173	1.070	1.052
6772.000	0.956	1.016	1.067
6774.000	0.863	0.960	1.081
6776.000	0.888	0.917	1.092
6778.000	0.920	0.926	1.100
6780.000	0.956	0.965	1.105
6782.000	1.001	1.014	1.106
6784.000	1.061	1.074	1.107
6786.000	1.131	1.133	1.109
6788.000	1.220	1.184	1.112
6790.000	1.254	1.208	1.107
6792.000	1.253	1.224	1.099

6794.000	1.183	1.245	1.093
6796.000	1.210	1.267	1.096
6798.000	1.325	1.282	1.105
6800.000	1.361	1.288	1.113
6802.000	1.333	1.267	1.122
6804.000	1.211	1.204	1.129
6806.000	1.106	1.121	1.127
6808.000	1.012	1.053	1.120
6810.000	0.941	1.028	1.110
6812.000	0.995	1.013	1.098
6814.000	1.083	1.013	1.085
6816.000	1.032	1.026	1.073
6818.000	1.010	1.037	1.059
6820.000	1.010	1.036	1.041
6822.000	1.048	1.049	1.015
6824.000	1.078	1.075	0.997
6826.000	1.098	1.097	0.984
6828.000	1.139	1.079	0.971
6830.000	1.120	1.042	0.963
6832.000	0.960	0.996	0.961
6834.000	0.891	0.952	0.964
6836.000	0.869	0.917	0.963
6838.000	0.921	0.914	0.954
6840.000	0.944	0.902	0.947
6842.000	0.943	0.878	0.940
6844.000	0.834	0.830	0.931
6846.000	0.748	0.822	0.924
6848.000	0.684	0.835	0.917
6850.000	0.904	0.846	0.911
6852.000	1.006	0.878	0.901
6854.000	0.890	0.933	0.892
6856.000	0.907	0.958	0.892
6858.000	0.959	0.950	0.893
6860.000	1.029	0.944	0.892
6862.000	0.964	0.933	0.889
6864.000	0.859	0.907	0.884

6866.000	0.853	0.862	0.880
6868.000	0.831	0.842	0.880
6870.000	0.802	0.853	0.884
6872.000	0.867	0.870	0.890
6874.000	0.912	0.882	0.894
6876.000	0.938	0.899	0.893
6878.000	0.892	0.917	0.890
6880.000	0.886	0.918	0.888
6882.000	0.957	0.903	0.884
6884.000	0.918	0.890	0.879
6886.000	0.862	0.880	0.874
6888.000	0.829	0.858	0.869
6890.000	0.834	0.842	0.866
6892.000	0.848	0.836	0.867
6894.000	0.835	0.839	0.871
6896.000	0.834	0.870	0.873
6898.000	0.846	0.897	0.874
6900.000	0.988	0.894	0.873
6902.000	0.981	0.896	0.873
6904.000	0.820	0.903	0.872
6906.000	0.846	0.887	0.870
6908.000	0.880	0.854	0.867
6910.000	0.906	0.840	0.866
6912.000	0.818	0.827	0.867
6914.000	0.749	0.819	0.871
6916.000	0.781	0.819	0.878
6918.000	0.842	0.840	0.885
6920.000	0.904	0.875	0.892
6922.000	0.923	0.902	0.898
6924.000	0.926	0.911	0.897
6926.000	0.917	0.906	0.896
6928.000	0.885	0.902	0.901
6930.000	0.880	0.885	0.903
6932.000	0.900	0.866	0.905
6934.000	0.842	0.861	0.907
6936.000	0.824	0.874	0.913

6938.000	0.857	0.896	0.922
6940.000	0.947	0.932	0.930
6942.000	1.012	0.969	0.933
6944.000	1.019	0.996	0.933
6946.000	1.010	1.000	0.937
6948.000	0.993	0.988	0.940
6950.000	0.967	0.971	0.942
6952.000	0.951	0.951	0.943
6954.000	0.936	0.938	0.946
6956.000	0.910	0.936	0.948
6958.000	0.924	0.938	0.954
6960.000	0.960	0.945	0.957
6962.000	0.960	0.961	0.956
6964.000	0.970	0.959	0.951
6966.000	0.990	0.949	0.943
6968.000	0.913	0.960	0.934
6970.000	0.914	0.967	0.922
6972.000	1.011	0.964	0.909
6974.000	1.008	0.964	0.897
6976.000	0.976	0.968	0.885
6978.000	0.911	0.959	0.877
6980.000	0.932	0.954	0.874
6982.000	0.966	0.941	0.868
6984.000	0.985	0.925	0.860
6986.000	0.913	0.903	0.853
6988.000	0.829	0.872	0.849
6990.000	0.822	0.833	0.844
6992.000	0.811	0.793	0.839
6994.000	0.790	0.761	0.834
6996.000	0.712	0.727	0.826
6998.000	0.669	0.699	0.820
7000.000	0.651	0.686	0.817
7002.000	0.670	0.709	0.819
7004.000	0.730	0.732	0.824
7006.000	0.828	0.753	0.827
7008.000	0.779	0.775	0.825

7010.000	0.759	0.802	0.824
7012.000	0.778	0.814	0.827
7014.000	0.868	0.812	0.830
7016.000	0.887	0.818	0.838
7018.000	0.770	0.828	0.850
7020.000	0.788	0.823	0.866
7022.000	0.826	0.826	0.882
7024.000	0.845	0.866	0.899
7026.000	0.900	0.921	0.915
7028.000	0.971	0.961	0.927
7030.000	1.062	0.980	0.936
7032.000	1.027	0.980	0.949
7034.000	0.943	0.963	0.964
7036.000	0.897	0.930	0.978
7038.000	0.884	0.929	0.984
7040.000	0.901	0.957	0.990
7042.000	1.019	1.000	1.000
7044.000	1.085	1.038	1.006
7046.000	1.109	1.071	1.012
7048.000	1.076	1.083	1.020
7050.000	1.067	1.073	1.036
7052.000	1.080	1.059	1.045
7054.000	1.036	1.065	1.045
7056.000	1.039	1.080	1.046
7058.000	1.104	1.089	1.049
7060.000	1.140	1.088	1.054
7062.000	1.125	1.088	1.062
7064.000	1.034	1.071	1.070
7066.000	1.037	1.029	1.071
7068.000	1.020	0.996	1.069
7070.000	0.929	1.003	1.068
7072.000	0.962	1.053	1.068
7074.000	1.068	1.089	1.066
7076.000	1.284	1.115	1.064
7078.000	1.204	1.133	1.066
7080.000	1.059	1.124	1.063

7082.000	1.052	1.069	1.056
7084.000	1.023	1.047	1.051
7086.000	1.005	1.054	1.044
7088.000	1.097	1.052	1.040
7090.000	1.092	1.058	1.034
7092.000	1.042	1.071	1.033
7094.000	1.055	1.069	1.038
7096.000	1.072	1.055	1.041
7098.000	1.086	1.052	1.040
7100.000	1.020	1.058	1.030
7102.000	1.026	1.035	1.024
7104.000	1.087	1.004	1.023
7106.000	0.956	1.001	1.023
7108.000	0.929	0.988	1.024
7110.000	1.008	0.954	1.025
7112.000	0.959	0.941	1.023
7114.000	0.918	0.954	1.021
7116.000	0.892	0.963	1.022
7118.000	0.994	0.980	1.021
7120.000	1.055	1.005	1.021
7122.000	1.041	1.035	1.019
7124.000	1.041	1.044	1.020
7126.000	1.042	1.042	1.021
7128.000	1.042	1.042	1.020
7130.000	1.043	1.043	1.024
7132.000	1.044	1.044	1.029
7134.000	1.045	1.045	1.031
7136.000	1.046	1.046	1.035
7138.000	1.047	1.047	1.040
7140.000	1.047	1.047	1.047
7142.000	1.048	1.048	1.050
7144.000	1.049	1.049	1.050
7146.000	1.050	1.050	1.044
7148.000	1.051	1.051	1.029
7150.000	1.051	1.051	1.020
7152.000	1.052	1.052	1.019

7154.000	1.053	1.053	1.024
7156.000	1.054	1.054	1.025
7158.000	1.055	1.055	1.027
7160.000	1.056	1.056	1.033
7162.000	1.056	1.056	1.035
7164.000	1.057	1.057	1.035
7166.000	1.058	1.058	1.032
7168.000	1.059	1.025	1.032
7170.000	1.060	0.949	1.031
7172.000	0.894	0.901	1.026
7174.000	0.676	0.889	1.023
7176.000	0.815	0.913	1.022
7178.000	0.998	0.949	1.021
7180.000	1.180	1.032	1.022
7182.000	1.074	1.106	1.024
7184.000	1.091	1.127	1.027
7186.000	1.184	1.098	1.027
7188.000	1.105	1.080	1.028
7190.000	1.037	1.073	1.033
7192.000	0.984	1.041	1.034
7194.000	1.056	1.003	1.035
7196.000	1.025	0.994	1.045
7198.000	0.913	1.003	1.059
7200.000	0.992	0.996	1.068
7202.000	1.027	1.004	1.074
7204.000	1.021	1.042	1.073
7206.000	1.067	1.070	1.073
7208.000	1.104	1.077	1.066
7210.000	1.130	1.089	1.060
7212.000	1.064	1.114	1.061
7214.000	1.083	1.111	1.063
7216.000	1.189	1.100	1.068
7218.000	1.091	1.115	1.070
7220.000	1.072	1.107	1.072
7222.000	1.138	1.076	1.080
7224.000	1.043	1.085	1.086

7226.000	1.037	1.103	1.090
7228.000	1.137	1.092	1.096
7230.000	1.159	1.063	1.102
7232.000	1.083	1.067	1.109
7234.000	0.897	1.065	1.110
7236.000	1.056	1.050	1.112
7238.000	1.129	1.054	1.115
7240.000	1.082	1.095	1.113
7242.000	1.105	1.099	1.115
7244.000	1.105	1.097	1.120
7246.000	1.072	1.109	1.120
7248.000	1.121	1.112	1.124
7250.000	1.141	1.126	1.133
7252.000	1.121	1.157	1.135
7254.000	1.177	1.184	1.136
7256.000	1.225	1.188	1.141
7258.000	1.258	1.187	1.151
7260.000	1.159	1.184	1.154
7262.000	1.118	1.166	1.153
7264.000	1.158	1.143	1.151
7266.000	1.135	1.150	1.147
7268.000	1.144	1.154	1.144
7270.000	1.197	1.152	1.147
7272.000	1.136	1.176	1.150
7274.000	1.149	1.187	1.147
7276.000	1.255	1.182	1.144
7278.000	1.196	1.197	1.140
7280.000	1.175	1.198	1.135
7282.000	1.209	1.170	1.128
7284.000	1.152	1.155	1.123
7286.000	1.120	1.126	1.119
7288.000	1.120	1.083	1.113
7290.000	1.029	1.059	1.111
7292.000	0.996	1.067	1.114
7294.000	1.029	1.079	1.115
7296.000	1.162	1.087	1.122

7298.000	1.178	1.100	1.132
7300.000	1.071	1.109	1.133
7302.000	1.063	1.097	1.133
7304.000	1.073	1.076	1.132
7306.000	1.100	1.070	1.127
7308.000	1.073	1.060	1.126
7310.000	1.043	1.047	1.130
7312.000	1.010	1.043	1.136
7314.000	1.010	1.071	1.146
7316.000	1.081	1.111	1.157
7318.000	1.211	1.171	1.162
7320.000	1.245	1.246	1.163
7322.000	1.308	1.286	1.165
7324.000	1.384	1.285	1.169
7326.000	1.283	1.265	1.172
7328.000	1.206	1.219	1.176
7330.000	1.145	1.167	1.182
7332.000	1.078	1.157	1.190
7334.000	1.122	1.170	1.199
7336.000	1.234	1.198	1.209
7338.000	1.274	1.234	1.217
7340.000	1.282	1.242	1.221
7342.000	1.258	1.232	1.218
7344.000	1.164	1.225	1.216
7346.000	1.182	1.199	1.216
7348.000	1.237	1.177	1.216
7350.000	1.157	1.179	1.219
7352.000	1.144	1.192	1.225
7354.000	1.174	1.199	1.239
7356.000	1.247	1.223	1.255
7358.000	1.275	1.245	1.267
7360.000	1.276	1.253	1.269
7362.000	1.255	1.236	1.270
7364.000	1.211	1.210	1.271
7366.000	1.165	1.197	1.271
7368.000	1.145	1.205	1.274

7370.000	1.207	1.241	1.276
7372.000	1.296	1.278	1.274
7374.000	1.391	1.319	1.276
7376.000	1.351	1.378	1.279
7378.000	1.349	1.416	1.280
7380.000	1.504	1.419	1.283
7382.000	1.485	1.406	1.286
7384.000	1.407	1.397	1.286
7386.000	1.286	1.359	1.284
7388.000	1.305	1.312	1.284
7390.000	1.309	1.280	1.286
7392.000	1.255	1.268	1.289
7394.000	1.244	1.245	1.291
7396.000	1.225	1.226	1.290
7398.000	1.192	1.218	1.284
7400.000	1.216	1.205	1.280
7402.000	1.214	1.225	1.278
7404.000	1.180	1.257	1.270
7406.000	1.321	1.269	1.260
7408.000	1.352	1.271	1.254
7410.000	1.278	1.276	1.257
7412.000	1.224	1.256	1.262
7414.000	1.208	1.230	1.268
7416.000	1.220	1.223	1.277
7418.000	1.220	1.233	1.287
7420.000	1.245	1.237	1.298
7422.000	1.274	1.245	1.306
7424.000	1.226	1.263	1.320
7426.000	1.259	1.271	1.336
7428.000	1.314	1.267	1.348
7430.000	1.280	1.274	1.352
7432.000	1.256	1.292	1.355
7434.000	1.261	1.314	1.363
7436.000	1.349	1.352	1.374
7438.000	1.422	1.394	1.383
7440.000	1.470	1.444	1.385

7442.000	1.470	1.475	1.407
7444.000	1.509	1.469	1.428
7446.000	1.502	1.487	1.435
7448.000	1.394	1.517	1.439
7450.000	1.559	1.511	1.441
7452.000	1.622	1.493	1.445
7454.000	1.479	1.498	1.454
7456.000	1.413	1.484	1.462
7458.000	1.415	1.460	1.468
7460.000	1.490	1.448	1.469
7462.000	1.504	1.421	1.465
7464.000	1.417	1.493	1.459
7466.000	1.280	1.550	1.463
7468.000	1.776	1.538	1.459
7470.000	1.771	1.517	1.448
7472.000	1.444	1.526	1.439
7474.000	1.315	1.452	1.427
7476.000	1.324	1.397	1.415
7478.000	1.407	1.402	1.410
7480.000	1.495	1.422	1.406
7482.000	1.471	1.432	1.404
7484.000	1.411	1.411	1.401
7486.000	1.377	1.376	1.392
7488.000	1.300	1.397	1.384
7490.000	1.322	1.396	1.380
7492.000	1.575	1.367	1.358
7494.000	1.405	1.342	1.337
7496.000	1.236	1.328	1.327
7498.000	1.174	1.277	1.319
7500.000	1.253	1.268	1.315
7502.000	1.319	1.285	1.312
7504.000	1.360	1.321	1.301
7506.000	1.319	1.356	1.300
7508.000	1.352	1.347	1.304
7510.000	1.428	1.315	1.297
7512.000	1.277	1.287	1.296

7514.000	1.199	1.265	1.295
7516.000	1.180	1.228	1.286
7518.000	1.242	1.212	1.276
7520.000	1.241	1.192	1.273
7522.000	1.197	1.203	1.278
7524.000	1.101	1.221	1.278
7526.000	1.235	1.216	1.273
7528.000	1.333	1.266	1.267
7530.000	1.216	1.347	1.273
7532.000	1.447	1.343	1.275
7534.000	1.505	1.328	1.268
7536.000	1.216	1.348	1.266
7538.000	1.258	1.329	1.266
7540.000	1.313	1.259	1.267
7542.000	1.354	1.247	1.263
7544.000	1.155	1.253	1.267
7546.000	1.157	1.241	1.277
7548.000	1.286	1.211	1.297
7550.000	1.252	1.222	1.305
7552.000	1.204	1.286	1.305
7554.000	1.214	1.309	1.310
7556.000	1.475	1.310	1.310
7558.000	1.401	1.310	1.307
7560.000	1.256	1.310	1.315
7562.000	1.207	1.255	1.319
7564.000	1.212	1.206	1.320
7566.000	1.201	1.218	1.316
7568.000	1.153	1.271	1.313
7570.000	1.318	1.345	1.311
7572.000	1.470	1.391	1.304
7574.000	1.585	1.430	1.296
7576.000	1.427	1.434	1.295
7578.000	1.348	1.427	1.296
7580.000	1.342	1.399	1.290
7582.000	1.431	1.397	1.285
7584.000	1.446	1.398	1.286

7586.000	1.416	1.395	1.288
7588.000	1.354	1.361	1.287
7590.000	1.329	1.288	1.288
7592.000	1.261	1.227	1.290
7594.000	1.082	1.179	1.280
7596.000	1.109	1.123	1.267
7598.000	1.113	1.104	1.252
7600.000	1.051	1.138	1.239
7602.000	1.165	1.178	1.234
7604.000	1.253	1.215	1.229
7606.000	1.309	1.261	1.218
7608.000	1.295	1.279	1.211
7610.000	1.281	1.266	1.202
7612.000	1.257	1.247	1.189
7614.000	1.187	1.231	1.176
7616.000	1.217	1.185	1.166
7618.000	1.211	1.166	1.167
7620.000	1.052	1.170	1.179
7622.000	1.161	1.147	1.190
7624.000	1.207	1.146	1.202
7626.000	1.103	1.180	1.205
7628.000	1.208	1.182	1.199
7630.000	1.223	1.194	1.187
7632.000	1.168	1.210	1.174
7634.000	1.265	1.175	1.165
7636.000	1.184	1.132	1.159
7638.000	1.034	1.099	1.156
7640.000	1.007	1.067	1.154
7642.000	1.005	1.111	1.150
7644.000	1.104	1.186	1.154
7646.000	1.403	1.253	1.162
7648.000	1.410	1.300	1.167
7650.000	1.345	1.298	1.174
7652.000	1.241	1.219	1.177
7654.000	1.095	1.131	1.197
7656.000	1.003	1.074	1.215

7658.000	0.970	1.047	1.212
7660.000	1.061	1.053	1.212
7662.000	1.104	1.085	1.219
7664.000	1.128	1.114	1.224
7666.000	1.163	1.131	1.225
7668.000	1.114	1.181	1.233
7670.000	1.146	1.221	1.238
7672.000	1.355	1.245	1.247
7674.000	1.325	1.277	1.268
7676.000	1.283	1.396	1.299
7678.000	1.276	1.446	1.339
7680.000	1.743	1.419	1.358
7682.000	1.605	1.402	1.370
7684.000	1.191	1.385	1.379
7686.000	1.198	1.265	1.386
7688.000	1.190	1.149	1.395
7690.000	1.143	1.172	1.405
7692.000	1.024	1.239	1.417
7694.000	1.305	1.328	1.429
7696.000	1.534	1.471	1.436
7698.000	1.633	1.674	1.450
7700.000	1.857	1.829	1.455
7702.000	2.040	1.816	1.464
7704.000	2.079	1.746	1.482
7706.000	1.470	1.629	1.581
7708.000	1.285	1.477	1.790
7710.000	1.272	1.334	1.939
7712.000	1.279	1.323	1.827
7714.000	1.364	1.348	1.727
7716.000	1.417	1.382	1.642
7718.000	1.410	1.435	1.555
7720.000	1.438	1.493	1.449
7722.000	1.546	1.494	1.324
7724.000	1.657	1.512	1.105
7726.000	1.419	1.663	0.632
7728.000	1.499	2.172	0.455

7730.000	2.192	3.122	0.505
7732.000	4.094	3.824	0.560
7734.000	6.404	3.200	0.592
7736.000	4.930	2.490	0.612
7738.000	-1.619	1.453	0.629
7740.000	-1.360	-0.004	0.665
7742.000	-1.089	-1.214	0.702
7744.000	-0.885	-1.187	0.731
7746.000	-1.116	-1.640	0.749
7748.000	-1.485	-3.376	0.760
7750.000	-3.624	-3.672	0.779
7752.000	-9.772	-2.905	0.793
7754.000	-2.363	-2.071	0.779
7756.000	2.720	-0.934	0.686
7758.000	2.681	1.373	0.499
7760.000	2.064	2.204	0.364
7762.000	1.765	2.128	0.503
7764.000	1.791	2.058	0.639
7766.000	2.339	2.076	0.764
7768.000	2.331	2.122	0.874
7770.000	2.155	2.149	0.987
7772.000	1.993	2.059	1.112
7774.000	1.928	1.967	1.319
7776.000	1.889	1.902	1.776
7778.000	1.867	1.860	1.943
7780.000	1.832	1.816	1.904
7782.000	1.783	1.753	1.876
7784.000	1.708	1.748	1.884
7786.000	1.574	1.792	1.915
7788.000	1.845	1.842	1.936
7790.000	2.052	1.871	1.941
7792.000	2.030	1.901	1.956
7794.000	1.857	1.858	1.977
7796.000	1.724	1.756	1.994
7798.000	1.627	1.685	2.009
7800.000	1.543	1.674	2.026

7802.000	1.675	1.679	2.036
7804.000	1.802	1.748	2.041
7806.000	1.746	1.893	2.043
7808.000	1.975	2.069	2.050
7810.000	2.268	2.169	2.058
7812.000	2.553	2.310	2.052
7814.000	2.305	2.458	2.035
7816.000	2.451	2.539	2.018
7818.000	2.711	2.516	2.006
7820.000	2.676	2.512	1.999
7822.000	2.435	2.486	1.994
7824.000	2.285	2.369	1.992
7826.000	2.320	2.225	1.987
7828.000	2.129	2.105	1.978
7830.000	1.958	2.023	1.972
7832.000	1.836	1.915	1.966
7834.000	1.872	1.826	1.960
7836.000	1.782	1.761	1.935
7838.000	1.682	1.713	1.916
7840.000	1.633	1.653	1.891
7842.000	1.596	1.607	1.850
7844.000	1.572	1.568	1.808
7846.000	1.552	1.543	1.779
7848.000	1.488	1.533	1.761
7850.000	1.506	1.532	1.736
7852.000	1.547	1.543	1.717
7854.000	1.568	1.608	1.706
7856.000	1.608	1.733	1.699
7858.000	1.811	1.806	1.685
7860.000	2.131	1.862	1.673
7862.000	1.911	1.905	1.668
7864.000	1.850	1.878	1.669
7866.000	1.822	1.779	1.670
7868.000	1.679	1.736	1.667
7870.000	1.635	1.735	1.667
7872.000	1.695	1.709	1.670

7874.000	1.842	1.705	1.674
7876.000	1.692	1.713	1.680
7878.000	1.659	1.706	1.685
7880.000	1.677	1.643	1.692
7882.000	1.662	1.600	1.694
7884.000	1.528	1.579	1.679
7886.000	1.474	1.577	1.673
7888.000	1.554	1.568	1.667
7890.000	1.668	1.564	1.660
7892.000	1.615	1.580	1.654
7894.000	1.510	1.580	1.647
7896.000	1.553	1.566	1.634
7898.000	1.554	1.585	1.615
7900.000	1.599	1.621	1.601
7902.000	1.709	1.665	1.588
7904.000	1.688	1.727	1.573
7906.000	1.775	1.759	1.563
7908.000	1.865	1.768	1.557
7910.000	1.758	1.774	1.553
7912.000	1.752	1.744	1.551
7914.000	1.720	1.678	1.549
7916.000	1.627	1.617	1.549
7918.000	1.534	1.545	1.553
7920.000	1.454	1.470	1.556
7922.000	1.390	1.415	1.559
7924.000	1.347	1.376	1.556
7926.000	1.352	1.344	1.546
7928.000	1.338	1.349	1.539
7930.000	1.296	1.357	1.529
7932.000	1.410	1.359	1.515
7934.000	1.389	1.395	1.502
7936.000	1.360	1.457	1.488
7938.000	1.519	1.501	1.477
7940.000	1.608	1.542	1.474
7942.000	1.630	1.599	1.474
7944.000	1.594	1.616	1.475

7946.000	1.644	1.601	1.477
7948.000	1.606	1.568	1.476
7950.000	1.531	1.549	1.477
7952.000	1.467	1.526	1.480
7954.000	1.499	1.511	1.483
7956.000	1.527	1.492	1.482
7958.000	1.530	1.479	1.484
7960.000	1.436	1.467	1.488
7962.000	1.405	1.470	1.477
7964.000	1.436	1.470	1.463
7966.000	1.544	1.482	1.451
7968.000	1.530	1.489	1.440
7970.000	1.496	1.464	1.428
7972.000	1.439	1.430	1.419
7974.000	1.310	1.409	1.413
7976.000	1.375	1.382	1.404
7978.000	1.425	1.373	1.396
7980.000	1.360	1.400	1.388
7982.000	1.396	1.414	1.381
7984.000	1.445	1.378	1.376
7986.000	1.446	1.360	1.375
7988.000	1.243	1.344	1.373
7990.000	1.270	1.321	1.363
7992.000	1.316	1.298	1.353
7994.000	1.330	1.326	1.347
7996.000	1.330	1.351	1.343
7998.000	1.384	1.335	1.344
8000.000	1.394	1.327	1.343
8002.000	1.235	1.328	1.340
8004.000	1.292	1.321	1.338
8006.000	1.338	1.307	1.335
8008.000	1.347	1.335	1.333
8010.000	1.325	1.353	1.332
8012.000	1.375	1.342	1.334
8014.000	1.382	1.333	1.340
8016.000	1.281	1.334	1.342

8018.000	1.302	1.330	1.339
8020.000	1.332	1.321	1.338
8022.000	1.355	1.334	1.336
8024.000	1.333	1.342	1.336
8026.000	1.348	1.338	1.342
8028.000	1.343	1.332	1.344
8030.000	1.311	1.345	1.345
8032.000	1.326	1.359	1.347
8034.000	1.397	1.350	1.350
8036.000	1.419	1.369	1.349
8038.000	1.296	1.378	1.349
8040.000	1.407	1.348	1.352
8042.000	1.369	1.324	1.353
8044.000	1.250	1.334	1.349
8046.000	1.301	1.329	1.341
8048.000	1.346	1.334	1.332
8050.000	1.380	1.354	1.324
8052.000	1.397	1.367	1.317
8054.000	1.346	1.377	1.312
8056.000	1.365	1.379	1.305
8058.000	1.398	1.372	1.298
8060.000	1.390	1.376	1.313
8062.000	1.363	1.377	1.359
8064.000	1.362	1.363	1.389
8066.000	1.372	1.330	1.429
8068.000	1.328	1.286	1.477
8070.000	1.225	1.236	1.520
8072.000	1.144	1.193	1.613
8074.000	1.113	1.163	1.680
8076.000	1.157	1.152	1.706
8078.000	1.175	1.154	1.708
8080.000	1.173	1.176	1.701
8082.000	1.151	1.303	1.690
8084.000	1.226	1.557	1.677
8086.000	1.789	1.752	1.662
8088.000	2.447	1.997	1.649

8090.000	2.148	2.241	1.635
8092.000	2.376	2.359	1.623
8094.000	2.447	2.604	1.617
8096.000	2.379	2.788	1.617
8098.000	3.668	2.719	1.620
8100.000	3.071	2.508	1.621
8102.000	2.028	2.272	1.622
8104.000	1.393	1.761	1.623
8106.000	1.200	1.361	1.626
8108.000	1.112	1.155	1.624
8110.000	1.071	1.081	1.598
8112.000	0.998	1.047	1.543
8114.000	1.023	1.030	1.499
8116.000	1.032	1.032	1.450
8118.000	1.028	1.061	1.396
8120.000	1.080	1.093	1.347
8122.000	1.143	1.125	1.249
8124.000	1.183	1.155	1.174
8126.000	1.189	1.183	1.138
8128.000	1.182	1.200	1.128
8130.000	1.216	1.198	1.132
8132.000	1.230	1.188	1.131
8134.000	1.171	1.167	1.132
8136.000	1.141	1.131	1.136
8138.000	1.075	1.115	1.140
8140.000	1.038	1.102	1.143
8142.000	1.148	1.102	1.145
8144.000	1.107	1.132	1.146
8146.000	1.139	1.165	1.144
8148.000	1.226	1.160	1.141
8150.000	1.204	1.168	1.140
8152.000	1.123	1.196	1.140
8154.000	1.146	1.171	1.137
8156.000	1.283	1.148	1.129
8158.000	1.099	1.146	1.123
8160.000	1.088	1.137	1.118

8162.000	1.114	1.102	1.119
8164.000	1.100	1.102	1.119
8166.000	1.108	1.103	1.113
8168.000	1.100	1.100	1.109
8170.000	1.092	1.103	1.100
8172.000	1.100	1.111	1.091
8174.000	1.114	1.128	1.083
8176.000	1.150	1.138	1.077
8178.000	1.181	1.127	1.069
8180.000	1.144	1.104	1.056
8182.000	1.043	1.080	1.052
8184.000	1.002	1.062	1.048
8186.000	1.030	1.041	1.040
8188.000	1.089	1.033	1.033
8190.000	1.040	1.033	1.026
8192.000	1.003	1.012	1.020
8194.000	1.002	0.991	1.012
8196.000	0.928	0.986	1.003
8198.000	0.983	0.978	0.996
8200.000	1.016	0.966	0.985
8202.000	0.959	0.976	0.973
8204.000	0.944	0.980	0.963
8206.000	0.976	0.972	0.957
8208.000	1.002	0.963	0.954
8210.000	0.980	0.958	0.949
8212.000	0.913	0.952	0.944
8214.000	0.919	0.940	0.943
8216.000	0.948	0.921	0.941
8218.000	0.940	0.917	0.937
8220.000	0.883	0.919	0.934
8222.000	0.896	0.907	0.930
8224.000	0.929	0.894	0.922
8226.000	0.884	0.895	0.920
8228.000	0.880	0.895	0.921
8230.000	0.884	0.894	0.922
8232.000	0.896	0.899	0.918

8234.000	0.926	0.914	0.915
8236.000	0.911	0.941	0.916
8238.000	0.950	0.953	0.919
8240.000	1.020	0.946	0.934
8242.000	0.960	0.937	0.950
8244.000	0.888	0.922	0.961
8246.000	0.864	0.879	0.965
8248.000	0.880	0.869	0.963
8250.000	0.805	0.890	0.961
8252.000	0.909	0.913	0.960
8254.000	0.990	0.920	0.959
8256.000	0.983	0.942	0.960
8258.000	0.915	0.946	0.959
8260.000	0.911	0.946	0.957
8262.000	0.933	1.016	0.956
8264.000	0.989	1.097	0.950
8266.000	1.332	1.148	0.946
8268.000	1.320	1.160	0.947
8270.000	1.167	1.139	0.952
8272.000	0.993	1.041	0.960
8274.000	0.881	0.946	0.970
8276.000	0.845	0.883	0.974
8278.000	0.843	0.872	0.980
8280.000	0.854	0.874	0.989
8282.000	0.936	0.876	0.993
8284.000	0.891	0.893	0.989
8286.000	0.858	0.898	0.990
8288.000	0.928	0.885	0.986
8290.000	0.876	0.888	0.967
8292.000	0.870	0.913	0.949
8294.000	0.907	0.943	0.939
8296.000	0.982	0.978	0.934
8298.000	1.080	1.009	0.935
8300.000	1.048	1.054	0.937
8302.000	1.027	1.099	0.937
8304.000	1.131	1.083	0.935

8306.000	1.206	1.040	0.929
8308.000	1.004	1.025	0.926
8310.000	0.832	0.976	0.928
8312.000	0.949	0.906	0.924
8314.000	0.889	0.877	0.924
8316.000	0.855	0.895	0.925
8318.000	0.861	0.881	0.922
8320.000	0.919	0.881	0.916
8322.000	0.882	0.890	0.906
8324.000	0.891	0.889	0.896
8326.000	0.897	0.867	0.887
8328.000	0.859	0.847	0.873
8330.000	0.806	0.832	0.857
8332.000	0.785	0.832	0.849
8334.000	0.813	0.826	0.847
8336.000	0.898	0.841	0.842
8338.000	0.830	0.865	0.841
8340.000	0.879	0.867	0.841
8342.000	0.906	0.854	0.837
8344.000	0.821	0.853	0.832
8346.000	0.836	0.839	0.831
8348.000	0.824	0.817	0.830
8350.000	0.807	0.808	0.827
8352.000	0.798	0.801	0.825
8354.000	0.776	0.797	0.826
8356.000	0.798	0.793	0.831
8358.000	0.807	0.799	0.835
8360.000	0.784	0.818	0.836
8362.000	0.830	0.827	0.838
8364.000	0.869	0.819	0.835
8366.000	0.846	0.822	0.828
8368.000	0.765	0.826	0.823
8370.000	0.802	0.824	0.818
8372.000	0.846	0.821	0.812
8374.000	0.859	0.828	0.808
8376.000	0.834	0.837	0.804

8378.000	0.796	0.846	0.804
8380.000	0.846	0.858	0.803
8382.000	0.895	0.876	0.802
8384.000	0.920	0.891	0.800
8386.000	0.920	0.883	0.799
8388.000	0.874	0.851	0.795
8390.000	0.805	0.809	0.789
8392.000	0.735	0.763	0.785
8394.000	0.712	0.727	0.783
8396.000	0.689	0.708	0.781
8398.000	0.693	0.701	0.781
8400.000	0.708	0.710	0.787
8402.000	0.700	0.728	0.791
8404.000	0.758	0.744	0.791
8406.000	0.780	0.752	0.787
8408.000	0.773	0.770	0.777
8410.000	0.750	0.772	0.770
8412.000	0.788	0.760	0.764
8414.000	0.769	0.738	0.761
8416.000	0.718	0.737	0.761
8418.000	0.664	0.738	0.765
8420.000	0.748	0.757	0.769
8422.000	0.792	0.808	0.772
8424.000	0.864	0.854	0.774
8426.000	0.972	0.876	0.772
8428.000	0.896	0.874	0.772
8430.000	0.856	0.839	0.770
8432.000	0.782	0.793	0.767
8434.000	0.689	0.759	0.764
8436.000	0.742	0.731	0.761
8438.000	0.724	0.724	0.760
8440.000	0.718	0.749	0.762
8442.000	0.746	0.755	0.763
8444.000	0.815	0.764	0.732
8446.000	0.771	0.772	0.721
8448.000	0.769	0.755	0.722

8450.000	0.760	0.744	0.715
8452.000	0.661	0.736	0.712
8454.000	0.758	0.719	0.710
8456.000	0.733	0.705	0.712
8458.000	0.683	0.714	0.718
8460.000	0.691	0.712	0.721
8462.000	0.706	0.720	0.724
8464.000	0.745	0.719	0.725
8466.000	0.773	0.574	0.723
8468.000	0.680	0.540	0.717
8470.000	-0.032	0.566	0.715
8472.000	0.535	0.574	0.713
8474.000	0.875	0.602	0.713
8476.000	0.812	0.768	0.717
8478.000	0.819	0.825	0.718
8480.000	0.799	0.818	0.719
8482.000	0.818	0.820	0.721
8484.000	0.843	0.815	0.721
8486.000	0.820	0.805	0.719
8488.000	0.797	0.780	0.718
8490.000	0.747	0.745	0.714
8492.000	0.695	0.725	0.714
8494.000	0.665	0.711	0.743
8496.000	0.719	0.710	0.749
8498.000	0.730	0.724	0.743
8500.000	0.741	0.748	0.741
8502.000	0.764	0.759	0.736
8504.000	0.787	0.759	0.734
8506.000	0.769	0.749	0.734
8508.000	0.733	0.728	0.732
8510.000	0.691	0.712	0.728
8512.000	0.660	0.696	0.723
8514.000	0.706	0.683	0.721
8516.000	0.688	0.683	0.723
8518.000	0.669	0.689	0.725
8520.000	0.690	0.694	0.724

8522.000	0.690	0.705	0.720
8524.000	0.733	0.713	0.719
8526.000	0.741	0.721	0.717
8528.000	0.713	0.747	0.713
8530.000	0.729	0.760	0.710
8532.000	0.821	0.755	0.710
8534.000	0.799	0.747	0.710
8536.000	0.715	0.745	0.711
8538.000	0.671	0.727	0.712
8540.000	0.717	0.711	0.714
8542.000	0.730	0.706	0.717
8544.000	0.720	0.700	0.720
8546.000	0.692	0.695	0.723
8548.000	0.638	0.694	0.723
8550.000	0.696	0.690	0.721
8552.000	0.721	0.688	0.721
8554.000	0.704	0.705	0.721
8556.000	0.681	0.707	0.717
8558.000	0.725	0.700	0.715
8560.000	0.703	0.703	0.716
8562.000	0.685	0.714	0.720
8564.000	0.722	0.721	0.724
8566.000	0.737	0.734	0.725
8568.000	0.759	0.748	0.728
8570.000	0.766	0.750	0.733
8572.000	0.755	0.742	0.739
8574.000	0.731	0.732	0.743
8576.000	0.701	0.722	0.746
8578.000	0.705	0.716	0.747
8580.000	0.720	0.720	0.748
8582.000	0.722	0.727	0.749
8584.000	0.753	0.740	0.754
8586.000	0.735	0.763	0.758
8588.000	0.771	0.767	0.760
8590.000	0.831	0.776	0.762
8592.000	0.746	0.791	0.762

8594.000	0.798	0.797	0.760
8596.000	0.810	0.790	0.758
8598.000	0.800	0.798	0.758
8600.000	0.799	0.783	0.761
8602.000	0.783	0.763	0.763
8604.000	0.724	0.755	0.767
8606.000	0.710	0.762	0.771
8608.000	0.758	0.760	0.773
8610.000	0.836	0.770	0.774
8612.000	0.773	0.785	0.774
8614.000	0.771	0.788	0.771
8616.000	0.787	0.763	0.771
8618.000	0.773	0.748	0.769
8620.000	0.711	0.740	0.766
8622.000	0.700	0.737	0.766
8624.000	0.730	0.736	0.765
8626.000	0.770	0.757	0.766
8628.000	0.770	0.783	0.769
8630.000	0.816	0.798	0.771
8632.000	0.830	0.794	0.771
8634.000	0.803	0.792	0.770
8636.000	0.751	0.781	0.772
8638.000	0.759	0.765	0.772
8640.000	0.760	0.752	0.769
8642.000	0.751	0.750	0.767
8644.000	0.740	0.758	0.769
8646.000	0.742	0.763	0.775
8648.000	0.797	0.772	0.779
8650.000	0.786	0.787	0.780
8652.000	0.793	0.787	0.779
8654.000	0.814	0.783	0.775
8656.000	0.744	0.788	0.772
8658.000	0.777	0.792	0.770
8660.000	0.811	0.784	0.771
8662.000	0.814	0.777	0.770
8664.000	0.772	0.764	0.769

8666.000	0.709	0.758	0.768
8668.000	0.713	0.764	0.769
8670.000	0.779	0.775	0.771
8672.000	0.845	0.791	0.771
8674.000	0.829	0.796	0.772
8676.000	0.789	0.786	0.772
8678.000	0.738	0.769	0.771
8680.000	0.729	0.753	0.772
8682.000	0.758	0.748	0.772
8684.000	0.750	0.750	0.770
8686.000	0.765	0.750	0.771
8688.000	0.748	0.743	0.771
8690.000	0.727	0.746	0.774
8692.000	0.726	0.751	0.776
8694.000	0.765	0.762	0.776
8696.000	0.791	0.777	0.772
8698.000	0.800	0.793	0.768
8700.000	0.803	0.795	0.767
8702.000	0.807	0.792	0.768
8704.000	0.776	0.787	0.770
8706.000	0.776	0.781	0.770
8708.000	0.771	0.786	0.773
8710.000	0.776	0.785	0.774
8712.000	0.829	0.785	0.775
8714.000	0.773	0.787	0.775
8716.000	0.778	0.784	0.777
8718.000	0.778	0.770	0.775
8720.000	0.760	0.761	0.772
8722.000	0.760	0.756	0.772
8724.000	0.729	0.756	0.773
8726.000	0.754	0.758	0.772
8728.000	0.776	0.758	0.774
8730.000	0.769	0.776	0.775
8732.000	0.761	0.787	0.774
8734.000	0.819	0.784	0.771
8736.000	0.808	0.777	0.770

8738.000	0.764	0.776	0.771
8740.000	0.733	0.756	0.771
8742.000	0.757	0.740	0.768
8744.000	0.718	0.744	0.766
8746.000	0.730	0.765	0.768
8748.000	0.783	0.771	0.769
8750.000	0.835	0.793	0.768
8752.000	0.787	0.807	0.768
8754.000	0.828	0.798	0.769
8756.000	0.802	0.772	0.768
8758.000	0.736	0.774	0.767
8760.000	0.707	0.770	0.766
8762.000	0.795	0.764	0.766
8764.000	0.810	0.759	0.766
8766.000	0.769	0.759	0.766
8768.000	0.715	0.764	0.770
8770.000	0.707	0.749	0.773
8772.000	0.819	0.741	0.771
8774.000	0.736	0.756	0.768
8776.000	0.729	0.770	0.765
8778.000	0.788	0.754	0.763
8780.000	0.778	0.765	0.761
8782.000	0.738	0.779	0.761
8784.000	0.794	0.772	0.765
8786.000	0.799	0.763	0.763
8788.000	0.753	0.767	0.762
8790.000	0.731	0.771	0.765
8792.000	0.755	0.772	0.771
8794.000	0.818	0.770	0.776
8796.000	0.802	0.773	0.778
8798.000	0.742	0.769	0.782
8800.000	0.749	0.760	0.785
8802.000	0.733	0.751	0.785
8804.000	0.775	0.748	0.785
8806.000	0.755	0.757	0.788
8808.000	0.725	0.762	0.789

8810.000	0.798	0.764	0.790
8812.000	0.757	0.781	0.793
8814.000	0.783	0.810	0.797
8816.000	0.841	0.815	0.803
8818.000	0.872	0.838	0.805
8820.000	0.824	0.848	0.806
8822.000	0.872	0.841	0.811
8824.000	0.833	0.826	0.816
8826.000	0.805	0.818	0.820
8828.000	0.794	0.806	0.823
8830.000	0.783	0.804	0.827
8832.000	0.816	0.806	0.833
8834.000	0.820	0.810	0.837
8836.000	0.815	0.821	0.844
8838.000	0.816	0.839	0.849
8840.000	0.839	0.848	0.846
8842.000	0.903	0.853	0.843
8844.000	0.867	0.860	0.847
8846.000	0.840	0.868	0.849
8848.000	0.850	0.854	0.852
8850.000	0.882	0.850	0.858
8852.000	0.833	0.853	0.867
8854.000	0.845	0.858	0.876
8856.000	0.856	0.863	0.882
8858.000	0.875	0.882	0.884
8860.000	0.905	0.893	0.885
8862.000	0.930	0.878	0.889
8864.000	0.898	0.862	0.893
8866.000	0.782	0.866	0.895
8868.000	0.796	0.865	0.899
8870.000	0.922	0.863	0.904
8872.000	0.929	0.898	0.907
8874.000	0.888	0.943	0.908
8876.000	0.958	0.962	0.910
8878.000	1.018	0.967	0.913
8880.000	1.019	0.967	0.917

8882.000	0.954	0.945	0.922
8884.000	0.889	0.921	0.927
8886.000	0.845	0.908	0.930
8888.000	0.896	0.908	0.931
8890.000	0.957	0.922	0.937
8892.000	0.951	0.943	0.944
8894.000	0.959	0.949	0.946
8896.000	0.952	0.939	0.945
8898.000	0.927	0.930	0.949
8900.000	0.906	0.922	0.952
8902.000	0.904	0.922	0.951
8904.000	0.920	0.936	0.950
8906.000	0.953	0.960	0.951
8908.000	0.998	0.980	0.956
8910.000	1.025	0.982	0.968
8912.000	1.004	0.975	0.976
8914.000	0.929	0.972	0.982
8916.000	0.921	0.958	0.988
8918.000	0.984	0.942	0.992
8920.000	0.953	0.952	0.993
8922.000	0.924	0.973	0.997
8924.000	0.979	0.976	1.004
8926.000	1.028	0.983	1.009
8928.000	0.999	0.995	1.014
8930.000	0.984	1.004	1.020
8932.000	0.984	1.024	1.022
8934.000	1.023	1.045	1.024
8936.000	1.128	1.069	1.025
8938.000	1.104	1.093	1.030
8940.000	1.107	1.100	1.034
8942.000	1.105	1.069	1.033
8944.000	1.055	1.057	1.034
8946.000	0.973	1.050	1.040
8948.000	1.046	1.036	1.046
8950.000	1.073	1.035	1.048
8952.000	1.032	1.060	1.049

8954.000	1.050	1.057	1.055
8956.000	1.099	1.058	1.055
8958.000	1.033	1.057	1.058
8960.000	1.074	1.058	1.059
8962.000	1.031	1.046	1.063
8964.000	1.051	1.028	1.069
8966.000	1.040	1.010	1.068
8968.000	0.946	1.017	1.065
8970.000	0.979	1.033	1.067
8972.000	1.068	1.042	1.065
8974.000	1.133	1.059	1.062
8976.000	1.084	1.088	1.064
8978.000	1.030	1.072	1.062
8980.000	1.125	1.065	1.058
8982.000	0.985	1.079	1.063
8984.000	1.102	1.114	1.073
8986.000	1.150	1.140	1.084
8988.000	1.207	1.158	1.086
8990.000	1.255	1.131	1.088
8992.000	1.076	1.106	1.091
8994.000	0.969	1.066	1.093
8996.000	1.025	1.014	1.091
8998.000	1.005	1.014	1.084
9000.000	0.996	1.023	1.082
9002.000	1.078	1.017	1.084
9004.000	1.012	1.049	1.079
9006.000	0.994	1.113	1.082
9008.000	1.166	1.157	1.084
9010.000	1.315	1.178	1.083
9012.000	1.300	1.196	1.086
9014.000	1.116	1.167	1.083
9016.000	1.083	1.109	1.086
9018.000	1.019	1.052	1.092
9020.000	1.029	1.024	1.096
9022.000	1.012	1.012	1.101
9024.000	0.975	1.025	1.107

9026.000	1.025	1.018	1.112
9028.000	1.083	1.030	1.120
9030.000	0.995	1.062	1.125
9032.000	1.072	1.086	1.122
9034.000	1.137	1.126	1.111
9036.000	1.142	1.160	1.102
9038.000	1.284	1.174	1.098
9040.000	1.167	1.172	1.096
9042.000	1.143	1.167	1.100
9044.000	1.124	1.137	1.105
9046.000	1.117	1.136	1.109
9048.000	1.136	1.147	1.113
9050.000	1.161	1.162	1.117
9052.000	1.195	1.167	1.121
9054.000	1.200	1.153	1.132
9056.000	1.142	1.129	1.144
9058.000	1.069	1.106	1.154
9060.000	1.040	1.070	1.160
9062.000	1.078	1.049	1.156
9064.000	1.020	1.058	1.155
9066.000	1.038	1.080	1.156
9068.000	1.113	1.087	1.160
9070.000	1.152	1.099	1.167
9072.000	1.112	1.118	1.174
9074.000	1.082	1.129	1.182
9076.000	1.132	1.154	1.183
9078.000	1.168	1.207	1.181
9080.000	1.276	1.268	1.180
9082.000	1.378	1.298	1.183
9084.000	1.386	1.300	1.192
9086.000	1.285	1.274	1.194
9088.000	1.176	1.232	1.201
9090.000	1.146	1.201	1.212
9092.000	1.167	1.205	1.220
9094.000	1.232	1.232	1.225
9096.000	1.302	1.272	1.234

9098.000	1.312	1.282	1.245
9100.000	1.346	1.266	1.254
9102.000	1.217	1.230	1.262
9104.000	1.153	1.197	1.266
9106.000	1.124	1.179	1.267
9108.000	1.143	1.163	1.271
9110.000	1.257	1.171	1.274
9112.000	1.140	1.207	1.275
9114.000	1.192	1.240	1.276
9116.000	1.301	1.244	1.277
9118.000	1.311	1.286	1.278
9120.000	1.279	1.318	1.149
9122.000	1.350	1.328	0.647
9124.000	1.350	1.341	0.564
9126.000	1.350	1.358	0.527
9128.000	1.376	1.369	0.500
9130.000	1.365	1.399	0.479
9132.000	1.404	1.398	0.464
9134.000	1.497	1.367	0.451
9136.000	1.346	1.328	0.449
9138.000	1.220	1.283	0.451
9140.000	1.172	1.238	0.446
9142.000	1.182	0.585	0.434
9144.000	1.267	-1.909	0.418
9146.000	-1.918	-2.290	0.397
9148.000	-11.249	-2.466	0.375
9150.000	-0.734	-2.627	0.354
9152.000	0.303	-2.121	0.331
9154.000	0.460	0.284	0.307
9156.000	0.616	0.616	0.283
9158.000	0.772	0.772	0.258
9160.000	0.929	0.929	0.240
9162.000	1.085	1.042	0.227
9164.000	1.242	1.088	0.217
9166.000	1.180	1.077	0.210
9168.000	1.004	1.028	0.201

9170.000	0.874	0.939	0.319
9172.000	0.838	0.865	0.807
9174.000	0.801	0.823	0.872
9176.000	0.809	0.803	0.900
9178.000	0.794	0.797	0.921
9180.000	0.771	0.810	0.938
9182.000	0.808	0.827	0.948
9184.000	0.870	0.848	0.964
9186.000	0.892	0.877	0.954
9188.000	0.901	0.917	0.819
9190.000	0.918	0.956	0.798
9192.000	1.007	0.983	0.800
9194.000	1.063	0.991	0.822
9196.000	1.029	0.989	0.858
9198.000	0.941	0.987	0.885
9200.000	0.904	0.973	0.887
9202.000	0.998	0.972	0.891
9204.000	0.992	0.988	0.900
9206.000	1.024	1.076	0.908
9208.000	1.024	1.040	0.916
9210.000	1.341	0.417	0.923
9212.000	0.819	0.340	0.931
9214.000	-2.125	0.348	0.939
9216.000	0.644	0.368	0.942
9218.000	1.059	0.548	0.941
9220.000	1.442	1.268	0.943
9222.000	1.718	1.314	0.947
9224.000	1.475	1.279	0.952
9226.000	0.878	1.190	0.955
9228.000	0.881	1.050	0.956
9230.000	1.000	0.967	0.953
9232.000	1.018	1.008	0.952
9234.000	1.059	1.051	0.940
9236.000	1.080	1.074	0.951
9238.000	1.098	1.084	1.080
9240.000	1.117	1.079	1.098

9242.000	1.067	1.080	1.097
9244.000	1.033	1.069	1.083
9246.000	1.085	1.053	1.069
9248.000	1.042	1.053	1.066
9250.000	1.040	1.051	1.081
9252.000	1.063	1.021	1.090
9254.000	1.024	1.014	1.095
9256.000	0.936	1.014	1.096
9258.000	1.005	1.018	1.088
9260.000	1.042	1.036	1.090
9262.000	1.083	1.067	1.093
9264.000	1.116	1.072	1.094
9266.000	1.088	1.082	1.096
9268.000	1.030	1.141	1.101
9270.000	1.093	1.199	1.108
9272.000	1.377	1.228	1.116
9274.000	1.406	1.247	1.132
9276.000	1.232	1.251	1.144
9278.000	1.128	1.183	1.156
9280.000	1.110	1.077	1.175
9282.000	1.036	1.055	1.206
9284.000	0.879	1.062	1.258
9286.000	1.120	1.071	1.332
9288.000	1.163	1.085	1.407
9290.000	1.155	1.143	1.434
9292.000	1.108	1.168	1.448
9294.000	1.167	1.183	1.453
9296.000	1.244	1.245	1.447
9298.000	1.242	1.292	1.438
9300.000	1.463	1.324	1.433
9302.000	1.342	1.359	1.434
9304.000	1.330	1.466	1.435
9306.000	1.421	1.644	1.442
9308.000	1.774	1.959	1.452
9310.000	2.355	2.293	1.453
9312.000	2.915	2.359	1.456

9314.000	3.001	2.282	1.457
9316.000	1.749	2.054	1.455
9318.000	1.389	1.718	1.452
9320.000	1.215	1.354	1.450
9322.000	1.235	1.224	1.446
9324.000	1.183	1.176	1.435
9326.000	1.096	1.164	1.427
9328.000	1.150	1.158	1.421
9330.000	1.154	1.144	1.413
9332.000	1.206	1.155	1.394
9334.000	1.113	1.171	1.353
9336.000	1.151	1.177	1.293
9338.000	1.230	1.150	1.228
9340.000	1.186	1.146	1.212
9342.000	1.070	1.155	1.210
9344.000	1.092	1.138	1.211
9346.000	1.198	1.137	1.207
9348.000	1.145	1.153	1.206
9350.000	1.179	1.167	1.211
9352.000	1.151	1.174	1.208
9354.000	1.162	1.205	1.210
9356.000	1.234	1.233	1.211
9358.000	1.300	1.289	1.214
9360.000	1.320	1.328	1.217
9362.000	1.428	1.354	1.221
9364.000	1.358	1.362	1.270
9366.000	1.366	1.342	1.369
9368.000	1.337	1.284	1.277
9370.000	1.220	1.247	1.148
9372.000	1.138	1.217	1.329
9374.000	1.175	1.164	1.407
9376.000	1.213	1.162	1.412
9378.000	1.075	1.180	1.413
9380.000	1.207	1.184	1.408
9382.000	1.228	1.185	1.400
9384.000	1.197	1.237	1.391

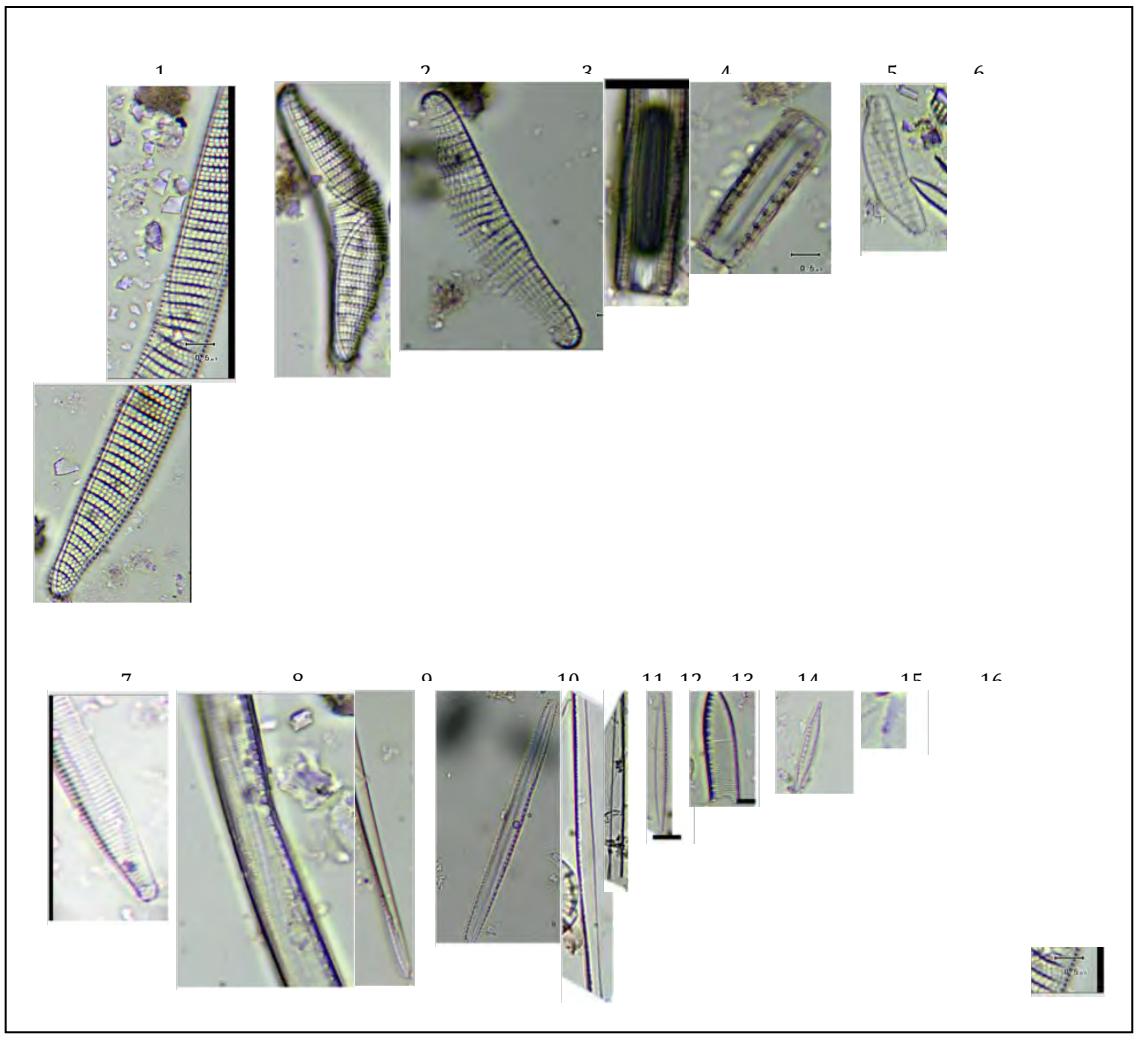
9386.000	1.218	1.475	1.375
9388.000	1.335	1.938	1.362
9390.000	2.397	1.458	1.346
9392.000	3.545	0.811	1.332
9394.000	-1.206	1.679	1.323
9396.000	-2.014	1.825	1.317
9398.000	5.673	1.368	1.310
9400.000	3.128	1.847	1.306
9402.000	1.258	2.474	1.309
9404.000	1.188	1.556	1.302
9406.000	1.123	1.154	1.294
9408.000	1.083	1.104	1.286
9410.000	1.117	1.072	1.280
9412.000	1.011	1.043	1.270
9414.000	1.027	1.022	1.217
9416.000	0.977	0.998	1.117
9418.000	0.979	0.994	1.208
9420.000	0.995	0.991	1.330
9422.000	0.992	1.016	1.143
9424.000	1.012	1.048	1.060
9426.000	1.100	1.057	1.048
9428.000	1.143	1.066	1.040
9430.000	1.037	1.063	1.036
9432.000	1.038	1.054	1.036
9434.000	0.997	1.044	1.036
9436.000	1.052	1.051	1.040
9438.000	1.095	1.053	1.044
9440.000	1.071	1.068	1.050
9442.000	1.050	1.064	1.052
9444.000	1.073	1.043	1.055
9446.000	1.029	1.042	1.060
9448.000	0.993	1.022	1.065
9450.000	1.063	1.003	1.066
9452.000	0.954	1.005	1.065
9454.000	0.976	1.022	1.069
9456.000	1.040	1.034	1.079

9458.000	1.079	1.064	1.088
9460.000	1.122	1.093	1.094
9462.000	1.103	1.111	1.101
9464.000	1.120	1.100	1.109
9466.000	1.129	1.094	1.118
9468.000	1.024	1.095	1.127
9470.000	1.092	1.095	1.139
9472.000	1.112	1.096	1.151
9474.000	1.120	1.114	1.162
9476.000	1.132	1.123	1.182
9478.000	1.114	1.161	1.198
9480.000	1.136	1.180	1.210
9482.000	1.304	1.192	1.230
9484.000	1.214	1.224	1.234
9486.000	1.193	1.252	1.232
9488.000	1.272	1.246	1.234
9490.000	1.274	1.265	1.241
9492.000	1.276	1.289	1.261
9494.000	1.307	1.295	1.273
9496.000	1.317	1.309	1.281
9498.000	1.299	1.343	1.300
9500.000	1.344	1.359	1.322
9502.000	1.449	1.364	1.342
9504.000	1.387	1.419	1.363
9506.000	1.340	1.395	1.380
9508.000	1.576	1.314	1.397
9510.000	1.223	1.273	1.426
9512.000	1.044	1.265	1.486
9514.000	1.182	1.251	1.520
9516.000	1.298	1.288	1.557
9518.000	1.509	1.342	1.590
9520.000	1.410	1.421	1.626
9522.000	1.311	1.498	1.661
9524.000	1.578	1.523	1.696
9526.000	1.681	1.571	1.732
9528.000	1.638	1.653	1.787

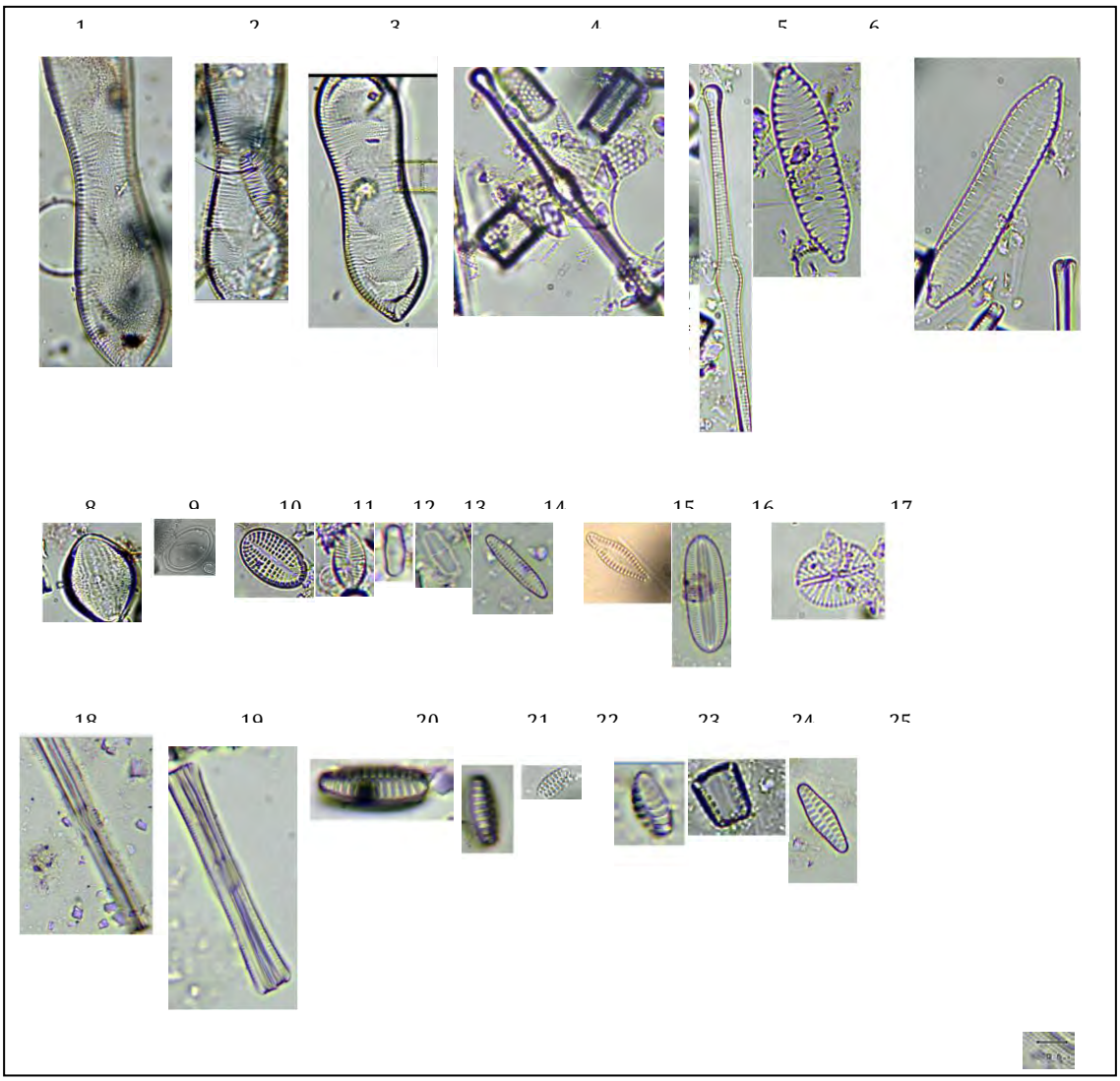
9530.000	1.646	1.669	1.890
9532.000	1.725	1.714	2.036
9534.000	1.657	1.940	2.191
9536.000	1.906	2.036	2.384
9538.000	2.766	2.131	2.518
9540.000	2.128	2.227	2.615
9542.000	2.199	2.292	2.685
9544.000	2.136	2.171	2.732
9546.000	2.228	2.190	2.785
9548.000	2.164	2.218	2.833
9550.000	2.223	2.342	2.881
9552.000	2.338	2.684	2.957
9554.000	2.760	3.295	3.050
9556.000	3.936	3.871	3.114
9558.000	5.218	4.574	3.169
9560.000	5.105	4.928	3.244
9562.000	5.851	4.885	3.272
9564.000	4.529	4.494	3.320
9566.000	3.723	3.989	3.346
9568.000	3.262	3.351	3.366
9570.000	2.580	2.999	3.405
9572.000	2.659	2.832	3.459
9574.000	2.770	2.886	3.500
9576.000	2.888	3.165	3.547
9578.000	3.532	3.297	3.592
9580.000	3.975	3.346	3.549
9582.000	3.317	3.529	3.453
9584.000	3.019	3.513	3.348
9586.000	3.801	3.385	3.454
9588.000	3.451	3.289	3.468
9590.000	3.336	3.215	3.458
9592.000	2.840	3.097	3.442
9594.000	2.650	3.107	3.423
9596.000	3.207	3.090	3.401
9598.000	3.503	3.225	3.381
9600.000	3.250	3.472	3.347

9602.000	3.515	3.402	3.275
9604.000	3.884	3.263	3.175
9606.000	2.856	3.110	3.110
9608.000	2.810	4.110	3.112
9610.000	2.485	4.309	
9612.000	8.515	4.431	
9614.000	4.879	4.442	
9616.000	3.466	4.367	
9618.000	2.868	3.086	
9620.000	2.110	2.561	
9622.000	2.109	2.275	
9624.000	2.254	2.048	
9626.000	2.034	1.921	
9628.000	1.733	1.841	
9630.000	1.476	2.005	
9632.000	1.705		
9634.000	3.074		

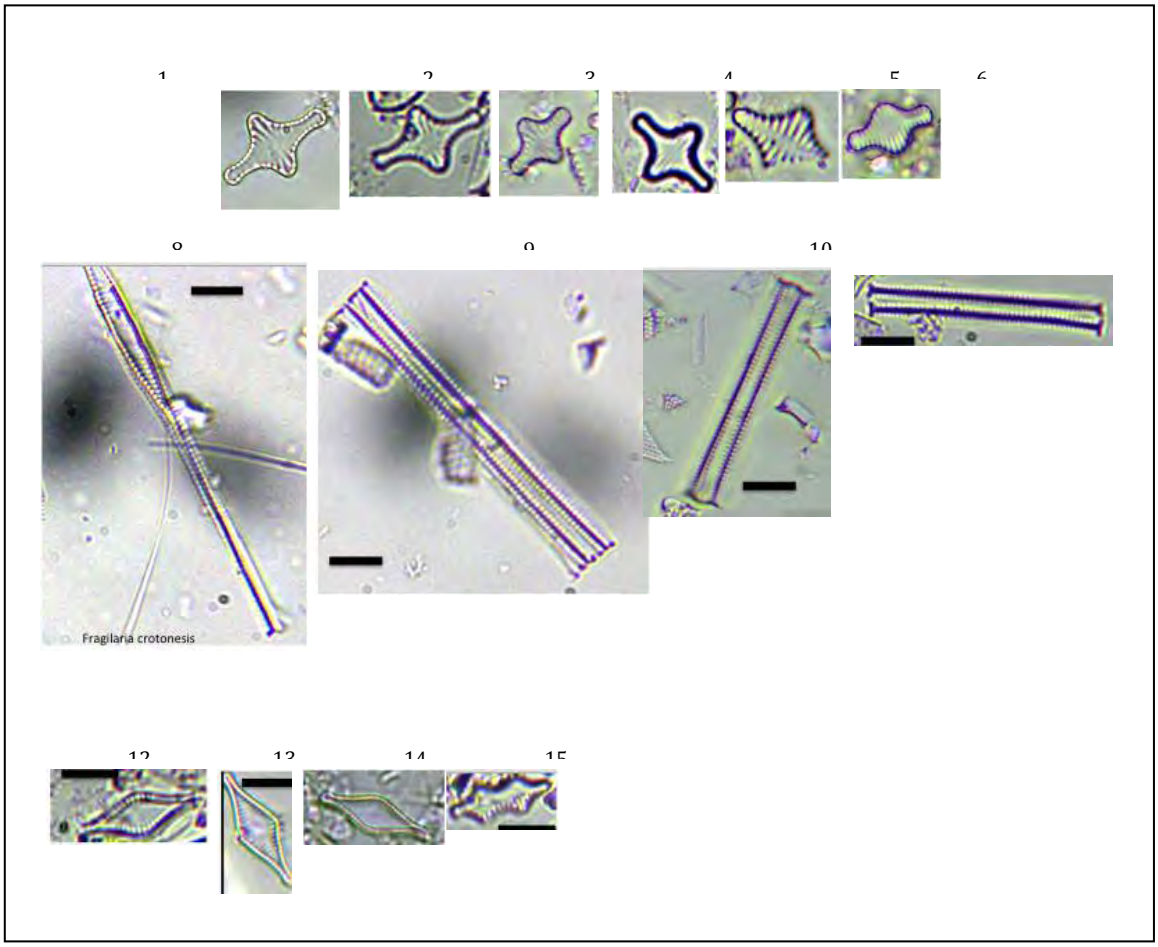
Appendix 2: Diatom Plates



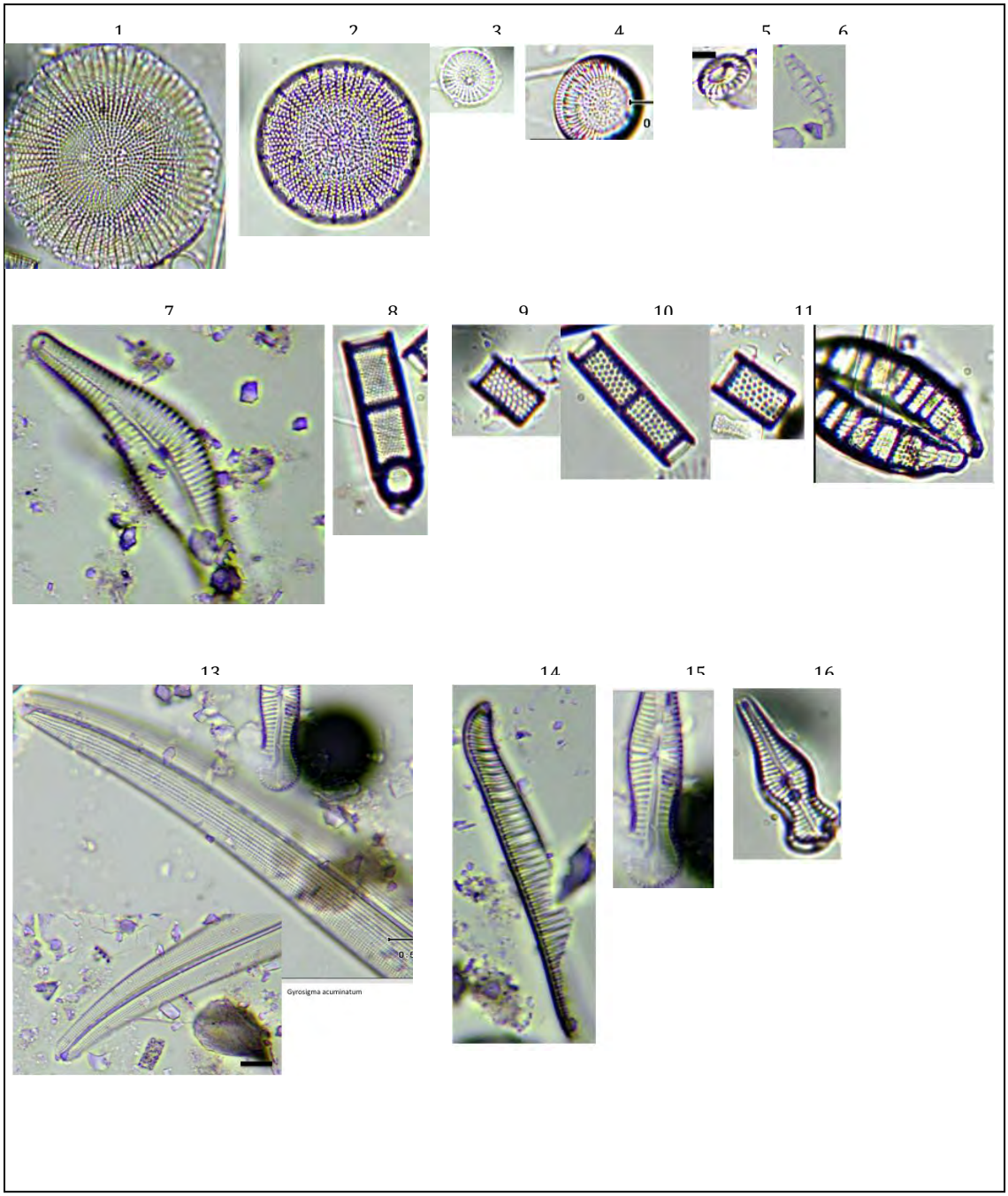
Epithemia adnata: 6, Epithemia turgida: 1-5, Nitzschia agnita: 15, Nitzschia amphibioides: 20-24, Nitzschia angustatula: 7, Nitzschia capitellata: 13, Nitzschia frustulum fonticola: 17-18, Nitzschia macilenta: 9 -12, Nitzschia normannii: 14, Nitzschia SPU: 8, 16, and Nitzschia valdecostata: 19



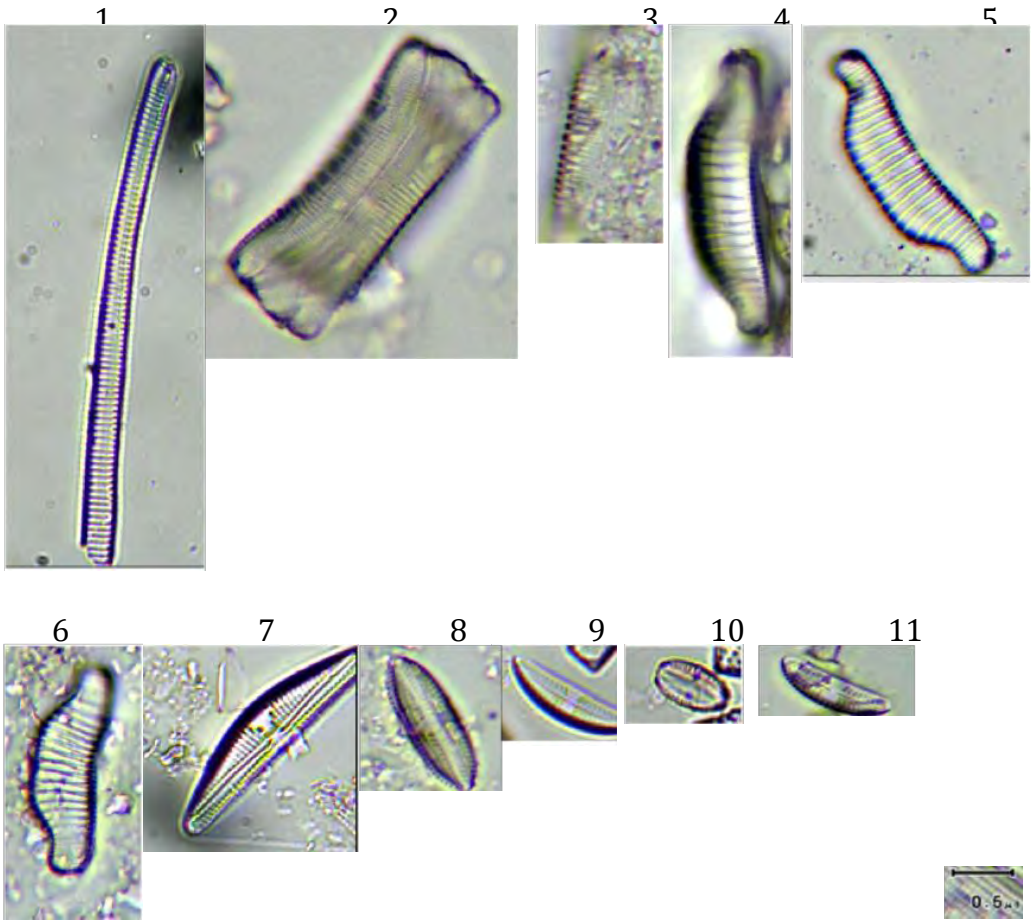
Achnanthes oestrupii: 11, Achnanthes rosenstockii: 12-13, Cocconeis neothumensis: 10, Cocconeis pediculus: 8, Cocconeis placentula var. euglypta: 9, Cymatopleura solea: 1-3, Diploneis petersenii: 16, Navicula pseudoscutiformis: 17, Pseudostaurosira brevistriata: 14, Pseudostaurosira brevistriata var. inflata: 15, Staurosirella martyi: 20-21, Staurosirella pinnata: 22-25, Tabellaria flocculosa: 4-5, Tabellaria quadriseptata: 18-19



Fragilaria capucina: 9-11, Fragilaria construens: 1-7, Fragilaria crotonensis: 8, Fragilaria parasitica: 12-14, and Fragilaria robusta: 15



Aulacoseira ambigua: 8, Aulacoseira granulata: 9-11, Cyclotella bodanica: 4, Cyclotella atomus: 5, Cymbella subaequalis: 7, Denticula elegans: 6, Gomphonema truncatum: 15-16, Gyrosigma acuminatum: 13, Stephanodiscus hantzschii: 3, Stephanodiscus niagarae: 1-2, Rhopalodia gibba: 12



Amphora inariensis: 7, Amphora pediculus: 8-11, Eunotia cf glacialis: 1, Eunotia praerupta var. bigibba: 4-5, Eunotia SPU

Appendix 3A: Diatom Raw Counts

Top (cm)	185	189	193	197	201	205	209
Top Date cal yr BP	403	412.97	422.94	432.9	442.87	452.84	462.81
Achnanthes rosenstockii							
Amorpha peidiculus and A. inariensis	0	0	3	0	0	0	0
Amphora thumensis	0	1	1	0	0	0	0
Aulacoseira ambigua	128	594	2514	50	116	174	120
Aulacoseira granulata	39	521	439	36	226	264	93
cf pinularia							
Cocconeis neothumensis	12	0	0	0	0	0	10
Cocconeis pediculus							
Cocconeis placentula var. euglypta							
Cyclotella bodanica and C. atomus	144	18	76	99	40	9	80
Cyclotella SPU							
Cymbella subaequalis	0	2	16	4	1	1	16
Cymatopleura solea							
Denticula elegans							
Denticula SPU							
Diploneis petersenii							
Epithemia adnata							
Epithemia SPU							
Epithemia turgida							
Eunotia cf glacialis							1
Eunotia praerupta var. bigibba							
Eunotia SPU							
Fragilaria capucina	2	0	3	0	0	0	0
Fragilaria construens							
Fragilaria crotonensis	98	201	64	281	120	33	97
Fragilaria parasitica					1		1
Fragilaria robusta							
Fragilaria SPU							3
Gomphonema truncatum							1
Gyrosigma acuminatum	0	1	2	0	0	0	0
Navicula pseudoscutiformis							
Nitzschia agnita							
Nitzschia amphibioides							
Nitzschia angustatula							
Nitzschia capitellata							
Nitzschia frustulum fonticola							
Nitzschia macilenta							2
Nitzschia normannii							
Nitzschia SPU							
Nitzschia SPU							
Nitzschia valdecostata							
Pseudostaurosira brevistriata	0	1	0	2	0	1	8

Rhopalodia gibba							
Rhopalodia gibberula							1
Pseudostraurosira SPU							
SPU		1					
Staurosirella pinnata and S. martyi	2	1	26	5	4	1	7
Stephanodiscus niagarae and S. hantzschii	23	10	28	2	11	14	42
Surirella angusta							
Surirella SPU							
Tabellaria flocculosa	27	9	9	18	2	12	9
Tabellaria quadriseptata							
Total	475	1360	3181	497	521	509	491
Top (cm)	213	217	221	225	229	233	237
Top Date cal yr BP	473.77	482.74	492.71	502.68	512.65	522.61	532.58
Achnanthes rosenstockii							
Amorpha peidiculus and A. inariensis	0	0	0	0	270	0	7
Amphora thumensis	0	0	0	0	0	0	0
Aulacoseira ambigua	34	560	323	214	270	151	373
Aulacoseira granulata	24	340	323	388	105	34	183
cf pinularia							
Cocconeis neothumensis	12	0	11	0	9	2	16
Cocconeis pediculus					1		
Cocconeis placentula var. euglypta					14		
Cyclotella bodanica and C. atomus	193	24	23	3	8	8	53
Cyclotella SPU							
Cymbella subaequalis	27	8	22	4	23	8	20
Cymatopleura solea					1		
Denticula elegans							
Denticula SPU							
Diploneis petersenii							
Epithemia adnata							
Epithemia SPU							
Epithemia turgida							
Eunotia cf glacialis							
Eunotia praerupta var. bigibba							
Eunotia SPU							
Fragilaria capucina	2	0	0	0	1	0	1
Fragilaria construens			1				
Fragilaria crotonensis	108	23	299	51	57	412	247
Fragilaria parasitica			1	1			
Fragilaria robusta			1				
Fragilaria SPU							
Gomphonema truncatum							
Gyrosigma acuminatum	11	1	1	0	0	0	1

Navicula pseudoscutiformis							
Nitzschia agnita							
Nitzschia amphibioides							
Nitzschia angustatula							
Nitzschia capitellata							
Nitzschia frustulum fonticola							
Nitzschia macilenta							1
Nitzschia normannii							
Nitzschia SPU							
Nitzschia SPU							
Nitzschia valdecostata							
Pseudostaurosira brevistriata	0	0	9	0	1	6	3
Rhopalodia gibba							
Rhopalodia gibberula							
Pseudostraurosira SPU	2		4		4		9
SPU				1			
Staurosirella pinnata and S. martyi	13	3	15	2	10	5	15
Stephanodiscus niagarae and S. hantzschii	14	14	14	7	8	11	27
Surirella angusta					1		1
Surirella SPU							
Tabellaria flocculosa	81	6	50	17	14	124	67
Tabellaria quadriseptata					12		
Total	521	979	1097	688	809	761	1024
Top (cm)	241	245	249	253	257	259	263
Top Date cal yr BP	542.55	552.52	562.48	572.45	582.42	587.4	597.37
Achnanthes rosenstockii							
Amorpha peidiculus and A. inariensis	12	20	10	1	18	20	11
Amphora thumensis	0	0	2	0	1	0	0
Aulacoseira ambigua	427	129	97	67	101	129	27
Aulacoseira granulata	332	46	35	27	24	37	0
cf pinularia							
Cocconeis neothumensis	25	24	67	15	27	50	13
Cocconeis pediculus							
Cocconeis placentula var. euglypta							
Cyclotella bodanica and C. atomus	33	78	45	20	26	26	4
Cyclotella SPU							
Cymbella subaequalis	18	45	30	12	18	15	20
Cymatopleura solea		1					
Denticula elegans							
Denticula SPU	1						
Diploneis petersenii							
Epithemia adnata							
Epithemia SPU							

Epithemia turgida							
Eunotia cf glacialis							
Eunotia praerupta var. bigibba						1	
Eunotia SPU							
Fragilaria capucina	0	3	2	7	2	0	0
Fragilaria construens	6						
Fragilaria crotonensis	136	306	309	351	195	182	10
Fragilaria parasitica	2						
Fragilaria robusta							
Fragilaria SPU							
Gomphonema truncatum			1			5	
Gyrosigma acuminatum	0	3	67	2	3	50	0
Navicula pseudoscutiformis					1		
Nitzschia agnita							
Nitzschia amphibioides							
Nitzschia angustatula							
Nitzschia capitellata							
Nitzschia frustulum fonticola							
Nitzschia macilenta							
Nitzschia normannii							
Nitzschia SPU							
Nitzschia SPU							
Nitzschia valdecostata							
Pseudostaurosira brevistriata	13	18	30	7	6	10	12
Rhopalodia gibba							
Rhopalodia gibberula							
Pseudostraurosira SPU							
SPU							
Staurosirella pinnata and S. martyi	20	37	18	3	25	56	14
Stephanodiscus niagarae and S. hantzschii	24	22	6	1	5	3	2
Surirella angusta							
Surirella SPU							
Tabellaria flocculosa	64	7	5	23	15	7	2
Tabellaria quadriseptata							
Total	1113	739	724	536	467	591	115
Top (cm)	287.5	292.5	297.5	302.5	307.5	312.5	317.5
Top Date cal yr BP	5589.29	5675.57	5761.29	5846.45	5931.05	6015.09	6098.57
Achnanthes rosenstockii			1				
Amorpha peidiculus and A. inariensis	6	12	22	25	33	0	29
Amphora thumensis	1	0	2	2	1	0	4
Aulacoseira ambigua	185	68	103	185	121	99	115
Aulacoseira granulata	171	8	10	13	16	9	8
cf pinularia							

Cocconeis neothumensis	20	26	57	41	0	34	31
Cocconeis pediculus							
Cocconeis placentula var. euglypta							
Cyclotella bodanica and C. atomus	53	15	9	13	12	19	12
Cyclotella SPU							
Cymbella subaequalis	12	90	63	62	31	44	57
Cymatopleura solea							
Denticula elegans							
Denticula SPU							
Diploneis petersenii					1		
Epithemia adnata							
Epithemia SPU							
Epithemia turgida		4		5	1		
Eunotia cf glacialis							
Eunotia praerupta var. bigibba			1				
Eunotia SPU				1			
Fragilaria capucina	25	0	0	0	0	0	0
Fragilaria construens							
Fragilaria crotonensis	156	3	3	4	39	5	1
Fragilaria parasitica							
Fragilaria robusta							
Fragilaria SPU							
Gomphonema truncatum							
Gyrosigma acuminatum	1	17	28	12	14	5	40
Navicula pseudoscutiformis							
Nitzschia agnita							
Nitzschia amphibioides				1			
Nitzschia angustatula							
Nitzschia capitellata	1						
Nitzschia frustulum fonticola							
Nitzschia macilenta							
Nitzschia normannii							
Nitzschia SPU							
Nitzschia SPU							
Nitzschia valdecostata							
Pseudostaurosira brevistriata	8	115	116	77	100	134	80
Rhopalodia gibba							
Rhopalodia gibberula							
Pseudostraurosira SPU							
SPU							
Staurosirella pinnata and S. martyi	29	86	51	36	81	131	98
Stephanodiscus niagarae and S. hantzschii	25	6	8	8	10	9	2
Surirella angusta							
Surirella SPU							
Tabellaria flocculosa	30	16	17	11	10	13	14

Tabellaria quadriseptata							
Total	723	466	491	496	470	502	491
Top (cm)	287.5	292.5	297.5	302.5	307.5	312.5	317.5
Top Date cal yr BP	5589.29	5675.57	5761.29	5846.45	5931.05	6015.09	6098.57
Achnanthes rosenstockii			1				
Amorpha peidiculus and A. inariensis	6	12	22	25	33	0	29
Amphora thumensis	1	0	2	2	1	0	4
Aulacoseira ambigua	185	68	103	185	121	99	115
Aulacoseira granulata	171	8	10	13	16	9	8
cf pinularia							
Cocconeis neothumensis	20	26	57	41	0	34	31
Cocconeis pediculus							
Cocconeis placentula var. euglypta							
Cyclotella bodanica and C. atomus	53	15	9	13	12	19	12
Cyclotella SPU							
Cymbella subaequalis	12	90	63	62	31	44	57
Cymatopleura solea							
Denticula elegans							
Denticula SPU							
Diploneis petersenii					1		
Epithemia adnata							
Epithemia SPU							
Epithemia turgida		4		5	1		
Eunotia cf glacialis							
Eunotia praerupta var. bigibba			1				
Eunotia SPU				1			
Fragilaria capucina	25	0	0	0	0	0	0
Fragilaria construens							
Fragilaria crotonensis	156	3	3	4	39	5	1
Fragilaria parasitica							
Fragilaria robusta							
Fragilaria SPU							
Gomphonema truncatum							
Gyrosigma acuminatum	1	17	28	12	14	5	40
Navicula pseudoscutiformis							
Nitzschia agnita							
Nitzschia amphibioides				1			
Nitzschia angustatula							
Nitzschia capitellata	1						
Nitzschia frustulum fonticola							
Nitzschia macilenta							
Nitzschia normannii							
Nitzschia SPU							
Nitzschia SPU							

Nitzschia valdecostata							
Pseudostaurosira brevistriata	8	115	116	77	100	134	80
Rhopalodia gibba							
Rhopalodia gibberula							
Pseudostraurosira SPU							
SPU							
Staurosirella pinnata and S. martyi	29	86	51	36	81	131	98
Stephanodiscus niagarae and S. hantzschii	25	6	8	8	10	9	2
Surirella angusta							
Surirella SPU							
Tabellaria flocculosa	30	16	17	11	10	13	14
Tabellaria quadriseptata							
Total	723	466	491	496	470	502	491
Top (cm)	287.5	292.5	297.5	302.5	307.5	312.5	317.5
Top Date cal yr BP	5589.29	5675.57	5761.29	5846.45	5931.05	6015.09	6098.57
Achnanthes rosenstockii			1				
Amorpha peidiculus and A. inariensis	6	12	22	25	33	0	29
Amphora thumensis	1	0	2	2	1	0	4
Aulacoseira ambigua	185	68	103	185	121	99	115
Aulacoseira granulata	171	8	10	13	16	9	8
cf pinularia							
Cocconeis neothumensis	20	26	57	41	0	34	31
Cocconeis pediculus							
Cocconeis placentula var. euglypta							
Cyclotella bodanica and C. atomus	53	15	9	13	12	19	12
Cyclotella SPU							
Cymbella subaequalis	12	90	63	62	31	44	57
Cymatopleura solea							
Denticula elegans							
Denticula SPU							
Diploneis petersenii					1		
Epithemia adnata							
Epithemia SPU							
Epithemia turgida		4		5	1		
Eunotia cf glacialis							
Eunotia praerupta var. bigibba			1				
Eunotia SPU				1			
Fragilaria capucina	25	0	0	0	0	0	0
Fragilaria construens							
Fragilaria crotonensis	156	3	3	4	39	5	1
Fragilaria parasitica							
Fragilaria robusta							

Fragilaria SPU							
Gomphonema truncatum							
Gyrosigma acuminatum	1	17	28	12	14	5	40
Navicula pseudoscutiformis							
Nitzschia agnita							
Nitzschia amphibioides				1			
Nitzschia angustatula							
Nitzschia capitellata	1						
Nitzschia frustulum fonticola							
Nitzschia macilenta							
Nitzschia normannii							
Nitzschia SPU							
Nitzschia SPU							
Nitzschia valdecostata							
Pseudostaurosira brevistriata	8	115	116	77	100	134	80
Rhopalodia gibba							
Rhopalodia gibberula							
Pseudostraurosira SPU							
SPU							
Staurosirella pinnata and S. martyi	29	86	51	36	81	131	98
Stephanodiscus niagarae and S. hantzschii	25	6	8	8	10	9	2
Surirella angusta							
Surirella SPU							
Tabellaria flocculosa	30	16	17	11	10	13	14
Tabellaria quadriseptata							
Total	723	466	491	496	470	502	491
Top (cm)	322.5	327.5	332.5	337.5	342.5	347.5	352.5
Top Date cal yr BP	6181.49	6263.85	12691.3	6426.89	6507.57	6587.69	6667.25
Achnanthes rosenstockii						1	
Amorpha peidiculus and A. inariensis	41	40	53	41	27	31	39
Amphora thumensis	4	3	0	4	5	5	2
Aulacoseira ambigua	101	101	143	130	174	100	134
Aulacoseira granulata	9	6	5	8	0	7	4
cf pinularia							
Cocconeis neothumensis	47	44	55	63	42	49	52
Cocconeis pediculus							
Cocconeis placentula var. euglypta							
Cyclotella bodanica and C. atomus	7	2	5	6	3	9	22
Cyclotella SPU							
Cymbella subaequalis	40	35	26	54	51	44	79
Cymatopleura solea							
Denticula elegans			1				

Denticula SPU							
Diploneis petersenii							
Epithemia adnata							1
Epithemia SPU							
Epithemia turgida				1		1	3
Eunotia cf glacialis							
Eunotia praerupta var. bigibba							1
Eunotia SPU				1			
Fragilaria capucina	0	6	0	0	0	4	0
Fragilaria construens						1	
Fragilaria crotonensis	3	2	0	0	4	22	3
Fragilaria parasitica							
Fragilaria robusta							
Fragilaria SPU							
Gomphonema truncatum							1
Gyrosigma acuminatum	13	22	18	12	9	5	7
Navicula pseudoscutiformis							
Nitzschia agnita						1	
Nitzschia amphibioides		1				1	1
Nitzschia angustatula							
Nitzschia capitellata							
Nitzschia frustulum fonticola							2
Nitzschia macilenta						1	
Nitzschia normannii		1					
Nitzschia SPU							
Nitzschia SPU						3	
Nitzschia valdecostata						1	
Pseudostaurosira brevistriata	126	124	108	93	111	113	139
Rhopalodia gibba							
Rhopalodia gibberula							
Pseudostraurosira SPU							
SPU							
Staurosirella pinnata and S. martyi	99	106	74	102	81	62	62
Stephanodiscus niagarae and S. hantzschii	1	0	1	3	1	6	7
Surirella angusta							
Surirella SPU		1					
Tabellaria flocculosa	5	4	5	1	5	26	5
Tabellaria quadriseptata							
Total	496	498	494	519	513	493	564
Top (cm)	357.5	362.5	367.5	372.5	377.5	381.5	
Top Date cal yr BP	6746.25	6824.69	6902.57	6979.89	7056.65	7117.655	
Achnanthes rosenstockii							
Amorpha peidiculus and A. inariensis	58	78	60	77	77	59	
Amphora thumensis	6	17	8	7	9	8	

Aulacoseira ambigua	148	146	184	154	137	181
Aulacoseira granulata	13	1	2	0	0	1
cf pinularia						
Cocconeis neothumensis	59	57	47	53	49	38
Cocconeis pediculus						
Cocconeis placentula var. euglypta						
Cyclotella bodanica and C. atomus	6	6	11	9	12	10
Cyclotella SPU				1		
Cymbella subaequalis	55	46	73	73	70	58
Cymatopleura solea				1		
Denticula elegans						
Denticula SPU						
Diploneis petersenii						
Epithemia adnata						
Epithemia SPU		1				
Epithemia turgida	2					
Eunotia cf glacialis						
Eunotia praerupta var. bigibba						
Eunotia SPU						
Fragilaria capucina	0	0	0	0	0	0
Fragilaria construens			2	1	1	
Fragilaria crotonensis	2	4	1	0	29	2
Fragilaria parasitica						
Fragilaria robusta						
Fragilaria SPU						
Gomphonema truncatum						
Gyrosigma acuminatum	6	6	184	8	4	6
Navicula pseudoscutiformis						
Nitzschia agnita						
Nitzschia amphibioides	1	1			3	
Nitzschia angustatula					1	
Nitzschia capitellata						
Nitzschia frustulum fonticola						
Nitzschia macilenta						
Nitzschia normannii						
Nitzschia SPU		1	1	1		
Nitzschia SPU						
Nitzschia valdecostata						
Pseudostaurosira brevistriata	140	97	62	71	90	78
Rhopalodia gibba					1	
Rhopalodia gibberula						
Pseudostraurosira SPU					1	
SPU						
Staurosirella pinnata and S. martyi	38	35	44	75	56	55
Stephanodiscus niagarae and S.	4	4	0	6	7	3

hantzschii						
Surirella angusta						
Surirella SPU						
Tabellaria flocculosa	5	2	1	8	7	0
Tabellaria quadriseptata						
Total	543	502	680	545	554	499

Appendix 3B: Diatom Relative Abundances

Top (cm)	185	189	193	197	201	205
Top Date	403	412.97	422.94	432.9	442.87	452.84
Achnanthes rosenstockii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Amorpha peidiculus and A. inariensis	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%
Amphora thumensis	0.00%	0.07%	0.03%	0.00%	0.00%	0.00%
Aulacoseira ambigua	26.95%	43.68%	79.03%	10.06%	22.26%	34.18%
Aulacoseira granulata	8.21%	38.31%	13.80%	7.24%	43.38%	51.87%
cf pinularia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis neothumensis	2.53%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis pediculus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis placentula var. euglypta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyclotella bodanica and C. atomus	30.32%	1.32%	2.39%	19.92%	7.68%	1.77%
Cyclotella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cymbella subaequalis	0.00%	0.15%	0.50%	0.80%	0.19%	0.20%
Cymatopleura solea	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula elegans	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Diploneis petersenii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia adnata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia turgida	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia cf glacialis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia praerupta var. bigibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria capucina	0.42%	0.00%	0.09%	0.00%	0.00%	0.00%
Fragilaria construens	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria crotonensis	20.63%	14.78%	2.01%	56.54%	23.03%	6.48%
Fragilaria parasitica	0.00%	0.00%	0.00%	0.00%	0.19%	0.00%
Fragilaria robusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gomphonema truncatum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gyrosigma acuminatum	0.00%	0.07%	0.06%	0.00%	0.00%	0.00%
Navicula pseudoscutiformis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia agnita	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia amphibioides	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia angustatula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia capitellata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia frustulum fonticola	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia macilenta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia normannii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia valdecostata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostaurosira brevistriata	0.00%	0.07%	0.00%	0.40%	0.00%	0.20%
Rhopalodia gibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Rhopalodia gibberula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostraurosira SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SPU	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%
Staurosirella pinnata and S. martyi	0.42%	0.07%	0.82%	1.01%	0.77%	0.20%
Stephanodiscus niagarae and S. hantzschii	4.84%	0.74%	0.88%	0.40%	2.11%	2.75%
Surirella angusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Surirella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tabellaria flocculosa	5.68%	0.66%	0.28%	3.62%	0.38%	2.36%
Tabellaria quadriseptata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Top (cm)	209	213	217	221	225	229
Top Date	462.81	473.77	482.74	492.71	502.68	512.65
Achnanthes rosenstockii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Amorpha peidiculus and A. inariensis	0.00%	0.00%	0.00%	0.00%	0.00%	33.37%
Amphora thumensis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aulacoseira ambigua	24.44%	6.53%	57.20%	29.44%	31.10%	33.37%
Aulacoseira granulata	18.94%	4.61%	34.73%	29.44%	56.40%	12.98%
cf pinularia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis neothumensis	2.04%	2.30%	0.00%	1.00%	0.00%	1.11%
Cocconeis pediculus	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%
Cocconeis placentula var. euglypta	0.00%	0.00%	0.00%	0.00%	0.00%	1.73%
Cyclotella bodanica and C. atomus	16.29%	37.04%	2.45%	2.10%	0.44%	0.99%
Cyclotella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cymbella subaequalis	3.26%	5.18%	0.82%	2.01%	0.58%	2.84%
Cymatopleura solea	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%
Denticula elegans	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Diploneis petersenii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia adnata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia turgida	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia cf glacialis	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia praerupta var. bigibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria capucina	0.00%	0.38%	0.00%	0.00%	0.00%	0.12%
Fragilaria construens	0.00%	0.00%	0.00%	0.09%	0.00%	0.00%
Fragilaria crotonensis	19.76%	20.73%	2.35%	27.26%	7.41%	7.05%
Fragilaria parasitica	0.20%	0.00%	0.00%	0.09%	0.15%	0.00%
Fragilaria robusta	0.00%	0.00%	0.00%	0.09%	0.00%	0.00%
Fragilaria SPU	0.61%	0.00%	0.00%	0.00%	0.00%	0.00%
Gomphonema truncatum	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Gyrosigma acuminatum	0.00%	2.11%	0.10%	0.09%	0.00%	0.00%
Navicula pseudoscutiformis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Nitzschia agnita	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia amphibioides	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia angustatula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia capitellata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia frustulum fonticola	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia macilenta	0.41%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia normannii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia valdecostata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostaurosira brevistriata	1.63%	0.00%	0.00%	0.82%	0.00%	0.12%
Rhopalodia gibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Rhopalodia gibberula	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostraurosira SPU	0.00%	0.38%	0.00%	0.36%	0.00%	0.49%
SPU	0.00%	0.00%	0.00%	0.00%	0.15%	0.00%
Staurosirella pinnata and S. martyi	1.43%	2.50%	0.31%	1.37%	0.29%	1.24%
Stephanodiscus niagarae and S. hantzschii	8.55%	2.69%	1.43%	1.28%	1.02%	0.99%
Surirella angusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%
Surirella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tabellaria flocculosa	1.83%	15.55%	0.61%	4.56%	2.47%	1.73%
Tabellaria quadriseptata	0.00%	0.00%	0.00%	0.00%	0.00%	1.48%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Top (cm)	233	237	241	245	249	253
Top Date	522.61	532.58	542.55	552.52	562.48	572.45
Achnanthes rosenstockii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Amorpha peidiculus and A. inariensis	0.00%	0.68%	1.08%	2.71%	1.38%	0.19%
Amphora thumensis	0.00%	0.00%	0.00%	0.00%	0.28%	0.00%
Aulacoseira ambigua	19.84%	36.43%	38.36%	17.46%	13.40%	12.50%
Aulacoseira granulata	4.47%	17.87%	29.83%	6.22%	4.83%	5.04%
cf pinularia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis neothumensis	0.26%	1.56%	2.25%	3.25%	9.25%	2.80%
Cocconeis pediculus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis placentula var. euglypta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyclotella bodanica and C. atomus	1.05%	5.18%	2.96%	10.55%	6.22%	3.73%
Cyclotella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cymbella subaequalis	1.05%	1.95%	1.62%	6.09%	4.14%	2.24%
Cymatopleura solea	0.00%	0.00%	0.00%	0.14%	0.00%	0.00%
Denticula elegans	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula SPU	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%
Diploneis petersenii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia adnata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia turgida	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia cf glacialis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Eunotia praerupta var. bigibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria capucina	0.00%	0.10%	0.00%	0.41%	0.28%	1.31%
Fragilaria construens	0.00%	0.00%	0.54%	0.00%	0.00%	0.00%
Fragilaria crotonensis	54.14%	24.12%	12.22%	41.41%	42.68%	65.49%
Fragilaria parasitica	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%
Fragilaria robusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gomphonema truncatum	0.00%	0.00%	0.00%	0.00%	0.14%	0.00%
Gyrosigma acuminatum	0.00%	0.10%	0.00%	0.41%	9.25%	0.37%
Navicula pseudoscutiformis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia agnita	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia amphibioides	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia angustatula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia capitellata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia frustulum fonticola	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia macilenta	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%
Nitzschia normannii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia valdecostata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostaurosira brevistriata	0.79%	0.29%	1.17%	2.44%	4.14%	1.31%
Rhopalodia gibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Rhopalodia gibberula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostraurosira SPU	0.00%	0.88%	0.00%	0.00%	0.00%	0.00%
SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Staurosirella pinnata and S. martyi	0.66%	1.46%	1.80%	5.01%	2.49%	0.56%
Stephanodiscus niagarae and S. hantzschii	1.45%	2.64%	2.16%	2.98%	0.83%	0.19%
Surirella angusta	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%
Surirella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tabellaria flocculosa	16.29%	6.54%	5.75%	0.95%	0.69%	4.29%
Tabellaria quadriseptata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Top (cm)	257	259	263	287.5	292.5	297.5
Top Date	582.42	587.4	597.37	5589.29	5675.57	5761.29
Achnanthes rosenstockii	0.00%	0.00%	0.00%	0.00%	0.00%	0.20%
Amorpha peidiculus and A. inariensis	3.85%	3.38%	9.57%	0.83%	2.58%	4.48%
Amphora thumensis	0.21%	0.00%	0.00%	0.14%	0.00%	0.41%
Aulacoseira ambigua	21.63%	21.83%	23.48%	25.59%	14.59%	20.98%
Aulacoseira granulata	5.14%	6.26%	0.00%	23.65%	1.72%	2.04%
cf pinularia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis neothumensis	5.78%	8.46%	11.30%	2.77%	5.58%	11.61%
Cocconeis pediculus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis placentula var. euglypta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Cyclotella bodanica and C. atomus	5.57%	4.40%	3.48%	7.33%	3.22%	1.83%
Cyclotella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cymbella subaequalis	3.85%	2.54%	17.39%	1.66%	19.31%	12.83%
Cymatopleura solea	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula elegans	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Diploneis petersenii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia adnata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia turgida	0.00%	0.00%	0.00%	0.00%	0.86%	0.00%
Eunotia cf glacialis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia praerupta var. bigibba	0.00%	0.17%	0.00%	0.00%	0.00%	0.20%
Eunotia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria capucina	0.43%	0.00%	0.00%	3.46%	0.00%	0.00%
Fragilaria construens	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria crotonensis	41.76%	30.80%	8.70%	21.58%	0.64%	0.61%
Fragilaria parasitica	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria robusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gomphonema truncatum	0.00%	0.85%	0.00%	0.00%	0.00%	0.00%
Gyrosigma acuminatum	0.64%	8.46%	0.00%	0.14%	3.65%	5.70%
Navicula pseudoscutiformis	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia agnita	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia amphibioides	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia angustatula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia capitellata	0.00%	0.00%	0.00%	0.14%	0.00%	0.00%
Nitzschia frustulum fonticola	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia macilenta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia normannii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia valdecostata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostaurosira brevistriata	1.28%	1.69%	10.43%	1.11%	24.68%	23.63%
Rhopalodia gibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Rhopalodia gibberula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostraurosira SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Staurosirella pinnata and S. martyi	5.35%	9.48%	12.17%	4.01%	18.45%	10.39%
Stephanodiscus niagarae and S. hantzschii	1.07%	0.51%	1.74%	3.46%	1.29%	1.63%
Surirella angusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Surirella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tabellaria flocculosa	3.21%	1.18%	1.74%	4.15%	3.43%	3.46%
Tabellaria quadriseptata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Top (cm)	302.5	307.5	312.5	317.5	322.5	327.5

Top Date	5846.45	5931.05	6015.09	6098.57	6181.49	6263.85
Achnanthes rosenstockii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Amorpha peidiculus and A. inariensis	5.04%	7.02%	0.00%	5.91%	8.27%	8.03%
Amphora thumensis	0.40%	0.21%	0.00%	0.81%	0.81%	0.60%
Aulacoseira ambigua	37.30%	25.74%	19.72%	23.42%	20.36%	20.28%
Aulacoseira granulata	2.62%	3.40%	1.79%	1.63%	1.81%	1.20%
cf pinularia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis neothumensis	8.27%	0.00%	6.77%	6.31%	9.48%	8.84%
Cocconeis pediculus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis placentula var. euglypta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyclotella bodanica and C. atomus	2.62%	2.55%	3.78%	2.44%	1.41%	0.40%
Cyclotella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cymbella subaequalis	12.50%	6.60%	8.76%	11.61%	8.06%	7.03%
Cymatopleura solea	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula elegans	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Diploneis petersenii	0.00%	0.21%	0.00%	0.00%	0.00%	0.00%
Epithemia adnata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia turgida	1.01%	0.21%	0.00%	0.00%	0.00%	0.00%
Eunotia cf glacialis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia praerupta var. bigibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia SPU	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria capucina	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%
Fragilaria construens	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria crotonensis	0.81%	8.30%	1.00%	0.20%	0.60%	0.40%
Fragilaria parasitica	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria robusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gomphonema truncatum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gyrosigma acuminatum	2.42%	2.98%	1.00%	8.15%	2.62%	4.42%
Navicula pseudoscutiformis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia agnita	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia amphibioides	0.20%	0.00%	0.00%	0.00%	0.00%	0.20%
Nitzschia angustatula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia capitellata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia frustulum fonticola	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia macilenta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia normannii	0.00%	0.00%	0.00%	0.00%	0.00%	0.20%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia valdecostata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostaurosira brevistriata	15.52%	21.28%	26.69%	16.29%	25.40%	24.90%
Rhopalodia gibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Rhopalodia gibberula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Pseudostraurosira SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Staurosirella pinnata and S. martyi	7.26%	17.23%	26.10%	19.96%	19.96%	21.29%
Stephanodiscus niagarae and S. hantzschii	1.61%	2.13%	1.79%	0.41%	0.20%	0.00%
Surirella angusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Surirella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.20%
Tabellaria flocculosa	2.22%	2.13%	2.59%	2.85%	1.01%	0.80%
Tabellaria quadriseptata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Top (cm)	332.5	337.5	342.5	347.5	352.5	357.5
Top Date	12691.3	6426.89	6507.57	6587.69	6667.25	6746.25
Achnanthes rosenstockii	0.00%	0.00%	0.00%	0.20%	0.00%	0.00%
Amorpha peidiculus and A. inariensis	10.73%	7.90%	5.26%	6.29%	6.91%	10.68%
Amphora thumensis	0.00%	0.77%	0.97%	1.01%	0.35%	1.10%
Aulacoseira ambigua	28.95%	25.05%	33.92%	20.28%	23.76%	27.26%
Aulacoseira granulata	1.01%	1.54%	0.00%	1.42%	0.71%	2.39%
cf pinularia	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis neothumensis	11.13%	12.14%	8.19%	9.94%	9.22%	10.87%
Cocconeis pediculus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cocconeis placentula var. euglypta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cyclotella bodanica and C. atomus	1.01%	1.16%	0.58%	1.83%	3.90%	1.10%
Cyclotella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cymbella subaequalis	5.26%	10.40%	9.94%	8.92%	14.01%	10.13%
Cymatopleura solea	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula elegans	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Denticula SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Diploneis petersenii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia adnata	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%
Epithemia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Epithemia turgida	0.00%	0.19%	0.00%	0.20%	0.53%	0.37%
Eunotia cf glacialis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eunotia praerupta var. bigibba	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%
Eunotia SPU	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%
Fragilaria capucina	0.00%	0.00%	0.00%	0.81%	0.00%	0.00%
Fragilaria construens	0.00%	0.00%	0.00%	0.20%	0.00%	0.00%
Fragilaria crotonensis	0.00%	0.00%	0.78%	4.46%	0.53%	0.37%
Fragilaria parasitica	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria robusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Gomphonema truncatum	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%
Gyrosigma acuminatum	3.64%	2.31%	1.75%	1.01%	1.24%	1.10%
Navicula pseudoscutiformis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia agnita	0.00%	0.00%	0.00%	0.20%	0.00%	0.00%

Nitzschia amphibioides	0.00%	0.00%	0.00%	0.20%	0.18%	0.18%
Nitzschia angustatula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia capitellata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia frustulum fonticola	0.00%	0.00%	0.00%	0.00%	0.35%	0.00%
Nitzschia macilenta	0.00%	0.00%	0.00%	0.20%	0.00%	0.00%
Nitzschia normannii	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.61%	0.00%	0.00%
Nitzschia valdecostata	0.00%	0.00%	0.00%	0.20%	0.00%	0.00%
Pseudostaurosira brevistriata	21.86%	17.92%	21.64%	22.92%	24.65%	25.78%
Rhopalodia gibba	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Rhopalodia gibberula	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostraurosira SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Staurosirella pinnata and S. martyi	14.98%	19.65%	15.79%	12.58%	10.99%	7.00%
Stephanodiscus niagarae and S. hantzschii	0.20%	0.58%	0.19%	1.22%	1.24%	0.74%
Surirella angusta	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Surirella SPU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tabellaria flocculosa	1.01%	0.19%	0.97%	5.27%	0.89%	0.92%
Tabellaria quadriseptata	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Top (cm)	362.5	367.5	372.5	377.5	381.5	
Top Date	6824.69	6902.57	6979.89	7056.65	7117.655	
Achnanthes rosenstockii	0.00%	0.00%	0.00%	0.00%	0.00%	
Amorpha peidiculus and A. inariensis	15.54%	8.82%	14.13%	13.90%	11.82%	
Amphora thumensis	3.39%	1.18%	1.28%	1.62%	1.60%	
Aulacoseira ambigua	29.08%	27.06%	28.26%	24.73%	36.27%	
Aulacoseira granulata	0.20%	0.29%	0.00%	0.00%	0.20%	
cf pinularia	0.00%	0.00%	0.00%	0.00%	0.00%	
Cocconeis neothumensis	11.35%	6.91%	9.72%	8.84%	7.62%	
Cocconeis pediculus	0.00%	0.00%	0.00%	0.00%	0.00%	
Cocconeis placentula var. euglypta	0.00%	0.00%	0.00%	0.00%	0.00%	
Cyclotella bodanica and C. atomus	1.20%	1.62%	1.65%	2.17%	2.00%	
Cyclotella SPU	0.00%	0.00%	0.18%	0.00%	0.00%	
Cymbella subaequalis	9.16%	10.74%	13.39%	12.64%	11.62%	
Cymatopleura solea	0.00%	0.00%	0.18%	0.00%	0.00%	
Denticula elegans	0.00%	0.00%	0.00%	0.00%	0.00%	
Denticula SPU	0.00%	0.00%	0.00%	0.00%	0.00%	
Diploneis petersenii	0.00%	0.00%	0.00%	0.00%	0.00%	
Epithemia adnata	0.00%	0.00%	0.00%	0.00%	0.00%	
Epithemia SPU	0.20%	0.00%	0.00%	0.00%	0.00%	
Epithemia turgida	0.00%	0.00%	0.00%	0.00%	0.00%	
Eunotia cf glacialis	0.00%	0.00%	0.00%	0.00%	0.00%	
Eunotia praerupta var.	0.00%	0.00%	0.00%	0.00%	0.00%	

bigibba					
Eunotia SPU	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria capucina	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria construens	0.00%	0.29%	0.18%	0.18%	0.00%
Fragilaria crotonensis	0.80%	0.15%	0.00%	5.23%	0.40%
Fragilaria parasitica	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria robusta	0.00%	0.00%	0.00%	0.00%	0.00%
Fragilaria SPU	0.00%	0.00%	0.00%	0.00%	0.00%
Gomphonema truncatum	0.00%	0.00%	0.00%	0.00%	0.00%
Gyrosigma acuminatum	1.20%	27.06%	1.47%	0.72%	1.20%
Navicula pseudoscutiformis	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia agnita	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia amphibioides	0.20%	0.00%	0.00%	0.54%	0.00%
Nitzschia angustatula	0.00%	0.00%	0.00%	0.18%	0.00%
Nitzschia capitellata	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia frustulum fonticola	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia macilenta	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia normannii	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia SPU	0.20%	0.15%	0.18%	0.00%	0.00%
Nitzschia SPU	0.00%	0.00%	0.00%	0.00%	0.00%
Nitzschia valdecostata	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostaurosira brevistriata	19.32%	9.12%	13.03%	16.25%	15.63%
Rhopalodia gibba	0.00%	0.00%	0.00%	0.18%	0.00%
Rhopalodia gibberula	0.00%	0.00%	0.00%	0.00%	0.00%
Pseudostraurosira SPU	0.00%	0.00%	0.00%	0.18%	0.00%
SPU	0.00%	0.00%	0.00%	0.00%	0.00%
Staurosirella pinnata and S. martyi	6.97%	6.47%	13.76%	10.11%	11.02%
Stephanodiscus niagarae and S. hantzschii	0.80%	0.00%	1.10%	1.26%	0.60%
Surirella angusta	0.00%	0.00%	0.00%	0.00%	0.00%
Surirella SPU	0.00%	0.00%	0.00%	0.00%	0.00%
Tabellaria flocculosa	0.40%	0.15%	1.47%	1.26%	0.00%
Tabellaria quadriseptata	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Appendix 4: Dune Sediments

Note: in the table below the grain size fractions are listed at percent sand, silt, and clay of the whole sample, which may include pebbles. Additionally, the percentages of sand, silt, and clay are given as the fraction of each size in the <2mm fraction; these are denoted with (<2mm).

sample no.	-3 phi(%)	-2 phi(%)	-1 phi(%)	0 phi(%)	1 phi(%)
augpin2	0.000	0.000	0.000	0.000	1.505
augpin3	0.000	0.000	0.000	0.906	1.813
augpin5	0.000	0.000	0.000	0.000	0.833
augpin6	0.000	0.000	0.000	1.342	1.007
augpin8	0.000	0.000	0.000	0.420	0.420
augpin9	0.000	0.000	0.000	0.683	0.911
augpin10	0.000	0.000	14.602	6.637	4.425
augpin11	0.000	0.000	0.000	3.953	2.372
augpin14	0.000	0.000	2.583	2.214	1.476
augpin15	0.000	0.000	7.059	34.118	31.294
augpin16	0.000	0.000	0.000	0.549	1.374
augpin18	0.000	0.000	0.000	0.576	4.035
E11	0.000	0.000	0.000	20.168	38.655
E10	0.000	0.000	0.000	0.000	1.379
E8	0.000	0.000	0.000	0.585	0.585
E6	0.000	0.000	0.000	0.000	70.192
E4	0.000	0.000	0.000	0.000	1.250
E2	0.000	0.000	0.000	0.000	1.747
sample no.	2 phi(%)	3 phi(%)	4 phi(%)	5 phi(%)	6 phi(%)
augpin2	16.774	62.151	14.839	4.731	0.000
augpin3	59.215	31.118	5.740	1.208	0.000
augpin5	9.167	57.917	27.917	4.167	0.000
augpin6	15.101	61.409	17.450	3.691	0.000
augpin8	7.353	56.933	30.042	4.832	0.000
augpin9	18.223	68.793	10.478	0.911	0.000
augpin10	11.062	41.150	18.142	3.982	0.000
augpin11	7.905	50.198	32.016	3.557	0.000
augpin14	5.904	61.255	22.140	4.428	0.000
augpin15	14.824	10.118	2.588	0.000	0.000
augpin16	19.505	54.121	21.154	3.297	0.000
augpin18	29.395	53.602	11.527	0.865	0.000
E11	27.731	3.361	10.084	0.000	0.000
E10	14.483	80.000	4.138	0.000	0.000
E8	43.275	54.386	1.170	0.000	0.000
E6	26.923	2.885	0.000	0.000	0.000
E4	22.500	72.500	3.750	0.000	0.000
E2	29.694	67.249	1.310	0.000	0.000
sample no.	7 phi(%)	8 phi(%)	9 phi(%)	<9 phi(%)	%gravel
augpin2	0.000	0.000	0.000	0.000	0.000

augpin3	0.000	0.000	0.000	0.000	0.000
augpin5	0.000	0.000	0.000	0.000	0.000
augpin6	0.000	0.000	0.000	0.000	0.000
augpin8	0.000	0.000	0.000	0.000	0.000
augpin9	0.000	0.000	0.000	0.000	0.000
augpin10	0.000	0.000	0.000	0.000	14.602
augpin11	0.000	0.000	0.000	0.000	0.000
augpin14	0.000	0.000	0.000	0.000	2.583
augpin15	0.000	0.000	0.000	0.000	7.059
augpin16	0.000	0.000	0.000	0.000	0.000
augpin18	0.000	0.000	0.000	0.000	0.000
E11	0.000	0.000	0.000	0.000	0.000
E10	0.000	0.000	0.000	0.000	0.000
E8	0.000	0.000	0.000	0.000	0.000
E6	0.000	0.000	0.000	0.000	0.000
E4	0.000	0.000	0.000	0.000	0.000
E2	0.000	0.000	0.000	0.000	0.000
sample no.	%clay	%sand	%silt	% clay (<2mm)	% sand (<2mm)
augpin2	0.000	95.269	4.731	0.000	95.269
augpin3	0.000	98.792	1.208	0.000	98.792
augpin5	0.000	95.833	4.167	0.000	95.833
augpin6	0.000	96.309	3.691	0.000	96.309
augpin8	0.000	95.168	4.832	0.000	95.168
augpin9	0.000	99.089	0.911	0.000	99.089
augpin10	0.000	81.416	3.982	0.000	95.337
augpin11	0.000	96.443	3.557	0.000	96.443
augpin14	0.000	92.989	4.428	0.000	95.455
augpin15	0.000	92.941	0.000	0.000	100.000
augpin16	0.000	96.703	3.297	0.000	96.703
augpin18	0.000	99.135	0.865	0.000	99.135
E11	0.000	100.000	0.000	0.000	100.000
E10	0.000	100.000	0.000	0.000	100.000
E8	0.000	100.000	0.000	0.000	100.000
E6	0.000	100.000	0.000	0.000	100.000
E4	0.000	100.000	0.000	0.000	100.000
E2	0.000	100.000	0.000	0.000	100.000
sample no.	% silt (<2mm)	mean size	Std. Dev.	skewness	kurtosis
augpin2	4.731	2.545	0.751	0.384	1.023
augpin3	1.208	1.926	0.723	0.691	1.854
augpin5	4.167	2.754	0.712	0.144	0.581
augpin6	3.691	2.537	0.796	-0.386	2.463

augpin8	4.832	2.803	0.728	-0.110	1.646
augpin9	0.911	2.402	0.642	-0.530	3.212
augpin10	4.663	1.779	1.744	-0.781	-0.550
augpin11	3.557	2.646	0.985	-1.213	2.416
augpin14	4.545	2.552	1.061	-1.695	4.906
augpin15	0.000	0.446	1.186	0.587	-0.209
augpin16	3.297	2.538	0.801	-0.101	0.892
augpin18	0.865	2.241	0.768	-0.246	0.742
E11	0.000	0.945	1.150	0.797	0.094
E10	0.000	2.369	0.474	-1.162	3.342
E8	0.000	2.050	0.564	-0.588	0.908
E6	0.000	0.827	0.527	1.316	0.750
E4	0.000	2.288	0.517	-0.777	1.151
E2	0.000	2.181	0.528	-0.852	0.229