

THE STABLE ISOTOPE PALEOECOLOGY AND MORPHOMETRIC INVESTIGATION OF
THE SCALLOP *CHESAPECTEN COCCYMELUS* IN BED 10 OF THE CALVERT CLIFFS,
MARYLAND, USA

BY

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(Under the Direction of Sally E. Walker)

ABSTRACT

The stable isotope analysis of *Chesapecten coccymelus* can potentially be used as a proxy for how modern climate change and warming temperatures may impact the bay scallop (*Argoecten irradians irradians* and *Argoprcten irradians concentricus*). *Chesapecten coccymelus* is from the Miocene Climatic Optimum, which is estimated to be ~5–10 °C warmer than average temperatures today. Because of this, *C. coccymelus* is a good proxy for studying the impacts of climate change on benthic bivalves in a deep-time conservation paleobiology study. Further, in Bed 10 of the Calvert Cliffs, a second morphotype of *Chesapecten* is present. A morphometric investigation of this second morphotype, *Chesapecten* sp., finds it necessary to classify *Chesapecten* sp. as its own species, *Chesapecten godferyi* n. sp. Which aids in the further understanding and classification of the genus *Chesapecten*.

Index Words: Scallop, *Chesapecten*, stable isotope, Miocene Climatic Optimum, paleoecology, conservation paleobiology, morphometrics, taxonomy, *Chesapecten coccymelus*, *Chesapecten godferyi* n. sp.

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CHAPTER 1

Literature Review

Conservation paleobiology includes the study of how biota respond to environmental stressors (Deitl, 2015). Ecological data stretches back in history decades to centuries thus, utilizing conservation paleobiology in deep-time studies allows for a better understanding of the long-term effects of environmental climate change especially in marine ecosystems (Finnegan et al., 2024). Because scallops record the paleoenvironment they inhabit through the stable isotopes they build into their shells with (Krantz et al., 1984), they are great recorders of paleoclimate and a good organism to utilize in a deep-time paleobiological study. Temperature and planktonic blooms are recorded in stable isotopic signatures of the shell ($\delta^{18}\text{O}$ and $\delta^{13}\text{C}$, respectively). The stable oxygen isotope ratio ($\delta^{18}\text{O}$) records can be converted to temperature and also provides information on growth rate and longevity if seasonality is present. The stable carbon isotope ratio ($\delta^{13}\text{C}$) records the planktonic bloom signal during the early stages of growth (Gillikin et al., 2007).

Research using stable isotopes on fossils began in 1951, reconstructing paleotemperature with Jurassic-aged belemnites (Urey et al., 1951). To do so, the ratio between the heavier oxygen isotope ^{18}O and the lighter isotope ^{16}O can indicate the water temperature during the organism's life (Urey et al., 1951). Further research was done with stable isotopes on mollusks in the 1980's. Growth increments and stable isotopes can be applied to both modern organisms and fossils to give insight into both the modern climate and paleoclimates (Jones et al., 1983). In addition to stable oxygen isotopes providing insight into paleotemperature, stable carbon isotopes offer

insight into past upwelling cycles, planktonic blooms, and ice volume (Krantz et al., 1988; Grossman, 2020). In the Miocene, stable isotope analysis has been done with different species of *Chesapecten* (Goewert, 2010; Goewert and Surge, 2008) however, samples were not from the Chesapeake Bay region. The first stable isotopic study of *Chesapecten* from the Calvert Cliffs was by LaPointe (2017). These outcroppings were described stratigraphically in 1904 by G.H. Shattuck and separated into twenty-four different units (Kidwell et al., 2015; Kidwell, 1989; Shattuck, 1904). There are multiple condensation surfaces creating units of dense shell deposits (Kidwell, 1989).

The study of extinct biota can be used to aid in our understanding of the environmental stressors faced by modern organisms. Bay scallop fisheries have seen a significant decreases in productivity and in some cases the complete collapse of the commercial fishery (Tomasetti et al., 2023; Granneman et al., 2021). The scallop *Chesapecten coccymelus* is of a similar size (~ 60 mm; Ward and Blackwelder, 1975), the bay scallop is generally between 35-68 mm (Grannemen, 2021). Both species potentially lived in similar environments as *C. coccymelus* is found in shallow shoreface sands (Kidwell, 1989) and bay scallops are also living in relatively shallow water (Granneman et al., 2021). Thus, *C. coccymelus* is potentially a good proxy for understanding the impacts of warming temperature on modern bay scallops. *Chesapecten coccymelus* lived during the Miocene Climatic Optimum which was a warm period ~15 million years ago where temperatures were estimated to be 5–10 °C warmer on average than they are today (Wei et al., 2023). Understanding how a warmer climate impacted *C. coccymelus* we can potentially gain a better understanding of the potential impact climate change will have on modern bay scallops.

In addition, the Calvert Cliffs are large deposits of well-preserved biota. There has been interest in classifying these extinct taxa since the 1800's. My thesis will focus on the *Chesapecten* genus of scallop from the Miocene, specifically *C. coccymelus* and a potential new species, *Chesapecten* sp. The earliest *C. coccymelus* specimens were described in the 1890's as small, ovate, inflated, and strongly sculptured shells (Dall, 1898). *Chesapecten coccymelus* was later redescribed by Ward and Blackwelder (1975) with what they considered a more typical specimen. They believed the specimen described by Dall (1898) to be a non-typical morphotype for the species (Ward and Blackwelder, 1975). My study will investigate if the non-typical specimen (Dall, 1898's *Chesapecten coccymelus*, in which this study will be referring to as *Chesapecten* sp.) is really a new species.

CHAPTER 2

STABLE ISOTOPIC PALEOECOLOGY OF THE SCALLOP *CHESAPECTEN COCCYMELUS* AS A MODEL FOR MID-ATLANTIC SHELF CONDITIONS DURING THE MIOCENE CLIMATIC OPTIMUM, CALVERT CLIFFS, MARYLAND, USA

CHAPTER ABSTRACT

The bay scallop (*Argopecten irradians irradians* and *Argopecten irradians concentricus*) fishery has been in decline for the past decade and facing collapse due to warming temperatures and hypoxia. Thus, it is important to study scallops like *C. coccymelus* as a proxy for the impacts of climate change on bay scallops. Dampened seasonality is present throughout all the sampled shells, both the warm shells and cool shells. The inconsistency of the temperatures could be a result of time averaging, a cold pool, or the potential shift of the MCT to earlier than initially anticipated. *Chesapecten coccymelus* from Bed 10 are estimated to be 16.60–15.95 ma. Further, without the identifying annuli it is difficult to determine the age of the scallop. However, we were able to potentially determine when *C. coccymelus* becomes sexually mature, at ~15 mm.

Index Words: Scallops, conservation paleobiology, paleoecology, climate change, stable isotopes, Miocene Climatic Optimum, Miocene Climatic Transition, mid-Atlantic, Calvert Cliffs

INTRODUCTION

Conservation paleobiology offers insight into deep-time climate studies through the use of stable isotopes. My study will use the scallop shell *Chesapecten coccymelus* from the Miocene Climatic Optimum (MCO) to determine if it is a recorder of climate during this period. Scallops incorporate stable carbon and stable oxygen isotopes into the building of their shells as they grow. Thus, we can use isotope sclerochronology to reconstruct the past environment in which *C. coccymelus* lived (Chute et al., 2012; Krantz et al., 1988; Krantz et al., 1984). Oxygen stable isotopes ($\delta^{18}\text{O}_{\text{shell}}$) offer insights into the paleoenvironment, ice volume level, evaporation and precipitation of seawater during the life of the *C. coccymelus* shell (after Grossman, 2020; Krantz, et al., 1988). Carbon stable isotopes ($\delta^{13}\text{C}_{\text{shell}}$) can show planktonic bloom events and can also indicate a switch from environmental carbon usage to metabolic carbon (Grossman, 2020; Krantz, 1990).

My objective is to understand if *C. coccymelus* records warm water temperatures consistent with the MCO. I will focus on what the stable isotopes ($\delta^{18}\text{O}_{\text{shell}}$, $\delta^{13}\text{C}_{\text{shell}}$) reveal about the seasonality, temperature, and planktonic bloom events of the shelf conditions that the scallop lived in. Understanding how the warmer temperatures of the MCO affected *C. coccymelus* can provide insight into the impact climate change may have on modern bay scallops. Lastly, I will determine if the scallops throughout Bed 10 (Shattuck zone 10, Shattuck, 1904) record similar warm temperatures of the MCO or may reflect a cooling trend indicating possibly an earlier onset of the Miocene Climatic Transition (MCT).

I hypothesize the following:

- 1) Given the warm temperatures of the MCO, dampened seasonality will be recorded in the $\delta^{18}\text{O}_{\text{shell}}$ record. Goewert (2010) found that fossil scallops, including *C. coccymelus*, living in warmer water temperatures had less oscillation in the amplitude of the $\delta^{18}\text{O}_{\text{shell}}$ than those living in more temperate water which would experience larger $\delta^{18}\text{O}_{\text{shell}}$ amplitudes because of seasonality (cold winters and warm summers).
- 2) $\delta^{13}\text{C}_{\text{shell}}$ may show when the scallop becomes sexually mature, transitioning from spending energy on initial growth to reproduction and slowing growth rate. Further, after rapid juvenile growth, $\delta^{13}\text{C}_{\text{shell}}$ is usually coupled with $\delta^{18}\text{O}_{\text{shell}}$ and decoupled as the scallop ages because of the addition of metabolic carbon from respiration (Gillikin et al., 2007).
- 3) Scallops from two sample sites within Shattuck zone 10 (Bed 10) will have consistently warm temperatures if the MCO is pervasive throughout the entire bed. Bed 10 is considered to be part of the MCO (Zimmit et al., 2022).

Oxygen and Carbon Stable Isotope Background

Stable isotope analysis is commonly conducted with mollusk shells to determine seawater temperature, planktonic blooms, and seasonality (Jones et al, 1983, Krantz et al., 1984, Krantz et al., 1988, Chute et al., 2012). Because shifts in water temperature cause changes in the isotopic composition of the shell carbonate it allows for the reconstruction of past marine environments (Krantz et al., 1984). In 1951, the first work with stable oxygen isotopes and mollusks was conducted by H. C Urey. He measured the ratio between the heavy (^{18}O) and lighter (^{16}O) isotopes of the shell using Jurassic-age belemnites to show how belemnites can be used to reconstruct paleotemperature (Urey et al., 1951). Beginning in the 1980s, work with stable

oxygen isotopes using marine mollusks became more common. Stable isotopes in mollusks are recorders of the environmental change they experienced during their life span (Jones et al., 1983). Jones began studying the $\delta^{18}\text{O}_{\text{shell}}$ isotopic record in modern Atlantic Surf Clams (*Spisula solidissima*) off the coast of New Jersey.

In addition, fossil bivalves can be used in paleoecology studies because although the particular species may be extinct, the likelihood that the environmental preferences of the closely related modern species have changed is small (Jones, 1995). Mid-shelf to offshore marine mollusks were used in stable isotopic analysis during the 1980s (Jones et al., 1983; Krantz et al., 1984). Scallops passively record the temperature of the bottom water in the building of their shells using $\delta^{18}\text{O}_{\text{water}}$ and offers insight into ancient upwelling cycles using $\delta^{13}\text{C}$ when working with fossil scallops as well as modern scallops (Krantz et al., 1988). The amount of ^{18}O incorporated into the shell is dependent on water temperature, thus, the shell records the seawater temperature throughout the life of the bivalve (Chute et al., 2012).

Stable oxygen isotope analysis uses a ratio between the lighter (^{16}O) and heavier (^{18}O) isotope of oxygen to determine past temperature (Urey et al., 1951). The oxygen isotopes also store information on global glacial intervals (Grossman, 2020). During periods of glacial intervals, the $\delta^{18}\text{O}$ is higher in seawater as more ^{16}O is stored in continental ice (Grossman, 2020). During interglacial periods, $^{18}\text{O}_{\text{water}}$ mixes with $^{16}\text{O}_{\text{water}}$ causing lower $\delta^{18}\text{O}$ values in marine organisms (Grossman, 2020). Because scallop shells precipitate oxygen at equilibrium with seawater, their $\delta^{18}\text{O}_{\text{shell}}$ values can be used to determine temperature, which could reveal seasonality (Hickson et al., 1999).

EQ.1

$$\delta^{18}O = \left(\frac{\left(\frac{^{18}O}{^{16}O} \right)_{sample}}{\left(\frac{^{18}O}{^{16}O} \right)_{standard}} - 1 \right) \times 1000$$

EQ.1 uses the Vienna Pee Dee Belemnite (VPDB) as the standard (Grossman, 2020). The ratio of heavy to light oxygen isotopes ($^{18}O/^{16}O$) for the sample is divided by the ratio of heavy and light oxygen ($^{18}O/^{16}O$) isotopes for the standard (VPDB).

Examining $\delta^{13}C$ ontogenetic time series can provide insight into the planktonic bloom patterns in the geologic past as well as provide insight into global carbon cycles (Krantz, 1990; Cramer, 2020). The $\delta^{13}C$ is ratio is created using EQ.2 and measured in per mille (‰).

EQ. 2

$$\delta^{13}C = \left(\frac{\left(\frac{^{13}C}{^{12}C} \right)_{sample}}{\left(\frac{^{13}C}{^{12}C} \right)_{standard}} - 1 \right) \times 1000$$

EQ.2 uses the Vienna Pee Dee Belemnite (VPDB) as the standard (Cramer, 2020). The ratio of heavy to light carbon ($^{13}C/^{12}C$) isotopes for the sample is divided by the ratio of heavy and light carbon ($^{13}C/^{12}C$) isotopes for the standard (VPDB).

Photosynthesizers strongly prefer to uptake ^{12}C , the lighter carbon isotope (Cramer, 2020). Thus, high levels of photosynthetic fixation occur when much of the ^{12}C is taken up by planktonic blooms leaving the scallop to build its shell with the heavier ^{13}C to build its shell, causing $\delta^{13}C_{shell}$ to become more positive during blooms. It has been found that in the first year of a scallop's life, blooms can be recorded (Oczkowski et al., 2018). However, the scallop does transition to utilizing metabolic carbon as it ages rather than environmental carbon (Krantz et al., 1987; Gillikin et al., 2007).

Bay Scallop Ecology Background

Bay scallop populations over the past ten years have been in decline due to a combination of factors such as poor water quality, habitat loss, problems with larval recruitment, and overfishing (Barber and Blake 1983; Arnold and Marelli 1991; Blake et al. 1993; Arnold et al. 1998; Yarbrow and Carlson 2013; Ganneman et al., 2021). Because of this, researching the impacts of climate change on a scallop like *Chesapecten coccymelus* can potentially provide more insight into how further changes to the environment may impact the bay scallop.

There are three different species of bay scallops: *Argopecten irradians irradians*, *Argopecten irradians concentricus*, and *Argopecten irradians amplicostatus* (Clarke, 1965). I am focusing on *A. irradians irradians*, ranging from Massachusetts to New Jersey (Milke, 2006), and *A. irradians concentricus*, ranging from North Carolina to Florida (Hall, 2015). These two species provide an important modern comparison for *C. coccymelus* for longevity, growth, and spawning. However, the MCO is estimated to be 5–10 °C warmer than average temperatures today (Wei et al., 2021). The MCO is the time period *C. coccymelus* is believed to have lived (~17–15 Ma; Zimmet et al., 2022), which potentially makes it a good comparison for how warm temperatures can affect modern bay scallop species.

Northern *A. irradians irradians* are from cooler water and usually spawn once to twice a year. I will focus on the first spawning of *Argopecten irradians irradians*, in the late spring to early summer, rather than the “nubs” which spawn again in the fall because the majority of *A. irradians irradians* spawn in the spring, between May and August, when water temperatures are between 7.5–10 °C (Mackenzie, 2008). *Argopecten irradians irradians* grow best between 15 °C and 30 °C and cannot survive in temperatures over 35 °C (Mackenzie, 2008). The fastest growth rates for both *A. irradians irradians* and *A. irradians concentricus* are immediately following the

swimming larvae's attachment to substrate, ~10 mm per month (Mackenzie, 2008). For *A. irradians irradians*, this rapid growth usually occurs in July or shortly after (Mackenzie, 2008).

Southern *A. irradians concentricus* inhabit warmer water, spawn once a year and initiate spawning in the fall and at higher temperatures ~30 °C (Barber and Blake, 1983). *Argopecten irradians concentricus* has a lower food supply than that of the northern species and when coupled with the warmer temperatures, causes them to have less energy to put toward reproduction, limiting the extent of the species (Barber and Blake, 1983).

The modern bay scallop is similar to *C. coccymelus* in its size, habitat and life mode. In addition, the bay scallop's range extends along the Atlantic coast down into the Gulf of Mexico (Milke, 2006; Hall, 2015), which is the same general range of *C. coccymelus* is believed to have inhabited, stretching from the Delaware to the coast of Florida (Goewert, 2010). In addition, both *A. irradians irradians* and *A. irradians concentricus* only live for about two years (Epp, 1988 and Mackenzie, 2008). Examining when bay scallops spawn is important because changes in water temperature can affect when the bay scallop spawns and settles (Geiger et al. 2023). Further, the bay scallop fishery is currently facing collapse in the northeast (Tomasettii et al. 2023). Warming temperatures affect the survival rate of larvae and juvenile scallops in addition to causing a shift in the location of the biomass to more northern latitudes (Tomasettii et al., 2023). Thus, by comparing the fossil scallop *C. coccymelus* to modern bay scallops we can use *C. coccymelus* as a proxy for the potential future impacts of warming ocean temperatures on modern scallop species.

Previous stable isotope work has been done utilizing *C. coccymelus* from the early Miocene of Delaware and *Chesapecten madisonius* during the Pliocene warm period. The *C. coccymelus* shells sampled by Goewert (2010) were from slightly earlier during the MCO

(Kirkland Formation in the early Miocene). She found diminished seasonality and temperatures between 13.3 – 21.6 °C with a mean of 21.9 °C for these scallops (Goewert, 2010). The *C. madisonius* from the Pliocene were more positive in $\delta^{18}\text{O}_{\text{shell}}$ indicating cooler water temperatures than those of the Miocene (Goewert and Surge, 2008). In addition, no annual growth lines (annuli) were found on the *C. coccymelus* from the early Miocene (Goewert, 2010). This lack of annuli is consistent with modern *A. irradians concentricus* from Florida which only live to ~18 months and do not have an annual growth cessation (Granneman et al., 2021). The similarities between *A. irradians concentricus* and *C. coccymelus* allows me to examine the paleoecology of *C. coccymelus* to gain insight on the potential impacts warming temperatures may have on the modern bay scallop. In addition to comparing *C. coccymelus* to modern bay scallops, I will be comparing my *C. coccymelus* shells from the middle Miocene of the Calvert Cliffs to the findings of Goewert (2010) from the Miocene and Pliocene, to examine the climate patterns and the potential shift to the Miocene Climatic Transition (MCT) which is the transition to a cooler time period. Further, I will be looking at how my samples compare to *C. madisonius* temperatures which ranged from 3.2–20.8 °C during the Pliocene Warm Interval (3.2–2.4 Ma) (after Goewert and Surge, 2008) to gain potential insight on how climate change is or will affect modern bay scallops.

METHODS

Study Sites

My study focuses on *C. coccymelus* from the middle Miocene of the Calvert Cliffs in Maryland. Shells were collected from three sites along the western shore of the Chesapeake Bay: Chesapeake Beach, Willows and Plum Point (FIGURE 2.1). The northern most location sampled is Chesapeake Beach (also known as Brownie’s Beach and Randall’s Cliff, 38.67356°N, 76.53076°W). At this site, Shattuck zones 9–14 is exposed (FIGURE 2.2). The shell samples for

this site were taken from a slumped section of Bed 10 (FIGURE 2.3). Bed 10 in this location is exposed ~5 m above the beach on the cliff face and only accessible via slumped sections. The central site is Willows (38.63368 °N, 76.51786 °W), and the southernmost site is Plum Point (also known as Camp Kaufman and Hanse Site, 38.46327 °N, 76.47311 °W). At Plum Point, Bed 10 runs along the base of the cliff, dipping below the beach sediment in certain areas (FIGURE 2.4). Shells from this location were wet when collected and were dried at 60 °C for 12 hours before sampling for stable isotopes.

Field Methods

Shells for this study were collected along Bed 10 in 2022 (by S.E. Walker) and 2024 (by G. Burns and S.E. Walker) from three sites along the Calvert Cliffs, Maryland (FIGURE 2.1). The Calvert Cliffs is an outcrop of Miocene-aged strata (Kidwell et al., 2015, FIGURE 2.5 and FIGURE 2.6). At each site, Chesapeake Beach, Willows, and Plum Point (North to South, respectively) individual shell and bulk samples were collected. Shells collected from Chesapeake Beach and Willows came from slumped sections of Bed 10 (FIGURE 2.2, FIGURE 2.3). Plum Point shells were sampled *in situ* at the base of the cliff (FIGURE 2.4). Shells were collected using a trowel, dental pick, and paintbrush depending on the consolidation of the substrate.

Lab Methods

A total of fifteen shells were sampled for stable isotopes, five replicates randomly selected from slump or *in situ* beds from each site. Shells were cleaned of sediment using a dental pick and paint brush. Because of moisture, they were then oven dried at 60 °C for 12 hours and allowed to cool completely before sampling. Before drilling the shells, height, width and weight measurements were taken (FIGURE 2.7). These measurements were done with Pittsburgh 6” Digital Calipers (0.01mm resolution). Weight measurements were taken after cleaning and drying and before drilling the shells using a Denver Instrument Scale (0.001g resolution). These

measurements are important for identifying the species correctly and keeping a consistent range of shell sizes (30-65mm) for analysis. *Chesapecten coccymelus* shells are composed of unaltered calcite (Zimmit et al., 2022; Goewert and Surge, 2008) making them great candidates for stable isotope analysis.

To sample the shells, a Nouvag micro-cut drill was used with a 1-mm drill bit attached. Samples were drilled every ~1 mm starting at the umbo to the furthest extent of the shell (after Surge, 2008; FIGURE 2.8). For each drill hole into the calcite layer of the shell, ~0.08 mg of calcium carbonate powder was collected onto small weighing paper using a Von Graefe Knife (Fine Scientific Tools #10059-13). The thin-angled blade of the knife allowed for the ability to scoop the loose powder off the scabrous shell on to the weighing paper. The sample was then transferred to a Sartorius Cubic MSX micro-gram balance (0.001mg resolution) and weighed before being transferred into exetainers. Between each sample, all tools were vacuumed to remove any powder, soaked in 10% HCl to dissolve any residual CaCO₃ powder, and rinsed in deionized water and dried before the next sample. In total, 766 calcium-carbonate powder samples were collected from the fifteen shells.

The stable isotope samples $\delta^{13}\text{C}_{\text{shell}}$ and $\delta^{18}\text{O}_{\text{shell}}$ were analyzed at the University of Alabama Stable Isotope Laboratory (ASIL; data in Appendix A 1). ASIL utilizes a Thermo GasBench II in the acidification process of the CaCO₃ powder. The samples were analyzed on a Thermo Delta V Plus Mass Spectrometer. The powders were sampled for carbon and oxygen stable isotopes ($\delta^{13}\text{C}_{\text{shell}}$ and $\delta^{18}\text{O}_{\text{shell}}$, respectively), which are separated by isotope weight that creates the ratio used in the analysis. However, due to a breakdown with the ASIL mass spectrometer, so far only six shells have been analyzed, five from Chesapeake Beach and one from Willows of which this chapter is based.

Statistical analysis of the stable isotope data was done using RStudio (R Team, 2021; analysis code, Appendix A2.1). For the isotope data, each individual powder sample yields one data point. To create time series plots, the stable isotope data was plotted using the isotope value in per mille on the y-axis and the distance (mm) the sample is from the umbo to the last growing edge on the x-axis (FIGURE 2.8). This shows the change in per mille throughout the life of the *C. coccymelus* shell. A total of six time series plots were created, one for each shell sampled (Appendix A 2.4; A 3.6).

The mean and 95% confidence intervals (95% CIs) were calculated for each shell using a *t*-test using basic R (analysis, Appendix A 3.1). The mean estimates and their 95% CIs were plotted to examine the potential per mille (‰) difference between shells. This analysis was done for $\delta^{13}\text{C}_{\text{shell}}$ and $\delta^{18}\text{O}_{\text{shell}}$ to examine seasonality with the change per mille (‰) and its amplitude, as well as the change in per mille (‰) for the different ontogenetic life stages (Appendix A. 3.1; A 3.2). $\delta^{18}\text{O}_{\text{shell}}$ amplitudes were calculated by measuring the difference between the highest value and lowest value for at least five peaks per shell (data and analysis, Appendix A 2.2; A 2.3; A3).

For the temperature calculations, I used the Kim and O'Neil (1997) equation adapted by Dr. Bruce Railsback (B. Railsback, personal communication, November 8th, 2023) to calculate the paleotemperature of the seawater that the scallops lived in for each shell (EQ. 3).

EQ. 3

$$T = \left(\frac{18.03}{(\ln (\text{Calcite}(\text{VPDB}))} \right) \times \left(\frac{1.03091 + 30.91 + 1000}{(\text{SMOW} + 1000) + 0.03242} \right) - 273.15$$

Temperature (T) is being solved for and is converted to Celsius from Kelvin. *Calcite* is the fractionation between calcite and $^{18}\text{O}_{\text{water}}$ and is where the $\delta^{18}\text{O}_{\text{shell}}$ data is input. The VPDB is the international standard for oxygen stable isotopes. $\delta^{18}\text{O}_{\text{water}}$ or SMOW (‰) is the Standard Mean

Ocean Water, which is an approximated mean value for global ocean water $\delta^{18}\text{O}_{\text{water}}$ (Craig, 1961). For my analysis, I used a variety of different $\delta^{18}\text{O}_{\text{water}}$ values based on previous works (Goewert, 2010; Zachos et al., 2001). In total, four $\delta^{18}\text{O}_{\text{water}}$ values were used -0.35‰ based on Goewert (2010), 1‰ and 1.2‰ based on Zachos et al., (2001) and 1.5‰ based on my assessment of the NASA GISS plot (GISTEMP Team, 2025). In this case, -0.35‰ and 1‰ are considered the conservative $\delta^{18}\text{O}_{\text{water}}$ values and 1.2‰ and 1.5‰ are the liberal $\delta^{18}\text{O}_{\text{water}}$ values (Appendix A 2.3; A 3.5).

RESULTS

$\delta^{18}\text{O}_{\text{shell}}$ Time Series for *C. coccymelus*

Temporal time series were created to determine whether shells from the MCO experienced a dampened seasonality. I am defining seasonality as a clear and obvious sinusoidal pattern where the $\delta^{18}\text{O}_{\text{shell}}$ values went above and below 0‰. If seasonality were present, I would expect a sinusoidal pattern indicating warm summers and cool winters and higher amplitudes (after Goewert and Surge, 2008 and Krantz et al., 1984). For all shells sampled, the $\delta^{18}\text{O}_{\text{shell}}$ did not exhibit the sinusoidal pattern consistent with the presence of seasonality. Low amplitudes (~1‰) also indicated the seasonality for all samples was dampened (FIGURE 2.9; FIGURE 2.10; TABLE 2.1).

The $\delta^{18}\text{O}_{\text{shell}}$ time series indicate two groups of shells based on their isotope values. Chesapeake Beach shells 01–03 were more negative, indicating warmer temperatures, while Chesapeake Beach shells 04–05 and the Willows shell were more positive indicating cooler temperatures (FIGURE 2.9; TABLE 2.2).

$\delta^{18}\text{O}_{\text{shell}}$ Ontogenetics for *C. coccymelus*

Ontogenetic analysis was done using $\delta^{18}\text{O}_{\text{shell}}$ to determine if there was any difference between the sampled shells during the adult and juvenile stages. In general, the *C. coccymelus* lived in similar water $\delta^{18}\text{O}$ values as both juveniles and adults (FIGURE 2.12). At Chesapeake Beach, there were two distinct groups between the sampled shells, one warm group (CB 01–03) and one cool (CB 04–05) (FIGURE 2.11; TABLE 2.3). In fact, the cooler Chesapeake Beach shells (CB 04–05) were significantly different from Chesapeake Beach warmer shells (CB 01–03), separated by 0.7‰ (FIGURE 2.11; TABLE 2.3). The sample from Willows was also more positive than both groups of shells from Chesapeake Beach (FIGURE 2.11; TABLE 2.2).

Most of the shells had a similarity between the $\delta^{18}\text{O}_{\text{shell}}$ in their juvenile and adult life stages (FIGURE 2.12; TABLE 2.3). However, two shells (CB-02 and CB-03) had a significant difference between juvenile and adult mean $\delta^{18}\text{O}_{\text{shell}}$ values, which had 0.09‰ and 1.08‰ difference in $\delta^{18}\text{O}_{\text{shell}}$, respectively (FIGURE 2.12).

$\delta^{13}\text{C}_{\text{shell}}$ Time Series for *C. coccymelus*

For all *C. coccymelus* samples, $\delta^{13}\text{C}_{\text{shell}}$ is coupled with $\delta^{18}\text{O}_{\text{shell}}$ initially and declined as the scallop aged (FIGURE 2.9). All samples had a similar sharp increase (positive trend) and decrease (negative trend) of $\delta^{13}\text{C}_{\text{shell}}$ within the first ~15 mm of growth (the gray box in FIGURE 2.9). The sharp decrease was accompanied by a growth cessation (FIGURE 2.9). After which, the $\delta^{13}\text{C}_{\text{shell}}$ remained relatively constant until the end of the scallop's life, where it declined rapidly. The maximum $\delta^{13}\text{C}_{\text{shell}}$ values for each shell are above 1.3‰ (FIGURE 2.9; TABLE 2.4).

$\delta^{13}\text{C}_{\text{shell}}$ Ontogenetics for *C. coccymelus*

There was no significant difference in $\delta^{13}\text{C}_{\text{shell}}$ between any of the mean $\delta^{13}\text{C}_{\text{shell}}$ values for the shells sampled from Chesapeake Beach (FIGURE 2.11; TABLE 2.4). However, there was an ontogenetic difference in the incorporation of carbon into $\delta^{13}\text{C}_{\text{shell}}$. The $\delta^{13}\text{C}_{\text{shell}}$ values were all more positive when the scallop was a juvenile (<15mm) and $\delta^{13}\text{C}_{\text{shell}}$ was more negative when the scallop was an adult (>15mm) (FIGURE 2.12; TABLE 2.5)

When comparing the $\delta^{13}\text{C}_{\text{shell}}$ values of the juvenile and adult stages of the Chesapeake Beach shells, the juvenile scallops had a greater amount of variability in their values, reflected in their large 95% CIs (FIGURE 2.12). However, the variation was not significant based on the overlap of their 95% CIs (FIGURE 2.12). On the contrary, the $\delta^{13}\text{C}_{\text{shell}}$ values for the adult scallops had less variability (FIGURE 2.12). There was a significant difference between the $\delta^{13}\text{C}_{\text{shell}}$ for juveniles and adults, with the largest difference being CB-02 at 0.74‰ (FIGURE 2.12; TABLE 2.5).

Paleotemperature for *C. coccymelus*

The mean temperatures for Chesapeake Beach shells were warmer than the mean temperature for the Willows shell (FIGURE 2.13; TABLE 2.7). Chesapeake Beach shells CB-01–03 were ~6 °C warmer than shells 04–05 (TABLE 2.6 when using a $\delta^{18}\text{O}_{\text{water}}$ of 1.2‰). Shells CB-04–05 were also the smallest of the shells sampled at 33 mm each, compared to shells 01–03 which were 50-63 mm in length. The mean paleotemperature for the Chesapeake Beach site is estimated to be 19.98 °C (when $\delta^{18}\text{O}_{\text{water}}$ is 1.2‰, TABLE 2.7). The shell sample from Willows was cooler (13.13 °C at 1.2‰ $\delta^{18}\text{O}_{\text{water}}$ value) than the mean temperature from Chesapeake Beach (19.98 °C at 1.2‰ $\delta^{18}\text{O}_{\text{water}}$; FIGURE 2.13; TABLE 2.7). The liberal $\delta^{18}\text{O}_{\text{water}}$

value of 1.5‰ predicts the mean paleotemperature for the Chesapeake Beach site to be 21.42 °C and 14.50 °C for the Willows shell (FIGURE 2.13; TABLE 2.7).

Growth cessations, in general, occurred when there was an abrupt change in temperature, from warm temperatures to cooler and vice versa (FIGURE 2.9). In addition, the growth cessations did not always occur at the warmest or coolest temperatures therefore, for the scallops sampled, no clear annuli were identified. That is, there was no clear growth cessation denoting when the scallop stopped growing due to temperatures becoming too hot or too cold.

DISCUSSION

Oxygen and Carbon Stable Isotope Time Series for *C. coccymelus*

Seasonality analysis can be conducted with $\delta^{18}\text{O}_{\text{shell}}$ from scallop shells because of the preserved oxygen isotopes in shell calcium carbonate. Scallops take carbon and oxygen out of the environment and incorporate it into the building their CaCO_3 shells (Jones et al., 1983). In scallops, seasonal cycles often present in the form of a $\delta^{18}\text{O}_{\text{shell}}$ sinusoidal shape over time (Krantz et al., 1984). For the shells I sampled, there was no pattern of seasonality present.

The $\delta^{18}\text{O}_{\text{shell}}$ amplitudes along with the overall time series can help distinguish whether seasonality was present. In the time series plots, none of the plots had a clear sinusoidal pattern (FIGURE 2.9). The $\delta^{18}\text{O}_{\text{shell}}$ values generally occurred between 1‰ to 1.5‰ difference in amplitude. The only exception to this amplitude range was CB-03 which had a significantly more negative $\delta^{18}\text{O}_{\text{shell}}$ value and the lower extent of its amplitude range to -2.6‰ (FIGURE 2.9; FIGURE 2.10; TABLE 2.1). This is similar to the findings of Goewert (2010) for early Miocene *C. coccymelus* from Delaware which had dampened seasonality.

Ontogenetic $\delta^{13}\text{C}_{\text{shell}}$ and $\delta^{18}\text{O}_{\text{shell}}$ for *C. coccymelus*

There was no difference in mean $\delta^{13}\text{C}_{\text{shell}}$ between the five shells from Chesapeake Beach. However, the shell from Willows was significantly more positive than Chesapeake Beach shells (FIGURE 2.11). There was a significant difference in the mean $\delta^{13}\text{C}_{\text{shell}}$ between the different ontogenetic life stages. All of the sampled shells had higher juvenile $\delta^{13}\text{C}_{\text{shell}}$ from seawater values than the adult parts of the shell (FIGURE 2.12). In addition, each shell followed similar high $\delta^{13}\text{C}_{\text{shell}}$ values in the $\delta^{13}\text{C}_{\text{shell}}$ time series plot within the first 15mm growth, during the juvenile ontogenetic stage. At that time, the scallop was incorporating more positive $\delta^{13}\text{C}_{\text{shell}}$ values than in the rest of its life after ~15 mm. There was a drop in $\delta^{13}\text{C}_{\text{shell}}$ between 10 and 15 mm on all shells (FIGURE 2.9). The ontogenetic decline in $\delta^{13}\text{C}_{\text{shell}}$ value supports the transition between environmental carbon intake by the scallop to the use of metabolic carbon as it aged (after Gillikin et al., 2007). This major drop could potentially represent when the scallop reached sexual maturity. These drops in $\delta^{13}\text{C}_{\text{shell}}$ also happened close to a growth cessation.

During the early stages of life after the spat settles, the focus of the scallop is to grow. Because of their short life span, it is important for the spat to grow while there is available nutrient resources (Mackenzie, 2008). The sharp positive increase in $\delta^{13}\text{C}_{\text{shell}}$ is indicative of this initial growth spurt (Gillikin et al., 2007). When the $\delta^{13}\text{C}_{\text{shell}}$ drops abruptly is when the scallop might reach sexual maturity. As the scallop ages, it switches from taking ^{13}C from its environment to the use of metabolic carbon (Gillikan et al., 2007). In addition, the mean $\delta^{13}\text{C}_{\text{shell}}$ for the juvenile *C. coccymelus* is higher than that of the adults (FIGURE 2.12) further supporting the transition to metabolic carbon and slowing of growth with age.

The $\delta^{18}\text{O}_{\text{shell}}$ mean values had distinct groups of three warmer shells and three cooler shells. Shells CB 01–03 were warmer (23.03 – 24.93 °C, at 1.2‰ $\delta^{18}\text{O}_{\text{water}}$; TABLE 2.7) with

more negative $\delta^{18}\text{O}_{\text{shell}}$ (-0.79 – -1.17‰, FIGURE 2.11; TABLE 2.1). This is expected if these shells were from the MCO where temperatures were estimated to be 5–10 °C warmer than today (after Wei et al., 2023). Shells CB 04–05 and WI-03 were cooler (13.13 – 17.38 °C, at 1.2‰ $\delta^{18}\text{O}_{\text{water}}$; TABLE 2.7) with more positive $\delta^{18}\text{O}_{\text{shell}}$ (0.20 – 1.32‰, FIGURE 2.11; TABLE 2.1).

In all but two shells, there was little difference in the $\delta^{18}\text{O}_{\text{shell}}$ between the juvenile and adult stages except for CB 02–03 (FIGURE 2.12; TABLE 2.3). This potentially indicates that the juvenile scallops remain in the same water temperature range as adults in which they settled in. The only two shells that have significant differences in $\delta^{18}\text{O}_{\text{shell}}$ value between juvenile and adult stages were CB-02 and CB-03 (FIGURE 2.12; TABLE 2.3). The two shells which record warmer temperatures as adults than juveniles (CB-02, CB-03) could potentially indicate an abrupt increase in temperature and lack of migration into cooler waters, if possible, for *C. coccymelus*. However, without further data, it is difficult to determine a potential reason for this difference.

Oxygen and Carbon Stable Isotopic Comparison

Sampling for $\delta^{18}\text{O}_{\text{shell}}$ and $\delta^{13}\text{C}_{\text{shell}}$ was done with *C. coccymelus* shells from Bed 10 of the Calvert Cliffs, these data were compared to the Zimmt et al. (2022) $\delta^{18}\text{O}_{\text{shell}}$ and $\delta^{13}\text{C}_{\text{shell}}$ data also from the Bed 10 of the Calvert Cliffs (TABLE 2.8). It is unclear if Zimmt et al. (2022) took the mean of their replicates to generate their data or if their analysis was a mean from bulk isotope analysis. For this study I am assuming the mean of each replicate was taken for Zimmt et al. (2022)’s work.

Data from Zimmt et al. (2022) are comparable to the mean $\delta^{13}\text{C}_{\text{shell}}$ and $\delta^{18}\text{O}_{\text{shell}}$ values for my study’s Chesapeake Beach samples (TABLE 2.2; TABLE 2.4). The $\delta^{13}\text{C}_{\text{shell}}$ from my study are within the same range (TABLE 2.8) of positive values as the $\delta^{13}\text{C}$ from Zimmt et al.

(2022). Further, the $\delta^{18}\text{O}_{\text{shell}}$ from this study is also within the same general range of values (TABLE 2.8) as the $\delta^{18}\text{O}$ values found by Zimmt et al. (2022). The exception to these similarities are the two cool shells from Chesapeake Beach (CB-04, CB-05). In comparison to the $\delta^{18}\text{O}$ of Zimmt et al. (2022), CB-04–05 were significantly more positive ($\bar{x} = 0.1970\text{‰}$, $\bar{x} = 0.4212$ respectively). CB-04–05 are part of a cool signal for which there are a few potential causes, however, this cool trend is not reflected in the mean $\delta^{18}\text{O}$ of Zimmt et al. (2022).

The cool trend of three of the shell samples (CB-04, CB-05, WI-03) could be a result of a few different factors. This cool signal (FIGURE 2.9; TABLE 2.7) may be a sign either that the MCT happened sooner than previously thought or potentially, the MCO was not as uniformly warm as anticipated. If the MCO was as universally warm, we expect more uniformly warm temperatures and negative $\delta^{18}\text{O}_{\text{shell}}$ values for all shells. There is also the possibility these cool samples are from a geographically isolated cold pool. However, without more data from sites along the Chesapeake Bay it is difficult to identify a cause.

Lack of Annuli and Seasonality

There were no identifiable annuli on the sampled *C. coccymelys* shells or in their isotope data. Larger *Chesapecten* species like *Chesapecten madisonians* and *Chesapecten nefrens* produce a visible annual growth cessation on both the shell and the isotope data, which, is used to determine the scallop's general age. I believe the dampened seasonality prevents the identification and/or formation of annuli making it difficult to determine the age of the *C. coccymelus* shells and they could potentially live to less than a year which would also be a reason for their lack of annuli.

The lack of annuli could potentially be a result of the warmer temperatures and small size. Most modern scallops each year have an annual growth cessation during the period when the temperature drops below their optimal temperature range (Mackenzie, 2008). For modern bay scallops this is called overwintering and occurs when water temperatures drop below 7.2–10 °C (Mackenzie, 2008). Thus, we can speculate that the temperature never fell below *C. coccymelus*' optimal temperature range, so they did not overwinter and create an annuli. Further, *C. coccymelus* may lack annuli because it did not live past a year. Bay scallops, on average, only live up to two years (Epp et al., 1988), thus, it would not be outside the realm of possibility for *C. coccymelus* to also have a relatively short lifespan. In addition, when comparing the northern population of bay scallops (*A. irradians irradians*) to the southern (*A. irradians concentricus*), the northern scallops from a cooler more temperate climate generate annuli (Granneman et al., 2021) and can potentially live for up to two years (Mackenzie, 2008). The lack of annuli in both *C. coccymelus* and *A. irradians concentricus* can be indicators of a shortened life span due to warmer temperatures.

$\delta^{13}\text{C}_{\text{shell}}$ as a Potential Indicator of Sexual Maturity

There appears to be a clear pattern in the $\delta^{13}\text{C}_{\text{shell}}$ potentially indicating when the scallop reached sexual maturity. The $\delta^{13}\text{C}_{\text{shell}}$ has a large positive spike in values and then a decline towards its average $\delta^{13}\text{C}_{\text{shell}}$ values in its first ~15mm of growth (FIGURE 2.9). We are interpreting this to be where the scallop potentially reaches sexual maturity. Once settled, modern scallops begin the fastest growth period of their life (Mackenzie, 2008). Similarly, *C. coccymelus* diverts all its resources to growing as large and as quickly as possible (FIGURE 2.9). The sharp decrease in $\delta^{13}\text{C}_{\text{shell}}$ accompanied by a growth cessation is likely when the scallop

reaches sexual maturity and diverts its resources to reproduction rather than growth and shifts to metabolic carbon (FIGURE 2.9).

Paleotemperature Comparison

The paleotemperatures calculated for *C. coccymelus* from the middle Miocene of the Calvert Cliffs and the paleotemperature calculated for the early Miocene samples from the Kirkland Formation of Delaware (Goewert, 2010) fall within the same range of values. The early Miocene *C. coccymelus* shells from Delaware had estimated paleotemperatures between 13.3 to 26.1 °C (Goewert, 2010), which encompasses the warm temperatures I calculated (CB1–3; TABLE 2.6 and TABLE 2.7). However, the cooler shells from Chesapeake Beach and Willows (CB-04: 11.19 °C, CB-05: 10.19 °C and WI-03: 6.25°C, TABLE 2.6) fall outside of the calculated temperature range for the middle Pliocene warm period *C. madisonius* shells, when using the same $\delta^{18}\text{O}_{\text{water}}$ value (-0.35‰). The mean calculation for Chesapeake Beach (12.77 °C; TABLE 2.6) is also cooler than that of the calculations from the early Miocene Delaware samples (21.9 °C $\pm$ 2.4 °C; Goewert, 2010). These findings support the potential that the MCT is earlier in the middle Miocene than anticipated. However, with 600,000 years of time averaging in Bed 10 (Zachos et al., 2001) it is challenging to pinpoint precisely where the transition began or whether there were cooler intervals during the middle Miocene.

When comparing my study's paleotemperature findings to the present day, the calculated paleotemperatures from my shells are consistent with the estimate by Wei et al. (2023), that the MCO was 5-10 °C warmer than present. The mean paleotemperatures recorded in the $\delta^{18}\text{O}_{\text{shell}}$ for my studies warm group of shells (CB-01–CB-03) are ~7 °C warmer than today's average temperature for the Chesapeake Bay, 16.30 °C (TABLE 2.7, NOAA, 2024). When looking at my

studies cooler paleotemperature shells (CB-04–05), they are still warmer by ~ 1.7 °C than today's average temperature for the Chesapeake Bay (TABLE 2.7).

Bay Scallop Comparison

Comparing the findings of my study to a modern species allows for *C. coccymelus* to serve as a proxy for the potential future impact that climate change will have on modern bay scallops. *Chesapecten coccymelus* is a scallop which would have likely inhabited similar water depths to today's bay scallops. The MCO is estimated to be 5–10 °C warmer than present (Wei et al., 2023). This is supported by my study's finding of temperatures to be ~ 7 °C warmer in the warm shells (CB-01–CB-03; TABLE 2.6). The potential impact of increased temperature is the main way *C. coccymelus* can be used as a proxy. As temperature is one of the main factors which triggers modern bay scallops to spawn (Mackenzie, 2008) understanding how past scallop species were impacted by climate change we can infer potential impacts today.

Chesapecten coccymelus shells were generally ~ 3 cm in height which is considerably smaller than the larger *Chesapecten* species from cooler time periods like *Chesapecten nefrens* which can be up to 15 cm in height (Ward and Blackwelder, 1975). In addition, *C. coccymelus* lack annuli which form when temperature falls below the scallop's optimal growth temperature range. This is similar to the southern bay scallop (*Argopecten irradians concentricus*) which also lack annuli due to the warm water temperatures they inhabit. A note on the limitations of this study, the stable isotope data is not an analysis that can be generated in the field while surveying or harvesting modern bay scallops therefore it would not aid in the management of a species of scallop lacking annuli. However, the effects of warm water temperatures are already being seen in *Argopecten irradians concentricus*, coupled with these data from *C. coccymelus* can potentially help inform scallop management for the future and serve as a predictor for warming

water temperatures on the norther bay scallops (*Argoprceten irradians irradians*). This could potentially aid management in predicting when scallops will spawn and the relative water temperatures they may settle in.

CONCLUSIONS

Bay scallop fisheries have been in decline for the past decade and changes in temperature not only affect where the scallop populations will be but also when they spawn, which, for bay scallops determines how long the fishing season will be (Granneman et al., 2021). *Chesapecten coccymelus* can potentially provide insight into the effect of future warming temperatures may have on bay scallops because of the similarities between these two species. We can gain insight into how to better manage and protect bay scallop populations by comparing the effects warmer climate had on an extinct scallop species to the modern extant species who, are also facing a warming climate.

Based on the findings of this study, there is a potential for the bay scallops to decrease in size as well as become more difficult to manage populations as a species because of the lack of annuli which could be a result of warm temperatures. Bay scallops are harvested based on their age which is determined by the number of annuli present (Mackenzie, 2008; Granneman et al., 2021). A lack of annuli would make determining age challenging. In addition, temperature is one of the main stimulants for spawning (Mackenzie, 2008). Thus, changes in temperature could impact when bay scallops spawn. When examining *C. coccymelus* for spawning, in every shell, *C. coccymelus* settles in cooler temperatures. *Argopecten irradians irradians* spawn when temperatures are between 7.5–10 °C and *A. irradians concentricus* spawn at temperatures close to 30 °C (Barber and Blake, 1983; Mackenzie, 2008). The warmer *C. coccymelus* shells were settling between 0.5‰ and -0.5‰ while the cooler *C. coccymelus* shells were settling between

0.5‰ and 1.5‰, which is cooler than the temperature they live the majority of their life (FIGURE 2.9).

My conservation paleobiology study allows us to examine the future impacts of changes in our climate on modern benthic bivalves by using extinct biota as proxies. My study finds *C. coccymelus* to be a good proxy for examining the impact that climate change may have on modern bay scallop populations. Warming temperatures may impact when bay scallops spawn, settle, how large they grow and how long they live. All of these factors can be compared to *C. coccymelus*, which lived during the MCO and can represent future temperatures bay scallops may experience as a species as our world continues to warm.

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Tables

TABLE 2.1. Mean amplitude and amplitude range of $\delta^{18}\text{O}_{\text{shell}}$ and $\delta^{13}\text{C}_{\text{shell}}$ for *C. coccymelus* shells from Chesapeake Beach (CB) and Willows (WI)

<i>Site</i>	<i>Sample</i>	<i>Amplitude Range</i>	<i>Mean Amplitude</i>	<i>95% CI</i>
		$\delta^{18}\text{O}_{\text{shell}} (\text{‰})$	$\delta^{18}\text{O}_{\text{shell}} (\text{‰})$	$\delta^{18}\text{O}_{\text{shell}} (\text{‰})$
<i>CB</i>	CB-01	0 – -1.7	0.89	0.6828 – 1.0885
<i>CB</i>	CB-02	0.1 – -1.6	1	0.7799 – 1.2201
<i>CB</i>	CB-03	0.5 – -2.6	1.04	0.8172 – 1.2685
<i>CB</i>	CB-04	0.9 – -0.7	0.68	0.1156 – 1.2520
<i>CB</i>	CB-05	1.4 – -0.4	0.6	0.2887 – 0.9113
<i>WI</i>	WI-03	1.9 – 0.5	0.7	0.5244 – 0.8756

TABLE 2.2. $\delta^{18}\text{O}_{\text{shell}}$ mean calculations for the scallop *C. coccymelus* from Chesapeake Beach (CB) and Willows (WI).

<i>Site</i>	<i>Sample</i>	<i>Mean $\delta^{18}\text{O}_{\text{shell}}$ (‰)</i>	<i>95% CI $\delta^{18}\text{O}_{\text{shell}}$ (‰)</i>
<i>CB</i>	CB-01	-0.7863	-0.8875 – -0.6850
<i>CB</i>	CB-02	-0.8239	-0.9513 – -0.6965
<i>CB</i>	CB-03	-1.1745	-1.3855 – -0.9636
<i>CB</i>	CB-04	0.1970	0.0586 – 0.3353
<i>CB</i>	CB-05	0.4212	0.2814 – 0.5610
<i>WI</i>	WI-03	1.3187	1.2456 – 1.3919

TABLE 2.3. Results from the ontogenetic $\delta^{18}\text{O}_{\text{shell}}$ analysis of *C. coccymelus*. Mean juvenile calculations consist of data <15mm into the shell and mean calculations for the adults is data >15mm into the shell. This was distance determined using the $\delta^{13}\text{C}_{\text{shell}}$ (CB = Chesapeake Beach and WI = Willows).

<i>Site</i>	<i>Sample</i>	<i>Juvenile Mean</i> $\delta^{18}\text{O}_{\text{shell}} (\text{‰})$	<i>Juvenile 95% CI</i> $\delta^{18}\text{O}_{\text{shell}} (\text{‰})$	<i>Adult Mean</i> $\delta^{18}\text{O}_{\text{shell}} (\text{‰})$	<i>Adult 95% CI</i> $\delta^{18}\text{O}_{\text{shell}} (\text{‰})$
<i>CB</i>	CB-01	-0.8563	-1.0459 – -0.6666	-0.7543	-0.8788 – -0.6298
<i>CB</i>	CB-02	-0.5438	-0.7402 – -0.3473	-0.973	-1.1174 – -0.8292
<i>CB</i>	CB-03	-0.1625	-0.3692 – 0.0442	-1.590	-1.7339 – -1.4456
<i>CB</i>	CB-04	0.1938	-0.0790 – 0.4665	0.2	0.0754 – 0.3246
<i>CB</i>	CB-05	0.5688	0.3438 – 0.7937	0.2824	0.1185 – 0.4462
<i>WI</i>	WI-03	1.1188	0.9259 – 1.3116	1.3854	1.3174 – 1.4534

TABLE 2.4. $\delta^{13}\text{C}_{\text{shell}}$ maximum values and mean calculations for the scallop *C. coccymelus* from Chesapeake Beach (CB) and Willows (WI).

<i>Site</i>	<i>Sample</i>	<i>Maximum</i> $\delta^{13}\text{C}_{\text{shell}}$ Values (‰)	<i>Mean $\delta^{13}\text{C}_{\text{shell}}$</i> Values (‰)	<i>$\delta^{13}\text{C}_{\text{shell}}$ 95% CIs (‰)</i>
<i>CB</i>	CB-01	1.7	0.3353	0.1763 – 0.4943
<i>CB</i>	CB-02	1.3	0.2348	0.0595 – 0.4101
<i>CB</i>	CB-03	1.5	0.1709	0.0019 – 0.3399
<i>CB</i>	CB-04	2.3	0.0606	-0.2053 – 0.3265
<i>CB</i>	CB-05	1.7	0.3090	0.1252 – 0.4930
<i>WI</i>	WI-03	2.3	1.3031	1.2172 – 1.3891

TABLE 2.5. Results from the ontogenetic $\delta^{18}\text{O}_{\text{shell}}$ analysis. Mean juvenile calculations consist of data <15mm into the shell and mean calculations for the adults is data >15mm into the shell. This was distance determined using the $\delta^{13}\text{C}_{\text{shell}}$.

<i>SITE</i>	<i>Sample</i>	<i>Juvenile Mean</i> $\delta^{13}\text{C}_{\text{shell}}$ (‰)	<i>Juvenile</i> $\delta^{13}\text{C}_{\text{shell}}$ 95% CI (‰)	<i>Adult Mean</i> $\delta^{13}\text{C}_{\text{shell}}$ (‰)	<i>Adult</i> $\delta^{13}\text{C}_{\text{shell}}$ 95% CI (‰)
<i>CB</i>	CB-01	0.9938	0.6895 – 1.2980	0.0343	-0.024 – 0.0926
<i>CB</i>	CB-02	0.9063	0.7441 – 1.0684	-0.123	-0.2480 – 0.0014
<i>CB</i>	CB-03	0.95	0.6321 – 1.2679	-0.1487	-0.2245 – -0.0729
<i>CB</i>	CB-04	0.4938	0.0389 – 0.9486	-0.3471	-0.4903 – -0.2038
<i>CB</i>	CB-05	0.5813	0.2538 – 0.9087	0.05294	-0.0501 – 0.1560
<i>WI</i>	WI-03	1.6625	1.4357 – 1.8893	1.1833	1.1236 – 1.2430

TABLE 2.6. TABLE 2.6. Paleotemperature calculations from sample means, using Kim and O'Neil (1997) equation adapted by Dr. Bruce Railsback (EQ. 3) for each of the sampled. Conservative and liberal $\delta^{18}\text{O}_{\text{water}}$ values were chosen based on Zachos et al. (2001), NASA GISS sea surface temperature change and Goewert (2010), for the Chesapeake region. Mean paleotemperature calculations for the warm and cool shells of Chesapeake Beach shown in bold.

<i>SITE</i>	<i>SAMPLE</i>	<i>TEMP</i> ($\delta^{18}\text{O}_{\text{water}}$ -0.35‰, °C)	<i>TEMP</i> ($\delta^{18}\text{O}_{\text{water}}$ 1‰, °C)	<i>TEMP</i> ($\delta^{18}\text{O}_{\text{water}}$ 1.2‰, °C)	<i>TEMP</i> ($\delta^{18}\text{O}_{\text{water}}$ 1.5‰, °C)
<i>CB</i>	CB-01	15.67	22.06	23.03	24.49
<i>CB</i>	CB-02	15.85	22.24	23.21	24.68
<i>CB</i>	CB-03	17.48	23.95	24.93	26.41
<i>Warm Mean</i>		16.33	22.75	23.72	25.19
<i>CB</i>	CB-04	11.19	17.38	18.32	19.74
<i>CB</i>	CB-05	10.19	16.33	17.26	18.67
<i>Cool Mean</i>		10.69	16.86	17.97	19.19
<i>WI</i>	WI-03	6.26	12.22	13.13	14.50

TABLE 2.7. Paleotemperature calculations pooled by site using $\delta^{18}\text{O}_{\text{shell}}$ at conservative and liberal $\delta^{18}\text{O}_{\text{water}}$ values based on Zachos et al. (2001), NASA GISS sea surface temperature change and Goewert (2010) for the Chesapeake region.

<i>SITE</i>	<i>MEAN TEMPERATURE</i> ($\delta^{18}\text{O}_{\text{water}}$ -0.35‰, °C)	<i>MEAN TEMPERATURE</i> ($\delta^{18}\text{O}_{\text{water}}$ 1‰, °C)	<i>MEAN TEMPERATURE</i> ($\delta^{18}\text{O}_{\text{water}}$ 1.2‰, °C)	<i>Mean TEMPERATURE</i> ($\delta^{18}\text{O}_{\text{water}}$ 1.5‰, °C)
<i>CHESAPEAKE BEACH</i>	12.77	19.03	19.98	21.42
<i>WILLOWS</i>	6.26	12.22	13.13	14.50

TABLE 2.8. Comparison of the mean $\delta^{18}\text{O}_{\text{shell}}$ and $\delta^{13}\text{C}_{\text{shell}}$ values from this study to Zimmt et al. (2022). Both sets of sampled shells are from Chesapeake Beach (CB). It is unclear if the $\delta^{18}\text{O}_{\text{shell}}$ and $\delta^{13}\text{C}_{\text{shell}}$ data from Zimmt et al. (2022) are the mean of the values per shell rather than bulk analysis however it was not specified. The grand means are also included for both studies as well as the means of the warm and cool shells from this study.

<i>Site</i>	<i>Sample</i>	$\delta^{13}\text{C}_{\text{shell}}$ (‰ VPDB)	$\delta^{18}\text{O}_{\text{shell}}$ (‰ VPDB)	<i>Reference</i>
<i>CB</i>	CB-01	0.3353	-0.7863	This study
<i>CB</i>	CB-02	0.2348	-0.8239	This study
<i>CB</i>	CB-03	0.1709	-1.1745	This study
<i>CB</i>	CB-04	0.0606	0.1970	This study
<i>CB</i>	CB-05	0.3090	0.4212	This study
Grand Mean	CB-01–05	0.2221	-0.4333	This Study
Warm Mean	CB-01–03	0.247	0.9282	This Study
Cool Mean	CB-04–05	0.1848	0.3091	This Study
<i>CB</i>	CB3TS.1	0.27	-1.22	Zimmt
<i>CB</i>	CB3TS.2	0.16	-1.21	Zimmt
<i>CB</i>	CB3TS.3	0.18	-1.15	Zimmt
<i>CB</i>	CB3TS.4	0.32	-0.99	Zimmt
<i>CB</i>	CB3TS.5	0.26	-1.13	Zimmt
<i>CB</i>	CB4TS.1	0.90	-1.10	Zimmt
<i>CB</i>	CB4TS.2	0.83	-0.90	Zimmt
<i>CB</i>	CB4TS.3	0.90	-0.79	Zimmt
<i>CB</i>	CB4TS.4	0.66	-1.14	Zimmt
Grand Mean	All CB	0.4978	-1.07	Zimmt

Figures

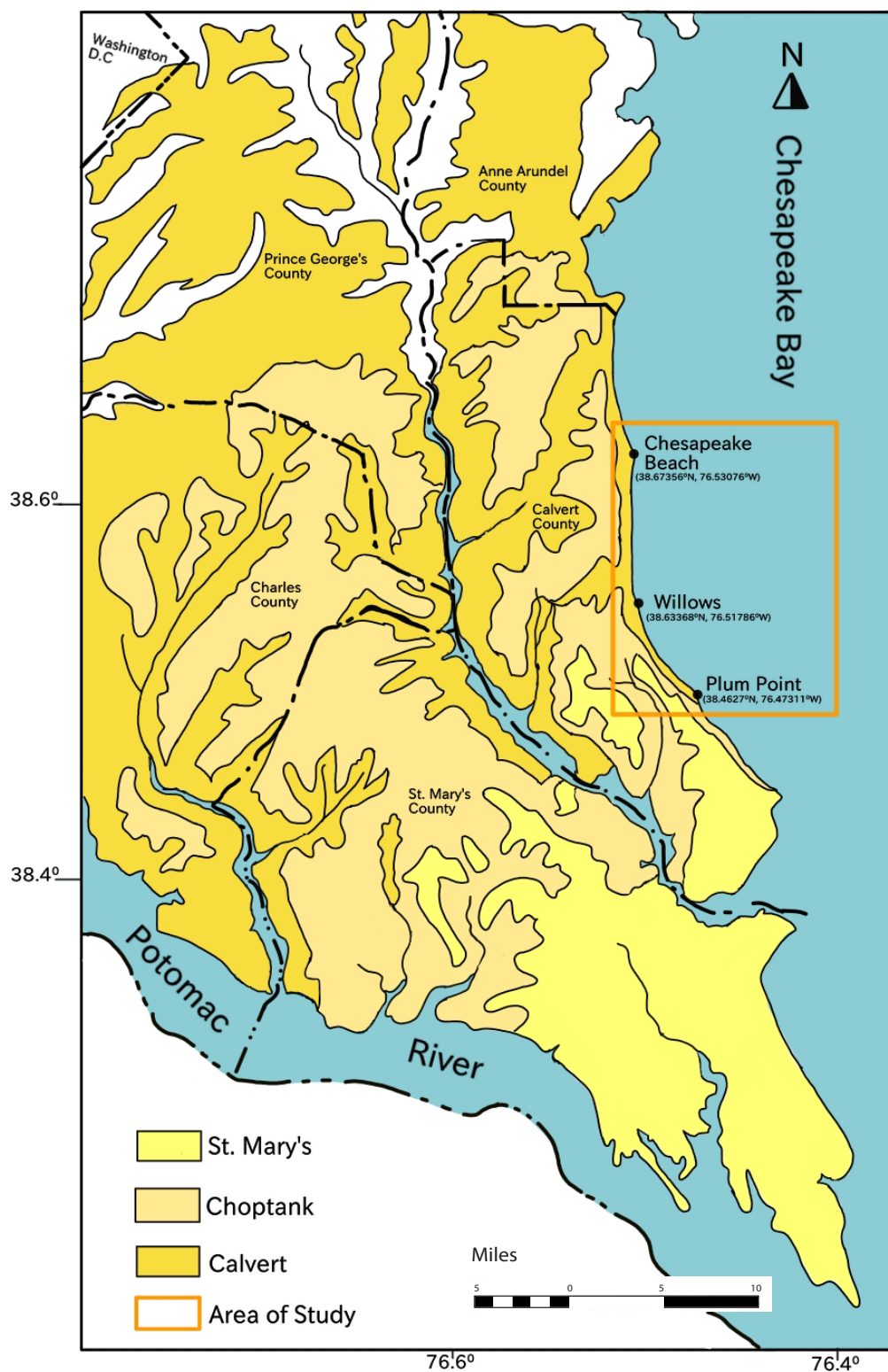


FIGURE 2.1. Map of study area, Calvert Cliffs, Maryland, with the three sites where shells were collected (in the orange box; map adapted from Kidwell et al. 2015).



FIGURE 2.2. Slumped section of Shattuck (1904) Bed 10 located below the vertical cracking of Bed 11 (38.67356°N, 76.53076°W).



FIGURE 2.3. Field photo of the sampling area of Chesapeake Beach (CB) in Bed 10 (38.67356°N, 76.53076°W).



FIGURE 2.4. Example of shell hash of Bed 10 that is part of the sampled section from Plum Point. Two complete (top right valve and bottom left valve) *Chesapecten coccymelus* shells located to the right of the scale bar.

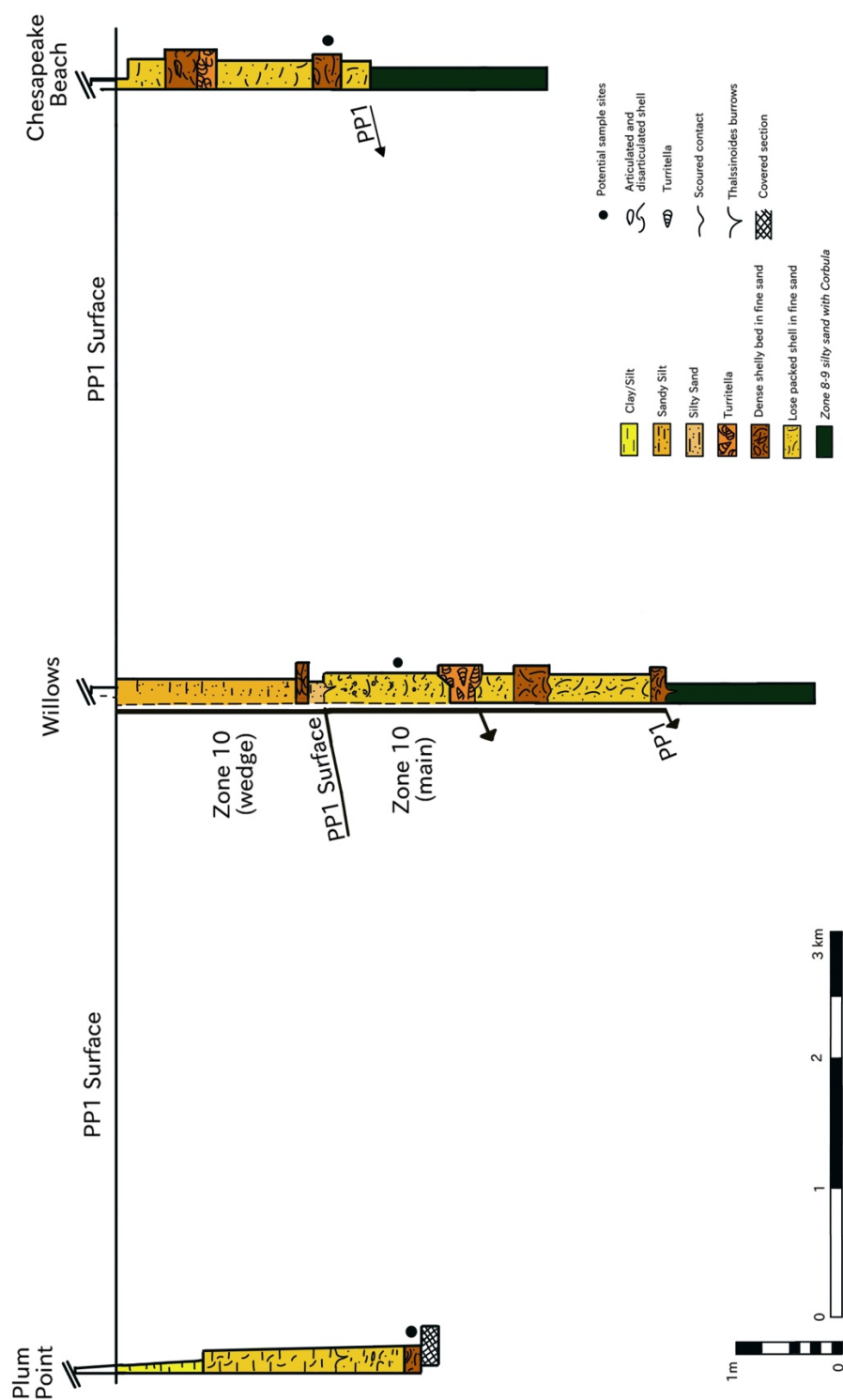


FIGURE 2.5. Stratigraphic columns of the three study sites where shells were collected (adapted from Zimmt et al., 2022).

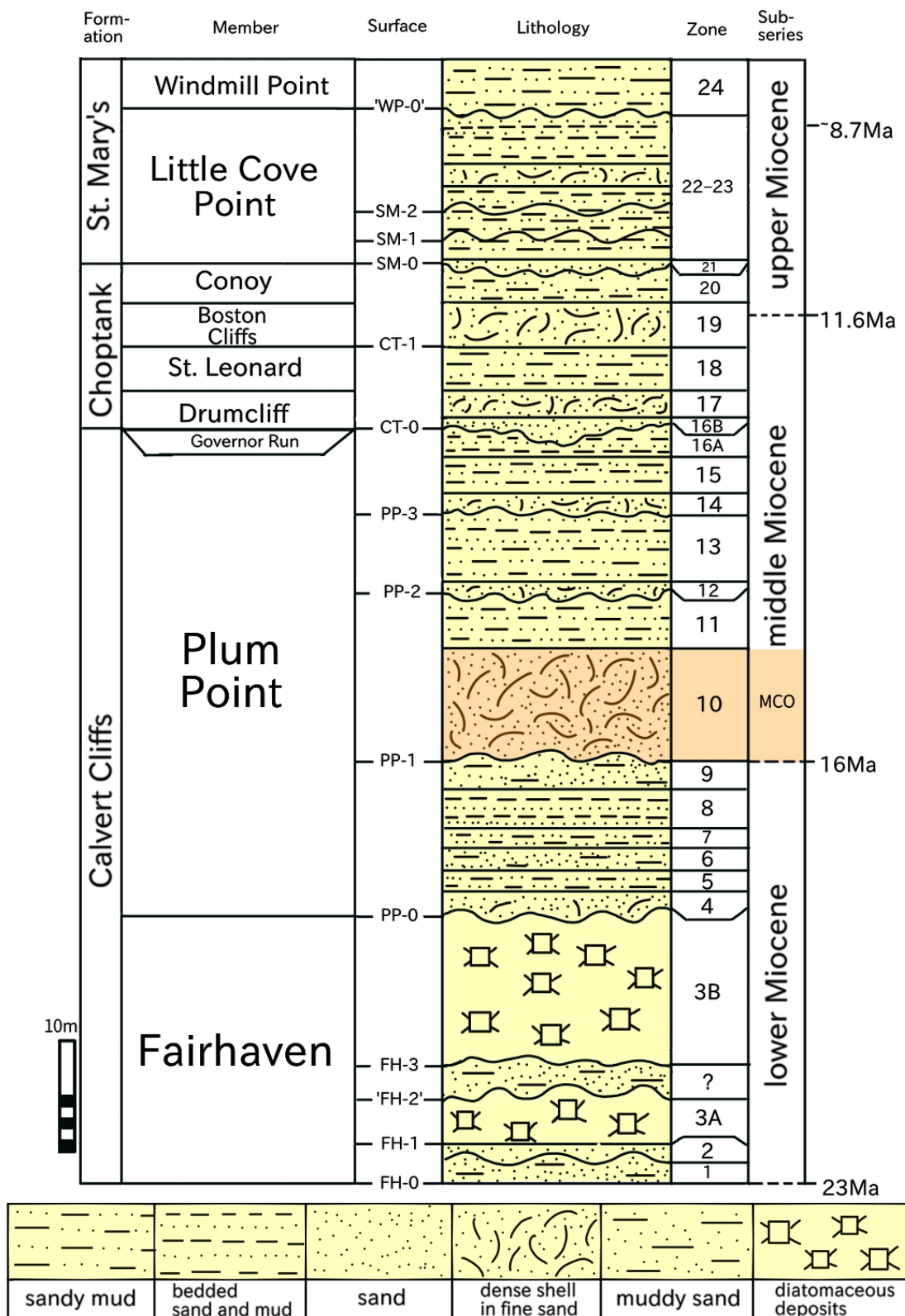


FIGURE 2.6. Stratigraphic column of the Calvert Cliffs with the MCO study area in orange (adapted from Kidwell et al., 2015; Zimmt et al., 2022).

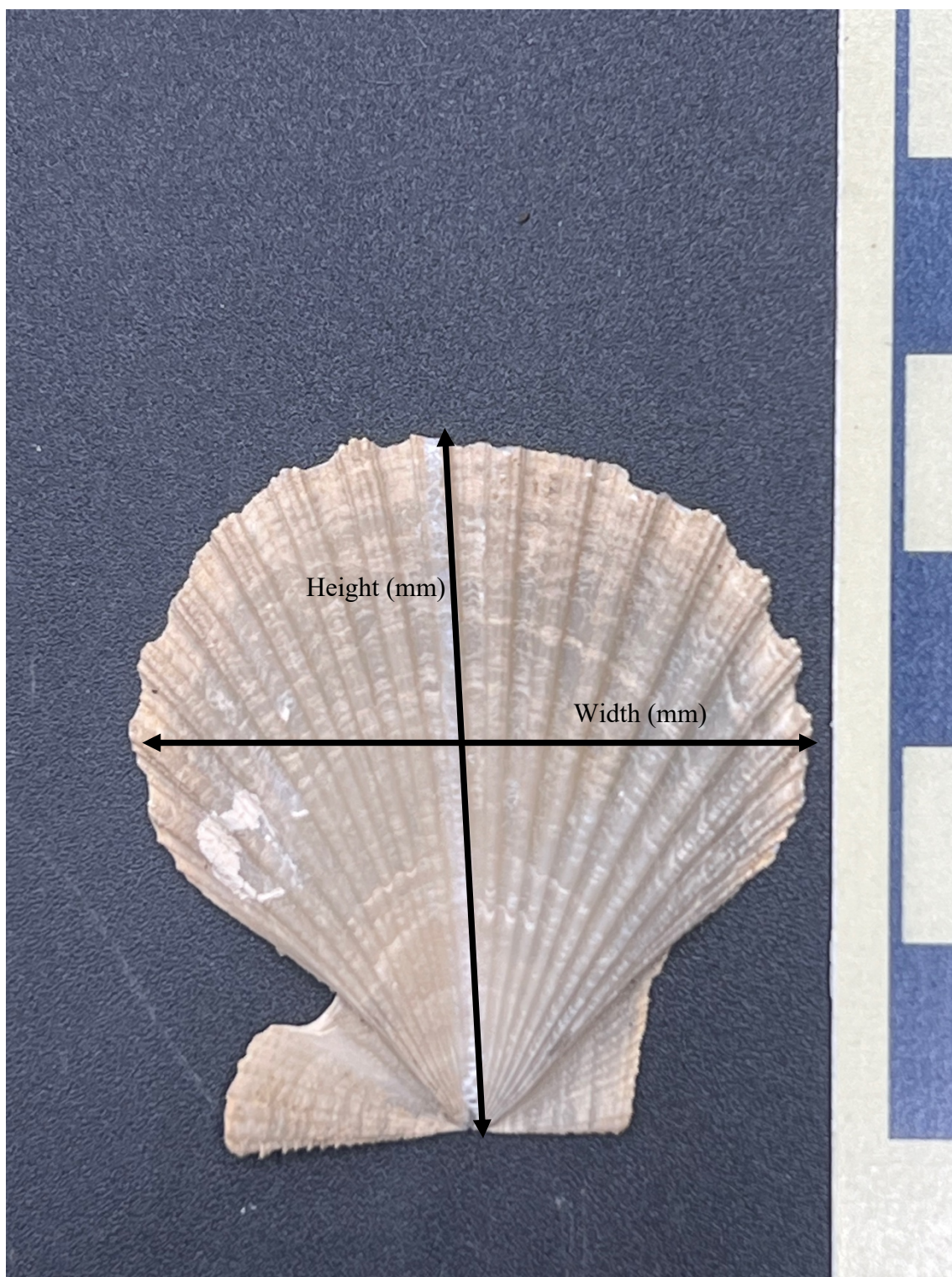


FIGURE 2.7. *Chesapecten coccymelus* shell (WI-03) with height and width measurements shown (black arrows).

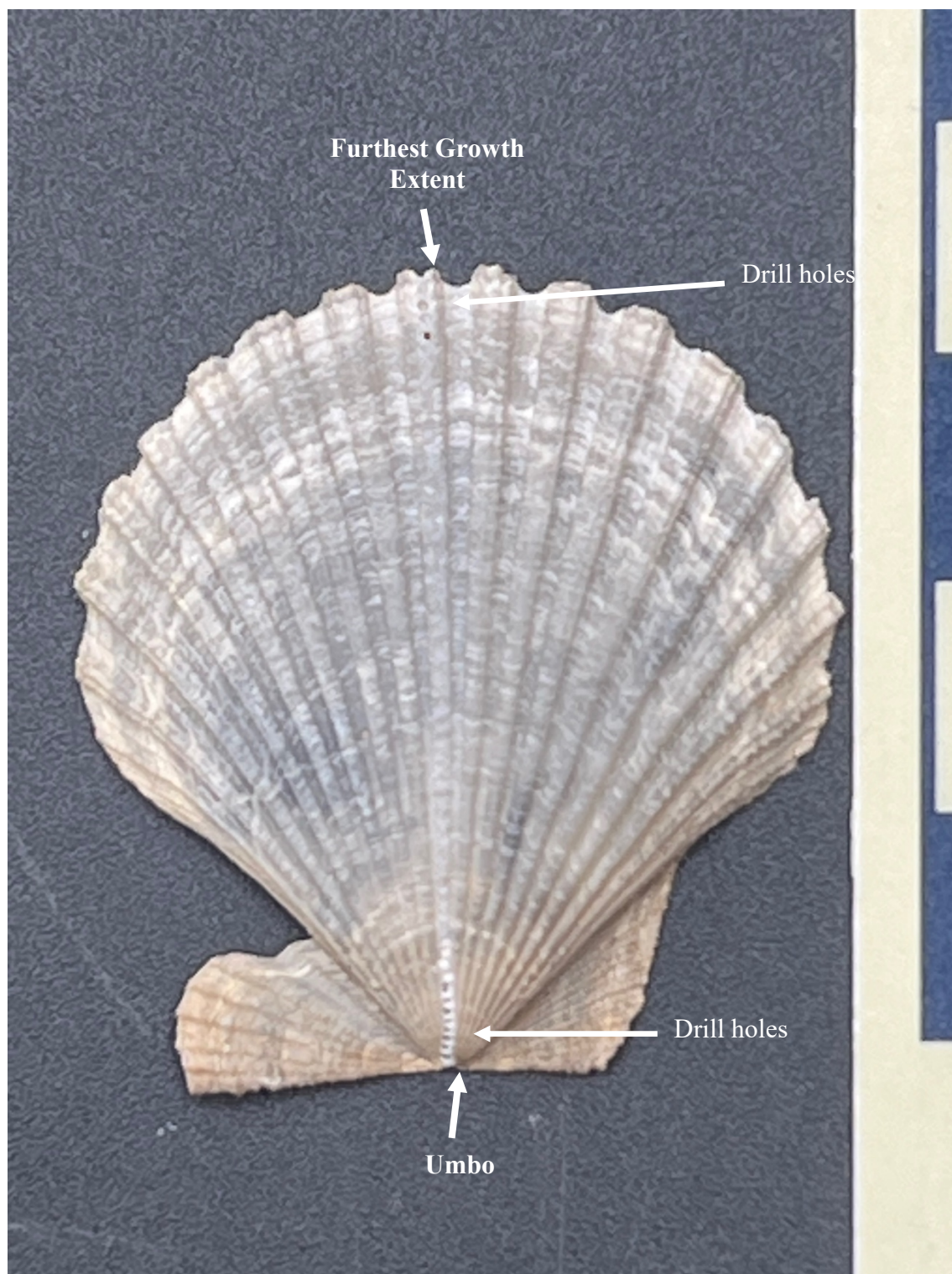


FIGURE 2.8. *Chesapecten coccymelus* shell (CB-03) after sampling from umbo to furthest growth extent. Drill holes are made at ~1mm intervals from the umbo to furthest growth extent; (1 cm scale bar).

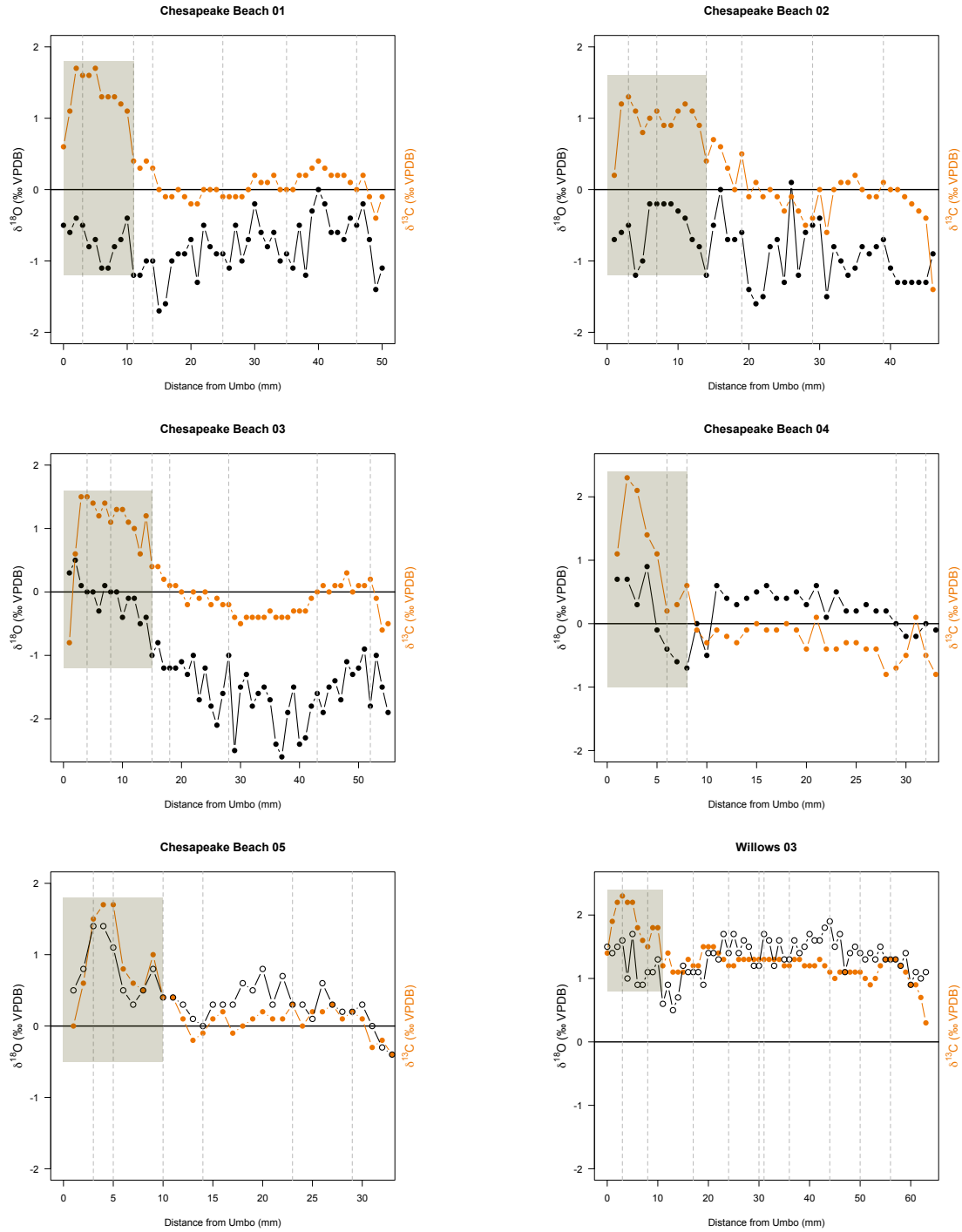


FIGURE 2.9. Change in oxygen ($\delta^{18}\text{O}$, black) and carbon ($\delta^{13}\text{C}$, orange) isotope values (in ‰) over the course of *C. coccymelus*' life. The distance is measured in mm from the umbo; gray box represents the estimated time in which the scallop reaches sexual maturity; dashed gray lines are growth cessations; zero is where the scallop settles as a spat and begins to grow its shell. Chesapeake Beach 05 and Willows 03 $\delta^{18}\text{O}$ values are shown as open circles as there are overlapping points with $\delta^{13}\text{C}$.

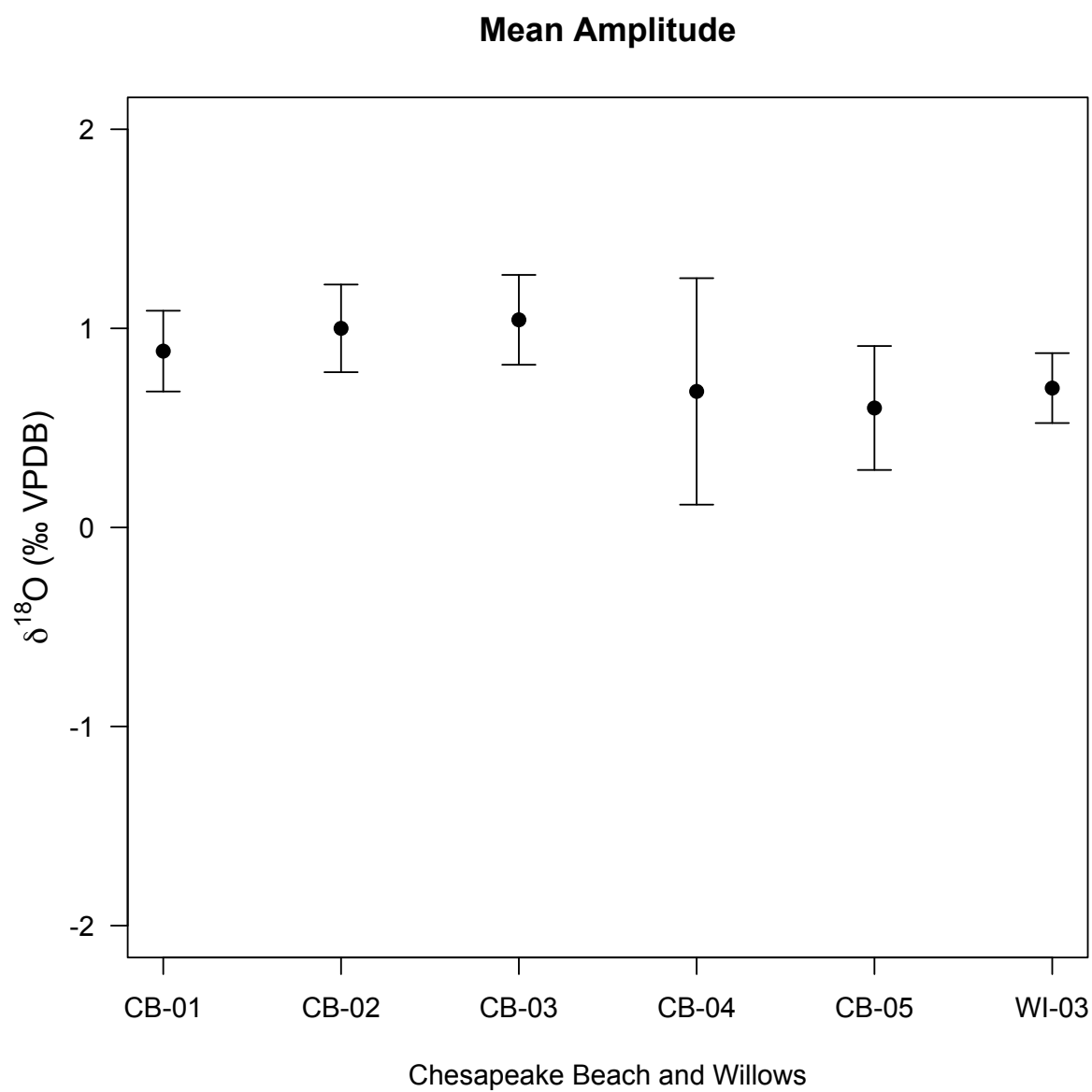


FIGURE 2.10. Mean amplitude and 95% CIs of $\delta^{18}\text{O}_{\text{shell}}$ Chesapeake Beach (CB) and Willows (WI) samples.

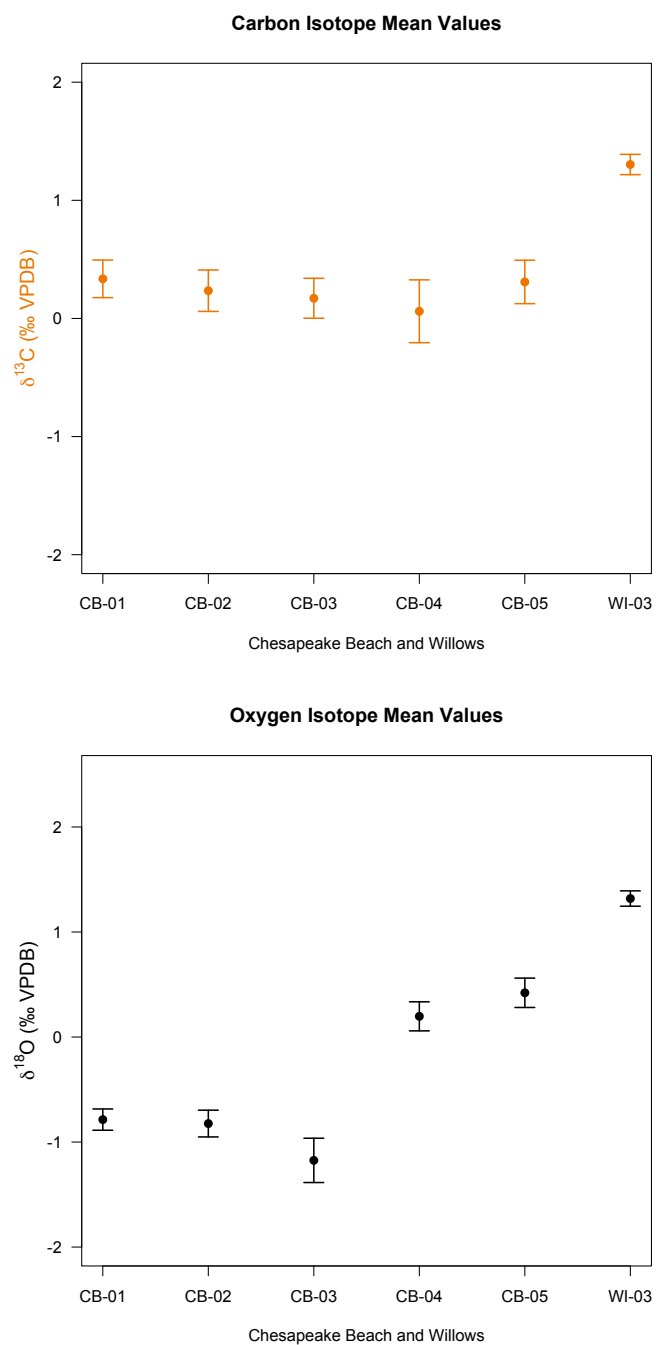


FIGURE 2.11. Mean carbon ($\delta^{13}\text{C}$, top) and oxygen ($\delta^{18}\text{O}$, bottom) stable isotope values for the six *Chesapecten coccymelus* shells sampled. The labels on the x-axis are the site abbreviations (CB = Chesapeake Beach, WI = Willows)

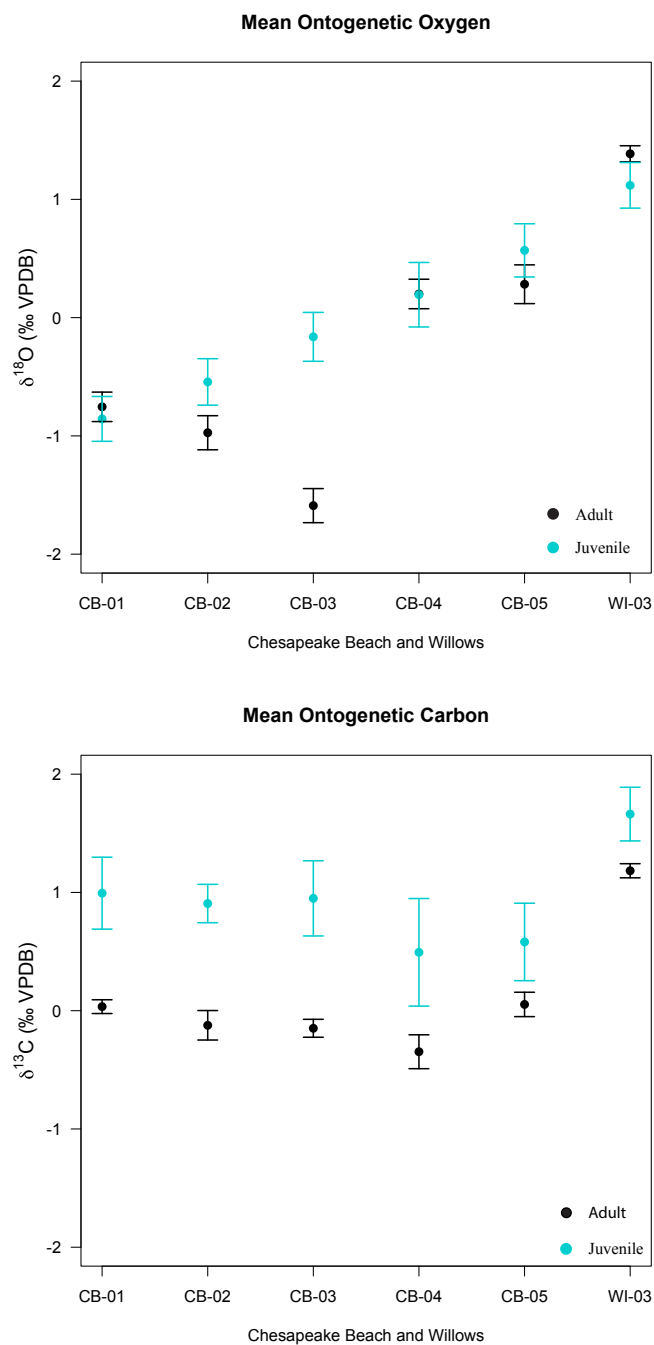


FIGURE 2.12. Mean carbon ($\delta^{13}\text{C}$, left) and oxygen ($\delta^{18}\text{O}$, right) values with 95% CIs for the juvenile stage (blue) and adult stage (black) of *C. coccymelus* (CB = Chesapeake Beach, WI = Willows).

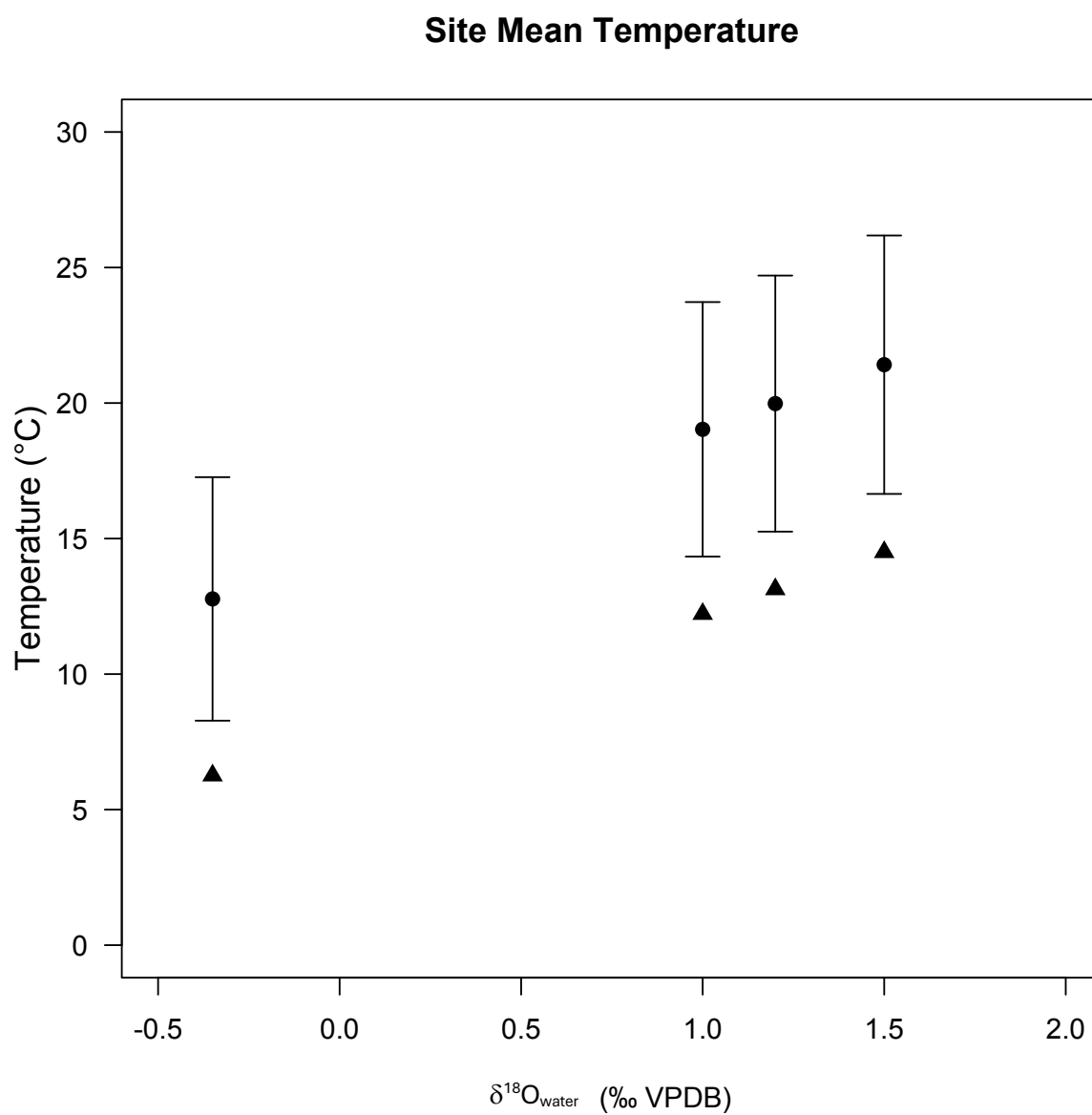


FIGURE 2.13. Mean paleotemperature calculation for Chesapeake Beach at multiple $\delta^{18}\text{O}_{\text{water}}$ values. Mean paleotemperature and 95% CIs shown for Chesapeake Beach and the paleotemperature calculation for Willows (Triangle).

CHAPTER 3

TO LUMP OR TO SPLIT?

A MORPHOMETRIC INVESTIGATION OF THE MIOCENE SCALLOP, *CHESAPECTEN COCCYMELUS*, AND THE POTENTIAL NEW SPECIES, *CHESAPECTEN GODFREYI* N. SP.

CHAPTER ABSTRACT

The taxonomy of the genus *Chesapecten* from the Miocene is generally well understood because of the excellent level of preservation present in the Calvert Cliffs, Maryland, USA. However, in Shattuck zone 10 (Bed 10) of the Calvert Formation there are two distinct morphotypes of the scallop *Chesapecten coccymelus*. A morphometric study of *C. coccymelus* and the second morphotype, known as *Chesapecten* sp., allows for better understand the overall taxonomy of *Chesapecten* from the middle Miocene (~16.60 – 15.95 Ma). Applying modern statistical analysis to shell morphometrics aids in determining if the second morphotype in Bed 10 should be classified as a new species. *Chesapecten* sp. was classified based on four attributes: convexity, number spine rows on the primary ribs, commissure shape, and auricle shape. This study finds it necessary to classify *Chesapecten* sp. as *Chesapecten godfreyi* n. sp., as a new species found in Bed 10.

Index Words: *Chesapecten*, *Chesapecten coccymelus*, taxonomy, morphometrics, morphotype, middle Miocene, Calvert Cliffs, *Chesapecten godfreyi* n. sp.

INTRODUCTION

Chesapecten coccymelus is a highly variable species (Ward and Blackwelder, 1975). Originally described by (Dall, 1898), *C. coccymelus* occurs in the lower middle Miocene and is an early species of the genus *Chesapecten* (Ward and Blackwelder, 1975). This chapter will examine the morphometrics of the extinct scallop species *Chesapecten coccymelus* and *Chesapecten* sp.

The two *Chesapecten* morphotypes are both found in the same bed: Shattuck zone 10 (Bed 10) of the Calvert Formation which dates between 16.60 – 15.95 Ma (Zimmt et al., 2022). There is a question as to whether the two different looking shells are different species or are variations within the same species. In the original *C. coccymelus* description by Dall (1898), he noted a single row of spines along each of the primary ribs and an inflated top valve. This morphotype (Dall 1898's description of *C. coccymelus*; USNM 87754) in this study is referred to as *Chesapecten* sp. In 1975, *C. coccymelus* was redescribed by Ward and Blackwelder, stating that Dall had described an uncommon end member of *C. coccymelus*. However, Ward and Blackwelder (1975) did not provided data on the variation in the species *C. coccymelus* or the frequency of the second morphotype (Dall's 1898 *C. coccymelus*). My study will be referring to Dall (1898)'s morphotype as *Chesapecten* sp.

Chesapecten coccymelus is important as it occurs at the beginning of the taxonomic tree for *Chesapecten* (Ward and Blackwelder, 1975). Further, a morphometric analysis by Goewert (2010) hypothesized that the non-typical specimen found in Bed 10 to be a transitional species between *Chesapecten coccymelus* and the scallop *Chesapecten nefrens*. *Chesapecten nefrens* is a younger species of *Chesapecten* found in Shattuck zone 14 (Bed 14)

My objective is to determine if *Chesapecten* sp. is really a new species. Doing so will hopefully clarify the current confusion surrounding the different morphotypes of *Chesapecten coccymelus*. I will compare the overall characteristics of the *Chesapecten* genus and the specific characteristics I used to identify *Chesapecten* sp. from *Chesapecten coccymelus*.

I hypothesize:

The *Chesapecten* sp. present in Bed 10 of the Calvert Cliffs is a new species of *Chesapecten*.

Site Background

These shells are from middle Miocene marine deposits located today on the coast of the Chesapeake Bay in Maryland. The stratigraphy was initially determined by Shattuck (1904) who separated the outcrop into 24 zones (beds). This study is focused on scallop shells found solely in Bed 10 of the Calvert Formation (FIGURE 3.1). Bed 10, a marine transgressive condensation surface, is primarily a dense shelly bed with fine sand and silt as the matrix (Kidwell, 1989). Because Bed 10 is a condensation surface, it is estimated that there is ~0.65 Ma years of time averaging (Zimmit, 2022). There is a mix of articulated, disarticulated, and shell hash deposited in the bed. Bed 10 outcrops along the modern shoreline at the current beach level in the southern end of the study area and ~5 m above the beach at the northern end of the study area (FIGURE 3.2).

Species Background

There are two descriptions for *Chesapecten coccymelus* (TABLE 3.1). As previously mentioned, *C. coccymelus* was initially described by Dall (1898). It was then redescribed by Ward and Blackwelder (1975). The reason for the redescription was due to Ward and Blackwelder (1975)'s belief that the Dall (1898) specimen (USNM 87754) was a non-typical specimen.

Dall (1898) describes the *C. coccymelus* as a small, ovate, inflated, strongly sculptured shell with the back of the ribs supporting numerous high, evenly spaced, distally guttered small spines (TABLE 3.1; USNM 87754). In this study I will refer to Dall's morphotype as "*Chesapecten* sp." Ward and Blackwelder (1975) describe *C. coccymelus* as small, usually less than 60 mm in height, inflated, with high distally concave spines (TABLE 3.1; USNM 193440). The type specimens used in these descriptions are housed at the Smithsonian Museum of Natural History (SMNH).

METHODS

Study Site

The Calvert Cliffs are a large deposit of Miocene strata (Kidwell et al. 2015). The stratigraphy of the cliffs was first described by Shattuck (1904). The shells examined in this study are from Bed 10 (FIGURE 3.1). This unit is a major shell bed primarily composed of whole-body fossils (both articulated and disarticulated) and shell fragments (Kidwell et al. 2015; Kidwell, 1989). This unit is a condensation surface with ~0.65 Ma of shell accumulation (Zimmit et al. 2022). The sediment matrix is an unconsolidated sandy silt mix; however, the majority of the unit is composed of shell. Bed 10 is a mix of gastropods and mollusks with the only two scallops recorded being *Chesapecten coccymelus* and *Chesapecten* sp. (Ward and Blackwelder 1975). *Chesapecten coccymelus* and *Chesapecten* sp. shells were sampled from the Calvert Cliffs in Maryland, USA, this past field season, the Calvert Marine Museum Paleontology collections, and from the paleobiology collections at the Smithsonian Museum of Natural History (SMNH). Shells collected in 2024 were collected at the same sites visited Ward and Blackwelder (1975), Randal's Cliff (Chesapeake Beach), 38.67356°N, 76.53076°W, and Camp Kaufman (Plum Point), 38.46327 °N, 76.47311 °W (FIGURE 3.2). Dall's specimen was collected at Plum Point.

Shell Measurements

A series of morphometric measurements were taken to aid in determining potential differences between *C. coccymelus* and *Chesapecten* sp. These measurements capture the general characteristics of the genus *Chesapecten* (Appendix B1.1). The measurements are based off of the measurement categories used by Ward and Blackwelder (1975): length (LN) the distance horizontally across the shell at its widest point, height (HT) the distance from the umbo to the furthest growth extent, total length of the auricle along line of ligament (LA), angle of drawn lines through origin of shell growth (at beak) and (both anteriorly and posteriorly) tangent to, but not intersecting edge of disk (ANG), convexity of the valve (CON), number of ribs (RIB; FIGURE 3.3; FIGURE 3.12). A shape category was created in this analysis by dividing the shell height by the length. This variable limits the impact of sampling across multiple life stages of the scallop. Specimens were measured using a Pittsburgh 6" Digital Calipers (0.01mm resolution). The angles were measured with a protractor. In total, 160 shells were examined from the Calvert Marine Museum, Smithsonian Museum of Natural History, and shells collected during field work. Three specimens from the SMNH type collections were also examined (USNM 193440, USNM 193441, and USNM 87754).

I also added my own characteristics specifically: convexity, number of spine rows, commissure shape, and auricle shape. I then tested if there was any difference between the two morphotypes using these characteristics and shell measurement data.

A series of data subsets from the original 160 shells was created based *C. coccymelus* and *Chesapecten* sp. (APPENDIX B1.1). One to examine all the morphometric measurements of top shells from *C. coccymelus* and *Chesapecten* sp. (14 shells; Appendix B 1.2). A second to examine the overall body shape of top shells for the two morphotypes (51 shells; Appendix B

1.3). And a third subset consisting of only top shells in which classification of morphotypes was verified based on the attributes identified by this study (20 shells; Appendix B 1.4). All subsets excluded shells with NA values.

For the genus level analysis, the measurements taken (based on Ward and Blackwelder 1975) were used as variables for Principal Component Analysis (PCA), Linear Discriminant Analysis (LDA), and scatter plots. Statistical analysis was done using RStudio (R Studio Team, 2021; Appendix B 2). Two analyses were done, one with all the morphometric data measurements for top valves (14 shells) and another focused on the shape and inflation of the top valves (51 shells; Appendix B 2.1; Appendix B 2.2). Further, if the sample had suffered any damage such as chipping that prevented accurate measurements were also excluded. In both the PCA and LDA a new variable was calculated to show the shape of the shell by dividing the height by the length. The shape variable is unitless and serves to compare the overall body shape of *C. coccymelus* and *Chesapecten* sp. without the influence from the sampling of different life stages. A PCA was done on a subset of 14 shells to compare the morphometric measurements. Another PCA was run a subset of 51 shells comparing the overall shape: shape and convexity.

The LDA allows for the classification of data and a prediction the accuracy of the classification. Like the PCA, two LDAs were created. One comparing the morphometric measurements from the 14-shell subset and one comparing the overall shape (51-shell subset; Appendix B2). Plotting these variables on a solely 2D plane allows for more clarity when comparing to the point cloud of the PCA. The accuracy was calculated for both of the LDA analyses, as well as a jackknifed accuracy to determine how accurate the predictions of the LDA were for the two groupings, *Chesapecten* sp. and *C. coccymelus*.

A non-parametric Kruskal-Wallis rank sum test was performed on the 20 shell subset of data (Appendix B 2.3). The Kruskal-Wallis test was run because of the non-parametric and ordinal nature of the classification data. There were four variables for the tests: number of spine rows on each primary rib, commissure shape, auricle shape, and inflation. These categories were given a 1 or 2 based their physical characteristics (zigzag commissure = 1, rounded commissure = 2, straight auricle = 1, curved auricle = 2, inflated = 1, not inflated = 2). The exception to this is the column for the number of spines in which shells were assigned the number that corresponded to the number of spines they had (1 or 3 rows). Inflation was included as the ordinal representation of the convexity measurements. The mean and 95% CIs were calculated for the convexity measurements. A boxplot was also created to further examine the distribution of the convexity data.

RESULTS

General Morphometric Results

There are four attributes used when classifying the morphotypes. The number of spine rows on the primary ribs, the convexity, the commissure shape, and the auricle shape (of the posterior auricle). For *Chesapecten* sp., one scabrous spine row is present on the top of the primary ribs, the commissure is zigzag, the convexity is generally inflated, and the auricle shape is straight. For *C. coccymelus*, there are three distinct rows of spines on the primary ridge, the commissure shape for *C. coccymelus* is more rounded at the apex of the ridge, the convexity is generally flatter than that of *Chesapecten* sp., and the posterior auricle of the top valve is generally more curved (FIGURE 3.5; TABLE 3.2). Each shell included in my study was examined for these four variables which was considered when determining its classification

(TABLE 3.3). These physical morphological differences between *C. coccymelus* and *Chesapecten* sp. suggest the classification of *Chesapecten* sp. as its own species.

The morphological observations are most commonly made using the top valve of the scallop. The bottom valves are generally flatter than the top in both species which makes the inflation characteristic difficult to determine when only observing bottom shells. However, the scabrous rows on the primary ribs are consistent on both the top and bottom valves, as well as the commissure and auricle shape thus, morphometric distinctions can be made.

PCA Results

The PCA examining all measured characteristics (angle, height, length, auricle length, number of primary ribs, convexity, shape) had 14 samples total. There is a single point cloud containing both *C. coccymelus* and *Chesapecten* sp. PC1 represents the most variable data and PC2 represents the second most variable data. PC1 is the variance of the shape, auricle length, and rib count (TABLE 3.4). The only loading above 20% variance is PC1 (TABLE 3.4). PC2 is the variance of convexity and shape (TABLE 3.4). When examining the loadings, the number of ribs (RIB) and the auricle length (LA) have the least amount of influence in separation while convexity, angle, and shape are more influential variables in determining separation. The only loading which caused any separation is convexity (FIGURE 3.6). These data are consistent with confirming that *Chesapecten* sp. falls within the *Chesapecten* group as well as its potential as a new species with there being a slight grouping based on convexity.

The PCA for overall body shape compared the shape variable to convexity yielding only separation appears along the convexity loading (FIGURE 3.7). This PCA had 51 samples that are generally grouped into one single point cloud. Shape and convexity are uncorrelated diverging from each other at 90° (FIGURE 3.7). The only grouping occurs along convexity with *C.*

coccymelus being less convex than *Chesapecten* sp. Because the PCA only used two variables, the data was also plotted as a scatter plot (FIGURE 3.7), further supporting that the convexity of *Chesapecten* sp. is slightly greater than that of *C. coccymelus*. The PC1 for the overall body shape (FIGURE 3.7) accounts for over 50% of the variance (TABLE 3.5).

LDA Results

The results of the LDA for the morphometric measurements (14 shells) support the findings in the PCA. In an LDA, the bars are the sample groupings, the height of the bars are the number of samples in that grouping, and the more tightly spaced the bars are, the more related the groupings are. The black line is the decision boundary which separates the samples into different groups (FIGURE 3.8). The accuracy for the LDA predictions based on morphotype is 1% (TABLE 3.6). The jackknifed accuracy for the LDA with the morphometrics measurements is 79% (TABLE 3.7). The LDA for the morphometric measurements, is weakly grouped and has overlap between the two morphotypes (FIGURE 3.8). The grouping of the majority of *Chesapecten* sp. is to the right of zero (FIGURE 3.8) and the grouping of *C. coccymelus* is to the left. Thus, based on all of the morphometric measurements of these top shells, there is a clear separation between the two morphotypes.

The LDA of overall body shape (51 shells) supports the findings of the morphometric measurement LDA and the PCAs. The accuracy for the overall body shape LDA is 69% (TABLE 3.8). The jackknifing had no effect on the accuracy of the LDA predictions with its accuracy also being 69% (TABLE 3.9). The groupings of *Chesapecten* sp. are weaker and more variable than that of *C. coccymelus* (FIGURE 3.9). The majority of the groupings for *Chesapecten* sp. are to the right of zero which supports the findings of the morphometric measurement LDA. These findings of slight separation within the genus level analysis combined

with the physical morphometric analysis support the potential to classify *Chesapecten* sp. as a new species of *Chesapecten*.

Further Statistical Analysis

Based on the findings of the discriminant function analyses, the mean and 95% CIs were calculated for the parametric variables (convexity, angle, auricle length, and number of ribs; FIGURE 3.14). These plots show there was no difference between the two morphotypes for any of the measurable characteristics. However, when examining the mean and median convexities, the mean and median values for *Chesapecten* sp. were slightly higher than *C. coccymelus* but not significant (FIGURE 3.15). A Kruskal-Wallis test supports the separation of morphotype based on their number of scabrous spine rows, commissure shape and auricle shape. Significant differences were found in the number of rows of spines, the commissure shape, and the auricle shape (Spines: chi-squared = 14.438, df = 1, p-value = 0.0001449, Commissure: chi-squared = 12.504, df = 1, p-value = 0.000406, Auricle Shape: chi-squared = 8.0667, df = 1, p-value = 0.004509). There is however, no significant difference in the inflation or convexity of the shells (chi-squared = 19, df = 19, p-value = 0.4568).

DISCUSSION

To determine if the morphotypes differed, I looked at four main features: number of rows of scabrous spines on the primary ribs, commissure shape, auricle shape and convexity (TABLE 3.2). For *C. coccymelus*, according to Ward and Blackwelder (1975) the number of spine rows is variable. However, my study finds the morphotypes had either three rows of spines or one row (FIGURE 3.4). All *Chesapecten* sp. shells had a single row of spines, while all of the *C. coccymelus* shells had three rows of spines. The commissure for *Chesapecten* sp. and *C. coccymelus* is also distinctly different, with *C. coccymelus* having a more rounded commissure

and *Chesapecten* sp. having a more zigzag or pointed commissure (FIGURE 3.4). Lastly, the general auricle shape of *Chesapecten* sp. is straighter than that of *C. coccymelus* (FIGURE 3.5).

Description Comparison

Chesapecten coccymelus was first described in 1898 by Dall. This specimen is a small top valve with a single distinct row of scabrous spines on the primary ribs (USNM 87754, FIGURE 3.11; TABLE 3.1). In his description, Dall (1899) notes the inflation, oval shape and presence of spines on the back of the ribs (TABLE 3.1). I examined his type specimen and found the shell is inflated and strongly sculptured with a single row of scabrous spines on the back of the primary ribs (USNM 87754, FIGURE 3.11).

In 1975, Ward and Blackwelder (1975) made a revision to Dall (1898)'s description. They described the type specimen of *C. coccymelus* named by Dall (USNM 87754, FIGURE 3.11) as an "end member of a somewhat variable species" and instead proposed a description using what they considered a more morphologically "typical" specimen (USNM 193440, FIGURE 3.12; TABLE 3.1).

For *C. coccymelus*' re-description, according to Ward and Blackwelder (1975), the auricles are flattened and in plane with the commissure. There are one to three rows of concave spines on the primary ribs, a slightly inflated right valve, a variable number of primary ribs, and the shell is less than 60 mm in height.

There is a third shell included in Ward and Blackwelder (1975)'s paper to which they describe as *Chesapecten* sp. (USNM 193441; FIGURE 3.10). For this shell which I will refer to by its USNM number (USNM 193441), there is no official description.

Chesapecten nefrens is described as having a variable number of unflattened primary ribs, nonuniform scabrous lirae, a slight convexity in the right valve, ctenidium, and a large adult shell ~150 mm (Ward and Blackwelder, 1975). Further, for comparison, *Chesapecten*

santamaria has a slightly convex left valve, flattened ribs, ctenidium, uniform scabrous lirae and large adult shells greater than 120 mm. *Chesapecten* sp. is like many *Chesapecten*, slightly inflated and has a variable number of primary ribs. However, *Chesapecten* sp. differs in that it has a zigzag-shaped commissure and the presence of a single row of scabrous spines along each of its primary ribs. Because of this, my study finds it acceptable to classify *Chesapecten* sp. as a new species of *Chesapecten*.

The description given by Ward and Blackwelder (1975) does not give precedence to the *C. coccymelus* given by Dall (1898). Rather they defined Dall's specimen as a non-typical morphotype and redescribed *C. coccymelus*. My study finds twenty-seven (top shells) of the 160 total shells (top and bottom) to be *Chesapecten* sp. (~17%). Based on the frequency of *Chesapecten* sp. found in this sample size, I would argue that *Chesapecten* sp. is not as non-typical as claimed by Ward and Blackwelder (1975). My description of *Chesapecten* sp. matches what was originally described by Dall (1898) for *C. coccymelus*. However, my study had used the classification description by Ward and Blackwelder (1975) as it is the commonly accepted description. Because of this difference, I find it necessary to describe *Chesapecten* sp. as its own species, rather than lumping it with *C. coccymelus* as Ward and Blackwelder (1975) described to hopefully clear some of the confusion surrounding the two morphotypes in Bed 10. However, the description for *C. coccymelus* should be that originally written by Dall (1898) based on priority and the other morphotype of the redescription by Ward and Blackwelder (1975) should technically be classified as *Chesapecten* sp. the new species.

In the type collections at the SMNH there is a shell labeled by Ward and Blackwelder (1975) as "*Chesapecten* sp." (USNM 193441). However, in their 1975 paper, there is no description of the shell or the reasoning behind why they classified it as "*Chesapecten* sp." I disagree with their

labeling USNM 193441 as *Chesapecten* sp. because its morphology is consistent with that of a *C. coccymelus* bottom valves (right valves). While the spines are worn, three lines where the scabrous spines on the ribs are still present. The commissure is rounded and there is very little convexity which, is expected in a bottom valve (FIGURE 3.13). Because most of the observable differences between their “*Chesapecten* sp.” and *C. coccymelus* are identifiable on the top shell not the bottom. Therefore, USNM 193441 a *C. coccymelus* its own morphotype.

Morphometrics

There is overlap between the morphometric data from *Chesapecten coccymelus* and *Chesapecten* sp., likely due to the analysis of genus level attributes as all of the parametric traits measured are traits described by Ward and Blackwelder (1975; (FIGURE 3.6; FIGURE 3.7). In both PCAs, the only loading that had any major influence was convexity. In the morphometric measurement PCA (FIGURE 3.6), there is a singular point cloud with the only separation being along the convexity loading. In the overall body shape PCA (FIGURE 3.7), there is a further separation based on the convexity. This separation is something expected as the convexity of the shell, while it is a genus level attribute, is a distinct attribute when identifying *Chesapecten* morphotypes. There is little to no separation of points based on the other loadings in the PCA.

The LDA of all morphometric measurements shows clear grouping of *C. coccymelus* and *Chesapecten* sp., with *C. coccymelus* to the left of zero and *Chesapecten* sp. to the right (FIGURE 3.8). There is a large amount overlap between species in the body shape LDA (FIGURE 3.9). However, there are slight groupings present in both LDA allowing for the potential of a new species. *Chesapecten* sp. is generally grouped more to the right of zero, and *C. coccymelus* has its tightest grouping to the left of zero. The overlap is expected in this case

because the attributes are expected to be within the same general range for both *C. coccymelus* and *Chesapecten* sp.

The Kruskal-Wallis test results reveal significant differences between *C. coccymelus* and *Chesapecten* sp. in their commissure shape, number of scabrous spine rows on each rib, and the auricle shape. This result is significant because these are species specific attributes. The convexity result does not show any statistical significance however, convexity is a genus level attribute that appears to be slightly larger in *Chesapecten* sp. than in *C. coccymelus*. This finding is supported by the overlapping mean and 95% CI values of *Chesapecten* sp. and *C. coccymelus* for convexity (FIGURE 3.14; FIGURE 3.15).

Potential Transitional Form

Another hypothesis on how *Chesapecten* sp. fits into the *Chesapecten* taxonomic tree, is that *Chesapecten* sp. is a transitional species between *C. coccymelus* and *C. nefrens* (Goewert, 2010). *Chesapecten nefrens* is younger than *C. coccymelus*, found in bed 14 of the Calvert Formation (TABLE 3.10; Ward and Blackwelder, 1975). *Chesapecten coccymelus* and *C. nefrens* are both identified as having typical specimens and non-typical specimens by Goewert (2010). Similarly, Ward and Blackwelder (1975) believe the *C. coccymelus* specimen collected by Dall (1898) to be a non-typical specimen for the species. Goewert (2010), in her Confirmatory Data Analysis (CDA) found that *C. nefrens* was misclassified as *C. coccymelus* 16.7% of the time. According to Goewert (2010) this misclassification could be a result of a transitional species between *C. coccymelus* and *C. nefrens*.

I do not necessarily support those of Goewert (2010). Goewert (2010)'s CDA was used to determine how well her model reflects the observed data and classifies it as different species according to those data. Her percentage of misclassification is supported by the lack of

separation of the *Chesapecten* sp. from *C. coccymelus* in the PCA and body shape LDA analysis of my study, however these analyses are performed at the genus level with shared traits similar among *Chesapecten* species. The identifiable difference between species arises when examining visual characteristics. For *C. coccymelus*, I found that one of its defining traits is its three distinct rows of spines on the primary rib, rounded commissure, and its small ovate shell. In comparison, *C. nefrens*, a significantly larger scallop, has nonuniform scabrous lirae on the primary ribs as well as narrow, flattened primary ribs. For *Chesapecten* sp. the commissure is different from both *C. coccymelus* and *C. nefrens* with its zigzag commissure. In addition, *Chesapecten* sp. in all its identified specimens has a single row of spines along each rib as in Dall (1898)'s original description for *C. coccymelus*.

Potential New Species

Because of the confusion surrounding the original description and redescription, I believe that based on priority, the specimen described by Dall (what this study has been referring to as *Chesapecten* sp.) is the correct description for *C. coccymelus*. Thus, the morphotype described by Ward and Blackwelder (1975) would technically need be classified as a new species. Therefore, I suggest the renaming of Ward and Blackwelder's description of *Chesapecten coccymelus* (USNM 193440) as *Chesapecten godfreyi* as Dall's 1898 specimen (USNM 87754) has priority and should remain as *C. coccymelus*.

Chesapecten godfreyi n. sp.

Diagnosis. — *Chesapecten godfreyi* n. sp. is a small, ovate scallop, usually approximately 60 mm in length. The commissure is round in shape. Three lines of scabrous spines are present on the top of each of the primary radial ribs.

Description. — Three rows of scabrous spines along the primary radial rib. Spines can be present on both valves. The commissure shape between the two shell valves is round with the rib crests being round. Right auricle shape curved from posterior side to hingeline. Number of primary radial ribs variable, usually between 15–19.

Etymology. — Named for Dr. Stephen Godfrey, Curator of Paleontology, at the Calvert Marine Museum, whose expert knowledge of the Calvert Cliffs and passion for paleontology was invaluable to this study.

Occurrence. — Neogene (middle Miocene), marine shoreface sands, found in the dense shelly Bed 10 (Shattuck, 1904) of the Calvert Formation at the Calvert Cliffs, Maryland, USA. GPS location: 38.67356°N, 76.53076°W.

CONCLUSIONS

My study proposes Ward and Blackwelder (1975)'s *Chesapecten coccymelus* to be classified as a new species found in Bed 10 of the Calvert Cliffs. Based on the genus level analysis and physical characteristics, I believe there to be enough separation between Ward and Blackwelder's *C. coccymelus* from Dall's *C. coccymelus* and *C. nefrens* to classify Ward and Blackwelder's *C. coccymelus* as a separate species from Dall's original *C. coccymelus* description. The main visual characteristics present in the classification of Dall's *C. coccymelus* morphotype my study identified are the number of scabrous rows of spines (one), the

commissure shape (zigzag), the top valve appears inflated, and the shape of the right auricle (straight).

There is a difference in how *C. coccymelus* is described by Dall (1898) and how Ward and Blackwelder (1975) describe the species. Dall (1898) describes *C. coccymelus* (USNM 87754; FIGURE 3.11) as a small, inflated, ovate shell with a single row of scabrous spines on each rib (TABLE 3.1). Ward and Blackwelder (1975) redescribed *C. coccymelus* as being ~60 mm in height and having 1–3 scabrous spines on each rib (USNM 193440; FIGURE 3.12; TABLE 3.1). My study used the description by Ward and Blackwelder (1975) to determine *C. coccymelus*. However, I suggest the renaming of Ward and Blackwelder’s morphotype as there is clear separation between their morphotype and the original description by Dall (1898). As the Dall (1898) description has priority, Ward and Blackwelder’s morphotype should instead be renamed as *Chesapecten godfreyi* n. sp. to avoid further confusion.

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Tables

TABLE 3.1. Original *C. coccymelus* description (Dall, 1898) and the redescription by Ward and Blackwelder (1975).

ORIGINAL DESCRIPTION (Dall, 1898)	DESCRIPTION (WARD AND BLACKWELDER, 1975)	DIAGNOSIS (WARD BLACKWELDER, 1975)
“Shell small, ovate, inflated, strongly sculptured, with unequal ears; disk with eighteen narrow, high, compressed ribs, with wider interspaces, which near the basal margin carry one to two small radial threads; the backs of the ribs support numerous high, evenly spaced, distally guttered, small spines; the interspaces only transverse sculpture of wavy incremental lines; submargins small, narrow, with fine, beaded radial threads, which in the left valve also extend over the ears; hinge-line short, the cardinal crura developed, sharply cross striated; angular crura present; interior of the disk fluted in harmony with the external ribs.”	“Valves small, usually less than 60 mm in height, thin, suborbicular, biconvex, left valve inflated, right valve less inflated, small gapes present along ventral commissure owing to inexact match of opposing valves; small gapes between opposing disk flanks.”	“<i>Chesapecten coccymelus</i> is a small <i>Chesapecten</i>, usually less than 60 mm in height, having very high distally concave spines and unequal auricles, the anterior auricle being longer than the posterior.”

TABLE 3.2. Species physical characteristics used in the identification of *Chesapecten coccymelus* and the species *Chesapecten* sp.

SPECIES	ROW(S) OF	AVERAGE	AURICLE	
	SPINES	CONVEXITY	COMMISSURE	SHAPE
<i>C. coccymelus</i>	3	4.76 mm	Rounded	Curved
<i>Chesapecten</i> sp.	1	6.13 mm	Zigzag	Straight

TABLE 3.3. Classification attributes for verified *Chesapecten* sp. and *C. coccymelus* shells.

<i>Species</i>	<i>Sample</i>	<i>Convexity</i>	<i># of Spine Rows</i>	<i>Commissure Shape</i>	<i>Auricle Shape</i>	<i>Inflated</i>	<i>Valve</i>
C. sp	CR-Cs-5-a	7.13	1	1	1	1	Top
C. sp.	CR-Cs-5-b	4.98	1	1	1	2	Bottom
C. coccy	CB art.	5.71	3	2	2	2	Top
C. coccy	CB art.	4.25	3	2	2	2	Bottom
C.coccy	BB-05	3.12	3	2	2	2	Bottom
C. coccy	BB-04	3.24	3	2	2	2	Bottom
C.coccy	BB-03	4.33	3	2	2	2	Bottom
C. coccy	BB-02	4.18	3	2	2	2	Bottom
C. coccy	BB-01	3.81	3	2	2	2	Bottom
C. coccy	WI-03	4.94	3	2	2	2	Bottom
C. coccy	WI-07	4.33	3	2	2	2	Bottom
C. coccy	WI-08	3.9	3	2	2	2	Bottom
C.coccy	CR-18	4.29	3	2	2	2	Bottom
C. coccy	CR-30	3.96	3	2	2	2	Bottom
C. coccy	CR-26	4.77	3	2	2	2	Bottom
C. sp.	CR-Cs-1	7.08	1	1	1	1	Top
C. sp.	CR-Cs-2	5.39	1	1	1	1	Top
C. sp.	CR-Cs-3	5.33	1	1	1	1	Top
C. sp.	CR-Cs-4	5.84	1	1	1	1	Top
C. sp.	CMM-I-2270	4.3	1	NA	NA	1	Top
C. sp.	CMM-I-576	7.89	NA	2	1	1	Top
C. sp.	CMM-I-1288	7.86	1	1	NA	1	Bottom
C. coccy	CR-CC-1	6.57	3	2	2	2	Top
C. coccy	CR-CC-2	5.42	3	2	2	2	Top
C.coccy	CR-CC-3	5.19	3	2	2	2	Top
C. coccy	CR-CC-4	4.02	3	2	2	2	Top
C. sp.	BB-Cs-1	5.89	1	1	1	1	Top
C. sp.	HW-Cs-1	6.32	1	1	1	1	Top
C. sp.	WI-01	6.27	3	2	2	1	Top
C. sp.	HW-Cs-2-a	8.19	1	1	NA	1	Top
C. sp.	HW-Cs-2-b	4.81	1	1	NA	2	Bottom
C. sp.	HW-Cs-3-a	7.53	1	1	1	1	Top
C. sp.	HW-Cs-3-b	4.36	1	1	1	2	Bottom
C. coccy	HW-CC-1	7.77	3	2	NA	2	Top
C. coccy	USNM193440	7.12	3	2	1	2	Top
C. coccy	USNM193441	4.14	NA	2	1	2	Bottom
C. sp.	USNM87754	5.08	1	1	NA	1	Top

TABLE 3.4. Importance of components for all morphometric measurement PCA.

	PC1	PC2	PC3	PC4	PC5
Standard Deviation	1.8327	0.9874	0.6259	0.4845	0.1997
Proportion of Variance	0.6717	0.1950	0.0784	0.0470	0.0080
Cumulative Proportion	0.6717	0.8667	0.9451	0.9920	1.00000

TABLE 3.5. Importance of components for the overall body shape PCA

	PC1	PC2
Standard Deviation	1.437	0.6732
Proportion of Variance	0.7734	0.2266
Cumulative Proportion	0.7734	1.000

TABLE 3.6. Accuracy for the LDA with all morphometric measurements.

	<i>Chesapecten coccymelus</i>	<i>Chesapecten sp.</i>
<i>Chesapecten coccymelus</i>	6	0
<i>Chesapecten sp.</i>	0	8

TABLE 3.7. Jackknife accuracy for the LDA with all morphometric measurements.

	<i>Chesapecten coccymelus</i>	<i>Chesapecten sp.</i>
<i>Chesapecten coccymelus</i>	3	3
<i>Chesapecten sp.</i>	0	8

TABLE 3.8. Accuracy for the overall body shape LDA.

	<i>Chesapecten coccymelus</i>	<i>Chesapecten sp.</i>
<i>Chesapecten coccymelus</i>	32	4
<i>Chesapecten sp.</i>	12	3

TABLE 3.9. Jackknife accuracy for the overall body shape LDA.

	<i>Chesapecten coccymelus</i>	<i>Chesapecten sp.</i>
<i>Chesapecten coccymelus</i>	32	4
<i>Chesapecten sp.</i>	12	3

TABLE 3.10. Ward and Blackwelder (1975) description and diagnosis of *Chesapecten nefrens*.

DIAGNOSIS:	DESCRIPTION:
“<i>Chesapecten nefrens</i> is a large <i>chesapecten</i> with large gapes between disk flanks and along the ventral commissure, nonuniform scabrous lirae, a pronounced byssal notch, unflattened ribs, and an only slightly convex right valve.”	“Valves large, adults often greater than 120 mm in height, suborbicular, biconvex, left valve strongly inflated, right valve very slightly inflated, most adults longer than high; gapes present along the ventral commissure owing to inexact match of opposing valves; very large gapes between opposing disk flanks. Auricles well developed, subequal; aruicular denticles present but not in contact when valves together. Free margins of posterior auricles flat and gaping in plane of commissure. Byssal notch deep; ctenolium coarse, but obscured in some adults; byssal fasciole broad, and very depressed. Plicae of right valves number 13 to 16, each plicae bears three scabrous lirae; other lirae, less elevated than those upon the summits of the plicae, crowd the sides and interspaces. Trace of outer ligament broad in adults, resilial insertion fairly deep, almost twice as high as long; resilial insertion extends into the interior for about one-third of its height in the left valve and slightly less in the right valve, posterior auricular denticles moderately expressed, cardinal crura obsolete, pallial line weakly expressed; ribbing expressed over most of interior of shell. Adductor insertions large with distinct nonstriated portion less than half the size of the striate portion; dorsal margin often encroaches on ligament, gill suspensor insertion not impressed.”

Figures

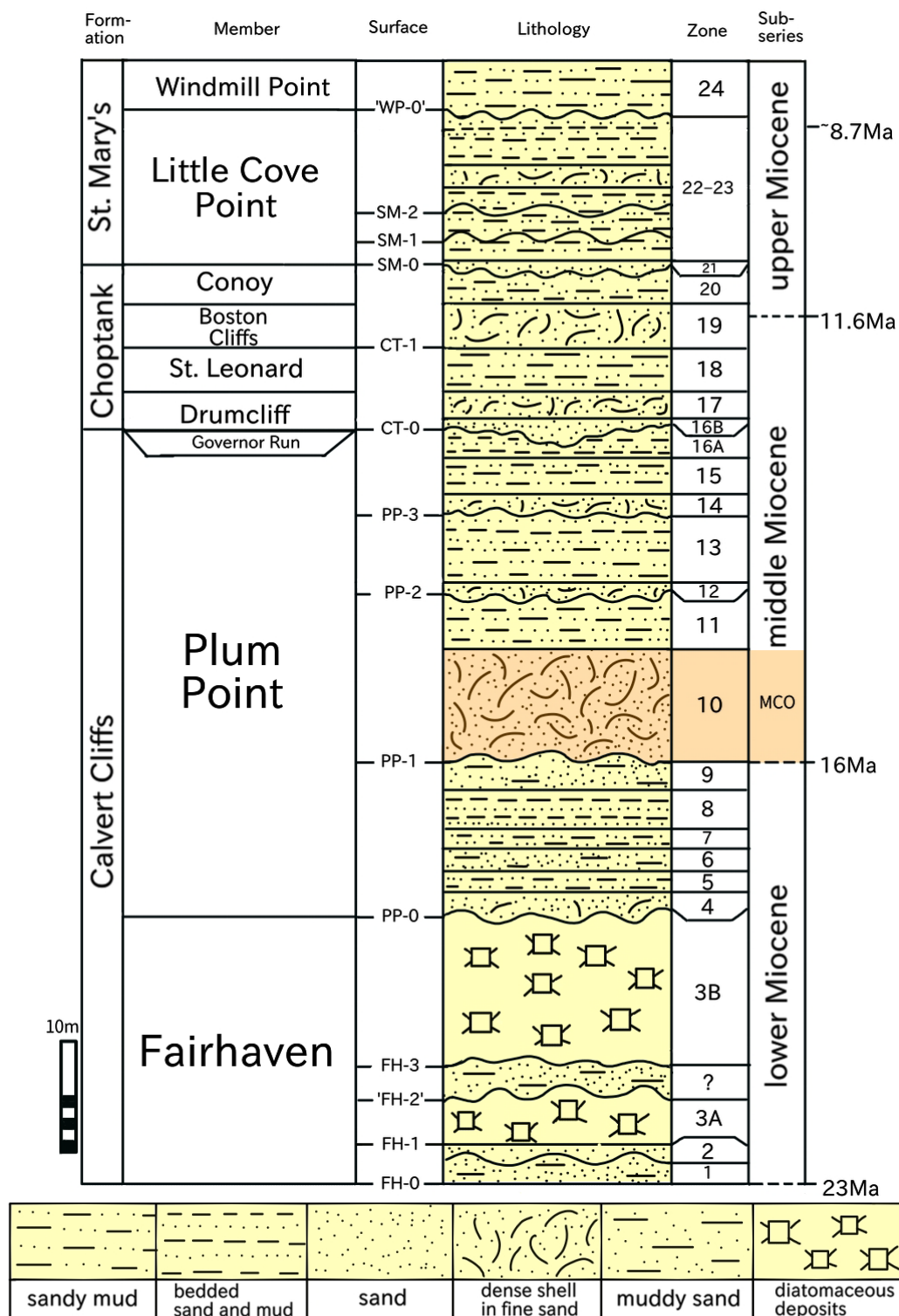


FIGURE 3.1. Stratigraphic column of the Calvert Cliffs with the MCO study area in orange (adapted from Kidwell et al., 2015; Zimmt et al., 2022).

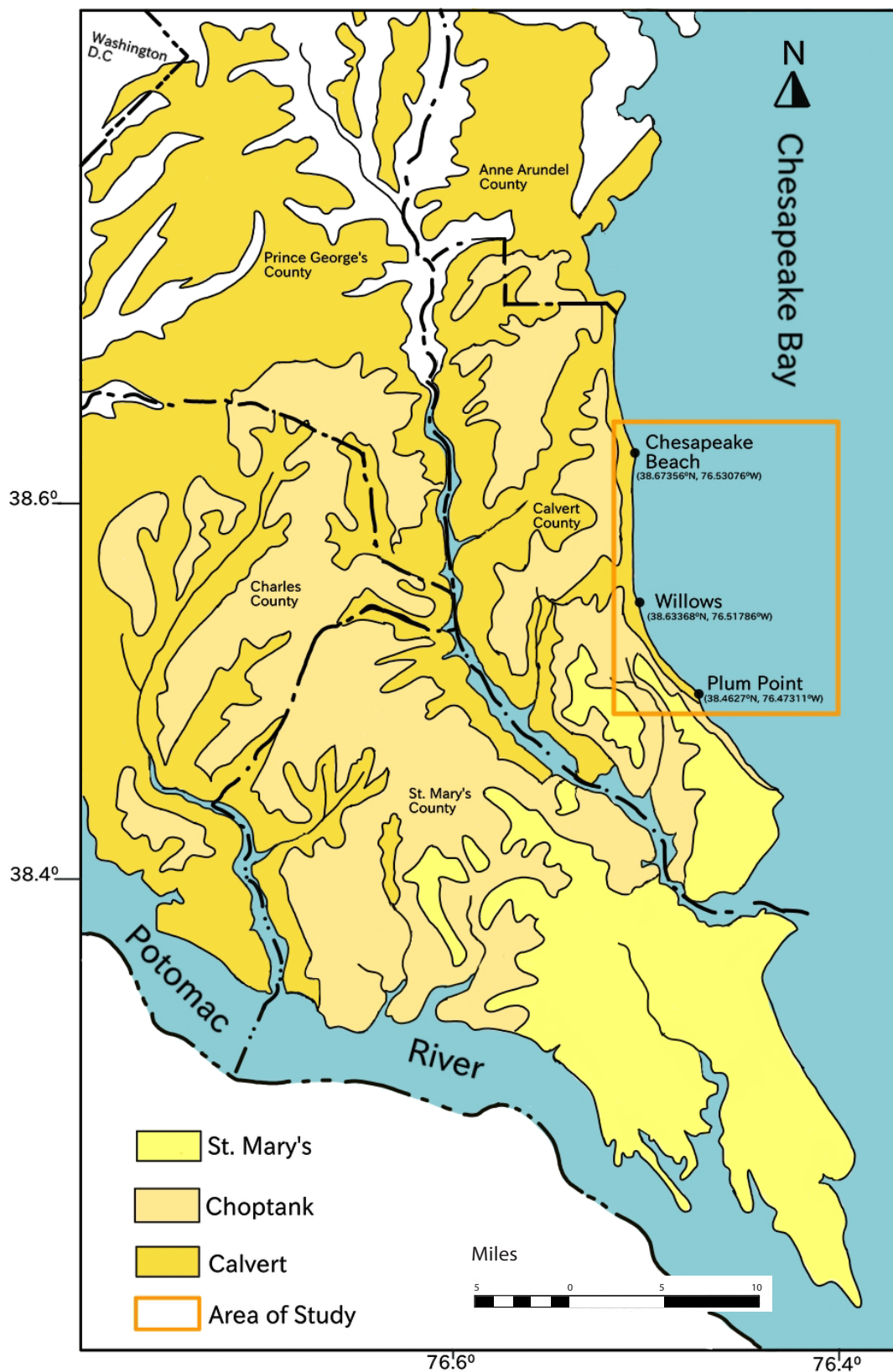


FIGURE 3.2. Map of study area, Calvert Cliffs, Maryland, with the three sites where shells were collected (in the orange box; map adapted from Kidwell et al. 2015).

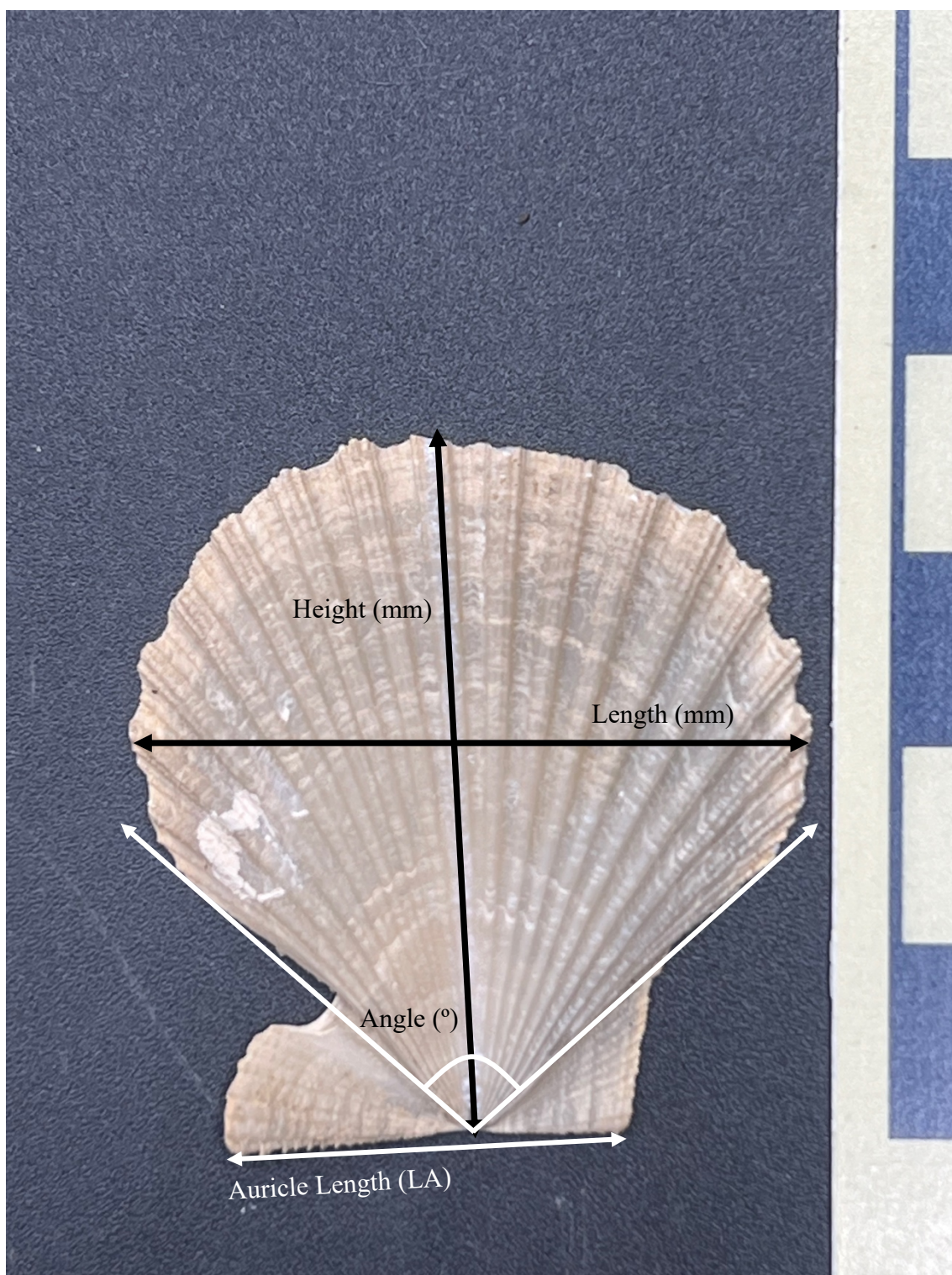


FIGURE 3.3. *Chesapecten coccymelus* shell (WI-03) with height and width measurements shown (black arrows) as well as the auricle length and angle measurements (white arrows).

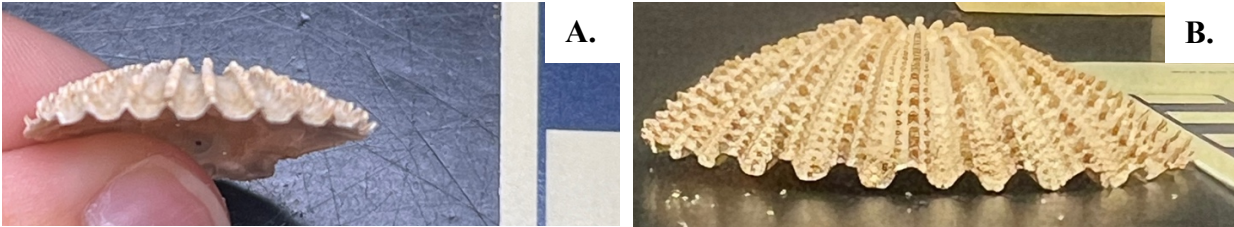


FIGURE 3.4. Comparison between *Chesapecten* sp. and *C. coccymelus* showing the difference in the number of rows of spines and in the commissure shape.

(A) *Chesapecten* sp., USNM 87754

(B) *C. coccymelus*, USNM 193440

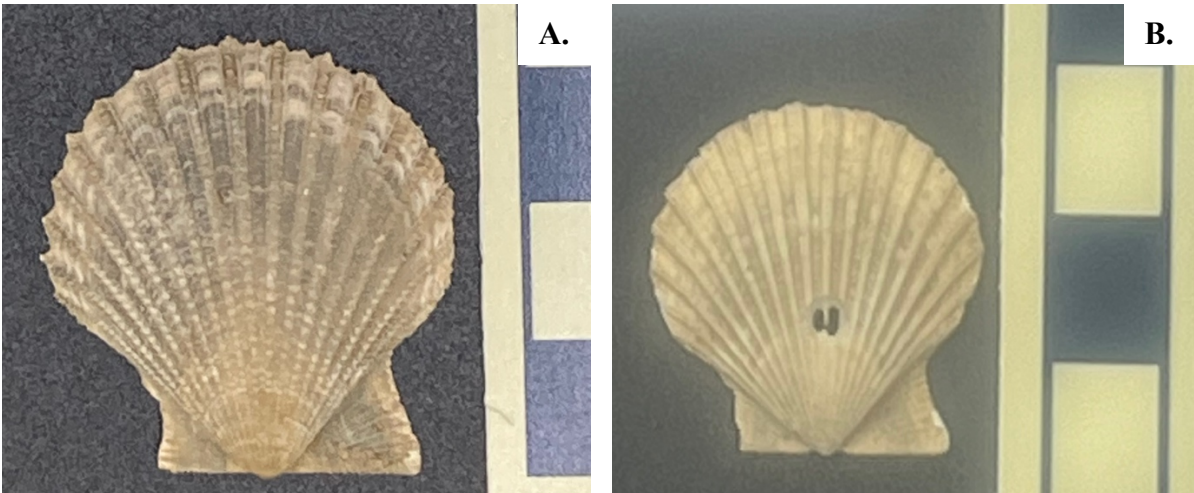


FIGURE 3.5. A comparison of the auricle shape.

(A) *Chesapecten* sp. has straight auricle shape

(B) *C. coccymelus* has a curved auricle shape

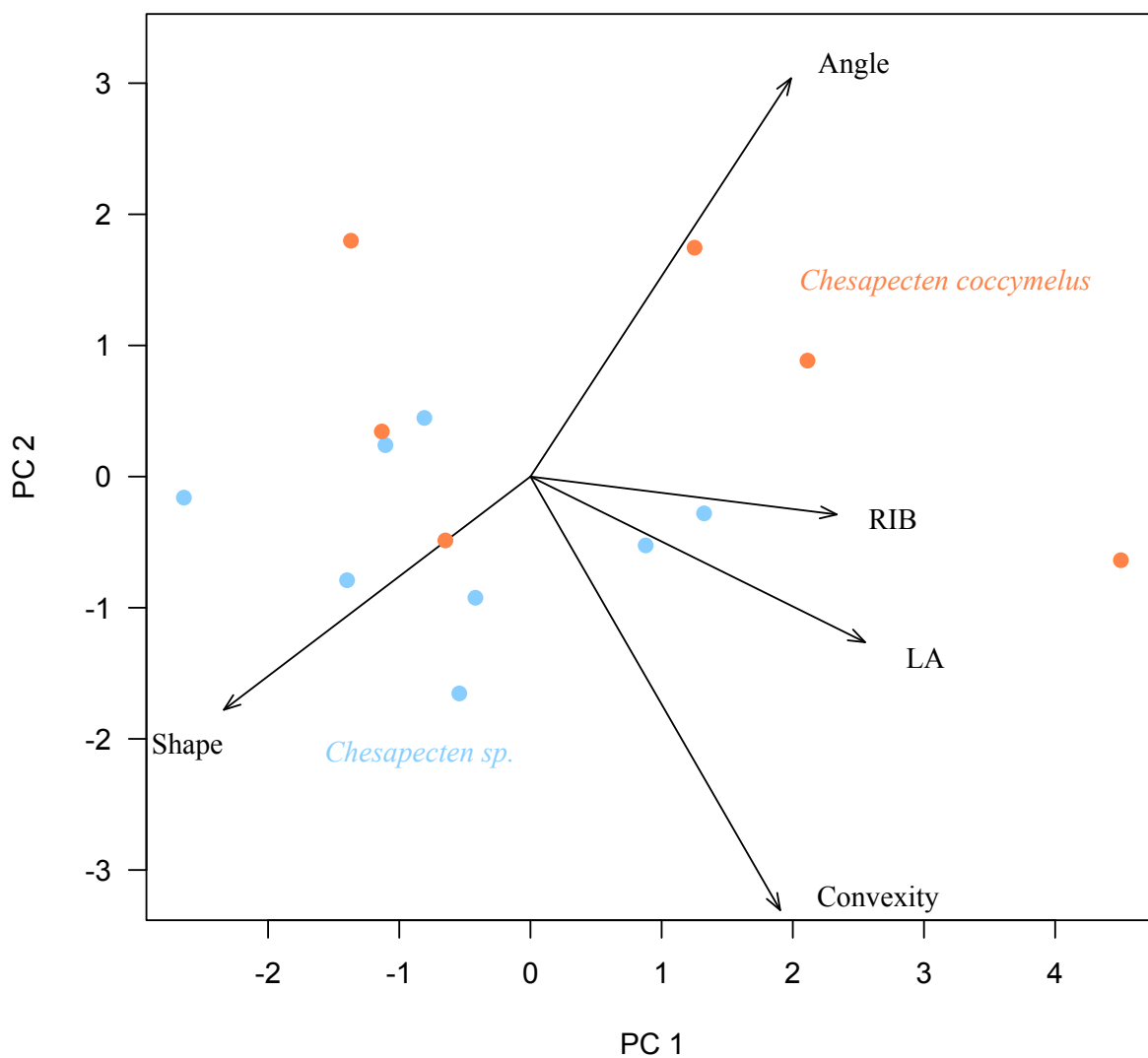


FIGURE 3.6. PCA of all the measurements taken (angle, convexity LA, ribs, shape) for the top valves of *C. coccymelus* and *Chesapeake* sp. (14 total samples) shows a slight grouping along the convexity loading. The arrows are the loadings or variables in the PCA. The longer the arrow, the more influence that variable has on the distribution of points.

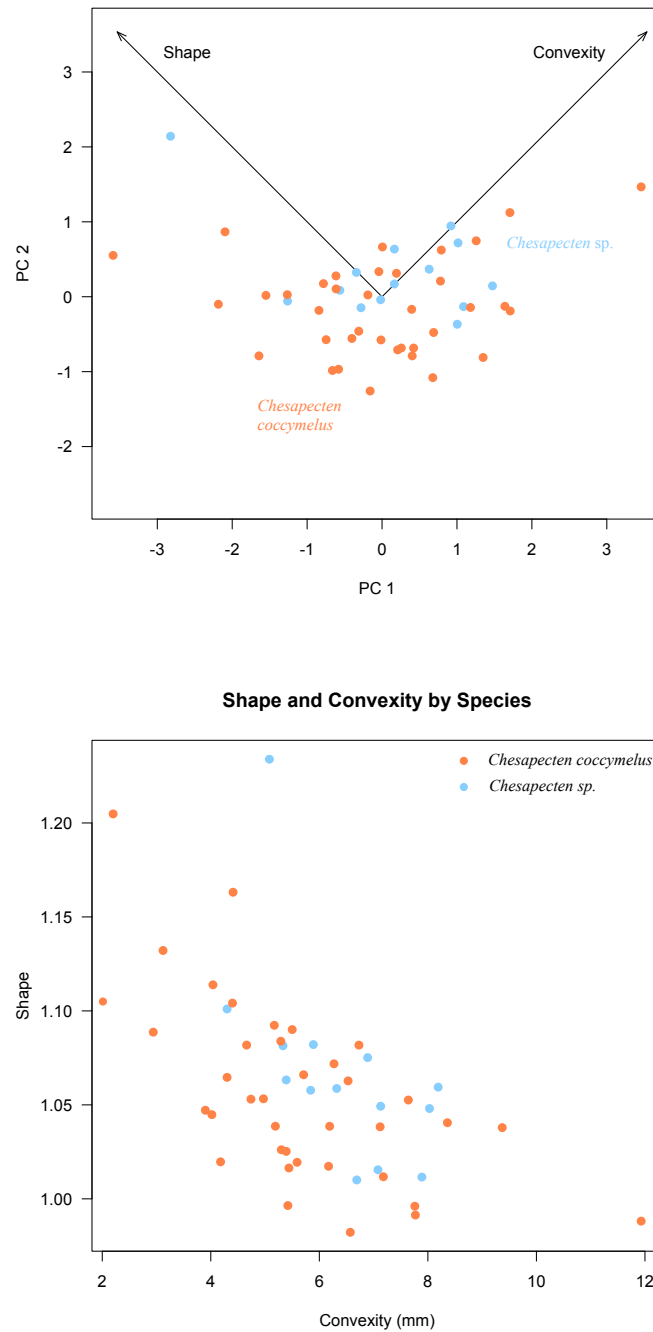


FIGURE 3.7. The PCA (top) of the overall body shape for the top valves of *C. coccymelus* and *Chesapecten sp.*, comparing the convexity and the shape of the samples (51 total samples) indicated a stronger grouping along the convexity loading. The loadings are at 90° to each other indicating that shape is completely uncorrelated from convexity. Scatter plot (bottom) has the same variables as the PCA. It examined the potential separation of species based on body shape. There is a single point cloud with some grouping of *C. coccymelus* because of its convexity being less than that of *Chesapecten sp.*

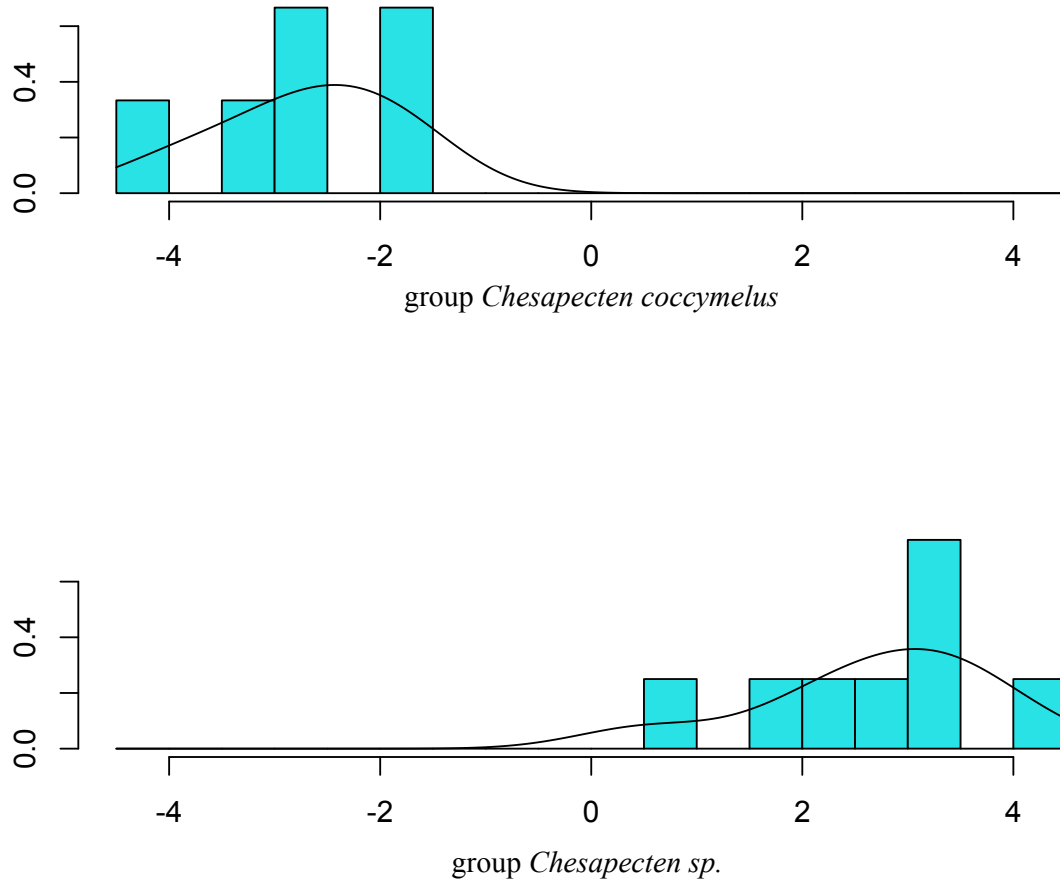


FIGURE 3.8. LDA of all the morphometrics measurements taken (angle, convexity LA, ribs, shape) for the top valves of *C. coccymelus* (top) and *Chesapeake sp.* (bottom; 14 samples total). Grouping of *Chesapeake sp.* to the right of zero and grouping of *C. coccymelus* to the left of zero supports the potential classification of a new species. Bars represent the grouping distributions; the tighter spaced bars are the more closely related; decision boundary is represented by a black line.

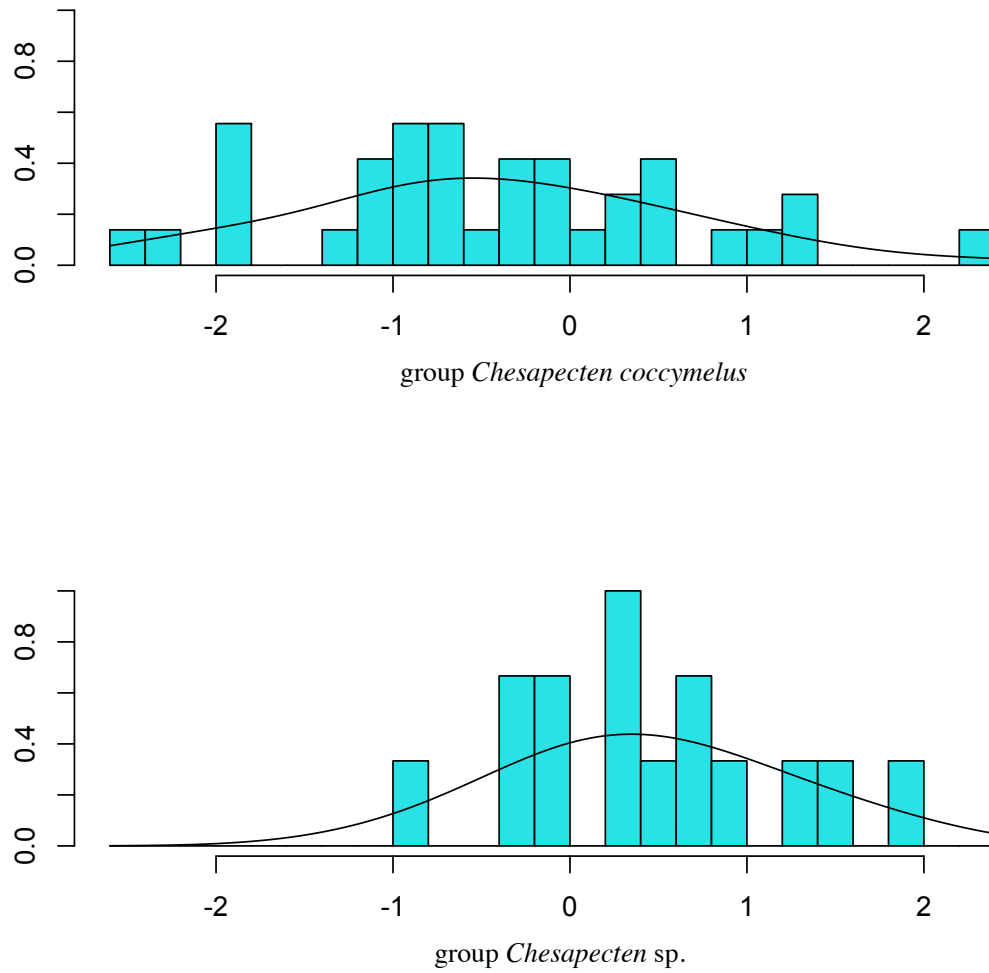


FIGURE 3.9. LDA of overall body shape for *C. coccymelus* (top) and *Chesapecten* sp. (bottom; 51 samples total). While the groups are still overlapping, the grouping of *Chesapecten* sp. is stronger, likely based on convexity; bars represent grouping distributions; tighter spaced bars are the more closely related; decision boundary is represented by a black line.

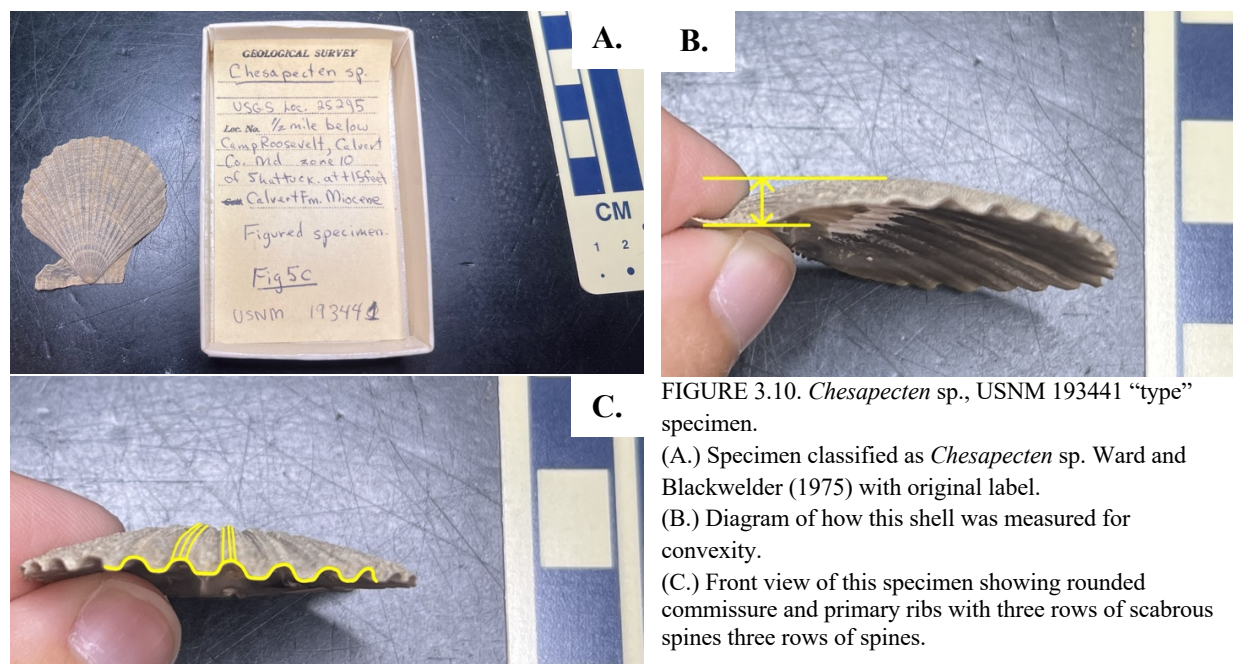


FIGURE 3.10. *Chesapeake* sp., USNM 193441 "type" specimen.

(A.) Specimen classified as *Chesapeake* sp. Ward and Blackwelder (1975) with original label.

(B.) Diagram of how this shell was measured for convexity.

(C.) Front view of this specimen showing rounded commissure and primary ribs with three rows of scabrous spines three rows of spines.

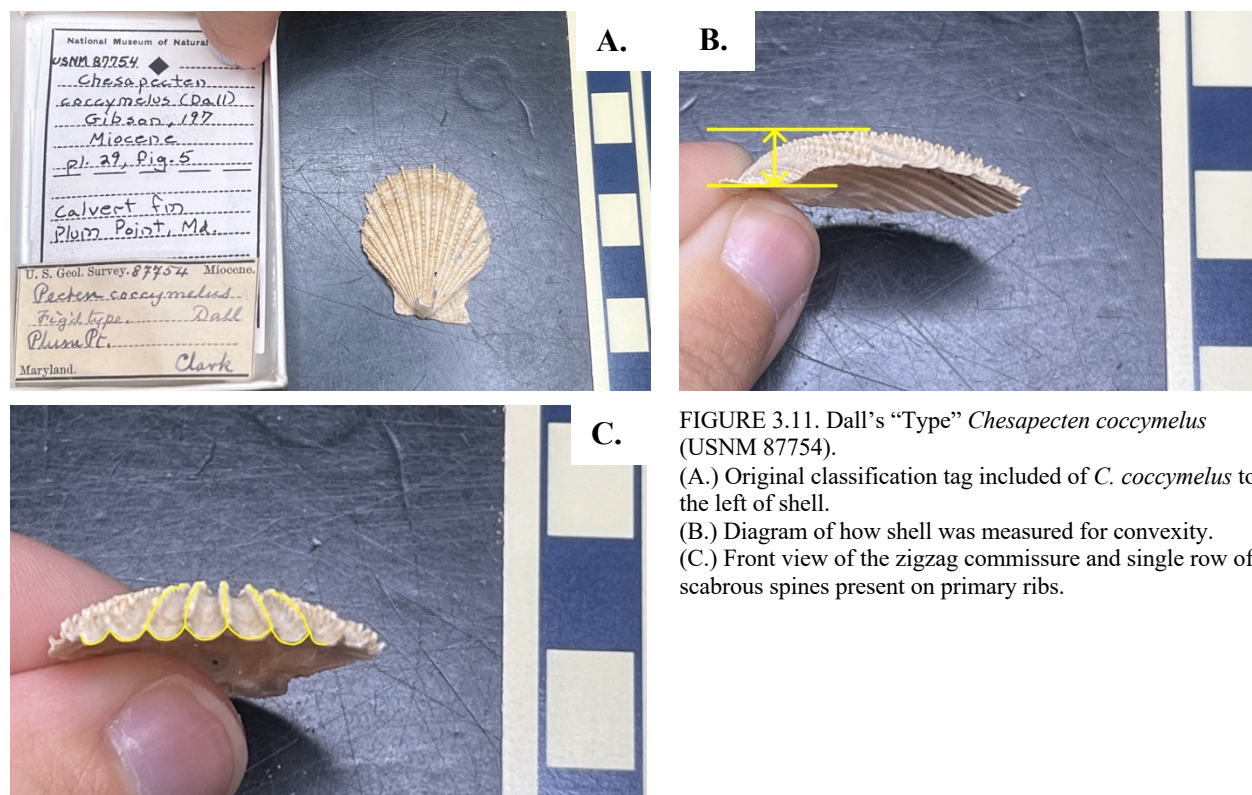


FIGURE 3.11. Dall's "Type" *Chesapeake coccymelus* (USNM 87754).

(A.) Original classification tag included of *C. coccymelus* to the left of shell.

(B.) Diagram of how shell was measured for convexity.

(C.) Front view of the zigzag commissure and single row of scabrous spines present on primary ribs.

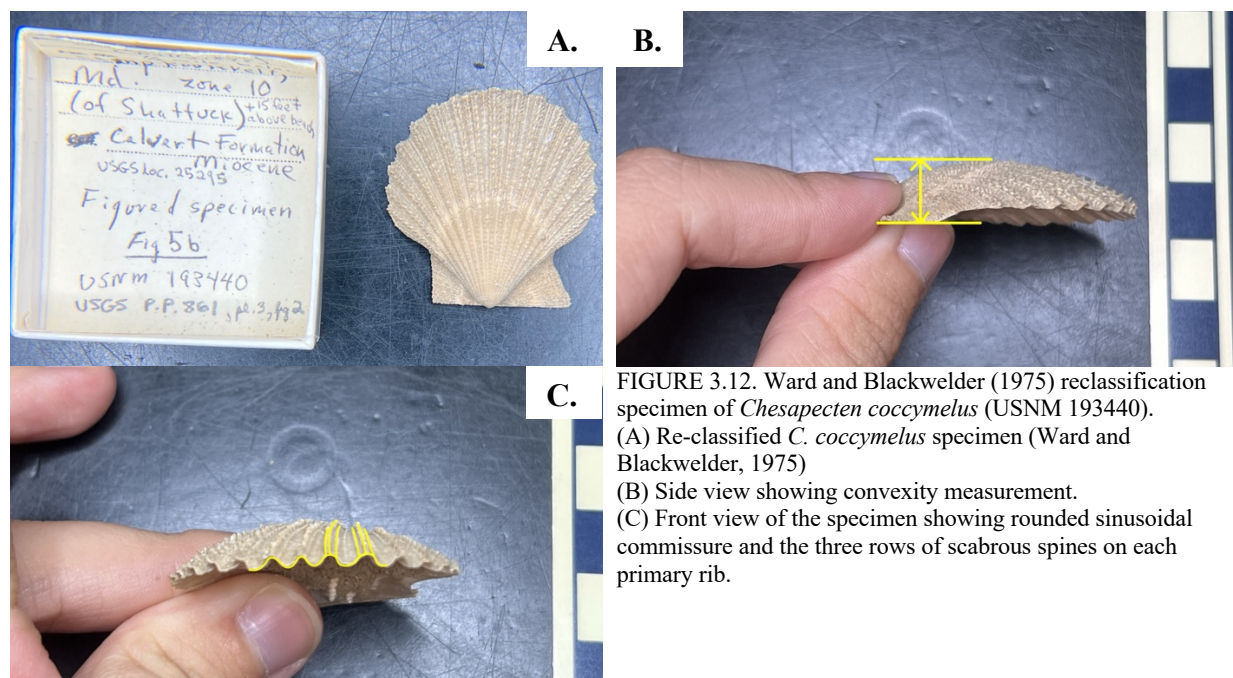


FIGURE 3.12. Ward and Blackwelder (1975) reclassification specimen of *Chesapecten coccymelus* (USNM 193440). (A) Re-classified *C. coccymelus* specimen (Ward and Blackwelder, 1975) (B) Side view showing convexity measurement. (C) Front view of the specimen showing rounded sinusoidal commissure and the three rows of scabrous spines on each primary rib.

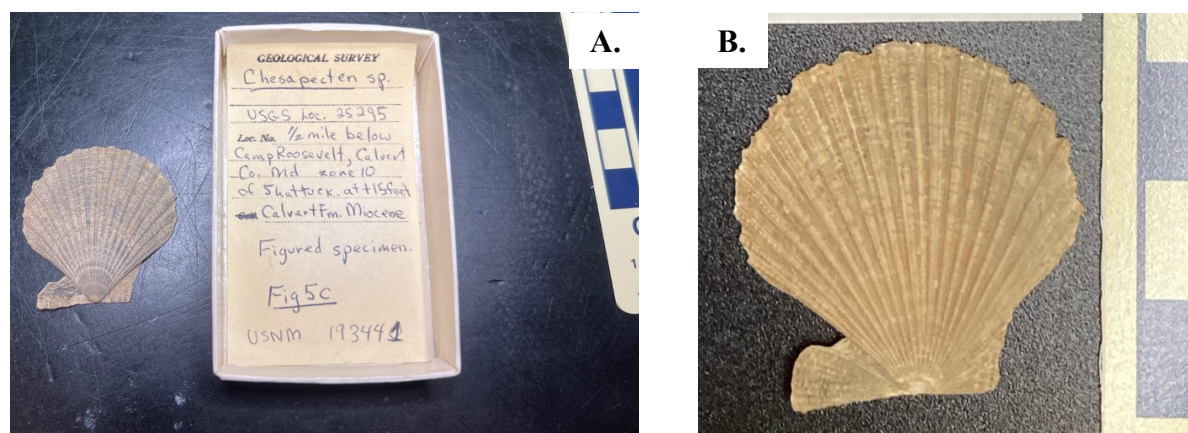


FIGURE 3.13. Comparison of Ward and Blackwelder (1975) *Chesapecten* sp. and a *Chesapecten coccymelus* from Plum Point.

- (A) Ward and Blackwelder (1975) *Chesapecten* sp. (USNM 193441).
 (B) *Chesapecten coccymelus* specimen from the same site as USNM 193441 (Plum Point).

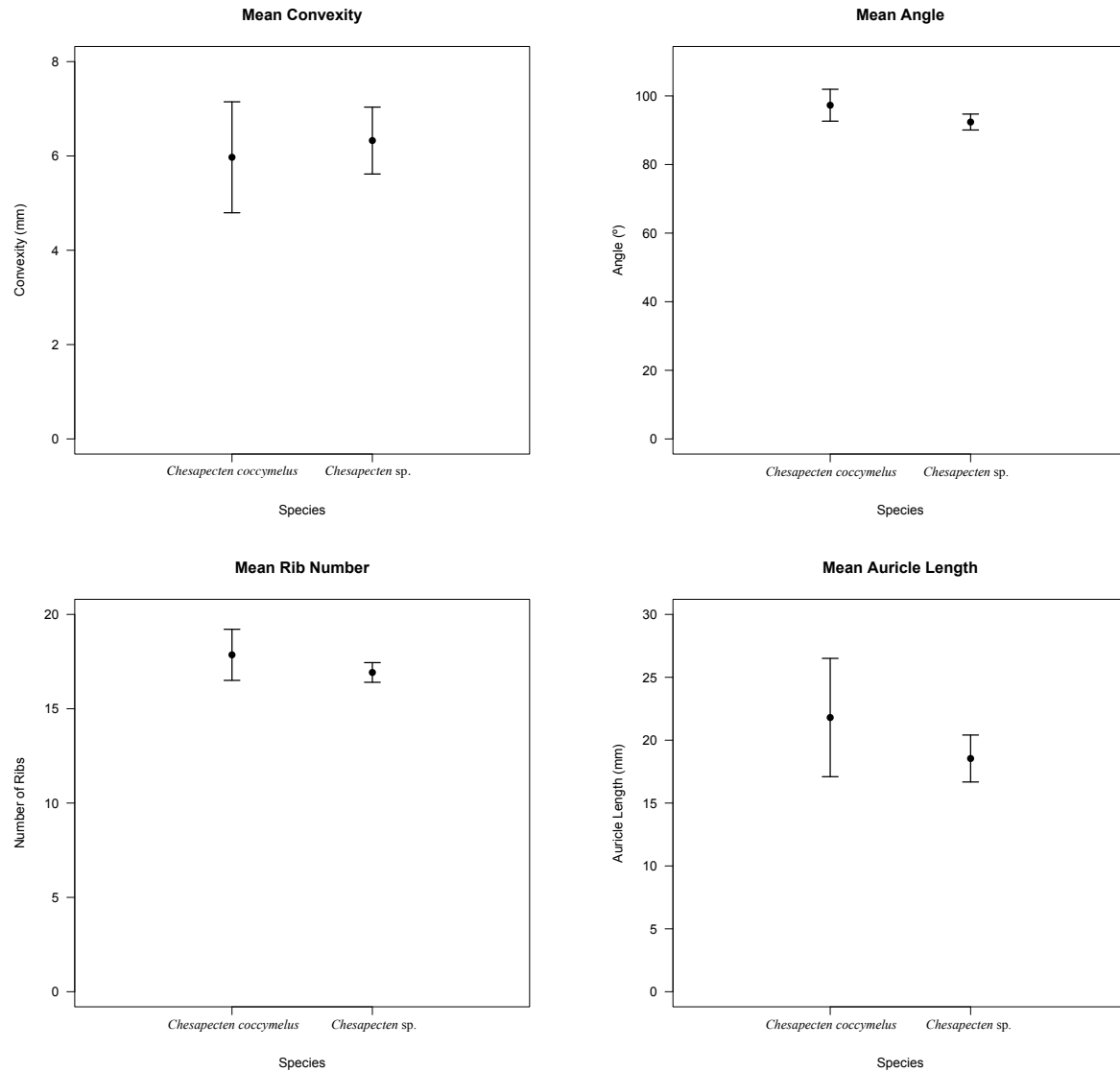


FIGURE 3.14. Mean and 95% CIs of the morphometric measurements (convexity, angle, number of ribs, auricle length) for top shells classified as *C. coccymelus* and *Chesapeake sp.* There was no significant difference between any of the attributes between the species. However, for convexity, the mean for *Chesapeake sp.* is slightly higher. In the other plots, the mean and 95% CIs are generally lower in their measurement and have more constrained confidence intervals.

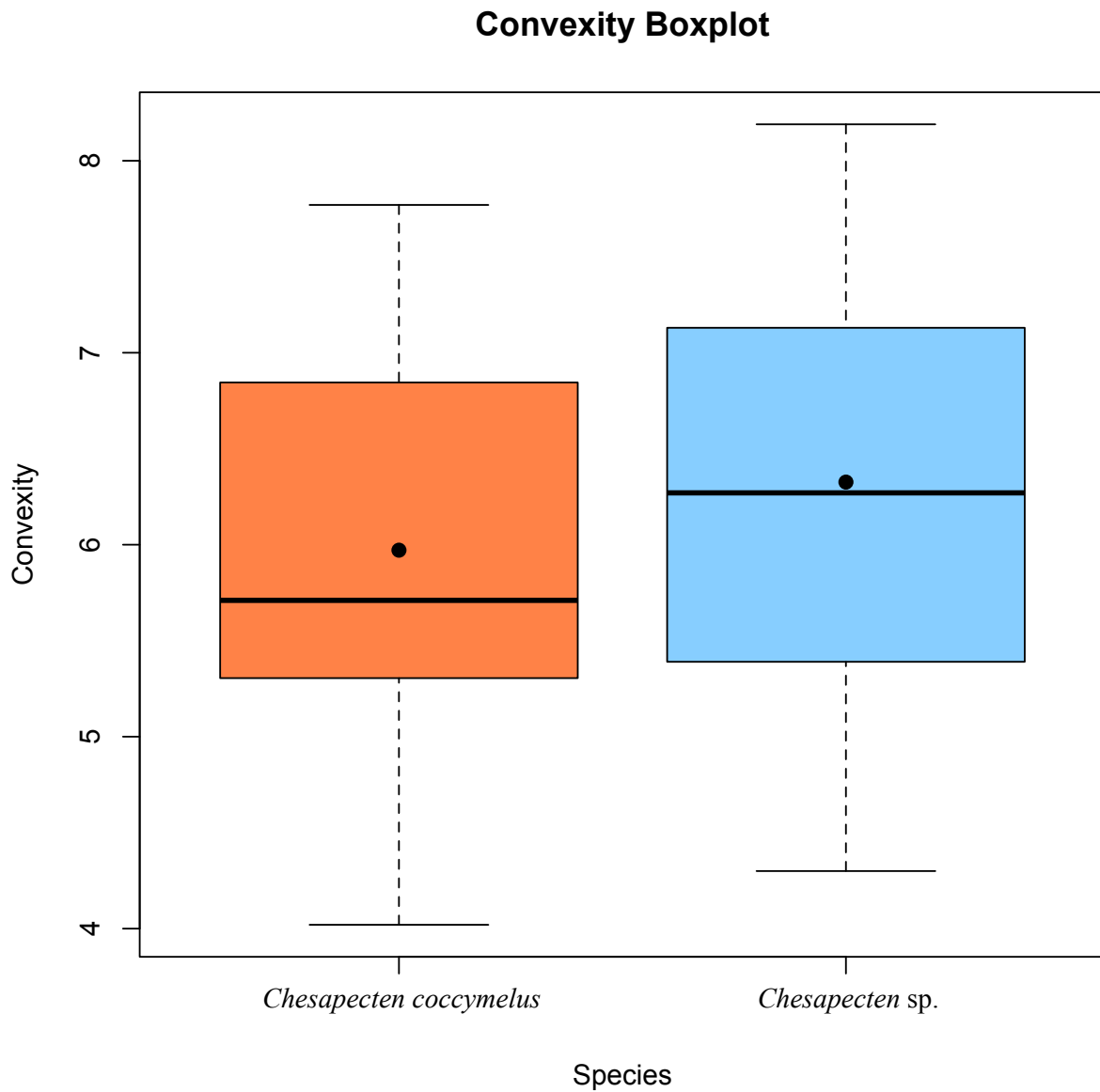


FIGURE 3.15. Comparison between the distribution of convexities for *C. coccymelus* and *Chesapeake sp.* The median for *Chesapeake sp.* is slightly greater than *C. coccymelus*, as well as the maximum score and the interquartile range. The median is the thick black line; the section of box below the median is the lower quartile representing 25% of samples and the section above, is the upper quartile range, representing 75% of the samples. The black dots are the mean values for convexity.

CHAPTER 4

CONCLUSIONS AND FUTURE WORK

The findings of the stable isotope analysis show *Chesapecten coccymelus* to be a potentially important proxy for comparing and predicting the effects of climate change on marine bivalves. *Chesapecten coccymelus* shells from the MCO show dampened seasonality and smaller adult shell size in comparison to the larger *Chesapecten* species from cooler time periods (*Chesapecten nefrens* ~150 mm; bed 14 Calvert Cliffs; Ward and Blackwelder, 1975). This is important for modern bay scallops as they are likely facing the same environmental stressors as *C. coccymelus*. Further, this study potentially shows an earlier cooling into the MCT than previously expected. The three-cooler paleo-temperatures support the transition to cooler temperatures earlier in the middle Miocene. This study also potentially identifies when *C. coccymelus* reaches sexual maturity which aids in our understanding of *Chesapecten* ontogenetics.

Future work with these stable isotope data will be informative as there are nine shells in which the isotopes are still waiting to be analyzed. These new data will hopefully provide more insight on the impacts of the warm temperatures of the MCO on *C. coccymelus*. In addition, these data may help in showing if the shells sampled from this study are from a warm climate or a cooling one. Currently there are six shells of isotope data, the paleo-temperature split between warm shells and cool is three and three.

The findings of the morphometric study of *Chesapecten coccymelus* have potentially identified a new species of *Chesapecten*, *Chesapecten godfreyi* n. sp. *Chesapecten godfreyi* n. sp.

is defined by its single row of scabrous spines on the primary ridge, its zigzag-shaped commissure and its straight auricle shape. Further, this study aimed to clear the confusion created by the re-description of *Chesapecten coccymelus* from its original. The original description of *C. coccymelus* (Dall, 1898) is of a shell which fits into the classification used for identifying *Chesapecten* sp. Thus, it was deemed a non-typical morphotype (Ward and Blackwelder, 1975) and redescribed with a specimen containing three rows of scabrous spines, a rounded commissure shape, and a curved auricle shape.

Future work for this study would investigate how *Chesapecten godfreyi* compares to the other *Chesapecten* species found in the Calvert Cliffs. This would allow for a better understanding of the overall taxonomy of *Chesapecten* in addition to the taxonomy of *Chesapecten coccymelus* from Bed 10.

APPENDIX A1.1. Raw Isotope Data

Sample Name	$\delta^{13}\text{C}$ (‰ VPDB)	$\delta^{18}\text{O}$ (‰ VPDB)	Notes
BB-02-06	1.0	-0.2	Measured on Delta V Plus at 50 oC
BB-02-07	1.1	-0.2	Measured on July 9, 2024
BB-02-08	0.9	-0.2	
BB-02-09	0.9	-0.2	
BB-02-16	0.6	0.0	
BB-02-17	0.3	-0.7	
BB-02-18	0.0	-0.7	
BB-02-19	0.5	-0.6	
BB-02-26	-0.1	0.1	
BB-02-27	-0.3	-1.2	
BB-02-28	-0.5	-0.6	
BB-02-29	-0.4	-0.5	
BB-02-36	0.0	-0.8	
BB-02-37	-0.1	-0.9	
BB-02-38	-0.1	-0.8	
BB-02-39	0.1	-0.7	
BB-02-46	-1.4	-0.9	
BB-03-01	-0.8	0.3	
BB-03-02	0.6	0.5	
BB-03-03	1.5	0.1	
BB-03-04	1.5	0.0	
BB-03-05	1.4	0.0	
BB-03-06	1.2	-0.3	
BB-03-07	1.4	0.1	
BB-03-08	1.1	0.0	
BB-03-09	1.3	0.0	
BB-03-10	1.3	-0.4	
BB-03-11	1.1	-0.1	
BB-03-12	1.0	-0.1	
BB-03-13	0.6	-0.5	
BB-03-14	1.2	-0.4	
BB-03-15	0.4	-1.0	
BB-03-16	0.4	-0.8	

BB-03-18	0.1	-1.2
BB-03-19	0.1	-1.2
BB-03-20	0.0	-1.1
BB-03-21	-0.2	-1.3
BB-03-22	0.0	-1.0
BB-03-23	-0.1	-1.7
BB-03-24	0.0	-1.2
BB-03-25	-0.2	-1.8
BB-03-26	-0.1	-2.1
BB-03-27	-0.2	-1.6
BB-03-28	-0.2	-1.0
BB-03-29	-0.4	-2.5
BB-03-30	-0.5	-1.5
BB-03-31	-0.4	-1.3
BB-03-32	-0.4	-1.8
BB-03-33	-0.4	-1.6
BB-03-34	-0.4	-1.5
BB-03-35	-0.3	-1.7
BB-03-36	-0.4	-2.4
BB-03-37	-0.4	-2.6
BB-03-38	-0.4	-1.9
BB-03-39	-0.3	-1.5
BB-03-40	-0.3	-2.4
BB-03-41	-0.3	-2.3
BB-03-42	-0.1	-1.8
BB-03-43	0.0	-1.6
BB-03-44	0.1	-1.9
BB-03-45	0.0	-1.5
BB-03-46	0.1	-1.4
BB-03-47	0.1	-1.7
BB-03-48	0.3	-1.1
BB-03-49	0.0	-1.3
BB-03-50	0.1	-1.2
BB-03-51	0.1	-0.9
BB-03-52	0.2	-1.8

BB-03-52	0.2	-1.8
BB-03-53	-0.1	-1.0
BB-03-54	-0.6	-1.5
BB-03-55	-0.5	-1.9
BB-04-01	1.1	0.7
BB-04-02	2.3	0.7
BB-04-03	2.1	0.3
BB-04-04	1.4	0.9
BB-04-05	1.1	-0.1
BB-04-06	0.2	-0.4
BB-04-07	0.3	-0.6
BB-04-08	0.6	-0.7

Row	Identifier 1			
52	IAEA-603-1	6851	1.9	-2.2
53	IAEA-603-2	6470	2.1	-2.0
54	IAEA-603-3	9136	2.1	-1.9
59	IAEA-603-4	4842	2.0	-2.4
67	IAEA-603-5	9571	1.7	-2.4
75	IAEA-603-6	10203	1.8	-2.3
83	IAEA-603-7	11565	1.8	-2.4
91	IAEA-603-8	8006	1.9	-2.3
99	IAEA-603-9	10080	1.8	-2.3
107	IAEA-603-10	3718	1.7	-2.9
115	IAEA-603-11	8082	2.0	-2.2
123	IAEA-603-12	11205	1.8	-2.3
131	IAEA-603-13	10454	1.8	-2.4
139	IAEA-603-14	8072	1.8	-2.6
146	IAEA-603-15	13035	1.9	-2.5

52	IAEA-603-1	6851	1.9	-2.2
53	IAEA-603-2	6470	2.1	-2.0
54	IAEA-603-3	9136	2.1	-1.9
59	IAEA-603-4	4842	2.0	-2.4
67	IAEA-603-5	9571	1.7	-2.4
75	IAEA-603-6	10203	1.8	-2.3
83	IAEA-603-7	11565	1.8	-2.4
91	IAEA-603-8	8006	1.9	-2.3
99	IAEA-603-9	10080	1.8	-2.3
107	IAEA-603-10	3718	1.7	-2.9
115	IAEA-603-11	8082	2.0	-2.2
123	IAEA-603-12	11205	1.8	-2.3
131	IAEA-603-13	10454	1.8	-2.4
139	IAEA-603-14	8072	1.8	-2.6
146	IAEA-603-15	13035	1.9	-2.5

Average	1.9	-2.3
Std Dev	0.12	0.24

Accepted	2.46	-2.37
Correction	0.595	-0.022

Measured on Delta V Plus at 50 oC
Measured on July 9, 2024

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O
30				1	10988		0.182	0.206
30				2	10976		0	0
30				3	10961		-0.102	-0.07
30				4	10943		-0.192	-0.195
30				5	10960		-0.249	-0.246
30				6	11249		-0.034	0.088
30				7	11291		0.047	0.246
30				8	11281		0.024	0.229
30				9	11274		-0.034	0.168
30				10	11271		-0.062	0.147
31				1	10991		0.051	0.07
31				2	10972		0	0
31				3	10970		-0.043	-0.028
31				4	10970		-0.071	-0.082
31				5	10983		-0.093	-0.081
31				6	11294		0.124	0.223
31				7	11266		0.283	0.454
31				8	11282		0.254	0.433
31				9	11244		0.226	0.39
31				10	11229		0.215	0.391
32				1	11220		0.352	0.491
32				2	10972		0	0
32				3	10943		-0.057	-0.08
32				4	10933		-0.07	-0.093
32				5	10969		-0.083	-0.097
32				6	10992		-0.077	-0.109
32				7	10967		-0.069	-0.091
32				8	11243		0.208	0.341
32				9	11235		0.291	0.444
32				10	11241		0.279	0.431
33				1	11226		0.032	0.038
33				2	11216		0	0
33				3	11104		-0.141	-0.211
33				4	11092		-0.16	-0.236
33				5	11096		-0.171	-0.26
33				6	11113		-0.181	-0.278
33				7	11104		-0.182	-0.259
33				8	11244		-0.069	-0.081
33				9	11214		-0.059	-0.072
33				10	11203		-0.08	-0.08
34				1	11205		0.038	0.038
34				2	11205		0	0
34				3	11089		-0.132	-0.208
34				4	11071		-0.131	-0.213
34				5	11098		-0.136	-0.233
34				6	11087		-0.148	-0.244
34				7	11098		-0.156	-0.261
34				8	11202		-0.05	-0.09

34	9	11208	-0.036	-0.045
34	10	11199	-0.037	-0.053
35	1	11201	0.037	0.063
35	2	11176	0	0
35	3	11076	-0.116	-0.177
35	4	11061	-0.114	-0.16
35	5	11054	-0.125	-0.178
35	6	11056	-0.122	-0.193
35	7	11065	-0.124	-0.209
35	8	11200	-0.026	-0.008
35	9	11191	0.003	0.038
35	10	11182	-0.009	0.002
36	1	11180	0.047	0.066
36	2	11169	0	0
36	3	11039	-0.157	-0.214
36	4	10923	-0.265	-0.388
36	5	10895	-0.417	-0.551
36	6	10914	-0.409	-0.552
36	7	10916	-0.402	-0.541
36	8	11219	-0.11	-0.111
36	9	11192	-0.009	0.057
36	10	11202	-0.022	0.012
37	1	11206	0.041	0.029
37	2	11198	0	0
37	3	11193	-0.017	-0.043
37	4	10917	-0.393	-0.558
37	5	10920	-0.405	-0.574
37	6	10906	-0.405	-0.583
37	7	10959	-0.411	-0.598
37	8	10930	-0.42	-0.594
37	9	11233	-0.071	-0.094
37	10	11203	0.017	0.014
38	1	11222	0.049	0.07
38	2	11229	0	0
38	3	11193	-0.003	-0.001
38	4	10939	-0.377	-0.515
38	5	10903	-0.42	-0.606
38	6	10936	-0.44	-0.604
38	7	10900	-0.453	-0.635
38	8	10918	-0.467	-0.639
38	9	11219	-0.151	-0.167
38	10	11249	-0.03	-0.023
39 2 hours	1	11189	0.028	0.051
39 2 hours	2	11176	0	0
39 2 hours	3	11176	-0.039	-0.025
39 2 hours	4	11178	-0.046	-0.033
39 2 hours	5	10883	-0.385	-0.544
39 2 hours	6	10822	-0.432	-0.692
39 2 hours	7	10824	-0.446	-0.717

39 2 hours	8	10821	-0.441	-0.707
39 2 hours	9	10850	-0.442	-0.72
39 2 hours	10	11143	-0.179	-0.287
40 1 hour 50 minutes	1	11125	0.054	0.044
40 1 hour 50 minutes	2	11109	0	0
40 1 hour 50 minutes	3	11112	-0.028	-0.057
40 1 hour 50 minutes	4	11105	-0.029	-0.05
40 1 hour 50 minutes	5	11078	-0.051	-0.067
40 1 hour 50 minutes	6	10858	-0.365	-0.567
40 1 hour 50 minutes	7	10808	-0.401	-0.609
40 1 hour 50 minutes	8	10818	-0.408	-0.612
40 1 hour 50 minutes	9	10843	-0.405	-0.627
40 1 hour 50 minutes	10	10865	-0.407	-0.627
41 1 hour 40 minutes	1	11123	0.068	0.11
41 1 hour 40 minutes	2	11111	0	0
41 1 hour 40 minutes	3	11104	-0.001	0.021
41 1 hour 40 minutes	4	11103	-0.016	0.006
41 1 hour 40 minutes	5	11090	-0.016	-0.005
41 1 hour 40 minutes	6	11104	-0.05	-0.032
41 1 hour 40 minutes	7	11106	-0.031	-0.034
41 1 hour 40 minutes	8	10951	-0.34	-0.429
41 1 hour 40 minutes	9	10961	-0.236	-0.305
41 1 hour 40 minutes	10	10839	-0.452	-0.637
42 1 hour 30 minutes	1	10865	-0.256	-0.409
42 1 hour 30 minutes	2	11141	0	0
42 1 hour 30 minutes	3	11126	0.08	0.117
42 1 hour 30 minutes	4	11120	0.07	0.083
42 1 hour 30 minutes	5	11117	0.027	0.044
42 1 hour 30 minutes	6	11117	0.007	0.031
42 1 hour 30 minutes	7	11117	0.006	0.036
42 1 hour 30 minutes	8	11096	0.001	0.007
42 1 hour 30 minutes	9	11115	-0.006	-0.014
42 1 hour 30 minutes	10	10849	-0.337	-0.493
43 1 hour 20 minutes	1	10837	0.002	0.025
43 1 hour 20 minutes	2	10835	0	0
43 1 hour 20 minutes	3	11155	0.14	0.244
43 1 hour 20 minutes	4	11149	0.435	0.636
43 1 hour 20 minutes	5	11139	0.437	0.623
43 1 hour 20 minutes	6	11132	0.387	0.578
43 1 hour 20 minutes	7	11126	0.366	0.545
43 1 hour 20 minutes	8	11122	0.366	0.52
43 1 hour 20 minutes	9	11090	0.346	0.505
43 1 hour 20 minutes	10	11100	0.323	0.507
44 1 hour 10 minutes	1	10819	0.044	0.027
44 1 hour 10 minutes	2	10817	0	0
44 1 hour 10 minutes	3	10846	0.008	-0.005
44 1 hour 10 minutes	4	10817	-0.001	0.01
44 1 hour 10 minutes	5	11131	0.297	0.436
44 1 hour 10 minutes	6	11123	0.412	0.599

44 1 hour 10 minutes	7	11131	0.399	0.604
44 1 hour 10 minutes	8	11106	0.388	0.577
44 1 hour 10 minutes	9	11090	0.351	0.511
44 1 hour 10 minutes	10	11083	0.352	0.496
45 1 hour	1	11095	0.169	0.261
45 1 hour	2	10948	0	0
45 1 hour	3	10852	-0.195	-0.259
45 1 hour	4	10822	-0.214	-0.301
45 1 hour	5	10838	-0.236	-0.329
45 1 hour	6	10840	-0.227	-0.301
45 1 hour	7	10829	-0.226	-0.314
45 1 hour	8	11133	0.068	0.146
45 1 hour	9	11126	0.185	0.305
45 1 hour	10	11099	0.176	0.266
46 50 min	1	11090	0.043	0.035
46 50 min	2	11076	0	0
46 50 min	3	11080	-0.019	-0.051
46 50 min	4	10938	-0.203	-0.298
46 50 min	5	10803	-0.41	-0.578
46 50 min	6	10792	-0.424	-0.606
46 50 min	7	10789	-0.438	-0.6
46 50 min	8	10805	-0.415	-0.591
46 50 min	9	10805	-0.402	-0.566
46 50 min	10	11106	-0.081	-0.098
47 40 min	1	11107	0.047	0.038
47 40 min	2	11088	0	0
47 40 min	3	11093	-0.012	-0.023
47 40 min	4	11064	-0.015	-0.008
47 40 min	5	11056	-0.007	-0.009
47 40 min	6	10929	-0.171	-0.248
47 40 min	7	10794	-0.405	-0.544
47 40 min	8	10788	-0.428	-0.606
47 40 min	9	10764	-0.429	-0.596
47 40 min	10	10792	-0.411	-0.569
48 30 min	1	11105	0.068	0.069
48 30 min	2	11071	0	0
48 30 min	3	11059	-0.027	-0.04
48 30 min	4	11053	-0.027	-0.029
48 30 min	5	11041	-0.038	-0.049
48 30 min	6	11061	-0.039	-0.045
48 30 min	7	10951	-0.2	-0.262
48 30 min	8	10821	-0.428	-0.588
48 30 min	9	10794	-0.449	-0.622
48 30 min	10	10806	-0.451	-0.617
49 20 min	1	11103	0.041	0.046
49 20 min	2	11080	0	0
49 20 min	3	11041	-0.054	-0.05
49 20 min	4	11038	-0.059	-0.058
49 20 min	5	11050	-0.071	-0.065

49 20 min		6	11041	-0.077	-0.077
49 20 min		7	10918	-0.209	-0.293
49 20 min		8	10836	-0.387	-0.558
49 20 min		9	10795	-0.414	-0.599
49 20 min		10	10783	-0.427	-0.611
50 10 min		1	11092	0.056	0.074
50 10 min		2	11084	0	0
50 10 min		3	11065	-0.037	-0.032
50 10 min		4	11060	-0.059	-0.053
50 10 min		5	11061	-0.063	-0.052
50 10 min		6	11053	-0.054	-0.065
50 10 min		7	11050	-0.063	-0.067
50 10 min		8	10822	-0.443	-0.573
50 10 min		9	10760	-0.47	-0.622
50 10 min		10	10788	-0.493	-0.662
51 Blank	New UGA	1	11063	-39.484	-26.273
51 Blank	New UGA	2	11065	-39.522	-26.318
51 Blank	New UGA	3	11047	-39.54	-26.32
51 Blank	New UGA	4	57	-12.371	-15.127
51 Blank	New UGA	5	11073	-39.54	-26.32
52 IAEA-603 66	New UGA	1	11030	-39.227	-25.931
52 IAEA-603 66	New UGA	2	11054	-39.347	-26.071
52 IAEA-603 66	New UGA	3	10900	-39.54	-26.32
52 IAEA-603 66	New UGA	4	6851	1.787	-2.304
52 IAEA-603 66	New UGA	5	5762	1.772	-2.309
52 IAEA-603 66	New UGA	6	4903	1.788	-2.276
52 IAEA-603 66	New UGA	7	4172	1.733	-2.41
52 IAEA-603 66	New UGA	8	3557	1.805	-2.308
52 IAEA-603 66	New UGA	9	3024	1.685	-2.525
52 IAEA-603 66	New UGA	10	2571	1.848	-2.128
52 IAEA-603 66	New UGA	11	2262	2.232	-1.966
52 IAEA-603 66	New UGA	12	1933	2.238	-2.03
52 IAEA-603 66	New UGA	13	1644	2.172	-1.983
52 IAEA-603 66	New UGA	14	11072	-39.54	-26.32
53 IAEA-603 58	New UGA	1	11050	-39.112	-25.723
53 IAEA-603 58	New UGA	2	10899	-39.361	-26.04
53 IAEA-603 58	New UGA	3	10872	-39.54	-26.32
53 IAEA-603 58	New UGA	4	6470	2.165	-1.777
53 IAEA-603 58	New UGA	5	5404	2.13	-1.804
53 IAEA-603 58	New UGA	6	4530	1.877	-2.155
53 IAEA-603 58	New UGA	7	3842	1.869	-2.258
53 IAEA-603 58	New UGA	8	3253	1.861	-2.153
53 IAEA-603 58	New UGA	9	2759	1.845	-2.231
53 IAEA-603 58	New UGA	10	2417	2.223	-1.871
53 IAEA-603 58	New UGA	11	2046	2.221	-1.875
53 IAEA-603 58	New UGA	12	1733	2.245	-1.925
53 IAEA-603 58	New UGA	13	1470	2.099	-2.092
53 IAEA-603 58	New UGA	14	11072	-39.54	-26.32
54 IAEA-603 85	New UGA	1	11023	-39.266	-25.964

54	IAEA-603 85	New UGA	2	10885	-39.499	-26.258
54	IAEA-603 85	New UGA	3	10872	-39.54	-26.32
54	IAEA-603 85	New UGA	4	9136	2.039	-1.863
54	IAEA-603 85	New UGA	5	7676	2.036	-1.982
54	IAEA-603 85	New UGA	6	6541	2.011	-1.981
54	IAEA-603 85	New UGA	7	5572	2.021	-2.008
54	IAEA-603 85	New UGA	8	4746	2.034	-1.891
54	IAEA-603 85	New UGA	9	4099	2.173	-1.884
54	IAEA-603 85	New UGA	10	3492	2.209	-1.846
54	IAEA-603 85	New UGA	11	2974	2.23	-1.851
54	IAEA-603 85	New UGA	12	2537	2.163	-1.887
54	IAEA-603 85	New UGA	13	2163	2.165	-1.977
54	IAEA-603 85	New UGA	14	11004	-39.54	-26.32
55	BB-02-26 0	New UGA	1	10873	-39.398	-26.175
55	BB-02-26 0	New UGA	2	10870	-39.518	-26.304
55	BB-02-26 0	New UGA	3	10868	-39.54	-26.32
55	BB-02-26 0	New UGA	4	7977	-0.751	0.099
55	BB-02-26 0	New UGA	5	6716	-0.749	0.092
55	BB-02-26 0	New UGA	6	5736	-0.739	0.085
55	BB-02-26 0	New UGA	7	4895	-0.775	0.108
55	BB-02-26 0	New UGA	8	4225	-0.55	0.246
55	BB-02-26 0	New UGA	9	3602	-0.607	0.225
55	BB-02-26 0	New UGA	10	3072	-0.605	0.118
55	BB-02-26 0	New UGA	11	2620	-0.633	0.082
55	BB-02-26 0	New UGA	12	2235	-0.659	0.035
55	BB-02-26 0	New UGA	13	1906	-0.666	-0.011
55	BB-02-26 0	New UGA	14	11015	-39.54	-26.32
56	BB-02-09 0	New UGA	1	10864	-39.572	-26.447
56	BB-02-09 0	New UGA	2	11042	-39.622	-26.428
56	BB-02-09 0	New UGA	3	11030	-39.54	-26.32
56	BB-02-09 0	New UGA	4	10581	0.424	0.086
56	BB-02-09 0	New UGA	5	8916	0.447	0.123
56	BB-02-09 0	New UGA	6	7622	0.472	0.174
56	BB-02-09 0	New UGA	7	6512	0.51	0.162
56	BB-02-09 0	New UGA	8	5569	0.526	0.127
56	BB-02-09 0	New UGA	9	4637	0.129	-0.458
56	BB-02-09 0	New UGA	10	3973	0.17	-0.456
56	BB-02-09 0	New UGA	11	3397	0.195	-0.424
56	BB-02-09 0	New UGA	12	2906	0.233	-0.453
56	BB-02-09 0	New UGA	13	2504	0.294	-0.396
56	BB-02-09 0	New UGA	14	10845	-39.54	-26.32
57	BB-02-19 0	New UGA	1	11028	-39.386	-26.156
57	BB-02-19 0	New UGA	2	11011	-39.509	-26.266
57	BB-02-19 0	New UGA	3	11029	-39.54	-26.32
57	BB-02-19 0	New UGA	4	8754	-0.143	-0.534
57	BB-02-19 0	New UGA	5	7403	-0.169	-0.538
57	BB-02-19 0	New UGA	6	6340	-0.165	-0.521
57	BB-02-19 0	New UGA	7	5432	-0.18	-0.61
57	BB-02-19 0	New UGA	8	4648	-0.177	-0.649

57	BB-02-19 0	New UGA	9	3975	-0.166	-0.706
57	BB-02-19 0	New UGA	10	3407	-0.051	-0.467
57	BB-02-19 0	New UGA	11	2916	-0.183	-0.742
57	BB-02-19 0	New UGA	12	2505	-0.117	-0.632
57	BB-02-19 0	New UGA	13	2213	0.377	-0.205
57	BB-02-19 0	New UGA	14	11025	-39.54	-26.32
58	BB-02-36 0	New UGA	1	11009	-39.426	-26.214
58	BB-02-36 0	New UGA	2	11019	-39.511	-26.303
58	BB-02-36 0	New UGA	3	11013	-39.54	-26.32
58	BB-02-36 0	New UGA	4	6579	-0.314	-0.177
58	BB-02-36 0	New UGA	5	5413	-0.644	-0.717
58	BB-02-36 0	New UGA	6	4608	-0.667	-0.776
58	BB-02-36 0	New UGA	7	3927	-0.663	-0.823
58	BB-02-36 0	New UGA	8	3348	-0.692	-0.822
58	BB-02-36 0	New UGA	9	2856	-0.626	-0.794
58	BB-02-36 0	New UGA	10	2436	-0.647	-0.893
58	BB-02-36 0	New UGA	11	2079	-0.681	-0.928
58	BB-02-36 0	New UGA	12	1775	-0.637	-0.89
58	BB-02-36 0	New UGA	13	1517	-0.553	-1.11
58	BB-02-36 0	New UGA	14	11045	-39.54	-26.32
59	IAEA-603 72	New UGA	1	11035	-39.387	-26.158
59	IAEA-603 72	New UGA	2	11029	-39.501	-26.274
59	IAEA-603 72	New UGA	3	11009	-39.54	-26.32
59	IAEA-603 72	New UGA	4	4842	1.994	-2.204
59	IAEA-603 72	New UGA	5	4062	2.061	-2.12
59	IAEA-603 72	New UGA	6	3456	2.148	-2.033
59	IAEA-603 72	New UGA	7	2939	2.17	-2.063
59	IAEA-603 72	New UGA	8	2496	2.205	-1.976
59	IAEA-603 72	New UGA	9	2067	1.85	-2.607
59	IAEA-603 72	New UGA	10	1755	1.836	-2.744
59	IAEA-603 72	New UGA	11	1493	1.822	-2.774
59	IAEA-603 72	New UGA	12	1269	1.871	-2.709
59	IAEA-603 72	New UGA	13	1081	1.971	-2.567
59	IAEA-603 72	New UGA	14	10869	-39.54	-26.32
60	BB-02-27 0	New UGA	1	11008	-39.363	-26.164
60	BB-02-27 0	New UGA	2	11012	-39.484	-26.267
60	BB-02-27 0	New UGA	3	10988	-39.54	-26.32
60	BB-02-27 0	New UGA	4	4964	-0.681	-0.756
60	BB-02-27 0	New UGA	5	4129	-0.93	-1.098
60	BB-02-27 0	New UGA	6	3528	-0.945	-1.148
60	BB-02-27 0	New UGA	7	3011	-0.939	-1.147
60	BB-02-27 0	New UGA	8	2570	-0.904	-1.193
60	BB-02-27 0	New UGA	9	2192	-0.888	-1.214
60	BB-02-27 0	New UGA	10	1873	-0.863	-1.239
60	BB-02-27 0	New UGA	11	1600	-0.917	-1.167
60	BB-02-27 0	New UGA	12	1370	-0.966	-1.28
60	BB-02-27 0	New UGA	13	1170	-0.939	-1.498
60	BB-02-27 0	New UGA	14	11049	-39.54	-26.32
61	BB-02-17 0	New UGA	1	11010	-39.385	-26.168

61	BB-02-17	0	New UGA	2	11014	-39.476	-26.251
61	BB-02-17	0	New UGA	3	11012	-39.54	-26.32
61	BB-02-17	0	New UGA	4	4981	0.003	-0.171
61	BB-02-17	0	New UGA	5	4206	0.054	-0.2
61	BB-02-17	0	New UGA	6	3554	-0.144	-0.363
61	BB-02-17	0	New UGA	7	3003	-0.362	-0.827
61	BB-02-17	0	New UGA	8	2566	-0.349	-0.765
61	BB-02-17	0	New UGA	9	2194	-0.4	-0.903
61	BB-02-17	0	New UGA	10	1876	-0.324	-0.991
61	BB-02-17	0	New UGA	11	1606	-0.38	-0.996
61	BB-02-17	0	New UGA	12	1374	-0.369	-1.034
61	BB-02-17	0	New UGA	13	1176	-0.369	-0.982
61	BB-02-17	0	New UGA	14	11024	-39.54	-26.32
62	BB-02-18	0	New UGA	1	11013	-39.378	-26.142
62	BB-02-18	0	New UGA	2	10994	-39.5	-26.275
62	BB-02-18	0	New UGA	3	11017	-39.54	-26.32
62	BB-02-18	0	New UGA	4	5861	-0.324	-0.165
62	BB-02-18	0	New UGA	5	4956	-0.463	-0.406
62	BB-02-18	0	New UGA	6	4281	-0.524	-0.411
62	BB-02-18	0	New UGA	7	3651	-0.685	-0.747
62	BB-02-18	0	New UGA	8	3147	-0.651	-0.788
62	BB-02-18	0	New UGA	9	2717	-0.672	-0.879
62	BB-02-18	0	New UGA	10	2342	-0.73	-0.878
62	BB-02-18	0	New UGA	11	2022	-0.661	-0.88
62	BB-02-18	0	New UGA	12	1745	-0.648	-0.957
62	BB-02-18	0	New UGA	13	1508	-0.713	-0.992
62	BB-02-18	0	New UGA	14	11034	-39.54	-26.32
63	BB-02-27	0	New UGA	1	11015	-39.373	-26.143
63	BB-02-27	0	New UGA	2	10993	-39.49	-26.259
63	BB-02-27	0	New UGA	3	11001	-39.54	-26.32
63	BB-02-27	0	New UGA	4	8131	0.814	0.362
63	BB-02-27	0	New UGA	5	6964	0.843	0.347
63	BB-02-27	0	New UGA	6	5958	0.651	0.123
63	BB-02-27	0	New UGA	7	5069	0.411	-0.263
63	BB-02-27	0	New UGA	8	4373	0.392	-0.357
63	BB-02-27	0	New UGA	9	3771	0.398	-0.354
63	BB-02-27	0	New UGA	10	3256	0.427	-0.47
63	BB-02-27	0	New UGA	11	2808	0.354	-0.524
63	BB-02-27	0	New UGA	12	2424	0.413	-0.487
63	BB-02-27	0	New UGA	13	2096	0.419	-0.45
63	BB-02-27	0	New UGA	14	11054	-39.54	-26.32
64	BB-02-28	0	New UGA	1	11013	-39.4	-26.174
64	BB-02-28	0	New UGA	2	11000	-39.491	-26.275
64	BB-02-28	0	New UGA	3	10987	-39.54	-26.32
64	BB-02-28	0	New UGA	4	7360	-0.805	0.048
64	BB-02-28	0	New UGA	5	6265	-0.957	-0.151
64	BB-02-28	0	New UGA	6	5439	-0.971	-0.204
64	BB-02-28	0	New UGA	7	4655	-1.215	-0.585
64	BB-02-28	0	New UGA	8	4034	-1.197	-0.603

64	BB-02-28	0	New UGA	9	3495	-1.219	-0.69
64	BB-02-28	0	New UGA	10	3030	-1.213	-0.71
64	BB-02-28	0	New UGA	11	2633	-1.168	-0.832
64	BB-02-28	0	New UGA	12	2284	-1.188	-0.757
64	BB-02-28	0	New UGA	13	1984	-1.222	-0.819
64	BB-02-28	0	New UGA	14	11037	-39.54	-26.32
65	BB-03-01	0	New UGA	1	11017	-39.388	-26.16
65	BB-03-01	0	New UGA	2	10989	-39.503	-26.292
65	BB-03-01	0	New UGA	3	11001	-39.54	-26.32
65	BB-03-01	0	New UGA	4	6510	-1.036	0.905
65	BB-03-01	0	New UGA	5	5577	-1.21	0.685
65	BB-03-01	0	New UGA	6	4878	-1.245	0.682
65	BB-03-01	0	New UGA	7	4193	-1.499	0.292
65	BB-03-01	0	New UGA	8	3654	-1.477	0.292
65	BB-03-01	0	New UGA	9	3186	-1.457	0.268
65	BB-03-01	0	New UGA	10	2774	-1.446	0.138
65	BB-03-01	0	New UGA	11	2416	-1.448	0.152
65	BB-03-01	0	New UGA	12	2104	-1.489	0.166
65	BB-03-01	0	New UGA	13	1836	-1.465	0.119
65	BB-03-01	0	New UGA	14	11058	-39.54	-26.32
66	BB-02-06	0	New UGA	1	10998	-39.387	-26.143
66	BB-02-06	0	New UGA	2	11005	-39.491	-26.257
66	BB-02-06	0	New UGA	3	11000	-39.54	-26.32
66	BB-02-06	0	New UGA	4	6713	0.753	0.324
66	BB-02-06	0	New UGA	5	5758	0.636	0.148
66	BB-02-06	0	New UGA	6	5078	0.615	0.087
66	BB-02-06	0	New UGA	7	4396	0.299	-0.286
66	BB-02-06	0	New UGA	8	3847	0.321	-0.3
66	BB-02-06	0	New UGA	9	3373	0.33	-0.276
66	BB-02-06	0	New UGA	10	2960	0.327	-0.354
66	BB-02-06	0	New UGA	11	2603	0.35	-0.457
66	BB-02-06	0	New UGA	12	2285	0.365	-0.41
66	BB-02-06	0	New UGA	13	2009	0.363	-0.511
66	BB-02-06	0	New UGA	14	11043	-39.54	-26.32
67	IAEA-603	82	New UGA	1	11039	-39.393	-26.174
67	IAEA-603	82	New UGA	2	11013	-39.504	-26.266
67	IAEA-603	82	New UGA	3	11025	-39.54	-26.32
67	IAEA-603	82	New UGA	4	9571	2.012	-1.901
67	IAEA-603	82	New UGA	5	8301	2.041	-1.938
67	IAEA-603	82	New UGA	6	7263	1.991	-1.958
67	IAEA-603	82	New UGA	7	6250	1.849	-2.199
67	IAEA-603	82	New UGA	8	5434	1.554	-2.579
67	IAEA-603	82	New UGA	9	4720	1.609	-2.577
67	IAEA-603	82	New UGA	10	4126	1.616	-2.588
67	IAEA-603	82	New UGA	11	3613	1.591	-2.638
67	IAEA-603	82	New UGA	12	3173	1.607	-2.651
67	IAEA-603	82	New UGA	13	2782	1.607	-2.689
67	IAEA-603	82	New UGA	14	11035	-39.54	-26.32
68	BB-02-39	0	New UGA	1	11025	-39.419	-26.141

68	BB-02-39	0	New UGA	2	11007	-39.529	-26.269
68	BB-02-39	0	New UGA	3	11011	-39.54	-26.32
68	BB-02-39	0	New UGA	4	7546	-0.301	-0.191
68	BB-02-39	0	New UGA	5	6594	-0.283	-0.203
68	BB-02-39	0	New UGA	6	5810	-0.261	-0.201
68	BB-02-39	0	New UGA	7	5034	-0.414	-0.441
68	BB-02-39	0	New UGA	8	4338	-0.708	-0.826
68	BB-02-39	0	New UGA	9	3801	-0.692	-0.891
68	BB-02-39	0	New UGA	10	3334	-0.669	-0.896
68	BB-02-39	0	New UGA	11	2916	-0.679	-0.951
68	BB-02-39	0	New UGA	12	2558	-0.638	-0.99
68	BB-02-39	0	New UGA	13	2239	-0.623	-0.911
68	BB-02-39	0	New UGA	14	11062	-39.54	-26.32
69	BB-02-37	0	New UGA	1	11018	-39.396	-26.161
69	BB-02-37	0	New UGA	2	11012	-39.51	-26.26
69	BB-02-37	0	New UGA	3	11003	-39.54	-26.32
69	BB-02-37	0	New UGA	4	8115	-0.487	-0.361
69	BB-02-37	0	New UGA	5	7044	-0.576	-0.545
69	BB-02-37	0	New UGA	6	6193	-0.576	-0.574
69	BB-02-37	0	New UGA	7	5347	-0.778	-0.889
69	BB-02-37	0	New UGA	8	4655	-0.797	-0.922
69	BB-02-37	0	New UGA	9	4064	-0.773	-0.974
69	BB-02-37	0	New UGA	10	3543	-0.803	-0.999
69	BB-02-37	0	New UGA	11	3098	-0.744	-1.06
69	BB-02-37	0	New UGA	12	2696	-0.797	-1.067
69	BB-02-37	0	New UGA	13	2352	-0.795	-1.186
69	BB-02-37	0	New UGA	14	11039	-39.54	-26.32
70	BB-02-16	0	New UGA	1	11037	-39.385	-26.163
70	BB-02-16	0	New UGA	2	11044	-39.496	-26.263
70	BB-02-16	0	New UGA	3	11048	-39.54	-26.32
70	BB-02-16	0	New UGA	4	10250	0.147	0.333
70	BB-02-16	0	New UGA	5	8848	-0.012	0.032
70	BB-02-16	0	New UGA	6	7804	-0.043	0.005
70	BB-02-16	0	New UGA	7	6855	-0.049	0.026
70	BB-02-16	0	New UGA	8	6015	-0.02	-0.026
70	BB-02-16	0	New UGA	9	5274	0.005	-0.034
70	BB-02-16	0	New UGA	10	4626	0.01	-0.043
70	BB-02-16	0	New UGA	11	4062	0.007	-0.073
70	BB-02-16	0	New UGA	12	3562	-0.011	-0.018
70	BB-02-16	0	New UGA	13	3129	0.021	-0.136
70	BB-02-16	0	New UGA	14	11055	-39.54	-26.32
71	BB-02-08	0	New UGA	1	11035	-39.405	-26.172
71	BB-02-08	0	New UGA	2	11035	-39.521	-26.283
71	BB-02-08	0	New UGA	3	11021	-39.54	-26.32
71	BB-02-08	0	New UGA	4	8752	0.413	0.113
71	BB-02-08	0	New UGA	5	7592	0.3	-0.088
71	BB-02-08	0	New UGA	6	6729	0.277	-0.147
71	BB-02-08	0	New UGA	7	5932	0.27	-0.142
71	BB-02-08	0	New UGA	8	5220	0.266	-0.16

71	BB-02-08	0	New UGA	9	4591	0.278	-0.149
71	BB-02-08	0	New UGA	10	4034	0.296	-0.244
71	BB-02-08	0	New UGA	11	3548	0.29	-0.3
71	BB-02-08	0	New UGA	12	3119	0.283	-0.367
71	BB-02-08	0	New UGA	13	2740	0.275	-0.305
71	BB-02-08	0	New UGA	14	11065	-39.54	-26.32
72	BB-02-46	0	New UGA	1	11050	-39.397	-26.153
72	BB-02-46	0	New UGA	2	11016	-39.518	-26.274
72	BB-02-46	0	New UGA	3	11041	-39.54	-26.32
72	BB-02-46	0	New UGA	4	12365	-1.615	-0.266
72	BB-02-46	0	New UGA	5	10766	-1.598	-0.29
72	BB-02-46	0	New UGA	6	9189	-2.073	-0.996
72	BB-02-46	0	New UGA	7	8066	-2.094	-0.998
72	BB-02-46	0	New UGA	8	7086	-2.075	-1.006
72	BB-02-46	0	New UGA	9	6224	-2.088	-1.055
72	BB-02-46	0	New UGA	10	5462	-2.055	-1.083
72	BB-02-46	0	New UGA	11	4790	-2.066	-1.071
72	BB-02-46	0	New UGA	12	4202	-2.068	-1.122
72	BB-02-46	0	New UGA	13	3686	-2.014	-1.092
72	BB-02-46	0	New UGA	14	10998	-39.54	-26.32
73	BB-02-38	0	New UGA	1	10977	-39.392	-26.172
73	BB-02-38	0	New UGA	2	10976	-39.51	-26.29
73	BB-02-38	0	New UGA	3	10967	-39.54	-26.32
73	BB-02-38	0	New UGA	4	8204	-0.482	-0.302
73	BB-02-38	0	New UGA	5	7178	-0.444	-0.335
73	BB-02-38	0	New UGA	6	6350	-0.459	-0.353
73	BB-02-38	0	New UGA	7	5521	-0.626	-0.567
73	BB-02-38	0	New UGA	8	4778	-0.864	-1.022
73	BB-02-38	0	New UGA	9	4191	-0.875	-0.998
73	BB-02-38	0	New UGA	10	3672	-0.898	-1.028
73	BB-02-38	0	New UGA	11	3220	-0.827	-1.091
73	BB-02-38	0	New UGA	12	2825	-0.87	-1.101
73	BB-02-38	0	New UGA	13	2474	-0.826	-1.168
73	BB-02-38	0	New UGA	14	11012	-39.54	-26.32
74	BB-03-02	0	New UGA	1	10975	-39.42	-26.233
74	BB-03-02	0	New UGA	2	10995	-39.517	-26.302
74	BB-03-02	0	New UGA	3	10982	-39.54	-26.32
74	BB-03-02	0	New UGA	4	6996	0.199	0.903
74	BB-03-02	0	New UGA	5	6035	-0.049	0.617
74	BB-03-02	0	New UGA	6	5341	-0.039	0.661
74	BB-03-02	0	New UGA	7	4700	-0.038	0.608
74	BB-03-02	0	New UGA	8	4132	-0.037	0.573
74	BB-03-02	0	New UGA	9	3632	-0.036	0.453
74	BB-03-02	0	New UGA	10	3188	-0.024	0.436
74	BB-03-02	0	New UGA	11	2802	0.017	0.39
74	BB-03-02	0	New UGA	12	2455	0.033	0.548
74	BB-03-02	0	New UGA	13	2154	-0.023	0.461
74	BB-03-02	0	New UGA	14	11044	-39.54	-26.32
75	IAEA-603	80	New UGA	1	11011	-39.393	-26.185

75 IAEA-603 80	New UGA	2	10984	-39.507	-26.302
75 IAEA-603 80	New UGA	3	10980	-39.54	-26.32
75 IAEA-603 80	New UGA	4	10203	2.028	-1.91
75 IAEA-603 80	New UGA	5	8897	2.045	-1.848
75 IAEA-603 80	New UGA	6	7855	2.03	-1.887
75 IAEA-603 80	New UGA	7	6824	1.887	-2.101
75 IAEA-603 80	New UGA	8	5904	1.609	-2.529
75 IAEA-603 80	New UGA	9	5179	1.611	-2.565
75 IAEA-603 80	New UGA	10	4539	1.613	-2.574
75 IAEA-603 80	New UGA	11	3976	1.643	-2.597
75 IAEA-603 80	New UGA	12	3483	1.595	-2.6
75 IAEA-603 80	New UGA	13	3053	1.607	-2.7
75 IAEA-603 80	New UGA	14	11048	-39.54	-26.32
76 BB-02-29 0	New UGA	1	11012	-39.387	-26.165
76 BB-02-29 0	New UGA	2	10994	-39.496	-26.283
76 BB-02-29 0	New UGA	3	11011	-39.54	-26.32
76 BB-02-29 0	New UGA	4	7889	-0.725	-0.104
76 BB-02-29 0	New UGA	5	6918	-0.677	-0.092
76 BB-02-29 0	New UGA	6	6124	-0.712	-0.062
76 BB-02-29 0	New UGA	7	5335	-0.867	-0.352
76 BB-02-29 0	New UGA	8	4627	-1.118	-0.675
76 BB-02-29 0	New UGA	9	4066	-1.071	-0.694
76 BB-02-29 0	New UGA	10	3571	-1.086	-0.742
76 BB-02-29 0	New UGA	11	3133	-1.088	-0.783
76 BB-02-29 0	New UGA	12	2753	-1.099	-0.783
76 BB-02-29 0	New UGA	13	2418	-1.095	-0.818
76 BB-02-29 0	New UGA	14	11044	-39.54	-26.32
77 BB-03-03 0	New UGA	1	11030	-39.378	-26.137
77 BB-03-03 0	New UGA	2	10988	-39.504	-26.26
77 BB-03-03 0	New UGA	3	11001	-39.54	-26.32
77 BB-03-03 0	New UGA	4	5524	1.021	0.526
77 BB-03-03 0	New UGA	5	4787	0.833	0.211
77 BB-03-03 0	New UGA	6	4251	0.83	0.201
77 BB-03-03 0	New UGA	7	3760	0.854	0.231
77 BB-03-03 0	New UGA	8	3312	0.822	0.114
77 BB-03-03 0	New UGA	9	2920	0.853	0.121
77 BB-03-03 0	New UGA	10	2573	0.847	0.095
77 BB-03-03 0	New UGA	11	2267	0.884	0.066
77 BB-03-03 0	New UGA	12	1996	0.894	0.153
77 BB-03-03 0	New UGA	13	1760	0.912	-0.047
77 BB-03-03 0	New UGA	14	11065	-39.54	-26.32
78 BB-03-50 0	New UGA	1	11015	-39.369	-26.168
78 BB-03-50 0	New UGA	2	11008	-39.481	-26.271
78 BB-03-50 0	New UGA	3	10983	-39.54	-26.32
78 BB-03-50 0	New UGA	4	10229	-0.262	-0.743
78 BB-03-50 0	New UGA	5	9009	-0.253	-0.714
78 BB-03-50 0	New UGA	6	8011	-0.287	-0.737
78 BB-03-50 0	New UGA	7	6998	-0.419	-0.967
78 BB-03-50 0	New UGA	8	6178	-0.411	-1.02

78 BB-03-50 0	New UGA	9	5383	-0.673	-1.394
78 BB-03-50 0	New UGA	10	4740	-0.659	-1.391
78 BB-03-50 0	New UGA	11	4182	-0.666	-1.421
78 BB-03-50 0	New UGA	12	3690	-0.616	-1.489
78 BB-03-50 0	New UGA	13	3259	-0.665	-1.497
78 BB-03-50 0	New UGA	14	11049	-39.54	-26.32
79 BB-03-51 0	New UGA	1	11024	-39.401	-26.165
79 BB-03-51 0	New UGA	2	10991	-39.499	-26.267
79 BB-03-51 0	New UGA	3	10993	-39.54	-26.32
79 BB-03-51 0	New UGA	4	13687	-0.194	-0.375
79 BB-03-51 0	New UGA	5	11898	-0.345	-0.585
79 BB-03-51 0	New UGA	6	10537	-0.392	-0.62
79 BB-03-51 0	New UGA	7	9200	-0.616	-0.99
79 BB-03-51 0	New UGA	8	8103	-0.606	-1.028
79 BB-03-51 0	New UGA	9	7135	-0.613	-1.094
79 BB-03-51 0	New UGA	10	6285	-0.609	-1.075
79 BB-03-51 0	New UGA	11	5540	-0.62	-1.116
79 BB-03-51 0	New UGA	12	4880	-0.578	-1.12
79 BB-03-51 0	New UGA	13	4301	-0.597	-1.168
79 BB-03-51 0	New UGA	14	11084	-39.54	-26.32
80 BB-03-10 0	New UGA	1	11025	-39.405	-26.177
80 BB-03-10 0	New UGA	2	11009	-39.508	-26.284
80 BB-03-10 0	New UGA	3	11019	-39.54	-26.32
80 BB-03-10 0	New UGA	4	6065	0.985	0.053
80 BB-03-10 0	New UGA	5	5364	1.025	0.104
80 BB-03-10 0	New UGA	6	4732	0.86	-0.157
80 BB-03-10 0	New UGA	7	4145	0.62	-0.483
80 BB-03-10 0	New UGA	8	3680	0.617	-0.492
80 BB-03-10 0	New UGA	9	3270	0.643	-0.573
80 BB-03-10 0	New UGA	10	2901	0.593	-0.588
80 BB-03-10 0	New UGA	11	2573	0.68	-0.606
80 BB-03-10 0	New UGA	12	2284	0.586	-0.658
80 BB-03-10 0	New UGA	13	2029	0.63	-0.692
80 BB-03-10 0	New UGA	14	11083	-39.54	-26.32
81 BB-03-11 0	New UGA	1	11026	-39.386	-26.171
81 BB-03-11 0	New UGA	2	11036	-39.502	-26.275
81 BB-03-11 0	New UGA	3	11004	-39.54	-26.32
81 BB-03-11 0	New UGA	4	10217	0.726	0.364
81 BB-03-11 0	New UGA	5	9031	0.747	0.418
81 BB-03-11 0	New UGA	6	7979	0.566	0.115
81 BB-03-11 0	New UGA	7	7113	0.559	0.102
81 BB-03-11 0	New UGA	8	6242	0.321	-0.171
81 BB-03-11 0	New UGA	9	5555	0.335	-0.277
81 BB-03-11 0	New UGA	10	4936	0.337	-0.308
81 BB-03-11 0	New UGA	11	4390	0.333	-0.344
81 BB-03-11 0	New UGA	12	3915	0.353	-0.277
81 BB-03-11 0	New UGA	13	3497	0.417	-0.362
81 BB-03-11 0	New UGA	14	11053	-39.54	-26.32
82 BB-03-33 0	New UGA	1	11031	-39.388	-26.156

82	BB-03-33	0	New UGA	2	11029	-39.489	-26.252
82	BB-03-33	0	New UGA	3	11021	-39.54	-26.32
82	BB-03-33	0	New UGA	4	7900	-0.762	-1.176
82	BB-03-33	0	New UGA	5	6903	-0.907	-1.391
82	BB-03-33	0	New UGA	6	6169	-0.92	-1.411
82	BB-03-33	0	New UGA	7	5494	-0.923	-1.442
82	BB-03-33	0	New UGA	8	4888	-0.913	-1.526
82	BB-03-33	0	New UGA	9	4291	-1.188	-1.835
82	BB-03-33	0	New UGA	10	3811	-1.12	-1.841
82	BB-03-33	0	New UGA	11	3386	-1.156	-1.814
82	BB-03-33	0	New UGA	12	3012	-1.129	-1.865
82	BB-03-33	0	New UGA	13	2680	-1.088	-1.867
82	BB-03-33	0	New UGA	14	11078	-39.54	-26.32
83	IAEA-603	94	New UGA	1	11034	-39.392	-26.163
83	IAEA-603	94	New UGA	2	11010	-39.507	-26.299
83	IAEA-603	94	New UGA	3	11021	-39.54	-26.32
83	IAEA-603	94	New UGA	4	11565	2.058	-1.905
83	IAEA-603	94	New UGA	5	10208	2.053	-1.926
83	IAEA-603	94	New UGA	6	9007	1.874	-2.176
83	IAEA-603	94	New UGA	7	7903	1.64	-2.474
83	IAEA-603	94	New UGA	8	6995	1.641	-2.579
83	IAEA-603	94	New UGA	9	6204	1.616	-2.55
83	IAEA-603	94	New UGA	10	5520	1.643	-2.557
83	IAEA-603	94	New UGA	11	4886	1.663	-2.641
83	IAEA-603	94	New UGA	12	4341	1.646	-2.627
83	IAEA-603	94	New UGA	13	3846	1.694	-2.581
83	IAEA-603	94	New UGA	14	11076	-39.54	-26.32
84	BB-03-43	0	New UGA	1	11024	-39.414	-26.171
84	BB-03-43	0	New UGA	2	11020	-39.518	-26.282
84	BB-03-43	0	New UGA	3	11021	-39.54	-26.32
84	BB-03-43	0	New UGA	4	10450	-0.362	-1.14
84	BB-03-43	0	New UGA	5	9137	-0.51	-1.337
84	BB-03-43	0	New UGA	6	8157	-0.571	-1.398
84	BB-03-43	0	New UGA	7	7274	-0.547	-1.429
84	BB-03-43	0	New UGA	8	6474	-0.568	-1.453
84	BB-03-43	0	New UGA	9	5762	-0.555	-1.469
84	BB-03-43	0	New UGA	10	5065	-0.789	-1.811
84	BB-03-43	0	New UGA	11	4512	-0.776	-1.854
84	BB-03-43	0	New UGA	12	4015	-0.722	-1.873
84	BB-03-43	0	New UGA	13	3572	-0.737	-1.843
84	BB-03-43	0	New UGA	14	11062	-39.54	-26.32
85	B-03-12	0	New UGA	1	11041	-39.403	-26.151
85	B-03-12	0	New UGA	2	11025	-39.521	-26.26
85	B-03-12	0	New UGA	3	11024	-39.54	-26.32
85	B-03-12	0	New UGA	4	10368	0.476	0.229
85	B-03-12	0	New UGA	5	9173	0.519	0.22
85	B-03-12	0	New UGA	6	8092	0.379	-0.019
85	B-03-12	0	New UGA	7	7200	0.372	-0.055
85	B-03-12	0	New UGA	8	6415	0.366	-0.042

85	B-03-12	0	New UGA	9	5692	0.357	-0.147
85	B-03-12	0	New UGA	10	5059	0.376	-0.12
85	B-03-12	0	New UGA	11	4498	0.368	-0.144
85	B-03-12	0	New UGA	12	4001	0.383	-0.099
85	B-03-12	0	New UGA	13	3567	0.408	-0.216
85	B-03-12	0	New UGA	14	11052	-39.54	-26.32
86	BB-03-22	0	New UGA	1	11029	-39.413	-26.201
86	BB-03-22	0	New UGA	2	11045	-39.527	-26.313
86	BB-03-22	0	New UGA	3	11023	-39.54	-26.32
86	BB-03-22	0	New UGA	4	6804	-0.497	-0.75
86	BB-03-22	0	New UGA	5	5941	-0.632	-0.914
86	BB-03-22	0	New UGA	6	5307	-0.617	-0.964
86	BB-03-22	0	New UGA	7	4727	-0.617	-1.037
86	BB-03-22	0	New UGA	8	4200	-0.66	-0.96
86	BB-03-22	0	New UGA	9	3731	-0.623	-1.04
86	BB-03-22	0	New UGA	10	3321	-0.605	-1.073
86	BB-03-22	0	New UGA	11	2949	-0.6	-1.105
86	BB-03-22	0	New UGA	12	2621	-0.579	-1.037
86	BB-03-22	0	New UGA	13	2332	-0.595	-1.074
86	BB-03-22	0	New UGA	14	11051	-39.54	-26.32
87	BB-03-32	0	New UGA	1	11041	-39.408	-26.163
87	BB-03-32	0	New UGA	2	11041	-39.517	-26.275
87	BB-03-32	0	New UGA	3	11046	-39.54	-26.32
87	BB-03-32	0	New UGA	4	10687	-0.66	-1.203
87	BB-03-32	0	New UGA	5	9423	-0.668	-1.286
87	BB-03-32	0	New UGA	6	8202	-1.081	-1.866
87	BB-03-32	0	New UGA	7	7288	-1.114	-1.917
87	BB-03-32	0	New UGA	8	6464	-1.094	-1.898
87	BB-03-32	0	New UGA	9	5739	-1.104	-1.986
87	BB-03-32	0	New UGA	10	5093	-1.081	-1.981
87	BB-03-32	0	New UGA	11	4525	-1.089	-2.002
87	BB-03-32	0	New UGA	12	4018	-1.123	-2.041
87	BB-03-32	0	New UGA	13	3568	-1.075	-2.058
87	BB-03-32	0	New UGA	14	11075	-39.54	-26.32
88	BB-03-41	0	New UGA	1	11065	-39.404	-26.186
88	BB-03-41	0	New UGA	2	11040	-39.504	-26.28
88	BB-03-41	0	New UGA	3	11045	-39.54	-26.32
88	BB-03-41	0	New UGA	4	7630	-0.65	-1.836
88	BB-03-41	0	New UGA	5	6772	-0.612	-1.812
88	BB-03-41	0	New UGA	6	6064	-0.606	-1.796
88	BB-03-41	0	New UGA	7	5325	-0.77	-2.089
88	BB-03-41	0	New UGA	8	4677	-1.039	-2.462
88	BB-03-41	0	New UGA	9	4158	-0.997	-2.498
88	BB-03-41	0	New UGA	10	3698	-1	-2.47
88	BB-03-41	0	New UGA	11	3291	-0.999	-2.535
88	BB-03-41	0	New UGA	12	2928	-0.977	-2.556
88	BB-03-41	0	New UGA	13	2608	-0.983	-2.566
88	BB-03-41	0	New UGA	14	11094	-39.54	-26.32
89	BB-03-21	0	New UGA	1	11058	-39.399	-26.171

89	BB-03-21	0	New UGA	2	11065	-39.502	-26.281
89	BB-03-21	0	New UGA	3	11068	-39.54	-26.32
89	BB-03-21	0	New UGA	4	9078	-0.449	-0.763
89	BB-03-21	0	New UGA	5	7863	-0.767	-1.196
89	BB-03-21	0	New UGA	6	6972	-0.898	-1.334
89	BB-03-21	0	New UGA	7	6209	-0.838	-1.336
89	BB-03-21	0	New UGA	8	5521	-0.888	-1.344
89	BB-03-21	0	New UGA	9	4907	-0.875	-1.403
89	BB-03-21	0	New UGA	10	4363	-0.844	-1.413
89	BB-03-21	0	New UGA	11	3880	-0.852	-1.484
89	BB-03-21	0	New UGA	12	3453	-0.842	-1.449
89	BB-03-21	0	New UGA	13	3073	-0.818	-1.514
89	BB-03-21	0	New UGA	14	11100	-39.54	-26.32
90	BB-03-18	0	New UGA	1	11056	-39.396	-26.161
90	BB-03-18	0	New UGA	2	11034	-39.502	-26.274
90	BB-03-18	0	New UGA	3	11022	-39.54	-26.32
90	BB-03-18	0	New UGA	4	6699	-0.226	-0.707
90	BB-03-18	0	New UGA	5	5927	-0.246	-0.751
90	BB-03-18	0	New UGA	6	5301	-0.258	-0.702
90	BB-03-18	0	New UGA	7	4666	-0.415	-1.004
90	BB-03-18	0	New UGA	8	4103	-0.665	-1.39
90	BB-03-18	0	New UGA	9	3650	-0.676	-1.417
90	BB-03-18	0	New UGA	10	3252	-0.656	-1.454
90	BB-03-18	0	New UGA	11	2894	-0.642	-1.396
90	BB-03-18	0	New UGA	12	2578	-0.662	-1.507
90	BB-03-18	0	New UGA	13	2296	-0.616	-1.522
90	BB-03-18	0	New UGA	14	11104	-39.54	-26.32
91	IAEA-603	64	New UGA	1	11094	-39.405	-26.188
91	IAEA-603	64	New UGA	2	11082	-39.506	-26.304
91	IAEA-603	64	New UGA	3	11068	-39.54	-26.32
91	IAEA-603	64	New UGA	4	8006	2.017	-2.025
91	IAEA-603	64	New UGA	5	7083	2.055	-1.994
91	IAEA-603	64	New UGA	6	6323	2.039	-2.028
91	IAEA-603	64	New UGA	7	5554	1.864	-2.271
91	IAEA-603	64	New UGA	8	4940	1.866	-2.3
91	IAEA-603	64	New UGA	9	4388	1.867	-2.262
91	IAEA-603	64	New UGA	10	3903	1.854	-2.314
91	IAEA-603	64	New UGA	11	3418	1.667	-2.709
91	IAEA-603	64	New UGA	12	3042	1.661	-2.67
91	IAEA-603	64	New UGA	13	2703	1.623	-2.668
91	IAEA-603	64	New UGA	14	11120	-39.54	-26.32
92	BB-03-08	0	New UGA	1	11083	-39.397	-26.178
92	BB-03-08	0	New UGA	2	11077	-39.499	-26.284
92	BB-03-08	0	New UGA	3	11077	-39.54	-26.32
92	BB-03-08	0	New UGA	4	11513	0.724	0.459
92	BB-03-08	0	New UGA	5	10050	0.503	0.134
92	BB-03-08	0	New UGA	6	8971	0.481	0.109
92	BB-03-08	0	New UGA	7	7980	0.462	0.053
92	BB-03-08	0	New UGA	8	7104	0.445	0.014

92 BB-03-08 0	New UGA	9	6307	0.465	-0.026
92 BB-03-08 0	New UGA	10	5611	0.457	-0.076
92 BB-03-08 0	New UGA	11	4989	0.474	-0.051
92 BB-03-08 0	New UGA	12	4442	0.472	-0.078
92 BB-03-08 0	New UGA	13	3950	0.509	0.111
92 BB-03-08 0	New UGA	14	11105	-39.54	-26.32
93 BB-03-46 0	New UGA	1	11067	-39.405	-26.183
93 BB-03-46 0	New UGA	2	11092	-39.499	-26.298
93 BB-03-46 0	New UGA	3	11051	-39.54	-26.32
93 BB-03-46 0	New UGA	4	9910	-0.263	-0.986
93 BB-03-46 0	New UGA	5	8794	-0.261	-1.029
93 BB-03-46 0	New UGA	6	7887	-0.274	-1.02
93 BB-03-46 0	New UGA	7	6955	-0.41	-1.226
93 BB-03-46 0	New UGA	8	6118	-0.67	-1.594
93 BB-03-46 0	New UGA	9	5462	-0.681	-1.65
93 BB-03-46 0	New UGA	10	4869	-0.679	-1.666
93 BB-03-46 0	New UGA	11	4346	-0.663	-1.695
93 BB-03-46 0	New UGA	12	3879	-0.651	-1.718
93 BB-03-46 0	New UGA	13	3469	-0.64	-1.692
93 BB-03-46 0	New UGA	14	11116	-39.54	-26.32
94 BB-03-42 0	New UGA	1	11112	-39.382	-26.18
94 BB-03-42 0	New UGA	2	11061	-39.499	-26.304
94 BB-03-42 0	New UGA	3	11058	-39.54	-26.32
94 BB-03-42 0	New UGA	4	9286	-0.435	-1.26
94 BB-03-42 0	New UGA	5	8233	-0.443	-1.296
94 BB-03-42 0	New UGA	6	7346	-0.516	-1.484
94 BB-03-42 0	New UGA	7	6465	-0.649	-1.706
94 BB-03-42 0	New UGA	8	5750	-0.689	-1.692
94 BB-03-42 0	New UGA	9	5054	-0.881	-2.096
94 BB-03-42 0	New UGA	10	4494	-0.863	-2.035
94 BB-03-42 0	New UGA	11	4001	-0.873	-2.077
94 BB-03-42 0	New UGA	12	3559	-0.882	-2.062
94 BB-03-42 0	New UGA	13	3180	-0.846	-2.048
94 BB-03-42 0	New UGA	14	11098	-39.54	-26.32
95 BB-03-20 0	New UGA	1	11098	-39.408	-26.173
95 BB-03-20 0	New UGA	2	11061	-39.499	-26.284
95 BB-03-20 0	New UGA	3	11079	-39.54	-26.32
95 BB-03-20 0	New UGA	4	8774	-0.482	-0.876
95 BB-03-20 0	New UGA	5	7772	-0.46	-0.876
95 BB-03-20 0	New UGA	6	6962	-0.458	-0.955
95 BB-03-20 0	New UGA	7	6198	-0.513	-0.916
95 BB-03-20 0	New UGA	8	5521	-0.429	-0.898
95 BB-03-20 0	New UGA	9	4850	-0.729	-1.213
95 BB-03-20 0	New UGA	10	4315	-0.688	-1.232
95 BB-03-20 0	New UGA	11	3847	-0.696	-1.347
95 BB-03-20 0	New UGA	12	3420	-0.682	-1.335
95 BB-03-20 0	New UGA	13	3047	-0.711	-1.27
95 BB-03-20 0	New UGA	14	11113	-39.54	-26.32
96 BB-03-48 0	New UGA	1	11073	-39.404	-26.184

96 BB-03-48 0	New UGA	2	11075	-39.507	-26.29
96 BB-03-48 0	New UGA	3	11086	-39.54	-26.32
96 BB-03-48 0	New UGA	4	9905	-0.353	-1.007
96 BB-03-48 0	New UGA	5	8781	-0.28	-0.902
96 BB-03-48 0	New UGA	6	7884	-0.203	-0.772
96 BB-03-48 0	New UGA	7	7032	-0.258	-0.926
96 BB-03-48 0	New UGA	8	6268	-0.244	-0.896
96 BB-03-48 0	New UGA	9	5518	-0.361	-1.063
96 BB-03-48 0	New UGA	10	4921	-0.371	-1.112
96 BB-03-48 0	New UGA	11	4390	-0.313	-1.094
96 BB-03-48 0	New UGA	12	3880	-0.414	-1.321
96 BB-03-48 0	New UGA	13	3451	-0.452	-1.334
96 BB-03-48 0	New UGA	14	10917	-39.54	-26.32
97 BB-03-47 0	New UGA	1	11077	-39.401	-26.127
97 BB-03-47 0	New UGA	2	11057	-39.502	-26.262
97 BB-03-47 0	New UGA	3	11051	-39.54	-26.32
97 BB-03-47 0	New UGA	4	6826	-0.302	-1.203
97 BB-03-47 0	New UGA	5	6054	-0.301	-1.283
97 BB-03-47 0	New UGA	6	5432	-0.268	-1.268
97 BB-03-47 0	New UGA	7	4792	-0.476	-1.565
97 BB-03-47 0	New UGA	8	4222	-0.678	-1.871
97 BB-03-47 0	New UGA	9	3771	-0.701	-1.832
97 BB-03-47 0	New UGA	10	3367	-0.67	-1.91
97 BB-03-47 0	New UGA	11	3006	-0.631	-1.926
97 BB-03-47 0	New UGA	12	2685	-0.703	-1.989
97 BB-03-47 0	New UGA	13	2399	-0.607	-2.024
97 BB-03-47 0	New UGA	14	11103	-39.54	-26.32
98 BB-03-09 0	New UGA	1	11093	-39.394	-26.167
98 BB-03-09 0	New UGA	2	11080	-39.501	-26.286
98 BB-03-09 0	New UGA	3	11072	-39.54	-26.32
98 BB-03-09 0	New UGA	4	9648	1.068	0.496
98 BB-03-09 0	New UGA	5	8437	0.859	0.252
98 BB-03-09 0	New UGA	6	7468	0.634	-0.077
98 BB-03-09 0	New UGA	7	6653	0.659	-0.078
98 BB-03-09 0	New UGA	8	5929	0.655	-0.103
98 BB-03-09 0	New UGA	9	5282	0.644	-0.138
98 BB-03-09 0	New UGA	10	4705	0.684	-0.116
98 BB-03-09 0	New UGA	11	4194	0.677	-0.168
98 BB-03-09 0	New UGA	12	3735	0.694	-0.162
98 BB-03-09 0	New UGA	13	3329	0.713	-0.181
98 BB-03-09 0	New UGA	14	11133	-39.54	-26.32
99 IAEA-603 79	New UGA	1	11080	-39.393	-26.196
99 IAEA-603 79	New UGA	2	11068	-39.501	-26.31
99 IAEA-603 79	New UGA	3	11090	-39.54	-26.32
99 IAEA-603 79	New UGA	4	10080	2.039	-1.998
99 IAEA-603 79	New UGA	5	8932	2.087	-1.928
99 IAEA-603 79	New UGA	6	7958	2.047	-1.946
99 IAEA-603 79	New UGA	7	6990	1.885	-2.283
99 IAEA-603 79	New UGA	8	6205	1.863	-2.213

99	IAEA-603 79	New UGA	9	5444	1.679	-2.525
99	IAEA-603 79	New UGA	10	4817	1.662	-2.554
99	IAEA-603 79	New UGA	11	4282	1.68	-2.578
99	IAEA-603 79	New UGA	12	3801	1.705	-2.636
99	IAEA-603 79	New UGA	13	3380	1.674	-2.582
99	IAEA-603 79	New UGA	14	11114	-39.54	-26.32
100	BB-03-31 0	New UGA	1	11067	-39.409	-26.148
100	BB-03-31 0	New UGA	2	11039	-39.524	-26.271
100	BB-03-31 0	New UGA	3	11061	-39.54	-26.32
100	BB-03-31 0	New UGA	4	8433	-0.855	-0.982
100	BB-03-31 0	New UGA	5	7387	-1.007	-1.245
100	BB-03-31 0	New UGA	6	6619	-1.012	-1.288
100	BB-03-31 0	New UGA	7	5914	-0.994	-1.228
100	BB-03-31 0	New UGA	8	5270	-1.011	-1.279
100	BB-03-31 0	New UGA	9	4694	-0.998	-1.303
100	BB-03-31 0	New UGA	10	4183	-1.022	-1.331
100	BB-03-31 0	New UGA	11	3730	-0.999	-1.347
100	BB-03-31 0	New UGA	12	3330	-0.959	-1.37
100	BB-03-31 0	New UGA	13	2965	-0.965	-1.411
100	BB-03-31 0	New UGA	14	11089	-39.54	-26.32
101	BB-03-28 0	New UGA	1	11067	-39.408	-26.189
101	BB-03-28 0	New UGA	2	11075	-39.514	-26.284
101	BB-03-28 0	New UGA	3	11052	-39.54	-26.32
101	BB-03-28 0	New UGA	4	12605	-0.736	-0.77
101	BB-03-28 0	New UGA	5	11228	-0.719	-0.732
101	BB-03-28 0	New UGA	6	9946	-0.877	-0.962
101	BB-03-28 0	New UGA	7	8896	-0.851	-0.99
101	BB-03-28 0	New UGA	8	7948	-0.856	-1.002
101	BB-03-28 0	New UGA	9	7089	-0.84	-1.056
101	BB-03-28 0	New UGA	10	6325	-0.848	-1.05
101	BB-03-28 0	New UGA	11	5646	-0.853	-1.023
101	BB-03-28 0	New UGA	12	5049	-0.834	-1.036
101	BB-03-28 0	New UGA	13	4500	-0.826	-1.121
101	BB-03-28 0	New UGA	14	11071	-39.54	-26.32
102	BB-03-23 0	New UGA	1	11047	-39.401	-26.161
102	BB-03-23 0	New UGA	2	11040	-39.512	-26.283
102	BB-03-23 0	New UGA	3	11019	-39.54	-26.32
102	BB-03-23 0	New UGA	4	5952	-0.463	-1.241
102	BB-03-23 0	New UGA	5	5279	-0.488	-1.237
102	BB-03-23 0	New UGA	6	4738	-0.462	-1.154
102	BB-03-23 0	New UGA	7	4120	-0.811	-1.775
102	BB-03-23 0	New UGA	8	3671	-0.856	-1.749
102	BB-03-23 0	New UGA	9	3275	-0.812	-1.91
102	BB-03-23 0	New UGA	10	2919	-0.839	-1.835
102	BB-03-23 0	New UGA	11	2605	-0.796	-1.997
102	BB-03-23 0	New UGA	12	2320	-0.848	-2.038
102	BB-03-23 0	New UGA	13	2068	-0.814	-1.976
102	BB-03-23 0	New UGA	14	11123	-39.54	-26.32
103	BB-03-53 0	New UGA	1	11065	-39.417	-26.183

103	BB-03-53	0	New UGA	2	11055	-39.525	-26.286
103	BB-03-53	0	New UGA	3	11061	-39.54	-26.32
103	BB-03-53	0	New UGA	4	13134	-0.397	-0.441
103	BB-03-53	0	New UGA	5	11633	-0.399	-0.482
103	BB-03-53	0	New UGA	6	10258	-0.558	-0.697
103	BB-03-53	0	New UGA	7	9011	-0.8	-1.047
103	BB-03-53	0	New UGA	8	8011	-0.795	-1.148
103	BB-03-53	0	New UGA	9	7107	-0.801	-1.146
103	BB-03-53	0	New UGA	10	6320	-0.806	-1.147
103	BB-03-53	0	New UGA	11	5618	-0.781	-1.205
103	BB-03-53	0	New UGA	12	4996	-0.745	-1.194
103	BB-03-53	0	New UGA	13	4442	-0.763	-1.196
103	BB-03-53	0	New UGA	14	11110	-39.54	-26.32
104	BB-03-13	0	New UGA	1	11054	-39.402	-26.19
104	BB-03-13	0	New UGA	2	11050	-39.516	-26.296
104	BB-03-13	0	New UGA	3	11057	-39.54	-26.32
104	BB-03-13	0	New UGA	4	11325	0.332	0.089
104	BB-03-13	0	New UGA	5	10062	0.329	0.061
104	BB-03-13	0	New UGA	6	8903	0.169	-0.211
104	BB-03-13	0	New UGA	7	7842	-0.067	-0.527
104	BB-03-13	0	New UGA	8	7002	-0.055	-0.542
104	BB-03-13	0	New UGA	9	6234	-0.08	-0.595
104	BB-03-13	0	New UGA	10	5557	-0.075	-0.649
104	BB-03-13	0	New UGA	11	4965	-0.065	-0.617
104	BB-03-13	0	New UGA	12	4416	-0.088	-0.681
104	BB-03-13	0	New UGA	13	3936	-0.073	-0.67
104	BB-03-13	0	New UGA	14	11104	-39.54	-26.32
105	BB-03-30	0	New UGA	1	11035	-39.399	-26.196
105	BB-03-30	0	New UGA	2	11034	-39.514	-26.298
105	BB-03-30	0	New UGA	3	11050	-39.54	-26.32
105	BB-03-30	0	New UGA	4	9219	-0.898	-1.096
105	BB-03-30	0	New UGA	5	8214	-0.877	-1.142
105	BB-03-30	0	New UGA	6	7287	-1.017	-1.36
105	BB-03-30	0	New UGA	7	6528	-1.049	-1.372
105	BB-03-30	0	New UGA	8	5823	-1.04	-1.369
105	BB-03-30	0	New UGA	9	5203	-1.036	-1.36
105	BB-03-30	0	New UGA	10	4588	-1.245	-1.724
105	BB-03-30	0	New UGA	11	4092	-1.248	-1.726
105	BB-03-30	0	New UGA	12	3665	-1.208	-1.669
105	BB-03-30	0	New UGA	13	3272	-1.173	-1.647
105	BB-03-30	0	New UGA	14	11086	-39.54	-26.32
106	BB-03-40	0	New UGA	1	11065	-39.407	-26.179
106	BB-03-40	0	New UGA	2	11047	-39.505	-26.298
106	BB-03-40	0	New UGA	3	11041	-39.54	-26.32
106	BB-03-40	0	New UGA	4	8961	-0.604	-1.871
106	BB-03-40	0	New UGA	5	7953	-0.623	-1.919
106	BB-03-40	0	New UGA	6	7033	-0.765	-2.174
106	BB-03-40	0	New UGA	7	6187	-1.056	-2.525
106	BB-03-40	0	New UGA	8	5523	-1.061	-2.521

106	BB-03-40	0	New UGA	9	4920	-1.027	-2.557
106	BB-03-40	0	New UGA	10	4392	-1.047	-2.64
106	BB-03-40	0	New UGA	11	3914	-1.03	-2.565
106	BB-03-40	0	New UGA	12	3500	-0.975	-2.565
106	BB-03-40	0	New UGA	13	3122	-0.997	-2.61
106	BB-03-40	0	New UGA	14	11111	-39.54	-26.32
107	IAEA-603	60	New UGA	1	11052	-39.402	-26.173
107	IAEA-603	60	New UGA	2	11065	-39.509	-26.295
107	IAEA-603	60	New UGA	3	11065	-39.54	-26.32
107	IAEA-603	60	New UGA	4	3718	1.92	-2.465
107	IAEA-603	60	New UGA	5	3293	1.97	-2.426
107	IAEA-603	60	New UGA	6	2909	1.794	-2.707
107	IAEA-603	60	New UGA	7	2592	1.821	-2.687
107	IAEA-603	60	New UGA	8	2275	1.601	-3.039
107	IAEA-603	60	New UGA	9	2024	1.621	-3.126
107	IAEA-603	60	New UGA	10	1798	1.66	-3.179
107	IAEA-603	60	New UGA	11	1601	1.582	-3.204
107	IAEA-603	60	New UGA	12	1422	1.585	-3.332
107	IAEA-603	60	New UGA	13	1266	1.535	-3.31
107	IAEA-603	60	New UGA	14	11097	-39.54	-26.32
108	BB-03-52	0	New UGA	1	11114	-39.409	-26.18
108	BB-03-52	0	New UGA	2	11078	-39.504	-26.285
108	BB-03-52	0	New UGA	3	11068	-39.54	-26.32
108	BB-03-52	0	New UGA	4	7088	-0.053	-1.066
108	BB-03-52	0	New UGA	5	6322	-0.147	-1.313
108	BB-03-52	0	New UGA	6	5596	-0.303	-1.544
108	BB-03-52	0	New UGA	7	5000	-0.327	-1.575
108	BB-03-52	0	New UGA	8	4403	-0.565	-1.923
108	BB-03-52	0	New UGA	9	3926	-0.551	-1.964
108	BB-03-52	0	New UGA	10	3505	-0.548	-2.038
108	BB-03-52	0	New UGA	11	3123	-0.543	-1.925
108	BB-03-52	0	New UGA	12	2783	-0.549	-2.078
108	BB-03-52	0	New UGA	13	2506	-0.512	-2.091
108	BB-03-52	0	New UGA	14	11122	-39.54	-26.32
109	BB-03-49	0	New UGA	1	11111	-39.4	-26.173
109	BB-03-49	0	New UGA	2	11085	-39.513	-26.289
109	BB-03-49	0	New UGA	3	11106	-39.54	-26.32
109	BB-03-49	0	New UGA	4	10852	-0.351	-0.849
109	BB-03-49	0	New UGA	5	9621	-0.341	-0.837
109	BB-03-49	0	New UGA	6	8522	-0.464	-1.093
109	BB-03-49	0	New UGA	7	7623	-0.459	-1.086
109	BB-03-49	0	New UGA	8	6717	-0.615	-1.357
109	BB-03-49	0	New UGA	9	5967	-0.623	-1.403
109	BB-03-49	0	New UGA	10	5319	-0.64	-1.37
109	BB-03-49	0	New UGA	11	4745	-0.662	-1.418
109	BB-03-49	0	New UGA	12	4224	-0.652	-1.512
109	BB-03-49	0	New UGA	13	3764	-0.697	-1.472
109	BB-03-49	0	New UGA	14	11120	-39.54	-26.32
110	BB-03-29	0	New UGA	1	11076	-39.399	-26.167

110	BB-03-29	0	New UGA	2	11080	-39.511	-26.296
110	BB-03-29	0	New UGA	3	11062	-39.54	-26.32
110	BB-03-29	0	New UGA	4	10636	-0.769	-2.042
110	BB-03-29	0	New UGA	5	9467	-0.688	-1.862
110	BB-03-29	0	New UGA	6	8356	-0.924	-2.308
110	BB-03-29	0	New UGA	7	7458	-0.932	-2.352
110	BB-03-29	0	New UGA	8	6561	-1.108	-2.601
110	BB-03-29	0	New UGA	9	5838	-1.144	-2.62
110	BB-03-29	0	New UGA	10	5198	-1.161	-2.653
110	BB-03-29	0	New UGA	11	4631	-1.13	-2.729
110	BB-03-29	0	New UGA	12	4125	-1.121	-2.689
110	BB-03-29	0	New UGA	13	3677	-1.106	-2.776
110	BB-03-29	0	New UGA	14	11143	-39.54	-26.32
111	BB-03-14	0	New UGA	1	11107	-39.393	-26.163
111	BB-03-14	0	New UGA	2	11078	-39.513	-26.282
111	BB-03-14	0	New UGA	3	11078	-39.54	-26.32
111	BB-03-14	0	New UGA	4	9817	0.722	-0.139
111	BB-03-14	0	New UGA	5	8724	0.699	-0.135
111	BB-03-14	0	New UGA	6	7749	0.531	-0.404
111	BB-03-14	0	New UGA	7	6920	0.515	-0.451
111	BB-03-14	0	New UGA	8	6189	0.511	-0.392
111	BB-03-14	0	New UGA	9	5528	0.544	-0.418
111	BB-03-14	0	New UGA	10	4935	0.514	-0.456
111	BB-03-14	0	New UGA	11	4405	0.562	-0.473
111	BB-03-14	0	New UGA	12	3939	0.571	-0.429
111	BB-03-14	0	New UGA	13	3479	0.407	-0.721
111	BB-03-14	0	New UGA	14	11113	-39.54	-26.32
112	BB-03-04	0	New UGA	1	11087	-39.397	-26.173
112	BB-03-04	0	New UGA	2	11079	-39.488	-26.259
112	BB-03-04	0	New UGA	3	11067	-39.54	-26.32
112	BB-03-04	0	New UGA	4	8644	1.173	0.556
112	BB-03-04	0	New UGA	5	7587	1.031	0.319
112	BB-03-04	0	New UGA	6	6728	0.804	-0.064
112	BB-03-04	0	New UGA	7	6018	0.811	-0.036
112	BB-03-04	0	New UGA	8	5375	0.823	-0.07
112	BB-03-04	0	New UGA	9	4800	0.797	-0.083
112	BB-03-04	0	New UGA	10	4282	0.811	-0.055
112	BB-03-04	0	New UGA	11	3825	0.849	-0.104
112	BB-03-04	0	New UGA	12	3413	0.771	-0.113
112	BB-03-04	0	New UGA	13	3050	0.806	-0.179
112	BB-03-04	0	New UGA	14	11151	-39.54	-26.32
113	BB-03-16	0	New UGA	1	11096	-39.416	-26.187
113	BB-03-16	0	New UGA	2	11104	-39.518	-26.293
113	BB-03-16	0	New UGA	3	11078	-39.54	-26.32
113	BB-03-16	0	New UGA	4	7591	-0.002	-0.452
113	BB-03-16	0	New UGA	5	6746	-0.003	-0.434
113	BB-03-16	0	New UGA	6	6057	0.009	-0.444
113	BB-03-16	0	New UGA	7	5345	-0.119	-0.67
113	BB-03-16	0	New UGA	8	4776	-0.132	-0.705

113	BB-03-16 0	New UGA	9	4206	-0.265	-0.976
113	BB-03-16 0	New UGA	10	3749	-0.286	-1.036
113	BB-03-16 0	New UGA	11	3344	-0.277	-1.051
113	BB-03-16 0	New UGA	12	2992	-0.289	-1.038
113	BB-03-16 0	New UGA	13	2671	-0.327	-1.1
113	BB-03-16 0	New UGA	14	11129	-39.54	-26.32
114	BB-03-24 0	New UGA	1	11132	-39.401	-26.15
114	BB-03-24 0	New UGA	2	11096	-39.508	-26.268
114	BB-03-24 0	New UGA	3	11073	-39.54	-26.32
114	BB-03-24 0	New UGA	4	10983	-0.608	-1.121
114	BB-03-24 0	New UGA	5	9792	-0.581	-1.112
114	BB-03-24 0	New UGA	6	8796	-0.619	-1.091
114	BB-03-24 0	New UGA	7	7881	-0.629	-1.137
114	BB-03-24 0	New UGA	8	7064	-0.623	-1.182
114	BB-03-24 0	New UGA	9	6307	-0.63	-1.166
114	BB-03-24 0	New UGA	10	5638	-0.604	-1.208
114	BB-03-24 0	New UGA	11	5041	-0.639	-1.185
114	BB-03-24 0	New UGA	12	4507	-0.606	-1.196
114	BB-03-24 0	New UGA	13	4037	-0.611	-1.122
114	BB-03-24 0	New UGA	14	11129	-39.54	-26.32
115	IAEA-603 61	New UGA	1	11152	-39.377	-26.147
115	IAEA-603 61	New UGA	2	11136	-39.508	-26.277
115	IAEA-603 61	New UGA	3	11138	-39.54	-26.32
115	IAEA-603 61	New UGA	4	8082	2.025	-1.972
115	IAEA-603 61	New UGA	5	7155	2.073	-1.943
115	IAEA-603 61	New UGA	6	6398	2.036	-1.957
115	IAEA-603 61	New UGA	7	5707	2.092	-1.948
115	IAEA-603 61	New UGA	8	5016	1.938	-2.203
115	IAEA-603 61	New UGA	9	4444	1.893	-2.265
115	IAEA-603 61	New UGA	10	3952	1.854	-2.347
115	IAEA-603 61	New UGA	11	3511	1.881	-2.355
115	IAEA-603 61	New UGA	12	3119	1.894	-2.344
115	IAEA-603 61	New UGA	13	2783	1.975	-2.282
115	IAEA-603 61	New UGA	14	11136	-39.54	-26.32
116	BB-03-06 0	New UGA	1	11103	-39.407	-26.198
116	BB-03-06 0	New UGA	2	11087	-39.51	-26.311
116	BB-03-06 0	New UGA	3	11079	-39.54	-26.32
116	BB-03-06 0	New UGA	4	6827	0.946	0.22
116	BB-03-06 0	New UGA	5	6054	0.992	0.329
116	BB-03-06 0	New UGA	6	5294	0.616	-0.247
116	BB-03-06 0	New UGA	7	4704	0.555	-0.361
116	BB-03-06 0	New UGA	8	4190	0.573	-0.387
116	BB-03-06 0	New UGA	9	3733	0.559	-0.407
116	BB-03-06 0	New UGA	10	3328	0.565	-0.419
116	BB-03-06 0	New UGA	11	2950	0.501	-0.575
116	BB-03-06 0	New UGA	12	2629	0.532	-0.577
116	BB-03-06 0	New UGA	13	2353	0.648	-0.448
116	BB-03-06 0	New UGA	14	11068	-39.54	-26.32
117	BB-03-37 0	New UGA	1	11072	-39.397	-26.148

117	BB-03-37	0	New UGA	2	11047	-39.49	-26.271
117	BB-03-37	0	New UGA	3	11054	-39.54	-26.32
117	BB-03-37	0	New UGA	4	6629	-0.758	-2.114
117	BB-03-37	0	New UGA	5	5903	-0.749	-2.004
117	BB-03-37	0	New UGA	6	5246	-0.916	-2.376
117	BB-03-37	0	New UGA	7	4633	-1.168	-2.73
117	BB-03-37	0	New UGA	8	4145	-1.174	-2.731
117	BB-03-37	0	New UGA	9	3708	-1.122	-2.778
117	BB-03-37	0	New UGA	10	3312	-1.148	-2.777
117	BB-03-37	0	New UGA	11	2963	-1.112	-2.741
117	BB-03-37	0	New UGA	12	2649	-1.134	-2.808
117	BB-03-37	0	New UGA	13	2367	-1.138	-2.838
117	BB-03-37	0	New UGA	14	11101	-39.54	-26.32
118	BB-03-17	0	New UGA	1	11091	-39.413	-26.184
118	BB-03-17	0	New UGA	2	11060	-39.516	-26.298
118	BB-03-17	0	New UGA	3	11062	-39.54	-26.32
118	BB-03-17	0	New UGA	4	10852	-0.101	-0.678
118	BB-03-17	0	New UGA	5	9623	-0.114	-0.641
118	BB-03-17	0	New UGA	6	8611	-0.095	-0.716
118	BB-03-17	0	New UGA	7	7574	-0.276	-0.998
118	BB-03-17	0	New UGA	8	6662	-0.502	-1.326
118	BB-03-17	0	New UGA	9	5932	-0.501	-1.356
118	BB-03-17	0	New UGA	10	5273	-0.469	-1.399
118	BB-03-17	0	New UGA	11	4691	-0.468	-1.419
118	BB-03-17	0	New UGA	12	4174	-0.503	-1.396
118	BB-03-17	0	New UGA	13	3718	-0.461	-1.484
118	BB-03-17	0	New UGA	14	11094	-39.54	-26.32
119	BB-03-35	0	New UGA	1	11080	-39.422	-26.197
119	BB-03-35	0	New UGA	2	11081	-39.522	-26.309
119	BB-03-35	0	New UGA	3	11075	-39.54	-26.32
119	BB-03-35	0	New UGA	4	11759	-0.646	-1.24
119	BB-03-35	0	New UGA	5	10457	-0.644	-1.212
119	BB-03-35	0	New UGA	6	9265	-0.811	-1.496
119	BB-03-35	0	New UGA	7	8272	-0.868	-1.569
119	BB-03-35	0	New UGA	8	7378	-0.878	-1.625
119	BB-03-35	0	New UGA	9	6528	-0.977	-1.822
119	BB-03-35	0	New UGA	10	5796	-1.041	-1.921
119	BB-03-35	0	New UGA	11	5162	-1.037	-1.917
119	BB-03-35	0	New UGA	12	4603	-1.001	-1.952
119	BB-03-35	0	New UGA	13	4108	-1.002	-1.915
119	BB-03-35	0	New UGA	14	11098	-39.54	-26.32
120	BB-03-39	0	New UGA	1	11079	-39.415	-26.171
120	BB-03-39	0	New UGA	2	11062	-39.517	-26.292
120	BB-03-39	0	New UGA	3	11034	-39.54	-26.32
120	BB-03-39	0	New UGA	4	11828	-0.658	-1.105
120	BB-03-39	0	New UGA	5	10520	-0.652	-1.089
120	BB-03-39	0	New UGA	6	9451	-0.664	-1.121
120	BB-03-39	0	New UGA	7	8349	-0.692	-1.147
120	BB-03-39	0	New UGA	8	7346	-1.043	-1.719

120	BB-03-39	0	New UGA	9	6547	-1.07	-1.825
120	BB-03-39	0	New UGA	10	5836	-1.02	-1.766
120	BB-03-39	0	New UGA	11	5205	-1.026	-1.788
120	BB-03-39	0	New UGA	12	4640	-1.048	-1.768
120	BB-03-39	0	New UGA	13	4146	-1.009	-1.881
120	BB-03-39	0	New UGA	14	11112	-39.54	-26.32
121	BB-03-19	0	New UGA	1	11068	-39.4	-26.158
121	BB-03-19	0	New UGA	2	11070	-39.513	-26.28
121	BB-03-19	0	New UGA	3	11073	-39.54	-26.32
121	BB-03-19	0	New UGA	4	8468	-0.301	-0.781
121	BB-03-19	0	New UGA	5	7546	-0.296	-0.799
121	BB-03-19	0	New UGA	6	6772	-0.283	-0.781
121	BB-03-19	0	New UGA	7	5999	-0.43	-0.996
121	BB-03-19	0	New UGA	8	5366	-0.458	-1.046
121	BB-03-19	0	New UGA	9	4731	-0.695	-1.472
121	BB-03-19	0	New UGA	10	4224	-0.7	-1.405
121	BB-03-19	0	New UGA	11	3776	-0.693	-1.428
121	BB-03-19	0	New UGA	12	3378	-0.669	-1.468
121	BB-03-19	0	New UGA	13	3022	-0.635	-1.478
121	BB-03-19	0	New UGA	14	11098	-39.54	-26.32
122	BB-03-45	0	New UGA	1	11071	-39.405	-26.165
122	BB-03-45	0	New UGA	2	11061	-39.516	-26.285
122	BB-03-45	0	New UGA	3	11066	-39.54	-26.32
122	BB-03-45	0	New UGA	4	9007	-0.377	-1.093
122	BB-03-45	0	New UGA	5	7995	-0.383	-1.046
122	BB-03-45	0	New UGA	6	7092	-0.526	-1.399
122	BB-03-45	0	New UGA	7	6334	-0.577	-1.457
122	BB-03-45	0	New UGA	8	5653	-0.554	-1.396
122	BB-03-45	0	New UGA	9	5058	-0.532	-1.454
122	BB-03-45	0	New UGA	10	4510	-0.52	-1.42
122	BB-03-45	0	New UGA	11	3969	-0.781	-1.663
122	BB-03-45	0	New UGA	12	3545	-0.771	-1.776
122	BB-03-45	0	New UGA	13	3164	-0.786	-1.757
122	BB-03-45	0	New UGA	14	11126	-39.54	-26.32
123	IAEA-603	83	New UGA	1	11078	-39.399	-26.18
123	IAEA-603	83	New UGA	2	11078	-39.51	-26.287
123	IAEA-603	83	New UGA	3	11086	-39.54	-26.32
123	IAEA-603	83	New UGA	4	11205	2.032	-1.891
123	IAEA-603	83	New UGA	5	9909	2.026	-1.919
123	IAEA-603	83	New UGA	6	8733	1.908	-2.138
123	IAEA-603	83	New UGA	7	7676	1.692	-2.46
123	IAEA-603	83	New UGA	8	6825	1.736	-2.505
123	IAEA-603	83	New UGA	9	6066	1.73	-2.486
123	IAEA-603	83	New UGA	10	5393	1.697	-2.492
123	IAEA-603	83	New UGA	11	4790	1.678	-2.472
123	IAEA-603	83	New UGA	12	4257	1.721	-2.511
123	IAEA-603	83	New UGA	13	3785	1.702	-2.57
123	IAEA-603	83	New UGA	14	11131	-39.54	-26.32
124	BB-03-38	0	New UGA	1	11101	-39.41	-26.199

124	BB-03-38	0	New UGA	2	11117	-39.522	-26.309
124	BB-03-38	0	New UGA	3	11089	-39.54	-26.32
124	BB-03-38	0	New UGA	4	11387	-0.708	-1.436
124	BB-03-38	0	New UGA	5	10121	-0.679	-1.427
124	BB-03-38	0	New UGA	6	8970	-0.889	-1.694
124	BB-03-38	0	New UGA	7	8010	-0.876	-1.732
124	BB-03-38	0	New UGA	8	7059	-1.108	-1.99
124	BB-03-38	0	New UGA	9	6262	-1.168	-2.119
124	BB-03-38	0	New UGA	10	5580	-1.133	-2.15
124	BB-03-38	0	New UGA	11	4976	-1.13	-2.123
124	BB-03-38	0	New UGA	12	4432	-1.111	-2.152
124	BB-03-38	0	New UGA	13	3960	-1.14	-2.286
124	BB-03-38	0	New UGA	14	11095	-39.54	-26.32
125	BB-03-34	0	New UGA	1	11079	-39.411	-26.207
125	BB-03-34	0	New UGA	2	11063	-39.492	-26.277
125	BB-03-34	0	New UGA	3	11062	-39.54	-26.32
125	BB-03-34	0	New UGA	4	11765	-0.766	-1.097
125	BB-03-34	0	New UGA	5	10524	-0.748	-1.138
125	BB-03-34	0	New UGA	6	9492	-0.764	-1.143
125	BB-03-34	0	New UGA	7	8415	-0.906	-1.353
125	BB-03-34	0	New UGA	8	7548	-0.922	-1.404
125	BB-03-34	0	New UGA	9	6666	-1.143	-1.755
125	BB-03-34	0	New UGA	10	5966	-1.148	-1.749
125	BB-03-34	0	New UGA	11	5340	-1.15	-1.748
125	BB-03-34	0	New UGA	12	4784	-1.143	-1.765
125	BB-03-34	0	New UGA	13	4289	-1.133	-1.782
125	BB-03-34	0	New UGA	14	11101	-39.54	-26.32
126	BB-03-44	0	New UGA	1	11030	-39.403	-26.173
126	BB-03-44	0	New UGA	2	11023	-39.515	-26.279
126	BB-03-44	0	New UGA	3	11013	-39.54	-26.32
126	BB-03-44	0	New UGA	4	8200	-0.283	-1.499
126	BB-03-44	0	New UGA	5	7188	-0.408	-1.712
126	BB-03-44	0	New UGA	6	6458	-0.457	-1.759
126	BB-03-44	0	New UGA	7	5776	-0.474	-1.77
126	BB-03-44	0	New UGA	8	5180	-0.429	-1.832
126	BB-03-44	0	New UGA	9	4620	-0.432	-1.859
126	BB-03-44	0	New UGA	10	4128	-0.377	-1.816
126	BB-03-44	0	New UGA	11	3643	-0.582	-2.116
126	BB-03-44	0	New UGA	12	3257	-0.624	-2.185
126	BB-03-44	0	New UGA	13	2908	-0.616	-2.195
126	BB-03-44	0	New UGA	14	11085	-39.54	-26.32
127	BB-03-05	0	New UGA	1	11059	-39.421	-26.189
127	BB-03-05	0	New UGA	2	11048	-39.512	-26.283
127	BB-03-05	0	New UGA	3	11058	-39.54	-26.32
127	BB-03-05	0	New UGA	4	6509	1.026	0.409
127	BB-03-05	0	New UGA	5	5808	1.09	0.5
127	BB-03-05	0	New UGA	6	5229	1.095	0.573
127	BB-03-05	0	New UGA	7	4637	0.914	0.209
127	BB-03-05	0	New UGA	8	4106	0.727	-0.105

127	BB-03-05	0	New UGA	9	3665	0.697	-0.255
127	BB-03-05	0	New UGA	10	3281	0.694	-0.233
127	BB-03-05	0	New UGA	11	2938	0.703	-0.207
127	BB-03-05	0	New UGA	12	2625	0.736	-0.279
127	BB-03-05	0	New UGA	13	2352	0.655	-0.284
127	BB-03-05	0	New UGA	14	11101	-39.54	-26.32
128	BB-03-27	0	New UGA	1	11060	-39.389	-26.189
128	BB-03-27	0	New UGA	2	11062	-39.489	-26.287
128	BB-03-27	0	New UGA	3	11042	-39.54	-26.32
128	BB-03-27	0	New UGA	4	6655	-0.628	-1.291
128	BB-03-27	0	New UGA	5	5861	-0.789	-1.459
128	BB-03-27	0	New UGA	6	5278	-0.799	-1.535
128	BB-03-27	0	New UGA	7	4739	-0.794	-1.558
128	BB-03-27	0	New UGA	8	4269	-0.759	-1.528
128	BB-03-27	0	New UGA	9	3824	-0.791	-1.612
128	BB-03-27	0	New UGA	10	3412	-0.812	-1.592
128	BB-03-27	0	New UGA	11	3054	-0.782	-1.609
128	BB-03-27	0	New UGA	12	2710	-0.9	-1.944
128	BB-03-27	0	New UGA	13	2420	-0.991	-1.98
128	BB-03-27	0	New UGA	14	11060	-39.54	-26.32
129	BB-03-07	0	New UGA	1	11084	-39.393	-26.175
129	BB-03-07	0	New UGA	2	11081	-39.489	-26.283
129	BB-03-07	0	New UGA	3	11061	-39.54	-26.32
129	BB-03-07	0	New UGA	4	12808	0.959	0.425
129	BB-03-07	0	New UGA	5	11292	0.794	0.22
129	BB-03-07	0	New UGA	6	10150	0.786	0.164
129	BB-03-07	0	New UGA	7	9085	0.781	0.141
129	BB-03-07	0	New UGA	8	8132	0.785	0.116
129	BB-03-07	0	New UGA	9	7263	0.79	0.164
129	BB-03-07	0	New UGA	10	6492	0.767	0.094
129	BB-03-07	0	New UGA	11	5807	0.82	0.097
129	BB-03-07	0	New UGA	12	5196	0.817	0.048
129	BB-03-07	0	New UGA	13	4637	0.799	0.051
129	BB-03-07	0	New UGA	14	11103	-39.54	-26.32
130	BB-03-15	0	New UGA	1	11082	-39.406	-26.165
130	BB-03-15	0	New UGA	2	11072	-39.509	-26.276
130	BB-03-15	0	New UGA	3	11070	-39.54	-26.32
130	BB-03-15	0	New UGA	4	9850	0.031	-0.559
130	BB-03-15	0	New UGA	5	8795	0.073	-0.57
130	BB-03-15	0	New UGA	6	7925	0.093	-0.585
130	BB-03-15	0	New UGA	7	6944	-0.265	-1.083
130	BB-03-15	0	New UGA	8	6204	-0.308	-1.12
130	BB-03-15	0	New UGA	9	5552	-0.332	-1.179
130	BB-03-15	0	New UGA	10	4966	-0.276	-1.087
130	BB-03-15	0	New UGA	11	4446	-0.272	-1.097
130	BB-03-15	0	New UGA	12	3987	-0.278	-1.152
130	BB-03-15	0	New UGA	13	3580	-0.218	-1.196
130	BB-03-15	0	New UGA	14	11107	-39.54	-26.32
131	IAEA-603	84	New UGA	1	11072	-39.405	-26.19

131	IAEA-603 84	New UGA	2	11101	-39.5	-26.292
131	IAEA-603 84	New UGA	3	11050	-39.54	-26.32
131	IAEA-603 84	New UGA	4	10454	2.077	-1.918
131	IAEA-603 84	New UGA	5	9285	2.039	-1.966
131	IAEA-603 84	New UGA	6	8223	1.877	-2.225
131	IAEA-603 84	New UGA	7	7267	1.645	-2.572
131	IAEA-603 84	New UGA	8	6483	1.645	-2.573
131	IAEA-603 84	New UGA	9	5804	1.66	-2.529
131	IAEA-603 84	New UGA	10	5166	1.634	-2.65
131	IAEA-603 84	New UGA	11	4609	1.654	-2.604
131	IAEA-603 84	New UGA	12	4115	1.644	-2.69
131	IAEA-603 84	New UGA	13	3677	1.682	-2.68
131	IAEA-603 84	New UGA	14	11124	-39.54	-26.32
132	BB-03-26 0	New UGA	1	11083	-39.411	-26.219
132	BB-03-26 0	New UGA	2	11063	-39.513	-26.307
132	BB-03-26 0	New UGA	3	11081	-39.54	-26.32
132	BB-03-26 0	New UGA	4	5592	-0.546	-1.759
132	BB-03-26 0	New UGA	5	5013	-0.523	-1.787
132	BB-03-26 0	New UGA	6	4534	-0.51	-1.69
132	BB-03-26 0	New UGA	7	4039	-0.631	-2.06
132	BB-03-26 0	New UGA	8	3636	-0.7	-2.104
132	BB-03-26 0	New UGA	9	3270	-0.673	-2.015
132	BB-03-26 0	New UGA	10	2936	-0.599	-2.033
132	BB-03-26 0	New UGA	11	2611	-0.866	-2.468
132	BB-03-26 0	New UGA	12	2341	-0.883	-2.449
132	BB-03-26 0	New UGA	13	2103	-0.848	-2.502
132	BB-03-26 0	New UGA	14	11107	-39.54	-26.32
133	BB-03-36 0	New UGA	1	11083	-39.407	-26.19
133	BB-03-36 0	New UGA	2	11070	-39.492	-26.281
133	BB-03-36 0	New UGA	3	11079	-39.54	-26.32
133	BB-03-36 0	New UGA	4	6760	-0.665	-1.839
133	BB-03-36 0	New UGA	5	5974	-0.817	-2.053
133	BB-03-36 0	New UGA	6	5323	-1.019	-2.387
133	BB-03-36 0	New UGA	7	4777	-1.079	-2.424
133	BB-03-36 0	New UGA	8	4293	-1.057	-2.491
133	BB-03-36 0	New UGA	9	3852	-1.055	-2.483
133	BB-03-36 0	New UGA	10	3460	-1.061	-2.546
133	BB-03-36 0	New UGA	11	3114	-0.989	-2.392
133	BB-03-36 0	New UGA	12	2799	-1.051	-2.458
133	BB-03-36 0	New UGA	13	2502	-1.07	-2.626
133	BB-03-36 0	New UGA	14	11106	-39.54	-26.32
134	BB-03-25 0	New UGA	1	11082	-39.388	-26.164
134	BB-03-25 0	New UGA	2	11069	-39.514	-26.28
134	BB-03-25 0	New UGA	3	11080	-39.54	-26.32
134	BB-03-25 0	New UGA	4	7202	-0.573	-1.451
134	BB-03-25 0	New UGA	5	6412	-0.584	-1.415
134	BB-03-25 0	New UGA	6	5766	-0.576	-1.425
134	BB-03-25 0	New UGA	7	5166	-0.542	-1.412
134	BB-03-25 0	New UGA	8	4575	-0.694	-1.628

134	BB-03-25	0	New UGA	9	4033	-0.951	-2.045
134	BB-03-25	0	New UGA	10	3603	-0.978	-2.073
134	BB-03-25	0	New UGA	11	3222	-0.963	-1.996
134	BB-03-25	0	New UGA	12	2886	-0.9	-2.177
134	BB-03-25	0	New UGA	13	2580	-0.924	-2.144
134	BB-03-25	0	New UGA	14	11113	-39.54	-26.32
135	BB-03-54	0	New UGA	1	11147	-39.394	-26.178
135	BB-03-54	0	New UGA	2	11132	-39.499	-26.28
135	BB-03-54	0	New UGA	3	11122	-39.54	-26.32
135	BB-03-54	0	New UGA	4	12067	-0.841	-0.91
135	BB-03-54	0	New UGA	5	10615	-1.015	-1.12
135	BB-03-54	0	New UGA	6	9540	-1.03	-1.182
135	BB-03-54	0	New UGA	7	8466	-1.237	-1.507
135	BB-03-54	0	New UGA	8	7563	-1.278	-1.61
135	BB-03-54	0	New UGA	9	6769	-1.261	-1.609
135	BB-03-54	0	New UGA	10	6054	-1.277	-1.617
135	BB-03-54	0	New UGA	11	5419	-1.282	-1.671
135	BB-03-54	0	New UGA	12	4837	-1.259	-1.608
135	BB-03-54	0	New UGA	13	4335	-1.241	-1.639
135	BB-03-54	0	New UGA	14	11174	-39.54	-26.32
136	BB-04-01	0	New UGA	1	11145	-39.397	-26.165
136	BB-04-01	0	New UGA	2	11131	-39.499	-26.289
136	BB-04-01	0	New UGA	3	11131	-39.54	-26.32
136	BB-04-01	0	New UGA	4	11032	0.733	1.075
136	BB-04-01	0	New UGA	5	9840	0.747	1.143
136	BB-04-01	0	New UGA	6	8878	0.749	1.1
136	BB-04-01	0	New UGA	7	7881	0.581	0.841
136	BB-04-01	0	New UGA	8	7062	0.596	0.842
136	BB-04-01	0	New UGA	9	6254	0.344	0.513
136	BB-04-01	0	New UGA	10	5617	0.328	0.409
136	BB-04-01	0	New UGA	11	5048	0.363	0.454
136	BB-04-01	0	New UGA	12	4531	0.383	0.416
136	BB-04-01	0	New UGA	13	4064	0.334	0.363
136	BB-04-01	0	New UGA	14	11150	-39.54	-26.32
137	BB-04-03	0	New UGA	1	11158	-39.411	-26.189
137	BB-04-03	0	New UGA	2	11134	-39.507	-26.281
137	BB-04-03	0	New UGA	3	11122	-39.54	-26.32
137	BB-04-03	0	New UGA	4	8092	1.743	0.821
137	BB-04-03	0	New UGA	5	7215	1.724	0.832
137	BB-04-03	0	New UGA	6	6420	1.585	0.555
137	BB-04-03	0	New UGA	7	5682	1.358	0.319
137	BB-04-03	0	New UGA	8	5093	1.362	0.257
137	BB-04-03	0	New UGA	9	4559	1.37	0.244
137	BB-04-03	0	New UGA	10	4098	1.393	0.149
137	BB-04-03	0	New UGA	11	3661	1.402	0.184
137	BB-04-03	0	New UGA	12	3280	1.388	0.127
137	BB-04-03	0	New UGA	13	2948	1.427	0.194
137	BB-04-03	0	New UGA	14	11159	-39.54	-26.32
138	BB-03-55	0	New UGA	1	11120	-39.402	-26.176

138	BB-03-55	0	New UGA	2	11122	-39.5	-26.301
138	BB-03-55	0	New UGA	3	11118	-39.54	-26.32
138	BB-03-55	0	New UGA	4	8507	-1.025	-1.668
138	BB-03-55	0	New UGA	5	7604	-1.005	-1.612
138	BB-03-55	0	New UGA	6	6859	-1.022	-1.696
138	BB-03-55	0	New UGA	7	6112	-1.116	-1.867
138	BB-03-55	0	New UGA	8	5477	-1.183	-1.968
138	BB-03-55	0	New UGA	9	4911	-1.193	-1.974
138	BB-03-55	0	New UGA	10	4410	-1.146	-1.989
138	BB-03-55	0	New UGA	11	3938	-1.173	-2.039
138	BB-03-55	0	New UGA	12	3542	-1.123	-2.056
138	BB-03-55	0	New UGA	13	3172	-1.14	-2.027
138	BB-03-55	0	New UGA	14	11134	-39.54	-26.32
139	IAEA-603	62	New UGA	1	11102	-39.385	-26.162
139	IAEA-603	62	New UGA	2	11106	-39.497	-26.261
139	IAEA-603	62	New UGA	3	11119	-39.54	-26.32
139	IAEA-603	62	New UGA	4	8072	2.073	-2.134
139	IAEA-603	62	New UGA	5	7179	2.088	-2.146
139	IAEA-603	62	New UGA	6	6378	1.921	-2.419
139	IAEA-603	62	New UGA	7	5622	1.682	-2.766
139	IAEA-603	62	New UGA	8	5035	1.747	-2.693
139	IAEA-603	62	New UGA	9	4495	1.72	-2.809
139	IAEA-603	62	New UGA	10	4022	1.709	-2.788
139	IAEA-603	62	New UGA	11	3601	1.746	-2.802
139	IAEA-603	62	New UGA	12	3212	1.762	-2.68
139	IAEA-603	62	New UGA	13	2869	1.804	-2.619
139	IAEA-603	62	New UGA	14	11115	-39.54	-26.32
140	BB-04-07	0	New UGA	1	11083	-39.397	-26.178
140	BB-04-07	0	New UGA	2	11083	-39.508	-26.271
140	BB-04-07	0	New UGA	3	11074	-39.54	-26.32
140	BB-04-07	0	New UGA	4	7163	-0.129	-0.36
140	BB-04-07	0	New UGA	5	6405	-0.099	-0.309
140	BB-04-07	0	New UGA	6	5786	-0.083	-0.284
140	BB-04-07	0	New UGA	7	5209	-0.094	-0.295
140	BB-04-07	0	New UGA	8	4616	-0.278	-0.56
140	BB-04-07	0	New UGA	9	4144	-0.238	-0.594
140	BB-04-07	0	New UGA	10	3682	-0.451	-0.83
140	BB-04-07	0	New UGA	11	3300	-0.398	-0.813
140	BB-04-07	0	New UGA	12	2953	-0.454	-0.866
140	BB-04-07	0	New UGA	13	2635	-0.374	-0.983
140	BB-04-07	0	New UGA	14	11127	-39.54	-26.32
141	BB-04-02	0	New UGA	1	11126	-39.399	-26.183
141	BB-04-02	0	New UGA	2	11106	-39.49	-26.282
141	BB-04-02	0	New UGA	3	11112	-39.54	-26.32
141	BB-04-02	0	New UGA	4	10766	1.958	1.238
141	BB-04-02	0	New UGA	5	9449	1.764	0.912
141	BB-04-02	0	New UGA	6	8497	1.742	0.854
141	BB-04-02	0	New UGA	7	7623	1.719	0.874
141	BB-04-02	0	New UGA	8	6844	1.793	0.958

141	BB-04-02	0	New UGA	9	6095	1.731	0.833
141	BB-04-02	0	New UGA	10	5367	1.64	0.551
141	BB-04-02	0	New UGA	11	4790	1.55	0.429
141	BB-04-02	0	New UGA	12	4286	1.566	0.41
141	BB-04-02	0	New UGA	13	3834	1.553	0.411
141	BB-04-02	0	New UGA	14	11144	-39.54	-26.32
142	BB-04-05	0	New UGA	1	11084	-39.393	-26.143
142	BB-04-05	0	New UGA	2	11085	-39.503	-26.277
142	BB-04-05	0	New UGA	3	11080	-39.54	-26.32
142	BB-04-05	0	New UGA	4	7856	0.733	0.368
142	BB-04-05	0	New UGA	5	6990	0.731	0.409
142	BB-04-05	0	New UGA	6	6298	0.769	0.384
142	BB-04-05	0	New UGA	7	5567	0.594	0.175
142	BB-04-05	0	New UGA	8	4920	0.305	-0.283
142	BB-04-05	0	New UGA	9	4402	0.311	-0.243
142	BB-04-05	0	New UGA	10	3944	0.324	-0.323
142	BB-04-05	0	New UGA	11	3530	0.281	-0.394
142	BB-04-05	0	New UGA	12	3159	0.328	-0.439
142	BB-04-05	0	New UGA	13	2826	0.333	-0.318
142	BB-04-05	0	New UGA	14	11105	-39.54	-26.32
143	BB-04-08	0	New UGA	1	11077	-39.397	-26.165
143	BB-04-08	0	New UGA	2	11073	-39.5	-26.292
143	BB-04-08	0	New UGA	3	11078	-39.54	-26.32
143	BB-04-08	0	New UGA	4	9188	0.134	-0.398
143	BB-04-08	0	New UGA	5	8092	-0.004	-0.646
143	BB-04-08	0	New UGA	6	7284	-0.008	-0.655
143	BB-04-08	0	New UGA	7	6559	-0.003	-0.574
143	BB-04-08	0	New UGA	8	5872	-0.038	-0.722
143	BB-04-08	0	New UGA	9	5278	-0.011	-0.677
143	BB-04-08	0	New UGA	10	4717	0.001	-0.776
143	BB-04-08	0	New UGA	11	4241	-0.028	-0.823
143	BB-04-08	0	New UGA	12	3794	-0.034	-0.903
143	BB-04-08	0	New UGA	13	3392	0.007	-0.839
143	BB-04-08	0	New UGA	14	11121	-39.54	-26.32
144	BB-04-06	0	New UGA	1	11094	-39.389	-26.179
144	BB-04-06	0	New UGA	2	11091	-39.511	-26.292
144	BB-04-06	0	New UGA	3	11062	-39.54	-26.32
144	BB-04-06	0	New UGA	4	8099	-0.128	0.121
144	BB-04-06	0	New UGA	5	7216	-0.044	0.221
144	BB-04-06	0	New UGA	6	6472	-0.121	0.069
144	BB-04-06	0	New UGA	7	5665	-0.49	-0.459
144	BB-04-06	0	New UGA	8	5035	-0.533	-0.539
144	BB-04-06	0	New UGA	9	4479	-0.581	-0.68
144	BB-04-06	0	New UGA	10	3996	-0.527	-0.625
144	BB-04-06	0	New UGA	11	3565	-0.567	-0.635
144	BB-04-06	0	New UGA	12	3189	-0.532	-0.649
144	BB-04-06	0	New UGA	13	2849	-0.498	-0.633
144	BB-04-06	0	New UGA	14	11131	-39.54	-26.32
145	BB-04-04	0	New UGA	1	11086	-39.406	-26.204

145	BB-04-04	0	New UGA	2	11093	-39.51	-26.288
145	BB-04-04	0	New UGA	3	11053	-39.54	-26.32
145	BB-04-04	0	New UGA	4	12534	1.052	1.487
145	BB-04-04	0	New UGA	5	11225	1.036	1.455
145	BB-04-04	0	New UGA	6	9957	0.75	0.948
145	BB-04-04	0	New UGA	7	8925	0.755	0.944
145	BB-04-04	0	New UGA	8	8005	0.741	0.847
145	BB-04-04	0	New UGA	9	7148	0.751	0.864
145	BB-04-04	0	New UGA	10	6400	0.807	0.898
145	BB-04-04	0	New UGA	11	5676	0.681	0.761
145	BB-04-04	0	New UGA	12	5034	0.549	0.532
145	BB-04-04	0	New UGA	13	4501	0.55	0.544
145	BB-04-04	0	New UGA	14	11103	-39.54	-26.32
146	IAEA-603	100	New UGA	1	11070	-39.4	-26.179
146	IAEA-603	100	New UGA	2	11064	-39.497	-26.277
146	IAEA-603	100	New UGA	3	11058	-39.54	-26.32
146	IAEA-603	100	New UGA	4	13035	2.174	-1.997
146	IAEA-603	100	New UGA	5	11571	2.214	-1.866
146	IAEA-603	100	New UGA	6	10388	2.155	-2.07
146	IAEA-603	100	New UGA	7	9161	1.984	-2.321
146	IAEA-603	100	New UGA	8	8072	1.757	-2.669
146	IAEA-603	100	New UGA	9	7181	1.755	-2.667
146	IAEA-603	100	New UGA	10	6408	1.763	-2.695
146	IAEA-603	100	New UGA	11	5705	1.752	-2.732
146	IAEA-603	100	New UGA	12	5094	1.785	-2.728
146	IAEA-603	100	New UGA	13	4543	1.774	-2.806
146	IAEA-603	100	New UGA	14	11120	-39.54	-26.32

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O					
52	IAEA-603-1	66	New UGA	4	6851	1.787	-2.304						
52	IAEA-603-1	66	New UGA	5	5762	1.772	-2.309						
52	IAEA-603-1	66	New UGA	6	4903	1.788	-2.276						
52	IAEA-603-1	66	New UGA	7	4172	1.733	-2.41						
52	IAEA-603-1	66	New UGA	8	3557	1.805	-2.308						
52	IAEA-603-1	66	New UGA	9	3024	1.685	-2.525						
52	IAEA-603-1	66	New UGA	10	2571	1.848	-2.128						
52	IAEA-603-1	66	New UGA	11	2262	2.232	-1.966						
52	IAEA-603-1	66	New UGA	12	1933	2.238	-2.03						
52	IAEA-603-1	66	New UGA	13	1644	2.172	-1.983	6851	1.9	-2.2	0.2	0.2	
53	IAEA-603-2	58	New UGA	4	6470	2.165	-1.777						
53	IAEA-603-2	58	New UGA	5	5404	2.13	-1.804						
53	IAEA-603-2	58	New UGA	6	4530	1.877	-2.155						
53	IAEA-603-2	58	New UGA	7	3842	1.869	-2.258						
53	IAEA-603-2	58	New UGA	8	3253	1.861	-2.153						
53	IAEA-603-2	58	New UGA	9	2759	1.845	-2.231						
53	IAEA-603-2	58	New UGA	10	2417	2.223	-1.871						
53	IAEA-603-2	58	New UGA	11	2046	2.221	-1.875						
53	IAEA-603-2	58	New UGA	12	1733	2.245	-1.925						
53	IAEA-603-2	58	New UGA	13	1470	2.099	-2.092	6470	2.1	-2.0	0.2	0.2	
54	IAEA-603-3	85	New UGA	4	9136	2.039	-1.863						
54	IAEA-603-3	85	New UGA	5	7676	2.036	-1.982						
54	IAEA-603-3	85	New UGA	6	6541	2.011	-1.981						
54	IAEA-603-3	85	New UGA	7	5572	2.021	-2.008						
54	IAEA-603-3	85	New UGA	8	4746	2.034	-1.891						
54	IAEA-603-3	85	New UGA	9	4099	2.173	-1.884						
54	IAEA-603-3	85	New UGA	10	3492	2.209	-1.846						
54	IAEA-603-3	85	New UGA	11	2974	2.23	-1.851						
54	IAEA-603-3	85	New UGA	12	2537	2.163	-1.887						
54	IAEA-603-3	85	New UGA	13	2163	2.165	-1.977	9136	2.1	-1.9	0.1	0.1	
59	IAEA-603-4	72	New UGA	4	4842	1.994	-2.204						
59	IAEA-603-4	72	New UGA	5	4062	2.061	-2.12						
59	IAEA-603-4	72	New UGA	6	3456	2.148	-2.033						
59	IAEA-603-4	72	New UGA	7	2939	2.17	-2.063						

59	IAEA-603-4	72	New UGA	8	2496	2.205	-1.976					
59	IAEA-603-4	72	New UGA	9	2067	1.85	-2.607					
59	IAEA-603-4	72	New UGA	10	1755	1.836	-2.744					
59	IAEA-603-4	72	New UGA	11	1493	1.822	-2.774					
59	IAEA-603-4	72	New UGA	12	1269	1.871	-2.709					
59	IAEA-603-4	72	New UGA	13	1081	1.971	-2.567	4842	2.0	-2.4	0.1	0.3
67	IAEA-603-5	82	New UGA	4	9571	2.012	-1.901					
67	IAEA-603-5	82	New UGA	5	8301	2.041	-1.938					
67	IAEA-603-5	82	New UGA	6	7263	1.991	-1.958					
67	IAEA-603-5	82	New UGA	7	6250	1.849	-2.199					
67	IAEA-603-5	82	New UGA	8	5434	1.554	-2.579					
67	IAEA-603-5	82	New UGA	9	4720	1.609	-2.577					
67	IAEA-603-5	82	New UGA	10	4126	1.616	-2.588					
67	IAEA-603-5	82	New UGA	11	3613	1.591	-2.638					
67	IAEA-603-5	82	New UGA	12	3173	1.607	-2.651					
67	IAEA-603-5	82	New UGA	13	2782	1.607	-2.689	9571	1.7	-2.4	0.2	0.3
75	IAEA-603-6	80	New UGA	4	10203	2.028	-1.91					
75	IAEA-603-6	80	New UGA	5	8897	2.045	-1.848					
75	IAEA-603-6	80	New UGA	6	7855	2.03	-1.887					
75	IAEA-603-6	80	New UGA	7	6824	1.887	-2.101					
75	IAEA-603-6	80	New UGA	8	5904	1.609	-2.529					
75	IAEA-603-6	80	New UGA	9	5179	1.611	-2.565					
75	IAEA-603-6	80	New UGA	10	4539	1.613	-2.574					
75	IAEA-603-6	80	New UGA	11	3976	1.643	-2.597					
75	IAEA-603-6	80	New UGA	12	3483	1.595	-2.6					
75	IAEA-603-6	80	New UGA	13	3053	1.607	-2.7	10203	1.8	-2.3	0.2	0.3
83	IAEA-603-7	94	New UGA	4	11565	2.058	-1.905					
83	IAEA-603-7	94	New UGA	5	10208	2.053	-1.926					
83	IAEA-603-7	94	New UGA	6	9007	1.874	-2.176					
83	IAEA-603-7	94	New UGA	7	7903	1.64	-2.474					
83	IAEA-603-7	94	New UGA	8	6995	1.641	-2.579					
83	IAEA-603-7	94	New UGA	9	6204	1.616	-2.55					
83	IAEA-603-7	94	New UGA	10	5520	1.643	-2.557					
83	IAEA-603-7	94	New UGA	11	4886	1.663	-2.641					
83	IAEA-603-7	94	New UGA	12	4341	1.646	-2.627					

83	IAEA-603-7	94	New UGA	13	3846	1.694	-2.581	11565	1.8	-2.4	0.2	0.3
91	IAEA-603-8	64	New UGA	4	8006	2.017	-2.025					
91	IAEA-603-8	64	New UGA	5	7083	2.055	-1.994					
91	IAEA-603-8	64	New UGA	6	6323	2.039	-2.028					
91	IAEA-603-8	64	New UGA	7	5554	1.864	-2.271					
91	IAEA-603-8	64	New UGA	8	4940	1.866	-2.3					
91	IAEA-603-8	64	New UGA	9	4388	1.867	-2.262					
91	IAEA-603-8	64	New UGA	10	3903	1.854	-2.314					
91	IAEA-603-8	64	New UGA	11	3418	1.667	-2.709					
91	IAEA-603-8	64	New UGA	12	3042	1.661	-2.67					
91	IAEA-603-8	64	New UGA	13	2703	1.623	-2.668	8006	1.9	-2.3	0.2	0.3
99	IAEA-603-9	79	New UGA	4	10080	2.039	-1.998					
99	IAEA-603-9	79	New UGA	5	8932	2.087	-1.928					
99	IAEA-603-9	79	New UGA	6	7958	2.047	-1.946					
99	IAEA-603-9	79	New UGA	7	6990	1.885	-2.283					
99	IAEA-603-9	79	New UGA	8	6205	1.863	-2.213					
99	IAEA-603-9	79	New UGA	9	5444	1.679	-2.525					
99	IAEA-603-9	79	New UGA	10	4817	1.662	-2.554					
99	IAEA-603-9	79	New UGA	11	4282	1.68	-2.578					
99	IAEA-603-9	79	New UGA	12	3801	1.705	-2.636					
99	IAEA-603-9	79	New UGA	13	3380	1.674	-2.582	10080	1.8	-2.3	0.2	0.3
107	IAEA-603-10	60	New UGA	4	3718	1.92	-2.465					
107	IAEA-603-10	60	New UGA	5	3293	1.97	-2.426					
107	IAEA-603-10	60	New UGA	6	2909	1.794	-2.707					
107	IAEA-603-10	60	New UGA	7	2592	1.821	-2.687					
107	IAEA-603-10	60	New UGA	8	2275	1.601	-3.039					
107	IAEA-603-10	60	New UGA	9	2024	1.621	-3.126					
107	IAEA-603-10	60	New UGA	10	1798	1.66	-3.179					
107	IAEA-603-10	60	New UGA	11	1601	1.582	-3.204					
107	IAEA-603-10	60	New UGA	12	1422	1.585	-3.332					
107	IAEA-603-10	60	New UGA	13	1266	1.535	-3.31	3718	1.7	-2.9	0.2	0.3
115	IAEA-603-11	61	New UGA	4	8082	2.025	-1.972					
115	IAEA-603-11	61	New UGA	5	7155	2.073	-1.943					
115	IAEA-603-11	61	New UGA	6	6398	2.036	-1.957					
115	IAEA-603-11	61	New UGA	7	5707	2.092	-1.948					

115	IAEA-603-11 61	New UGA	8	5016	1.938	-2.203					
115	IAEA-603-11 61	New UGA	9	4444	1.893	-2.265					
115	IAEA-603-11 61	New UGA	10	3952	1.854	-2.347					
115	IAEA-603-11 61	New UGA	11	3511	1.881	-2.355					
115	IAEA-603-11 61	New UGA	12	3119	1.894	-2.344					
115	IAEA-603-11 61	New UGA	13	2783	1.975	-2.282	8082	2.0	-2.2	0.1	0.2
123	IAEA-603-12 83	New UGA	4	11205	2.032	-1.891					
123	IAEA-603-12 83	New UGA	5	9909	2.026	-1.919					
123	IAEA-603-12 83	New UGA	6	8733	1.908	-2.138					
123	IAEA-603-12 83	New UGA	7	7676	1.692	-2.46					
123	IAEA-603-12 83	New UGA	8	6825	1.736	-2.505					
123	IAEA-603-12 83	New UGA	9	6066	1.73	-2.486					
123	IAEA-603-12 83	New UGA	10	5393	1.697	-2.492					
123	IAEA-603-12 83	New UGA	11	4790	1.678	-2.472					
123	IAEA-603-12 83	New UGA	12	4257	1.721	-2.511					
123	IAEA-603-12 83	New UGA	13	3785	1.702	-2.57	11205	1.8	-2.3	0.1	0.3
131	IAEA-603-13 84	New UGA	4	10454	2.077	-1.918					
131	IAEA-603-13 84	New UGA	5	9285	2.039	-1.966					
131	IAEA-603-13 84	New UGA	6	8223	1.877	-2.225					
131	IAEA-603-13 84	New UGA	7	7267	1.645	-2.572					
131	IAEA-603-13 84	New UGA	8	6483	1.645	-2.573					
131	IAEA-603-13 84	New UGA	9	5804	1.66	-2.529					
131	IAEA-603-13 84	New UGA	10	5166	1.634	-2.65					
131	IAEA-603-13 84	New UGA	11	4609	1.654	-2.604					
131	IAEA-603-13 84	New UGA	12	4115	1.644	-2.69					
131	IAEA-603-13 84	New UGA	13	3677	1.682	-2.68	10454	1.8	-2.4	0.2	0.3
139	IAEA-603-14 62	New UGA	4	8072	2.073	-2.134					
139	IAEA-603-14 62	New UGA	5	7179	2.088	-2.146					
139	IAEA-603-14 62	New UGA	6	6378	1.921	-2.419					
139	IAEA-603-14 62	New UGA	7	5622	1.682	-2.766					
139	IAEA-603-14 62	New UGA	8	5035	1.747	-2.693					
139	IAEA-603-14 62	New UGA	9	4495	1.72	-2.809					
139	IAEA-603-14 62	New UGA	10	4022	1.709	-2.788					
139	IAEA-603-14 62	New UGA	11	3601	1.746	-2.802					
139	IAEA-603-14 62	New UGA	12	3212	1.762	-2.68					

139	IAEA-603-14 62	New UGA	13	2869	1.804	-2.619	8072	1.8	-2.6	0.1	0.3
146	IAEA-603-15 100	New UGA	4	13035	2.174	-1.997					
146	IAEA-603-15 100	New UGA	5	11571	2.214	-1.866					
146	IAEA-603-15 100	New UGA	6	10388	2.155	-2.07					
146	IAEA-603-15 100	New UGA	7	9161	1.984	-2.321					
146	IAEA-603-15 100	New UGA	8	8072	1.757	-2.669					
146	IAEA-603-15 100	New UGA	9	7181	1.755	-2.667					
146	IAEA-603-15 100	New UGA	10	6408	1.763	-2.695					
146	IAEA-603-15 100	New UGA	11	5705	1.752	-2.732					
146	IAEA-603-15 100	New UGA	12	5094	1.785	-2.728					
146	IAEA-603-15 100	New UGA	13	4543	1.774	-2.806	13035	1.9	-2.5	0.2	0.4
				13035						0.217468	0.356786

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O				
85	B-03-12	0	New UGA	4	10368		0.476	0.229				
85	B-03-12	0	New UGA	5	9173		0.519	0.22				
85	B-03-12	0	New UGA	6	8092		0.379	-0.019				
85	B-03-12	0	New UGA	7	7200		0.372	-0.055				
85	B-03-12	0	New UGA	8	6415		0.366	-0.042				
85	B-03-12	0	New UGA	9	5692		0.357	-0.147				
85	B-03-12	0	New UGA	10	5059		0.376	-0.12				
85	B-03-12	0	New UGA	11	4498		0.368	-0.144				
85	B-03-12	0	New UGA	12	4001		0.383	-0.099				
85	B-03-12	0	New UGA	13	3567		0.408	-0.216	0.4	0.0	0.1	0.2
66	BB-02-06	0	New UGA	4	6713		0.753	0.324				
66	BB-02-06	0	New UGA	5	5758		0.636	0.148				
66	BB-02-06	0	New UGA	6	5078		0.615	0.087				
66	BB-02-06	0	New UGA	7	4396		0.299	-0.286				
66	BB-02-06	0	New UGA	8	3847		0.321	-0.3				
66	BB-02-06	0	New UGA	9	3373		0.33	-0.276				
66	BB-02-06	0	New UGA	10	2960		0.327	-0.354				
66	BB-02-06	0	New UGA	11	2603		0.35	-0.457				
66	BB-02-06	0	New UGA	12	2285		0.365	-0.41				
66	BB-02-06	0	New UGA	13	2009		0.363	-0.511	0.4	-0.2	0.2	0.3
71	BB-02-08	0	New UGA	4	8752		0.413	0.113				
71	BB-02-08	0	New UGA	5	7592		0.3	-0.088				
71	BB-02-08	0	New UGA	6	6729		0.277	-0.147				
71	BB-02-08	0	New UGA	7	5932		0.27	-0.142				
71	BB-02-08	0	New UGA	8	5220		0.266	-0.16				
71	BB-02-08	0	New UGA	9	4591		0.278	-0.149				
71	BB-02-08	0	New UGA	10	4034		0.296	-0.244				
71	BB-02-08	0	New UGA	11	3548		0.29	-0.3				
71	BB-02-08	0	New UGA	12	3119		0.283	-0.367				
71	BB-02-08	0	New UGA	13	2740		0.275	-0.305	0.3	-0.2	0.0	0.1
56	BB-02-09	0	New UGA	4	10581		0.424	0.086				
56	BB-02-09	0	New UGA	5	8916		0.447	0.123				
56	BB-02-09	0	New UGA	6	7622		0.472	0.174				
56	BB-02-09	0	New UGA	7	6512		0.51	0.162				

56	BB-02-09	0	New UGA	8	5569	0.526	0.127				
56	BB-02-09	0	New UGA	9	4637	0.129	-0.458				
56	BB-02-09	0	New UGA	10	3973	0.17	-0.456				
56	BB-02-09	0	New UGA	11	3397	0.195	-0.424				
56	BB-02-09	0	New UGA	12	2906	0.233	-0.453				
56	BB-02-09	0	New UGA	13	2504	0.294	-0.396	0.3	-0.2	0.2	0.3
70	BB-02-16	0	New UGA	4	10250	0.147	0.333				
70	BB-02-16	0	New UGA	5	8848	-0.012	0.032				
70	BB-02-16	0	New UGA	6	7804	-0.043	0.005				
70	BB-02-16	0	New UGA	7	6855	-0.049	0.026				
70	BB-02-16	0	New UGA	8	6015	-0.02	-0.026				
70	BB-02-16	0	New UGA	9	5274	0.005	-0.034				
70	BB-02-16	0	New UGA	10	4626	0.01	-0.043				
70	BB-02-16	0	New UGA	11	4062	0.007	-0.073				
70	BB-02-16	0	New UGA	12	3562	-0.011	-0.018				
70	BB-02-16	0	New UGA	13	3129	0.021	-0.136	0.0	0.0	0.1	0.1
61	BB-02-17	0	New UGA	4	4981	0.003	-0.171				
61	BB-02-17	0	New UGA	5	4206	0.054	-0.2				
61	BB-02-17	0	New UGA	6	3554	-0.144	-0.363				
61	BB-02-17	0	New UGA	7	3003	-0.362	-0.827				
61	BB-02-17	0	New UGA	8	2566	-0.349	-0.765				
61	BB-02-17	0	New UGA	9	2194	-0.4	-0.903				
61	BB-02-17	0	New UGA	10	1876	-0.324	-0.991				
61	BB-02-17	0	New UGA	11	1606	-0.38	-0.996				
61	BB-02-17	0	New UGA	12	1374	-0.369	-1.034				
61	BB-02-17	0	New UGA	13	1176	-0.369	-0.982	-0.3	-0.7	0.2	0.3
62	BB-02-18	0	New UGA	4	5861	-0.324	-0.165				
62	BB-02-18	0	New UGA	5	4956	-0.463	-0.406				
62	BB-02-18	0	New UGA	6	4281	-0.524	-0.411				
62	BB-02-18	0	New UGA	7	3651	-0.685	-0.747				
62	BB-02-18	0	New UGA	8	3147	-0.651	-0.788				
62	BB-02-18	0	New UGA	9	2717	-0.672	-0.879				
62	BB-02-18	0	New UGA	10	2342	-0.73	-0.878				
62	BB-02-18	0	New UGA	11	2022	-0.661	-0.88				
62	BB-02-18	0	New UGA	12	1745	-0.648	-0.957				

62	BB-02-18 0	New UGA	13	1508	-0.713	-0.992	-0.6	-0.7	0.1	0.3
57	BB-02-19 0	New UGA	4	8754	-0.143	-0.534				
57	BB-02-19 0	New UGA	5	7403	-0.169	-0.538				
57	BB-02-19 0	New UGA	6	6340	-0.165	-0.521				
57	BB-02-19 0	New UGA	7	5432	-0.18	-0.61				
57	BB-02-19 0	New UGA	8	4648	-0.177	-0.649				
57	BB-02-19 0	New UGA	9	3975	-0.166	-0.706				
57	BB-02-19 0	New UGA	10	3407	-0.051	-0.467				
57	BB-02-19 0	New UGA	11	2916	-0.183	-0.742				
57	BB-02-19 0	New UGA	12	2505	-0.117	-0.632				
57	BB-02-19 0	New UGA	13	2213	0.377	-0.205	-0.1	-0.6	0.2	0.2
55	BB-02-26 0	New UGA	4	7977	-0.751	0.099				
55	BB-02-26 0	New UGA	5	6716	-0.749	0.092				
55	BB-02-26 0	New UGA	6	5736	-0.739	0.085				
55	BB-02-26 0	New UGA	7	4895	-0.775	0.108				
55	BB-02-26 0	New UGA	8	4225	-0.55	0.246				
55	BB-02-26 0	New UGA	9	3602	-0.607	0.225				
55	BB-02-26 0	New UGA	10	3072	-0.605	0.118				
55	BB-02-26 0	New UGA	11	2620	-0.633	0.082				
55	BB-02-26 0	New UGA	12	2235	-0.659	0.035				
55	BB-02-26 0	New UGA	13	1906	-0.666	-0.011	-0.7	0.1	0.1	0.1
60	BB-02-27 0	New UG/	4	4964	-0.681	-0.756				
60	BB-02-27 0	New UG/	5	4129	-0.93	-1.098				
60	BB-02-27 0	New UG/	6	3528	-0.945	-1.148				
60	BB-02-27 0	New UG/	7	3011	-0.939	-1.147				
60	BB-02-27 0	New UG/	8	2570	-0.904	-1.193				
60	BB-02-27 0	New UG/	9	2192	-0.888	-1.214				
60	BB-02-27 0	New UG/	10	1873	-0.863	-1.239				
60	BB-02-27 0	New UG/	11	1600	-0.917	-1.167				
60	BB-02-27 0	New UG/	12	1370	-0.966	-1.28				
60	BB-02-27 0	New UG/	13	1170	-0.939	-1.498	-0.9	-1.2	0.1	0.2
63	BB-02-27 0	New UG/	4	8131	0.814	0.362				
63	BB-02-27 0	New UG/	5	6964	0.843	0.347				
63	BB-02-27 0	New UG/	6	5958	0.651	0.123				
63	BB-02-27 0	New UG/	7	5069	0.411	-0.263				

63	BB-02-27 0	New UGA/	8	4373	0.392	-0.357				
63	BB-02-27 0	New UGA/	9	3771	0.398	-0.354				
63	BB-02-27 0	New UGA/	10	3256	0.427	-0.47				
63	BB-02-27 0	New UGA/	11	2808	0.354	-0.524				
63	BB-02-27 0	New UGA/	12	2424	0.413	-0.487				
63	BB-02-27 0	New UGA/	13	2096	0.419	-0.45	0.5	-0.2	0.2	0.3
64	BB-02-28 0	New UGA	4	7360	-0.805	0.048				
64	BB-02-28 0	New UGA	5	6265	-0.957	-0.151				
64	BB-02-28 0	New UGA	6	5439	-0.971	-0.204				
64	BB-02-28 0	New UGA	7	4655	-1.215	-0.585				
64	BB-02-28 0	New UGA	8	4034	-1.197	-0.603				
64	BB-02-28 0	New UGA	9	3495	-1.219	-0.69				
64	BB-02-28 0	New UGA	10	3030	-1.213	-0.71				
64	BB-02-28 0	New UGA	11	2633	-1.168	-0.832				
64	BB-02-28 0	New UGA	12	2284	-1.188	-0.757				
64	BB-02-28 0	New UGA	13	1984	-1.222	-0.819	-1.1	-0.5	0.1	0.3
76	BB-02-29 0	New UGA	4	7889	-0.725	-0.104				
76	BB-02-29 0	New UGA	5	6918	-0.677	-0.092				
76	BB-02-29 0	New UGA	6	6124	-0.712	-0.062				
76	BB-02-29 0	New UGA	7	5335	-0.867	-0.352				
76	BB-02-29 0	New UGA	8	4627	-1.118	-0.675				
76	BB-02-29 0	New UGA	9	4066	-1.071	-0.694				
76	BB-02-29 0	New UGA	10	3571	-1.086	-0.742				
76	BB-02-29 0	New UGA	11	3133	-1.088	-0.783				
76	BB-02-29 0	New UGA	12	2753	-1.099	-0.783				
76	BB-02-29 0	New UGA	13	2418	-1.095	-0.818	-1.0	-0.5	0.2	0.3
58	BB-02-36 0	New UGA	4	6579	-0.314	-0.177				
58	BB-02-36 0	New UGA	5	5413	-0.644	-0.717				
58	BB-02-36 0	New UGA	6	4608	-0.667	-0.776				
58	BB-02-36 0	New UGA	7	3927	-0.663	-0.823				
58	BB-02-36 0	New UGA	8	3348	-0.692	-0.822				
58	BB-02-36 0	New UGA	9	2856	-0.626	-0.794				
58	BB-02-36 0	New UGA	10	2436	-0.647	-0.893				
58	BB-02-36 0	New UGA	11	2079	-0.681	-0.928				
58	BB-02-36 0	New UGA	12	1775	-0.637	-0.89				

58	BB-02-36	0	New UGA	13	1517	-0.553	-1.11	-0.6	-0.8	0.1	0.2
69	BB-02-37	0	New UGA	4	8115	-0.487	-0.361				
69	BB-02-37	0	New UGA	5	7044	-0.576	-0.545				
69	BB-02-37	0	New UGA	6	6193	-0.576	-0.574				
69	BB-02-37	0	New UGA	7	5347	-0.778	-0.889				
69	BB-02-37	0	New UGA	8	4655	-0.797	-0.922				
69	BB-02-37	0	New UGA	9	4064	-0.773	-0.974				
69	BB-02-37	0	New UGA	10	3543	-0.803	-0.999				
69	BB-02-37	0	New UGA	11	3098	-0.744	-1.06				
69	BB-02-37	0	New UGA	12	2696	-0.797	-1.067				
69	BB-02-37	0	New UGA	13	2352	-0.795	-1.186	-0.7	-0.9	0.1	0.3
73	BB-02-38	0	New UGA	4	8204	-0.482	-0.302				
73	BB-02-38	0	New UGA	5	7178	-0.444	-0.335				
73	BB-02-38	0	New UGA	6	6350	-0.459	-0.353				
73	BB-02-38	0	New UGA	7	5521	-0.626	-0.567				
73	BB-02-38	0	New UGA	8	4778	-0.864	-1.022				
73	BB-02-38	0	New UGA	9	4191	-0.875	-0.998				
73	BB-02-38	0	New UGA	10	3672	-0.898	-1.028				
73	BB-02-38	0	New UGA	11	3220	-0.827	-1.091				
73	BB-02-38	0	New UGA	12	2825	-0.87	-1.101				
73	BB-02-38	0	New UGA	13	2474	-0.826	-1.168	-0.7	-0.8	0.2	0.4
68	BB-02-39	0	New UGA	4	7546	-0.301	-0.191				
68	BB-02-39	0	New UGA	5	6594	-0.283	-0.203				
68	BB-02-39	0	New UGA	6	5810	-0.261	-0.201				
68	BB-02-39	0	New UGA	7	5034	-0.414	-0.441				
68	BB-02-39	0	New UGA	8	4338	-0.708	-0.826				
68	BB-02-39	0	New UGA	9	3801	-0.692	-0.891				
68	BB-02-39	0	New UGA	10	3334	-0.669	-0.896				
68	BB-02-39	0	New UGA	11	2916	-0.679	-0.951				
68	BB-02-39	0	New UGA	12	2558	-0.638	-0.99				
68	BB-02-39	0	New UGA	13	2239	-0.623	-0.911	-0.5	-0.7	0.2	0.3
72	BB-02-46	0	New UGA	4	12365	-1.615	-0.266				
72	BB-02-46	0	New UGA	5	10766	-1.598	-0.29				
72	BB-02-46	0	New UGA	6	9189	-2.073	-0.996				
72	BB-02-46	0	New UGA	7	8066	-2.094	-0.998				

72	BB-02-46	0	New UGA	8	7086	-2.075	-1.006				
72	BB-02-46	0	New UGA	9	6224	-2.088	-1.055				
72	BB-02-46	0	New UGA	10	5462	-2.055	-1.083				
72	BB-02-46	0	New UGA	11	4790	-2.066	-1.071				
72	BB-02-46	0	New UGA	12	4202	-2.068	-1.122				
72	BB-02-46	0	New UGA	13	3686	-2.014	-1.092	-2.0	-0.9	0.2	0.3
65	BB-03-01	0	New UGA	4	6510	-1.036	0.905				
65	BB-03-01	0	New UGA	5	5577	-1.21	0.685				
65	BB-03-01	0	New UGA	6	4878	-1.245	0.682				
65	BB-03-01	0	New UGA	7	4193	-1.499	0.292				
65	BB-03-01	0	New UGA	8	3654	-1.477	0.292				
65	BB-03-01	0	New UGA	9	3186	-1.457	0.268				
65	BB-03-01	0	New UGA	10	2774	-1.446	0.138				
65	BB-03-01	0	New UGA	11	2416	-1.448	0.152				
65	BB-03-01	0	New UGA	12	2104	-1.489	0.166				
65	BB-03-01	0	New UGA	13	1836	-1.465	0.119	-1.4	0.4	0.2	0.3
74	BB-03-02	0	New UGA	4	6996	0.199	0.903				
74	BB-03-02	0	New UGA	5	6035	-0.049	0.617				
74	BB-03-02	0	New UGA	6	5341	-0.039	0.661				
74	BB-03-02	0	New UGA	7	4700	-0.038	0.608				
74	BB-03-02	0	New UGA	8	4132	-0.037	0.573				
74	BB-03-02	0	New UGA	9	3632	-0.036	0.453				
74	BB-03-02	0	New UGA	10	3188	-0.024	0.436				
74	BB-03-02	0	New UGA	11	2802	0.017	0.39				
74	BB-03-02	0	New UGA	12	2455	0.033	0.548				
74	BB-03-02	0	New UGA	13	2154	-0.023	0.461	0.0	0.6	0.1	0.1
77	BB-03-03	0	New UGA	4	5524	1.021	0.526				
77	BB-03-03	0	New UGA	5	4787	0.833	0.211				
77	BB-03-03	0	New UGA	6	4251	0.83	0.201				
77	BB-03-03	0	New UGA	7	3760	0.854	0.231				
77	BB-03-03	0	New UGA	8	3312	0.822	0.114				
77	BB-03-03	0	New UGA	9	2920	0.853	0.121				
77	BB-03-03	0	New UGA	10	2573	0.847	0.095				
77	BB-03-03	0	New UGA	11	2267	0.884	0.066				
77	BB-03-03	0	New UGA	12	1996	0.894	0.153				

77	BB-03-03	0	New UGA	13	1760	0.912	-0.047	0.9	0.2	0.1	0.1
112	BB-03-04	0	New UGA	4	8644	1.173	0.556				
112	BB-03-04	0	New UGA	5	7587	1.031	0.319				
112	BB-03-04	0	New UGA	6	6728	0.804	-0.064				
112	BB-03-04	0	New UGA	7	6018	0.811	-0.036				
112	BB-03-04	0	New UGA	8	5375	0.823	-0.07				
112	BB-03-04	0	New UGA	9	4800	0.797	-0.083				
112	BB-03-04	0	New UGA	10	4282	0.811	-0.055				
112	BB-03-04	0	New UGA	11	3825	0.849	-0.104				
112	BB-03-04	0	New UGA	12	3413	0.771	-0.113				
112	BB-03-04	0	New UGA	13	3050	0.806	-0.179	0.9	0.0	0.1	0.2
127	BB-03-05	0	New UGA	4	6509	1.026	0.409				
127	BB-03-05	0	New UGA	5	5808	1.09	0.5				
127	BB-03-05	0	New UGA	6	5229	1.095	0.573				
127	BB-03-05	0	New UGA	7	4637	0.914	0.209				
127	BB-03-05	0	New UGA	8	4106	0.727	-0.105				
127	BB-03-05	0	New UGA	9	3665	0.697	-0.255				
127	BB-03-05	0	New UGA	10	3281	0.694	-0.233				
127	BB-03-05	0	New UGA	11	2938	0.703	-0.207				
127	BB-03-05	0	New UGA	12	2625	0.736	-0.279				
127	BB-03-05	0	New UGA	13	2352	0.655	-0.284	0.8	0.0	0.2	0.4
116	BB-03-06	0	New UGA	4	6827	0.946	0.22				
116	BB-03-06	0	New UGA	5	6054	0.992	0.329				
116	BB-03-06	0	New UGA	6	5294	0.616	-0.247				
116	BB-03-06	0	New UGA	7	4704	0.555	-0.361				
116	BB-03-06	0	New UGA	8	4190	0.573	-0.387				
116	BB-03-06	0	New UGA	9	3733	0.559	-0.407				
116	BB-03-06	0	New UGA	10	3328	0.565	-0.419				
116	BB-03-06	0	New UGA	11	2950	0.501	-0.575				
116	BB-03-06	0	New UGA	12	2629	0.532	-0.577				
116	BB-03-06	0	New UGA	13	2353	0.648	-0.448	0.6	-0.3	0.2	0.3
129	BB-03-07	0	New UGA	4	12808	0.959	0.425				
129	BB-03-07	0	New UGA	5	11292	0.794	0.22				
129	BB-03-07	0	New UGA	6	10150	0.786	0.164				
129	BB-03-07	0	New UGA	7	9085	0.781	0.141				

129	BB-03-07	0	New UGA	8	8132	0.785	0.116				
129	BB-03-07	0	New UGA	9	7263	0.79	0.164				
129	BB-03-07	0	New UGA	10	6492	0.767	0.094				
129	BB-03-07	0	New UGA	11	5807	0.82	0.097				
129	BB-03-07	0	New UGA	12	5196	0.817	0.048				
129	BB-03-07	0	New UGA	13	4637	0.799	0.051	0.8	0.2	0.1	0.1
92	BB-03-08	0	New UGA	4	11513	0.724	0.459				
92	BB-03-08	0	New UGA	5	10050	0.503	0.134				
92	BB-03-08	0	New UGA	6	8971	0.481	0.109				
92	BB-03-08	0	New UGA	7	7980	0.462	0.053				
92	BB-03-08	0	New UGA	8	7104	0.445	0.014				
92	BB-03-08	0	New UGA	9	6307	0.465	-0.026				
92	BB-03-08	0	New UGA	10	5611	0.457	-0.076				
92	BB-03-08	0	New UGA	11	4989	0.474	-0.051				
92	BB-03-08	0	New UGA	12	4442	0.472	-0.078				
92	BB-03-08	0	New UGA	13	3950	0.509	0.111	0.5	0.1	0.1	0.2
98	BB-03-09	0	New UGA	4	9648	1.068	0.496				
98	BB-03-09	0	New UGA	5	8437	0.859	0.252				
98	BB-03-09	0	New UGA	6	7468	0.634	-0.077				
98	BB-03-09	0	New UGA	7	6653	0.659	-0.078				
98	BB-03-09	0	New UGA	8	5929	0.655	-0.103				
98	BB-03-09	0	New UGA	9	5282	0.644	-0.138				
98	BB-03-09	0	New UGA	10	4705	0.684	-0.116				
98	BB-03-09	0	New UGA	11	4194	0.677	-0.168				
98	BB-03-09	0	New UGA	12	3735	0.694	-0.162				
98	BB-03-09	0	New UGA	13	3329	0.713	-0.181	0.7	0.0	0.1	0.2
80	BB-03-10	0	New UGA	4	6065	0.985	0.053				
80	BB-03-10	0	New UGA	5	5364	1.025	0.104				
80	BB-03-10	0	New UGA	6	4732	0.86	-0.157				
80	BB-03-10	0	New UGA	7	4145	0.62	-0.483				
80	BB-03-10	0	New UGA	8	3680	0.617	-0.492				
80	BB-03-10	0	New UGA	9	3270	0.643	-0.573				
80	BB-03-10	0	New UGA	10	2901	0.593	-0.588				
80	BB-03-10	0	New UGA	11	2573	0.68	-0.606				
80	BB-03-10	0	New UGA	12	2284	0.586	-0.658				

80	BB-03-10	0	New UGA	13	2029	0.63	-0.692	0.7	-0.4	0.2	0.3
81	BB-03-11	0	New UGA	4	10217	0.726	0.364				
81	BB-03-11	0	New UGA	5	9031	0.747	0.418				
81	BB-03-11	0	New UGA	6	7979	0.566	0.115				
81	BB-03-11	0	New UGA	7	7113	0.559	0.102				
81	BB-03-11	0	New UGA	8	6242	0.321	-0.171				
81	BB-03-11	0	New UGA	9	5555	0.335	-0.277				
81	BB-03-11	0	New UGA	10	4936	0.337	-0.308				
81	BB-03-11	0	New UGA	11	4390	0.333	-0.344				
81	BB-03-11	0	New UGA	12	3915	0.353	-0.277				
81	BB-03-11	0	New UGA	13	3497	0.417	-0.362	0.5	-0.1	0.2	0.3
104	BB-03-13	0	New UGA	4	11325	0.332	0.089				
104	BB-03-13	0	New UGA	5	10062	0.329	0.061				
104	BB-03-13	0	New UGA	6	8903	0.169	-0.211				
104	BB-03-13	0	New UGA	7	7842	-0.067	-0.527				
104	BB-03-13	0	New UGA	8	7002	-0.055	-0.542				
104	BB-03-13	0	New UGA	9	6234	-0.08	-0.595				
104	BB-03-13	0	New UGA	10	5557	-0.075	-0.649				
104	BB-03-13	0	New UGA	11	4965	-0.065	-0.617				
104	BB-03-13	0	New UGA	12	4416	-0.088	-0.681				
104	BB-03-13	0	New UGA	13	3936	-0.073	-0.67	0.0	-0.4	0.2	0.3
111	BB-03-14	0	New UGA	4	9817	0.722	-0.139				
111	BB-03-14	0	New UGA	5	8724	0.699	-0.135				
111	BB-03-14	0	New UGA	6	7749	0.531	-0.404				
111	BB-03-14	0	New UGA	7	6920	0.515	-0.451				
111	BB-03-14	0	New UGA	8	6189	0.511	-0.392				
111	BB-03-14	0	New UGA	9	5528	0.544	-0.418				
111	BB-03-14	0	New UGA	10	4935	0.514	-0.456				
111	BB-03-14	0	New UGA	11	4405	0.562	-0.473				
111	BB-03-14	0	New UGA	12	3939	0.571	-0.429				
111	BB-03-14	0	New UGA	13	3479	0.407	-0.721	0.6	-0.4	0.1	0.2
130	BB-03-15	0	New UGA	4	9850	0.031	-0.559				
130	BB-03-15	0	New UGA	5	8795	0.073	-0.57				
130	BB-03-15	0	New UGA	6	7925	0.093	-0.585				
130	BB-03-15	0	New UGA	7	6944	-0.265	-1.083				

130	BB-03-15	0	New UGA	8	6204	-0.308	-1.12				
130	BB-03-15	0	New UGA	9	5552	-0.332	-1.179				
130	BB-03-15	0	New UGA	10	4966	-0.276	-1.087				
130	BB-03-15	0	New UGA	11	4446	-0.272	-1.097				
130	BB-03-15	0	New UGA	12	3987	-0.278	-1.152				
130	BB-03-15	0	New UGA	13	3580	-0.218	-1.196	-0.2	-1.0	0.2	0.3
113	BB-03-16	0	New UGA	4	7591	-0.002	-0.452				
113	BB-03-16	0	New UGA	5	6746	-0.003	-0.434				
113	BB-03-16	0	New UGA	6	6057	0.009	-0.444				
113	BB-03-16	0	New UGA	7	5345	-0.119	-0.67				
113	BB-03-16	0	New UGA	8	4776	-0.132	-0.705				
113	BB-03-16	0	New UGA	9	4206	-0.265	-0.976				
113	BB-03-16	0	New UGA	10	3749	-0.286	-1.036				
113	BB-03-16	0	New UGA	11	3344	-0.277	-1.051				
113	BB-03-16	0	New UGA	12	2992	-0.289	-1.038				
113	BB-03-16	0	New UGA	13	2671	-0.327	-1.1	-0.2	-0.8	0.1	0.3
118	BB-03-17	0	New UGA	4	10852	-0.101	-0.678				
118	BB-03-17	0	New UGA	5	9623	-0.114	-0.641				
118	BB-03-17	0	New UGA	6	8611	-0.095	-0.716				
118	BB-03-17	0	New UGA	7	7574	-0.276	-0.998				
118	BB-03-17	0	New UGA	8	6662	-0.502	-1.326				
118	BB-03-17	0	New UGA	9	5932	-0.501	-1.356				
118	BB-03-17	0	New UGA	10	5273	-0.469	-1.399				
118	BB-03-17	0	New UGA	11	4691	-0.468	-1.419				
118	BB-03-17	0	New UGA	12	4174	-0.503	-1.396				
118	BB-03-17	0	New UGA	13	3718	-0.461	-1.484	-0.3	-1.1	0.2	0.3
90	BB-03-18	0	New UGA	4	6699	-0.226	-0.707				
90	BB-03-18	0	New UGA	5	5927	-0.246	-0.751				
90	BB-03-18	0	New UGA	6	5301	-0.258	-0.702				
90	BB-03-18	0	New UGA	7	4666	-0.415	-1.004				
90	BB-03-18	0	New UGA	8	4103	-0.665	-1.39				
90	BB-03-18	0	New UGA	9	3650	-0.676	-1.417				
90	BB-03-18	0	New UGA	10	3252	-0.656	-1.454				
90	BB-03-18	0	New UGA	11	2894	-0.642	-1.396				
90	BB-03-18	0	New UGA	12	2578	-0.662	-1.507				

90	BB-03-18	0	New UGA	13	2296	-0.616	-1.522	-0.5	-1.2	0.2	0.4
121	BB-03-19	0	New UGA	4	8468	-0.301	-0.781				
121	BB-03-19	0	New UGA	5	7546	-0.296	-0.799				
121	BB-03-19	0	New UGA	6	6772	-0.283	-0.781				
121	BB-03-19	0	New UGA	7	5999	-0.43	-0.996				
121	BB-03-19	0	New UGA	8	5366	-0.458	-1.046				
121	BB-03-19	0	New UGA	9	4731	-0.695	-1.472				
121	BB-03-19	0	New UGA	10	4224	-0.7	-1.405				
121	BB-03-19	0	New UGA	11	3776	-0.693	-1.428				
121	BB-03-19	0	New UGA	12	3378	-0.669	-1.468				
121	BB-03-19	0	New UGA	13	3022	-0.635	-1.478	-0.5	-1.2	0.2	0.3
95	BB-03-20	0	New UGA	4	8774	-0.482	-0.876				
95	BB-03-20	0	New UGA	5	7772	-0.46	-0.876				
95	BB-03-20	0	New UGA	6	6962	-0.458	-0.955				
95	BB-03-20	0	New UGA	7	6198	-0.513	-0.916				
95	BB-03-20	0	New UGA	8	5521	-0.429	-0.898				
95	BB-03-20	0	New UGA	9	4850	-0.729	-1.213				
95	BB-03-20	0	New UGA	10	4315	-0.688	-1.232				
95	BB-03-20	0	New UGA	11	3847	-0.696	-1.347				
95	BB-03-20	0	New UGA	12	3420	-0.682	-1.335				
95	BB-03-20	0	New UGA	13	3047	-0.711	-1.27	-0.6	-1.1	0.1	0.2
89	BB-03-21	0	New UGA	4	9078	-0.449	-0.763				
89	BB-03-21	0	New UGA	5	7863	-0.767	-1.196				
89	BB-03-21	0	New UGA	6	6972	-0.898	-1.334				
89	BB-03-21	0	New UGA	7	6209	-0.838	-1.336				
89	BB-03-21	0	New UGA	8	5521	-0.888	-1.344				
89	BB-03-21	0	New UGA	9	4907	-0.875	-1.403				
89	BB-03-21	0	New UGA	10	4363	-0.844	-1.413				
89	BB-03-21	0	New UGA	11	3880	-0.852	-1.484				
89	BB-03-21	0	New UGA	12	3453	-0.842	-1.449				
89	BB-03-21	0	New UGA	13	3073	-0.818	-1.514	-0.8	-1.3	0.1	0.2
86	BB-03-22	0	New UGA	4	6804	-0.497	-0.75				
86	BB-03-22	0	New UGA	5	5941	-0.632	-0.914				
86	BB-03-22	0	New UGA	6	5307	-0.617	-0.964				
86	BB-03-22	0	New UGA	7	4727	-0.617	-1.037				

86	BB-03-22	0	New UGA	8	4200	-0.66	-0.96				
86	BB-03-22	0	New UGA	9	3731	-0.623	-1.04				
86	BB-03-22	0	New UGA	10	3321	-0.605	-1.073				
86	BB-03-22	0	New UGA	11	2949	-0.6	-1.105				
86	BB-03-22	0	New UGA	12	2621	-0.579	-1.037				
86	BB-03-22	0	New UGA	13	2332	-0.595	-1.074	-0.6	-1.0	0.0	0.1
102	BB-03-23	0	New UGA	4	5952	-0.463	-1.241				
102	BB-03-23	0	New UGA	5	5279	-0.488	-1.237				
102	BB-03-23	0	New UGA	6	4738	-0.462	-1.154				
102	BB-03-23	0	New UGA	7	4120	-0.811	-1.775				
102	BB-03-23	0	New UGA	8	3671	-0.856	-1.749				
102	BB-03-23	0	New UGA	9	3275	-0.812	-1.91				
102	BB-03-23	0	New UGA	10	2919	-0.839	-1.835				
102	BB-03-23	0	New UGA	11	2605	-0.796	-1.997				
102	BB-03-23	0	New UGA	12	2320	-0.848	-2.038				
102	BB-03-23	0	New UGA	13	2068	-0.814	-1.976	-0.7	-1.7	0.2	0.3
114	BB-03-24	0	New UGA	4	10983	-0.608	-1.121				
114	BB-03-24	0	New UGA	5	9792	-0.581	-1.112				
114	BB-03-24	0	New UGA	6	8796	-0.619	-1.091				
114	BB-03-24	0	New UGA	7	7881	-0.629	-1.137				
114	BB-03-24	0	New UGA	8	7064	-0.623	-1.182				
114	BB-03-24	0	New UGA	9	6307	-0.63	-1.166				
114	BB-03-24	0	New UGA	10	5638	-0.604	-1.208				
114	BB-03-24	0	New UGA	11	5041	-0.639	-1.185				
114	BB-03-24	0	New UGA	12	4507	-0.606	-1.196				
114	BB-03-24	0	New UGA	13	4037	-0.611	-1.122	-0.6	-1.2	0.0	0.0
134	BB-03-25	0	New UGA	4	7202	-0.573	-1.451				
134	BB-03-25	0	New UGA	5	6412	-0.584	-1.415				
134	BB-03-25	0	New UGA	6	5766	-0.576	-1.425				
134	BB-03-25	0	New UGA	7	5166	-0.542	-1.412				
134	BB-03-25	0	New UGA	8	4575	-0.694	-1.628				
134	BB-03-25	0	New UGA	9	4033	-0.951	-2.045				
134	BB-03-25	0	New UGA	10	3603	-0.978	-2.073				
134	BB-03-25	0	New UGA	11	3222	-0.963	-1.996				
134	BB-03-25	0	New UGA	12	2886	-0.9	-2.177				

134	BB-03-25	0	New UGA	13	2580	-0.924	-2.144	-0.8	-1.8	0.2	0.3
132	BB-03-26	0	New UGA	4	5592	-0.546	-1.759				
132	BB-03-26	0	New UGA	5	5013	-0.523	-1.787				
132	BB-03-26	0	New UGA	6	4534	-0.51	-1.69				
132	BB-03-26	0	New UGA	7	4039	-0.631	-2.06				
132	BB-03-26	0	New UGA	8	3636	-0.7	-2.104				
132	BB-03-26	0	New UGA	9	3270	-0.673	-2.015				
132	BB-03-26	0	New UGA	10	2936	-0.599	-2.033				
132	BB-03-26	0	New UGA	11	2611	-0.866	-2.468				
132	BB-03-26	0	New UGA	12	2341	-0.883	-2.449				
132	BB-03-26	0	New UGA	13	2103	-0.848	-2.502	-0.7	-2.1	0.1	0.3
128	BB-03-27	0	New UGA	4	6655	-0.628	-1.291				
128	BB-03-27	0	New UGA	5	5861	-0.789	-1.459				
128	BB-03-27	0	New UGA	6	5278	-0.799	-1.535				
128	BB-03-27	0	New UGA	7	4739	-0.794	-1.558				
128	BB-03-27	0	New UGA	8	4269	-0.759	-1.528				
128	BB-03-27	0	New UGA	9	3824	-0.791	-1.612				
128	BB-03-27	0	New UGA	10	3412	-0.812	-1.592				
128	BB-03-27	0	New UGA	11	3054	-0.782	-1.609				
128	BB-03-27	0	New UGA	12	2710	-0.9	-1.944				
128	BB-03-27	0	New UGA	13	2420	-0.991	-1.98	-0.8	-1.6	0.1	0.2
101	BB-03-28	0	New UGA	4	12605	-0.736	-0.77				
101	BB-03-28	0	New UGA	5	11228	-0.719	-0.732				
101	BB-03-28	0	New UGA	6	9946	-0.877	-0.962				
101	BB-03-28	0	New UGA	7	8896	-0.851	-0.99				
101	BB-03-28	0	New UGA	8	7948	-0.856	-1.002				
101	BB-03-28	0	New UGA	9	7089	-0.84	-1.056				
101	BB-03-28	0	New UGA	10	6325	-0.848	-1.05				
101	BB-03-28	0	New UGA	11	5646	-0.853	-1.023				
101	BB-03-28	0	New UGA	12	5049	-0.834	-1.036				
101	BB-03-28	0	New UGA	13	4500	-0.826	-1.121	-0.8	-1.0	0.1	0.1
110	BB-03-29	0	New UGA	4	10636	-0.769	-2.042				
110	BB-03-29	0	New UGA	5	9467	-0.688	-1.862				
110	BB-03-29	0	New UGA	6	8356	-0.924	-2.308				
110	BB-03-29	0	New UGA	7	7458	-0.932	-2.352				

110	BB-03-29	0	New UGA	8	6561	-1.108	-2.601				
110	BB-03-29	0	New UGA	9	5838	-1.144	-2.62				
110	BB-03-29	0	New UGA	10	5198	-1.161	-2.653				
110	BB-03-29	0	New UGA	11	4631	-1.13	-2.729				
110	BB-03-29	0	New UGA	12	4125	-1.121	-2.689				
110	BB-03-29	0	New UGA	13	3677	-1.106	-2.776	-1.0	-2.5	0.2	0.3
105	BB-03-30	0	New UGA	4	9219	-0.898	-1.096				
105	BB-03-30	0	New UGA	5	8214	-0.877	-1.142				
105	BB-03-30	0	New UGA	6	7287	-1.017	-1.36				
105	BB-03-30	0	New UGA	7	6528	-1.049	-1.372				
105	BB-03-30	0	New UGA	8	5823	-1.04	-1.369				
105	BB-03-30	0	New UGA	9	5203	-1.036	-1.36				
105	BB-03-30	0	New UGA	10	4588	-1.245	-1.724				
105	BB-03-30	0	New UGA	11	4092	-1.248	-1.726				
105	BB-03-30	0	New UGA	12	3665	-1.208	-1.669				
105	BB-03-30	0	New UGA	13	3272	-1.173	-1.647	-1.1	-1.4	0.1	0.2
100	BB-03-31	0	New UGA	4	8433	-0.855	-0.982				
100	BB-03-31	0	New UGA	5	7387	-1.007	-1.245				
100	BB-03-31	0	New UGA	6	6619	-1.012	-1.288				
100	BB-03-31	0	New UGA	7	5914	-0.994	-1.228				
100	BB-03-31	0	New UGA	8	5270	-1.011	-1.279				
100	BB-03-31	0	New UGA	9	4694	-0.998	-1.303				
100	BB-03-31	0	New UGA	10	4183	-1.022	-1.331				
100	BB-03-31	0	New UGA	11	3730	-0.999	-1.347				
100	BB-03-31	0	New UGA	12	3330	-0.959	-1.37				
100	BB-03-31	0	New UGA	13	2965	-0.965	-1.411	-1.0	-1.3	0.0	0.1
87	BB-03-32	0	New UGA	4	10687	-0.66	-1.203				
87	BB-03-32	0	New UGA	5	9423	-0.668	-1.286				
87	BB-03-32	0	New UGA	6	8202	-1.081	-1.866				
87	BB-03-32	0	New UGA	7	7288	-1.114	-1.917				
87	BB-03-32	0	New UGA	8	6464	-1.094	-1.898				
87	BB-03-32	0	New UGA	9	5739	-1.104	-1.986				
87	BB-03-32	0	New UGA	10	5093	-1.081	-1.981				
87	BB-03-32	0	New UGA	11	4525	-1.089	-2.002				
87	BB-03-32	0	New UGA	12	4018	-1.123	-2.041				

87	BB-03-32	0	New UGA	13	3568	-1.075	-2.058	-1.0	-1.8	0.2	0.3
82	BB-03-33	0	New UGA	4	7900	-0.762	-1.176				
82	BB-03-33	0	New UGA	5	6903	-0.907	-1.391				
82	BB-03-33	0	New UGA	6	6169	-0.92	-1.411				
82	BB-03-33	0	New UGA	7	5494	-0.923	-1.442				
82	BB-03-33	0	New UGA	8	4888	-0.913	-1.526				
82	BB-03-33	0	New UGA	9	4291	-1.188	-1.835				
82	BB-03-33	0	New UGA	10	3811	-1.12	-1.841				
82	BB-03-33	0	New UGA	11	3386	-1.156	-1.814				
82	BB-03-33	0	New UGA	12	3012	-1.129	-1.865				
82	BB-03-33	0	New UGA	13	2680	-1.088	-1.867	-1.0	-1.6	0.1	0.3
125	BB-03-34	0	New UGA	4	11765	-0.766	-1.097				
125	BB-03-34	0	New UGA	5	10524	-0.748	-1.138				
125	BB-03-34	0	New UGA	6	9492	-0.764	-1.143				
125	BB-03-34	0	New UGA	7	8415	-0.906	-1.353				
125	BB-03-34	0	New UGA	8	7548	-0.922	-1.404				
125	BB-03-34	0	New UGA	9	6666	-1.143	-1.755				
125	BB-03-34	0	New UGA	10	5966	-1.148	-1.749				
125	BB-03-34	0	New UGA	11	5340	-1.15	-1.748				
125	BB-03-34	0	New UGA	12	4784	-1.143	-1.765				
125	BB-03-34	0	New UGA	13	4289	-1.133	-1.782	-1.0	-1.5	0.2	0.3
119	BB-03-35	0	New UGA	4	11759	-0.646	-1.24				
119	BB-03-35	0	New UGA	5	10457	-0.644	-1.212				
119	BB-03-35	0	New UGA	6	9265	-0.811	-1.496				
119	BB-03-35	0	New UGA	7	8272	-0.868	-1.569				
119	BB-03-35	0	New UGA	8	7378	-0.878	-1.625				
119	BB-03-35	0	New UGA	9	6528	-0.977	-1.822				
119	BB-03-35	0	New UGA	10	5796	-1.041	-1.921				
119	BB-03-35	0	New UGA	11	5162	-1.037	-1.917				
119	BB-03-35	0	New UGA	12	4603	-1.001	-1.952				
119	BB-03-35	0	New UGA	13	4108	-1.002	-1.915	-0.9	-1.7	0.2	0.3
133	BB-03-36	0	New UGA	4	6760	-0.665	-1.839				
133	BB-03-36	0	New UGA	5	5974	-0.817	-2.053				
133	BB-03-36	0	New UGA	6	5323	-1.019	-2.387				
133	BB-03-36	0	New UGA	7	4777	-1.079	-2.424				

133	BB-03-36	0	New UGA	8	4293	-1.057	-2.491				
133	BB-03-36	0	New UGA	9	3852	-1.055	-2.483				
133	BB-03-36	0	New UGA	10	3460	-1.061	-2.546				
133	BB-03-36	0	New UGA	11	3114	-0.989	-2.392				
133	BB-03-36	0	New UGA	12	2799	-1.051	-2.458				
133	BB-03-36	0	New UGA	13	2502	-1.07	-2.626	-1.0	-2.4	0.1	0.2
117	BB-03-37	0	New UGA	4	6629	-0.758	-2.114				
117	BB-03-37	0	New UGA	5	5903	-0.749	-2.004				
117	BB-03-37	0	New UGA	6	5246	-0.916	-2.376				
117	BB-03-37	0	New UGA	7	4633	-1.168	-2.73				
117	BB-03-37	0	New UGA	8	4145	-1.174	-2.731				
117	BB-03-37	0	New UGA	9	3708	-1.122	-2.778				
117	BB-03-37	0	New UGA	10	3312	-1.148	-2.777				
117	BB-03-37	0	New UGA	11	2963	-1.112	-2.741				
117	BB-03-37	0	New UGA	12	2649	-1.134	-2.808				
117	BB-03-37	0	New UGA	13	2367	-1.138	-2.838	-1.0	-2.6	0.2	0.3
124	BB-03-38	0	New UGA	4	11387	-0.708	-1.436				
124	BB-03-38	0	New UGA	5	10121	-0.679	-1.427				
124	BB-03-38	0	New UGA	6	8970	-0.889	-1.694				
124	BB-03-38	0	New UGA	7	8010	-0.876	-1.732				
124	BB-03-38	0	New UGA	8	7059	-1.108	-1.99				
124	BB-03-38	0	New UGA	9	6262	-1.168	-2.119				
124	BB-03-38	0	New UGA	10	5580	-1.133	-2.15				
124	BB-03-38	0	New UGA	11	4976	-1.13	-2.123				
124	BB-03-38	0	New UGA	12	4432	-1.111	-2.152				
124	BB-03-38	0	New UGA	13	3960	-1.14	-2.286	-1.0	-1.9	0.2	0.3
120	BB-03-39	0	New UGA	4	11828	-0.658	-1.105				
120	BB-03-39	0	New UGA	5	10520	-0.652	-1.089				
120	BB-03-39	0	New UGA	6	9451	-0.664	-1.121				
120	BB-03-39	0	New UGA	7	8349	-0.692	-1.147				
120	BB-03-39	0	New UGA	8	7346	-1.043	-1.719				
120	BB-03-39	0	New UGA	9	6547	-1.07	-1.825				
120	BB-03-39	0	New UGA	10	5836	-1.02	-1.766				
120	BB-03-39	0	New UGA	11	5205	-1.026	-1.788				
120	BB-03-39	0	New UGA	12	4640	-1.048	-1.768				

120	BB-03-39	0	New UGA	13	4146	-1.009	-1.881	-0.9	-1.5	0.2	0.4
106	BB-03-40	0	New UGA	4	8961	-0.604	-1.871				
106	BB-03-40	0	New UGA	5	7953	-0.623	-1.919				
106	BB-03-40	0	New UGA	6	7033	-0.765	-2.174				
106	BB-03-40	0	New UGA	7	6187	-1.056	-2.525				
106	BB-03-40	0	New UGA	8	5523	-1.061	-2.521				
106	BB-03-40	0	New UGA	9	4920	-1.027	-2.557				
106	BB-03-40	0	New UGA	10	4392	-1.047	-2.64				
106	BB-03-40	0	New UGA	11	3914	-1.03	-2.565				
106	BB-03-40	0	New UGA	12	3500	-0.975	-2.565				
106	BB-03-40	0	New UGA	13	3122	-0.997	-2.61	-0.9	-2.4	0.2	0.3
88	BB-03-41	0	New UGA	4	7630	-0.65	-1.836				
88	BB-03-41	0	New UGA	5	6772	-0.612	-1.812				
88	BB-03-41	0	New UGA	6	6064	-0.606	-1.796				
88	BB-03-41	0	New UGA	7	5325	-0.77	-2.089				
88	BB-03-41	0	New UGA	8	4677	-1.039	-2.462				
88	BB-03-41	0	New UGA	9	4158	-0.997	-2.498				
88	BB-03-41	0	New UGA	10	3698	-1	-2.47				
88	BB-03-41	0	New UGA	11	3291	-0.999	-2.535				
88	BB-03-41	0	New UGA	12	2928	-0.977	-2.556				
88	BB-03-41	0	New UGA	13	2608	-0.983	-2.566	-0.9	-2.3	0.2	0.3
94	BB-03-42	0	New UGA	4	9286	-0.435	-1.26				
94	BB-03-42	0	New UGA	5	8233	-0.443	-1.296				
94	BB-03-42	0	New UGA	6	7346	-0.516	-1.484				
94	BB-03-42	0	New UGA	7	6465	-0.649	-1.706				
94	BB-03-42	0	New UGA	8	5750	-0.689	-1.692				
94	BB-03-42	0	New UGA	9	5054	-0.881	-2.096				
94	BB-03-42	0	New UGA	10	4494	-0.863	-2.035				
94	BB-03-42	0	New UGA	11	4001	-0.873	-2.077				
94	BB-03-42	0	New UGA	12	3559	-0.882	-2.062				
94	BB-03-42	0	New UGA	13	3180	-0.846	-2.048	-0.7	-1.8	0.2	0.3
84	BB-03-43	0	New UGA	4	10450	-0.362	-1.14				
84	BB-03-43	0	New UGA	5	9137	-0.51	-1.337				
84	BB-03-43	0	New UGA	6	8157	-0.571	-1.398				
84	BB-03-43	0	New UGA	7	7274	-0.547	-1.429				

84	BB-03-43	0	New UGA	8	6474	-0.568	-1.453				
84	BB-03-43	0	New UGA	9	5762	-0.555	-1.469				
84	BB-03-43	0	New UGA	10	5065	-0.789	-1.811				
84	BB-03-43	0	New UGA	11	4512	-0.776	-1.854				
84	BB-03-43	0	New UGA	12	4015	-0.722	-1.873				
84	BB-03-43	0	New UGA	13	3572	-0.737	-1.843	-0.6	-1.6	0.1	0.3
126	BB-03-44	0	New UGA	4	8200	-0.283	-1.499				
126	BB-03-44	0	New UGA	5	7188	-0.408	-1.712				
126	BB-03-44	0	New UGA	6	6458	-0.457	-1.759				
126	BB-03-44	0	New UGA	7	5776	-0.474	-1.77				
126	BB-03-44	0	New UGA	8	5180	-0.429	-1.832				
126	BB-03-44	0	New UGA	9	4620	-0.432	-1.859				
126	BB-03-44	0	New UGA	10	4128	-0.377	-1.816				
126	BB-03-44	0	New UGA	11	3643	-0.582	-2.116				
126	BB-03-44	0	New UGA	12	3257	-0.624	-2.185				
126	BB-03-44	0	New UGA	13	2908	-0.616	-2.195	-0.5	-1.9	0.1	0.2
122	BB-03-45	0	New UGA	4	9007	-0.377	-1.093				
122	BB-03-45	0	New UGA	5	7995	-0.383	-1.046				
122	BB-03-45	0	New UGA	6	7092	-0.526	-1.399				
122	BB-03-45	0	New UGA	7	6334	-0.577	-1.457				
122	BB-03-45	0	New UGA	8	5653	-0.554	-1.396				
122	BB-03-45	0	New UGA	9	5058	-0.532	-1.454				
122	BB-03-45	0	New UGA	10	4510	-0.52	-1.42				
122	BB-03-45	0	New UGA	11	3969	-0.781	-1.663				
122	BB-03-45	0	New UGA	12	3545	-0.771	-1.776				
122	BB-03-45	0	New UGA	13	3164	-0.786	-1.757	-0.6	-1.4	0.2	0.2
93	BB-03-46	0	New UGA	4	9910	-0.263	-0.986				
93	BB-03-46	0	New UGA	5	8794	-0.261	-1.029				
93	BB-03-46	0	New UGA	6	7887	-0.274	-1.02				
93	BB-03-46	0	New UGA	7	6955	-0.41	-1.226				
93	BB-03-46	0	New UGA	8	6118	-0.67	-1.594				
93	BB-03-46	0	New UGA	9	5462	-0.681	-1.65				
93	BB-03-46	0	New UGA	10	4869	-0.679	-1.666				
93	BB-03-46	0	New UGA	11	4346	-0.663	-1.695				
93	BB-03-46	0	New UGA	12	3879	-0.651	-1.718				

93 BB-03-46 0	New UGA	13	3469	-0.64	-1.692	-0.5	-1.4	0.2	0.3
97 BB-03-47 0	New UGA	4	6826	-0.302	-1.203				
97 BB-03-47 0	New UGA	5	6054	-0.301	-1.283				
97 BB-03-47 0	New UGA	6	5432	-0.268	-1.268				
97 BB-03-47 0	New UGA	7	4792	-0.476	-1.565				
97 BB-03-47 0	New UGA	8	4222	-0.678	-1.871				
97 BB-03-47 0	New UGA	9	3771	-0.701	-1.832				
97 BB-03-47 0	New UGA	10	3367	-0.67	-1.91				
97 BB-03-47 0	New UGA	11	3006	-0.631	-1.926				
97 BB-03-47 0	New UGA	12	2685	-0.703	-1.989				
97 BB-03-47 0	New UGA	13	2399	-0.607	-2.024	-0.5	-1.7	0.2	0.3
96 BB-03-48 0	New UGA	4	9905	-0.353	-1.007				
96 BB-03-48 0	New UGA	5	8781	-0.28	-0.902				
96 BB-03-48 0	New UGA	6	7884	-0.203	-0.772				
96 BB-03-48 0	New UGA	7	7032	-0.258	-0.926				
96 BB-03-48 0	New UGA	8	6268	-0.244	-0.896				
96 BB-03-48 0	New UGA	9	5518	-0.361	-1.063				
96 BB-03-48 0	New UGA	10	4921	-0.371	-1.112				
96 BB-03-48 0	New UGA	11	4390	-0.313	-1.094				
96 BB-03-48 0	New UGA	12	3880	-0.414	-1.321				
96 BB-03-48 0	New UGA	13	3451	-0.452	-1.334	-0.3	-1.0	0.1	0.2
109 BB-03-49 0	New UGA	4	10852	-0.351	-0.849				
109 BB-03-49 0	New UGA	5	9621	-0.341	-0.837				
109 BB-03-49 0	New UGA	6	8522	-0.464	-1.093				
109 BB-03-49 0	New UGA	7	7623	-0.459	-1.086				
109 BB-03-49 0	New UGA	8	6717	-0.615	-1.357				
109 BB-03-49 0	New UGA	9	5967	-0.623	-1.403				
109 BB-03-49 0	New UGA	10	5319	-0.64	-1.37				
109 BB-03-49 0	New UGA	11	4745	-0.662	-1.418				
109 BB-03-49 0	New UGA	12	4224	-0.652	-1.512				
109 BB-03-49 0	New UGA	13	3764	-0.697	-1.472	-0.6	-1.2	0.1	0.3
78 BB-03-50 0	New UGA	4	10229	-0.262	-0.743				
78 BB-03-50 0	New UGA	5	9009	-0.253	-0.714				
78 BB-03-50 0	New UGA	6	8011	-0.287	-0.737				
78 BB-03-50 0	New UGA	7	6998	-0.419	-0.967				

78	BB-03-50	0	New UGA	8	6178	-0.411	-1.02				
78	BB-03-50	0	New UGA	9	5383	-0.673	-1.394				
78	BB-03-50	0	New UGA	10	4740	-0.659	-1.391				
78	BB-03-50	0	New UGA	11	4182	-0.666	-1.421				
78	BB-03-50	0	New UGA	12	3690	-0.616	-1.489				
78	BB-03-50	0	New UGA	13	3259	-0.665	-1.497	-0.5	-1.1	0.2	0.3
79	BB-03-51	0	New UGA	4	13687	-0.194	-0.375				
79	BB-03-51	0	New UGA	5	11898	-0.345	-0.585				
79	BB-03-51	0	New UGA	6	10537	-0.392	-0.62				
79	BB-03-51	0	New UGA	7	9200	-0.616	-0.99				
79	BB-03-51	0	New UGA	8	8103	-0.606	-1.028				
79	BB-03-51	0	New UGA	9	7135	-0.613	-1.094				
79	BB-03-51	0	New UGA	10	6285	-0.609	-1.075				
79	BB-03-51	0	New UGA	11	5540	-0.62	-1.116				
79	BB-03-51	0	New UGA	12	4880	-0.578	-1.12				
79	BB-03-51	0	New UGA	13	4301	-0.597	-1.168	-0.5	-0.9	0.2	0.3
108	BB-03-52	0	New UGA	4	7088	-0.053	-1.066				
108	BB-03-52	0	New UGA	5	6322	-0.147	-1.313				
108	BB-03-52	0	New UGA	6	5596	-0.303	-1.544				
108	BB-03-52	0	New UGA	7	5000	-0.327	-1.575				
108	BB-03-52	0	New UGA	8	4403	-0.565	-1.923				
108	BB-03-52	0	New UGA	9	3926	-0.551	-1.964				
108	BB-03-52	0	New UGA	10	3505	-0.548	-2.038				
108	BB-03-52	0	New UGA	11	3123	-0.543	-1.925				
108	BB-03-52	0	New UGA	12	2783	-0.549	-2.078				
108	BB-03-52	0	New UGA	13	2506	-0.512	-2.091	-0.4	-1.8	0.2	0.4
103	BB-03-53	0	New UGA	4	13134	-0.397	-0.441				
103	BB-03-53	0	New UGA	5	11633	-0.399	-0.482				
103	BB-03-53	0	New UGA	6	10258	-0.558	-0.697				
103	BB-03-53	0	New UGA	7	9011	-0.8	-1.047				
103	BB-03-53	0	New UGA	8	8011	-0.795	-1.148				
103	BB-03-53	0	New UGA	9	7107	-0.801	-1.146				
103	BB-03-53	0	New UGA	10	6320	-0.806	-1.147				
103	BB-03-53	0	New UGA	11	5618	-0.781	-1.205				
103	BB-03-53	0	New UGA	12	4996	-0.745	-1.194				

103	BB-03-53	0	New UGA	13	4442	-0.763	-1.196	-0.7	-1.0	0.2	0.3
135	BB-03-54	0	New UGA	4	12067	-0.841	-0.91				
135	BB-03-54	0	New UGA	5	10615	-1.015	-1.12				
135	BB-03-54	0	New UGA	6	9540	-1.03	-1.182				
135	BB-03-54	0	New UGA	7	8466	-1.237	-1.507				
135	BB-03-54	0	New UGA	8	7563	-1.278	-1.61				
135	BB-03-54	0	New UGA	9	6769	-1.261	-1.609				
135	BB-03-54	0	New UGA	10	6054	-1.277	-1.617				
135	BB-03-54	0	New UGA	11	5419	-1.282	-1.671				
135	BB-03-54	0	New UGA	12	4837	-1.259	-1.608				
135	BB-03-54	0	New UGA	13	4335	-1.241	-1.639	-1.2	-1.4	0.2	0.3
138	BB-03-55	0	New UGA	4	8507	-1.025	-1.668				
138	BB-03-55	0	New UGA	5	7604	-1.005	-1.612				
138	BB-03-55	0	New UGA	6	6859	-1.022	-1.696				
138	BB-03-55	0	New UGA	7	6112	-1.116	-1.867				
138	BB-03-55	0	New UGA	8	5477	-1.183	-1.968				
138	BB-03-55	0	New UGA	9	4911	-1.193	-1.974				
138	BB-03-55	0	New UGA	10	4410	-1.146	-1.989				
138	BB-03-55	0	New UGA	11	3938	-1.173	-2.039				
138	BB-03-55	0	New UGA	12	3542	-1.123	-2.056				
138	BB-03-55	0	New UGA	13	3172	-1.14	-2.027	-1.1	-1.9	0.1	0.2
136	BB-04-01	0	New UGA	4	11032	0.733	1.075				
136	BB-04-01	0	New UGA	5	9840	0.747	1.143				
136	BB-04-01	0	New UGA	6	8878	0.749	1.1				
136	BB-04-01	0	New UGA	7	7881	0.581	0.841				
136	BB-04-01	0	New UGA	8	7062	0.596	0.842				
136	BB-04-01	0	New UGA	9	6254	0.344	0.513				
136	BB-04-01	0	New UGA	10	5617	0.328	0.409				
136	BB-04-01	0	New UGA	11	5048	0.363	0.454				
136	BB-04-01	0	New UGA	12	4531	0.383	0.416				
136	BB-04-01	0	New UGA	13	4064	0.334	0.363	0.5	0.7	0.2	0.3
141	BB-04-02	0	New UGA	4	10766	1.958	1.238				
141	BB-04-02	0	New UGA	5	9449	1.764	0.912				
141	BB-04-02	0	New UGA	6	8497	1.742	0.854				
141	BB-04-02	0	New UGA	7	7623	1.719	0.874				

141	BB-04-02	0	New UGA	8	6844	1.793	0.958				
141	BB-04-02	0	New UGA	9	6095	1.731	0.833				
141	BB-04-02	0	New UGA	10	5367	1.64	0.551				
141	BB-04-02	0	New UGA	11	4790	1.55	0.429				
141	BB-04-02	0	New UGA	12	4286	1.566	0.41				
141	BB-04-02	0	New UGA	13	3834	1.553	0.411	1.7	0.7	0.1	0.3
137	BB-04-03	0	New UGA	4	8092	1.743	0.821				
137	BB-04-03	0	New UGA	5	7215	1.724	0.832				
137	BB-04-03	0	New UGA	6	6420	1.585	0.555				
137	BB-04-03	0	New UGA	7	5682	1.358	0.319				
137	BB-04-03	0	New UGA	8	5093	1.362	0.257				
137	BB-04-03	0	New UGA	9	4559	1.37	0.244				
137	BB-04-03	0	New UGA	10	4098	1.393	0.149				
137	BB-04-03	0	New UGA	11	3661	1.402	0.184				
137	BB-04-03	0	New UGA	12	3280	1.388	0.127				
137	BB-04-03	0	New UGA	13	2948	1.427	0.194	1.5	0.4	0.2	0.3
145	BB-04-04	0	New UGA	4	12534	1.052	1.487				
145	BB-04-04	0	New UGA	5	11225	1.036	1.455				
145	BB-04-04	0	New UGA	6	9957	0.75	0.948				
145	BB-04-04	0	New UGA	7	8925	0.755	0.944				
145	BB-04-04	0	New UGA	8	8005	0.741	0.847				
145	BB-04-04	0	New UGA	9	7148	0.751	0.864				
145	BB-04-04	0	New UGA	10	6400	0.807	0.898				
145	BB-04-04	0	New UGA	11	5676	0.681	0.761				
145	BB-04-04	0	New UGA	12	5034	0.549	0.532				
145	BB-04-04	0	New UGA	13	4501	0.55	0.544	0.8	0.9	0.2	0.3
142	BB-04-05	0	New UGA	4	7856	0.733	0.368				
142	BB-04-05	0	New UGA	5	6990	0.731	0.409				
142	BB-04-05	0	New UGA	6	6298	0.769	0.384				
142	BB-04-05	0	New UGA	7	5567	0.594	0.175				
142	BB-04-05	0	New UGA	8	4920	0.305	-0.283				
142	BB-04-05	0	New UGA	9	4402	0.311	-0.243				
142	BB-04-05	0	New UGA	10	3944	0.324	-0.323				
142	BB-04-05	0	New UGA	11	3530	0.281	-0.394				
142	BB-04-05	0	New UGA	12	3159	0.328	-0.439				

142	BB-04-05	0	New UGA	13	2826	0.333	-0.318	0.5	-0.1	0.2	0.4
144	BB-04-06	0	New UGA	4	8099	-0.128	0.121				
144	BB-04-06	0	New UGA	5	7216	-0.044	0.221				
144	BB-04-06	0	New UGA	6	6472	-0.121	0.069				
144	BB-04-06	0	New UGA	7	5665	-0.49	-0.459				
144	BB-04-06	0	New UGA	8	5035	-0.533	-0.539				
144	BB-04-06	0	New UGA	9	4479	-0.581	-0.68				
144	BB-04-06	0	New UGA	10	3996	-0.527	-0.625				
144	BB-04-06	0	New UGA	11	3565	-0.567	-0.635				
144	BB-04-06	0	New UGA	12	3189	-0.532	-0.649				
144	BB-04-06	0	New UGA	13	2849	-0.498	-0.633	-0.4	-0.4	0.2	0.4
140	BB-04-07	0	New UGA	4	7163	-0.129	-0.36				
140	BB-04-07	0	New UGA	5	6405	-0.099	-0.309				
140	BB-04-07	0	New UGA	6	5786	-0.083	-0.284				
140	BB-04-07	0	New UGA	7	5209	-0.094	-0.295				
140	BB-04-07	0	New UGA	8	4616	-0.278	-0.56				
140	BB-04-07	0	New UGA	9	4144	-0.238	-0.594				
140	BB-04-07	0	New UGA	10	3682	-0.451	-0.83				
140	BB-04-07	0	New UGA	11	3300	-0.398	-0.813				
140	BB-04-07	0	New UGA	12	2953	-0.454	-0.866				
140	BB-04-07	0	New UGA	13	2635	-0.374	-0.983	-0.3	-0.6	0.2	0.3
143	BB-04-08	0	New UGA	4	9188	0.134	-0.398				
143	BB-04-08	0	New UGA	5	8092	-0.004	-0.646				
143	BB-04-08	0	New UGA	6	7284	-0.008	-0.655				
143	BB-04-08	0	New UGA	7	6559	-0.003	-0.574				
143	BB-04-08	0	New UGA	8	5872	-0.038	-0.722				
143	BB-04-08	0	New UGA	9	5278	-0.011	-0.677				
143	BB-04-08	0	New UGA	10	4717	0.001	-0.776				
143	BB-04-08	0	New UGA	11	4241	-0.028	-0.823				
143	BB-04-08	0	New UGA	12	3794	-0.034	-0.903				
143	BB-04-08	0	New UGA	13	3392	0.007	-0.839	0.0	-0.7	0.0	0.1

13687

0.212946 0.364652

Row	Identifier 1		
85	B-03-12	0.4	0.0
66	BB-02-06	0.4	-0.2
71	BB-02-08	0.3	-0.2
56	BB-02-09	0.3	-0.2
70	BB-02-16	0.0	0.0
61	BB-02-17	-0.3	-0.7
62	BB-02-18	-0.6	-0.7
57	BB-02-19	-0.1	-0.6
55	BB-02-26	-0.7	0.1
60	BB-02-27	-0.9	-1.2
63	BB-02-27	0.5	-0.2
64	BB-02-28	-1.1	-0.5
76	BB-02-29	-1.0	-0.5
58	BB-02-36	-0.6	-0.8
69	BB-02-37	-0.7	-0.9
73	BB-02-38	-0.7	-0.8
68	BB-02-39	-0.5	-0.7
72	BB-02-46	-2.0	-0.9
65	BB-03-01	-1.4	0.4
74	BB-03-02	0.0	0.6
77	BB-03-03	0.9	0.2
112	BB-03-04	0.9	0.0
127	BB-03-05	0.8	0.0
116	BB-03-06	0.6	-0.3
129	BB-03-07	0.8	0.2
92	BB-03-08	0.5	0.1
98	BB-03-09	0.7	0.0
80	BB-03-10	0.7	-0.4
81	BB-03-11	0.5	-0.1
104	BB-03-13	0.0	-0.4
111	BB-03-14	0.6	-0.4
130	BB-03-15	-0.2	-1.0
113	BB-03-16	-0.2	-0.8
118	BB-03-17	-0.3	-1.1
90	BB-03-18	-0.5	-1.2
121	BB-03-19	-0.5	-1.2
95	BB-03-20	-0.6	-1.1
89	BB-03-21	-0.8	-1.3
86	BB-03-22	-0.6	-1.0
102	BB-03-23	-0.7	-1.7
114	BB-03-24	-0.6	-1.2
134	BB-03-25	-0.8	-1.8
132	BB-03-26	-0.7	-2.1
128	BB-03-27	-0.8	-1.6
101	BB-03-28	-0.8	-1.0
110	BB-03-29	-1.0	-2.5
105	BB-03-30	-1.1	-1.4
100	BB-03-31	-1.0	-1.3

87 BB-03-32	-1.0	-1.8
82 BB-03-33	-1.0	-1.6
125 BB-03-34	-1.0	-1.5
119 BB-03-35	-0.9	-1.7
133 BB-03-36	-1.0	-2.4
117 BB-03-37	-1.0	-2.6
124 BB-03-38	-1.0	-1.9
120 BB-03-39	-0.9	-1.5
106 BB-03-40	-0.9	-2.4
88 BB-03-41	-0.9	-2.3
94 BB-03-42	-0.7	-1.8
84 BB-03-43	-0.6	-1.6
126 BB-03-44	-0.5	-1.9
122 BB-03-45	-0.6	-1.4
93 BB-03-46	-0.5	-1.4
97 BB-03-47	-0.5	-1.7
96 BB-03-48	-0.3	-1.0
109 BB-03-49	-0.6	-1.2
78 BB-03-50	-0.5	-1.1
79 BB-03-51	-0.5	-0.9
108 BB-03-52	-0.4	-1.8
103 BB-03-53	-0.7	-1.0
135 BB-03-54	-1.2	-1.4
138 BB-03-55	-1.1	-1.9
136 BB-04-01	0.5	0.7
141 BB-04-02	1.7	0.7
137 BB-04-03	1.5	0.4
145 BB-04-04	0.8	0.9
142 BB-04-05	0.5	-0.1
144 BB-04-06	-0.4	-0.4
140 BB-04-07	-0.3	-0.6
143 BB-04-08	0.0	-0.7

85 B-03-12	0.4	0.0	1.0	-0.1
66 BB-02-06	0.4	-0.2	1.0	-0.2
71 BB-02-08	0.3	-0.2	0.9	-0.2
56 BB-02-09	0.3	-0.2	0.9	-0.2
70 BB-02-16	0.0	0.0	0.6	0.0
61 BB-02-17	-0.3	-0.7	0.3	-0.7
62 BB-02-18	-0.6	-0.7	0.0	-0.7
57 BB-02-19	-0.1	-0.6	0.5	-0.6
55 BB-02-26	-0.7	0.1	-0.1	0.1
60 BB-02-27	-0.9	-1.2	-0.3	-1.2
63 BB-02-27	0.5	-0.2	1.1	-0.2
64 BB-02-28	-1.1	-0.5	-0.5	-0.6
76 BB-02-29	-1.0	-0.5	-0.4	-0.5
58 BB-02-36	-0.6	-0.8	0.0	-0.8
69 BB-02-37	-0.7	-0.9	-0.1	-0.9
73 BB-02-38	-0.7	-0.8	-0.1	-0.8
68 BB-02-39	-0.5	-0.7	0.1	-0.7
72 BB-02-46	-2.0	-0.9	-1.4	-0.9
65 BB-03-01	-1.4	0.4	-0.8	0.3
74 BB-03-02	0.0	0.6	0.6	0.5
77 BB-03-03	0.9	0.2	1.5	0.1
112 BB-03-04	0.9	0.0	1.5	0.0
127 BB-03-05	0.8	0.0	1.4	0.0
116 BB-03-06	0.6	-0.3	1.2	-0.3
129 BB-03-07	0.8	0.2	1.4	0.1
92 BB-03-08	0.5	0.1	1.1	0.0
98 BB-03-09	0.7	0.0	1.3	0.0
80 BB-03-10	0.7	-0.4	1.3	-0.4
81 BB-03-11	0.5	-0.1	1.1	-0.1
104 BB-03-13	0.0	-0.4	0.6	-0.5
111 BB-03-14	0.6	-0.4	1.2	-0.4
130 BB-03-15	-0.2	-1.0	0.4	-1.0
113 BB-03-16	-0.2	-0.8	0.4	-0.8
118 BB-03-17	-0.3	-1.1	0.2	-1.2
90 BB-03-18	-0.5	-1.2	0.1	-1.2
121 BB-03-19	-0.5	-1.2	0.1	-1.2
95 BB-03-20	-0.6	-1.1	0.0	-1.1
89 BB-03-21	-0.8	-1.3	-0.2	-1.3
86 BB-03-22	-0.6	-1.0	0.0	-1.0
102 BB-03-23	-0.7	-1.7	-0.1	-1.7
114 BB-03-24	-0.6	-1.2	0.0	-1.2
134 BB-03-25	-0.8	-1.8	-0.2	-1.8
132 BB-03-26	-0.7	-2.1	-0.1	-2.1
128 BB-03-27	-0.8	-1.6	-0.2	-1.6
101 BB-03-28	-0.8	-1.0	-0.2	-1.0
110 BB-03-29	-1.0	-2.5	-0.4	-2.5
105 BB-03-30	-1.1	-1.4	-0.5	-1.5
100 BB-03-31	-1.0	-1.3	-0.4	-1.3
87 BB-03-32	-1.0	-1.8	-0.4	-1.8

82 BB-03-33	-1.0	-1.6	-0.4	-1.6
125 BB-03-34	-1.0	-1.5	-0.4	-1.5
119 BB-03-35	-0.9	-1.7	-0.3	-1.7
133 BB-03-36	-1.0	-2.4	-0.4	-2.4
117 BB-03-37	-1.0	-2.6	-0.4	-2.6
124 BB-03-38	-1.0	-1.9	-0.4	-1.9
120 BB-03-39	-0.9	-1.5	-0.3	-1.5
106 BB-03-40	-0.9	-2.4	-0.3	-2.4
88 BB-03-41	-0.9	-2.3	-0.3	-2.3
94 BB-03-42	-0.7	-1.8	-0.1	-1.8
84 BB-03-43	-0.6	-1.6	0.0	-1.6
126 BB-03-44	-0.5	-1.9	0.1	-1.9
122 BB-03-45	-0.6	-1.4	0.0	-1.5
93 BB-03-46	-0.5	-1.4	0.1	-1.4
97 BB-03-47	-0.5	-1.7	0.1	-1.7
96 BB-03-48	-0.3	-1.0	0.3	-1.1
109 BB-03-49	-0.6	-1.2	0.0	-1.3
78 BB-03-50	-0.5	-1.1	0.1	-1.2
79 BB-03-51	-0.5	-0.9	0.1	-0.9
108 BB-03-52	-0.4	-1.8	0.2	-1.8
103 BB-03-53	-0.7	-1.0	-0.1	-1.0
135 BB-03-54	-1.2	-1.4	-0.6	-1.5
138 BB-03-55	-1.1	-1.9	-0.5	-1.9
136 BB-04-01	0.5	0.7	1.1	0.7
141 BB-04-02	1.7	0.7	2.3	0.7
137 BB-04-03	1.5	0.4	2.1	0.3
145 BB-04-04	0.8	0.9	1.4	0.9
142 BB-04-05	0.5	-0.1	1.1	-0.1
144 BB-04-06	-0.4	-0.4	0.2	-0.4
140 BB-04-07	-0.3	-0.6	0.3	-0.6
143 BB-04-08	0.0	-0.7	0.6	-0.7

Sample Name	$\delta^{13}\text{C}$ (‰ VPDB)	$\delta^{18}\text{O}$ (‰ VPDB)	Notes
BB-04-09	-0.1	0.0	Measured on Delta V Plus at 50 oC
BB-04-10	-0.3	-0.5	Measured on July 11, 2024
BB-04-11	-0.1	0.6	
BB-04-12	-0.2	0.4	
BB-04-13	-0.3	0.3	
BB-04-14	-0.1	0.4	
BB-04-15	0.0	0.5	
BB-04-16	-0.1	0.6	
BB-04-17	-0.1	0.4	
BB-04-18	0.0	0.4	
BB-04-19	-0.1	0.5	
BB-04-20	-0.4	0.3	
BB-04-21	0.1	0.6	
BB-04-22	-0.4	0.1	
BB-04-23	-0.4	0.5	
BB-04-24	-0.3	0.2	
BB-04-25	-0.3	0.2	
BB-04-26	-0.4	0.3	
BB-04-27	-0.4	0.2	
BB-04-28	-0.8	0.2	
BB-04-29	-0.7	0.0	
BB-04-30	-0.5	-0.2	
BB-04-31	0.1	-0.2	
BB-04-32	-0.5	0.0	
BB-04-33	-0.8	-0.1	
BB-05-01	0.0	0.5	
BB-05-02	0.6	0.8	
BB-05-03	1.5	1.4	
BB-05-04	1.7	1.4	
BB-05-05	1.7	1.1	
BB-05-06	0.8	0.5	
BB-05-07	0.6	0.3	
BB-05-08	0.5	0.5	

BB-05-09	1.0	0.8
BB-05-10	0.4	0.4
BB-05-11	0.4	0.4
BB-05-12	0.1	0.3
BB-05-13	-0.2	0.1
BB-05-14	-0.1	0.0
BB-05-15	0.1	0.3
BB-05-16	0.2	0.3
BB-05-17	-0.1	0.3
BB-05-18	0.0	0.6
BB-05-19	0.1	0.5
BB-05-20	0.2	0.8
BB-05-21	0.1	0.3
BB-05-22	0.1	0.7
BB-05-23	0.3	0.3
BB-05-24	0.0	0.3
BB-05-25	0.2	0.1
BB-05-26	0.2	0.6
BB-05-27	0.3	0.3
BB-05-28	0.1	0.2
BB-05-29	0.2	0.2
BB-05-30	0.1	0.3
BB-05-31	-0.3	0.0
BB-05-32	-0.2	-0.3
BB-05-33	-0.4	-0.4
WI-01-01	2.3	1.8
WI-01-02	2.6	1.7
WI-01-03	2.5	2.2
WI-01-04	2.6	2.1
WI-01-05	2.2	1.9
WI-01-06		Sample needle clogged, will repeat sample at no charge
WI-01-07	1.6	1.5
WI-01-08	1.7	2.0
WI-01-09	0.9	0.7

WI-01-10			Sample needle clogged, will repeat sample at no charge
WI-01-11	1.8	1.7	
WI-01-12			Sample needle clogged, will repeat sample at no charge
WI-01-13	0.4	1.0	
WI-01-14	0.6	0.8	
WI-01-15			Sample needle clogged, will repeat sample at no charge
WI-01-16	0.7	1.3	
WI-01-17	0.5	1.0	
WI-01-18	0.9	1.3	
WI-01-19	0.5	0.9	
WI-01-20	0.5	1.7	
WI-01-21			Sample needle clogged, will repeat sample at no charge
WI-01-22	0.6	1.2	

Row	Identifier 1		
52	IAEA-603-1	2.5	-2.5
53	IAEA-603-2	2.4	-2.8
54	IAEA-603-3	2.3	-3.6
59	IAEA-603-4	2.3	-2.8
67	IAEA-603-5	2.3	-3.0
75	IAEA-603-6	2.3	-2.9
83	IAEA-603-7	2.3	-3.0
91	IAEA-603-8	2.3	-2.9
99	IAEA-603-9	2.3	-2.8
107	IAEA-603-10	2.4	-2.8
115	IAEA-603-11	2.3	-3.8
123	IAEA-603-12	2.4	-4.3
131	IAEA-603-13	2.8	-2.4
139	IAEA-603-14	2.8	-3.6
52	IAEA-603-1	2.5	-2.5
53	IAEA-603-2	2.4	-2.8
54	IAEA-603-3	2.3	-3.6
59	IAEA-603-4	2.3	-2.8
67	IAEA-603-5	2.3	-3.0
75	IAEA-603-6	2.3	-2.9
83	IAEA-603-7	2.3	-3.0
91	IAEA-603-8	2.3	-2.9
99	IAEA-603-9	2.3	-2.8
107	IAEA-603-10	2.4	-2.8
115	IAEA-603-11	2.3	-3.8
123	IAEA-603-12	2.4	
131	IAEA-603-13	2.8	-2.4
139	IAEA-603-14	2.8	-3.6
Average		2.4	-3.0
Std Dev		0.17	0.43
Accepted		2.46	-2.37
Correction		0.060	0.624
Measured on Delta V Plus at 50 oC			
Measured on July 11, 2024			

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O
28				1	10937		-0.185	-0.346
28				2	11218		0	0
28				3	11253		0.132	0.211
28				4	11211		0.132	0.182
28				5	11212		0.123	0.163
28				6	11190		0.124	0.172
28				7	11195		0.106	0.157
28				8	11213		0.104	0.135
28				9	11173		0.091	0.12
28				10	11060		-0.031	-0.074
29				1	10834		0.034	0.012
29				2	10865		0	0
29				3	10873		0.025	0.007
29				4	11140		0.206	0.313
29				5	11161		0.398	0.591
29				6	11160		0.38	0.57
29				7	11160		0.365	0.561
29				8	11143		0.362	0.548
29				9	11170		0.35	0.532
29				10	11149		0.346	0.541
30				1	10885		0.047	0.057
30				2	10896		0	0
30				3	10879		-0.014	-0.002
30				4	10874		-0.013	-0.005
30				5	10872		-0.005	0.008
30				6	11185		0.217	0.29
30				7	11186		0.464	0.629
30				8	11181		0.471	0.63
30				9	11156		0.441	0.608
30				10	11158		0.43	0.575
31				1	11140		0.044	0.035
31				2	11150		0	0
31				3	11023		-0.148	-0.201
31				4	10879		-0.362	-0.486
31				5	10894		-0.364	-0.512
31				6	10899		-0.38	-0.533
31				7	10854		-0.361	-0.527
31				8	10899		-0.365	-0.522
31				9	11191		-0.131	-0.162
31				10	11161		0.036	0.073
32				1	11140		0.039	0.027
32				2	11158		0	0
32				3	11140		-0.013	-0.025
32				4	11127		-0.009	-0.034
32				5	11128		-0.022	-0.04
32				6	11027		-0.198	-0.295
32				7	10878		-0.443	-0.619
32				8	10857		-0.462	-0.626

32	9	10878	-0.464	-0.641
32	10	10855	-0.451	-0.638
33	1	11164	0.075	0.073
33	2	11138	0	0
33	3	11153	0.006	-0.012
33	4	11130	-0.007	-0.042
33	5	11112	0.021	-0.076
33	6	11135	0.045	-0.131
33	7	11153	0.064	-0.183
33	8	11140	0.081	-0.177
33	9	11037	-0.028	-0.427
33	10	10868	-0.235	-0.749
34	1	10874	0.043	0.019
34	2	10873	0	0
34	3	11168	0.183	0.288
34	4	11162	0.366	0.549
34	5	11152	0.371	0.493
34	6	11142	0.346	0.449
34	7	11123	0.344	0.436
34	8	11114	0.348	0.417
34	9	11109	0.342	0.435
34	10	11126	0.335	0.41
35	1	10903	0.066	0.07
35	2	10854	0	0
35	3	10841	-0.017	-0.003
35	4	10864	-0.033	-0.033
35	5	10853	-0.031	0.012
35	6	10888	-0.017	0.017
35	7	11155	0.283	0.404
35	8	11147	0.463	0.669
35	9	11142	0.444	0.642
35	10	11129	0.452	0.669
36	1	11125	0.021	0.032
36	2	11137	0	0
36	3	11117	-0.014	-0.03
36	4	10998	-0.186	-0.253
36	5	10863	-0.402	-0.529
36	6	10880	-0.468	-0.605
36	7	10857	-0.464	-0.598
36	8	10869	-0.468	-0.613
36	9	10874	-0.467	-0.597
36	10	11139	-0.22	-0.248
37	1	11138	0.061	0.047
37	2	11120	0	0
37	3	11106	-0.003	-0.017
37	4	11108	-0.003	-0.047
37	5	11108	-0.007	-0.032
37	6	11097	-0.01	-0.045
37	7	10976	-0.119	-0.245

37	8	10874	-0.277	-0.503
37	9	10855	-0.289	-0.528
37	10	10846	-0.294	-0.537
38	1	11134	-0.108	-0.175
38	2	11184	0	0
38	3	11141	-0.012	-0.035
38	4	11126	-0.034	-0.053
38	5	11111	-0.045	-0.057
38	6	11123	-0.049	-0.086
38	7	11116	-0.053	-0.085
38	8	11118	-0.057	-0.084
38	9	11112	-0.052	-0.097
38	10	10968	-0.19	-0.314
39 2 hours	1	10837	0.033	0.012
39 2 hours	2	10835	0	0
39 2 hours	3	10867	-0.018	-0.004
39 2 hours	4	11139	0.194	0.304
39 2 hours	5	11130	0.344	0.553
39 2 hours	6	11140	0.332	0.536
39 2 hours	7	11136	0.322	0.497
39 2 hours	8	11108	0.293	0.479
39 2 hours	9	11096	0.29	0.487
39 2 hours	10	11103	0.289	0.479
40 1 hour 50 minutes	1	10984	0.121	0.179
40 1 hour 50 minutes	2	11002	0	0
40 1 hour 50 minutes	3	10983	0.077	0.119
40 1 hour 50 minutes	4	10986	0.003	0.012
40 1 hour 50 minutes	5	10993	0.079	0.135
40 1 hour 50 minutes	6	11164	0.147	0.288
40 1 hour 50 minutes	7	11160	0.255	0.381
40 1 hour 50 minutes	8	11132	0.234	0.376
40 1 hour 50 minutes	9	11139	0.212	0.329
40 1 hour 50 minutes	10	11117	0.189	0.321
41 1 hour 40 minutes	1	11107	0.007	0.013
41 1 hour 40 minutes	2	11111	0	0
41 1 hour 40 minutes	3	10858	-0.449	-0.544
41 1 hour 40 minutes	4	10844	-0.452	-0.569
41 1 hour 40 minutes	5	10857	-0.452	-0.579
41 1 hour 40 minutes	6	10847	-0.465	-0.565
41 1 hour 40 minutes	7	10883	-0.453	-0.556
41 1 hour 40 minutes	8	11123	-0.28	-0.33
41 1 hour 40 minutes	9	11135	0.013	0.045
41 1 hour 40 minutes	10	11128	-0.018	0.034
42 1 hour 30 minutes	1	11109	0.053	0.057
42 1 hour 30 minutes	2	11113	0	0
42 1 hour 30 minutes	3	11091	-0.017	-0.023
42 1 hour 30 minutes	4	10987	-0.127	-0.22
42 1 hour 30 minutes	5	10975	-0.131	-0.213
42 1 hour 30 minutes	6	10996	-0.13	-0.197

42 1 hour 30 minutes	7	10983	-0.123	-0.207
42 1 hour 30 minutes	8	11013	-0.134	-0.174
42 1 hour 30 minutes	9	11006	-0.143	-0.182
42 1 hour 30 minutes	10	11127	-0.03	0.002
43 1 hour 20 minutes	1	11133	0.056	0.056
43 1 hour 20 minutes	2	11118	0	0
43 1 hour 20 minutes	3	11105	-0.007	-0.015
43 1 hour 20 minutes	4	11105	-0.008	-0.015
43 1 hour 20 minutes	5	11099	-0.04	-0.013
43 1 hour 20 minutes	6	11105	-0.045	-0.05
43 1 hour 20 minutes	7	10993	-0.16	-0.223
43 1 hour 20 minutes	8	10995	-0.146	-0.198
43 1 hour 20 minutes	9	10986	-0.161	-0.201
43 1 hour 20 minutes	10	10987	-0.176	-0.222
44 1 hour 10 minutes	1	11133	0.002	-0.009
44 1 hour 10 minutes	2	11161	0	0
44 1 hour 10 minutes	3	11148	-0.006	-0.011
44 1 hour 10 minutes	4	11107	-0.03	-0.03
44 1 hour 10 minutes	5	11095	-0.046	-0.033
44 1 hour 10 minutes	6	11084	-0.042	-0.038
44 1 hour 10 minutes	7	11092	-0.049	-0.074
44 1 hour 10 minutes	8	11109	-0.047	-0.058
44 1 hour 10 minutes	9	10832	-0.417	-0.566
44 1 hour 10 minutes	10	10822	-0.414	-0.566
45 1 hour	1	10843	0.024	0.014
45 1 hour	2	10904	0	0
45 1 hour	3	11090	0.23	0.38
45 1 hour	4	11126	0.313	0.517
45 1 hour	5	11096	0.292	0.51
45 1 hour	6	11091	0.281	0.493
45 1 hour	7	11078	0.264	0.453
45 1 hour	8	11079	0.273	0.446
45 1 hour	9	11067	0.256	0.436
45 1 hour	10	11065	0.256	0.461
46 50 min	1	10809	0.056	0.047
46 50 min	2	10821	0	0
46 50 min	3	10822	-0.013	-0.003
46 50 min	4	10824	-0.011	0.003
46 50 min	5	10852	0.007	0.037
46 50 min	6	11092	0.27	0.398
46 50 min	7	11100	0.447	0.614
46 50 min	8	11117	0.44	0.589
46 50 min	9	11118	0.387	0.559
46 50 min	10	11055	0.394	0.587
47 40 min	1	11070	0.044	0.058
47 40 min	2	11070	0	0
47 40 min	3	10959	-0.193	-0.25
47 40 min	4	10843	-0.348	-0.467
47 40 min	5	10817	-0.382	-0.505

47 40 min		6	10839	-0.381	-0.499
47 40 min		7	10844	-0.357	-0.449
47 40 min		8	10851	-0.359	-0.462
47 40 min		9	11123	-0.086	-0.07
47 40 min		10	11126	0.04	0.119
48 30 min		1	11097	0.045	0.025
48 30 min		2	11095	0	0
48 30 min		3	11074	-0.008	-0.011
48 30 min		4	11084	-0.022	-0.038
48 30 min		5	11074	-0.012	-0.021
48 30 min		6	10958	-0.209	-0.296
48 30 min		7	10918	-0.353	-0.462
48 30 min		8	10858	-0.403	-0.552
48 30 min		9	10830	-0.404	-0.576
48 30 min		10	10847	-0.406	-0.582
49 20 min		1	11126	0.03	0.068
49 20 min		2	11125	0	0
49 20 min		3	11095	-0.056	-0.043
49 20 min		4	11091	-0.062	-0.074
49 20 min		5	11091	-0.062	-0.089
49 20 min		6	11087	-0.063	-0.094
49 20 min		7	11091	-0.054	-0.091
49 20 min		8	10976	-0.29	-0.405
49 20 min		9	10966	-0.24	-0.338
49 20 min		10	10864	-0.457	-0.628
50 10 min		1	10853	-0.156	-0.299
50 10 min		2	11134	0	0
50 10 min		3	11106	0.119	0.164
50 10 min		4	11090	0.106	0.14
50 10 min		5	11106	0.111	0.142
50 10 min		6	11101	0.106	0.135
50 10 min		7	11103	0.107	0.136
50 10 min		8	11099	0.096	0.129
50 10 min		9	11103	0.096	0.114
50 10 min		10	11115	0.068	0.091
51 Blank	New UGA	1	10828	-39.486	-26.285
51 Blank	New UGA	2	10858	-39.546	-26.328
51 Blank	New UGA	3	10863	-39.54	-26.32
51 Blank	New UGA	4	57	-11.248	-17.907
51 Blank	New UGA	5	51	-11.329	-16.699
51 Blank	New UGA	6	11148	-39.54	-26.32
52 IAEA-603 89	New UGA	1	11122	-39.257	-25.97
52 IAEA-603 89	New UGA	2	10949	-39.626	-26.458
52 IAEA-603 89	New UGA	3	10958	-39.54	-26.32
52 IAEA-603 89	New UGA	4	10834	2.379	-2.589
52 IAEA-603 89	New UGA	5	9529	2.344	-2.65
52 IAEA-603 89	New UGA	6	8487	2.347	-2.693
52 IAEA-603 89	New UGA	7	7484	2.312	-2.717
52 IAEA-603 89	New UGA	8	6602	2.258	-2.788

52	IAEA-603 89	New UGA	9	5804	2.309	-2.603
52	IAEA-603 89	New UGA	10	5237	2.683	-2.242
52	IAEA-603 89	New UGA	11	4596	2.671	-2.298
52	IAEA-603 89	New UGA	12	4035	2.662	-2.313
52	IAEA-603 89	New UGA	13	3542	2.655	-2.38
52	IAEA-603 89	New UGA	14	11141	-39.54	-26.32
53	IAEA-603 101	New UGA	1	11109	-39.145	-25.828
53	IAEA-603 101	New UGA	2	11096	-39.265	-25.925
53	IAEA-603 101	New UGA	3	10953	-39.54	-26.32
53	IAEA-603 101	New UGA	4	11105	2.482	-2.481
53	IAEA-603 101	New UGA	5	9664	2.352	-2.745
53	IAEA-603 101	New UGA	6	8555	2.312	-2.836
53	IAEA-603 101	New UGA	7	7531	2.286	-2.901
53	IAEA-603 101	New UGA	8	6604	2.254	-2.941
53	IAEA-603 101	New UGA	9	5788	2.253	-3.004
53	IAEA-603 101	New UGA	10	5075	2.21	-3.059
53	IAEA-603 101	New UGA	11	4446	2.211	-2.925
53	IAEA-603 101	New UGA	12	4018	2.677	-2.469
53	IAEA-603 101	New UGA	13	3516	2.67	-2.51
53	IAEA-603 101	New UGA	14	11131	-39.54	-26.32
54	IAEA-603 59	New UGA	1	11115	-39.387	-26.165
54	IAEA-603 59	New UGA	2	11108	-39.502	-26.263
54	IAEA-603 59	New UGA	3	11085	-39.54	-26.32
54	IAEA-603 59	New UGA	4	5494	2.225	-3.638
54	IAEA-603 59	New UGA	5	4836	2.241	-3.591
54	IAEA-603 59	New UGA	6	4294	2.243	-3.616
54	IAEA-603 59	New UGA	7	3796	2.216	-3.66
54	IAEA-603 59	New UGA	8	3347	2.243	-3.686
54	IAEA-603 59	New UGA	9	2950	2.243	-3.748
54	IAEA-603 59	New UGA	10	2597	2.231	-3.68
54	IAEA-603 59	New UGA	11	2288	2.22	-3.79
54	IAEA-603 59	New UGA	12	2014	2.24	-3.622
54	IAEA-603 59	New UGA	13	1826	2.618	-3.142
54	IAEA-603 59	New UGA	14	11117	-39.54	-26.32
55	BB-04-14 0	New UGA	1	11089	-39.385	-26.194
55	BB-04-14 0	New UGA	2	11067	-39.486	-26.285
55	BB-04-14 0	New UGA	3	11079	-39.54	-26.32
55	BB-04-14 0	New UGA	4	8153	0.133	0.264
55	BB-04-14 0	New UGA	5	7131	0.131	0.348
55	BB-04-14 0	New UGA	6	6243	0.008	0.11
55	BB-04-14 0	New UGA	7	5430	-0.249	-0.278
55	BB-04-14 0	New UGA	8	4767	-0.262	-0.297
55	BB-04-14 0	New UGA	9	4182	-0.242	-0.328
55	BB-04-14 0	New UGA	10	3670	-0.202	-0.304
55	BB-04-14 0	New UGA	11	3219	-0.214	-0.393
55	BB-04-14 0	New UGA	12	2824	-0.222	-0.498
55	BB-04-14 0	New UGA	13	2476	-0.169	-0.409
55	BB-04-14 0	New UGA	14	11145	-39.54	-26.32
56	BB-04-17 0	New UGA	1	11112	-39.379	-26.161

56	BB-04-17	0	New UGA	2	11107	-39.493	-26.288
56	BB-04-17	0	New UGA	3	11101	-39.54	-26.32
56	BB-04-17	0	New UGA	4	9555	0.195	0.252
56	BB-04-17	0	New UGA	5	8353	0.204	0.288
56	BB-04-17	0	New UGA	6	7301	0.049	-0.007
56	BB-04-17	0	New UGA	7	6345	-0.221	-0.338
56	BB-04-17	0	New UGA	8	5557	-0.249	-0.362
56	BB-04-17	0	New UGA	9	4870	-0.21	-0.377
56	BB-04-17	0	New UGA	10	4266	-0.253	-0.378
56	BB-04-17	0	New UGA	11	3728	-0.211	-0.457
56	BB-04-17	0	New UGA	12	3264	-0.215	-0.421
56	BB-04-17	0	New UGA	13	2862	-0.199	-0.518
56	BB-04-17	0	New UGA	14	11142	-39.54	-26.32
57	BB-04-22	0	New UGA	1	11094	-39.388	-26.151
57	BB-04-22	0	New UGA	2	11088	-39.504	-26.286
57	BB-04-22	0	New UGA	3	11087	-39.54	-26.32
57	BB-04-22	0	New UGA	4	6802	-0.196	-0.066
57	BB-04-22	0	New UGA	5	5937	-0.186	-0.056
57	BB-04-22	0	New UGA	6	5190	-0.311	-0.234
57	BB-04-22	0	New UGA	7	4562	-0.341	-0.285
57	BB-04-22	0	New UGA	8	3957	-0.588	-0.686
57	BB-04-22	0	New UGA	9	3473	-0.562	-0.724
57	BB-04-22	0	New UGA	10	3045	-0.527	-0.682
57	BB-04-22	0	New UGA	11	2670	-0.515	-0.778
57	BB-04-22	0	New UGA	12	2343	-0.498	-0.739
57	BB-04-22	0	New UGA	13	2058	-0.495	-0.797
57	BB-04-22	0	New UGA	14	11123	-39.54	-26.32
58	BB-04-15	0	New UGA	1	11076	-39.377	-26.171
58	BB-04-15	0	New UGA	2	11074	-39.504	-26.291
58	BB-04-15	0	New UGA	3	11085	-39.54	-26.32
58	BB-04-15	0	New UGA	4	10949	0.224	0.407
58	BB-04-15	0	New UGA	5	9577	0.235	0.418
58	BB-04-15	0	New UGA	6	8363	0.044	0.144
58	BB-04-15	0	New UGA	7	7259	-0.217	-0.259
58	BB-04-15	0	New UGA	8	6363	-0.208	-0.203
58	BB-04-15	0	New UGA	9	5580	-0.203	-0.293
58	BB-04-15	0	New UGA	10	4886	-0.187	-0.292
58	BB-04-15	0	New UGA	11	4276	-0.229	-0.3
58	BB-04-15	0	New UGA	12	3745	-0.189	-0.426
58	BB-04-15	0	New UGA	13	3288	-0.152	-0.409
58	BB-04-15	0	New UGA	14	11111	-39.54	-26.32
59	IAEA-603	76	New UGA	1	11096	-39.38	-26.154
59	IAEA-603	76	New UGA	2	11071	-39.508	-26.308
59	IAEA-603	76	New UGA	3	11059	-39.54	-26.32
59	IAEA-603	76	New UGA	4	8769	2.583	-2.416
59	IAEA-603	76	New UGA	5	7649	2.56	-2.443
59	IAEA-603	76	New UGA	6	6754	2.554	-2.4
59	IAEA-603	76	New UGA	7	5868	2.378	-2.71
59	IAEA-603	76	New UGA	8	5083	2.193	-3.024

59	IAEA-603 76	New UGA	9	4451	2.204	-3.005
59	IAEA-603 76	New UGA	10	3909	2.24	-3.036
59	IAEA-603 76	New UGA	11	3426	2.272	-3.081
59	IAEA-603 76	New UGA	12	3003	2.238	-3.032
59	IAEA-603 76	New UGA	13	2634	2.266	-3.135
59	IAEA-603 76	New UGA	14	11097	-39.54	-26.32
60	BB-04-27 0	New UGA	1	11076	-39.402	-26.176
60	BB-04-27 0	New UGA	2	11062	-39.501	-26.281
60	BB-04-27 0	New UGA	3	11046	-39.54	-26.32
60	BB-04-27 0	New UGA	4	9919	-0.122	0.373
60	BB-04-27 0	New UGA	5	8623	-0.368	-0.238
60	BB-04-27 0	New UGA	6	7613	-0.396	-0.222
60	BB-04-27 0	New UGA	7	6607	-0.589	-0.546
60	BB-04-27 0	New UGA	8	5794	-0.612	-0.512
60	BB-04-27 0	New UGA	9	5077	-0.591	-0.517
60	BB-04-27 0	New UGA	10	4448	-0.611	-0.591
60	BB-04-27 0	New UGA	11	3896	-0.585	-0.579
60	BB-04-27 0	New UGA	12	3409	-0.594	-0.574
60	BB-04-27 0	New UGA	13	2988	-0.595	-0.63
60	BB-04-27 0	New UGA	14	11135	-39.54	-26.32
61	BB-04-32 0	New UGA	1	11061	-39.379	-26.16
61	BB-04-32 0	New UGA	2	11053	-39.494	-26.292
61	BB-04-32 0	New UGA	3	11044	-39.54	-26.32
61	BB-04-32 0	New UGA	4	7926	-0.302	-0.283
61	BB-04-32 0	New UGA	5	6864	-0.302	-0.242
61	BB-04-32 0	New UGA	6	6040	-0.295	-0.177
61	BB-04-32 0	New UGA	7	5241	-0.434	-0.455
61	BB-04-32 0	New UGA	8	4596	-0.471	-0.567
61	BB-04-32 0	New UGA	9	3981	-0.72	-0.879
61	BB-04-32 0	New UGA	10	3494	-0.656	-0.867
61	BB-04-32 0	New UGA	11	3059	-0.687	-0.947
61	BB-04-32 0	New UGA	12	2679	-0.646	-0.996
61	BB-04-32 0	New UGA	13	2350	-0.666	-0.97
61	BB-04-32 0	New UGA	14	11114	-39.54	-26.32
62	BB-04-09 0	New UGA	1	11081	-39.396	-26.187
62	BB-04-09 0	New UGA	2	11058	-39.513	-26.322
62	BB-04-09 0	New UGA	3	11044	-39.54	-26.32
62	BB-04-09 0	New UGA	4	7211	-0.241	-0.643
62	BB-04-09 0	New UGA	5	6334	-0.248	-0.618
62	BB-04-09 0	New UGA	6	5624	-0.208	-0.602
62	BB-04-09 0	New UGA	7	4966	-0.237	-0.693
62	BB-04-09 0	New UGA	8	4370	-0.22	-0.614
62	BB-04-09 0	New UGA	9	3859	-0.174	-0.672
62	BB-04-09 0	New UGA	10	3390	-0.217	-0.761
62	BB-04-09 0	New UGA	11	2980	-0.192	-0.715
62	BB-04-09 0	New UGA	12	2621	-0.192	-0.71
62	BB-04-09 0	New UGA	13	2332	0.016	-0.479
62	BB-04-09 0	New UGA	14	11084	-39.54	-26.32
63	BB-04-18 0	New UGA	1	11053	-39.402	-26.178

63	BB-04-18	0	New UGA	2	11068	-39.511	-26.277
63	BB-04-18	0	New UGA	3	11060	-39.54	-26.32
63	BB-04-18	0	New UGA	4	13671	0.28	0.26
63	BB-04-18	0	New UGA	5	11826	0.16	0.024
63	BB-04-18	0	New UGA	6	10461	0.116	-0.021
63	BB-04-18	0	New UGA	7	9089	-0.144	-0.371
63	BB-04-18	0	New UGA	8	7993	-0.158	-0.397
63	BB-04-18	0	New UGA	9	7017	-0.102	-0.396
63	BB-04-18	0	New UGA	10	6163	-0.124	-0.399
63	BB-04-18	0	New UGA	11	5421	-0.104	-0.435
63	BB-04-18	0	New UGA	12	4766	-0.065	-0.437
63	BB-04-18	0	New UGA	13	4181	-0.075	-0.298
63	BB-04-18	0	New UGA	14	11066	-39.54	-26.32
64	BB-05-09	0	New UGA	1	11054	-39.4	-26.176
64	BB-05-09	0	New UGA	2	11047	-39.517	-26.267
64	BB-05-09	0	New UGA	3	11053	-39.54	-26.32
64	BB-05-09	0	New UGA	4	11918	1.307	0.708
64	BB-05-09	0	New UGA	5	10421	1.25	0.654
64	BB-05-09	0	New UGA	6	9110	1.084	0.401
64	BB-05-09	0	New UGA	7	7922	0.854	0.045
64	BB-05-09	0	New UGA	8	6962	0.851	-0.023
64	BB-05-09	0	New UGA	9	6111	0.855	-0.02
64	BB-05-09	0	New UGA	10	5365	0.831	-0.094
64	BB-05-09	0	New UGA	11	4699	0.871	-0.089
64	BB-05-09	0	New UGA	12	4124	0.88	-0.045
64	BB-05-09	0	New UGA	13	3617	0.851	-0.116
64	BB-05-09	0	New UGA	14	11073	-39.54	-26.32
65	BB-04-33	0	New UGA	1	11057	-39.41	-26.161
65	BB-04-33	0	New UGA	2	11026	-39.513	-26.288
65	BB-04-33	0	New UGA	3	11023	-39.54	-26.32
65	BB-04-33	0	New UGA	4	8524	-0.618	-0.292
65	BB-04-33	0	New UGA	5	7457	-0.621	-0.232
65	BB-04-33	0	New UGA	6	6531	-0.776	-0.502
65	BB-04-33	0	New UGA	7	5681	-0.99	-0.84
65	BB-04-33	0	New UGA	8	4990	-0.992	-0.854
65	BB-04-33	0	New UGA	9	4376	-1.007	-0.917
65	BB-04-33	0	New UGA	10	3845	-0.988	-0.982
65	BB-04-33	0	New UGA	11	3370	-1.016	-0.894
65	BB-04-33	0	New UGA	12	2958	-0.934	-1.022
65	BB-04-33	0	New UGA	13	2591	-0.973	-0.893
65	BB-04-33	0	New UGA	14	11079	-39.54	-26.32
66	BB-04-25	0	New UGA	1	11045	-39.421	-26.203
66	BB-04-25	0	New UGA	2	11042	-39.502	-26.31
66	BB-04-25	0	New UGA	3	11048	-39.54	-26.32
66	BB-04-25	0	New UGA	4	10039	-0.082	-0.011
66	BB-04-25	0	New UGA	5	8830	-0.075	-0.005
66	BB-04-25	0	New UGA	6	7746	-0.234	-0.238
66	BB-04-25	0	New UGA	7	6852	-0.204	-0.296
66	BB-04-25	0	New UGA	8	5966	-0.422	-0.515

66	BB-04-25	0	New UGA	9	5239	-0.383	-0.563
66	BB-04-25	0	New UGA	10	4594	-0.426	-0.634
66	BB-04-25	0	New UGA	11	4038	-0.436	-0.696
66	BB-04-25	0	New UGA	12	3557	-0.426	-0.705
66	BB-04-25	0	New UGA	13	3123	-0.442	-0.721
66	BB-04-25	0	New UGA	14	11059	-39.54	-26.32
67	IAEA-603	66	New UGA	1	10995	-39.396	-26.19
67	IAEA-603	66	New UGA	2	11015	-39.51	-26.307
67	IAEA-603	66	New UGA	3	10997	-39.54	-26.32
67	IAEA-603	66	New UGA	4	7566	2.565	-2.499
67	IAEA-603	66	New UGA	5	6642	2.568	-2.549
67	IAEA-603	66	New UGA	6	5836	2.38	-2.787
67	IAEA-603	66	New UGA	7	5103	2.151	-3.129
67	IAEA-603	66	New UGA	8	4501	2.144	-3.147
67	IAEA-603	66	New UGA	9	3968	2.182	-3.161
67	IAEA-603	66	New UGA	10	3499	2.172	-3.175
67	IAEA-603	66	New UGA	11	3089	2.22	-3.252
67	IAEA-603	66	New UGA	12	2718	2.199	-3.186
67	IAEA-603	66	New UGA	13	2399	2.173	-3.301
67	IAEA-603	66	New UGA	14	11065	-39.54	-26.32
68	BB-04-10	0	New UGA	1	11029	-39.384	-26.166
68	BB-04-10	0	New UGA	2	11042	-39.514	-26.281
68	BB-04-10	0	New UGA	3	11033	-39.54	-26.32
68	BB-04-10	0	New UGA	4	6155	-0.046	-0.649
68	BB-04-10	0	New UGA	5	5449	-0.028	-0.665
68	BB-04-10	0	New UGA	6	4807	-0.222	-0.879
68	BB-04-10	0	New UGA	7	4264	-0.216	-0.981
68	BB-04-10	0	New UGA	8	3727	-0.509	-1.23
68	BB-04-10	0	New UGA	9	3306	-0.453	-1.308
68	BB-04-10	0	New UGA	10	2920	-0.458	-1.361
68	BB-04-10	0	New UGA	11	2584	-0.509	-1.354
68	BB-04-10	0	New UGA	12	2300	-0.373	-1.383
68	BB-04-10	0	New UGA	13	2035	-0.345	-1.309
68	BB-04-10	0	New UGA	14	11035	-39.54	-26.32
69	BB-04-19	0	New UGA	1	11039	-39.394	-26.2
69	BB-04-19	0	New UGA	2	11021	-39.506	-26.305
69	BB-04-19	0	New UGA	3	11021	-39.54	-26.32
69	BB-04-19	0	New UGA	4	8757	0.099	0.3
69	BB-04-19	0	New UGA	5	7730	0.128	0.299
69	BB-04-19	0	New UGA	6	6818	-0.066	0.048
69	BB-04-19	0	New UGA	7	5987	-0.248	-0.218
69	BB-04-19	0	New UGA	8	5305	-0.285	-0.201
69	BB-04-19	0	New UGA	9	4693	-0.251	-0.321
69	BB-04-19	0	New UGA	10	4158	-0.296	-0.315
69	BB-04-19	0	New UGA	11	3682	-0.241	-0.387
69	BB-04-19	0	New UGA	12	3267	-0.236	-0.388
69	BB-04-19	0	New UGA	13	2890	-0.237	-0.303
69	BB-04-19	0	New UGA	14	11063	-39.54	-26.32
70	BB-04-29	0	New UGA	1	11046	-39.401	-26.19

70	BB-04-29	0	New UGA	2	11043	-39.513	-26.282
70	BB-04-29	0	New UGA	3	11024	-39.54	-26.32
70	BB-04-29	0	New UGA	4	10177	-0.494	-0.183
70	BB-04-29	0	New UGA	5	9026	-0.493	-0.193
70	BB-04-29	0	New UGA	6	8015	-0.656	-0.407
70	BB-04-29	0	New UGA	7	7170	-0.656	-0.409
70	BB-04-29	0	New UGA	8	6347	-0.821	-0.72
70	BB-04-29	0	New UGA	9	5663	-0.86	-0.79
70	BB-04-29	0	New UGA	10	5047	-0.853	-0.787
70	BB-04-29	0	New UGA	11	4505	-0.836	-0.811
70	BB-04-29	0	New UGA	12	4020	-0.816	-0.835
70	BB-04-29	0	New UGA	13	3589	-0.824	-0.839
70	BB-04-29	0	New UGA	14	11062	-39.54	-26.32
71	BB-04-20	0	New UGA	1	11020	-39.403	-26.17
71	BB-04-20	0	New UGA	2	11011	-39.515	-26.284
71	BB-04-20	0	New UGA	3	11021	-39.54	-26.32
71	BB-04-20	0	New UGA	4	9996	-0.086	0.208
71	BB-04-20	0	New UGA	5	8925	-0.08	0.147
71	BB-04-20	0	New UGA	6	7941	-0.284	-0.093
71	BB-04-20	0	New UGA	7	7034	-0.556	-0.431
71	BB-04-20	0	New UGA	8	6305	-0.524	-0.501
71	BB-04-20	0	New UGA	9	5629	-0.534	-0.571
71	BB-04-20	0	New UGA	10	5033	-0.539	-0.582
71	BB-04-20	0	New UGA	11	4497	-0.525	-0.578
71	BB-04-20	0	New UGA	12	4021	-0.527	-0.645
71	BB-04-20	0	New UGA	13	3598	-0.525	-0.595
71	BB-04-20	0	New UGA	14	11071	-39.54	-26.32
72	BB-04-23	0	New UGA	1	11057	-39.409	-26.164
72	BB-04-23	0	New UGA	2	11044	-39.506	-26.277
72	BB-04-23	0	New UGA	3	11055	-39.54	-26.32
72	BB-04-23	0	New UGA	4	11618	-0.242	0.229
72	BB-04-23	0	New UGA	5	10344	-0.173	0.348
72	BB-04-23	0	New UGA	6	9161	-0.375	-0.013
72	BB-04-23	0	New UGA	7	8207	-0.378	0.033
72	BB-04-23	0	New UGA	8	7286	-0.539	-0.319
72	BB-04-23	0	New UGA	9	6503	-0.631	-0.334
72	BB-04-23	0	New UGA	10	5824	-0.612	-0.391
72	BB-04-23	0	New UGA	11	5210	-0.591	-0.394
72	BB-04-23	0	New UGA	12	4670	-0.586	-0.365
72	BB-04-23	0	New UGA	13	4183	-0.599	-0.422
72	BB-04-23	0	New UGA	14	11095	-39.54	-26.32
73	BB-05-02	0	New UGA	1	11044	-39.424	-26.18
73	BB-05-02	0	New UGA	2	11035	-39.516	-26.298
73	BB-05-02	0	New UGA	3	11019	-39.54	-26.32
73	BB-05-02	0	New UGA	4	7224	0.756	0.67
73	BB-05-02	0	New UGA	5	6427	0.78	0.661
73	BB-05-02	0	New UGA	6	5729	0.64	0.472
73	BB-05-02	0	New UGA	7	5091	0.404	0.132
73	BB-05-02	0	New UGA	8	4589	0.409	0.083

73	BB-05-02	0	New UGA	9	4128	0.419	0.009
73	BB-05-02	0	New UGA	10	3717	0.416	-0.003
73	BB-05-02	0	New UGA	11	3344	0.394	-0.036
73	BB-05-02	0	New UGA	12	3008	0.422	-0.046
73	BB-05-02	0	New UGA	13	2709	0.419	-0.119
73	BB-05-02	0	New UGA	14	11100	-39.54	-26.32
74	BB-05-12	0	New UGA	1	11056	-39.413	-26.175
74	BB-05-12	0	New UGA	2	11051	-39.512	-26.273
74	BB-05-12	0	New UGA	3	11039	-39.54	-26.32
74	BB-05-12	0	New UGA	4	9261	0.223	-0.019
74	BB-05-12	0	New UGA	5	8321	0.214	-0.022
74	BB-05-12	0	New UGA	6	7463	0.056	-0.296
74	BB-05-12	0	New UGA	7	6751	0.035	-0.394
74	BB-05-12	0	New UGA	8	6086	0.039	-0.369
74	BB-05-12	0	New UGA	9	5486	0.027	-0.444
74	BB-05-12	0	New UGA	10	4946	0.041	-0.457
74	BB-05-12	0	New UGA	11	4456	0.01	-0.467
74	BB-05-12	0	New UGA	12	4014	0.022	-0.49
74	BB-05-12	0	New UGA	13	3619	0.024	-0.476
74	BB-05-12	0	New UGA	14	11065	-39.54	-26.32
75	IAEA-603	85	New UGA	1	11042	-39.398	-26.177
75	IAEA-603	85	New UGA	2	11042	-39.504	-26.298
75	IAEA-603	85	New UGA	3	11049	-39.54	-26.32
75	IAEA-603	85	New UGA	4	9331	2.561	-2.448
75	IAEA-603	85	New UGA	5	8318	2.55	-2.393
75	IAEA-603	85	New UGA	6	7376	2.222	-2.935
75	IAEA-603	85	New UGA	7	6650	2.182	-2.989
75	IAEA-603	85	New UGA	8	6000	2.165	-3.069
75	IAEA-603	85	New UGA	9	5412	2.175	-3.019
75	IAEA-603	85	New UGA	10	4878	2.183	-3.04
75	IAEA-603	85	New UGA	11	4396	2.218	-3.018
75	IAEA-603	85	New UGA	12	3964	2.167	-3.057
75	IAEA-603	85	New UGA	13	3575	2.169	-3.098
75	IAEA-603	85	New UGA	14	11093	-39.54	-26.32
76	BB-05-06	0	New UGA	1	11055	-39.386	-26.137
76	BB-05-06	0	New UGA	2	11063	-39.495	-26.276
76	BB-05-06	0	New UGA	3	11041	-39.54	-26.32
76	BB-05-06	0	New UGA	4	6787	1.065	0.393
76	BB-05-06	0	New UGA	5	6043	0.929	0.249
76	BB-05-06	0	New UGA	6	5497	0.899	0.147
76	BB-05-06	0	New UGA	7	4930	0.728	-0.202
76	BB-05-06	0	New UGA	8	4463	0.695	-0.197
76	BB-05-06	0	New UGA	9	4030	0.695	-0.174
76	BB-05-06	0	New UGA	10	3647	0.693	-0.232
76	BB-05-06	0	New UGA	11	3293	0.726	-0.315
76	BB-05-06	0	New UGA	12	2978	0.718	-0.265
76	BB-05-06	0	New UGA	13	2693	0.717	-0.404
76	BB-05-06	0	New UGA	14	11129	-39.54	-26.32
77	BB-04-11	0	New UGA	1	11055	-39.399	-26.19

77	BB-04-11	0	New UGA	2	11073	-39.5	-26.284
77	BB-04-11	0	New UGA	3	11058	-39.54	-26.32
77	BB-04-11	0	New UGA	4	8969	0.032	0.283
77	BB-04-11	0	New UGA	5	7976	-0.12	-0.068
77	BB-04-11	0	New UGA	6	7251	-0.129	-0.063
77	BB-04-11	0	New UGA	7	6573	-0.141	-0.056
77	BB-04-11	0	New UGA	8	5963	-0.107	-0.064
77	BB-04-11	0	New UGA	9	5385	-0.14	-0.148
77	BB-04-11	0	New UGA	10	4860	-0.157	-0.063
77	BB-04-11	0	New UGA	11	4395	-0.128	-0.138
77	BB-04-11	0	New UGA	12	3970	-0.155	-0.213
77	BB-04-11	0	New UGA	13	3586	-0.098	-0.203
77	BB-04-11	0	New UGA	14	11096	-39.54	-26.32
78	BB-04-31	0	New UGA	1	11081	-39.405	-26.144
78	BB-04-31	0	New UGA	2	11048	-39.518	-26.265
78	BB-04-31	0	New UGA	3	11062	-39.54	-26.32
78	BB-04-31	0	New UGA	4	7543	0.238	-0.519
78	BB-04-31	0	New UGA	5	6782	0.262	-0.441
78	BB-04-31	0	New UGA	6	6104	0.126	-0.648
78	BB-04-31	0	New UGA	7	5540	0.156	-0.683
78	BB-04-31	0	New UGA	8	5021	0.125	-0.684
78	BB-04-31	0	New UGA	9	4550	0.147	-0.72
78	BB-04-31	0	New UGA	10	4051	-0.116	-1.146
78	BB-04-31	0	New UGA	11	3662	-0.148	-1.086
78	BB-04-31	0	New UGA	12	3321	-0.084	-1.233
78	BB-04-31	0	New UGA	13	3002	-0.06	-1.23
78	BB-04-31	0	New UGA	14	11086	-39.54	-26.32
79	BB-05-07	0	New UGA	1	11083	-39.405	-26.178
79	BB-05-07	0	New UGA	2	11048	-39.509	-26.271
79	BB-05-07	0	New UGA	3	11042	-39.54	-26.32
79	BB-05-07	0	New UGA	4	6644	0.824	0.121
79	BB-05-07	0	New UGA	5	5967	0.882	0.139
79	BB-05-07	0	New UGA	6	5285	0.531	-0.274
79	BB-05-07	0	New UGA	7	4773	0.464	-0.446
79	BB-05-07	0	New UGA	8	4318	0.456	-0.437
79	BB-05-07	0	New UGA	9	3896	0.477	-0.479
79	BB-05-07	0	New UGA	10	3520	0.478	-0.399
79	BB-05-07	0	New UGA	11	3178	0.469	-0.512
79	BB-05-07	0	New UGA	12	2866	0.501	-0.42
79	BB-05-07	0	New UGA	13	2593	0.484	-0.57
79	BB-05-07	0	New UGA	14	11092	-39.54	-26.32
80	BB-04-30	0	New UGA	1	11066	-39.393	-26.152
80	BB-04-30	0	New UGA	2	11060	-39.49	-26.264
80	BB-04-30	0	New UGA	3	11050	-39.54	-26.32
80	BB-04-30	0	New UGA	4	12724	-0.203	-0.303
80	BB-04-30	0	New UGA	5	11432	-0.221	-0.294
80	BB-04-30	0	New UGA	6	10287	-0.412	-0.577
80	BB-04-30	0	New UGA	7	9217	-0.668	-0.876
80	BB-04-30	0	New UGA	8	8336	-0.676	-0.97

80	BB-04-30	0	New UGA	9	7528	-0.683	-0.999
80	BB-04-30	0	New UGA	10	6811	-0.632	-0.962
80	BB-04-30	0	New UGA	11	6175	-0.608	-0.931
80	BB-04-30	0	New UGA	12	5567	-0.669	-0.996
80	BB-04-30	0	New UGA	13	5030	-0.64	-0.991
80	BB-04-30	0	New UGA	14	11114	-39.54	-26.32
81	BB-04-26	0	New UGA	1	11061	-39.408	-26.175
81	BB-04-26	0	New UGA	2	11056	-39.509	-26.28
81	BB-04-26	0	New UGA	3	11050	-39.54	-26.32
81	BB-04-26	0	New UGA	4	8088	-0.262	-0.04
81	BB-04-26	0	New UGA	5	7213	-0.236	-0.029
81	BB-04-26	0	New UGA	6	6542	-0.268	-0.047
81	BB-04-26	0	New UGA	7	5916	-0.246	-0.034
81	BB-04-26	0	New UGA	8	5277	-0.424	-0.317
81	BB-04-26	0	New UGA	9	4704	-0.647	-0.613
81	BB-04-26	0	New UGA	10	4249	-0.671	-0.666
81	BB-04-26	0	New UGA	11	3848	-0.642	-0.688
81	BB-04-26	0	New UGA	12	3481	-0.569	-0.68
81	BB-04-26	0	New UGA	13	3140	-0.544	-0.599
81	BB-04-26	0	New UGA	14	11106	-39.54	-26.32
82	BB-05-05	0	New UGA	1	11059	-39.404	-26.18
82	BB-05-05	0	New UGA	2	11066	-39.505	-26.299
82	BB-05-05	0	New UGA	3	11057	-39.54	-26.32
82	BB-05-05	0	New UGA	4	8168	1.917	0.99
82	BB-05-05	0	New UGA	5	7243	1.781	0.77
82	BB-05-05	0	New UGA	6	6578	1.776	0.687
82	BB-05-05	0	New UGA	7	5894	1.584	0.463
82	BB-05-05	0	New UGA	8	5334	1.567	0.413
82	BB-05-05	0	New UGA	9	4826	1.563	0.357
82	BB-05-05	0	New UGA	10	4361	1.595	0.331
82	BB-05-05	0	New UGA	11	3948	1.575	0.334
82	BB-05-05	0	New UGA	12	3562	1.59	0.33
82	BB-05-05	0	New UGA	13	3221	1.582	0.364
82	BB-05-05	0	New UGA	14	11130	-39.54	-26.32
83	IAEA-603	67	New UGA	1	11066	-39.395	-26.174
83	IAEA-603	67	New UGA	2	11047	-39.506	-26.281
83	IAEA-603	67	New UGA	3	11046	-39.54	-26.32
83	IAEA-603	67	New UGA	4	7157	2.54	-2.556
83	IAEA-603	67	New UGA	5	6417	2.587	-2.506
83	IAEA-603	67	New UGA	6	5757	2.408	-2.71
83	IAEA-603	67	New UGA	7	5214	2.388	-2.752
83	IAEA-603	67	New UGA	8	4656	2.151	-3.095
83	IAEA-603	67	New UGA	9	4204	2.173	-3.099
83	IAEA-603	67	New UGA	10	3803	2.181	-3.185
83	IAEA-603	67	New UGA	11	3437	2.193	-3.176
83	IAEA-603	67	New UGA	12	3108	2.162	-3.257
83	IAEA-603	67	New UGA	13	2809	2.19	-3.201
83	IAEA-603	67	New UGA	14	11113	-39.54	-26.32
84	BB-05-14	0	New UGA	1	11081	-39.404	-26.164

84	BB-05-14	0	New UGA	2	11071	-39.514	-26.276
84	BB-05-14	0	New UGA	3	11062	-39.54	-26.32
84	BB-05-14	0	New UGA	4	6737	0.058	-0.252
84	BB-05-14	0	New UGA	5	6021	0.07	-0.162
84	BB-05-14	0	New UGA	6	5391	-0.059	-0.413
84	BB-05-14	0	New UGA	7	4875	-0.053	-0.404
84	BB-05-14	0	New UGA	8	4356	-0.232	-0.756
84	BB-05-14	0	New UGA	9	3942	-0.246	-0.77
84	BB-05-14	0	New UGA	10	3563	-0.208	-0.792
84	BB-05-14	0	New UGA	11	3222	-0.156	-0.749
84	BB-05-14	0	New UGA	12	2918	-0.172	-0.799
84	BB-05-14	0	New UGA	13	2637	-0.17	-0.844
84	BB-05-14	0	New UGA	14	11083	-39.54	-26.32
85	BB-05-03	0	New UGA	1	11057	-39.418	-26.178
85	BB-05-03	0	New UGA	2	11057	-39.505	-26.283
85	BB-05-03	0	New UGA	3	11051	-39.54	-26.32
85	BB-05-03	0	New UGA	4	9389	1.696	1.215
85	BB-05-03	0	New UGA	5	8457	1.726	1.232
85	BB-05-03	0	New UGA	6	7604	1.58	0.925
85	BB-05-03	0	New UGA	7	6849	1.359	0.714
85	BB-05-03	0	New UGA	8	6199	1.318	0.638
85	BB-05-03	0	New UGA	9	5627	1.304	0.552
85	BB-05-03	0	New UGA	10	5100	1.328	0.568
85	BB-05-03	0	New UGA	11	4629	1.304	0.539
85	BB-05-03	0	New UGA	12	4202	1.357	0.56
85	BB-05-03	0	New UGA	13	3816	1.338	0.473
85	BB-05-03	0	New UGA	14	11082	-39.54	-26.32
86	BB-05-04	0	New UGA	1	11082	-39.396	-26.149
86	BB-05-04	0	New UGA	2	11064	-39.505	-26.276
86	BB-05-04	0	New UGA	3	11064	-39.54	-26.32
86	BB-05-04	0	New UGA	4	7483	1.718	1.049
86	BB-05-04	0	New UGA	5	6649	1.706	0.989
86	BB-05-04	0	New UGA	6	5916	1.58	0.762
86	BB-05-04	0	New UGA	7	5364	1.566	0.743
86	BB-05-04	0	New UGA	8	4873	1.574	0.704
86	BB-05-04	0	New UGA	9	4419	1.579	0.722
86	BB-05-04	0	New UGA	10	4013	1.589	0.761
86	BB-05-04	0	New UGA	11	3639	1.558	0.717
86	BB-05-04	0	New UGA	12	3309	1.586	0.749
86	BB-05-04	0	New UGA	13	3006	1.629	0.721
86	BB-05-04	0	New UGA	14	11097	-39.54	-26.32
87	BB-05-01	0	New UGA	1	11037	-39.403	-26.203
87	BB-05-01	0	New UGA	2	11090	-39.503	-26.286
87	BB-05-01	0	New UGA	3	11063	-39.54	-26.32
87	BB-05-01	0	New UGA	4	6104	0.24	0.255
87	BB-05-01	0	New UGA	5	5526	0.329	0.449
87	BB-05-01	0	New UGA	6	4919	-0.052	-0.157
87	BB-05-01	0	New UGA	7	4455	-0.166	-0.201
87	BB-05-01	0	New UGA	8	4042	-0.172	-0.254

87	BB-05-01	0	New UGA	9	3673	-0.155	-0.305
87	BB-05-01	0	New UGA	10	3338	-0.153	-0.282
87	BB-05-01	0	New UGA	11	3035	-0.128	-0.278
87	BB-05-01	0	New UGA	12	2758	-0.127	-0.255
87	BB-05-01	0	New UGA	13	2505	-0.109	-0.297
87	BB-05-01	0	New UGA	14	11070	-39.54	-26.32
88	BB-05-15	0	New UGA	1	11038	-39.423	-26.182
88	BB-05-15	0	New UGA	2	11032	-39.512	-26.271
88	BB-05-15	0	New UGA	3	11017	-39.54	-26.32
88	BB-05-15	0	New UGA	4	10169	0.18	0.036
88	BB-05-15	0	New UGA	5	9198	0.177	0.031
88	BB-05-15	0	New UGA	6	8314	0.084	-0.206
88	BB-05-15	0	New UGA	7	7575	0.022	-0.171
88	BB-05-15	0	New UGA	8	6890	0.034	-0.245
88	BB-05-15	0	New UGA	9	6277	0.084	-0.24
88	BB-05-15	0	New UGA	10	5649	-0.113	-0.461
88	BB-05-15	0	New UGA	11	5125	-0.124	-0.504
88	BB-05-15	0	New UGA	12	4654	-0.105	-0.487
88	BB-05-15	0	New UGA	13	4230	-0.077	-0.545
88	BB-05-15	0	New UGA	14	11088	-39.54	-26.32
89	BB-04-13	0	New UGA	1	11076	-39.406	-26.169
89	BB-04-13	0	New UGA	2	11064	-39.511	-26.297
89	BB-04-13	0	New UGA	3	11053	-39.54	-26.32
89	BB-04-13	0	New UGA	4	9356	-0.036	0.129
89	BB-04-13	0	New UGA	5	8436	-0.04	0.098
89	BB-04-13	0	New UGA	6	7596	-0.226	-0.158
89	BB-04-13	0	New UGA	7	6845	-0.456	-0.375
89	BB-04-13	0	New UGA	8	6195	-0.496	-0.541
89	BB-04-13	0	New UGA	9	5637	-0.499	-0.591
89	BB-04-13	0	New UGA	10	5137	-0.434	-0.43
89	BB-04-13	0	New UGA	11	4658	-0.463	-0.581
89	BB-04-13	0	New UGA	12	4231	-0.449	-0.624
89	BB-04-13	0	New UGA	13	3841	-0.46	-0.652
89	BB-04-13	0	New UGA	14	11110	-39.54	-26.32
90	BB-04-16	0	New UGA	1	11057	-39.38	-26.146
90	BB-04-16	0	New UGA	2	11033	-39.489	-26.274
90	BB-04-16	0	New UGA	3	11044	-39.54	-26.32
90	BB-04-16	0	New UGA	4	9351	0.029	0.313
90	BB-04-16	0	New UGA	5	8448	0.044	0.257
90	BB-04-16	0	New UGA	6	7614	-0.179	-0.067
90	BB-04-16	0	New UGA	7	6951	-0.187	-0.048
90	BB-04-16	0	New UGA	8	6334	-0.195	-0.091
90	BB-04-16	0	New UGA	9	5759	-0.23	-0.112
90	BB-04-16	0	New UGA	10	5244	-0.185	-0.142
90	BB-04-16	0	New UGA	11	4776	-0.16	-0.147
90	BB-04-16	0	New UGA	12	4348	-0.157	-0.174
90	BB-04-16	0	New UGA	13	3958	-0.162	-0.175
90	BB-04-16	0	New UGA	14	11084	-39.54	-26.32
91	IAEA-603	101	New UGA	1	11051	-39.42	-26.194

91	IAEA-603 101	New UGA	2	11064	-39.502	-26.277
91	IAEA-603 101	New UGA	3	11059	-39.54	-26.32
91	IAEA-603 101	New UGA	4	11531	2.63	-2.33
91	IAEA-603 101	New UGA	5	10428	2.556	-2.492
91	IAEA-603 101	New UGA	6	9323	2.246	-2.959
91	IAEA-603 101	New UGA	7	8492	2.239	-3.011
91	IAEA-603 101	New UGA	8	7744	2.227	-2.974
91	IAEA-603 101	New UGA	9	7063	2.258	-2.968
91	IAEA-603 101	New UGA	10	6427	2.256	-3.038
91	IAEA-603 101	New UGA	11	5839	2.251	-3.048
91	IAEA-603 101	New UGA	12	5317	2.252	-3.092
91	IAEA-603 101	New UGA	13	4837	2.252	-3.089
91	IAEA-603 101	New UGA	14	11091	-39.54	-26.32
92	BB-04-21 0	New UGA	1	11064	-39.411	-26.191
92	BB-04-21 0	New UGA	2	11060	-39.512	-26.288
92	BB-04-21 0	New UGA	3	11052	-39.54	-26.32
92	BB-04-21 0	New UGA	4	9709	0.118	0.238
92	BB-04-21 0	New UGA	5	8811	0.153	0.217
92	BB-04-21 0	New UGA	6	7977	0.013	-0.033
92	BB-04-21 0	New UGA	7	7299	0.013	-0.045
92	BB-04-21 0	New UGA	8	6662	0.003	-0.033
92	BB-04-21 0	New UGA	9	6085	0.017	-0.039
92	BB-04-21 0	New UGA	10	5544	0.051	-0.016
92	BB-04-21 0	New UGA	11	5065	0.051	-0.05
92	BB-04-21 0	New UGA	12	4609	0.026	-0.034
92	BB-04-21 0	New UGA	13	4220	0.047	-0.069
92	BB-04-21 0	New UGA	14	11074	-39.54	-26.32
93	BB-05-11 0	New UGA	1	11134	-39.403	-26.158
93	BB-05-11 0	New UGA	2	11133	-39.514	-26.265
93	BB-05-11 0	New UGA	3	11117	-39.54	-26.32
93	BB-05-11 0	New UGA	4	9099	0.417	0.031
93	BB-05-11 0	New UGA	5	8124	0.325	-0.192
93	BB-05-11 0	New UGA	6	7427	0.286	-0.251
93	BB-05-11 0	New UGA	7	6766	0.288	-0.206
93	BB-05-11 0	New UGA	8	6164	0.305	-0.223
93	BB-05-11 0	New UGA	9	5618	0.307	-0.24
93	BB-05-11 0	New UGA	10	5120	0.306	-0.241
93	BB-05-11 0	New UGA	11	4664	0.354	-0.269
93	BB-05-11 0	New UGA	12	4241	0.335	-0.226
93	BB-05-11 0	New UGA	13	3866	0.343	-0.231
93	BB-05-11 0	New UGA	14	11109	-39.54	-26.32
94	BB-04-24 0	New UGA	1	11108	-39.417	-26.189
94	BB-04-24 0	New UGA	2	11104	-39.5	-26.293
94	BB-04-24 0	New UGA	3	11097	-39.54	-26.32
94	BB-04-24 0	New UGA	4	10513	-0.1	0.011
94	BB-04-24 0	New UGA	5	9518	-0.042	0.189
94	BB-04-24 0	New UGA	6	8491	-0.41	-0.436
94	BB-04-24 0	New UGA	7	7720	-0.438	-0.537
94	BB-04-24 0	New UGA	8	7030	-0.46	-0.58

94	BB-04-24	0	New UGA	9	6395	-0.407	-0.539
94	BB-04-24	0	New UGA	10	5822	-0.403	-0.525
94	BB-04-24	0	New UGA	11	5290	-0.389	-0.561
94	BB-04-24	0	New UGA	12	4820	-0.364	-0.526
94	BB-04-24	0	New UGA	13	4377	-0.401	-0.553
94	BB-04-24	0	New UGA	14	11138	-39.54	-26.32
95	BB-05-13	0	New UGA	1	11099	-39.394	-26.174
95	BB-05-13	0	New UGA	2	11085	-39.496	-26.292
95	BB-05-13	0	New UGA	3	11079	-39.54	-26.32
95	BB-05-13	0	New UGA	4	7312	0.003	-0.112
95	BB-05-13	0	New UGA	5	6596	-0.005	-0.14
95	BB-05-13	0	New UGA	6	6039	0.007	-0.102
95	BB-05-13	0	New UGA	7	5454	-0.121	-0.307
95	BB-05-13	0	New UGA	8	4881	-0.36	-0.778
95	BB-05-13	0	New UGA	9	4448	-0.416	-0.837
95	BB-05-13	0	New UGA	10	4053	-0.404	-0.806
95	BB-05-13	0	New UGA	11	3701	-0.366	-0.804
95	BB-05-13	0	New UGA	12	3379	-0.355	-0.836
95	BB-05-13	0	New UGA	13	3082	-0.354	-0.85
95	BB-05-13	0	New UGA	14	11087	-39.54	-26.32
96	BB-04-28	0	New UGA	1	11048	-39.402	-26.186
96	BB-04-28	0	New UGA	2	11060	-39.51	-26.307
96	BB-04-28	0	New UGA	3	11038	-39.54	-26.32
96	BB-04-28	0	New UGA	4	10783	-0.519	0.042
96	BB-04-28	0	New UGA	5	9819	-0.512	0.04
96	BB-04-28	0	New UGA	6	8900	-0.7	-0.187
96	BB-04-28	0	New UGA	7	8061	-0.936	-0.498
96	BB-04-28	0	New UGA	8	7363	-0.941	-0.549
96	BB-04-28	0	New UGA	9	6736	-0.95	-0.599
96	BB-04-28	0	New UGA	10	6153	-0.942	-0.571
96	BB-04-28	0	New UGA	11	5623	-0.941	-0.62
96	BB-04-28	0	New UGA	12	5140	-0.918	-0.601
96	BB-04-28	0	New UGA	13	4708	-0.937	-0.673
96	BB-04-28	0	New UGA	14	11092	-39.54	-26.32
97	BB-05-10	0	New UGA	1	11092	-39.41	-26.182
97	BB-05-10	0	New UGA	2	11063	-39.518	-26.296
97	BB-05-10	0	New UGA	3	11074	-39.54	-26.32
97	BB-05-10	0	New UGA	4	10023	0.654	0.193
97	BB-05-10	0	New UGA	5	8961	0.455	-0.09
97	BB-05-10	0	New UGA	6	8212	0.453	-0.07
97	BB-05-10	0	New UGA	7	7521	0.436	-0.112
97	BB-05-10	0	New UGA	8	6883	0.448	-0.122
97	BB-05-10	0	New UGA	9	6235	0.247	-0.393
97	BB-05-10	0	New UGA	10	5686	0.227	-0.407
97	BB-05-10	0	New UGA	11	5202	0.226	-0.461
97	BB-05-10	0	New UGA	12	4763	0.283	-0.494
97	BB-05-10	0	New UGA	13	4364	0.26	-0.578
97	BB-05-10	0	New UGA	14	11120	-39.54	-26.32
98	BB-05-08	0	New UGA	1	11086	-39.416	-26.193

98 BB-05-08 0	New UGA	2	11074	-39.509	-26.291
98 BB-05-08 0	New UGA	3	11058	-39.54	-26.32
98 BB-05-08 0	New UGA	4	9534	0.656	0.251
98 BB-05-08 0	New UGA	5	8641	0.622	0.202
98 BB-05-08 0	New UGA	6	7947	0.636	0.209
98 BB-05-08 0	New UGA	7	7201	0.52	-0.005
98 BB-05-08 0	New UGA	8	6504	0.339	-0.296
98 BB-05-08 0	New UGA	9	5953	0.317	-0.315
98 BB-05-08 0	New UGA	10	5451	0.332	-0.349
98 BB-05-08 0	New UGA	11	4991	0.324	-0.312
98 BB-05-08 0	New UGA	12	4575	0.314	-0.401
98 BB-05-08 0	New UGA	13	4191	0.366	-0.341
98 BB-05-08 0	New UGA	14	11152	-39.54	-26.32
99 IAEA-603 93	New UGA	1	11130	-39.417	-26.181
99 IAEA-603 93	New UGA	2	11118	-39.512	-26.294
99 IAEA-603 93	New UGA	3	11125	-39.54	-26.32
99 IAEA-603 93	New UGA	4	10661	2.55	-2.431
99 IAEA-603 93	New UGA	5	9577	2.437	-2.629
99 IAEA-603 93	New UGA	6	8781	2.399	-2.676
99 IAEA-603 93	New UGA	7	7954	2.256	-2.899
99 IAEA-603 93	New UGA	8	7273	2.239	-2.972
99 IAEA-603 93	New UGA	9	6654	2.248	-2.977
99 IAEA-603 93	New UGA	10	6084	2.234	-2.946
99 IAEA-603 93	New UGA	11	5560	2.258	-2.969
99 IAEA-603 93	New UGA	12	5074	2.272	-2.963
99 IAEA-603 93	New UGA	13	4644	2.255	-2.99
99 IAEA-603 93	New UGA	14	11173	-39.54	-26.32
100 BB-04-12 0	New UGA	1	11125	-39.379	-26.171
100 BB-04-12 0	New UGA	2	11135	-39.495	-26.272
100 BB-04-12 0	New UGA	3	11106	-39.54	-26.32
100 BB-04-12 0	New UGA	4	9502	0.05	0.209
100 BB-04-12 0	New UGA	5	8639	0.057	0.22
100 BB-04-12 0	New UGA	6	7879	-0.127	-0.043
100 BB-04-12 0	New UGA	7	7201	-0.133	-0.033
100 BB-04-12 0	New UGA	8	6556	-0.367	-0.32
100 BB-04-12 0	New UGA	9	6000	-0.393	-0.374
100 BB-04-12 0	New UGA	10	5507	-0.381	-0.463
100 BB-04-12 0	New UGA	11	5047	-0.366	-0.511
100 BB-04-12 0	New UGA	12	4615	-0.393	-0.495
100 BB-04-12 0	New UGA	13	4224	-0.351	-0.473
100 BB-04-12 0	New UGA	14	11163	-39.54	-26.32
101 BB-05-31 0	New UGA	1	11140	-39.399	-26.145
101 BB-05-31 0	New UGA	2	11108	-39.491	-26.26
101 BB-05-31 0	New UGA	3	11104	-39.54	-26.32
101 BB-05-31 0	New UGA	4	11081	-0.099	-0.251
101 BB-05-31 0	New UGA	5	10065	-0.076	-0.238
101 BB-05-31 0	New UGA	6	9145	-0.247	-0.473
101 BB-05-31 0	New UGA	7	8401	-0.29	-0.526
101 BB-05-31 0	New UGA	8	7624	-0.463	-0.79

101	BB-05-31	0	New UGA	9	6971	-0.479	-0.875
101	BB-05-31	0	New UGA	10	6397	-0.485	-0.834
101	BB-05-31	0	New UGA	11	5853	-0.494	-0.875
101	BB-05-31	0	New UGA	12	5362	-0.484	-0.894
101	BB-05-31	0	New UGA	13	4925	-0.45	-0.862
101	BB-05-31	0	New UGA	14	11146	-39.54	-26.32
102	BB-05-24	0	New UGA	1	11122	-39.388	-26.143
102	BB-05-24	0	New UGA	2	11095	-39.511	-26.281
102	BB-05-24	0	New UGA	3	11086	-39.54	-26.32
102	BB-05-24	0	New UGA	4	7314	0.168	0.023
102	BB-05-24	0	New UGA	5	6656	0.239	0.033
102	BB-05-24	0	New UGA	6	6130	0.193	0.061
102	BB-05-24	0	New UGA	7	5578	0.055	-0.226
102	BB-05-24	0	New UGA	8	5089	-0.182	-0.492
102	BB-05-24	0	New UGA	9	4681	-0.204	-0.566
102	BB-05-24	0	New UGA	10	4311	-0.219	-0.582
102	BB-05-24	0	New UGA	11	3970	-0.226	-0.568
102	BB-05-24	0	New UGA	12	3666	-0.154	-0.608
102	BB-05-24	0	New UGA	13	3355	-0.198	-0.673
102	BB-05-24	0	New UGA	14	11159	-39.54	-26.32
103	BB-05-29	0	New UGA	1	11171	-39.4	-26.157
103	BB-05-29	0	New UGA	2	11118	-39.511	-26.268
103	BB-05-29	0	New UGA	3	11126	-39.54	-26.32
103	BB-05-29	0	New UGA	4	7991	0.296	-0.136
103	BB-05-29	0	New UGA	5	7450	0.142	-0.405
103	BB-05-29	0	New UGA	6	6790	0.098	-0.473
103	BB-05-29	0	New UGA	7	6227	0.15	-0.416
103	BB-05-29	0	New UGA	8	5707	0.101	-0.535
103	BB-05-29	0	New UGA	9	5245	0.078	-0.531
103	BB-05-29	0	New UGA	10	4830	0.106	-0.521
103	BB-05-29	0	New UGA	11	4444	0.108	-0.535
103	BB-05-29	0	New UGA	12	4098	0.134	-0.611
103	BB-05-29	0	New UGA	13	3774	0.099	-0.562
103	BB-05-29	0	New UGA	14	11148	-39.54	-26.32
104	BB-05-25	0	New UGA	1	11112	-39.394	-26.15
104	BB-05-25	0	New UGA	2	11114	-39.508	-26.29
104	BB-05-25	0	New UGA	3	11128	-39.54	-26.32
104	BB-05-25	0	New UGA	4	7792	0.406	-0.017
104	BB-05-25	0	New UGA	5	7104	0.431	-0.022
104	BB-05-25	0	New UGA	6	6471	0.265	-0.209
104	BB-05-25	0	New UGA	7	5836	-0.043	-0.638
104	BB-05-25	0	New UGA	8	5348	0.002	-0.664
104	BB-05-25	0	New UGA	9	4909	0.012	-0.693
104	BB-05-25	0	New UGA	10	4496	0.046	-0.583
104	BB-05-25	0	New UGA	11	4115	-0.023	-0.742
104	BB-05-25	0	New UGA	12	3752	0.024	-0.671
104	BB-05-25	0	New UGA	13	3439	-0.026	-0.677
104	BB-05-25	0	New UGA	14	11136	-39.54	-26.32
105	BB-05-18	0	New UGA	1	11094	-39.392	-26.157

105	BB-05-18	0	New UGA	2	11073	-39.509	-26.258
105	BB-05-18	0	New UGA	3	11065	-39.54	-26.32
105	BB-05-18	0	New UGA	4	9448	0.118	0.231
105	BB-05-18	0	New UGA	5	8567	0.103	0.257
105	BB-05-18	0	New UGA	6	7788	-0.039	0.014
105	BB-05-18	0	New UGA	7	7144	-0.084	-0.037
105	BB-05-18	0	New UGA	8	6579	-0.053	-0.033
105	BB-05-18	0	New UGA	9	6003	-0.084	-0.058
105	BB-05-18	0	New UGA	10	5510	-0.059	-0.119
105	BB-05-18	0	New UGA	11	5047	-0.082	-0.121
105	BB-05-18	0	New UGA	12	4617	-0.043	-0.14
105	BB-05-18	0	New UGA	13	4219	-0.063	-0.102
105	BB-05-18	0	New UGA	14	11101	-39.54	-26.32
106	BB-05-21	0	New UGA	1	11093	-39.421	-26.18
106	BB-05-21	0	New UGA	2	11079	-39.518	-26.299
106	BB-05-21	0	New UGA	3	11090	-39.54	-26.32
106	BB-05-21	0	New UGA	4	12234	0.268	0.163
106	BB-05-21	0	New UGA	5	11115	0.254	0.135
106	BB-05-21	0	New UGA	6	10077	0.059	-0.204
106	BB-05-21	0	New UGA	7	9160	-0.068	-0.378
106	BB-05-21	0	New UGA	8	8404	-0.064	-0.403
106	BB-05-21	0	New UGA	9	7723	-0.067	-0.452
106	BB-05-21	0	New UGA	10	7090	-0.055	-0.457
106	BB-05-21	0	New UGA	11	6518	-0.026	-0.473
106	BB-05-21	0	New UGA	12	5983	-0.027	-0.428
106	BB-05-21	0	New UGA	13	5489	-0.009	-0.407
106	BB-05-21	0	New UGA	14	11139	-39.54	-26.32
107	IAEA-603	71	New UGA	1	11101	-39.396	-26.17
107	IAEA-603	71	New UGA	2	11114	-39.511	-26.279
107	IAEA-603	71	New UGA	3	11083	-39.54	-26.32
107	IAEA-603	71	New UGA	4	7853	2.521	-2.56
107	IAEA-603	71	New UGA	5	7068	2.415	-2.848
107	IAEA-603	71	New UGA	6	6527	2.411	-2.804
107	IAEA-603	71	New UGA	7	6025	2.391	-2.767
107	IAEA-603	71	New UGA	8	5575	2.463	-2.685
107	IAEA-603	71	New UGA	9	5136	2.42	-2.845
107	IAEA-603	71	New UGA	10	4736	2.378	-2.8
107	IAEA-603	71	New UGA	11	4341	2.422	-2.801
107	IAEA-603	71	New UGA	12	3993	2.412	-2.784
107	IAEA-603	71	New UGA	13	3668	2.39	-2.816
107	IAEA-603	71	New UGA	14	11133	-39.54	-26.32
108	BB-05-20	0	New UGA	1	11110	-39.399	-26.19
108	BB-05-20	0	New UGA	2	11107	-39.512	-26.272
108	BB-05-20	0	New UGA	3	11113	-39.54	-26.32
108	BB-05-20	0	New UGA	4	14179	0.395	0.489
108	BB-05-20	0	New UGA	5	12812	0.347	0.449
108	BB-05-20	0	New UGA	6	11689	0.348	0.359
108	BB-05-20	0	New UGA	7	10586	0.183	0.214
108	BB-05-20	0	New UGA	8	9718	0.193	0.184

108	BB-05-20	0	New UGA	9	8940	0.197	0.161
108	BB-05-20	0	New UGA	10	8218	0.182	0.113
108	BB-05-20	0	New UGA	11	7450	-0.067	-0.207
108	BB-05-20	0	New UGA	12	6866	-0.03	-0.228
108	BB-05-20	0	New UGA	13	6316	0.027	-0.184
108	BB-05-20	0	New UGA	14	11157	-39.54	-26.32
109	BB-05-32	0	New UGA	1	11104	-39.412	-26.192
109	BB-05-32	0	New UGA	2	11097	-39.501	-26.297
109	BB-05-32	0	New UGA	3	11090	-39.54	-26.32
109	BB-05-32	0	New UGA	4	11653	0.041	-0.438
109	BB-05-32	0	New UGA	5	10824	0.011	-0.561
109	BB-05-32	0	New UGA	6	9749	-0.163	-0.748
109	BB-05-32	0	New UGA	7	8812	-0.362	-1.121
109	BB-05-32	0	New UGA	8	8105	-0.362	-1.093
109	BB-05-32	0	New UGA	9	7443	-0.385	-1.128
109	BB-05-32	0	New UGA	10	6858	-0.37	-1.145
109	BB-05-32	0	New UGA	11	6279	-0.369	-1.144
109	BB-05-32	0	New UGA	12	5789	-0.365	-1.174
109	BB-05-32	0	New UGA	13	5310	-0.339	-1.134
109	BB-05-32	0	New UGA	14	11165	-39.54	-26.32
110	BB-05-33	0	New UGA	1	11113	-39.395	-26.179
110	BB-05-33	0	New UGA	2	11118	-39.504	-26.284
110	BB-05-33	0	New UGA	3	11104	-39.54	-26.32
110	BB-05-33	0	New UGA	4	8238	-0.277	-0.603
110	BB-05-33	0	New UGA	5	7470	-0.194	-0.549
110	BB-05-33	0	New UGA	6	6768	-0.393	-0.832
110	BB-05-33	0	New UGA	7	6146	-0.609	-1.145
110	BB-05-33	0	New UGA	8	5661	-0.579	-1.16
110	BB-05-33	0	New UGA	9	5206	-0.582	-1.241
110	BB-05-33	0	New UGA	10	4798	-0.59	-1.228
110	BB-05-33	0	New UGA	11	4422	-0.587	-1.222
110	BB-05-33	0	New UGA	12	4073	-0.569	-1.193
110	BB-05-33	0	New UGA	13	3761	-0.556	-1.258
110	BB-05-33	0	New UGA	14	11158	-39.54	-26.32
111	BB-05-27	0	New UGA	1	11143	-39.397	-26.183
111	BB-05-27	0	New UGA	2	11132	-39.518	-26.298
111	BB-05-27	0	New UGA	3	11117	-39.54	-26.32
111	BB-05-27	0	New UGA	4	10229	0.455	0.102
111	BB-05-27	0	New UGA	5	9356	0.457	0.1
111	BB-05-27	0	New UGA	6	8552	0.356	-0.079
111	BB-05-27	0	New UGA	7	7874	0.309	-0.177
111	BB-05-27	0	New UGA	8	7167	0.156	-0.355
111	BB-05-27	0	New UGA	9	6590	0.126	-0.494
111	BB-05-27	0	New UGA	10	6065	0.131	-0.484
111	BB-05-27	0	New UGA	11	5585	0.152	-0.492
111	BB-05-27	0	New UGA	12	5141	0.142	-0.524
111	BB-05-27	0	New UGA	13	4725	0.159	-0.509
111	BB-05-27	0	New UGA	14	11165	-39.54	-26.32
112	BB-05-17	0	New UGA	1	11124	-39.399	-26.19

112	BB-05-17	0	New UGA	2	11115	-39.511	-26.287
112	BB-05-17	0	New UGA	3	11104	-39.54	-26.32
112	BB-05-17	0	New UGA	4	10600	0.013	0.01
112	BB-05-17	0	New UGA	5	9591	0.011	-0.05
112	BB-05-17	0	New UGA	6	8687	-0.132	-0.251
112	BB-05-17	0	New UGA	7	7972	-0.151	-0.298
112	BB-05-17	0	New UGA	8	7345	-0.12	-0.267
112	BB-05-17	0	New UGA	9	6724	-0.19	-0.435
112	BB-05-17	0	New UGA	10	6152	-0.29	-0.561
112	BB-05-17	0	New UGA	11	5670	-0.294	-0.567
112	BB-05-17	0	New UGA	12	5233	-0.287	-0.619
112	BB-05-17	0	New UGA	13	4829	-0.297	-0.645
112	BB-05-17	0	New UGA	14	11151	-39.54	-26.32
113	BB-05-30	0	New UGA	1	11118	-39.367	-26.153
113	BB-05-30	0	New UGA	2	11131	-39.482	-26.277
113	BB-05-30	0	New UGA	3	11097	-39.54	-26.32
113	BB-05-30	0	New UGA	4	11497	0.236	0.119
113	BB-05-30	0	New UGA	5	10497	0.174	-0.075
113	BB-05-30	0	New UGA	6	9592	0.179	-0.076
113	BB-05-30	0	New UGA	7	8803	0.184	-0.033
113	BB-05-30	0	New UGA	8	7995	0.019	-0.288
113	BB-05-30	0	New UGA	9	7278	-0.157	-0.588
113	BB-05-30	0	New UGA	10	6695	-0.132	-0.581
113	BB-05-30	0	New UGA	11	6173	-0.147	-0.527
113	BB-05-30	0	New UGA	12	5704	-0.113	-0.532
113	BB-05-30	0	New UGA	13	5271	-0.082	-0.546
113	BB-05-30	0	New UGA	14	11020	-39.54	-26.32
114	BB-05-28	0	New UGA	1	11137	-39.394	-26.145
114	BB-05-28	0	New UGA	2	11158	-39.498	-26.287
114	BB-05-28	0	New UGA	3	11141	-39.54	-26.32
114	BB-05-28	0	New UGA	4	9758	0.337	0.049
114	BB-05-28	0	New UGA	5	8898	0.348	0.051
114	BB-05-28	0	New UGA	6	8079	0.15	-0.207
114	BB-05-28	0	New UGA	7	7379	-0.036	-0.521
114	BB-05-28	0	New UGA	8	6820	0.002	-0.38
114	BB-05-28	0	New UGA	9	6294	-0.08	-0.621
114	BB-05-28	0	New UGA	10	5829	-0.004	-0.502
114	BB-05-28	0	New UGA	11	5386	-0.025	-0.544
114	BB-05-28	0	New UGA	12	4972	-0.018	-0.577
114	BB-05-28	0	New UGA	13	4595	-0.024	-0.539
114	BB-05-28	0	New UGA	14	11190	-39.54	-26.32
115	IAEA-603	90	New UGA	1	11160	-39.399	-26.168
115	IAEA-603	90	New UGA	2	11151	-39.501	-26.269
115	IAEA-603	90	New UGA	3	11158	-39.54	-26.32
115	IAEA-603	90	New UGA	4	9748	2.485	-3.495
115	IAEA-603	90	New UGA	5	8915	2.488	-3.532
115	IAEA-603	90	New UGA	6	8252	2.506	-3.468
115	IAEA-603	90	New UGA	7	7539	2.36	-3.749
115	IAEA-603	90	New UGA	8	6969	2.344	-3.815

115	IAEA-603 90	New UGA	9	6376	2.152	-4.029
115	IAEA-603 90	New UGA	10	5907	2.118	-4.045
115	IAEA-603 90	New UGA	11	5490	2.181	-3.997
115	IAEA-603 90	New UGA	12	5077	2.164	-4.01
115	IAEA-603 90	New UGA	13	4711	2.158	-4.108
115	IAEA-603 90	New UGA	14	11220	-39.54	-26.32
116	BB-05-26 0	New UGA	1	11147	-39.378	-26.153
116	BB-05-26 0	New UGA	2	11142	-39.496	-26.276
116	BB-05-26 0	New UGA	3	11145	-39.54	-26.32
116	BB-05-26 0	New UGA	4	10048	0.17	-0.117
116	BB-05-26 0	New UGA	5	9135	0.156	-0.104
116	BB-05-26 0	New UGA	6	8438	0.132	-0.018
116	BB-05-26 0	New UGA	7	7778	0.109	-0.161
116	BB-05-26 0	New UGA	8	7202	0.168	0.027
116	BB-05-26 0	New UGA	9	6661	0.139	-0.071
116	BB-05-26 0	New UGA	10	6161	0.095	-0.217
116	BB-05-26 0	New UGA	11	5713	0.124	-0.151
116	BB-05-26 0	New UGA	12	5274	0.225	0.039
116	BB-05-26 0	New UGA	13	4897	0.187	0.063
116	BB-05-26 0	New UGA	14	11188	-39.54	-26.32
117	BB-05-22 0	New UGA	1	11140	-39.407	-26.177
117	BB-05-22 0	New UGA	2	11141	-39.52	-26.295
117	BB-05-22 0	New UGA	3	11133	-39.54	-26.32
117	BB-05-22 0	New UGA	4	11215	0.327	0.555
117	BB-05-22 0	New UGA	5	10222	0.238	0.372
117	BB-05-22 0	New UGA	6	9433	0.248	0.381
117	BB-05-22 0	New UGA	7	8581	0.067	0.061
117	BB-05-22 0	New UGA	8	7824	-0.091	-0.17
117	BB-05-22 0	New UGA	9	7197	-0.138	-0.23
117	BB-05-22 0	New UGA	10	6657	-0.073	-0.101
117	BB-05-22 0	New UGA	11	6135	-0.081	-0.262
117	BB-05-22 0	New UGA	12	5657	-0.071	-0.239
117	BB-05-22 0	New UGA	13	5202	0.016	0.087
117	BB-05-22 0	New UGA	14	11160	-39.54	-26.32
118	BB-05-19 0	New UGA	1	11145	-39.414	-26.2
118	BB-05-19 0	New UGA	2	11130	-39.517	-26.324
118	BB-05-19 0	New UGA	3	11131	-39.54	-26.32
118	BB-05-19 0	New UGA	4	10508	0.352	0.504
118	BB-05-19 0	New UGA	5	9636	0.32	0.431
118	BB-05-19 0	New UGA	6	9008	0.166	0.06
118	BB-05-19 0	New UGA	7	8240	0.111	-0.028
118	BB-05-19 0	New UGA	8	7605	0.024	-0.187
118	BB-05-19 0	New UGA	9	6981	-0.087	-0.352
118	BB-05-19 0	New UGA	10	6470	-0.17	-0.451
118	BB-05-19 0	New UGA	11	6012	-0.136	-0.443
118	BB-05-19 0	New UGA	12	5587	-0.133	-0.389
118	BB-05-19 0	New UGA	13	5192	-0.161	-0.463
118	BB-05-19 0	New UGA	14	11183	-39.54	-26.32
119	BB-05-23 0	New UGA	1	11182	-39.391	-26.142

119	BB-05-23	0	New UGA	2	11165	-39.512	-26.287
119	BB-05-23	0	New UGA	3	11129	-39.54	-26.32
119	BB-05-23	0	New UGA	4	9646	0.391	0.171
119	BB-05-23	0	New UGA	5	9648	0.264	-0.074
119	BB-05-23	0	New UGA	6	8935	0.328	0.028
119	BB-05-23	0	New UGA	7	8203	0.205	-0.073
119	BB-05-23	0	New UGA	8	7627	0.119	-0.418
119	BB-05-23	0	New UGA	9	7123	0.133	-0.45
119	BB-05-23	0	New UGA	10	6646	0.126	-0.474
119	BB-05-23	0	New UGA	11	6226	0.186	-0.392
119	BB-05-23	0	New UGA	12	5802	0.169	-0.475
119	BB-05-23	0	New UGA	13	5425	0.185	-0.486
119	BB-05-23	0	New UGA	14	11200	-39.54	-26.32
120	BB-05-16	0	New UGA	1	11163	-39.403	-26.185
120	BB-05-16	0	New UGA	2	11145	-39.509	-26.279
120	BB-05-16	0	New UGA	3	11146	-39.54	-26.32
120	BB-05-16	0	New UGA	4	10620	0.391	-0.087
120	BB-05-16	0	New UGA	5	12793	0.395	0.076
120	BB-05-16	0	New UGA	6	11741	0.306	-0.088
120	BB-05-16	0	New UGA	7	10693	0.205	-0.304
120	BB-05-16	0	New UGA	8	9932	0.21	-0.222
120	BB-05-16	0	New UGA	9	9151	0.128	-0.362
120	BB-05-16	0	New UGA	10	8484	0.037	-0.598
120	BB-05-16	0	New UGA	11	7906	0.098	-0.522
120	BB-05-16	0	New UGA	12	7363	0.048	-0.617
120	BB-05-16	0	New UGA	13	6864	0.062	-0.652
120	BB-05-16	0	New UGA	14	11179	-39.54	-26.32
121	WI-01-09	0	New UGA	1	11146	-39.39	-26.153
121	WI-01-09	0	New UGA	2	11124	-39.501	-26.253
121	WI-01-09	0	New UGA	3	11122	-39.54	-26.32
121	WI-01-09	0	New UGA	4	8073	0.927	0.485
121	WI-01-09	0	New UGA	5	8443	1.024	0.404
121	WI-01-09	0	New UGA	6	7749	0.906	0.247
121	WI-01-09	0	New UGA	7	7206	0.845	0.106
121	WI-01-09	0	New UGA	8	6727	0.835	0.097
121	WI-01-09	0	New UGA	9	6215	0.763	0.164
121	WI-01-09	0	New UGA	10	5815	0.753	0.062
121	WI-01-09	0	New UGA	11	5472	0.694	-0.099
121	WI-01-09	0	New UGA	12	5127	0.668	-0.219
121	WI-01-09	0	New UGA	13	4832	0.687	-0.117
121	WI-01-09	0	New UGA	14	11158	-39.54	-26.32
122	WI-01-19	0	New UGA	1	11139	-39.413	-26.18
122	WI-01-19	0	New UGA	2	11113	-39.52	-26.3
122	WI-01-19	0	New UGA	3	11106	-39.54	-26.32
122	WI-01-19	0	New UGA	4	2937	0.891	0.022
122	WI-01-19	0	New UGA	5	10722	0.507	0.384
122	WI-01-19	0	New UGA	6	9825	0.447	0.28
122	WI-01-19	0	New UGA	7	9088	0.408	0.254
122	WI-01-19	0	New UGA	8	8465	0.393	0.218

122	WI-01-19	0	New UGA	9	7910	0.4	0.259
122	WI-01-19	0	New UGA	10	7416	0.426	0.241
122	WI-01-19	0	New UGA	11	6961	0.419	0.32
122	WI-01-19	0	New UGA	12	6533	0.409	0.237
122	WI-01-19	0	New UGA	13	6147	0.48	0.319
122	WI-01-19	0	New UGA	14	11157	-39.54	-26.32
123	IAEA-603	62	New UGA	1	11124	-39.416	-26.199
123	IAEA-603	62	New UGA	2	11130	-39.519	-26.303
123	IAEA-603	62	New UGA	3	11124	-39.54	-26.32
123	IAEA-603	62	New UGA	4	5102	2.23	-2.707
123	IAEA-603	62	New UGA	5	5092	2.597	-3.947
123	IAEA-603	62	New UGA	6	4762	2.588	-4.007
123	IAEA-603	62	New UGA	7	4478	2.67	-3.832
123	IAEA-603	62	New UGA	8	4158	2.475	-4.265
123	IAEA-603	62	New UGA	9	3911	2.512	-4.275
123	IAEA-603	62	New UGA	10	3641	2.281	-4.609
123	IAEA-603	62	New UGA	11	3425	2.246	-4.636
123	IAEA-603	62	New UGA	12	3230	2.304	-4.638
123	IAEA-603	62	New UGA	13	3049	2.283	-4.636
123	IAEA-603	62	New UGA	14	11160	-39.54	-26.32
124	WI-01-06	0	New UGA	1	11139	-39.396	-26.184
124	WI-01-06	0	New UGA	2	11138	-39.512	-26.315
124	WI-01-06	0	New UGA	3	11116	-39.54	-26.32
124	WI-01-06	0	New UGA	4	47739	-43.97	-110.639
124	WI-01-06	0	New UGA	5	48844	-109.804	-199.912
124	WI-01-06	0	New UGA	6	48831	-100.524	-188.466
124	WI-01-06	0	New UGA	7	48827	-88.218	-174.502
124	WI-01-06	0	New UGA	8	47393	-63.709	-149.241
124	WI-01-06	0	New UGA	9	45172	-38.037	-121.611
124	WI-01-06	0	New UGA	10	42562	-11.321	-90.04
124	WI-01-06	0	New UGA	11	40230	4.406	-60.541
124	WI-01-06	0	New UGA	12	38041	3.333	-32.985
124	WI-01-06	0	New UGA	13	35669	2.27	-6.419
124	WI-01-06	0	New UGA	14	11035	-39.54	-26.32
125	WI-01-16	0	New UGA	1	11217	-39.627	-26.536
125	WI-01-16	0	New UGA	2	11223	-39.505	-26.295
125	WI-01-16	0	New UGA	3	11196	-39.54	-26.32
125	WI-01-16	0	New UGA	4	21657	1.728	1.153
125	WI-01-16	0	New UGA	5	10398	0.501	0.589
125	WI-01-16	0	New UGA	6	9467	0.556	0.702
125	WI-01-16	0	New UGA	7	8773	0.535	0.636
125	WI-01-16	0	New UGA	8	8195	0.557	0.719
125	WI-01-16	0	New UGA	9	7688	0.572	0.701
125	WI-01-16	0	New UGA	10	7230	0.615	0.732
125	WI-01-16	0	New UGA	11	6836	0.651	0.813
125	WI-01-16	0	New UGA	12	6374	0.537	0.657
125	WI-01-16	0	New UGA	13	5951	0.402	0.382
125	WI-01-16	0	New UGA	14	10926	-39.54	-26.32
126	WI-01-08	0	New UGA	1	11192	-39.446	-26.398

126	WI-01-08	0	New UGA	2	11178	-39.491	-26.32
126	WI-01-08	0	New UGA	3	11153	-39.54	-26.32
126	WI-01-08	0	New UGA	4	5022	0.708	0.567
126	WI-01-08	0	New UGA	5	13478	1.688	1.273
126	WI-01-08	0	New UGA	6	12656	1.697	1.416
126	WI-01-08	0	New UGA	7	11931	1.675	1.354
126	WI-01-08	0	New UGA	8	11297	1.694	1.412
126	WI-01-08	0	New UGA	9	10707	1.73	1.456
126	WI-01-08	0	New UGA	10	10157	1.746	1.532
126	WI-01-08	0	New UGA	11	9534	1.629	1.312
126	WI-01-08	0	New UGA	12	9048	1.643	1.322
126	WI-01-08	0	New UGA	13	8519	1.567	1.171
126	WI-01-08	0	New UGA	14	10902	-39.54	-26.32
127	WI-01-11	0	New UGA	1	11193	-39.471	-26.335
127	WI-01-11	0	New UGA	2	11184	-39.503	-26.281
127	WI-01-11	0	New UGA	3	11153	-39.54	-26.32
127	WI-01-11	0	New UGA	4	5624	1.576	1.09
127	WI-01-11	0	New UGA	5	7996	1.683	1.046
127	WI-01-11	0	New UGA	6	7464	1.68	1.026
127	WI-01-11	0	New UGA	7	7035	1.767	1.239
127	WI-01-11	0	New UGA	8	6632	1.705	1.064
127	WI-01-11	0	New UGA	9	6283	1.742	1.127
127	WI-01-11	0	New UGA	10	5966	1.748	1.116
127	WI-01-11	0	New UGA	11	5673	1.772	1.193
127	WI-01-11	0	New UGA	12	5325	1.689	0.904
127	WI-01-11	0	New UGA	13	5068	1.699	0.961
127	WI-01-11	0	New UGA	14	11012	-39.54	-26.32
128	WI-01-03	0	New UGA	1	11171	-39.527	-26.378
128	WI-01-03	0	New UGA	2	11206	-39.507	-26.299
128	WI-01-03	0	New UGA	3	11208	-39.54	-26.32
128	WI-01-03	0	New UGA	4	3345	1.695	0.737
128	WI-01-03	0	New UGA	5	4979	2.404	1.524
128	WI-01-03	0	New UGA	6	4637	2.414	1.649
128	WI-01-03	0	New UGA	7	4361	2.438	1.563
128	WI-01-03	0	New UGA	8	4125	2.48	1.661
128	WI-01-03	0	New UGA	9	3921	2.543	1.806
128	WI-01-03	0	New UGA	10	3714	2.51	1.704
128	WI-01-03	0	New UGA	11	3539	2.567	1.726
128	WI-01-03	0	New UGA	12	3319	2.406	1.608
128	WI-01-03	0	New UGA	13	3126	2.219	1.22
128	WI-01-03	0	New UGA	14	10954	-39.54	-26.32
129	WI-01-13	0	New UGA	1	11217	-39.501	-26.34
129	WI-01-13	0	New UGA	2	11201	-39.502	-26.269
129	WI-01-13	0	New UGA	3	11211	-39.54	-26.32
129	WI-01-13	0	New UGA	4	2118	2.306	1.158
129	WI-01-13	0	New UGA	5	8276	0.259	0.295
129	WI-01-13	0	New UGA	6	7659	0.305	0.41
129	WI-01-13	0	New UGA	7	7228	0.295	0.392
129	WI-01-13	0	New UGA	8	6847	0.28	0.41

129	WI-01-13	0	New UGA	9	6517	0.309	0.461
129	WI-01-13	0	New UGA	10	6239	0.375	0.464
129	WI-01-13	0	New UGA	11	5967	0.438	0.644
129	WI-01-13	0	New UGA	12	5633	0.322	0.344
129	WI-01-13	0	New UGA	13	5333	0.255	0.362
129	WI-01-13	0	New UGA	14	10926	-39.54	-26.32
130	WI-01-05	0	New UGA	1	11222	-39.475	-26.243
130	WI-01-05	0	New UGA	2	11192	-39.501	-26.24
130	WI-01-05	0	New UGA	3	11163	-39.54	-26.32
130	WI-01-05	0	New UGA	4	3793	0.256	0.361
130	WI-01-05	0	New UGA	5	7989	1.99	1.158
130	WI-01-05	0	New UGA	6	7591	2.161	1.304
130	WI-01-05	0	New UGA	7	7224	2.127	1.242
130	WI-01-05	0	New UGA	8	6944	2.118	1.223
130	WI-01-05	0	New UGA	9	6646	2.126	1.192
130	WI-01-05	0	New UGA	10	6387	2.154	1.354
130	WI-01-05	0	New UGA	11	6142	2.21	1.401
130	WI-01-05	0	New UGA	12	5900	2.146	1.267
130	WI-01-05	0	New UGA	13	5621	2.036	1.103
130	WI-01-05	0	New UGA	14	11023	-39.54	-26.32
131	IAEA-603	68	New UGA	1	10974	-39.721	-26.68
131	IAEA-603	68	New UGA	2	11175	-39.709	-26.577
131	IAEA-603	68	New UGA	3	11178	-39.54	-26.32
131	IAEA-603	68	New UGA	4	4208	2.138	1.146
131	IAEA-603	68	New UGA	5	5099	2.445	-0.366
131	IAEA-603	68	New UGA	6	5949	2.694	-2.416
131	IAEA-603	68	New UGA	7	5565	2.694	-2.415
131	IAEA-603	68	New UGA	8	5331	2.737	-2.421
131	IAEA-603	68	New UGA	9	5083	2.753	-2.356
131	IAEA-603	68	New UGA	10	4822	2.721	-2.308
131	IAEA-603	68	New UGA	11	4748	2.82	-2.327
131	IAEA-603	68	New UGA	12	4573	2.854	-2.192
131	IAEA-603	68	New UGA	13	4411	2.728	-2.42
131	IAEA-603	68	New UGA	14	11013	-39.54	-26.32
132	WI-01-04	0	New UGA	1	11198	-39.545	-26.429
132	WI-01-04	0	New UGA	2	11183	-39.485	-26.265
132	WI-01-04	0	New UGA	3	11195	-39.54	-26.32
132	WI-01-04	0	New UGA	4	3695	2.581	-2.764
132	WI-01-04	0	New UGA	5	237	1.552	-6.07
132	WI-01-04	0	New UGA	6	3543	2.825	-2.431
132	WI-01-04	0	New UGA	7	7074	2.687	1.103
132	WI-01-04	0	New UGA	8	7117	2.616	1.64
132	WI-01-04	0	New UGA	9	6783	2.631	1.634
132	WI-01-04	0	New UGA	10	6481	2.659	1.697
132	WI-01-04	0	New UGA	11	6143	2.546	1.483
132	WI-01-04	0	New UGA	12	5826	2.39	1.236
132	WI-01-04	0	New UGA	13	5587	2.396	1.289
132	WI-01-04	0	New UGA	14	10929	-39.54	-26.32
133	WI-01-17	0	New UGA	1	11187	-39.436	-26.247

133	WI-01-17	0	New UGA	2	11183	-39.498	-26.295
133	WI-01-17	0	New UGA	3	11174	-39.54	-26.32
133	WI-01-17	0	New UGA	4	4161	2.416	1.099
133	WI-01-17	0	New UGA	5	5611	1.11	0.757
133	WI-01-17	0	New UGA	6	5786	0.375	0.389
133	WI-01-17	0	New UGA	7	5475	0.391	0.386
133	WI-01-17	0	New UGA	8	5226	0.416	0.394
133	WI-01-17	0	New UGA	9	5012	0.488	0.542
133	WI-01-17	0	New UGA	10	4796	0.548	0.509
133	WI-01-17	0	New UGA	11	4595	0.521	0.458
133	WI-01-17	0	New UGA	12	4350	0.448	0.467
133	WI-01-17	0	New UGA	13	4116	0.254	0.014
133	WI-01-17	0	New UGA	14	10927	-39.54	-26.32
134	WI-01-07	0	New UGA	1	11202	-39.484	-26.283
134	WI-01-07	0	New UGA	2	11199	-39.514	-26.297
134	WI-01-07	0	New UGA	3	11175	-39.54	-26.32
134	WI-01-07	0	New UGA	4	2958	0.28	0.027
134	WI-01-07	0	New UGA	5	9616	1.266	0.606
134	WI-01-07	0	New UGA	6	15145	1.639	1.01
134	WI-01-07	0	New UGA	7	14512	1.62	0.96
134	WI-01-07	0	New UGA	8	13937	1.611	0.957
134	WI-01-07	0	New UGA	9	13408	1.639	1.011
134	WI-01-07	0	New UGA	10	12956	1.687	1.061
134	WI-01-07	0	New UGA	11	12294	1.522	0.845
134	WI-01-07	0	New UGA	12	11732	1.376	0.624
134	WI-01-07	0	New UGA	13	11330	1.419	0.651
134	WI-01-07	0	New UGA	14	10959	-39.54	-26.32
135	WI-01-18	0	New UGA	1	11195	-39.45	-26.235
135	WI-01-18	0	New UGA	2	11164	-39.519	-26.297
135	WI-01-18	0	New UGA	3	11171	-39.54	-26.32
135	WI-01-18	0	New UGA	4	8789	1.378	0.475
135	WI-01-18	0	New UGA	5	11197	0.994	0.661
135	WI-01-18	0	New UGA	6	11592	0.77	0.667
135	WI-01-18	0	New UGA	7	11013	0.8	0.685
135	WI-01-18	0	New UGA	8	10521	0.834	0.687
135	WI-01-18	0	New UGA	9	10081	0.846	0.804
135	WI-01-18	0	New UGA	10	9674	0.889	0.805
135	WI-01-18	0	New UGA	11	9277	0.866	0.797
135	WI-01-18	0	New UGA	12	8825	0.751	0.613
135	WI-01-18	0	New UGA	13	8411	0.621	0.479
135	WI-01-18	0	New UGA	14	10913	-39.54	-26.32
136	WI-01-22	0	New UGA	1	11179	-39.474	-26.262
136	WI-01-22	0	New UGA	2	11165	-39.497	-26.277
136	WI-01-22	0	New UGA	3	11160	-39.54	-26.32
136	WI-01-22	0	New UGA	4	6411	0.621	0.293
136	WI-01-22	0	New UGA	5	5876	0.714	0.539
136	WI-01-22	0	New UGA	6	6120	0.504	0.37
136	WI-01-22	0	New UGA	7	5931	0.566	0.644
136	WI-01-22	0	New UGA	8	5794	0.611	0.583

136	WI-01-22	0	New UGA	9	5579	0.586	0.576
136	WI-01-22	0	New UGA	10	5376	0.616	0.647
136	WI-01-22	0	New UGA	11	5161	0.704	0.844
136	WI-01-22	0	New UGA	12	4956	0.495	0.416
136	WI-01-22	0	New UGA	13	4743	0.442	0.514
136	WI-01-22	0	New UGA	14	10915	-39.54	-26.32
137	WI-01-01	0	New UGA	1	11187	-39.486	-26.279
137	WI-01-01	0	New UGA	2	11184	-39.499	-26.272
137	WI-01-01	0	New UGA	3	11166	-39.54	-26.32
137	WI-01-01	0	New UGA	4	4085	0.316	0.185
137	WI-01-01	0	New UGA	5	3241	0.502	0.288
137	WI-01-01	0	New UGA	6	4318	1.09	0.523
137	WI-01-01	0	New UGA	7	5513	2.195	1.103
137	WI-01-01	0	New UGA	8	5603	2.263	1.436
137	WI-01-01	0	New UGA	9	5511	2.24	1.258
137	WI-01-01	0	New UGA	10	5398	2.286	1.305
137	WI-01-01	0	New UGA	11	5286	2.302	1.341
137	WI-01-01	0	New UGA	12	5079	2.142	1.104
137	WI-01-01	0	New UGA	13	4752	2.017	0.838
137	WI-01-01	0	New UGA	14	10898	-39.54	-26.32
138	WI-01-14	0	New UGA	1	11252	-39.504	-26.326
138	WI-01-14	0	New UGA	2	11212	-39.51	-26.288
138	WI-01-14	0	New UGA	3	11213	-39.54	-26.32
138	WI-01-14	0	New UGA	4	4343	1.933	0.808
138	WI-01-14	0	New UGA	5	3924	2.059	1.062
138	WI-01-14	0	New UGA	6	6739	0.582	0.322
138	WI-01-14	0	New UGA	7	6522	0.551	0.223
138	WI-01-14	0	New UGA	8	6359	0.533	0.224
138	WI-01-14	0	New UGA	9	5884	0.543	0.259
138	WI-01-14	0	New UGA	10	5658	0.468	0.067
138	WI-01-14	0	New UGA	11	5503	0.456	0.02
138	WI-01-14	0	New UGA	12	5362	0.416	-0.008
138	WI-01-14	0	New UGA	13	5199	0.468	0.095
138	WI-01-14	0	New UGA	14	11080	-39.54	-26.32
139	IAEA-603	83	New UGA	1	11221	-39.427	-26.193
139	IAEA-603	83	New UGA	2	11214	-39.508	-26.277
139	IAEA-603	83	New UGA	3	11211	-39.54	-26.32
139	IAEA-603	83	New UGA	4	4850	0.323	-0.074
139	IAEA-603	83	New UGA	5	3508	0.493	0.148
139	IAEA-603	83	New UGA	6	3097	0.557	-0.154
139	IAEA-603	83	New UGA	7	4982	2.677	-3.353
139	IAEA-603	83	New UGA	8	5241	2.803	-3.486
139	IAEA-603	83	New UGA	9	4990	2.814	-3.624
139	IAEA-603	83	New UGA	10	4679	2.847	-3.556
139	IAEA-603	83	New UGA	11	4376	2.866	-3.5
139	IAEA-603	83	New UGA	12	4093	2.902	-3.549
139	IAEA-603	83	New UGA	13	3969	2.512	-4.036
139	IAEA-603	83	New UGA	14	10920	-39.54	-26.32
140	WI-01-12	0	New UGA	1	11204	-39.505	-26.329

140	WI-01-12	0	New UGA	2	11188	-39.51	-26.29
140	WI-01-12	0	New UGA	3	11172	-39.54	-26.32
140	WI-01-12	0	New UGA	4	5686	2.536	-3.883
140	WI-01-12	0	New UGA	5	357	1.733	-7.021
140	WI-01-12	0	New UGA	6	213	2.089	-7.863
140	WI-01-12	0	New UGA	7	181	1.707	-6.779
140	WI-01-12	0	New UGA	8	156	1.678	-8.464
140	WI-01-12	0	New UGA	9	139	2.649	-8.088
140	WI-01-12	0	New UGA	10	2493	3.128	-2.929
140	WI-01-12	0	New UGA	11	4038	2.904	-3.474
140	WI-01-12	0	New UGA	12	4038	2.742	-3.735
140	WI-01-12	0	New UGA	13	4089	1.298	-0.163
140	WI-01-12	0	New UGA	14	10935	-39.54	-26.32
141	WI-01-20	0	New UGA	1	11138	-39.486	-26.29
141	WI-01-20	0	New UGA	2	11141	-39.501	-26.276
141	WI-01-20	0	New UGA	3	11119	-39.54	-26.32
141	WI-01-20	0	New UGA	4	6544	1.17	0.542
141	WI-01-20	0	New UGA	5	412	0.281	-2.956
141	WI-01-20	0	New UGA	6	246	0.551	-3.282
141	WI-01-20	0	New UGA	7	2092	1.41	0.774
141	WI-01-20	0	New UGA	8	4597	1.509	0.895
141	WI-01-20	0	New UGA	9	4409	1.44	0.895
141	WI-01-20	0	New UGA	10	6912	0.757	1.58
141	WI-01-20	0	New UGA	11	7075	0.521	1.353
141	WI-01-20	0	New UGA	12	6839	0.454	1.211
141	WI-01-20	0	New UGA	13	6673	0.198	0.753
141	WI-01-20	0	New UGA	14	10893	-39.54	-26.32
142	WI-01-02	0	New UGA	1	11157	-39.436	-26.227
142	WI-01-02	0	New UGA	2	11139	-39.498	-26.269
142	WI-01-02	0	New UGA	3	11144	-39.54	-26.32
142	WI-01-02	0	New UGA	4	8431	0.155	0.754
142	WI-01-02	0	New UGA	5	4803	0.222	0.701
142	WI-01-02	0	New UGA	6	4300	0.261	0.79
142	WI-01-02	0	New UGA	7	4245	0.317	0.768
142	WI-01-02	0	New UGA	8	4277	0.88	0.968
142	WI-01-02	0	New UGA	9	3390	2.554	1.372
142	WI-01-02	0	New UGA	10	3517	2.642	1.431
142	WI-01-02	0	New UGA	11	3704	2.677	1.557
142	WI-01-02	0	New UGA	12	3456	2.38	1.032
142	WI-01-02	0	New UGA	13	3183	2.355	1.006
142	WI-01-02	0	New UGA	14	10888	-39.54	-26.32
143	WI-01-15	0	New UGA	1	11175	-39.463	-26.274
143	WI-01-15	0	New UGA	2	11146	-39.504	-26.286
143	WI-01-15	0	New UGA	3	11135	-39.54	-26.32
143	WI-01-15	0	New UGA	4	3294	2.382	1.068
143	WI-01-15	0	New UGA	5	324	1.57	-1.335
143	WI-01-15	0	New UGA	6	221	2.032	-2.732
143	WI-01-15	0	New UGA	7	192	1.883	-2.861
143	WI-01-15	0	New UGA	8	171	1.973	-2.586

143	WI-01-15	0	New UGA	9	153	2.369	-1.046
143	WI-01-15	0	New UGA	10	141	1.811	-3.032
143	WI-01-15	0	New UGA	11	129	1.369	-3.192
143	WI-01-15	0	New UGA	12	119	2.009	-4.639
143	WI-01-15	0	New UGA	13	108	2.916	-2.625
143	WI-01-15	0	New UGA	14	11013	-39.54	-26.32
144	WI-01-21	0	New UGA	1	11263	-39.427	-26.181
144	WI-01-21	0	New UGA	2	11261	-39.495	-26.272
144	WI-01-21	0	New UGA	3	11239	-39.54	-26.32
144	WI-01-21	0	New UGA	4	352	0.102	-3.98
144	WI-01-21	0	New UGA	5	103	1.651	-2.439
144	WI-01-21	0	New UGA	6	85	2.471	-2.944
144	WI-01-21	0	New UGA	7	81	1.661	-4.591
144	WI-01-21	0	New UGA	8	78	2.075	-5.045
144	WI-01-21	0	New UGA	9	74	0.908	-5.261
144	WI-01-21	0	New UGA	10	70	2.226	-4.071
144	WI-01-21	0	New UGA	11	67	2.313	-3.398
144	WI-01-21	0	New UGA	12	64	2.435	-3.993
144	WI-01-21	0	New UGA	13	60	0.859	-3.042
144	WI-01-21	0	New UGA	14	10912	-39.54	-26.32
145	WI-01-10	0	New UGA	1	11215	-39.487	-26.267
145	WI-01-10	0	New UGA	2	11190	-39.509	-26.284
145	WI-01-10	0	New UGA	3	11171	-39.54	-26.32
145	WI-01-10	0	New UGA	4	224	-0.601	-7.97
145	WI-01-10	0	New UGA	5	68	1.199	-7.62
145	WI-01-10	0	New UGA	6	57	2.094	-4.24
145	WI-01-10	0	New UGA	7	55	1.372	-4.286
145	WI-01-10	0	New UGA	8	52	1.286	-4.277
145	WI-01-10	0	New UGA	9	50	2.795	-4.295
145	WI-01-10	0	New UGA	10	11069	-39.54	-26.32
146	IAEA-603	51	New UGA	1	11195	-39.481	-26.245
146	IAEA-603	51	New UGA	2	11194	-39.512	-26.277
146	IAEA-603	51	New UGA	3	11166	-39.54	-26.32
146	IAEA-603	51	New UGA	4	170	-1.35	-7.982
146	IAEA-603	51	New UGA	5	51	1.224	-5.705
146	IAEA-603	51	New UGA	6	11201	-39.54	-26.32

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O				
52	IAEA-603-1	89	New UGA	4	10834	2.379	-2.589					
52	IAEA-603-1	89	New UGA	5	9529	2.344	-2.65					
52	IAEA-603-1	89	New UGA	6	8487	2.347	-2.693					
52	IAEA-603-1	89	New UGA	7	7484	2.312	-2.717					
52	IAEA-603-1	89	New UGA	8	6602	2.258	-2.788					
52	IAEA-603-1	89	New UGA	9	5804	2.309	-2.603					
52	IAEA-603-1	89	New UGA	10	5237	2.683	-2.242					
52	IAEA-603-1	89	New UGA	11	4596	2.671	-2.298					
52	IAEA-603-1	89	New UGA	12	4035	2.662	-2.313					
52	IAEA-603-1	89	New UGA	13	3542	2.655	-2.38	2.5	-2.5	0.2	0.2	
53	IAEA-603-2	101	New UGA	4	11105	2.482	-2.481					
53	IAEA-603-2	101	New UGA	5	9664	2.352	-2.745					
53	IAEA-603-2	101	New UGA	6	8555	2.312	-2.836					
53	IAEA-603-2	101	New UGA	7	7531	2.286	-2.901					
53	IAEA-603-2	101	New UGA	8	6604	2.254	-2.941					
53	IAEA-603-2	101	New UGA	9	5788	2.253	-3.004					
53	IAEA-603-2	101	New UGA	10	5075	2.21	-3.059					
53	IAEA-603-2	101	New UGA	11	4446	2.211	-2.925					
53	IAEA-603-2	101	New UGA	12	4018	2.677	-2.469					
53	IAEA-603-2	101	New UGA	13	3516	2.67	-2.51	2.4	-2.8	0.2	0.2	
54	IAEA-603-3	59	New UGA	4	5494	2.225	-3.638					
54	IAEA-603-3	59	New UGA	5	4836	2.241	-3.591					
54	IAEA-603-3	59	New UGA	6	4294	2.243	-3.616					
54	IAEA-603-3	59	New UGA	7	3796	2.216	-3.66					
54	IAEA-603-3	59	New UGA	8	3347	2.243	-3.686					
54	IAEA-603-3	59	New UGA	9	2950	2.243	-3.748					
54	IAEA-603-3	59	New UGA	10	2597	2.231	-3.68					
54	IAEA-603-3	59	New UGA	11	2288	2.22	-3.79					
54	IAEA-603-3	59	New UGA	12	2014	2.24	-3.622					
54	IAEA-603-3	59	New UGA	13	1826	2.618	-3.142	2.3	-3.6	0.1	0.2	
59	IAEA-603-4	76	New UGA	4	8769	2.583	-2.416					
59	IAEA-603-4	76	New UGA	5	7649	2.56	-2.443					
59	IAEA-603-4	76	New UGA	6	6754	2.554	-2.4					
59	IAEA-603-4	76	New UGA	7	5868	2.378	-2.71					

59	IAEA-603-4	76	New UGA	8	5083	2.193	-3.024				
59	IAEA-603-4	76	New UGA	9	4451	2.204	-3.005				
59	IAEA-603-4	76	New UGA	10	3909	2.24	-3.036				
59	IAEA-603-4	76	New UGA	11	3426	2.272	-3.081				
59	IAEA-603-4	76	New UGA	12	3003	2.238	-3.032				
59	IAEA-603-4	76	New UGA	13	2634	2.266	-3.135	2.3	-2.8	0.2	0.3
67	IAEA-603-5	66	New UGA	4	7566	2.565	-2.499				
67	IAEA-603-5	66	New UGA	5	6642	2.568	-2.549				
67	IAEA-603-5	66	New UGA	6	5836	2.38	-2.787				
67	IAEA-603-5	66	New UGA	7	5103	2.151	-3.129				
67	IAEA-603-5	66	New UGA	8	4501	2.144	-3.147				
67	IAEA-603-5	66	New UGA	9	3968	2.182	-3.161				
67	IAEA-603-5	66	New UGA	10	3499	2.172	-3.175				
67	IAEA-603-5	66	New UGA	11	3089	2.22	-3.252				
67	IAEA-603-5	66	New UGA	12	2718	2.199	-3.186				
67	IAEA-603-5	66	New UGA	13	2399	2.173	-3.301	2.3	-3.0	0.2	0.3
75	IAEA-603-6	85	New UGA	4	9331	2.561	-2.448				
75	IAEA-603-6	85	New UGA	5	8318	2.55	-2.393				
75	IAEA-603-6	85	New UGA	6	7376	2.222	-2.935				
75	IAEA-603-6	85	New UGA	7	6650	2.182	-2.989				
75	IAEA-603-6	85	New UGA	8	6000	2.165	-3.069				
75	IAEA-603-6	85	New UGA	9	5412	2.175	-3.019				
75	IAEA-603-6	85	New UGA	10	4878	2.183	-3.04				
75	IAEA-603-6	85	New UGA	11	4396	2.218	-3.018				
75	IAEA-603-6	85	New UGA	12	3964	2.167	-3.057				
75	IAEA-603-6	85	New UGA	13	3575	2.169	-3.098	2.3	-2.9	0.2	0.3
83	IAEA-603-7	67	New UGA	4	7157	2.54	-2.556				
83	IAEA-603-7	67	New UGA	5	6417	2.587	-2.506				
83	IAEA-603-7	67	New UGA	6	5757	2.408	-2.71				
83	IAEA-603-7	67	New UGA	7	5214	2.388	-2.752				
83	IAEA-603-7	67	New UGA	8	4656	2.151	-3.095				
83	IAEA-603-7	67	New UGA	9	4204	2.173	-3.099				
83	IAEA-603-7	67	New UGA	10	3803	2.181	-3.185				
83	IAEA-603-7	67	New UGA	11	3437	2.193	-3.176				
83	IAEA-603-7	67	New UGA	12	3108	2.162	-3.257				

83	IAEA-603-7	67	New UGA	13	2809	2.19	-3.201	2.3	-3.0	0.2	0.3
91	IAEA-603-8	101	New UGA	4	11531	2.63	-2.33				
91	IAEA-603-8	101	New UGA	5	10428	2.556	-2.492				
91	IAEA-603-8	101	New UGA	6	9323	2.246	-2.959				
91	IAEA-603-8	101	New UGA	7	8492	2.239	-3.011				
91	IAEA-603-8	101	New UGA	8	7744	2.227	-2.974				
91	IAEA-603-8	101	New UGA	9	7063	2.258	-2.968				
91	IAEA-603-8	101	New UGA	10	6427	2.256	-3.038				
91	IAEA-603-8	101	New UGA	11	5839	2.251	-3.048				
91	IAEA-603-8	101	New UGA	12	5317	2.252	-3.092				
91	IAEA-603-8	101	New UGA	13	4837	2.252	-3.089	2.3	-2.9	0.1	0.3
99	IAEA-603-9	93	New UGA	4	10661	2.55	-2.431				
99	IAEA-603-9	93	New UGA	5	9577	2.437	-2.629				
99	IAEA-603-9	93	New UGA	6	8781	2.399	-2.676				
99	IAEA-603-9	93	New UGA	7	7954	2.256	-2.899				
99	IAEA-603-9	93	New UGA	8	7273	2.239	-2.972				
99	IAEA-603-9	93	New UGA	9	6654	2.248	-2.977				
99	IAEA-603-9	93	New UGA	10	6084	2.234	-2.946				
99	IAEA-603-9	93	New UGA	11	5560	2.258	-2.969				
99	IAEA-603-9	93	New UGA	12	5074	2.272	-2.963				
99	IAEA-603-9	93	New UGA	13	4644	2.255	-2.99	2.3	-2.8	0.1	0.2
107	IAEA-603-10	71	New UGA	4	7853	2.521	-2.56				
107	IAEA-603-10	71	New UGA	5	7068	2.415	-2.848				
107	IAEA-603-10	71	New UGA	6	6527	2.411	-2.804				
107	IAEA-603-10	71	New UGA	7	6025	2.391	-2.767				
107	IAEA-603-10	71	New UGA	8	5575	2.463	-2.685				
107	IAEA-603-10	71	New UGA	9	5136	2.42	-2.845				
107	IAEA-603-10	71	New UGA	10	4736	2.378	-2.8				
107	IAEA-603-10	71	New UGA	11	4341	2.422	-2.801				
107	IAEA-603-10	71	New UGA	12	3993	2.412	-2.784				
107	IAEA-603-10	71	New UGA	13	3668	2.39	-2.816	2.4	-2.8	0.0	0.1
115	IAEA-603-11	90	New UGA	4	9748	2.485	-3.495				
115	IAEA-603-11	90	New UGA	5	8915	2.488	-3.532				
115	IAEA-603-11	90	New UGA	6	8252	2.506	-3.468				
115	IAEA-603-11	90	New UGA	7	7539	2.36	-3.749				

115	IAEA-603-11 90	New UGA	8	6969	2.344	-3.815				
115	IAEA-603-11 90	New UGA	9	6376	2.152	-4.029				
115	IAEA-603-11 90	New UGA	10	5907	2.118	-4.045				
115	IAEA-603-11 90	New UGA	11	5490	2.181	-3.997				
115	IAEA-603-11 90	New UGA	12	5077	2.164	-4.01				
115	IAEA-603-11 90	New UGA	13	4711	2.158	-4.108	2.3	-3.8	0.2	0.2
123	IAEA-603-12 62	New UGA	4							
123	IAEA-603-12 62	New UGA	5	5092	2.597	-3.947				
123	IAEA-603-12 62	New UGA	6	4762	2.588	-4.007				
123	IAEA-603-12 62	New UGA	7	4478	2.67	-3.832				
123	IAEA-603-12 62	New UGA	8	4158	2.475	-4.265				
123	IAEA-603-12 62	New UGA	9	3911	2.512	-4.275				
123	IAEA-603-12 62	New UGA	10	3641	2.281	-4.609				
123	IAEA-603-12 62	New UGA	11	3425	2.246	-4.636				
123	IAEA-603-12 62	New UGA	12	3230	2.304	-4.638				
123	IAEA-603-12 62	New UGA	13	3049	2.283	-4.636	2.4	-4.3	0.2	0.3
131	IAEA-603-13 68	New UGA Exetainers								
131	IAEA-603-13 68	New UGA Exetainers								
131	IAEA-603-13 68	New UGA	6	5949	2.694	-2.416				
131	IAEA-603-13 68	New UGA	7	5565	2.694	-2.415				
131	IAEA-603-13 68	New UGA	8	5331	2.737	-2.421				
131	IAEA-603-13 68	New UGA	9	5083	2.753	-2.356				
131	IAEA-603-13 68	New UGA	10	4822	2.721	-2.308				
131	IAEA-603-13 68	New UGA	11	4748	2.82	-2.327				
131	IAEA-603-13 68	New UGA	12	4573	2.854	-2.192				
131	IAEA-603-13 68	New UGA	13	4411	2.728	-2.42	2.8	-2.4	0.1	0.1
139	IAEA-603-14 83	New UGA	4							
139	IAEA-603-14 83	New UGA	5							
139	IAEA-603-14 83	New UGA	6							
139	IAEA-603-14 83	New UGA	7	4982	2.677	-3.353				
139	IAEA-603-14 83	New UGA	8	5241	2.803	-3.486				
139	IAEA-603-14 83	New UGA	9	4990	2.814	-3.624				
139	IAEA-603-14 83	New UGA	10	4679	2.847	-3.556				
139	IAEA-603-14 83	New UGA	11	4376	2.866	-3.5				
139	IAEA-603-14 83	New UGA	12	4093	2.902	-3.549				

139	IAEA-603-1483	New UGA	13	3969	2.512	-4.036	2.8	-3.6	0.1	0.2
				11531					0.179918	0.328731

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O				
55	BB-04-14	0	New UGA	4	8153		0.133	0.264				
55	BB-04-14	0	New UGA	5	7131		0.131	0.348				
55	BB-04-14	0	New UGA	6	6243		0.008	0.11				
55	BB-04-14	0	New UGA	7	5430		-0.249	-0.278				
55	BB-04-14	0	New UGA	8	4767		-0.262	-0.297				
55	BB-04-14	0	New UGA	9	4182		-0.242	-0.328				
55	BB-04-14	0	New UGA	10	3670		-0.202	-0.304				
55	BB-04-14	0	New UGA	11	3219		-0.214	-0.393				
55	BB-04-14	0	New UGA	12	2824		-0.222	-0.498				
55	BB-04-14	0	New UGA	13	2476		-0.169	-0.409	-0.1	-0.2	0.2	0.3
56	BB-04-17	0	New UGA	4	9555		0.195	0.252				
56	BB-04-17	0	New UGA	5	8353		0.204	0.288				
56	BB-04-17	0	New UGA	6	7301		0.049	-0.007				
56	BB-04-17	0	New UGA	7	6345		-0.221	-0.338				
56	BB-04-17	0	New UGA	8	5557		-0.249	-0.362				
56	BB-04-17	0	New UGA	9	4870		-0.21	-0.377				
56	BB-04-17	0	New UGA	10	4266		-0.253	-0.378				
56	BB-04-17	0	New UGA	11	3728		-0.211	-0.457				
56	BB-04-17	0	New UGA	12	3264		-0.215	-0.421				
56	BB-04-17	0	New UGA	13	2862		-0.199	-0.518	-0.1	-0.2	0.2	0.3
57	BB-04-22	0	New UGA	4	6802		-0.196	-0.066				
57	BB-04-22	0	New UGA	5	5937		-0.186	-0.056				
57	BB-04-22	0	New UGA	6	5190		-0.311	-0.234				
57	BB-04-22	0	New UGA	7	4562		-0.341	-0.285				
57	BB-04-22	0	New UGA	8	3957		-0.588	-0.686				
57	BB-04-22	0	New UGA	9	3473		-0.562	-0.724				
57	BB-04-22	0	New UGA	10	3045		-0.527	-0.682				
57	BB-04-22	0	New UGA	11	2670		-0.515	-0.778				
57	BB-04-22	0	New UGA	12	2343		-0.498	-0.739				
57	BB-04-22	0	New UGA	13	2058		-0.495	-0.797	-0.4	-0.5	0.2	0.3
58	BB-04-15	0	New UGA	4	10949		0.224	0.407				
58	BB-04-15	0	New UGA	5	9577		0.235	0.418				
58	BB-04-15	0	New UGA	6	8363		0.044	0.144				
58	BB-04-15	0	New UGA	7	7259		-0.217	-0.259				

58	BB-04-15	0	New UGA	8	6363	-0.208	-0.203				
58	BB-04-15	0	New UGA	9	5580	-0.203	-0.293				
58	BB-04-15	0	New UGA	10	4886	-0.187	-0.292				
58	BB-04-15	0	New UGA	11	4276	-0.229	-0.3				
58	BB-04-15	0	New UGA	12	3745	-0.189	-0.426				
58	BB-04-15	0	New UGA	13	3288	-0.152	-0.409	-0.1	-0.1	0.2	0.3
60	BB-04-27	0	New UGA	4	9919	-0.122	0.373				
60	BB-04-27	0	New UGA	5	8623	-0.368	-0.238				
60	BB-04-27	0	New UGA	6	7613	-0.396	-0.222				
60	BB-04-27	0	New UGA	7	6607	-0.589	-0.546				
60	BB-04-27	0	New UGA	8	5794	-0.612	-0.512				
60	BB-04-27	0	New UGA	9	5077	-0.591	-0.517				
60	BB-04-27	0	New UGA	10	4448	-0.611	-0.591				
60	BB-04-27	0	New UGA	11	3896	-0.585	-0.579				
60	BB-04-27	0	New UGA	12	3409	-0.594	-0.574				
60	BB-04-27	0	New UGA	13	2988	-0.595	-0.63	-0.5	-0.4	0.2	0.3
61	BB-04-32	0	New UGA	4	7926	-0.302	-0.283				
61	BB-04-32	0	New UGA	5	6864	-0.302	-0.242				
61	BB-04-32	0	New UGA	6	6040	-0.295	-0.177				
61	BB-04-32	0	New UGA	7	5241	-0.434	-0.455				
61	BB-04-32	0	New UGA	8	4596	-0.471	-0.567				
61	BB-04-32	0	New UGA	9	3981	-0.72	-0.879				
61	BB-04-32	0	New UGA	10	3494	-0.656	-0.867				
61	BB-04-32	0	New UGA	11	3059	-0.687	-0.947				
61	BB-04-32	0	New UGA	12	2679	-0.646	-0.996				
61	BB-04-32	0	New UGA	13	2350	-0.666	-0.97	-0.5	-0.6	0.2	0.3
62	BB-04-09	0	New UGA	4	7211	-0.241	-0.643				
62	BB-04-09	0	New UGA	5	6334	-0.248	-0.618				
62	BB-04-09	0	New UGA	6	5624	-0.208	-0.602				
62	BB-04-09	0	New UGA	7	4966	-0.237	-0.693				
62	BB-04-09	0	New UGA	8	4370	-0.22	-0.614				
62	BB-04-09	0	New UGA	9	3859	-0.174	-0.672				
62	BB-04-09	0	New UGA	10	3390	-0.217	-0.761				
62	BB-04-09	0	New UGA	11	2980	-0.192	-0.715				
62	BB-04-09	0	New UGA	12	2621	-0.192	-0.71				

62	BB-04-09	0	New UGA	13	2332	0.016	-0.479	-0.2	-0.7	0.1	0.1
63	BB-04-18	0	New UGA	4	13671	0.28	0.26				
63	BB-04-18	0	New UGA	5	11826	0.16	0.024				
63	BB-04-18	0	New UGA	6	10461	0.116	-0.021				
63	BB-04-18	0	New UGA	7	9089	-0.144	-0.371				
63	BB-04-18	0	New UGA	8	7993	-0.158	-0.397				
63	BB-04-18	0	New UGA	9	7017	-0.102	-0.396				
63	BB-04-18	0	New UGA	10	6163	-0.124	-0.399				
63	BB-04-18	0	New UGA	11	5421	-0.104	-0.435				
63	BB-04-18	0	New UGA	12	4766	-0.065	-0.437				
63	BB-04-18	0	New UGA	13	4181	-0.075	-0.298	0.0	-0.2	0.2	0.2
64	BB-05-09	0	New UGA	4	11918	1.307	0.708				
64	BB-05-09	0	New UGA	5	10421	1.25	0.654				
64	BB-05-09	0	New UGA	6	9110	1.084	0.401				
64	BB-05-09	0	New UGA	7	7922	0.854	0.045				
64	BB-05-09	0	New UGA	8	6962	0.851	-0.023				
64	BB-05-09	0	New UGA	9	6111	0.855	-0.02				
64	BB-05-09	0	New UGA	10	5365	0.831	-0.094				
64	BB-05-09	0	New UGA	11	4699	0.871	-0.089				
64	BB-05-09	0	New UGA	12	4124	0.88	-0.045				
64	BB-05-09	0	New UGA	13	3617	0.851	-0.116	1.0	0.1	0.2	0.3
65	BB-04-33	0	New UGA	4	8524	-0.618	-0.292				
65	BB-04-33	0	New UGA	5	7457	-0.621	-0.232				
65	BB-04-33	0	New UGA	6	6531	-0.776	-0.502				
65	BB-04-33	0	New UGA	7	5681	-0.99	-0.84				
65	BB-04-33	0	New UGA	8	4990	-0.992	-0.854				
65	BB-04-33	0	New UGA	9	4376	-1.007	-0.917				
65	BB-04-33	0	New UGA	10	3845	-0.988	-0.982				
65	BB-04-33	0	New UGA	11	3370	-1.016	-0.894				
65	BB-04-33	0	New UGA	12	2958	-0.934	-1.022				
65	BB-04-33	0	New UGA	13	2591	-0.973	-0.893	-0.9	-0.7	0.2	0.3
66	BB-04-25	0	New UGA	4	10039	-0.082	-0.011				
66	BB-04-25	0	New UGA	5	8830	-0.075	-0.005				
66	BB-04-25	0	New UGA	6	7746	-0.234	-0.238				
66	BB-04-25	0	New UGA	7	6852	-0.204	-0.296				

66	BB-04-25	0	New UGA	8	5966	-0.422	-0.515				
66	BB-04-25	0	New UGA	9	5239	-0.383	-0.563				
66	BB-04-25	0	New UGA	10	4594	-0.426	-0.634				
66	BB-04-25	0	New UGA	11	4038	-0.436	-0.696				
66	BB-04-25	0	New UGA	12	3557	-0.426	-0.705				
66	BB-04-25	0	New UGA	13	3123	-0.442	-0.721	-0.3	-0.4	0.1	0.3
68	BB-04-10	0	New UGA	4	6155	-0.046	-0.649				
68	BB-04-10	0	New UGA	5	5449	-0.028	-0.665				
68	BB-04-10	0	New UGA	6	4807	-0.222	-0.879				
68	BB-04-10	0	New UGA	7	4264	-0.216	-0.981				
68	BB-04-10	0	New UGA	8	3727	-0.509	-1.23				
68	BB-04-10	0	New UGA	9	3306	-0.453	-1.308				
68	BB-04-10	0	New UGA	10	2920	-0.458	-1.361				
68	BB-04-10	0	New UGA	11	2584	-0.509	-1.354				
68	BB-04-10	0	New UGA	12	2300	-0.373	-1.383				
68	BB-04-10	0	New UGA	13	2035	-0.345	-1.309	-0.3	-1.1	0.2	0.3
69	BB-04-19	0	New UGA	4	8757	0.099	0.3				
69	BB-04-19	0	New UGA	5	7730	0.128	0.299				
69	BB-04-19	0	New UGA	6	6818	-0.066	0.048				
69	BB-04-19	0	New UGA	7	5987	-0.248	-0.218				
69	BB-04-19	0	New UGA	8	5305	-0.285	-0.201				
69	BB-04-19	0	New UGA	9	4693	-0.251	-0.321				
69	BB-04-19	0	New UGA	10	4158	-0.296	-0.315				
69	BB-04-19	0	New UGA	11	3682	-0.241	-0.387				
69	BB-04-19	0	New UGA	12	3267	-0.236	-0.388				
69	BB-04-19	0	New UGA	13	2890	-0.237	-0.303	-0.2	-0.1	0.2	0.3
70	BB-04-29	0	New UGA	4	10177	-0.494	-0.183				
70	BB-04-29	0	New UGA	5	9026	-0.493	-0.193				
70	BB-04-29	0	New UGA	6	8015	-0.656	-0.407				
70	BB-04-29	0	New UGA	7	7170	-0.656	-0.409				
70	BB-04-29	0	New UGA	8	6347	-0.821	-0.72				
70	BB-04-29	0	New UGA	9	5663	-0.86	-0.79				
70	BB-04-29	0	New UGA	10	5047	-0.853	-0.787				
70	BB-04-29	0	New UGA	11	4505	-0.836	-0.811				
70	BB-04-29	0	New UGA	12	4020	-0.816	-0.835				

70	BB-04-29	0	New UGA	13	3589	-0.824	-0.839	-0.7	-0.6	0.1	0.3
71	BB-04-20	0	New UGA	4	9996	-0.086	0.208				
71	BB-04-20	0	New UGA	5	8925	-0.08	0.147				
71	BB-04-20	0	New UGA	6	7941	-0.284	-0.093				
71	BB-04-20	0	New UGA	7	7034	-0.556	-0.431				
71	BB-04-20	0	New UGA	8	6305	-0.524	-0.501				
71	BB-04-20	0	New UGA	9	5629	-0.534	-0.571				
71	BB-04-20	0	New UGA	10	5033	-0.539	-0.582				
71	BB-04-20	0	New UGA	11	4497	-0.525	-0.578				
71	BB-04-20	0	New UGA	12	4021	-0.527	-0.645				
71	BB-04-20	0	New UGA	13	3598	-0.525	-0.595	-0.4	-0.4	0.2	0.3
72	BB-04-23	0	New UGA	4	11618	-0.242	0.229				
72	BB-04-23	0	New UGA	5	10344	-0.173	0.348				
72	BB-04-23	0	New UGA	6	9161	-0.375	-0.013				
72	BB-04-23	0	New UGA	7	8207	-0.378	0.033				
72	BB-04-23	0	New UGA	8	7286	-0.539	-0.319				
72	BB-04-23	0	New UGA	9	6503	-0.631	-0.334				
72	BB-04-23	0	New UGA	10	5824	-0.612	-0.391				
72	BB-04-23	0	New UGA	11	5210	-0.591	-0.394				
72	BB-04-23	0	New UGA	12	4670	-0.586	-0.365				
72	BB-04-23	0	New UGA	13	4183	-0.599	-0.422	-0.5	-0.2	0.2	0.3
73	BB-05-02	0	New UGA	4	7224	0.756	0.67				
73	BB-05-02	0	New UGA	5	6427	0.78	0.661				
73	BB-05-02	0	New UGA	6	5729	0.64	0.472				
73	BB-05-02	0	New UGA	7	5091	0.404	0.132				
73	BB-05-02	0	New UGA	8	4589	0.409	0.083				
73	BB-05-02	0	New UGA	9	4128	0.419	0.009				
73	BB-05-02	0	New UGA	10	3717	0.416	-0.003				
73	BB-05-02	0	New UGA	11	3344	0.394	-0.036				
73	BB-05-02	0	New UGA	12	3008	0.422	-0.046				
73	BB-05-02	0	New UGA	13	2709	0.419	-0.119	0.5	0.2	0.2	0.3
74	BB-05-12	0	New UGA	4	9261	0.223	-0.019				
74	BB-05-12	0	New UGA	5	8321	0.214	-0.022				
74	BB-05-12	0	New UGA	6	7463	0.056	-0.296				
74	BB-05-12	0	New UGA	7	6751	0.035	-0.394				

74	BB-05-12	0	New UGA	8	6086	0.039	-0.369				
74	BB-05-12	0	New UGA	9	5486	0.027	-0.444				
74	BB-05-12	0	New UGA	10	4946	0.041	-0.457				
74	BB-05-12	0	New UGA	11	4456	0.01	-0.467				
74	BB-05-12	0	New UGA	12	4014	0.022	-0.49				
74	BB-05-12	0	New UGA	13	3619	0.024	-0.476	0.1	-0.3	0.1	0.2
76	BB-05-06	0	New UGA	4	6787	1.065	0.393				
76	BB-05-06	0	New UGA	5	6043	0.929	0.249				
76	BB-05-06	0	New UGA	6	5497	0.899	0.147				
76	BB-05-06	0	New UGA	7	4930	0.728	-0.202				
76	BB-05-06	0	New UGA	8	4463	0.695	-0.197				
76	BB-05-06	0	New UGA	9	4030	0.695	-0.174				
76	BB-05-06	0	New UGA	10	3647	0.693	-0.232				
76	BB-05-06	0	New UGA	11	3293	0.726	-0.315				
76	BB-05-06	0	New UGA	12	2978	0.718	-0.265				
76	BB-05-06	0	New UGA	13	2693	0.717	-0.404	0.8	-0.1	0.1	0.3
77	BB-04-11	0	New UGA	4	8969	0.032	0.283				
77	BB-04-11	0	New UGA	5	7976	-0.12	-0.068				
77	BB-04-11	0	New UGA	6	7251	-0.129	-0.063				
77	BB-04-11	0	New UGA	7	6573	-0.141	-0.056				
77	BB-04-11	0	New UGA	8	5963	-0.107	-0.064				
77	BB-04-11	0	New UGA	9	5385	-0.14	-0.148				
77	BB-04-11	0	New UGA	10	4860	-0.157	-0.063				
77	BB-04-11	0	New UGA	11	4395	-0.128	-0.138				
77	BB-04-11	0	New UGA	12	3970	-0.155	-0.213				
77	BB-04-11	0	New UGA	13	3586	-0.098	-0.203	-0.1	-0.1	0.1	0.1
78	BB-04-31	0	New UGA	4	7543	0.238	-0.519				
78	BB-04-31	0	New UGA	5	6782	0.262	-0.441				
78	BB-04-31	0	New UGA	6	6104	0.126	-0.648				
78	BB-04-31	0	New UGA	7	5540	0.156	-0.683				
78	BB-04-31	0	New UGA	8	5021	0.125	-0.684				
78	BB-04-31	0	New UGA	9	4550	0.147	-0.72				
78	BB-04-31	0	New UGA	10	4051	-0.116	-1.146				
78	BB-04-31	0	New UGA	11	3662	-0.148	-1.086				
78	BB-04-31	0	New UGA	12	3321	-0.084	-1.233				

78	BB-04-31	0	New UGA	13	3002	-0.06	-1.23	0.1	-0.8	0.2	0.3
79	BB-05-07	0	New UGA	4	6644	0.824	0.121				
79	BB-05-07	0	New UGA	5	5967	0.882	0.139				
79	BB-05-07	0	New UGA	6	5285	0.531	-0.274				
79	BB-05-07	0	New UGA	7	4773	0.464	-0.446				
79	BB-05-07	0	New UGA	8	4318	0.456	-0.437				
79	BB-05-07	0	New UGA	9	3896	0.477	-0.479				
79	BB-05-07	0	New UGA	10	3520	0.478	-0.399				
79	BB-05-07	0	New UGA	11	3178	0.469	-0.512				
79	BB-05-07	0	New UGA	12	2866	0.501	-0.42				
79	BB-05-07	0	New UGA	13	2593	0.484	-0.57	0.6	-0.3	0.2	0.3
80	BB-04-30	0	New UGA	4	12724	-0.203	-0.303				
80	BB-04-30	0	New UGA	5	11432	-0.221	-0.294				
80	BB-04-30	0	New UGA	6	10287	-0.412	-0.577				
80	BB-04-30	0	New UGA	7	9217	-0.668	-0.876				
80	BB-04-30	0	New UGA	8	8336	-0.676	-0.97				
80	BB-04-30	0	New UGA	9	7528	-0.683	-0.999				
80	BB-04-30	0	New UGA	10	6811	-0.632	-0.962				
80	BB-04-30	0	New UGA	11	6175	-0.608	-0.931				
80	BB-04-30	0	New UGA	12	5567	-0.669	-0.996				
80	BB-04-30	0	New UGA	13	5030	-0.64	-0.991	-0.5	-0.8	0.2	0.3
81	BB-04-26	0	New UGA	4	8088	-0.262	-0.04				
81	BB-04-26	0	New UGA	5	7213	-0.236	-0.029				
81	BB-04-26	0	New UGA	6	6542	-0.268	-0.047				
81	BB-04-26	0	New UGA	7	5916	-0.246	-0.034				
81	BB-04-26	0	New UGA	8	5277	-0.424	-0.317				
81	BB-04-26	0	New UGA	9	4704	-0.647	-0.613				
81	BB-04-26	0	New UGA	10	4249	-0.671	-0.666				
81	BB-04-26	0	New UGA	11	3848	-0.642	-0.688				
81	BB-04-26	0	New UGA	12	3481	-0.569	-0.68				
81	BB-04-26	0	New UGA	13	3140	-0.544	-0.599	-0.5	-0.4	0.2	0.3
82	BB-05-05	0	New UGA	4	8168	1.917	0.99				
82	BB-05-05	0	New UGA	5	7243	1.781	0.77				
82	BB-05-05	0	New UGA	6	6578	1.776	0.687				
82	BB-05-05	0	New UGA	7	5894	1.584	0.463				

82	BB-05-05	0	New UGA	8	5334	1.567	0.413				
82	BB-05-05	0	New UGA	9	4826	1.563	0.357				
82	BB-05-05	0	New UGA	10	4361	1.595	0.331				
82	BB-05-05	0	New UGA	11	3948	1.575	0.334				
82	BB-05-05	0	New UGA	12	3562	1.59	0.33				
82	BB-05-05	0	New UGA	13	3221	1.582	0.364	1.7	0.5	0.1	0.2
84	BB-05-14	0	New UGA	4	6737	0.058	-0.252				
84	BB-05-14	0	New UGA	5	6021	0.07	-0.162				
84	BB-05-14	0	New UGA	6	5391	-0.059	-0.413				
84	BB-05-14	0	New UGA	7	4875	-0.053	-0.404				
84	BB-05-14	0	New UGA	8	4356	-0.232	-0.756				
84	BB-05-14	0	New UGA	9	3942	-0.246	-0.77				
84	BB-05-14	0	New UGA	10	3563	-0.208	-0.792				
84	BB-05-14	0	New UGA	11	3222	-0.156	-0.749				
84	BB-05-14	0	New UGA	12	2918	-0.172	-0.799				
84	BB-05-14	0	New UGA	13	2637	-0.17	-0.844	-0.1	-0.6	0.1	0.3
85	BB-05-03	0	New UGA	4	9389	1.696	1.215				
85	BB-05-03	0	New UGA	5	8457	1.726	1.232				
85	BB-05-03	0	New UGA	6	7604	1.58	0.925				
85	BB-05-03	0	New UGA	7	6849	1.359	0.714				
85	BB-05-03	0	New UGA	8	6199	1.318	0.638				
85	BB-05-03	0	New UGA	9	5627	1.304	0.552				
85	BB-05-03	0	New UGA	10	5100	1.328	0.568				
85	BB-05-03	0	New UGA	11	4629	1.304	0.539				
85	BB-05-03	0	New UGA	12	4202	1.357	0.56				
85	BB-05-03	0	New UGA	13	3816	1.338	0.473	1.4	0.7	0.2	0.3
86	BB-05-04	0	New UGA	4	7483	1.718	1.049				
86	BB-05-04	0	New UGA	5	6649	1.706	0.989				
86	BB-05-04	0	New UGA	6	5916	1.58	0.762				
86	BB-05-04	0	New UGA	7	5364	1.566	0.743				
86	BB-05-04	0	New UGA	8	4873	1.574	0.704				
86	BB-05-04	0	New UGA	9	4419	1.579	0.722				
86	BB-05-04	0	New UGA	10	4013	1.589	0.761				
86	BB-05-04	0	New UGA	11	3639	1.558	0.717				
86	BB-05-04	0	New UGA	12	3309	1.586	0.749				

86	BB-05-04	0	New UGA	13	3006	1.629	0.721	1.6	0.8	0.1	0.1
87	BB-05-01	0	New UGA	4	6104	0.24	0.255				
87	BB-05-01	0	New UGA	5	5526	0.329	0.449				
87	BB-05-01	0	New UGA	6	4919	-0.052	-0.157				
87	BB-05-01	0	New UGA	7	4455	-0.166	-0.201				
87	BB-05-01	0	New UGA	8	4042	-0.172	-0.254				
87	BB-05-01	0	New UGA	9	3673	-0.155	-0.305				
87	BB-05-01	0	New UGA	10	3338	-0.153	-0.282				
87	BB-05-01	0	New UGA	11	3035	-0.128	-0.278				
87	BB-05-01	0	New UGA	12	2758	-0.127	-0.255				
87	BB-05-01	0	New UGA	13	2505	-0.109	-0.297	0.0	-0.1	0.2	0.3
88	BB-05-15	0	New UGA	4	10169	0.18	0.036				
88	BB-05-15	0	New UGA	5	9198	0.177	0.031				
88	BB-05-15	0	New UGA	6	8314	0.084	-0.206				
88	BB-05-15	0	New UGA	7	7575	0.022	-0.171				
88	BB-05-15	0	New UGA	8	6890	0.034	-0.245				
88	BB-05-15	0	New UGA	9	6277	0.084	-0.24				
88	BB-05-15	0	New UGA	10	5649	-0.113	-0.461				
88	BB-05-15	0	New UGA	11	5125	-0.124	-0.504				
88	BB-05-15	0	New UGA	12	4654	-0.105	-0.487				
88	BB-05-15	0	New UGA	13	4230	-0.077	-0.545	0.0	-0.3	0.1	0.2
89	BB-04-13	0	New UGA	4	9356	-0.036	0.129				
89	BB-04-13	0	New UGA	5	8436	-0.04	0.098				
89	BB-04-13	0	New UGA	6	7596	-0.226	-0.158				
89	BB-04-13	0	New UGA	7	6845	-0.456	-0.375				
89	BB-04-13	0	New UGA	8	6195	-0.496	-0.541				
89	BB-04-13	0	New UGA	9	5637	-0.499	-0.591				
89	BB-04-13	0	New UGA	10	5137	-0.434	-0.43				
89	BB-04-13	0	New UGA	11	4658	-0.463	-0.581				
89	BB-04-13	0	New UGA	12	4231	-0.449	-0.624				
89	BB-04-13	0	New UGA	13	3841	-0.46	-0.652	-0.4	-0.4	0.2	0.3
90	BB-04-16	0	New UGA	4	9351	0.029	0.313				
90	BB-04-16	0	New UGA	5	8448	0.044	0.257				
90	BB-04-16	0	New UGA	6	7614	-0.179	-0.067				
90	BB-04-16	0	New UGA	7	6951	-0.187	-0.048				

90	BB-04-16	0	New UGA	8	6334	-0.195	-0.091				
90	BB-04-16	0	New UGA	9	5759	-0.23	-0.112				
90	BB-04-16	0	New UGA	10	5244	-0.185	-0.142				
90	BB-04-16	0	New UGA	11	4776	-0.16	-0.147				
90	BB-04-16	0	New UGA	12	4348	-0.157	-0.174				
90	BB-04-16	0	New UGA	13	3958	-0.162	-0.175	-0.1	0.0	0.1	0.2
92	BB-04-21	0	New UGA	4	9709	0.118	0.238				
92	BB-04-21	0	New UGA	5	8811	0.153	0.217				
92	BB-04-21	0	New UGA	6	7977	0.013	-0.033				
92	BB-04-21	0	New UGA	7	7299	0.013	-0.045				
92	BB-04-21	0	New UGA	8	6662	0.003	-0.033				
92	BB-04-21	0	New UGA	9	6085	0.017	-0.039				
92	BB-04-21	0	New UGA	10	5544	0.051	-0.016				
92	BB-04-21	0	New UGA	11	5065	0.051	-0.05				
92	BB-04-21	0	New UGA	12	4609	0.026	-0.034				
92	BB-04-21	0	New UGA	13	4220	0.047	-0.069	0.0	0.0	0.0	0.1
93	BB-05-11	0	New UGA	4	9099	0.417	0.031				
93	BB-05-11	0	New UGA	5	8124	0.325	-0.192				
93	BB-05-11	0	New UGA	6	7427	0.286	-0.251				
93	BB-05-11	0	New UGA	7	6766	0.288	-0.206				
93	BB-05-11	0	New UGA	8	6164	0.305	-0.223				
93	BB-05-11	0	New UGA	9	5618	0.307	-0.24				
93	BB-05-11	0	New UGA	10	5120	0.306	-0.241				
93	BB-05-11	0	New UGA	11	4664	0.354	-0.269				
93	BB-05-11	0	New UGA	12	4241	0.335	-0.226				
93	BB-05-11	0	New UGA	13	3866	0.343	-0.231	0.3	-0.2	0.0	0.1
94	BB-04-24	0	New UGA	4	10513	-0.1	0.011				
94	BB-04-24	0	New UGA	5	9518	-0.042	0.189				
94	BB-04-24	0	New UGA	6	8491	-0.41	-0.436				
94	BB-04-24	0	New UGA	7	7720	-0.438	-0.537				
94	BB-04-24	0	New UGA	8	7030	-0.46	-0.58				
94	BB-04-24	0	New UGA	9	6395	-0.407	-0.539				
94	BB-04-24	0	New UGA	10	5822	-0.403	-0.525				
94	BB-04-24	0	New UGA	11	5290	-0.389	-0.561				
94	BB-04-24	0	New UGA	12	4820	-0.364	-0.526				

94	BB-04-24	0	New UGA	13	4377	-0.401	-0.553	-0.3	-0.4	0.1	0.3
95	BB-05-13	0	New UGA	4	7312	0.003	-0.112				
95	BB-05-13	0	New UGA	5	6596	-0.005	-0.14				
95	BB-05-13	0	New UGA	6	6039	0.007	-0.102				
95	BB-05-13	0	New UGA	7	5454	-0.121	-0.307				
95	BB-05-13	0	New UGA	8	4881	-0.36	-0.778				
95	BB-05-13	0	New UGA	9	4448	-0.416	-0.837				
95	BB-05-13	0	New UGA	10	4053	-0.404	-0.806				
95	BB-05-13	0	New UGA	11	3701	-0.366	-0.804				
95	BB-05-13	0	New UGA	12	3379	-0.355	-0.836				
95	BB-05-13	0	New UGA	13	3082	-0.354	-0.85	-0.2	-0.6	0.2	0.3
96	BB-04-28	0	New UGA	4	10783	-0.519	0.042				
96	BB-04-28	0	New UGA	5	9819	-0.512	0.04				
96	BB-04-28	0	New UGA	6	8900	-0.7	-0.187				
96	BB-04-28	0	New UGA	7	8061	-0.936	-0.498				
96	BB-04-28	0	New UGA	8	7363	-0.941	-0.549				
96	BB-04-28	0	New UGA	9	6736	-0.95	-0.599				
96	BB-04-28	0	New UGA	10	6153	-0.942	-0.571				
96	BB-04-28	0	New UGA	11	5623	-0.941	-0.62				
96	BB-04-28	0	New UGA	12	5140	-0.918	-0.601				
96	BB-04-28	0	New UGA	13	4708	-0.937	-0.673	-0.8	-0.4	0.2	0.3
97	BB-05-10	0	New UGA	4	10023	0.654	0.193				
97	BB-05-10	0	New UGA	5	8961	0.455	-0.09				
97	BB-05-10	0	New UGA	6	8212	0.453	-0.07				
97	BB-05-10	0	New UGA	7	7521	0.436	-0.112				
97	BB-05-10	0	New UGA	8	6883	0.448	-0.122				
97	BB-05-10	0	New UGA	9	6235	0.247	-0.393				
97	BB-05-10	0	New UGA	10	5686	0.227	-0.407				
97	BB-05-10	0	New UGA	11	5202	0.226	-0.461				
97	BB-05-10	0	New UGA	12	4763	0.283	-0.494				
97	BB-05-10	0	New UGA	13	4364	0.26	-0.578	0.4	-0.3	0.1	0.2
98	BB-05-08	0	New UGA	4	9534	0.656	0.251				
98	BB-05-08	0	New UGA	5	8641	0.622	0.202				
98	BB-05-08	0	New UGA	6	7947	0.636	0.209				
98	BB-05-08	0	New UGA	7	7201	0.52	-0.005				

98	BB-05-08	0	New UGA	8	6504	0.339	-0.296				
98	BB-05-08	0	New UGA	9	5953	0.317	-0.315				
98	BB-05-08	0	New UGA	10	5451	0.332	-0.349				
98	BB-05-08	0	New UGA	11	4991	0.324	-0.312				
98	BB-05-08	0	New UGA	12	4575	0.314	-0.401				
98	BB-05-08	0	New UGA	13	4191	0.366	-0.341	0.4	-0.1	0.1	0.3
100	BB-04-12	0	New UGA	4	9502	0.05	0.209				
100	BB-04-12	0	New UGA	5	8639	0.057	0.22				
100	BB-04-12	0	New UGA	6	7879	-0.127	-0.043				
100	BB-04-12	0	New UGA	7	7201	-0.133	-0.033				
100	BB-04-12	0	New UGA	8	6556	-0.367	-0.32				
100	BB-04-12	0	New UGA	9	6000	-0.393	-0.374				
100	BB-04-12	0	New UGA	10	5507	-0.381	-0.463				
100	BB-04-12	0	New UGA	11	5047	-0.366	-0.511				
100	BB-04-12	0	New UGA	12	4615	-0.393	-0.495				
100	BB-04-12	0	New UGA	13	4224	-0.351	-0.473	-0.2	-0.2	0.2	0.3
101	BB-05-31	0	New UGA	4	11081	-0.099	-0.251				
101	BB-05-31	0	New UGA	5	10065	-0.076	-0.238				
101	BB-05-31	0	New UGA	6	9145	-0.247	-0.473				
101	BB-05-31	0	New UGA	7	8401	-0.29	-0.526				
101	BB-05-31	0	New UGA	8	7624	-0.463	-0.79				
101	BB-05-31	0	New UGA	9	6971	-0.479	-0.875				
101	BB-05-31	0	New UGA	10	6397	-0.485	-0.834				
101	BB-05-31	0	New UGA	11	5853	-0.494	-0.875				
101	BB-05-31	0	New UGA	12	5362	-0.484	-0.894				
101	BB-05-31	0	New UGA	13	4925	-0.45	-0.862	-0.4	-0.7	0.2	0.3
102	BB-05-24	0	New UGA	4	7314	0.168	0.023				
102	BB-05-24	0	New UGA	5	6656	0.239	0.033				
102	BB-05-24	0	New UGA	6	6130	0.193	0.061				
102	BB-05-24	0	New UGA	7	5578	0.055	-0.226				
102	BB-05-24	0	New UGA	8	5089	-0.182	-0.492				
102	BB-05-24	0	New UGA	9	4681	-0.204	-0.566				
102	BB-05-24	0	New UGA	10	4311	-0.219	-0.582				
102	BB-05-24	0	New UGA	11	3970	-0.226	-0.568				
102	BB-05-24	0	New UGA	12	3666	-0.154	-0.608				

102	BB-05-24	0	New UGA	13	3355	-0.198	-0.673	-0.1	-0.4	0.2	0.3
103	BB-05-29	0	New UGA	4	7991	0.296	-0.136				
103	BB-05-29	0	New UGA	5	7450	0.142	-0.405				
103	BB-05-29	0	New UGA	6	6790	0.098	-0.473				
103	BB-05-29	0	New UGA	7	6227	0.15	-0.416				
103	BB-05-29	0	New UGA	8	5707	0.101	-0.535				
103	BB-05-29	0	New UGA	9	5245	0.078	-0.531				
103	BB-05-29	0	New UGA	10	4830	0.106	-0.521				
103	BB-05-29	0	New UGA	11	4444	0.108	-0.535				
103	BB-05-29	0	New UGA	12	4098	0.134	-0.611				
103	BB-05-29	0	New UGA	13	3774	0.099	-0.562	0.1	-0.5	0.1	0.1
104	BB-05-25	0	New UGA	4	7792	0.406	-0.017				
104	BB-05-25	0	New UGA	5	7104	0.431	-0.022				
104	BB-05-25	0	New UGA	6	6471	0.265	-0.209				
104	BB-05-25	0	New UGA	7	5836	-0.043	-0.638				
104	BB-05-25	0	New UGA	8	5348	0.002	-0.664				
104	BB-05-25	0	New UGA	9	4909	0.012	-0.693				
104	BB-05-25	0	New UGA	10	4496	0.046	-0.583				
104	BB-05-25	0	New UGA	11	4115	-0.023	-0.742				
104	BB-05-25	0	New UGA	12	3752	0.024	-0.671				
104	BB-05-25	0	New UGA	13	3439	-0.026	-0.677	0.1	-0.5	0.2	0.3
105	BB-05-18	0	New UGA	4	9448	0.118	0.231				
105	BB-05-18	0	New UGA	5	8567	0.103	0.257				
105	BB-05-18	0	New UGA	6	7788	-0.039	0.014				
105	BB-05-18	0	New UGA	7	7144	-0.084	-0.037				
105	BB-05-18	0	New UGA	8	6579	-0.053	-0.033				
105	BB-05-18	0	New UGA	9	6003	-0.084	-0.058				
105	BB-05-18	0	New UGA	10	5510	-0.059	-0.119				
105	BB-05-18	0	New UGA	11	5047	-0.082	-0.121				
105	BB-05-18	0	New UGA	12	4617	-0.043	-0.14				
105	BB-05-18	0	New UGA	13	4219	-0.063	-0.102	0.0	0.0	0.1	0.1
106	BB-05-21	0	New UGA	4	12234	0.268	0.163				
106	BB-05-21	0	New UGA	5	11115	0.254	0.135				
106	BB-05-21	0	New UGA	6	10077	0.059	-0.204				
106	BB-05-21	0	New UGA	7	9160	-0.068	-0.378				

106	BB-05-21	0	New UGA	8	8404	-0.064	-0.403				
106	BB-05-21	0	New UGA	9	7723	-0.067	-0.452				
106	BB-05-21	0	New UGA	10	7090	-0.055	-0.457				
106	BB-05-21	0	New UGA	11	6518	-0.026	-0.473				
106	BB-05-21	0	New UGA	12	5983	-0.027	-0.428				
106	BB-05-21	0	New UGA	13	5489	-0.009	-0.407	0.0	-0.3	0.1	0.2
108	BB-05-20	0	New UGA	4	14179	0.395	0.489				
108	BB-05-20	0	New UGA	5	12812	0.347	0.449				
108	BB-05-20	0	New UGA	6	11689	0.348	0.359				
108	BB-05-20	0	New UGA	7	10586	0.183	0.214				
108	BB-05-20	0	New UGA	8	9718	0.193	0.184				
108	BB-05-20	0	New UGA	9	8940	0.197	0.161				
108	BB-05-20	0	New UGA	10	8218	0.182	0.113				
108	BB-05-20	0	New UGA	11	7450	-0.067	-0.207				
108	BB-05-20	0	New UGA	12	6866	-0.03	-0.228				
108	BB-05-20	0	New UGA	13	6316	0.027	-0.184	0.2	0.1	0.2	0.3
109	BB-05-32	0	New UGA	4	11653	0.041	-0.438				
109	BB-05-32	0	New UGA	5	10824	0.011	-0.561				
109	BB-05-32	0	New UGA	6	9749	-0.163	-0.748				
109	BB-05-32	0	New UGA	7	8812	-0.362	-1.121				
109	BB-05-32	0	New UGA	8	8105	-0.362	-1.093				
109	BB-05-32	0	New UGA	9	7443	-0.385	-1.128				
109	BB-05-32	0	New UGA	10	6858	-0.37	-1.145				
109	BB-05-32	0	New UGA	11	6279	-0.369	-1.144				
109	BB-05-32	0	New UGA	12	5789	-0.365	-1.174				
109	BB-05-32	0	New UGA	13	5310	-0.339	-1.134	-0.3	-1.0	0.2	0.3
110	BB-05-33	0	New UGA	4	8238	-0.277	-0.603				
110	BB-05-33	0	New UGA	5	7470	-0.194	-0.549				
110	BB-05-33	0	New UGA	6	6768	-0.393	-0.832				
110	BB-05-33	0	New UGA	7	6146	-0.609	-1.145				
110	BB-05-33	0	New UGA	8	5661	-0.579	-1.16				
110	BB-05-33	0	New UGA	9	5206	-0.582	-1.241				
110	BB-05-33	0	New UGA	10	4798	-0.59	-1.228				
110	BB-05-33	0	New UGA	11	4422	-0.587	-1.222				
110	BB-05-33	0	New UGA	12	4073	-0.569	-1.193				

110	BB-05-33	0	New UGA	13	3761	-0.556	-1.258	-0.5	-1.0	0.2	0.3
111	BB-05-27	0	New UGA	4	10229	0.455	0.102				
111	BB-05-27	0	New UGA	5	9356	0.457	0.1				
111	BB-05-27	0	New UGA	6	8552	0.356	-0.079				
111	BB-05-27	0	New UGA	7	7874	0.309	-0.177				
111	BB-05-27	0	New UGA	8	7167	0.156	-0.355				
111	BB-05-27	0	New UGA	9	6590	0.126	-0.494				
111	BB-05-27	0	New UGA	10	6065	0.131	-0.484				
111	BB-05-27	0	New UGA	11	5585	0.152	-0.492				
111	BB-05-27	0	New UGA	12	5141	0.142	-0.524				
111	BB-05-27	0	New UGA	13	4725	0.159	-0.509	0.2	-0.3	0.1	0.3
112	BB-05-17	0	New UGA	4	10600	0.013	0.01				
112	BB-05-17	0	New UGA	5	9591	0.011	-0.05				
112	BB-05-17	0	New UGA	6	8687	-0.132	-0.251				
112	BB-05-17	0	New UGA	7	7972	-0.151	-0.298				
112	BB-05-17	0	New UGA	8	7345	-0.12	-0.267				
112	BB-05-17	0	New UGA	9	6724	-0.19	-0.435				
112	BB-05-17	0	New UGA	10	6152	-0.29	-0.561				
112	BB-05-17	0	New UGA	11	5670	-0.294	-0.567				
112	BB-05-17	0	New UGA	12	5233	-0.287	-0.619				
112	BB-05-17	0	New UGA	13	4829	-0.297	-0.645	-0.2	-0.4	0.1	0.2
113	BB-05-30	0	New UGA	4	11497	0.236	0.119				
113	BB-05-30	0	New UGA	5	10497	0.174	-0.075				
113	BB-05-30	0	New UGA	6	9592	0.179	-0.076				
113	BB-05-30	0	New UGA	7	8803	0.184	-0.033				
113	BB-05-30	0	New UGA	8	7995	0.019	-0.288				
113	BB-05-30	0	New UGA	9	7278	-0.157	-0.588				
113	BB-05-30	0	New UGA	10	6695	-0.132	-0.581				
113	BB-05-30	0	New UGA	11	6173	-0.147	-0.527				
113	BB-05-30	0	New UGA	12	5704	-0.113	-0.532				
113	BB-05-30	0	New UGA	13	5271	-0.082	-0.546	0.0	-0.3	0.2	0.3
114	BB-05-28	0	New UGA	4	9758	0.337	0.049				
114	BB-05-28	0	New UGA	5	8898	0.348	0.051				
114	BB-05-28	0	New UGA	6	8079	0.15	-0.207				
114	BB-05-28	0	New UGA	7	7379	-0.036	-0.521				

114	BB-05-28	0	New UGA	8	6820	0.002	-0.38				
114	BB-05-28	0	New UGA	9	6294	-0.08	-0.621				
114	BB-05-28	0	New UGA	10	5829	-0.004	-0.502				
114	BB-05-28	0	New UGA	11	5386	-0.025	-0.544				
114	BB-05-28	0	New UGA	12	4972	-0.018	-0.577				
114	BB-05-28	0	New UGA	13	4595	-0.024	-0.539	0.1	-0.4	0.2	0.3
116	BB-05-26	0	New UGA	4	10048	0.17	-0.117				
116	BB-05-26	0	New UGA	5	9135	0.156	-0.104				
116	BB-05-26	0	New UGA	6	8438	0.132	-0.018				
116	BB-05-26	0	New UGA	7	7778	0.109	-0.161				
116	BB-05-26	0	New UGA	8	7202	0.168	0.027				
116	BB-05-26	0	New UGA	9	6661	0.139	-0.071				
116	BB-05-26	0	New UGA	10	6161	0.095	-0.217				
116	BB-05-26	0	New UGA	11	5713	0.124	-0.151				
116	BB-05-26	0	New UGA	12	5274	0.225	0.039				
116	BB-05-26	0	New UGA	13	4897	0.187	0.063	0.2	-0.1	0.0	0.1
117	BB-05-22	0	New UGA	4	11215	0.327	0.555				
117	BB-05-22	0	New UGA	5	10222	0.238	0.372				
117	BB-05-22	0	New UGA	6	9433	0.248	0.381				
117	BB-05-22	0	New UGA	7	8581	0.067	0.061				
117	BB-05-22	0	New UGA	8	7824	-0.091	-0.17				
117	BB-05-22	0	New UGA	9	7197	-0.138	-0.23				
117	BB-05-22	0	New UGA	10	6657	-0.073	-0.101				
117	BB-05-22	0	New UGA	11	6135	-0.081	-0.262				
117	BB-05-22	0	New UGA	12	5657	-0.071	-0.239				
117	BB-05-22	0	New UGA	13	5202	0.016	0.087	0.0	0.0	0.2	0.3
118	BB-05-19	0	New UGA	4	10508	0.352	0.504				
118	BB-05-19	0	New UGA	5	9636	0.32	0.431				
118	BB-05-19	0	New UGA	6	9008	0.166	0.06				
118	BB-05-19	0	New UGA	7	8240	0.111	-0.028				
118	BB-05-19	0	New UGA	8	7605	0.024	-0.187				
118	BB-05-19	0	New UGA	9	6981	-0.087	-0.352				
118	BB-05-19	0	New UGA	10	6470	-0.17	-0.451				
118	BB-05-19	0	New UGA	11	6012	-0.136	-0.443				
118	BB-05-19	0	New UGA	12	5587	-0.133	-0.389				

118	BB-05-19	0	New UGA	13	5192	-0.161	-0.463	0.0	-0.1	0.2	0.4
119	BB-05-23	0	New UGA	4							
119	BB-05-23	0	New UGA	5	9648	0.264	-0.074				
119	BB-05-23	0	New UGA	6	8935	0.328	0.028				
119	BB-05-23	0	New UGA	7	8203	0.205	-0.073				
119	BB-05-23	0	New UGA	8	7627	0.119	-0.418				
119	BB-05-23	0	New UGA	9	7123	0.133	-0.45				
119	BB-05-23	0	New UGA	10	6646	0.126	-0.474				
119	BB-05-23	0	New UGA	11	6226	0.186	-0.392				
119	BB-05-23	0	New UGA	12	5802	0.169	-0.475				
119	BB-05-23	0	New UGA	13	5425	0.185	-0.486	0.2	-0.3	0.1	0.2
120	BB-05-16	0	New UGA	4							
120	BB-05-16	0	New UGA	5	12793	0.395	0.076				
120	BB-05-16	0	New UGA	6	11741	0.306	-0.088				
120	BB-05-16	0	New UGA	7	10693	0.205	-0.304				
120	BB-05-16	0	New UGA	8	9932	0.21	-0.222				
120	BB-05-16	0	New UGA	9	9151	0.128	-0.362				
120	BB-05-16	0	New UGA	10	8484	0.037	-0.598				
120	BB-05-16	0	New UGA	11	7906	0.098	-0.522				
120	BB-05-16	0	New UGA	12	7363	0.048	-0.617				
120	BB-05-16	0	New UGA	13	6864	0.062	-0.652	0.2	-0.4	0.1	0.3
121	WI-01-09	0	New UGA	4							
121	WI-01-09	0	New UGA	5	8443	1.024	0.404				
121	WI-01-09	0	New UGA	6	7749	0.906	0.247				
121	WI-01-09	0	New UGA	7	7206	0.845	0.106				
121	WI-01-09	0	New UGA	8	6727	0.835	0.097				
121	WI-01-09	0	New UGA	9	6215	0.763	0.164				
121	WI-01-09	0	New UGA	10	5815	0.753	0.062				
121	WI-01-09	0	New UGA	11	5472	0.694	-0.099				
121	WI-01-09	0	New UGA	12	5127	0.668	-0.219				
121	WI-01-09	0	New UGA	13	4832	0.687	-0.117	0.8	0.1	0.1	0.2
122	WI-01-19	0	New UGA	4							
122	WI-01-19	0	New UGA	5	10722	0.507	0.384				
122	WI-01-19	0	New UGA	6	9825	0.447	0.28				
122	WI-01-19	0	New UGA	7	9088	0.408	0.254				

122	WI-01-19	0	New UGA	8	8465	0.393	0.218				
122	WI-01-19	0	New UGA	9	7910	0.4	0.259				
122	WI-01-19	0	New UGA	10	7416	0.426	0.241				
122	WI-01-19	0	New UGA	11	6961	0.419	0.32				
122	WI-01-19	0	New UGA	12	6533	0.409	0.237				
122	WI-01-19	0	New UGA	13	6147	0.48	0.319	0.4	0.3	0.0	0.1
124	WI-01-06	0	New UGA	4	47739	-43.97	-110.639				
124	WI-01-06	0	New UGA	5	48844	-109.804	-199.912				
124	WI-01-06	0	New UGA	6	48831	-100.524	-188.466				
124	WI-01-06	0	New UGA	7	48827	-88.218	-174.502				
124	WI-01-06	0	New UGA	8	47393	-63.709	-149.241				
124	WI-01-06	0	New UGA	9	45172	-38.037	-121.611				
124	WI-01-06	0	New UGA	10	42562	-11.321	-90.04				
124	WI-01-06	0	New UGA	11	40230	4.406	-60.541				
124	WI-01-06	0	New UGA	12	38041	3.333	-32.985				
124	WI-01-06	0	New UGA	13	35669	2.27	-6.419	X	X		
125	WI-01-16	0	New UGA	4	21657	1.728	1.153				
125	WI-01-16	0	New UGA	5	10398	0.501	0.589				
125	WI-01-16	0	New UGA	6	9467	0.556	0.702				
125	WI-01-16	0	New UGA	7	8773	0.535	0.636				
125	WI-01-16	0	New UGA	8	8195	0.557	0.719				
125	WI-01-16	0	New UGA	9	7688	0.572	0.701				
125	WI-01-16	0	New UGA	10	7230	0.615	0.732				
125	WI-01-16	0	New UGA	11	6836	0.651	0.813				
125	WI-01-16	0	New UGA	12	6374	0.537	0.657				
125	WI-01-16	0	New UGA	13	5951	0.402	0.382	0.7	0.7	0.4	0.2
126	WI-01-08	0	New UGA	4							
126	WI-01-08	0	New UGA	5	13478	1.688	1.273				
126	WI-01-08	0	New UGA	6	12656	1.697	1.416				
126	WI-01-08	0	New UGA	7	11931	1.675	1.354				
126	WI-01-08	0	New UGA	8	11297	1.694	1.412				
126	WI-01-08	0	New UGA	9	10707	1.73	1.456				
126	WI-01-08	0	New UGA	10	10157	1.746	1.532				
126	WI-01-08	0	New UGA	11	9534	1.629	1.312				
126	WI-01-08	0	New UGA	12	9048	1.643	1.322				

126	WI-01-08	0	New UGA	13	8519	1.567	1.171	1.7	1.4	0.1	0.1
127	WI-01-11	0	New UGA	4							
127	WI-01-11	0	New UGA	5	7996	1.683	1.046				
127	WI-01-11	0	New UGA	6	7464	1.68	1.026				
127	WI-01-11	0	New UGA	7	7035	1.767	1.239				
127	WI-01-11	0	New UGA	8	6632	1.705	1.064				
127	WI-01-11	0	New UGA	9	6283	1.742	1.127				
127	WI-01-11	0	New UGA	10	5966	1.748	1.116				
127	WI-01-11	0	New UGA	11	5673	1.772	1.193				
127	WI-01-11	0	New UGA	12	5325	1.689	0.904				
127	WI-01-11	0	New UGA	13	5068	1.699	0.961	1.7	1.1	0.0	0.1
128	WI-01-03	0	New UGA	4							
128	WI-01-03	0	New UGA	5	4979	2.404	1.524				
128	WI-01-03	0	New UGA	6	4637	2.414	1.649				
128	WI-01-03	0	New UGA	7	4361	2.438	1.563				
128	WI-01-03	0	New UGA	8	4125	2.48	1.661				
128	WI-01-03	0	New UGA	9	3921	2.543	1.806				
128	WI-01-03	0	New UGA	10	3714	2.51	1.704				
128	WI-01-03	0	New UGA	11	3539	2.567	1.726				
128	WI-01-03	0	New UGA	12	3319	2.406	1.608				
128	WI-01-03	0	New UGA	13	3126	2.219	1.22	2.4	1.6	0.1	0.2
129	WI-01-13	0	New UGA	4							
129	WI-01-13	0	New UGA	5	8276	0.259	0.295				
129	WI-01-13	0	New UGA	6	7659	0.305	0.41				
129	WI-01-13	0	New UGA	7	7228	0.295	0.392				
129	WI-01-13	0	New UGA	8	6847	0.28	0.41				
129	WI-01-13	0	New UGA	9	6517	0.309	0.461				
129	WI-01-13	0	New UGA	10	6239	0.375	0.464				
129	WI-01-13	0	New UGA	11	5967	0.438	0.644				
129	WI-01-13	0	New UGA	12	5633	0.322	0.344				
129	WI-01-13	0	New UGA	13	5333	0.255	0.362	0.3	0.4	0.1	0.1
130	WI-01-05	0	New UGA	4							
130	WI-01-05	0	New UGA	5	7989	1.99	1.158				
130	WI-01-05	0	New UGA	6	7591	2.161	1.304				
130	WI-01-05	0	New UGA	7	7224	2.127	1.242				

130	WI-01-05	0	New UGA	8	6944	2.118	1.223				
130	WI-01-05	0	New UGA	9	6646	2.126	1.192				
130	WI-01-05	0	New UGA	10	6387	2.154	1.354				
130	WI-01-05	0	New UGA	11	6142	2.21	1.401				
130	WI-01-05	0	New UGA	12	5900	2.146	1.267				
130	WI-01-05	0	New UGA	13	5621	2.036	1.103	2.1	1.2	0.1	0.1
132	WI-01-04	0	New UGA	4							
132	WI-01-04	0	New UGA	5							
132	WI-01-04	0	New UGA	6							
132	WI-01-04	0	New UGA	7							
132	WI-01-04	0	New UGA	8	7117	2.616	1.64				
132	WI-01-04	0	New UGA	9	6783	2.631	1.634				
132	WI-01-04	0	New UGA	10	6481	2.659	1.697				
132	WI-01-04	0	New UGA	11	6143	2.546	1.483				
132	WI-01-04	0	New UGA	12	5826	2.39	1.236				
132	WI-01-04	0	New UGA	13	5587	2.396	1.289	2.5	1.5	0.1	0.2
133	WI-01-17	0	New UGA	4							
133	WI-01-17	0	New UGA	5							
133	WI-01-17	0	New UGA	6	5786	0.375	0.389				
133	WI-01-17	0	New UGA	7	5475	0.391	0.386				
133	WI-01-17	0	New UGA	8	5226	0.416	0.394				
133	WI-01-17	0	New UGA	9	5012	0.488	0.542				
133	WI-01-17	0	New UGA	10	4796	0.548	0.509				
133	WI-01-17	0	New UGA	11	4595	0.521	0.458				
133	WI-01-17	0	New UGA	12	4350	0.448	0.467				
133	WI-01-17	0	New UGA	13	4116	0.254	0.014	0.4	0.4	0.1	0.2
134	WI-01-07	0	New UGA	4							
134	WI-01-07	0	New UGA	5							
134	WI-01-07	0	New UGA	6	15145	1.639	1.01				
134	WI-01-07	0	New UGA	7	14512	1.62	0.96				
134	WI-01-07	0	New UGA	8	13937	1.611	0.957				
134	WI-01-07	0	New UGA	9	13408	1.639	1.011				
134	WI-01-07	0	New UGA	10	12956	1.687	1.061				
134	WI-01-07	0	New UGA	11	12294	1.522	0.845				
134	WI-01-07	0	New UGA	12	11732	1.376	0.624				

134	WI-01-07	0	New UGA	13	11330	1.419	0.651	1.6	0.9	0.1	0.2
135	WI-01-18	0	New UGA	4							
135	WI-01-18	0	New UGA	5	11197	0.994	0.661				
135	WI-01-18	0	New UGA	6	11592	0.77	0.667				
135	WI-01-18	0	New UGA	7	11013	0.8	0.685				
135	WI-01-18	0	New UGA	8	10521	0.834	0.687				
135	WI-01-18	0	New UGA	9	10081	0.846	0.804				
135	WI-01-18	0	New UGA	10	9674	0.889	0.805				
135	WI-01-18	0	New UGA	11	9277	0.866	0.797				
135	WI-01-18	0	New UGA	12	8825	0.751	0.613				
135	WI-01-18	0	New UGA	13	8411	0.621	0.479	0.8	0.7	0.1	0.1
136	WI-01-22	0	New UGA	4	6411	0.621	0.293				
136	WI-01-22	0	New UGA	5	5876	0.714	0.539				
136	WI-01-22	0	New UGA	6	6120	0.504	0.37				
136	WI-01-22	0	New UGA	7	5931	0.566	0.644				
136	WI-01-22	0	New UGA	8	5794	0.611	0.583				
136	WI-01-22	0	New UGA	9	5579	0.586	0.576				
136	WI-01-22	0	New UGA	10	5376	0.616	0.647				
136	WI-01-22	0	New UGA	11	5161	0.704	0.844				
136	WI-01-22	0	New UGA	12	4956	0.495	0.416				
136	WI-01-22	0	New UGA	13	4743	0.442	0.514	0.6	0.5	0.1	0.2
137	WI-01-01	0	New UGA	4							
137	WI-01-01	0	New UGA	5							
137	WI-01-01	0	New UGA	6							
137	WI-01-01	0	New UGA	7							
137	WI-01-01	0	New UGA	8	5603	2.263	1.436				
137	WI-01-01	0	New UGA	9	5511	2.24	1.258				
137	WI-01-01	0	New UGA	10	5398	2.286	1.305				
137	WI-01-01	0	New UGA	11	5286	2.302	1.341				
137	WI-01-01	0	New UGA	12	5079	2.142	1.104				
137	WI-01-01	0	New UGA	13	4752	2.017	0.838	2.2	1.2	0.1	0.2
138	WI-01-14	0	New UGA	4							
138	WI-01-14	0	New UGA	5							
138	WI-01-14	0	New UGA	6	6739	0.582	0.322				
138	WI-01-14	0	New UGA	7	6522	0.551	0.223				

138	WI-01-14	0	New UGA	8	6359	0.533	0.224				
138	WI-01-14	0	New UGA	9	5884	0.543	0.259				
138	WI-01-14	0	New UGA	10	5658	0.468	0.067				
138	WI-01-14	0	New UGA	11	5503	0.456	0.02				
138	WI-01-14	0	New UGA	12	5362	0.416	-0.008				
138	WI-01-14	0	New UGA	13	5199	0.468	0.095	0.5	0.2	0.1	0.1
140	WI-01-12	0	New UGA	4							
140	WI-01-12	0	New UGA	5							
140	WI-01-12	0	New UGA	6							
140	WI-01-12	0	New UGA	7							
140	WI-01-12	0	New UGA	8							
140	WI-01-12	0	New UGA	9							
140	WI-01-12	0	New UGA	10							
140	WI-01-12	0	New UGA	11							
140	WI-01-12	0	New UGA	12							
140	WI-01-12	0	New UGA	13				X	X		
141	WI-01-20	0	New UGA	4							
141	WI-01-20	0	New UGA	5							
141	WI-01-20	0	New UGA	6							
141	WI-01-20	0	New UGA	7							
141	WI-01-20	0	New UGA	8							
141	WI-01-20	0	New UGA	9							
141	WI-01-20	0	New UGA	10							
141	WI-01-20	0	New UGA	11	7075	0.521	1.353				
141	WI-01-20	0	New UGA	12	6839	0.454	1.211				
141	WI-01-20	0	New UGA	13	6673	0.198	0.753	0.4	1.1	0.2	0.3
142	WI-01-02	0	New UGA	4			0.754				
142	WI-01-02	0	New UGA	5			0.701				
142	WI-01-02	0	New UGA	6			0.79				
142	WI-01-02	0	New UGA	7			0.768				
142	WI-01-02	0	New UGA	8			0.968				
142	WI-01-02	0	New UGA	9	3390	2.554	1.372				
142	WI-01-02	0	New UGA	10	3517	2.642	1.431				
142	WI-01-02	0	New UGA	11	3704	2.677	1.557				
142	WI-01-02	0	New UGA	12	3456	2.38	1.032				

142	WI-01-02	0	New UGA	13	3183	2.355	1.006	2.5	1.0	0.1	0.3
143	WI-01-15	0	New UGA	4	3294	2.382	1.068				
143	WI-01-15	0	New UGA	5	324	1.57	-1.335				
143	WI-01-15	0	New UGA	6	221	2.032	-2.732				
143	WI-01-15	0	New UGA	7	192	1.883	-2.861				
143	WI-01-15	0	New UGA	8	171	1.973	-2.586				
143	WI-01-15	0	New UGA	9	153	2.369	-1.046				
143	WI-01-15	0	New UGA	10	141	1.811	-3.032				
143	WI-01-15	0	New UGA	11	129	1.369	-3.192				
143	WI-01-15	0	New UGA	12	119	2.009	-4.639				
143	WI-01-15	0	New UGA	13	108	2.916	-2.625	X	X		
144	WI-01-21	0	New UGA	4	352	0.102	-3.98				
144	WI-01-21	0	New UGA	5	103	1.651	-2.439				
144	WI-01-21	0	New UGA	6	85	2.471	-2.944				
144	WI-01-21	0	New UGA	7	81	1.661	-4.591				
144	WI-01-21	0	New UGA	8	78	2.075	-5.045				
144	WI-01-21	0	New UGA	9	74	0.908	-5.261				
144	WI-01-21	0	New UGA	10	70	2.226	-4.071				
144	WI-01-21	0	New UGA	11	67	2.313	-3.398				
144	WI-01-21	0	New UGA	12	64	2.435	-3.993				
144	WI-01-21	0	New UGA	13	60	0.859	-3.042	X	X		
145	WI-01-10	0	New UGA	4	224	-0.601	-7.97				
145	WI-01-10	0	New UGA	5	68	1.199	-7.62				
145	WI-01-10	0	New UGA	6	57	2.094	-4.24				
145	WI-01-10	0	New UGA	7	55	1.372	-4.286				
145	WI-01-10	0	New UGA	8	52	1.286	-4.277				
145	WI-01-10	0	New UGA	9	50	2.795	-4.295				
145	WI-01-10	0	New UGA	10	11069	-39.54	-26.32	X	X		

0.379211 0.364335

Identifier 1		
BB-04-14	-0.1	-0.2
BB-04-17	-0.1	-0.2
BB-04-22	-0.4	-0.5
BB-04-15	-0.1	-0.1
BB-04-27	-0.5	-0.4
BB-04-32	-0.5	-0.6
BB-04-09	-0.2	-0.7
BB-04-18	0.0	-0.2
BB-05-09	1.0	0.1
BB-04-33	-0.9	-0.7
BB-04-25	-0.3	-0.4
BB-04-10	-0.3	-1.1
BB-04-19	-0.2	-0.1
BB-04-29	-0.7	-0.6
BB-04-20	-0.4	-0.4
BB-04-23	-0.5	-0.2
BB-05-02	0.5	0.2
BB-05-12	0.1	-0.3
BB-05-06	0.8	-0.1
BB-04-11	-0.1	-0.1
BB-04-31	0.1	-0.8
BB-05-07	0.6	-0.3
BB-04-30	-0.5	-0.8
BB-04-26	-0.5	-0.4
BB-05-05	1.7	0.5
BB-05-14	-0.1	-0.6
BB-05-03	1.4	0.7
BB-05-04	1.6	0.8
BB-05-01	0.0	-0.1
BB-05-15	0.0	-0.3
BB-04-13	-0.4	-0.4
BB-04-16	-0.1	0.0
BB-04-21	0.0	0.0
BB-05-11	0.3	-0.2
BB-04-24	-0.3	-0.4
BB-05-13	-0.2	-0.6
BB-04-28	-0.8	-0.4
BB-05-10	0.4	-0.3
BB-05-08	0.4	-0.1
BB-04-12	-0.2	-0.2
BB-05-31	-0.4	-0.7
BB-05-24	-0.1	-0.4
BB-05-29	0.1	-0.5
BB-05-25	0.1	-0.5
BB-05-18	0.0	0.0
BB-05-21	0.0	-0.3
BB-05-20	0.2	0.1
BB-05-32	-0.3	-1.0

BB-05-33	-0.5	-1.0
BB-05-27	0.2	-0.3
BB-05-17	-0.2	-0.4
BB-05-30	0.0	-0.3
BB-05-28	0.1	-0.4
BB-05-26	0.2	-0.1
BB-05-22	0.0	0.0
BB-05-19	0.0	-0.1
BB-05-23	0.2	-0.3
BB-05-16	0.2	-0.4
WI-01-09	0.8	0.1
WI-01-19	0.4	0.3
WI-01-06 X	X	
WI-01-16	0.7	0.7
WI-01-08	1.7	1.4
WI-01-11	1.7	1.1
WI-01-03	2.4	1.6
WI-01-13	0.3	0.4
WI-01-05	2.1	1.2
WI-01-04	2.5	1.5
WI-01-17	0.4	0.4
WI-01-07	1.6	0.9
WI-01-18	0.8	0.7
WI-01-22	0.6	0.5
WI-01-01	2.2	1.2
WI-01-14	0.5	0.2
WI-01-12 X	X	
WI-01-20	0.4	1.1
WI-01-02	2.5	1.0
WI-01-15 X	X	
WI-01-21 X	X	
WI-01-10 X	X	

BB-04-14	-0.1	-0.2	-0.1	0.4
BB-04-17	-0.1	-0.2	-0.1	0.4
BB-04-22	-0.4	-0.5	-0.4	0.1
BB-04-15	-0.1	-0.1	0.0	0.5
BB-04-27	-0.5	-0.4	-0.4	0.2
BB-04-32	-0.5	-0.6	-0.5	0.0
BB-04-09	-0.2	-0.7	-0.1	0.0
BB-04-18	0.0	-0.2	0.0	0.4
BB-05-09	1.0	0.1	1.0	0.8
BB-04-33	-0.9	-0.7	-0.8	-0.1
BB-04-25	-0.3	-0.4	-0.3	0.2
BB-04-10	-0.3	-1.1	-0.3	-0.5
BB-04-19	-0.2	-0.1	-0.1	0.5
BB-04-29	-0.7	-0.6	-0.7	0.0
BB-04-20	-0.4	-0.4	-0.4	0.3
BB-04-23	-0.5	-0.2	-0.4	0.5
BB-05-02	0.5	0.2	0.6	0.8
BB-05-12	0.1	-0.3	0.1	0.3
BB-05-06	0.8	-0.1	0.8	0.5
BB-04-11	-0.1	-0.1	-0.1	0.6
BB-04-31	0.1	-0.8	0.1	-0.2
BB-05-07	0.6	-0.3	0.6	0.3
BB-04-30	-0.5	-0.8	-0.5	-0.2
BB-04-26	-0.5	-0.4	-0.4	0.3
BB-05-05	1.7	0.5	1.7	1.1
BB-05-14	-0.1	-0.6	-0.1	0.0
BB-05-03	1.4	0.7	1.5	1.4
BB-05-04	1.6	0.8	1.7	1.4
BB-05-01	0.0	-0.1	0.0	0.5
BB-05-15	0.0	-0.3	0.1	0.3
BB-04-13	-0.4	-0.4	-0.3	0.3
BB-04-16	-0.1	0.0	-0.1	0.6
BB-04-21	0.0	0.0	0.1	0.6
BB-05-11	0.3	-0.2	0.4	0.4
BB-04-24	-0.3	-0.4	-0.3	0.2
BB-05-13	-0.2	-0.6	-0.2	0.1
BB-04-28	-0.8	-0.4	-0.8	0.2
BB-05-10	0.4	-0.3	0.4	0.4
BB-05-08	0.4	-0.1	0.5	0.5
BB-04-12	-0.2	-0.2	-0.2	0.4
BB-05-31	-0.4	-0.7	-0.3	0.0
BB-05-24	-0.1	-0.4	0.0	0.3
BB-05-29	0.1	-0.5	0.2	0.2
BB-05-25	0.1	-0.5	0.2	0.1
BB-05-18	0.0	0.0	0.0	0.6
BB-05-21	0.0	-0.3	0.1	0.3
BB-05-20	0.2	0.1	0.2	0.8
BB-05-32	-0.3	-1.0	-0.2	-0.3
BB-05-33	-0.5	-1.0	-0.4	-0.4

BB-05-27	0.2	-0.3	0.3	0.3
BB-05-17	-0.2	-0.4	-0.1	0.3
BB-05-30	0.0	-0.3	0.1	0.3
BB-05-28	0.1	-0.4	0.1	0.2
BB-05-26	0.2	-0.1	0.2	0.6
BB-05-22	0.0	0.0	0.1	0.7
BB-05-19	0.0	-0.1	0.1	0.5
BB-05-23	0.2	-0.3	0.3	0.3
BB-05-16	0.2	-0.4	0.2	0.3
WI-01-09	0.8	0.1	0.9	0.7
WI-01-19	0.4	0.3	0.5	0.9
WI-01-06 X	X		#####	#####
WI-01-16	0.7	0.7	0.7	1.3
WI-01-08	1.7	1.4	1.7	2.0
WI-01-11	1.7	1.1	1.8	1.7
WI-01-03	2.4	1.6	2.5	2.2
WI-01-13	0.3	0.4	0.4	1.0
WI-01-05	2.1	1.2	2.2	1.9
WI-01-04	2.5	1.5	2.6	2.1
WI-01-17	0.4	0.4	0.5	1.0
WI-01-07	1.6	0.9	1.6	1.5
WI-01-18	0.8	0.7	0.9	1.3
WI-01-22	0.6	0.5	0.6	1.2
WI-01-01	2.2	1.2	2.3	1.8
WI-01-14	0.5	0.2	0.6	0.8
WI-01-12 X	X		#####	#####
WI-01-20	0.4	1.1	0.5	1.7
WI-01-02	2.5	1.0	2.6	1.7
WI-01-15 X	X		#####	#####
WI-01-21 X	X		#####	#####
WI-01-10 X	X		#####	#####

Sample Name	$\delta^{13}\text{C}$ (‰ VPDB)	$\delta^{18}\text{O}$ (‰ VPDB)	Notes
WI-02-40	0.5	1.2	Measured on Delta V Plus at 50 oC
WI-02-47	0.5	0.9	Measured on July 11, 2024
WI-02-48	0.4	0.7	Beam size correction for d18O only
WI-02-49	0.4	0.7	
WI-02-50	0.4	0.7	
WI-02-51	0.4	1.3	
WI-02-52	0.3	0.7	
WI-02-53	0.4	1.1	
WI-03-01	1.4	1.5	
WI-03-02	1.9	1.4	
WI-03-03	2.2	1.5	
WI-03-04	2.3	1.6	
WI-03-05	2.2	1.0	
WI-03-06	2.2	1.7	
WI-03-07	1.8	0.9	
WI-03-08	1.6	0.9	
WI-03-09	1.5	1.1	
WI-03-10	1.8	1.1	labeled WI-08-10 in raw data by mistake
WI-03-11	1.8	1.3	
WI-03-12	1.2	0.6	
WI-03-13	1.4	0.9	
WI-03-14	1.1	0.5	
WI-03-15	1.1	0.7	
WI-03-16	1.1	1.2	
WI-03-17	1.3	1.1	
WI-03-18	1.2	1.1	
WI-03-19	1.2	1.1	
WI-03-20	1.5	0.9	
WI-03-21	1.5	1.4	
WI-03-22	1.5	1.4	
WI-03-23	1.4	1.3	
WI-03-24	1.3	1.7	
WI-03-25	1.2	1.4	

WI-03-26	1.2	1.7
WI-03-27	1.3	1.4
WI-03-28	1.3	1.6
WI-03-29	1.3	1.5
WI-03-30	1.3	1.2
WI-03-31	1.3	1.2
WI-03-32	1.3	1.7
WI-03-33	1.3	1.6
WI-03-34	1.3	1.2
WI-03-35	1.3	1.6
WI-03-36	1.2	1.3
WI-03-37	1.2	1.3
WI-03-38	1.3	1.6
WI-03-39	1.3	1.4
WI-03-40	1.2	1.5
WI-03-41	1.2	1.7
WI-03-42	1.2	1.6
WI-03-43	1.3	1.6
WI-03-44	1.2	1.8
WI-03-45	1.1	1.9
WI-03-46	1.0	1.5
WI-03-47	1.1	1.7
WI-03-48	1.1	1.1
WI-03-49	1.1	1.4
WI-03-50	1.1	1.5
WI-03-51	1.1	1.4
WI-03-52	1.0	1.3
WI-03-53	0.9	1.4
WI-03-54	1.0	1.3
WI-03-55	1.2	1.5
WI-03-56	1.3	1.3
WI-03-57	1.3	1.3
WI-03-58	1.3	1.3
WI-03-59	1.2	1.2
WI-03-60	1.1	1.4

WI-03-61	0.9	0.9
WI-03-62	0.9	1.1
WI-03-63	0.7	1.0
WI-03-64	0.3	1.1
WI-07-05	2.3	2.8
WI-07-08	2.3	2.7
WI-07-09	1.6	2.0
WI-07-16	1.1	2.1
WI-07-17	1.0	2.3
WI-07-19	0.9	2.1
WI-07-23	1.1	1.8
WI-07-25	1.0	2.0

Row	Identifier 1					
52	IAEA-603-1	3836	2.4	-3.3		
53	IAEA-603-2	6505	2.4	-3.1		
54	IAEA-603-3	4133	2.4	-3.4		
59	IAEA-603-4	4627	2.3	-3.4		
67	IAEA-603-5	4472	2.3	-3.6		
75	IAEA-603-6	5649	2.3	-3.6		
83	IAEA-603-7	4984	2.4	-3.7		
91	IAEA-603-8	5492	2.3	-4.0		
99	IAEA-603-9	4636	2.3	-4.1		
107	IAEA-603-10	8489	2.4	-3.8		
115	IAEA-603-11	6002	2.4	-3.9		
123	IAEA-603-12	4621	2.3	-4.3		
131	IAEA-603-13	5414	2.4	-4.0		
139	IAEA-603-14	3666	2.3	-4.7		
146	IAEA-603-15	6329	2.3	-4.2		
52	IAEA-603-1	3836	2.4	-3.3	-0.64383	-2.6
53	IAEA-603-2	6505	2.4	-3.1	-0.65621	-2.4
54	IAEA-603-3	4133	2.4	-3.4	-0.66859	-2.7
59	IAEA-603-4	4627	2.3	-3.4	-0.7305	-2.6
67	IAEA-603-5	4472	2.3	-3.6	-0.82955	-2.7
75	IAEA-603-6	5649	2.3	-3.6	-0.9286	-2.6
83	IAEA-603-7	4984	2.4	-3.7	-1.02765	-2.7
91	IAEA-603-8	5492	2.3	-4.0	-1.1267	-2.9
99	IAEA-603-9	4636	2.3	-4.1	-1.22575	-2.9
107	IAEA-603-10	8489	2.4	-3.8	-1.3248	-2.5
115	IAEA-603-11	6002	2.4	-3.9	-1.42385	-2.5
123	IAEA-603-12	4621	2.3	-4.3	-1.5229	-2.8
131	IAEA-603-13	5414	2.4	-4.0	-1.62195	-2.4
139	IAEA-603-14	3666	2.3	-4.7	-1.721	-3.0
146	IAEA-603-15	6329	2.3	-4.2	-1.80767	-2.4
Average			2.4	-3.8		-2.6
Std Dev			0.03	0.45		0.18
Accepted			2.46	-2.37		-2.37
Correction			0.107	1.430		0.280

Measured on Delta V Plus at 50 oC
Measured on July 11, 2024
Beam size correction for d18O only

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O
44	1 hour	10 minutes		1	8703		0.04	0.042
44	1 hour	10 minutes		2	8706		0	0
44	1 hour	10 minutes		3	8707		-0.016	-0.036
44	1 hour	10 minutes		4	8712		-0.034	-0.031
44	1 hour	10 minutes		5	8710		-0.04	-0.037
44	1 hour	10 minutes		6	8712		-0.049	-0.075
44	1 hour	10 minutes		7	8716		-0.052	-0.053
44	1 hour	10 minutes		8	8700		-0.054	-0.084
44	1 hour	10 minutes		9	8698		-0.064	-0.088
44	1 hour	10 minutes		10	8701		-0.069	-0.091
45	1 hour			1	8713		0.042	0.039
45	1 hour			2	8701		0	0
45	1 hour			3	8700		-0.009	-0.023
45	1 hour			4	8692		-0.028	-0.028
45	1 hour			5	8695		-0.029	-0.044
45	1 hour			6	8708		-0.044	-0.045
45	1 hour			7	8701		-0.055	-0.078
45	1 hour			8	8701		-0.053	-0.07
45	1 hour			9	8697		-0.046	-0.094
45	1 hour			10	8692		-0.065	-0.119
46	50 min			1	8700		0.058	0.065
46	50 min			2	8708		0	0
46	50 min			3	8695		-0.009	-0.008
46	50 min			4	8705		-0.021	-0.014
46	50 min			5	8710		-0.029	-0.04
46	50 min			6	8713		-0.03	-0.063
46	50 min			7	8713		-0.025	-0.048
46	50 min			8	8713		-0.047	-0.072
46	50 min			9	8709		-0.044	-0.066
46	50 min			10	8712		-0.051	-0.085
47	40 min			1	8702		0.054	0.038
47	40 min			2	8704		0	0
47	40 min			3	8699		-0.006	0.002
47	40 min			4	8706		-0.006	-0.003
47	40 min			5	8703		-0.025	-0.042
47	40 min			6	8714		-0.031	-0.057
47	40 min			7	8710		-0.038	-0.032
47	40 min			8	8698		-0.032	-0.066
47	40 min			9	8698		-0.036	-0.047
47	40 min			10	8706		-0.035	-0.091
48	30 min			1	8703		0.037	0.06
48	30 min			2	8703		0	0
48	30 min			3	8707		-0.011	-0.009
48	30 min			4	8696		-0.014	-0.022
48	30 min			5	8694		-0.025	-0.028
48	30 min			6	8714		-0.023	-0.056
48	30 min			7	8699		-0.033	-0.032
48	30 min			8	8698		-0.048	-0.046

48 30 min		9	8697	-0.034	-0.045
48 30 min		10	8691	-0.065	-0.067
49 20 min		1	8700	0.056	0.033
49 20 min		2	8700	0	0
49 20 min		3	8701	-0.012	-0.033
49 20 min		4	8676	-0.006	-0.028
49 20 min		5	8694	-0.003	-0.048
49 20 min		6	8700	-0.032	-0.06
49 20 min		7	8710	-0.024	-0.058
49 20 min		8	8691	-0.042	-0.093
49 20 min		9	8694	-0.054	-0.081
49 20 min		10	8696	-0.051	-0.098
50 10 min		1	8704	0.049	0.036
50 10 min		2	8701	0	0
50 10 min		3	8691	-0.02	-0.035
50 10 min		4	8691	-0.017	-0.04
50 10 min		5	8681	-0.026	-0.046
50 10 min		6	8681	-0.027	-0.037
50 10 min		7	8684	-0.019	-0.057
50 10 min		8	8678	-0.026	-0.046
50 10 min		9	8681	-0.037	-0.05
50 10 min		10	8686	-0.037	-0.049
51 Blank	New UGA	1	8683	-39.455	-26.214
51 Blank	New UGA	2	8676	-39.515	-26.286
51 Blank	New UGA	3	8676	-39.54	-26.32
51 Blank	New UGA	4	8672	-39.54	-26.32
52 IAEA-603 55	New UGA	1	8679	-39.373	-26.16
52 IAEA-603 55	New UGA	2	8677	-39.512	-26.282
52 IAEA-603 55	New UGA	3	8672	-39.54	-26.32
52 IAEA-603 55	New UGA	4	3836	2.38	-3.191
52 IAEA-603 55	New UGA	5	3222	2.378	-3.221
52 IAEA-603 55	New UGA	6	2749	2.373	-3.246
52 IAEA-603 55	New UGA	7	2336	2.407	-3.178
52 IAEA-603 55	New UGA	8	1988	2.375	-3.161
52 IAEA-603 55	New UGA	9	1696	2.33	-3.247
52 IAEA-603 55	New UGA	10	1447	2.394	-3.424
52 IAEA-603 55	New UGA	11	1234	2.381	-3.429
52 IAEA-603 55	New UGA	12	1050	2.473	-3.405
52 IAEA-603 55	New UGA	13	895	2.4	-3.46
52 IAEA-603 55	New UGA	14	8665	-39.54	-26.32
53 IAEA-603 84	New UGA	1	8665	-39.373	-26.164
53 IAEA-603 84	New UGA	2	8666	-39.512	-26.299
53 IAEA-603 84	New UGA	3	8665	-39.54	-26.32
53 IAEA-603 84	New UGA	4	6505	2.433	-2.932
53 IAEA-603 84	New UGA	5	5437	2.4	-2.98
53 IAEA-603 84	New UGA	6	4613	2.358	-2.922
53 IAEA-603 84	New UGA	7	3920	2.364	-3.006
53 IAEA-603 84	New UGA	8	3323	2.355	-3.005
53 IAEA-603 84	New UGA	9	2828	2.38	-3.082

53	IAEA-603 84	New UGA	10	2399	2.395	-2.988
53	IAEA-603 84	New UGA	11	2040	2.423	-3.213
53	IAEA-603 84	New UGA	12	1737	2.377	-3.156
53	IAEA-603 84	New UGA	13	1481	2.387	-3.259
53	IAEA-603 84	New UGA	14	8663	-39.54	-26.32
54	IAEA-603 52	New UGA	1	8653	-39.37	-26.162
54	IAEA-603 52	New UGA	2	8656	-39.494	-26.258
54	IAEA-603 52	New UGA	3	8663	-39.54	-26.32
54	IAEA-603 52	New UGA	4	4133	2.322	-3.417
54	IAEA-603 52	New UGA	5	3464	2.331	-3.296
54	IAEA-603 52	New UGA	6	2949	2.338	-3.245
54	IAEA-603 52	New UGA	7	2509	2.354	-3.358
54	IAEA-603 52	New UGA	8	2136	2.368	-3.4
54	IAEA-603 52	New UGA	9	1816	2.353	-3.437
54	IAEA-603 52	New UGA	10	1546	2.362	-3.421
54	IAEA-603 52	New UGA	11	1318	2.414	-3.37
54	IAEA-603 52	New UGA	12	1120	2.445	-3.541
54	IAEA-603 52	New UGA	13	956	2.504	-3.43
54	IAEA-603 52	New UGA	14	8648	-39.54	-26.32
55	WI-03-31 0	New UGA	1	8637	-39.367	-26.123
55	WI-03-31 0	New UGA	2	8642	-39.506	-26.251
55	WI-03-31 0	New UGA	3	8648	-39.54	-26.32
55	WI-03-31 0	New UGA	4	9856	1.322	0.382
55	WI-03-31 0	New UGA	5	8212	1.273	0.357
55	WI-03-31 0	New UGA	6	6927	1.22	0.298
55	WI-03-31 0	New UGA	7	5851	1.224	0.262
55	WI-03-31 0	New UGA	8	4944	1.156	0.24
55	WI-03-31 0	New UGA	9	4173	1.184	0.224
55	WI-03-31 0	New UGA	10	3544	1.192	0.123
55	WI-03-31 0	New UGA	11	2995	1.19	0.166
55	WI-03-31 0	New UGA	12	2542	1.168	0.049
55	WI-03-31 0	New UGA	13	2154	1.139	-0.07
55	WI-03-31 0	New UGA	14	8649	-39.54	-26.32
56	WI-03-20 0	New UGA	1	8653	-39.38	-26.138
56	WI-03-20 0	New UGA	2	8644	-39.489	-26.249
56	WI-03-20 0	New UGA	3	8645	-39.54	-26.32
56	WI-03-20 0	New UGA	4	9533	1.485	0.108
56	WI-03-20 0	New UGA	5	7909	1.434	0.092
56	WI-03-20 0	New UGA	6	6721	1.375	0.056
56	WI-03-20 0	New UGA	7	5675	1.327	-0.019
56	WI-03-20 0	New UGA	8	4784	1.32	0.004
56	WI-03-20 0	New UGA	9	4056	1.313	-0.101
56	WI-03-20 0	New UGA	10	3432	1.318	-0.125
56	WI-03-20 0	New UGA	11	2910	1.337	-0.134
56	WI-03-20 0	New UGA	12	2464	1.354	-0.219
56	WI-03-20 0	New UGA	13	2085	1.385	-0.149
56	WI-03-20 0	New UGA	14	8646	-39.54	-26.32
57	WI-02-48 0	New UGA	1	8643	-39.36	-26.164
57	WI-02-48 0	New UGA	2	8642	-39.489	-26.256

57	WI-02-48	0	New UGA	3	8634	-39.54	-26.32
57	WI-02-48	0	New UGA	4	8434	0.388	-0.146
57	WI-02-48	0	New UGA	5	6989	0.374	-0.171
57	WI-02-48	0	New UGA	6	5906	0.307	-0.199
57	WI-02-48	0	New UGA	7	4979	0.309	-0.268
57	WI-02-48	0	New UGA	8	4199	0.281	-0.261
57	WI-02-48	0	New UGA	9	3551	0.252	-0.349
57	WI-02-48	0	New UGA	10	2995	0.292	-0.346
57	WI-02-48	0	New UGA	11	2523	0.3	-0.328
57	WI-02-48	0	New UGA	12	2136	0.308	-0.393
57	WI-02-48	0	New UGA	13	1807	0.36	-0.434
57	WI-02-48	0	New UGA	14	8644	-39.54	-26.32
58	WI-02-52	0	New UGA	1	8633	-39.376	-26.159
58	WI-02-52	0	New UGA	2	8641	-39.497	-26.278
58	WI-02-52	0	New UGA	3	8629	-39.54	-26.32
58	WI-02-52	0	New UGA	4	11033	0.389	-0.163
58	WI-02-52	0	New UGA	5	9161	0.33	-0.19
58	WI-02-52	0	New UGA	6	7726	0.248	-0.195
58	WI-02-52	0	New UGA	7	6522	0.199	-0.31
58	WI-02-52	0	New UGA	8	5500	0.194	-0.341
58	WI-02-52	0	New UGA	9	4644	0.189	-0.275
58	WI-02-52	0	New UGA	10	3925	0.182	-0.371
58	WI-02-52	0	New UGA	11	3319	0.173	-0.475
58	WI-02-52	0	New UGA	12	2802	0.189	-0.479
58	WI-02-52	0	New UGA	13	2373	0.221	-0.452
58	WI-02-52	0	New UGA	14	8643	-39.54	-26.32
59	IAEA-603	59	New UGA	1	8633	-39.387	-26.177
59	IAEA-603	59	New UGA	2	8621	-39.511	-26.263
59	IAEA-603	59	New UGA	3	8623	-39.54	-26.32
59	IAEA-603	59	New UGA	4	4627	2.32	-3.324
59	IAEA-603	59	New UGA	5	3866	2.294	-3.336
59	IAEA-603	59	New UGA	6	3274	2.326	-3.188
59	IAEA-603	59	New UGA	7	2775	2.33	-3.361
59	IAEA-603	59	New UGA	8	2352	2.308	-3.38
59	IAEA-603	59	New UGA	9	1991	2.352	-3.335
59	IAEA-603	59	New UGA	10	1694	2.274	-3.399
59	IAEA-603	59	New UGA	11	1439	2.345	-3.43
59	IAEA-603	59	New UGA	12	1220	2.36	-3.436
59	IAEA-603	59	New UGA	13	1035	2.45	-3.437
59	IAEA-603	59	New UGA	14	8615	-39.54	-26.32
60	WI-03-02	0	New UGA	1	8610	-39.389	-26.129
60	WI-03-02	0	New UGA	2	8610	-39.498	-26.268
60	WI-03-02	0	New UGA	3	8619	-39.54	-26.32
60	WI-03-02	0	New UGA	4	5824	1.748	0.416
60	WI-03-02	0	New UGA	5	4848	1.738	0.432
60	WI-03-02	0	New UGA	6	4113	1.733	0.423
60	WI-03-02	0	New UGA	7	3489	1.723	0.404
60	WI-03-02	0	New UGA	8	2944	1.73	0.423
60	WI-03-02	0	New UGA	9	2499	1.752	0.345

60	WI-03-02	0	New UGA	10	2112	1.762	0.426
60	WI-03-02	0	New UGA	11	1808	1.813	0.308
60	WI-03-02	0	New UGA	12	1571	1.762	0.16
60	WI-03-02	0	New UGA	13	1340	1.732	0.212
60	WI-03-02	0	New UGA	14	8618	-39.54	-26.32
61	WI-03-12	0	New UGA	1	8610	-39.367	-26.172
61	WI-03-12	0	New UGA	2	8606	-39.488	-26.278
61	WI-03-12	0	New UGA	3	8609	-39.54	-26.32
61	WI-03-12	0	New UGA	4	7344	1.176	-0.295
61	WI-03-12	0	New UGA	5	6141	1.108	-0.338
61	WI-03-12	0	New UGA	6	5199	1.093	-0.412
61	WI-03-12	0	New UGA	7	4406	1.109	-0.436
61	WI-03-12	0	New UGA	8	3719	1.058	-0.395
61	WI-03-12	0	New UGA	9	3165	1.024	-0.473
61	WI-03-12	0	New UGA	10	2672	1.038	-0.528
61	WI-03-12	0	New UGA	11	2271	1.041	-0.446
61	WI-03-12	0	New UGA	12	1928	1.115	-0.597
61	WI-03-12	0	New UGA	13	1636	1.114	-0.515
61	WI-03-12	0	New UGA	14	8607	-39.54	-26.32
62	WI-03-34	0	New UGA	1	8598	-39.358	-26.127
62	WI-03-34	0	New UGA	2	8602	-39.493	-26.248
62	WI-03-34	0	New UGA	3	8604	-39.54	-26.32
62	WI-03-34	0	New UGA	4	6849	1.182	0.266
62	WI-03-34	0	New UGA	5	5711	1.191	0.272
62	WI-03-34	0	New UGA	6	4829	1.158	0.275
62	WI-03-34	0	New UGA	7	4102	1.136	0.198
62	WI-03-34	0	New UGA	8	3463	1.147	0.262
62	WI-03-34	0	New UGA	9	2938	1.132	0.163
62	WI-03-34	0	New UGA	10	2488	1.189	0.187
62	WI-03-34	0	New UGA	11	2114	1.195	0.062
62	WI-03-34	0	New UGA	12	1792	1.174	0.11
62	WI-03-34	0	New UGA	13	1517	1.223	0.043
62	WI-03-34	0	New UGA	14	8597	-39.54	-26.32
63	WI-03-05	0	New UGA	1	8600	-39.379	-26.147
63	WI-03-05	0	New UGA	2	8602	-39.496	-26.266
63	WI-03-05	0	New UGA	3	8592	-39.54	-26.32
63	WI-03-05	0	New UGA	4	4660	2.068	0.043
63	WI-03-05	0	New UGA	5	3886	2.077	0.013
63	WI-03-05	0	New UGA	6	3288	2.094	0.027
63	WI-03-05	0	New UGA	7	2785	2.085	-0.013
63	WI-03-05	0	New UGA	8	2359	2.104	-0.086
63	WI-03-05	0	New UGA	9	2001	2.085	-0.148
63	WI-03-05	0	New UGA	10	1695	2.067	-0.144
63	WI-03-05	0	New UGA	11	1437	2.097	-0.155
63	WI-03-05	0	New UGA	12	1216	2.194	-0.138
63	WI-03-05	0	New UGA	13	1031	2.181	-0.081
63	WI-03-05	0	New UGA	14	8590	-39.54	-26.32
64	WI-03-15	0	New UGA	1	8585	-39.369	-26.163
64	WI-03-15	0	New UGA	2	8586	-39.499	-26.264

64	WI-03-15	0	New UGA	3	8594	-39.54	-26.32
64	WI-03-15	0	New UGA	4	6641	0.972	-0.205
64	WI-03-15	0	New UGA	5	5541	0.966	-0.288
64	WI-03-15	0	New UGA	6	4685	0.924	-0.237
64	WI-03-15	0	New UGA	7	3986	0.951	-0.306
64	WI-03-15	0	New UGA	8	3376	0.962	-0.315
64	WI-03-15	0	New UGA	9	2865	0.962	-0.324
64	WI-03-15	0	New UGA	10	2437	0.911	-0.469
64	WI-03-15	0	New UGA	11	2061	0.942	-0.406
64	WI-03-15	0	New UGA	12	1753	0.961	-0.585
64	WI-03-15	0	New UGA	13	1490	0.969	-0.47
64	WI-03-15	0	New UGA	14	8589	-39.54	-26.32
65	WI-02-50	0	New UGA	1	8587	-39.379	-26.145
65	WI-02-50	0	New UGA	2	8590	-39.504	-26.274
65	WI-02-50	0	New UGA	3	8599	-39.54	-26.32
65	WI-02-50	0	New UGA	4	11066	0.485	-0.159
65	WI-02-50	0	New UGA	5	9146	0.39	-0.209
65	WI-02-50	0	New UGA	6	7733	0.36	-0.336
65	WI-02-50	0	New UGA	7	6523	0.3	-0.346
65	WI-02-50	0	New UGA	8	5514	0.299	-0.4
65	WI-02-50	0	New UGA	9	4657	0.28	-0.425
65	WI-02-50	0	New UGA	10	3939	0.284	-0.471
65	WI-02-50	0	New UGA	11	3326	0.252	-0.486
65	WI-02-50	0	New UGA	12	2814	0.3	-0.477
65	WI-02-50	0	New UGA	13	2389	0.28	-0.593
65	WI-02-50	0	New UGA	14	8578	-39.54	-26.32
66	WI-02-49	0	New UGA	1	8583	-39.387	-26.151
66	WI-02-49	0	New UGA	2	8576	-39.499	-26.281
66	WI-02-49	0	New UGA	3	8580	-39.54	-26.32
66	WI-02-49	0	New UGA	4	11136	0.447	-0.202
66	WI-02-49	0	New UGA	5	9220	0.387	-0.244
66	WI-02-49	0	New UGA	6	7806	0.346	-0.338
66	WI-02-49	0	New UGA	7	6548	0.259	-0.336
66	WI-02-49	0	New UGA	8	5541	0.257	-0.38
66	WI-02-49	0	New UGA	9	4677	0.264	-0.406
66	WI-02-49	0	New UGA	10	3951	0.192	-0.483
66	WI-02-49	0	New UGA	11	3340	0.221	-0.479
66	WI-02-49	0	New UGA	12	2823	0.221	-0.516
66	WI-02-49	0	New UGA	13	2391	0.223	-0.594
66	WI-02-49	0	New UGA	14	8584	-39.54	-26.32
67	IAEA-603	66	New UGA	1	8566	-39.376	-26.155
67	IAEA-603	66	New UGA	2	8573	-39.48	-26.276
67	IAEA-603	66	New UGA	3	8586	-39.54	-26.32
67	IAEA-603	66	New UGA	4	4472	2.294	-3.52
67	IAEA-603	66	New UGA	5	3739	2.343	-3.475
67	IAEA-603	66	New UGA	6	3175	2.315	-3.462
67	IAEA-603	66	New UGA	7	2709	2.316	-3.55
67	IAEA-603	66	New UGA	8	2304	2.367	-3.595
67	IAEA-603	66	New UGA	9	1960	2.372	-3.609

67	IAEA-603 66	New UGA	10	1667	2.37	-3.624
67	IAEA-603 66	New UGA	11	1418	2.313	-3.584
67	IAEA-603 66	New UGA	12	1206	2.386	-3.671
67	IAEA-603 66	New UGA	13	1028	2.417	-3.684
67	IAEA-603 66	New UGA	14	8573	-39.54	-26.32
68	WI-03-25 0	New UGA	1	8576	-39.378	-26.124
68	WI-03-25 0	New UGA	2	8566	-39.487	-26.258
68	WI-03-25 0	New UGA	3	8575	-39.54	-26.32
68	WI-03-25 0	New UGA	4	8863	1.15	0.395
68	WI-03-25 0	New UGA	5	7355	1.094	0.385
68	WI-03-25 0	New UGA	6	6214	1.068	0.344
68	WI-03-25 0	New UGA	7	5261	1.015	0.278
68	WI-03-25 0	New UGA	8	4440	0.999	0.271
68	WI-03-25 0	New UGA	9	3760	1.025	0.165
68	WI-03-25 0	New UGA	10	3186	1.051	0.118
68	WI-03-25 0	New UGA	11	2689	0.993	0.089
68	WI-03-25 0	New UGA	12	2285	1.098	0.258
68	WI-03-25 0	New UGA	13	1934	1.005	0.074
68	WI-03-25 0	New UGA	14	8576	-39.54	-26.32
69	WI-03-07 0	New UGA	1	8564	-39.38	-26.155
69	WI-03-07 0	New UGA	2	8560	-39.502	-26.266
69	WI-03-07 0	New UGA	3	8572	-39.54	-26.32
69	WI-03-07 0	New UGA	4	5900	1.678	-0.13
69	WI-03-07 0	New UGA	5	4924	1.65	-0.196
69	WI-03-07 0	New UGA	6	4174	1.655	-0.17
69	WI-03-07 0	New UGA	7	3531	1.663	-0.202
69	WI-03-07 0	New UGA	8	2999	1.727	-0.113
69	WI-03-07 0	New UGA	9	2542	1.653	-0.312
69	WI-03-07 0	New UGA	10	2153	1.65	-0.307
69	WI-03-07 0	New UGA	11	1825	1.663	-0.21
69	WI-03-07 0	New UGA	12	1541	1.622	-0.4
69	WI-03-07 0	New UGA	13	1315	1.67	-0.49
69	WI-03-07 0	New UGA	14	8566	-39.54	-26.32
70	WI-03-17 0	New UGA	1	8555	-39.376	-26.109
70	WI-03-17 0	New UGA	2	8567	-39.498	-26.266
70	WI-03-17 0	New UGA	3	8560	-39.54	-26.32
70	WI-03-17 0	New UGA	4	12177	1.333	0.174
70	WI-03-17 0	New UGA	5	10095	1.247	0.111
70	WI-03-17 0	New UGA	6	8505	1.154	0.041
70	WI-03-17 0	New UGA	7	7188	1.153	-0.061
70	WI-03-17 0	New UGA	8	6059	1.099	-0.052
70	WI-03-17 0	New UGA	9	5114	1.123	-0.058
70	WI-03-17 0	New UGA	10	4336	1.072	-0.186
70	WI-03-17 0	New UGA	11	3670	1.111	-0.133
70	WI-03-17 0	New UGA	12	3095	1.113	-0.141
70	WI-03-17 0	New UGA	13	2624	1.142	-0.184
70	WI-03-17 0	New UGA	14	8560	-39.54	-26.32
71	WI-03-14 0	New UGA	1	8553	-39.358	-26.147
71	WI-03-14 0	New UGA	2	8545	-39.492	-26.273

71	WI-03-14	0	New UGA	3	8551	-39.54	-26.32
71	WI-03-14	0	New UGA	4	4119	0.974	-0.597
71	WI-03-14	0	New UGA	5	3429	0.942	-0.618
71	WI-03-14	0	New UGA	6	2900	0.948	-0.594
71	WI-03-14	0	New UGA	7	2465	0.986	-0.561
71	WI-03-14	0	New UGA	8	2083	0.934	-0.756
71	WI-03-14	0	New UGA	9	1762	0.933	-0.727
71	WI-03-14	0	New UGA	10	1489	0.995	-0.681
71	WI-03-14	0	New UGA	11	1264	1.006	-0.878
71	WI-03-14	0	New UGA	12	1071	1.008	-0.88
71	WI-03-14	0	New UGA	13	911	1.153	-0.935
71	WI-03-14	0	New UGA	14	8562	-39.54	-26.32
72	WI-03-37	0	New UGA	1	8560	-39.383	-26.152
72	WI-03-37	0	New UGA	2	8550	-39.498	-26.294
72	WI-03-37	0	New UGA	3	8557	-39.54	-26.32
72	WI-03-37	0	New UGA	4	7679	1.146	0.262
72	WI-03-37	0	New UGA	5	6363	1.129	0.187
72	WI-03-37	0	New UGA	6	5341	1.227	0.443
72	WI-03-37	0	New UGA	7	4536	1.153	0.249
72	WI-03-37	0	New UGA	8	3830	1.179	0.301
72	WI-03-37	0	New UGA	9	3236	1.067	0.1
72	WI-03-37	0	New UGA	10	2730	1.11	0.071
72	WI-03-37	0	New UGA	11	2306	1.077	-0.004
72	WI-03-37	0	New UGA	12	1951	1.106	-0.06
72	WI-03-37	0	New UGA	13	1646	1.104	-0.072
72	WI-03-37	0	New UGA	14	8562	-39.54	-26.32
73	WI-03-13	0	New UGA	1	8555	-39.384	-26.159
73	WI-03-13	0	New UGA	2	8561	-39.497	-26.285
73	WI-03-13	0	New UGA	3	8551	-39.54	-26.32
73	WI-03-13	0	New UGA	4	7299	1.282	-0.212
73	WI-03-13	0	New UGA	5	6056	1.296	-0.168
73	WI-03-13	0	New UGA	6	5100	1.223	-0.221
73	WI-03-13	0	New UGA	7	4313	1.243	-0.342
73	WI-03-13	0	New UGA	8	3644	1.279	-0.184
73	WI-03-13	0	New UGA	9	3077	1.207	-0.482
73	WI-03-13	0	New UGA	10	2604	1.274	-0.342
73	WI-03-13	0	New UGA	11	2201	1.225	-0.403
73	WI-03-13	0	New UGA	12	1861	1.263	-0.438
73	WI-03-13	0	New UGA	13	1571	1.259	-0.541
73	WI-03-13	0	New UGA	14	8568	-39.54	-26.32
74	WI-02-47	0	New UGA	1	8546	-39.367	-26.138
74	WI-02-47	0	New UGA	2	8563	-39.488	-26.238
74	WI-02-47	0	New UGA	3	8567	-39.54	-26.32
74	WI-02-47	0	New UGA	4	8892	0.564	0.005
74	WI-02-47	0	New UGA	5	7332	0.478	-0.147
74	WI-02-47	0	New UGA	6	6145	0.549	0.065
74	WI-02-47	0	New UGA	7	5197	0.39	-0.291
74	WI-02-47	0	New UGA	8	4381	0.394	-0.269
74	WI-02-47	0	New UGA	9	3701	0.343	-0.344

74	WI-02-47	0	New UGA	10	3127	0.381	-0.378
74	WI-02-47	0	New UGA	11	2643	0.336	-0.427
74	WI-02-47	0	New UGA	12	2232	0.356	-0.526
74	WI-02-47	0	New UGA	13	1884	0.415	-0.414
74	WI-02-47	0	New UGA	14	8553	-39.54	-26.32
75	IAEA-603	74	New UGA	1	8552	-39.393	-26.131
75	IAEA-603	74	New UGA	2	8545	-39.514	-26.262
75	IAEA-603	74	New UGA	3	8544	-39.54	-26.32
75	IAEA-603	74	New UGA	4	5649	2.26	-3.531
75	IAEA-603	74	New UGA	5	4706	2.349	-3.467
75	IAEA-603	74	New UGA	6	3977	2.255	-3.506
75	IAEA-603	74	New UGA	7	3362	2.268	-3.53
75	IAEA-603	74	New UGA	8	2854	2.38	-3.459
75	IAEA-603	74	New UGA	9	2410	2.27	-3.627
75	IAEA-603	74	New UGA	10	2047	2.315	-3.643
75	IAEA-603	74	New UGA	11	1729	2.238	-3.653
75	IAEA-603	74	New UGA	12	1471	2.342	-3.573
75	IAEA-603	74	New UGA	13	1247	2.35	-3.566
75	IAEA-603	74	New UGA	14	8558	-39.54	-26.32
76	WI-03-39	0	New UGA	1	8535	-39.394	-26.122
76	WI-03-39	0	New UGA	2	8534	-39.519	-26.266
76	WI-03-39	0	New UGA	3	8549	-39.54	-26.32
76	WI-03-39	0	New UGA	4	9897	1.248	0.357
76	WI-03-39	0	New UGA	5	8216	1.212	0.331
76	WI-03-39	0	New UGA	6	6920	1.155	0.254
76	WI-03-39	0	New UGA	7	5823	1.266	0.554
76	WI-03-39	0	New UGA	8	4943	1.226	0.451
76	WI-03-39	0	New UGA	9	4186	1.134	0.14
76	WI-03-39	0	New UGA	10	3547	1.125	0.137
76	WI-03-39	0	New UGA	11	2993	1.1	0.05
76	WI-03-39	0	New UGA	12	2534	1.14	-0.014
76	WI-03-39	0	New UGA	13	2145	1.118	-0.044
76	WI-03-39	0	New UGA	14	8550	-39.54	-26.32
77	WI-03-27	0	New UGA	1	8547	-39.379	-26.152
77	WI-03-27	0	New UGA	2	8545	-39.5	-26.266
77	WI-03-27	0	New UGA	3	8560	-39.54	-26.32
77	WI-03-27	0	New UGA	4	11217	1.363	0.361
77	WI-03-27	0	New UGA	5	9247	1.307	0.274
77	WI-03-27	0	New UGA	6	7786	1.194	0.244
77	WI-03-27	0	New UGA	7	6556	1.187	0.189
77	WI-03-27	0	New UGA	8	5510	1.21	0.133
77	WI-03-27	0	New UGA	9	4655	1.171	0.054
77	WI-03-27	0	New UGA	10	3923	1.147	0.045
77	WI-03-27	0	New UGA	11	3309	1.132	0.041
77	WI-03-27	0	New UGA	12	2792	1.155	-0.041
77	WI-03-27	0	New UGA	13	2360	1.194	-0.077
77	WI-03-27	0	New UGA	14	8543	-39.54	-26.32
78	WI-03-08	0	New UGA	1	8543	-39.412	-26.165
78	WI-03-08	0	New UGA	2	8538	-39.509	-26.275

78	WI-03-08	0	New UGA	3	8551	-39.54	-26.32
78	WI-03-08	0	New UGA	4	6756	1.592	-0.233
78	WI-03-08	0	New UGA	5	5590	1.572	-0.238
78	WI-03-08	0	New UGA	6	4713	1.536	-0.294
78	WI-03-08	0	New UGA	7	3981	1.499	-0.298
78	WI-03-08	0	New UGA	8	3364	1.523	-0.433
78	WI-03-08	0	New UGA	9	2836	1.496	-0.383
78	WI-03-08	0	New UGA	10	2399	1.523	-0.439
78	WI-03-08	0	New UGA	11	2023	1.505	-0.45
78	WI-03-08	0	New UGA	12	1711	1.576	-0.462
78	WI-03-08	0	New UGA	13	1444	1.578	-0.509
78	WI-03-08	0	New UGA	14	8540	-39.54	-26.32
79	WI-08-10	0	New UGA	1	8536	-39.389	-26.148
79	WI-08-10	0	New UGA	2	8543	-39.489	-26.282
79	WI-08-10	0	New UGA	3	8551	-39.54	-26.32
79	WI-08-10	0	New UGA	4	7570	1.711	-0.002
79	WI-08-10	0	New UGA	5	6276	1.67	-0.047
79	WI-08-10	0	New UGA	6	5293	1.633	-0.08
79	WI-08-10	0	New UGA	7	4459	1.649	-0.075
79	WI-08-10	0	New UGA	8	3763	1.596	-0.157
79	WI-08-10	0	New UGA	9	3184	1.635	-0.195
79	WI-08-10	0	New UGA	10	2687	1.656	-0.187
79	WI-08-10	0	New UGA	11	2273	1.681	-0.208
79	WI-08-10	0	New UGA	12	1920	1.691	-0.202
79	WI-08-10	0	New UGA	13	1624	1.605	-0.308
79	WI-08-10	0	New UGA	14	8539	-39.54	-26.32
80	WI-03-36	0	New UGA	1	8544	-39.378	-26.155
80	WI-03-36	0	New UGA	2	8540	-39.497	-26.259
80	WI-03-36	0	New UGA	3	8552	-39.54	-26.32
80	WI-03-36	0	New UGA	4	6149	1.146	0.157
80	WI-03-36	0	New UGA	5	5110	1.15	0.162
80	WI-03-36	0	New UGA	6	4338	1.111	0.166
80	WI-03-36	0	New UGA	7	3684	1.083	0.024
80	WI-03-36	0	New UGA	8	3123	1.1	0.018
80	WI-03-36	0	New UGA	9	2645	1.115	0.064
80	WI-03-36	0	New UGA	10	2248	1.057	0.041
80	WI-03-36	0	New UGA	11	1903	1.149	-0.025
80	WI-03-36	0	New UGA	12	1611	1.161	-0.055
80	WI-03-36	0	New UGA	13	1365	1.21	-0.189
80	WI-03-36	0	New UGA	14	8551	-39.54	-26.32
81	WI-03-04	0	New UGA	1	8537	-39.367	-26.159
81	WI-03-04	0	New UGA	2	8549	-39.487	-26.268
81	WI-03-04	0	New UGA	3	8551	-39.54	-26.32
81	WI-03-04	0	New UGA	4	7067	2.337	0.621
81	WI-03-04	0	New UGA	5	5836	2.215	0.388
81	WI-03-04	0	New UGA	6	4902	2.277	0.582
81	WI-03-04	0	New UGA	7	4076	2.3	0.603
81	WI-03-04	0	New UGA	8	3486	2.176	0.178
81	WI-03-04	0	New UGA	9	2937	2.091	0.231

81	WI-03-04	0	New UGA	10	2480	2.148	0.214
81	WI-03-04	0	New UGA	11	2090	2.161	0.209
81	WI-03-04	0	New UGA	12	1771	2.145	0.075
81	WI-03-04	0	New UGA	13	1492	2.196	0.03
81	WI-03-04	0	New UGA	14	8540	-39.54	-26.32
82	WI-03-30	0	New UGA	1	8546	-39.367	-26.155
82	WI-03-30	0	New UGA	2	8545	-39.506	-26.273
82	WI-03-30	0	New UGA	3	8548	-39.54	-26.32
82	WI-03-30	0	New UGA	4	7586	1.277	0.055
82	WI-03-30	0	New UGA	5	6270	1.236	0.031
82	WI-03-30	0	New UGA	6	5283	1.207	0.014
82	WI-03-30	0	New UGA	7	4460	1.203	-0.062
82	WI-03-30	0	New UGA	8	3766	1.198	-0.096
82	WI-03-30	0	New UGA	9	3181	1.132	-0.099
82	WI-03-30	0	New UGA	10	2686	1.203	-0.135
82	WI-03-30	0	New UGA	11	2275	1.213	-0.264
82	WI-03-30	0	New UGA	12	1923	1.125	-0.29
82	WI-03-30	0	New UGA	13	1626	1.223	-0.273
82	WI-03-30	0	New UGA	14	8546	-39.54	-26.32
83	IAEA-603	66	New UGA	1	8517	-39.392	-26.159
83	IAEA-603	66	New UGA	2	8533	-39.491	-26.276
83	IAEA-603	66	New UGA	3	8529	-39.54	-26.32
83	IAEA-603	66	New UGA	4	4984	2.348	-3.549
83	IAEA-603	66	New UGA	5	4147	2.394	-3.556
83	IAEA-603	66	New UGA	6	3507	2.322	-3.612
83	IAEA-603	66	New UGA	7	2974	2.301	-3.713
83	IAEA-603	66	New UGA	8	2527	2.378	-3.558
83	IAEA-603	66	New UGA	9	2141	2.321	-3.719
83	IAEA-603	66	New UGA	10	1815	2.381	-3.837
83	IAEA-603	66	New UGA	11	1540	2.414	-3.864
83	IAEA-603	66	New UGA	12	1305	2.324	-3.767
83	IAEA-603	66	New UGA	13	1106	2.369	-3.776
83	IAEA-603	66	New UGA	14	8534	-39.54	-26.32
84	WI-03-19	0	New UGA	1	8534	-39.387	-26.168
84	WI-03-19	0	New UGA	2	8532	-39.506	-26.301
84	WI-03-19	0	New UGA	3	8537	-39.54	-26.32
84	WI-03-19	0	New UGA	4	9476	1.256	-0.013
84	WI-03-19	0	New UGA	5	7826	1.172	-0.147
84	WI-03-19	0	New UGA	6	6583	1.234	0.099
84	WI-03-19	0	New UGA	7	5581	1.111	-0.19
84	WI-03-19	0	New UGA	8	4704	1.068	-0.17
84	WI-03-19	0	New UGA	9	3995	1.089	-0.223
84	WI-03-19	0	New UGA	10	3381	1.092	-0.269
84	WI-03-19	0	New UGA	11	2848	1.088	-0.302
84	WI-03-19	0	New UGA	12	2415	1.113	-0.348
84	WI-03-19	0	New UGA	13	2041	1.147	-0.375
84	WI-03-19	0	New UGA	14	8542	-39.54	-26.32
85	WI-03-23	0	New UGA	1	8529	-39.374	-26.14
85	WI-03-23	0	New UGA	2	8534	-39.488	-26.252

85	WI-03-23	0	New UGA	3	8539	-39.54	-26.32
85	WI-03-23	0	New UGA	4	8166	1.324	0.177
85	WI-03-23	0	New UGA	5	6760	1.293	0.087
85	WI-03-23	0	New UGA	6	5702	1.254	0.09
85	WI-03-23	0	New UGA	7	4824	1.264	0.096
85	WI-03-23	0	New UGA	8	4080	1.207	0.077
85	WI-03-23	0	New UGA	9	3466	1.272	0.092
85	WI-03-23	0	New UGA	10	2926	1.191	-0.062
85	WI-03-23	0	New UGA	11	2473	1.253	-0.137
85	WI-03-23	0	New UGA	12	2092	1.278	-0.095
85	WI-03-23	0	New UGA	13	1780	1.28	-0.2
85	WI-03-23	0	New UGA	14	8537	-39.54	-26.32
86	WI-03-03	0	New UGA	1	8538	-39.381	-26.145
86	WI-03-03	0	New UGA	2	8545	-39.503	-26.283
86	WI-03-03	0	New UGA	3	8551	-39.54	-26.32
86	WI-03-03	0	New UGA	4	6954	2.1	0.308
86	WI-03-03	0	New UGA	5	5743	2.11	0.367
86	WI-03-03	0	New UGA	6	4829	2.07	0.332
86	WI-03-03	0	New UGA	7	4067	2.084	0.231
86	WI-03-03	0	New UGA	8	3428	2.083	0.268
86	WI-03-03	0	New UGA	9	2888	2.061	0.171
86	WI-03-03	0	New UGA	10	2429	2.069	0.114
86	WI-03-03	0	New UGA	11	2046	2.009	0.133
86	WI-03-03	0	New UGA	12	1725	2.106	0.071
86	WI-03-03	0	New UGA	13	1456	2.089	-0.025
86	WI-03-03	0	New UGA	14	8528	-39.54	-26.32
87	WI-03-40	0	New UGA	1	8536	-39.38	-26.179
87	WI-03-40	0	New UGA	2	8544	-39.49	-26.269
87	WI-03-40	0	New UGA	3	8520	-39.54	-26.32
87	WI-03-40	0	New UGA	4	11017	1.247	0.29
87	WI-03-40	0	New UGA	5	9096	1.222	0.274
87	WI-03-40	0	New UGA	6	7630	1.126	0.237
87	WI-03-40	0	New UGA	7	6421	1.069	0.133
87	WI-03-40	0	New UGA	8	5404	1.06	0.06
87	WI-03-40	0	New UGA	9	4567	1.108	0.191
87	WI-03-40	0	New UGA	10	3844	1.074	0.072
87	WI-03-40	0	New UGA	11	3250	1.118	0.037
87	WI-03-40	0	New UGA	12	2741	1.17	0.274
87	WI-03-40	0	New UGA	13	2312	1.045	-0.079
87	WI-03-40	0	New UGA	14	8538	-39.54	-26.32
88	WI-03-38	0	New UGA	1	8537	-39.383	-26.176
88	WI-03-38	0	New UGA	2	8535	-39.494	-26.299
88	WI-03-38	0	New UGA	3	8547	-39.54	-26.32
88	WI-03-38	0	New UGA	4	10687	1.395	0.526
88	WI-03-38	0	New UGA	5	8793	1.353	0.528
88	WI-03-38	0	New UGA	6	7442	1.311	0.406
88	WI-03-38	0	New UGA	7	6275	1.211	0.412
88	WI-03-38	0	New UGA	8	5290	1.129	0.129
88	WI-03-38	0	New UGA	9	4458	1.088	0.108

88	WI-03-38	0	New UGA	10	3777	1.078	0.09
88	WI-03-38	0	New UGA	11	3179	1.1	-0.009
88	WI-03-38	0	New UGA	12	2681	1.082	-0.04
88	WI-03-38	0	New UGA	13	2277	1.109	-0.002
88	WI-03-38	0	New UGA	14	8531	-39.54	-26.32
89	WI-03-16	0	New UGA	1	8528	-39.385	-26.158
89	WI-03-16	0	New UGA	2	8532	-39.508	-26.269
89	WI-03-16	0	New UGA	3	8549	-39.54	-26.32
89	WI-03-16	0	New UGA	4	10744	1.223	0.198
89	WI-03-16	0	New UGA	5	8968	1.036	-0.132
89	WI-03-16	0	New UGA	6	7568	0.976	-0.211
89	WI-03-16	0	New UGA	7	6380	0.939	-0.239
89	WI-03-16	0	New UGA	8	5357	0.867	-0.313
89	WI-03-16	0	New UGA	9	4500	0.994	0.014
89	WI-03-16	0	New UGA	10	3811	0.852	-0.397
89	WI-03-16	0	New UGA	11	3229	0.892	-0.422
89	WI-03-16	0	New UGA	12	2720	0.877	-0.453
89	WI-03-16	0	New UGA	13	2293	1.007	-0.218
89	WI-03-16	0	New UGA	14	8542	-39.54	-26.32
90	WI-02-40	0	New UGA	1	8530	-39.372	-26.143
90	WI-02-40	0	New UGA	2	8529	-39.486	-26.279
90	WI-02-40	0	New UGA	3	8552	-39.54	-26.32
90	WI-02-40	0	New UGA	4	10335	0.517	-0.065
90	WI-02-40	0	New UGA	5	8511	0.424	-0.157
90	WI-02-40	0	New UGA	6	7169	0.421	-0.155
90	WI-02-40	0	New UGA	7	6035	0.352	-0.198
90	WI-02-40	0	New UGA	8	5112	0.391	-0.189
90	WI-02-40	0	New UGA	9	4302	0.323	-0.247
90	WI-02-40	0	New UGA	10	3635	0.333	-0.311
90	WI-02-40	0	New UGA	11	3070	0.336	-0.33
90	WI-02-40	0	New UGA	12	2597	0.292	-0.397
90	WI-02-40	0	New UGA	13	2195	0.373	-0.376
90	WI-02-40	0	New UGA	14	8540	-39.54	-26.32
91	IAEA-603	68	New UGA	1	8534	-39.395	-26.125
91	IAEA-603	68	New UGA	2	8537	-39.51	-26.254
91	IAEA-603	68	New UGA	3	8548	-39.54	-26.32
91	IAEA-603	68	New UGA	4	5492	2.289	-3.901
91	IAEA-603	68	New UGA	5	4553	2.416	-3.69
91	IAEA-603	68	New UGA	6	3853	2.307	-3.983
91	IAEA-603	68	New UGA	7	3270	2.272	-4.001
91	IAEA-603	68	New UGA	8	2764	2.305	-4.04
91	IAEA-603	68	New UGA	9	2338	2.291	-4.007
91	IAEA-603	68	New UGA	10	1980	2.303	-3.98
91	IAEA-603	68	New UGA	11	1677	2.404	-4.114
91	IAEA-603	68	New UGA	12	1420	2.308	-4.056
91	IAEA-603	68	New UGA	13	1204	2.414	-4.231
91	IAEA-603	68	New UGA	14	8536	-39.54	-26.32
92	WI-03-33	0	New UGA	1	8531	-39.398	-26.14
92	WI-03-33	0	New UGA	2	8533	-39.509	-26.272

92	WI-03-33	0	New UGA	3	8540	-39.54	-26.32
92	WI-03-33	0	New UGA	4	10141	1.308	0.245
92	WI-03-33	0	New UGA	5	8341	1.321	0.46
92	WI-03-33	0	New UGA	6	7023	1.224	0.136
92	WI-03-33	0	New UGA	7	5920	1.185	0.15
92	WI-03-33	0	New UGA	8	4983	1.201	0.106
92	WI-03-33	0	New UGA	9	4184	1.128	0.014
92	WI-03-33	0	New UGA	10	3529	1.129	0.003
92	WI-03-33	0	New UGA	11	2955	1.303	0.356
92	WI-03-33	0	New UGA	12	2513	1.179	-0.032
92	WI-03-33	0	New UGA	13	2121	1.165	-0.079
92	WI-03-33	0	New UGA	14	8540	-39.54	-26.32
93	WI-03-22	0	New UGA	1	8541	-39.382	-26.172
93	WI-03-22	0	New UGA	2	8533	-39.499	-26.287
93	WI-03-22	0	New UGA	3	8534	-39.54	-26.32
93	WI-03-22	0	New UGA	4	10691	1.54	0.103
93	WI-03-22	0	New UGA	5	8810	1.491	0.07
93	WI-03-22	0	New UGA	6	7430	1.5	0.198
93	WI-03-22	0	New UGA	7	6273	1.42	-0.026
93	WI-03-22	0	New UGA	8	5294	1.405	-0.065
93	WI-03-22	0	New UGA	9	4461	1.36	0.123
93	WI-03-22	0	New UGA	10	3769	1.361	-0.222
93	WI-03-22	0	New UGA	11	3189	1.344	-0.202
93	WI-03-22	0	New UGA	12	2693	1.359	-0.206
93	WI-03-22	0	New UGA	13	2279	1.3	-0.211
93	WI-03-22	0	New UGA	14	8537	-39.54	-26.32
94	WI-03-18	0	New UGA	1	8526	-39.397	-26.126
94	WI-03-18	0	New UGA	2	8533	-39.511	-26.254
94	WI-03-18	0	New UGA	3	8533	-39.54	-26.32
94	WI-03-18	0	New UGA	4	7160	1.101	-0.186
94	WI-03-18	0	New UGA	5	5923	1.118	-0.18
94	WI-03-18	0	New UGA	6	4996	1.033	-0.213
94	WI-03-18	0	New UGA	7	4218	1.039	-0.299
94	WI-03-18	0	New UGA	8	3575	1.126	-0.148
94	WI-03-18	0	New UGA	9	3010	1.073	-0.338
94	WI-03-18	0	New UGA	10	2548	1.044	-0.369
94	WI-03-18	0	New UGA	11	2151	1.051	-0.357
94	WI-03-18	0	New UGA	12	1823	1.096	-0.534
94	WI-03-18	0	New UGA	13	1540	1.038	-0.431
94	WI-03-18	0	New UGA	14	8537	-39.54	-26.32
95	WI-03-11	0	New UGA	1	8523	-39.38	-26.156
95	WI-03-11	0	New UGA	2	8528	-39.488	-26.276
95	WI-03-11	0	New UGA	3	8528	-39.54	-26.32
95	WI-03-11	0	New UGA	4	5702	1.689	-0.077
95	WI-03-11	0	New UGA	5	4698	1.717	-0.01
95	WI-03-11	0	New UGA	6	3962	1.679	-0.088
95	WI-03-11	0	New UGA	7	3327	1.683	-0.022
95	WI-03-11	0	New UGA	8	2802	1.69	-0.059
95	WI-03-11	0	New UGA	9	2359	1.677	-0.167

95	WI-03-11	0	New UGA	10	1986	1.692	-0.228
95	WI-03-11	0	New UGA	11	1676	1.687	-0.192
95	WI-03-11	0	New UGA	12	1410	1.729	-0.171
95	WI-03-11	0	New UGA	13	1191	1.727	-0.48
95	WI-03-11	0	New UGA	14	8527	-39.54	-26.32
96	WI-03-01	0	New UGA	1	8521	-39.365	-26.169
96	WI-03-01	0	New UGA	2	8524	-39.496	-26.307
96	WI-03-01	0	New UGA	3	8522	-39.54	-26.32
96	WI-03-01	0	New UGA	4	8444	1.418	0.186
96	WI-03-01	0	New UGA	5	6965	1.377	0.118
96	WI-03-01	0	New UGA	6	5877	1.329	0.074
96	WI-03-01	0	New UGA	7	4953	1.319	0.052
96	WI-03-01	0	New UGA	8	4186	1.266	0.07
96	WI-03-01	0	New UGA	9	3540	1.278	0.034
96	WI-03-01	0	New UGA	10	2990	1.286	-0.065
96	WI-03-01	0	New UGA	11	2526	1.313	-0.06
96	WI-03-01	0	New UGA	12	2139	1.307	-0.17
96	WI-03-01	0	New UGA	13	1813	1.285	-0.227
96	WI-03-01	0	New UGA	14	8532	-39.54	-26.32
97	WI-03-32	0	New UGA	1	8527	-39.397	-26.136
97	WI-03-32	0	New UGA	2	8521	-39.513	-26.279
97	WI-03-32	0	New UGA	3	8530	-39.54	-26.32
97	WI-03-32	0	New UGA	4	13301	1.483	0.556
97	WI-03-32	0	New UGA	5	10931	1.326	0.343
97	WI-03-32	0	New UGA	6	9183	1.252	0.232
97	WI-03-32	0	New UGA	7	7737	1.203	0.187
97	WI-03-32	0	New UGA	8	6518	1.153	0.137
97	WI-03-32	0	New UGA	9	5500	1.154	0.134
97	WI-03-32	0	New UGA	10	4634	1.155	0.047
97	WI-03-32	0	New UGA	11	3914	1.12	0.047
97	WI-03-32	0	New UGA	12	3303	1.144	0.05
97	WI-03-32	0	New UGA	13	2788	1.122	-0.013
97	WI-03-32	0	New UGA	14	8521	-39.54	-26.32
98	WI-03-26	0	New UGA	1	8525	-39.388	-26.173
98	WI-03-26	0	New UGA	2	8518	-39.503	-26.286
98	WI-03-26	0	New UGA	3	8528	-39.54	-26.32
98	WI-03-26	0	New UGA	4	11272	1.244	0.401
98	WI-03-26	0	New UGA	5	9345	1.21	0.354
98	WI-03-26	0	New UGA	6	7848	1.129	0.297
98	WI-03-26	0	New UGA	7	6613	1.086	0.217
98	WI-03-26	0	New UGA	8	5585	1.054	0.184
98	WI-03-26	0	New UGA	9	4714	1.084	0.123
98	WI-03-26	0	New UGA	10	3980	1.095	0.149
98	WI-03-26	0	New UGA	11	3365	1.077	0.094
98	WI-03-26	0	New UGA	12	2840	1.014	0.04
98	WI-03-26	0	New UGA	13	2410	1.066	-0.011
98	WI-03-26	0	New UGA	14	8522	-39.54	-26.32
99	IAEA-603	55	New UGA	1	8521	-39.39	-26.15
99	IAEA-603	55	New UGA	2	8517	-39.502	-26.303

99	IAEA-603 55	New UGA	3	8528	-39.54	-26.32
99	IAEA-603 55	New UGA	4	4636	2.289	-4.005
99	IAEA-603 55	New UGA	5	3862	2.356	-4.017
99	IAEA-603 55	New UGA	6	3280	2.317	-4.031
99	IAEA-603 55	New UGA	7	2785	2.291	-4.051
99	IAEA-603 55	New UGA	8	2363	2.324	-4.039
99	IAEA-603 55	New UGA	9	2012	2.344	-4.009
99	IAEA-603 55	New UGA	10	1707	2.354	-4.036
99	IAEA-603 55	New UGA	11	1453	2.408	-4.102
99	IAEA-603 55	New UGA	12	1237	2.338	-4.253
99	IAEA-603 55	New UGA	13	1050	2.381	-4.246
99	IAEA-603 55	New UGA	14	8524	-39.54	-26.32
100	WI-03-28 0	New UGA	1	8517	-39.38	-26.166
100	WI-03-28 0	New UGA	2	8509	-39.483	-26.267
100	WI-03-28 0	New UGA	3	8526	-39.54	-26.32
100	WI-03-28 0	New UGA	4	10852	1.385	0.301
100	WI-03-28 0	New UGA	5	8940	1.328	0.28
100	WI-03-28 0	New UGA	6	7521	1.252	0.195
100	WI-03-28 0	New UGA	7	6331	1.227	0.179
100	WI-03-28 0	New UGA	8	5348	1.195	0.173
100	WI-03-28 0	New UGA	9	4510	1.21	0.068
100	WI-03-28 0	New UGA	10	3811	1.112	0.089
100	WI-03-28 0	New UGA	11	3212	1.181	0.095
100	WI-03-28 0	New UGA	12	2715	1.179	-0.045
100	WI-03-28 0	New UGA	13	2295	1.207	-0.046
100	WI-03-28 0	New UGA	14	8520	-39.54	-26.32
101	WI-03-06 0	New UGA	1	8512	-39.374	-26.157
101	WI-03-06 0	New UGA	2	8520	-39.497	-26.279
101	WI-03-06 0	New UGA	3	8517	-39.54	-26.32
101	WI-03-06 0	New UGA	4	12036	2.173	0.285
101	WI-03-06 0	New UGA	5	9943	2.091	0.26
101	WI-03-06 0	New UGA	6	8425	2.059	0.22
101	WI-03-06 0	New UGA	7	7101	2.047	0.337
101	WI-03-06 0	New UGA	8	5944	2.079	0.39
101	WI-03-06 0	New UGA	9	5088	2.031	0.212
101	WI-03-06 0	New UGA	10	4316	1.986	0.107
101	WI-03-06 0	New UGA	11	3631	2.039	0.269
101	WI-03-06 0	New UGA	12	3099	2.003	0.111
101	WI-03-06 0	New UGA	13	2624	1.973	-0.118
101	WI-03-06 0	New UGA	14	8513	-39.54	-26.32
102	WI-03-21 0	New UGA	1	8508	-39.376	-26.137
102	WI-03-21 0	New UGA	2	8516	-39.49	-26.253
102	WI-03-21 0	New UGA	3	8517	-39.54	-26.32
102	WI-03-21 0	New UGA	4	13765	1.639	0.176
102	WI-03-21 0	New UGA	5	11286	1.534	0.07
102	WI-03-21 0	New UGA	6	9476	1.441	-0.056
102	WI-03-21 0	New UGA	7	7985	1.399	-0.09
102	WI-03-21 0	New UGA	8	6719	1.348	-0.097
102	WI-03-21 0	New UGA	9	5667	1.343	-0.148

102	WI-03-21	0	New UGA	10	4767	1.316	-0.249
102	WI-03-21	0	New UGA	11	4014	1.32	-0.193
102	WI-03-21	0	New UGA	12	3392	1.214	-0.239
102	WI-03-21	0	New UGA	13	2865	1.314	-0.354
102	WI-03-21	0	New UGA	14	8531	-39.54	-26.32
103	WI-02-51	0	New UGA	1	8514	-39.365	-26.167
103	WI-02-51	0	New UGA	2	8517	-39.485	-26.265
103	WI-02-51	0	New UGA	3	8521	-39.54	-26.32
103	WI-02-51	0	New UGA	4	11420	0.393	-0.142
103	WI-02-51	0	New UGA	5	9455	0.363	-0.144
103	WI-02-51	0	New UGA	6	7975	0.285	-0.225
103	WI-02-51	0	New UGA	7	6685	0.357	-0.065
103	WI-02-51	0	New UGA	8	5665	0.278	-0.275
103	WI-02-51	0	New UGA	9	4776	0.167	-0.387
103	WI-02-51	0	New UGA	10	4024	0.193	-0.192
103	WI-02-51	0	New UGA	11	3389	0.311	-0.144
103	WI-02-51	0	New UGA	12	2873	0.175	-0.531
103	WI-02-51	0	New UGA	13	2430	0.146	-0.452
103	WI-02-51	0	New UGA	14	8511	-39.54	-26.32
104	WI-03-24	0	New UGA	1	8505	-39.393	-26.157
104	WI-03-24	0	New UGA	2	8506	-39.509	-26.285
104	WI-03-24	0	New UGA	3	8502	-39.54	-26.32
104	WI-03-24	0	New UGA	4	12045	1.449	0.44
104	WI-03-24	0	New UGA	5	9877	1.306	0.283
104	WI-03-24	0	New UGA	6	8314	1.23	0.223
104	WI-03-24	0	New UGA	7	6999	1.217	0.155
104	WI-03-24	0	New UGA	8	5887	1.178	0.136
104	WI-03-24	0	New UGA	9	4967	1.158	0.047
104	WI-03-24	0	New UGA	10	4201	1.165	0.08
104	WI-03-24	0	New UGA	11	3532	1.277	0.317
104	WI-03-24	0	New UGA	12	2990	1.146	0.037
104	WI-03-24	0	New UGA	13	2531	1.198	-0.038
104	WI-03-24	0	New UGA	14	8520	-39.54	-26.32
105	WI-03-35	0	New UGA	1	8513	-39.395	-26.161
105	WI-03-35	0	New UGA	2	8504	-39.509	-26.297
105	WI-03-35	0	New UGA	3	8506	-39.54	-26.32
105	WI-03-35	0	New UGA	4	8458	1.266	0.184
105	WI-03-35	0	New UGA	5	6969	1.211	0.158
105	WI-03-35	0	New UGA	6	5858	1.143	0.108
105	WI-03-35	0	New UGA	7	4933	1.164	0.118
105	WI-03-35	0	New UGA	8	4160	1.137	0.091
105	WI-03-35	0	New UGA	9	3502	1.126	-0.058
105	WI-03-35	0	New UGA	10	2952	1.144	0.014
105	WI-03-35	0	New UGA	11	2492	1.092	-0.05
105	WI-03-35	0	New UGA	12	2102	1.081	-0.084
105	WI-03-35	0	New UGA	13	1774	1.228	-0.133
105	WI-03-35	0	New UGA	14	8522	-39.54	-26.32
106	WI-02-53	0	New UGA	1	8511	-39.383	-26.159
106	WI-02-53	0	New UGA	2	8505	-39.508	-26.289

106	WI-02-53	0	New UGA	3	8508	-39.54	-26.32
106	WI-02-53	0	New UGA	4	6433	0.35	-0.361
106	WI-02-53	0	New UGA	5	5297	0.295	-0.351
106	WI-02-53	0	New UGA	6	4463	0.261	-0.402
106	WI-02-53	0	New UGA	7	3764	0.27	-0.448
106	WI-02-53	0	New UGA	8	3174	0.228	-0.417
106	WI-02-53	0	New UGA	9	2678	0.254	-0.457
106	WI-02-53	0	New UGA	10	2256	0.299	-0.485
106	WI-02-53	0	New UGA	11	1905	0.311	-0.614
106	WI-02-53	0	New UGA	12	1609	0.327	-0.596
106	WI-02-53	0	New UGA	13	1356	0.299	-0.698
106	WI-02-53	0	New UGA	14	8514	-39.54	-26.32
107	IAEA-603	97	New UGA	1	8505	-39.382	-26.152
107	IAEA-603	97	New UGA	2	8502	-39.506	-26.281
107	IAEA-603	97	New UGA	3	8510	-39.54	-26.32
107	IAEA-603	97	New UGA	4	8489	2.472	-3.665
107	IAEA-603	97	New UGA	5	7010	2.414	-3.709
107	IAEA-603	97	New UGA	6	5930	2.416	-3.764
107	IAEA-603	97	New UGA	7	5002	2.378	-3.81
107	IAEA-603	97	New UGA	8	4227	2.306	-3.759
107	IAEA-603	97	New UGA	9	3575	2.3	-3.873
107	IAEA-603	97	New UGA	10	3023	2.295	-3.884
107	IAEA-603	97	New UGA	11	2557	2.347	-3.895
107	IAEA-603	97	New UGA	12	2165	2.349	-3.981
107	IAEA-603	97	New UGA	13	1831	2.351	-3.946
107	IAEA-603	97	New UGA	14	8508	-39.54	-26.32
108	WI-03-09	0	New UGA	1	8501	-39.389	-26.148
108	WI-03-09	0	New UGA	2	8503	-39.504	-26.296
108	WI-03-09	0	New UGA	3	8511	-39.54	-26.32
108	WI-03-09	0	New UGA	4	8693	1.44	-0.317
108	WI-03-09	0	New UGA	5	7179	1.422	-0.337
108	WI-03-09	0	New UGA	6	6051	1.356	-0.351
108	WI-03-09	0	New UGA	7	5103	1.387	-0.413
108	WI-03-09	0	New UGA	8	4314	1.337	-0.446
108	WI-03-09	0	New UGA	9	3633	1.313	-0.528
108	WI-03-09	0	New UGA	10	3071	1.325	-0.537
108	WI-03-09	0	New UGA	11	2596	1.336	-0.563
108	WI-03-09	0	New UGA	12	2190	1.351	-0.602
108	WI-03-09	0	New UGA	13	1852	1.327	-0.619
108	WI-03-09	0	New UGA	14	8504	-39.54	-26.32
109	WI-03-29	0	New UGA	1	8503	-39.377	-26.153
109	WI-03-29	0	New UGA	2	8503	-39.501	-26.279
109	WI-03-29	0	New UGA	3	8505	-39.54	-26.32
109	WI-03-29	0	New UGA	4	7859	1.265	-0.02
109	WI-03-29	0	New UGA	5	6497	1.231	-0.076
109	WI-03-29	0	New UGA	6	5475	1.156	-0.072
109	WI-03-29	0	New UGA	7	4627	1.149	-0.122
109	WI-03-29	0	New UGA	8	3902	1.161	-0.127
109	WI-03-29	0	New UGA	9	3303	1.191	-0.176

109	WI-03-29	0	New UGA	10	2788	1.162	-0.208
109	WI-03-29	0	New UGA	11	2358	1.21	-0.227
109	WI-03-29	0	New UGA	12	1995	1.179	-0.272
109	WI-03-29	0	New UGA	13	1686	1.177	-0.356
109	WI-03-29	0	New UGA	14	8509	-39.54	-26.32
110	WI-03-61	0	New UGA	1	8500	-39.391	-26.145
110	WI-03-61	0	New UGA	2	8493	-39.51	-26.265
110	WI-03-61	0	New UGA	3	8510	-39.54	-26.32
110	WI-03-61	0	New UGA	4	10892	1.013	-0.45
110	WI-03-61	0	New UGA	5	8986	0.857	-0.613
110	WI-03-61	0	New UGA	6	7557	0.818	-0.725
110	WI-03-61	0	New UGA	7	6376	0.781	-0.752
110	WI-03-61	0	New UGA	8	5377	0.728	-0.763
110	WI-03-61	0	New UGA	9	4532	0.738	-0.771
110	WI-03-61	0	New UGA	10	3825	0.723	-0.855
110	WI-03-61	0	New UGA	11	3227	0.755	-0.801
110	WI-03-61	0	New UGA	12	2727	0.786	-0.924
110	WI-03-61	0	New UGA	13	2309	0.777	-0.921
110	WI-03-61	0	New UGA	14	8502	-39.54	-26.32
111	WI-03-43	0	New UGA	1	8498	-39.372	-26.144
111	WI-03-43	0	New UGA	2	8493	-39.491	-26.271
111	WI-03-43	0	New UGA	3	8510	-39.54	-26.32
111	WI-03-43	0	New UGA	4	12742	1.375	0.187
111	WI-03-43	0	New UGA	5	10515	1.275	0.091
111	WI-03-43	0	New UGA	6	8842	1.178	0.078
111	WI-03-43	0	New UGA	7	7459	1.147	-0.01
111	WI-03-43	0	New UGA	8	6285	1.119	-0.04
111	WI-03-43	0	New UGA	9	5295	1.089	-0.084
111	WI-03-43	0	New UGA	10	4476	1.101	-0.098
111	WI-03-43	0	New UGA	11	3780	1.021	-0.183
111	WI-03-43	0	New UGA	12	3194	1.104	-0.181
111	WI-03-43	0	New UGA	13	2699	1.116	-0.198
111	WI-03-43	0	New UGA	14	8504	-39.54	-26.32
112	WI-03-48	0	New UGA	1	8502	-39.391	-26.159
112	WI-03-48	0	New UGA	2	8512	-39.508	-26.276
112	WI-03-48	0	New UGA	3	8499	-39.54	-26.32
112	WI-03-48	0	New UGA	4	9529	1.078	-0.436
112	WI-03-48	0	New UGA	5	7846	1.012	-0.479
112	WI-03-48	0	New UGA	6	6595	0.965	-0.511
112	WI-03-48	0	New UGA	7	5555	0.965	-0.515
112	WI-03-48	0	New UGA	8	4692	0.974	-0.567
112	WI-03-48	0	New UGA	9	3956	0.967	-0.55
112	WI-03-48	0	New UGA	10	3337	1.03	-0.463
112	WI-03-48	0	New UGA	11	2813	0.972	-0.678
112	WI-03-48	0	New UGA	12	2369	1.001	-0.674
112	WI-03-48	0	New UGA	13	2004	1.034	-0.657
112	WI-03-48	0	New UGA	14	8506	-39.54	-26.32
113	WI-03-53	0	New UGA	1	8494	-39.386	-26.157
113	WI-03-53	0	New UGA	2	8501	-39.498	-26.274

113	WI-03-53	0	New UGA	3	8499	-39.54	-26.32
113	WI-03-53	0	New UGA	4	13181	1.026	-0.073
113	WI-03-53	0	New UGA	5	10802	0.944	-0.161
113	WI-03-53	0	New UGA	6	9096	0.894	-0.201
113	WI-03-53	0	New UGA	7	7643	0.819	-0.226
113	WI-03-53	0	New UGA	8	6439	0.792	-0.262
113	WI-03-53	0	New UGA	9	5432	0.778	-0.352
113	WI-03-53	0	New UGA	10	4581	0.78	-0.367
113	WI-03-53	0	New UGA	11	3871	0.762	-0.456
113	WI-03-53	0	New UGA	12	3268	0.796	-0.428
113	WI-03-53	0	New UGA	13	2766	0.767	-0.532
113	WI-03-53	0	New UGA	14	8507	-39.54	-26.32
114	WI-03-57	0	New UGA	1	8495	-39.397	-26.152
114	WI-03-57	0	New UGA	2	8502	-39.518	-26.28
114	WI-03-57	0	New UGA	3	8503	-39.54	-26.32
114	WI-03-57	0	New UGA	4	12059	1.325	-0.242
114	WI-03-57	0	New UGA	5	9967	1.247	-0.349
114	WI-03-57	0	New UGA	6	8386	1.185	-0.364
114	WI-03-57	0	New UGA	7	7083	1.162	-0.425
114	WI-03-57	0	New UGA	8	5982	1.162	-0.385
114	WI-03-57	0	New UGA	9	5056	1.121	-0.466
114	WI-03-57	0	New UGA	10	4271	1.103	-0.447
114	WI-03-57	0	New UGA	11	3619	1.123	-0.535
114	WI-03-57	0	New UGA	12	3054	1.134	-0.516
114	WI-03-57	0	New UGA	13	2586	1.117	-0.524
114	WI-03-57	0	New UGA	14	8503	-39.54	-26.32
115	IAEA-603	71	New UGA	1	8503	-39.38	-26.17
115	IAEA-603	71	New UGA	2	8500	-39.496	-26.267
115	IAEA-603	71	New UGA	3	8496	-39.54	-26.32
115	IAEA-603	71	New UGA	4	6002	2.389	-3.785
115	IAEA-603	71	New UGA	5	4984	2.38	-3.803
115	IAEA-603	71	New UGA	6	4222	2.391	-3.828
115	IAEA-603	71	New UGA	7	3572	2.345	-3.812
115	IAEA-603	71	New UGA	8	3025	2.365	-3.881
115	IAEA-603	71	New UGA	9	2564	2.418	-3.935
115	IAEA-603	71	New UGA	10	2173	2.373	-3.898
115	IAEA-603	71	New UGA	11	1843	2.394	-3.967
115	IAEA-603	71	New UGA	12	1561	2.444	-3.974
115	IAEA-603	71	New UGA	13	1324	2.392	-4.126
115	IAEA-603	71	New UGA	14	8504	-39.54	-26.32
116	WI-03-54	0	New UGA	1	8477	-39.371	-26.149
116	WI-03-54	0	New UGA	2	8495	-39.496	-26.258
116	WI-03-54	0	New UGA	3	8501	-39.54	-26.32
116	WI-03-54	0	New UGA	4	11889	1.094	-0.239
116	WI-03-54	0	New UGA	5	9809	1.034	-0.285
116	WI-03-54	0	New UGA	6	8276	0.961	-0.373
116	WI-03-54	0	New UGA	7	6977	0.913	-0.445
116	WI-03-54	0	New UGA	8	5894	0.86	-0.442
116	WI-03-54	0	New UGA	9	4983	0.904	-0.53

116	WI-03-54	0	New UGA	10	4217	0.839	-0.567
116	WI-03-54	0	New UGA	11	3568	0.823	-0.569
116	WI-03-54	0	New UGA	12	3019	0.883	-0.595
116	WI-03-54	0	New UGA	13	2557	0.91	-0.613
116	WI-03-54	0	New UGA	14	8500	-39.54	-26.32
117	WI-03-41	0	New UGA	1	8485	-39.39	-26.138
117	WI-03-41	0	New UGA	2	8494	-39.498	-26.27
117	WI-03-41	0	New UGA	3	8498	-39.54	-26.32
117	WI-03-41	0	New UGA	4	8916	1.251	0.08
117	WI-03-41	0	New UGA	5	7355	1.194	0.072
117	WI-03-41	0	New UGA	6	6196	1.157	0.008
117	WI-03-41	0	New UGA	7	5221	1.15	-0.026
117	WI-03-41	0	New UGA	8	4404	1.072	-0.058
117	WI-03-41	0	New UGA	9	3719	1.128	-0.06
117	WI-03-41	0	New UGA	10	3138	1.074	-0.132
117	WI-03-41	0	New UGA	11	2653	1.097	-0.15
117	WI-03-41	0	New UGA	12	2239	1.136	-0.153
117	WI-03-41	0	New UGA	13	1893	1.096	-0.241
117	WI-03-41	0	New UGA	14	8509	-39.54	-26.32
118	WI-03-62	0	New UGA	1	8488	-39.389	-26.166
118	WI-03-62	0	New UGA	2	8497	-39.505	-26.294
118	WI-03-62	0	New UGA	3	8501	-39.54	-26.32
118	WI-03-62	0	New UGA	4	16610	1.103	-0.378
118	WI-03-62	0	New UGA	5	13696	0.98	-0.437
118	WI-03-62	0	New UGA	6	11493	0.902	-0.497
118	WI-03-62	0	New UGA	7	9680	0.858	-0.54
118	WI-03-62	0	New UGA	8	8155	0.794	-0.635
118	WI-03-62	0	New UGA	9	6865	0.763	-0.718
118	WI-03-62	0	New UGA	10	5795	0.743	-0.748
118	WI-03-62	0	New UGA	11	4901	0.735	-0.708
118	WI-03-62	0	New UGA	12	4143	0.737	-0.816
118	WI-03-62	0	New UGA	13	3500	0.713	-0.745
118	WI-03-62	0	New UGA	14	8509	-39.54	-26.32
119	WI-03-64	0	New UGA	1	8487	-39.399	-26.183
119	WI-03-64	0	New UGA	2	8488	-39.509	-26.288
119	WI-03-64	0	New UGA	3	8500	-39.54	-26.32
119	WI-03-64	0	New UGA	4	16273	0.461	-0.423
119	WI-03-64	0	New UGA	5	13378	0.371	-0.536
119	WI-03-64	0	New UGA	6	11272	0.283	-0.6
119	WI-03-64	0	New UGA	7	9478	0.218	-0.647
119	WI-03-64	0	New UGA	8	7987	0.168	-0.68
119	WI-03-64	0	New UGA	9	6733	0.146	-0.772
119	WI-03-64	0	New UGA	10	5694	0.17	-0.819
119	WI-03-64	0	New UGA	11	4798	0.138	-0.792
119	WI-03-64	0	New UGA	12	4060	0.113	-0.851
119	WI-03-64	0	New UGA	13	3433	0.124	-0.874
119	WI-03-64	0	New UGA	14	8511	-39.54	-26.32
120	WI-03-42	0	New UGA	1	8493	-39.406	-26.142
120	WI-03-42	0	New UGA	2	8493	-39.512	-26.261

120	WI-03-42	0	New UGA	3	8486	-39.54	-26.32
120	WI-03-42	0	New UGA	4	7659	1.171	-0.006
120	WI-03-42	0	New UGA	5	6325	1.147	-0.013
120	WI-03-42	0	New UGA	6	5338	1.136	-0.084
120	WI-03-42	0	New UGA	7	4505	1.121	-0.083
120	WI-03-42	0	New UGA	8	3805	1.077	-0.117
120	WI-03-42	0	New UGA	9	3218	1.071	-0.151
120	WI-03-42	0	New UGA	10	2728	1.123	-0.204
120	WI-03-42	0	New UGA	11	2309	1.176	-0.24
120	WI-03-42	0	New UGA	12	1952	1.128	-0.248
120	WI-03-42	0	New UGA	13	1653	1.182	-0.263
120	WI-03-42	0	New UGA	14	8500	-39.54	-26.32
121	WI-03-50	0	New UGA	1	8484	-39.375	-26.162
121	WI-03-50	0	New UGA	2	8510	-39.51	-26.285
121	WI-03-50	0	New UGA	3	8495	-39.54	-26.32
121	WI-03-50	0	New UGA	4	10977	1.082	-0.115
121	WI-03-50	0	New UGA	5	9061	1.04	-0.152
121	WI-03-50	0	New UGA	6	7619	0.962	-0.233
121	WI-03-50	0	New UGA	7	6428	0.926	-0.267
121	WI-03-50	0	New UGA	8	5422	0.903	-0.314
121	WI-03-50	0	New UGA	9	4578	0.913	-0.323
121	WI-03-50	0	New UGA	10	3861	0.86	-0.299
121	WI-03-50	0	New UGA	11	3264	0.931	-0.389
121	WI-03-50	0	New UGA	12	2763	0.928	-0.395
121	WI-03-50	0	New UGA	13	2334	0.958	-0.385
121	WI-03-50	0	New UGA	14	8510	-39.54	-26.32
122	WI-03-51	0	New UGA	1	8495	-39.398	-26.169
122	WI-03-51	0	New UGA	2	8499	-39.503	-26.267
122	WI-03-51	0	New UGA	3	8494	-39.54	-26.32
122	WI-03-51	0	New UGA	4	11956	1.17	-0.226
122	WI-03-51	0	New UGA	5	9810	1.098	-0.249
122	WI-03-51	0	New UGA	6	8237	1.035	-0.27
122	WI-03-51	0	New UGA	7	6931	1.02	-0.361
122	WI-03-51	0	New UGA	8	5835	0.97	-0.379
122	WI-03-51	0	New UGA	9	4918	0.99	-0.419
122	WI-03-51	0	New UGA	10	4154	0.977	-0.421
122	WI-03-51	0	New UGA	11	3493	0.984	-0.433
122	WI-03-51	0	New UGA	12	2949	0.953	-0.528
122	WI-03-51	0	New UGA	13	2485	0.975	-0.478
122	WI-03-51	0	New UGA	14	8501	-39.54	-26.32
123	IAEA-603	96	New UGA	1	8491	-39.387	-26.138
123	IAEA-603	96	New UGA	2	8512	-39.494	-26.271
123	IAEA-603	96	New UGA	3	8505	-39.54	-26.32
123	IAEA-603	96	New UGA	4	4621	2.319	-4.282
123	IAEA-603	96	New UGA	5	3850	2.332	-4.219
123	IAEA-603	96	New UGA	6	3274	2.317	-4.265
123	IAEA-603	96	New UGA	7	2781	2.373	-4.234
123	IAEA-603	96	New UGA	8	2366	2.294	-4.322
123	IAEA-603	96	New UGA	9	2007	2.404	-4.238

123	IAEA-603 96	New UGA	10	1709	2.355	-4.347
123	IAEA-603 96	New UGA	11	1454	2.369	-4.324
123	IAEA-603 96	New UGA	12	1237	2.305	-4.425
123	IAEA-603 96	New UGA	13	1053	2.262	-4.405
123	IAEA-603 96	New UGA	14	8504	-39.54	-26.32
124	WI-03-46 0	New UGA	1	8511	-39.374	-26.126
124	WI-03-46 0	New UGA	2	8501	-39.484	-26.261
124	WI-03-46 0	New UGA	3	8508	-39.54	-26.32
124	WI-03-46 0	New UGA	4	10717	1.071	-0.113
124	WI-03-46 0	New UGA	5	8854	0.985	-0.202
124	WI-03-46 0	New UGA	6	7463	0.942	-0.258
124	WI-03-46 0	New UGA	7	6297	0.909	-0.264
124	WI-03-46 0	New UGA	8	5318	0.872	-0.334
124	WI-03-46 0	New UGA	9	4494	0.856	-0.358
124	WI-03-46 0	New UGA	10	3799	0.816	-0.339
124	WI-03-46 0	New UGA	11	3214	0.851	-0.423
124	WI-03-46 0	New UGA	12	2720	0.876	-0.52
124	WI-03-46 0	New UGA	13	2302	0.903	-0.475
124	WI-03-46 0	New UGA	14	8505	-39.54	-26.32
125	WI-03-56 0	New UGA	1	8506	-39.39	-26.147
125	WI-03-56 0	New UGA	2	8504	-39.501	-26.278
125	WI-03-56 0	New UGA	3	8511	-39.54	-26.32
125	WI-03-56 0	New UGA	4	12617	1.377	-0.313
125	WI-03-56 0	New UGA	5	10387	1.319	-0.375
125	WI-03-56 0	New UGA	6	8751	1.22	-0.478
125	WI-03-56 0	New UGA	7	7363	1.185	-0.499
125	WI-03-56 0	New UGA	8	6214	1.181	-0.565
125	WI-03-56 0	New UGA	9	5240	1.159	-0.589
125	WI-03-56 0	New UGA	10	4422	1.158	-0.614
125	WI-03-56 0	New UGA	11	3730	1.155	-0.64
125	WI-03-56 0	New UGA	12	3154	1.153	-0.709
125	WI-03-56 0	New UGA	13	2663	1.092	-0.702
125	WI-03-56 0	New UGA	14	8512	-39.54	-26.32
126	WI-03-60 0	New UGA	1	8505	-39.396	-26.186
126	WI-03-60 0	New UGA	2	8506	-39.499	-26.295
126	WI-03-60 0	New UGA	3	8514	-39.54	-26.32
126	WI-03-60 0	New UGA	4	14950	1.213	-0.202
126	WI-03-60 0	New UGA	5	12247	1.114	-0.267
126	WI-03-60 0	New UGA	6	10255	1.026	-0.322
126	WI-03-60 0	New UGA	7	8606	0.962	-0.39
126	WI-03-60 0	New UGA	8	7218	0.925	-0.44
126	WI-03-60 0	New UGA	9	6074	0.877	-0.494
126	WI-03-60 0	New UGA	10	5109	0.872	-0.547
126	WI-03-60 0	New UGA	11	4299	0.834	-0.551
126	WI-03-60 0	New UGA	12	3616	0.818	-0.57
126	WI-03-60 0	New UGA	13	3048	0.846	-0.528
126	WI-03-60 0	New UGA	14	8516	-39.54	-26.32
127	WI-03-52 0	New UGA	1	8510	-39.398	-26.17
127	WI-03-52 0	New UGA	2	8516	-39.515	-26.276

127	WI-03-52	0	New UGA	3	8520	-39.54	-26.32
127	WI-03-52	0	New UGA	4	8045	0.926	-0.431
127	WI-03-52	0	New UGA	5	6667	0.891	-0.423
127	WI-03-52	0	New UGA	6	5638	0.846	-0.43
127	WI-03-52	0	New UGA	7	4770	0.861	-0.479
127	WI-03-52	0	New UGA	8	4043	0.869	-0.5
127	WI-03-52	0	New UGA	9	3420	0.805	-0.532
127	WI-03-52	0	New UGA	10	2899	0.84	-0.541
127	WI-03-52	0	New UGA	11	2459	0.842	-0.598
127	WI-03-52	0	New UGA	12	2085	0.901	-0.57
127	WI-03-52	0	New UGA	13	1768	0.906	-0.691
127	WI-03-52	0	New UGA	14	8508	-39.54	-26.32
128	WI-03-58	0	New UGA	1	8494	-39.378	-26.132
128	WI-03-58	0	New UGA	2	8501	-39.491	-26.256
128	WI-03-58	0	New UGA	3	8519	-39.54	-26.32
128	WI-03-58	0	New UGA	4	12404	1.386	-0.395
128	WI-03-58	0	New UGA	5	10198	1.329	-0.446
128	WI-03-58	0	New UGA	6	8566	1.269	-0.511
128	WI-03-58	0	New UGA	7	7204	1.203	-0.6
128	WI-03-58	0	New UGA	8	6061	1.164	-0.553
128	WI-03-58	0	New UGA	9	5110	1.149	-0.609
128	WI-03-58	0	New UGA	10	4309	1.162	-0.635
128	WI-03-58	0	New UGA	11	3635	1.215	-0.682
128	WI-03-58	0	New UGA	12	3069	1.201	-0.681
128	WI-03-58	0	New UGA	13	2591	1.191	-0.746
128	WI-03-58	0	New UGA	14	8514	-39.54	-26.32
129	WI-03-63	0	New UGA	1	8496	-39.39	-26.182
129	WI-03-63	0	New UGA	2	8499	-39.506	-26.265
129	WI-03-63	0	New UGA	3	8512	-39.54	-26.32
129	WI-03-63	0	New UGA	4	10314	0.701	-0.72
129	WI-03-63	0	New UGA	5	8469	0.676	-0.741
129	WI-03-63	0	New UGA	6	7116	0.576	-0.775
129	WI-03-63	0	New UGA	7	5979	0.549	-0.764
129	WI-03-63	0	New UGA	8	5027	0.539	-0.885
129	WI-03-63	0	New UGA	9	4234	0.464	-0.857
129	WI-03-63	0	New UGA	10	3563	0.557	-0.878
129	WI-03-63	0	New UGA	11	3005	0.527	-0.953
129	WI-03-63	0	New UGA	12	2534	0.515	-0.944
129	WI-03-63	0	New UGA	13	2135	0.573	-0.975
129	WI-03-63	0	New UGA	14	8508	-39.54	-26.32
130	WI-03-59	0	New UGA	1	8503	-39.36	-26.134
130	WI-03-59	0	New UGA	2	8504	-39.484	-26.271
130	WI-03-59	0	New UGA	3	8512	-39.54	-26.32
130	WI-03-59	0	New UGA	4	11896	1.219	-0.489
130	WI-03-59	0	New UGA	5	9782	1.171	-0.539
130	WI-03-59	0	New UGA	6	8239	1.086	-0.626
130	WI-03-59	0	New UGA	7	6942	1.058	-0.586
130	WI-03-59	0	New UGA	8	5864	1.019	-0.708
130	WI-03-59	0	New UGA	9	4942	1.013	-0.708

130	WI-03-59	0	New UGA	10	4174	0.952	-0.744
130	WI-03-59	0	New UGA	11	3523	0.993	-0.749
130	WI-03-59	0	New UGA	12	2977	1	-0.815
130	WI-03-59	0	New UGA	13	2517	1.027	-0.746
130	WI-03-59	0	New UGA	14	8513	-39.54	-26.32
131	IAEA-603	82	New UGA	1	8497	-39.397	-26.168
131	IAEA-603	82	New UGA	2	8504	-39.515	-26.28
131	IAEA-603	82	New UGA	3	8509	-39.54	-26.32
131	IAEA-603	82	New UGA	4	5414	2.365	-3.985
131	IAEA-603	82	New UGA	5	4500	2.402	-3.925
131	IAEA-603	82	New UGA	6	3815	2.37	-3.999
131	IAEA-603	82	New UGA	7	3235	2.34	-3.983
131	IAEA-603	82	New UGA	8	2743	2.412	-3.988
131	IAEA-603	82	New UGA	9	2326	2.387	-3.999
131	IAEA-603	82	New UGA	10	1974	2.378	-4.019
131	IAEA-603	82	New UGA	11	1676	2.398	-4.054
131	IAEA-603	82	New UGA	12	1422	2.466	-4.233
131	IAEA-603	82	New UGA	13	1207	2.443	-4.196
131	IAEA-603	82	New UGA	14	8509	-39.54	-26.32
132	WI-03-47	0	New UGA	1	8502	-39.384	-26.14
132	WI-03-47	0	New UGA	2	8493	-39.498	-26.286
132	WI-03-47	0	New UGA	3	8503	-39.54	-26.32
132	WI-03-47	0	New UGA	4	12570	1.204	-0.076
132	WI-03-47	0	New UGA	5	10357	1.11	-0.1
132	WI-03-47	0	New UGA	6	8701	1.071	-0.151
132	WI-03-47	0	New UGA	7	7328	1.024	-0.214
132	WI-03-47	0	New UGA	8	6165	1.028	-0.249
132	WI-03-47	0	New UGA	9	5194	0.984	-0.246
132	WI-03-47	0	New UGA	10	4386	0.938	-0.29
132	WI-03-47	0	New UGA	11	3699	0.977	-0.299
132	WI-03-47	0	New UGA	12	3124	0.965	-0.321
132	WI-03-47	0	New UGA	13	2637	1.008	-0.334
132	WI-03-47	0	New UGA	14	8501	-39.54	-26.32
133	WI-03-44	0	New UGA	1	8509	-39.396	-26.178
133	WI-03-44	0	New UGA	2	8496	-39.497	-26.292
133	WI-03-44	0	New UGA	3	8520	-39.54	-26.32
133	WI-03-44	0	New UGA	4	11865	1.217	0.058
133	WI-03-44	0	New UGA	5	9792	1.144	0.009
133	WI-03-44	0	New UGA	6	8264	1.104	-0.019
133	WI-03-44	0	New UGA	7	6984	1.02	-0.111
133	WI-03-44	0	New UGA	8	5886	1.044	-0.112
133	WI-03-44	0	New UGA	9	4979	0.995	-0.113
133	WI-03-44	0	New UGA	10	4216	0.954	-0.139
133	WI-03-44	0	New UGA	11	3564	1.014	-0.238
133	WI-03-44	0	New UGA	12	3021	1.039	-0.183
133	WI-03-44	0	New UGA	13	2559	1.047	-0.242
133	WI-03-44	0	New UGA	14	8508	-39.54	-26.32
134	WI-03-55	0	New UGA	1	8496	-39.387	-26.144
134	WI-03-55	0	New UGA	2	8496	-39.494	-26.238

134	WI-03-55	0	New UGA	3	8503	-39.54	-26.32
134	WI-03-55	0	New UGA	4	12085	1.277	-0.291
134	WI-03-55	0	New UGA	5	9987	1.19	-0.368
134	WI-03-55	0	New UGA	6	8404	1.139	-0.387
134	WI-03-55	0	New UGA	7	7089	1.11	-0.501
134	WI-03-55	0	New UGA	8	5981	1.041	-0.45
134	WI-03-55	0	New UGA	9	5053	1.047	-0.487
134	WI-03-55	0	New UGA	10	4268	1.003	-0.556
134	WI-03-55	0	New UGA	11	3609	1.068	-0.594
134	WI-03-55	0	New UGA	12	3051	1.006	-0.624
134	WI-03-55	0	New UGA	13	2582	1.056	-0.563
134	WI-03-55	0	New UGA	14	8504	-39.54	-26.32
135	WI-03-49	0	New UGA	1	8501	-39.393	-26.151
135	WI-03-49	0	New UGA	2	8499	-39.507	-26.258
135	WI-03-49	0	New UGA	3	8504	-39.54	-26.32
135	WI-03-49	0	New UGA	4	9129	1.105	-0.367
135	WI-03-49	0	New UGA	5	7567	1.009	-0.451
135	WI-03-49	0	New UGA	6	6387	1.018	-0.452
135	WI-03-49	0	New UGA	7	5403	0.964	-0.526
135	WI-03-49	0	New UGA	8	4562	0.962	-0.545
135	WI-03-49	0	New UGA	9	3858	0.954	-0.631
135	WI-03-49	0	New UGA	10	3263	0.97	-0.557
135	WI-03-49	0	New UGA	11	2766	1.003	-0.619
135	WI-03-49	0	New UGA	12	2342	0.922	-0.648
135	WI-03-49	0	New UGA	13	1983	1.025	-0.639
135	WI-03-49	0	New UGA	14	8500	-39.54	-26.32
136	WI-03-45	0	New UGA	1	8490	-39.384	-26.135
136	WI-03-45	0	New UGA	2	8495	-39.493	-26.248
136	WI-03-45	0	New UGA	3	8502	-39.54	-26.32
136	WI-03-45	0	New UGA	4	12261	1.166	0.083
136	WI-03-45	0	New UGA	5	10054	1.1	0.046
136	WI-03-45	0	New UGA	6	8450	1.002	-0.011
136	WI-03-45	0	New UGA	7	7105	0.969	-0.054
136	WI-03-45	0	New UGA	8	5982	0.971	-0.036
136	WI-03-45	0	New UGA	9	5032	0.912	-0.103
136	WI-03-45	0	New UGA	10	4241	0.875	-0.188
136	WI-03-45	0	New UGA	11	3576	0.892	-0.159
136	WI-03-45	0	New UGA	12	3020	0.926	-0.229
136	WI-03-45	0	New UGA	13	2546	1.004	-0.215
136	WI-03-45	0	New UGA	14	8508	-39.54	-26.32
137	WI-07-23	0	New UGA	1	8502	-39.38	-26.159
137	WI-07-23	0	New UGA	2	8502	-39.504	-26.266
137	WI-07-23	0	New UGA	3	8508	-39.54	-26.32
137	WI-07-23	0	New UGA	4	8791	1.118	-0.053
137	WI-07-23	0	New UGA	5	7279	1.164	0.17
137	WI-07-23	0	New UGA	6	6144	1.073	-0.101
137	WI-07-23	0	New UGA	7	5191	0.958	-0.107
137	WI-07-23	0	New UGA	8	4383	1.019	-0.187
137	WI-07-23	0	New UGA	9	3710	0.988	-0.166

137	WI-07-23	0	New UGA	10	3138	0.999	-0.224
137	WI-07-23	0	New UGA	11	2668	1.023	-0.193
137	WI-07-23	0	New UGA	12	2252	0.981	-0.276
137	WI-07-23	0	New UGA	13	1906	1	-0.32
137	WI-07-23	0	New UGA	14	8507	-39.54	-26.32
138	WI-07-09	0	New UGA	1	8498	-39.368	-26.135
138	WI-07-09	0	New UGA	2	8489	-39.492	-26.267
138	WI-07-09	0	New UGA	3	8506	-39.54	-26.32
138	WI-07-09	0	New UGA	4	6025	1.469	0.119
138	WI-07-09	0	New UGA	5	4983	1.55	0.232
138	WI-07-09	0	New UGA	6	4203	1.509	0.138
138	WI-07-09	0	New UGA	7	3549	1.462	0.051
138	WI-07-09	0	New UGA	8	2990	1.456	0.022
138	WI-07-09	0	New UGA	9	2527	1.455	-0.109
138	WI-07-09	0	New UGA	10	2143	1.488	-0.094
138	WI-07-09	0	New UGA	11	1803	1.438	-0.172
138	WI-07-09	0	New UGA	12	1527	1.454	-0.124
138	WI-07-09	0	New UGA	13	1286	1.524	-0.228
138	WI-07-09	0	New UGA	14	8513	-39.54	-26.32
139	IAEA-603	68	New UGA	1	8500	-39.366	-26.129
139	IAEA-603	68	New UGA	2	8517	-39.493	-26.275
139	IAEA-603	68	New UGA	3	8507	-39.54	-26.32
139	IAEA-603	68	New UGA	4	3666	2.31	-4.62
139	IAEA-603	68	New UGA	5	3046	2.325	-4.716
139	IAEA-603	68	New UGA	6	2588	2.274	-4.725
139	IAEA-603	68	New UGA	7	2195	2.311	-4.696
139	IAEA-603	68	New UGA	8	1866	2.333	-4.736
139	IAEA-603	68	New UGA	9	1583	2.348	-4.779
139	IAEA-603	68	New UGA	10	1345	2.387	-4.675
139	IAEA-603	68	New UGA	11	1144	2.362	-4.859
139	IAEA-603	68	New UGA	12	972	2.328	-4.849
139	IAEA-603	68	New UGA	13	827	2.402	-4.804
139	IAEA-603	68	New UGA	14	8489	-39.54	-26.32
140	WI-07-05	0	New UGA	1	8493	-39.372	-26.136
140	WI-07-05	0	New UGA	2	8502	-39.499	-26.262
140	WI-07-05	0	New UGA	3	8505	-39.54	-26.32
140	WI-07-05	0	New UGA	4	5913	2.203	0.827
140	WI-07-05	0	New UGA	5	4861	2.142	0.862
140	WI-07-05	0	New UGA	6	4087	2.148	0.884
140	WI-07-05	0	New UGA	7	3438	2.158	0.78
140	WI-07-05	0	New UGA	8	2901	2.142	0.801
140	WI-07-05	0	New UGA	9	2440	2.159	0.795
140	WI-07-05	0	New UGA	10	2063	2.191	0.674
140	WI-07-05	0	New UGA	11	1733	2.12	0.634
140	WI-07-05	0	New UGA	12	1460	2.165	0.601
140	WI-07-05	0	New UGA	13	1230	2.164	0.616
140	WI-07-05	0	New UGA	14	8510	-39.54	-26.32
141	WI-07-19	0	New UGA	1	8506	-39.38	-26.16
141	WI-07-19	0	New UGA	2	8499	-39.501	-26.276

141	WI-07-19	0	New UGA	3	8513	-39.54	-26.32
141	WI-07-19	0	New UGA	4	7453	0.863	0.185
141	WI-07-19	0	New UGA	5	6145	0.818	0.202
141	WI-07-19	0	New UGA	6	5187	0.805	0.15
141	WI-07-19	0	New UGA	7	4384	0.782	0.142
141	WI-07-19	0	New UGA	8	3705	0.813	0.149
141	WI-07-19	0	New UGA	9	3134	0.784	0.142
141	WI-07-19	0	New UGA	10	2651	0.803	0.142
141	WI-07-19	0	New UGA	11	2243	0.885	-0.007
141	WI-07-19	0	New UGA	12	1898	0.869	0.064
141	WI-07-19	0	New UGA	13	1615	0.964	-0.025
141	WI-07-19	0	New UGA	14	8509	-39.54	-26.32
142	WI-07-10	0	New UGA	1	8507	-39.375	-26.146
142	WI-07-10	0	New UGA	2	8506	-39.495	-26.275
142	WI-07-10	0	New UGA	3	8510	-39.54	-26.32
142	WI-07-10	0	New UGA	4	7445	1.07	0.235
142	WI-07-10	0	New UGA	5	6167	1.071	0.242
142	WI-07-10	0	New UGA	6	5200	1.039	0.155
142	WI-07-10	0	New UGA	7	4373	0.98	0.117
142	WI-07-10	0	New UGA	8	3682	0.993	0.155
142	WI-07-10	0	New UGA	9	3100	0.971	0.057
142	WI-07-10	0	New UGA	10	2610	0.995	0.088
142	WI-07-10	0	New UGA	11	2201	0.976	-0.109
142	WI-07-10	0	New UGA	12	1856	1.033	-0.021
142	WI-07-10	0	New UGA	13	1565	0.997	-0.096
142	WI-07-10	0	New UGA	14	8497	-39.54	-26.32
143	WI-07-17	0	New UGA	1	8498	-39.37	-26.124
143	WI-07-17	0	New UGA	2	8506	-39.503	-26.253
143	WI-07-17	0	New UGA	3	8510	-39.54	-26.32
143	WI-07-17	0	New UGA	4	5742	0.92	0.236
143	WI-07-17	0	New UGA	5	4792	0.918	0.325
143	WI-07-17	0	New UGA	6	4054	0.902	0.284
143	WI-07-17	0	New UGA	7	3427	0.845	0.216
143	WI-07-17	0	New UGA	8	2895	0.881	0.221
143	WI-07-17	0	New UGA	9	2451	0.888	0.171
143	WI-07-17	0	New UGA	10	2073	0.924	0.119
143	WI-07-17	0	New UGA	11	1753	0.891	0.199
143	WI-07-17	0	New UGA	12	1489	0.976	-0.029
143	WI-07-17	0	New UGA	13	1257	1.008	0.38
143	WI-07-17	0	New UGA	14	8516	-39.54	-26.32
144	WI-07-08	0	New UGA	1	8517	-39.376	-26.12
144	WI-07-08	0	New UGA	2	8503	-39.5	-26.251
144	WI-07-08	0	New UGA	3	8513	-39.54	-26.32
144	WI-07-08	0	New UGA	4	7538	2.242	0.679
144	WI-07-08	0	New UGA	5	6227	2.214	0.73
144	WI-07-08	0	New UGA	6	5257	2.174	0.65
144	WI-07-08	0	New UGA	7	4436	2.136	0.603
144	WI-07-08	0	New UGA	8	3745	2.132	0.621
144	WI-07-08	0	New UGA	9	3166	2.137	0.584

144	WI-07-08	0	New UGA	10	2672	2.188	0.569
144	WI-07-08	0	New UGA	11	2259	2.214	0.551
144	WI-07-08	0	New UGA	12	1910	2.238	0.465
144	WI-07-08	0	New UGA	13	1624	2.276	0.423
144	WI-07-08	0	New UGA	14	8512	-39.54	-26.32
145	WI-07-25	0	New UGA	1	8513	-39.37	-26.179
145	WI-07-25	0	New UGA	2	8514	-39.508	-26.308
145	WI-07-25	0	New UGA	3	8517	-39.54	-26.32
145	WI-07-25	0	New UGA	4	11315	1.075	0.043
145	WI-07-25	0	New UGA	5	9325	0.941	-0.023
145	WI-07-25	0	New UGA	6	7868	0.935	-0.079
145	WI-07-25	0	New UGA	7	6630	0.875	-0.094
145	WI-07-25	0	New UGA	8	5585	0.854	-0.106
145	WI-07-25	0	New UGA	9	4714	0.857	-0.124
145	WI-07-25	0	New UGA	10	3978	0.85	-0.141
145	WI-07-25	0	New UGA	11	3362	0.837	-0.227
145	WI-07-25	0	New UGA	12	2845	0.845	-0.2
145	WI-07-25	0	New UGA	13	2405	0.919	-0.277
145	WI-07-25	0	New UGA	14	8510	-39.54	-26.32
146	IAEA-603	71	New UGA	1	8508	-39.372	-26.15
146	IAEA-603	71	New UGA	2	8500	-39.502	-26.277
146	IAEA-603	71	New UGA	3	8510	-39.54	-26.32
146	IAEA-603	71	New UGA	4	6329	2.365	-4.124
146	IAEA-603	71	New UGA	5	5201	2.31	-4.131
146	IAEA-603	71	New UGA	6	4412	2.314	-4.147
146	IAEA-603	71	New UGA	7	3743	2.297	-4.177
146	IAEA-603	71	New UGA	8	3183	2.292	-4.236
146	IAEA-603	71	New UGA	9	2699	2.303	-4.225
146	IAEA-603	71	New UGA	10	2291	2.344	-4.206
146	IAEA-603	71	New UGA	11	1949	2.347	-4.309
146	IAEA-603	71	New UGA	12	1655	2.312	-4.287
146	IAEA-603	71	New UGA	13	1406	2.401	-4.338
146	IAEA-603	71	New UGA	14	8506	-39.54	-26.32

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O					
52	IAEA-603-1	55	New UGA	4	3836	2.38	-3.191						
52	IAEA-603-1	55	New UGA	5	3222	2.378	-3.221						
52	IAEA-603-1	55	New UGA	6	2749	2.373	-3.246						
52	IAEA-603-1	55	New UGA	7	2336	2.407	-3.178						
52	IAEA-603-1	55	New UGA	8	1988	2.375	-3.161						
52	IAEA-603-1	55	New UGA	9	1696	2.33	-3.247						
52	IAEA-603-1	55	New UGA	10	1447	2.394	-3.424						
52	IAEA-603-1	55	New UGA	11	1234	2.381	-3.429						
52	IAEA-603-1	55	New UGA	12	1050	2.473	-3.405						
52	IAEA-603-1	55	New UGA	13				3836	2.4	-3.3	0.0	0.1	
53	IAEA-603-2	84	New UGA	4	6505	2.433	-2.932						
53	IAEA-603-2	84	New UGA	5	5437	2.4	-2.98						
53	IAEA-603-2	84	New UGA	6	4613	2.358	-2.922						
53	IAEA-603-2	84	New UGA	7	3920	2.364	-3.006						
53	IAEA-603-2	84	New UGA	8	3323	2.355	-3.005						
53	IAEA-603-2	84	New UGA	9	2828	2.38	-3.082						
53	IAEA-603-2	84	New UGA	10	2399	2.395	-2.988						
53	IAEA-603-2	84	New UGA	11	2040	2.423	-3.213						
53	IAEA-603-2	84	New UGA	12	1737	2.377	-3.156						
53	IAEA-603-2	84	New UGA	13	1481	2.387	-3.259	6505	2.4	-3.1	0.0	0.1	
54	IAEA-603-3	52	New UGA	4	4133	2.322	-3.417						
54	IAEA-603-3	52	New UGA	5	3464	2.331	-3.296						
54	IAEA-603-3	52	New UGA	6	2949	2.338	-3.245						
54	IAEA-603-3	52	New UGA	7	2509	2.354	-3.358						
54	IAEA-603-3	52	New UGA	8	2136	2.368	-3.4						
54	IAEA-603-3	52	New UGA	9	1816	2.353	-3.437						
54	IAEA-603-3	52	New UGA	10	1546	2.362	-3.421						
54	IAEA-603-3	52	New UGA	11	1318	2.414	-3.37						
54	IAEA-603-3	52	New UGA	12	1120	2.445	-3.541						
54	IAEA-603-3	52	New UGA	13				4133	2.4	-3.4	0.0	0.1	
59	IAEA-603-4	59	New UGA	4	4627	2.32	-3.324						
59	IAEA-603-4	59	New UGA	5	3866	2.294	-3.336						
59	IAEA-603-4	59	New UGA	6	3274	2.326	-3.188						
59	IAEA-603-4	59	New UGA	7	2775	2.33	-3.361						

59	IAEA-603-4	59	New UGA	8	2352	2.308	-3.38					
59	IAEA-603-4	59	New UGA	9	1991	2.352	-3.335					
59	IAEA-603-4	59	New UGA	10	1694	2.274	-3.399					
59	IAEA-603-4	59	New UGA	11	1439	2.345	-3.43					
59	IAEA-603-4	59	New UGA	12	1220	2.36	-3.436					
59	IAEA-603-4	59	New UGA	13	1035	2.45	-3.437	4627	2.3	-3.4	0.0	0.1
67	IAEA-603-5	66	New UGA	4	4472	2.294	-3.52					
67	IAEA-603-5	66	New UGA	5	3739	2.343	-3.475					
67	IAEA-603-5	66	New UGA	6	3175	2.315	-3.462					
67	IAEA-603-5	66	New UGA	7	2709	2.316	-3.55					
67	IAEA-603-5	66	New UGA	8	2304	2.367	-3.595					
67	IAEA-603-5	66	New UGA	9	1960	2.372	-3.609					
67	IAEA-603-5	66	New UGA	10	1667	2.37	-3.624					
67	IAEA-603-5	66	New UGA	11	1418	2.313	-3.584					
67	IAEA-603-5	66	New UGA	12	1206	2.386	-3.671					
67	IAEA-603-5	66	New UGA	13	1028	2.417	-3.684	4472	2.3	-3.6	0.0	0.1
75	IAEA-603-6	74	New UGA	4	5649	2.26	-3.531					
75	IAEA-603-6	74	New UGA	5	4706	2.349	-3.467					
75	IAEA-603-6	74	New UGA	6	3977	2.255	-3.506					
75	IAEA-603-6	74	New UGA	7	3362	2.268	-3.53					
75	IAEA-603-6	74	New UGA	8	2854	2.38	-3.459					
75	IAEA-603-6	74	New UGA	9	2410	2.27	-3.627					
75	IAEA-603-6	74	New UGA	10	2047	2.315	-3.643					
75	IAEA-603-6	74	New UGA	11	1729	2.238	-3.653					
75	IAEA-603-6	74	New UGA	12	1471	2.342	-3.573					
75	IAEA-603-6	74	New UGA	13	1247	2.35	-3.566	5649	2.3	-3.6	0.1	0.1
83	IAEA-603-7	66	New UGA	4	4984	2.348	-3.549					
83	IAEA-603-7	66	New UGA	5	4147	2.394	-3.556					
83	IAEA-603-7	66	New UGA	6	3507	2.322	-3.612					
83	IAEA-603-7	66	New UGA	7	2974	2.301	-3.713					
83	IAEA-603-7	66	New UGA	8	2527	2.378	-3.558					
83	IAEA-603-7	66	New UGA	9	2141	2.321	-3.719					
83	IAEA-603-7	66	New UGA	10	1815	2.381	-3.837					
83	IAEA-603-7	66	New UGA	11	1540	2.414	-3.864					
83	IAEA-603-7	66	New UGA	12	1305	2.324	-3.767					

83	IAEA-603-7	66	New UGA	13	1106	2.369	-3.776	4984	2.4	-3.7	0.0	0.1
91	IAEA-603-8	68	New UGA	4	5492	2.289	-3.901					
91	IAEA-603-8	68	New UGA	5	4553	2.416	-3.69					
91	IAEA-603-8	68	New UGA	6	3853	2.307	-3.983					
91	IAEA-603-8	68	New UGA	7	3270	2.272	-4.001					
91	IAEA-603-8	68	New UGA	8	2764	2.305	-4.04					
91	IAEA-603-8	68	New UGA	9	2338	2.291	-4.007					
91	IAEA-603-8	68	New UGA	10	1980	2.303	-3.98					
91	IAEA-603-8	68	New UGA	11	1677	2.404	-4.114					
91	IAEA-603-8	68	New UGA	12	1420	2.308	-4.056					
91	IAEA-603-8	68	New UGA	13	1204	2.414	-4.231	5492	2.3	-4.0	0.1	0.1
99	IAEA-603-9	55	New UGA	4	4636	2.289	-4.005					
99	IAEA-603-9	55	New UGA	5	3862	2.356	-4.017					
99	IAEA-603-9	55	New UGA	6	3280	2.317	-4.031					
99	IAEA-603-9	55	New UGA	7	2785	2.291	-4.051					
99	IAEA-603-9	55	New UGA	8	2363	2.324	-4.039					
99	IAEA-603-9	55	New UGA	9	2012	2.344	-4.009					
99	IAEA-603-9	55	New UGA	10	1707	2.354	-4.036					
99	IAEA-603-9	55	New UGA	11	1453	2.408	-4.102					
99	IAEA-603-9	55	New UGA	12	1237	2.338	-4.253					
99	IAEA-603-9	55	New UGA	13	1050	2.381	-4.246	4636	2.3	-4.1	0.0	0.1
107	IAEA-603-10	97	New UGA	4	8489	2.472	-3.665					
107	IAEA-603-10	97	New UGA	5	7010	2.414	-3.709					
107	IAEA-603-10	97	New UGA	6	5930	2.416	-3.764					
107	IAEA-603-10	97	New UGA	7	5002	2.378	-3.81					
107	IAEA-603-10	97	New UGA	8	4227	2.306	-3.759					
107	IAEA-603-10	97	New UGA	9	3575	2.3	-3.873					
107	IAEA-603-10	97	New UGA	10	3023	2.295	-3.884					
107	IAEA-603-10	97	New UGA	11	2557	2.347	-3.895					
107	IAEA-603-10	97	New UGA	12	2165	2.349	-3.981					
107	IAEA-603-10	97	New UGA	13	1831	2.351	-3.946	8489	2.4	-3.8	0.1	0.1
115	IAEA-603-11	71	New UGA	4	6002	2.389	-3.785					
115	IAEA-603-11	71	New UGA	5	4984	2.38	-3.803					
115	IAEA-603-11	71	New UGA	6	4222	2.391	-3.828					
115	IAEA-603-11	71	New UGA	7	3572	2.345	-3.812					

115	IAEA-603-11 71	New UGA	8	3025	2.365	-3.881					
115	IAEA-603-11 71	New UGA	9	2564	2.418	-3.935					
115	IAEA-603-11 71	New UGA	10	2173	2.373	-3.898					
115	IAEA-603-11 71	New UGA	11	1843	2.394	-3.967					
115	IAEA-603-11 71	New UGA	12	1561	2.444	-3.974					
115	IAEA-603-11 71	New UGA	13	1324	2.392	-4.126	6002	2.4	-3.9	0.0	0.1
123	IAEA-603-12 96	New UGA	4	4621	2.319	-4.282					
123	IAEA-603-12 96	New UGA	5	3850	2.332	-4.219					
123	IAEA-603-12 96	New UGA	6	3274	2.317	-4.265					
123	IAEA-603-12 96	New UGA	7	2781	2.373	-4.234					
123	IAEA-603-12 96	New UGA	8	2366	2.294	-4.322					
123	IAEA-603-12 96	New UGA	9	2007	2.404	-4.238					
123	IAEA-603-12 96	New UGA	10	1709	2.355	-4.347					
123	IAEA-603-12 96	New UGA	11	1454	2.369	-4.324					
123	IAEA-603-12 96	New UGA	12	1237	2.305	-4.425					
123	IAEA-603-12 96	New UGA	13	1053	2.262	-4.405	4621	2.3	-4.3	0.0	0.1
131	IAEA-603-13 82	New UGA	4	5414	2.365	-3.985					
131	IAEA-603-13 82	New UGA	5	4500	2.402	-3.925					
131	IAEA-603-13 82	New UGA	6	3815	2.37	-3.999					
131	IAEA-603-13 82	New UGA	7	3235	2.34	-3.983					
131	IAEA-603-13 82	New UGA	8	2743	2.412	-3.988					
131	IAEA-603-13 82	New UGA	9	2326	2.387	-3.999					
131	IAEA-603-13 82	New UGA	10	1974	2.378	-4.019					
131	IAEA-603-13 82	New UGA	11	1676	2.398	-4.054					
131	IAEA-603-13 82	New UGA	12	1422	2.466	-4.233					
131	IAEA-603-13 82	New UGA	13	1207	2.443	-4.196	5414	2.4	-4.0	0.0	0.1
139	IAEA-603-14 68	New UGA	4	3666	2.31	-4.62					
139	IAEA-603-14 68	New UGA	5	3046	2.325	-4.716					
139	IAEA-603-14 68	New UGA	6	2588	2.274	-4.725					
139	IAEA-603-14 68	New UGA	7	2195	2.311	-4.696					
139	IAEA-603-14 68	New UGA	8	1866	2.333	-4.736					
139	IAEA-603-14 68	New UGA	9	1583	2.348	-4.779					
139	IAEA-603-14 68	New UGA	10	1345	2.387	-4.675					
139	IAEA-603-14 68	New UGA	11	1144	2.362	-4.859					
139	IAEA-603-14 68	New UGA	12								

Row	Identifier 1	Identifier 2	Preparation	Peak Nr	Ampl	44	d 13C/12C	d 18O/16O					
55	WI-03-31	0	New UGA	4	9856	1.322	0.382						
55	WI-03-31	0	New UGA	5	8212	1.273	0.357						
55	WI-03-31	0	New UGA	6	6927	1.22	0.298						
55	WI-03-31	0	New UGA	7	5851	1.224	0.262						
55	WI-03-31	0	New UGA	8	4944	1.156	0.24						
55	WI-03-31	0	New UGA	9	4173	1.184	0.224						
55	WI-03-31	0	New UGA	10	3544	1.192	0.123						
55	WI-03-31	0	New UGA	11	2995	1.19	0.166						
55	WI-03-31	0	New UGA	12	2542	1.168	0.049						
55	WI-03-31	0	New UGA	13	2154	1.139	-0.07	9856	1.2	0.2	0.1	0.1	
56	WI-03-20	0	New UGA	4	9533	1.485	0.108						
56	WI-03-20	0	New UGA	5	7909	1.434	0.092						
56	WI-03-20	0	New UGA	6	6721	1.375	0.056						
56	WI-03-20	0	New UGA	7	5675	1.327	-0.019						
56	WI-03-20	0	New UGA	8	4784	1.32	0.004						
56	WI-03-20	0	New UGA	9	4056	1.313	-0.101						
56	WI-03-20	0	New UGA	10	3432	1.318	-0.125						
56	WI-03-20	0	New UGA	11	2910	1.337	-0.134						
56	WI-03-20	0	New UGA	12	2464	1.354	-0.219						
56	WI-03-20	0	New UGA	13	2085	1.385	-0.149	9533	1.4	0.0	0.1	0.1	
57	WI-02-48	0	New UGA	4	8434	0.388	-0.146						
57	WI-02-48	0	New UGA	5	6989	0.374	-0.171						
57	WI-02-48	0	New UGA	6	5906	0.307	-0.199						
57	WI-02-48	0	New UGA	7	4979	0.309	-0.268						
57	WI-02-48	0	New UGA	8	4199	0.281	-0.261						
57	WI-02-48	0	New UGA	9	3551	0.252	-0.349						
57	WI-02-48	0	New UGA	10	2995	0.292	-0.346						
57	WI-02-48	0	New UGA	11	2523	0.3	-0.328						
57	WI-02-48	0	New UGA	12	2136	0.308	-0.393						
57	WI-02-48	0	New UGA	13	1807	0.36	-0.434	8434	0.3	-0.3	0.0	0.1	
58	WI-02-52	0	New UGA	4	11033	0.389	-0.163						
58	WI-02-52	0	New UGA	5	9161	0.33	-0.19						
58	WI-02-52	0	New UGA	6	7726	0.248	-0.195						
58	WI-02-52	0	New UGA	7	6522	0.199	-0.31						

58	WI-02-52	0	New UGA	8	5500	0.194	-0.341					
58	WI-02-52	0	New UGA	9	4644	0.189	-0.275					
58	WI-02-52	0	New UGA	10	3925	0.182	-0.371					
58	WI-02-52	0	New UGA	11	3319	0.173	-0.475					
58	WI-02-52	0	New UGA	12	2802	0.189	-0.479					
58	WI-02-52	0	New UGA	13	2373	0.221	-0.452	11033	0.2	-0.3	0.1	0.1
60	WI-03-02	0	New UGA	4	5824	1.748	0.416					
60	WI-03-02	0	New UGA	5	4848	1.738	0.432					
60	WI-03-02	0	New UGA	6	4113	1.733	0.423					
60	WI-03-02	0	New UGA	7	3489	1.723	0.404					
60	WI-03-02	0	New UGA	8	2944	1.73	0.423					
60	WI-03-02	0	New UGA	9	2499	1.752	0.345					
60	WI-03-02	0	New UGA	10	2112	1.762	0.426					
60	WI-03-02	0	New UGA	11	1808	1.813	0.308					
60	WI-03-02	0	New UGA	12	1571	1.762	0.16					
60	WI-03-02	0	New UGA	13	1340	1.732	0.212	5824	1.7	0.4	0.0	0.1
61	WI-03-12	0	New UGA	4	7344	1.176	-0.295					
61	WI-03-12	0	New UGA	5	6141	1.108	-0.338					
61	WI-03-12	0	New UGA	6	5199	1.093	-0.412					
61	WI-03-12	0	New UGA	7	4406	1.109	-0.436					
61	WI-03-12	0	New UGA	8	3719	1.058	-0.395					
61	WI-03-12	0	New UGA	9	3165	1.024	-0.473					
61	WI-03-12	0	New UGA	10	2672	1.038	-0.528					
61	WI-03-12	0	New UGA	11	2271	1.041	-0.446					
61	WI-03-12	0	New UGA	12	1928	1.115	-0.597					
61	WI-03-12	0	New UGA	13	1636	1.114	-0.515	7344	1.1	-0.4	0.0	0.1
62	WI-03-34	0	New UGA	4	6849	1.182	0.266					
62	WI-03-34	0	New UGA	5	5711	1.191	0.272					
62	WI-03-34	0	New UGA	6	4829	1.158	0.275					
62	WI-03-34	0	New UGA	7	4102	1.136	0.198					
62	WI-03-34	0	New UGA	8	3463	1.147	0.262					
62	WI-03-34	0	New UGA	9	2938	1.132	0.163					
62	WI-03-34	0	New UGA	10	2488	1.189	0.187					
62	WI-03-34	0	New UGA	11	2114	1.195	0.062					
62	WI-03-34	0	New UGA	12	1792	1.174	0.11					

62	WI-03-34	0	New UGA	13	1517	1.223	0.043	6849	1.2	0.2	0.0	0.1
63	WI-03-05	0	New UGA	4	4660	2.068	0.043					
63	WI-03-05	0	New UGA	5	3886	2.077	0.013					
63	WI-03-05	0	New UGA	6	3288	2.094	0.027					
63	WI-03-05	0	New UGA	7	2785	2.085	-0.013					
63	WI-03-05	0	New UGA	8	2359	2.104	-0.086					
63	WI-03-05	0	New UGA	9	2001	2.085	-0.148					
63	WI-03-05	0	New UGA	10	1695	2.067	-0.144					
63	WI-03-05	0	New UGA	11	1437	2.097	-0.155					
63	WI-03-05	0	New UGA	12	1216	2.194	-0.138					
63	WI-03-05	0	New UGA	13	1031	2.181	-0.081	4660	2.1	-0.1	0.0	0.1
64	WI-03-15	0	New UGA	4	6641	0.972	-0.205					
64	WI-03-15	0	New UGA	5	5541	0.966	-0.288					
64	WI-03-15	0	New UGA	6	4685	0.924	-0.237					
64	WI-03-15	0	New UGA	7	3986	0.951	-0.306					
64	WI-03-15	0	New UGA	8	3376	0.962	-0.315					
64	WI-03-15	0	New UGA	9	2865	0.962	-0.324					
64	WI-03-15	0	New UGA	10	2437	0.911	-0.469					
64	WI-03-15	0	New UGA	11	2061	0.942	-0.406					
64	WI-03-15	0	New UGA	12	1753	0.961	-0.585					
64	WI-03-15	0	New UGA	13	1490	0.969	-0.47	6641	1.0	-0.4	0.0	0.1
65	WI-02-50	0	New UGA	4	11066	0.485	-0.159					
65	WI-02-50	0	New UGA	5	9146	0.39	-0.209					
65	WI-02-50	0	New UGA	6	7733	0.36	-0.336					
65	WI-02-50	0	New UGA	7	6523	0.3	-0.346					
65	WI-02-50	0	New UGA	8	5514	0.299	-0.4					
65	WI-02-50	0	New UGA	9	4657	0.28	-0.425					
65	WI-02-50	0	New UGA	10	3939	0.284	-0.471					
65	WI-02-50	0	New UGA	11	3326	0.252	-0.486					
65	WI-02-50	0	New UGA	12	2814	0.3	-0.477					
65	WI-02-50	0	New UGA	13	2389	0.28	-0.593	11066	0.3	-0.4	0.1	0.1
66	WI-02-49	0	New UGA	4	11136	0.447	-0.202					
66	WI-02-49	0	New UGA	5	9220	0.387	-0.244					
66	WI-02-49	0	New UGA	6	7806	0.346	-0.338					
66	WI-02-49	0	New UGA	7	6548	0.259	-0.336					

66	WI-02-49	0	New UGA	8	5541	0.257	-0.38					
66	WI-02-49	0	New UGA	9	4677	0.264	-0.406					
66	WI-02-49	0	New UGA	10	3951	0.192	-0.483					
66	WI-02-49	0	New UGA	11	3340	0.221	-0.479					
66	WI-02-49	0	New UGA	12	2823	0.221	-0.516					
66	WI-02-49	0	New UGA	13	2391	0.223	-0.594	11136	0.3	-0.4	0.1	0.1
68	WI-03-25	0	New UGA	4	8863	1.15	0.395					
68	WI-03-25	0	New UGA	5	7355	1.094	0.385					
68	WI-03-25	0	New UGA	6	6214	1.068	0.344					
68	WI-03-25	0	New UGA	7	5261	1.015	0.278					
68	WI-03-25	0	New UGA	8	4440	0.999	0.271					
68	WI-03-25	0	New UGA	9	3760	1.025	0.165					
68	WI-03-25	0	New UGA	10	3186	1.051	0.118					
68	WI-03-25	0	New UGA	11	2689	0.993	0.089					
68	WI-03-25	0	New UGA	12	2285	1.098	0.258					
68	WI-03-25	0	New UGA	13	1934	1.005	0.074	8863	1.0	0.2	0.1	0.1
69	WI-03-07	0	New UGA	4	5900	1.678	-0.13					
69	WI-03-07	0	New UGA	5	4924	1.65	-0.196					
69	WI-03-07	0	New UGA	6	4174	1.655	-0.17					
69	WI-03-07	0	New UGA	7	3531	1.663	-0.202					
69	WI-03-07	0	New UGA	8	2999	1.727	-0.113					
69	WI-03-07	0	New UGA	9	2542	1.653	-0.312					
69	WI-03-07	0	New UGA	10	2153	1.65	-0.307					
69	WI-03-07	0	New UGA	11	1825	1.663	-0.21					
69	WI-03-07	0	New UGA	12	1541	1.622	-0.4					
69	WI-03-07	0	New UGA	13	1315	1.67	-0.49	5900	1.7	-0.3	0.0	0.1
70	WI-03-17	0	New UGA	4	12177	1.333	0.174					
70	WI-03-17	0	New UGA	5	10095	1.247	0.111					
70	WI-03-17	0	New UGA	6	8505	1.154	0.041					
70	WI-03-17	0	New UGA	7	7188	1.153	-0.061					
70	WI-03-17	0	New UGA	8	6059	1.099	-0.052					
70	WI-03-17	0	New UGA	9	5114	1.123	-0.058					
70	WI-03-17	0	New UGA	10	4336	1.072	-0.186					
70	WI-03-17	0	New UGA	11	3670	1.111	-0.133					
70	WI-03-17	0	New UGA	12	3095	1.113	-0.141					

70	WI-03-17	0	New UGA	13	2624	1.142	-0.184	12177	1.2	0.0	0.1	0.1
71	WI-03-14	0	New UGA	4	4119	0.974	-0.597					
71	WI-03-14	0	New UGA	5	3429	0.942	-0.618					
71	WI-03-14	0	New UGA	6	2900	0.948	-0.594					
71	WI-03-14	0	New UGA	7	2465	0.986	-0.561					
71	WI-03-14	0	New UGA	8	2083	0.934	-0.756					
71	WI-03-14	0	New UGA	9	1762	0.933	-0.727					
71	WI-03-14	0	New UGA	10	1489	0.995	-0.681					
71	WI-03-14	0	New UGA	11	1264	1.006	-0.878					
71	WI-03-14	0	New UGA	12	1071	1.008	-0.88					
71	WI-03-14	0	New UGA	13				4119	1.0	-0.7	0.0	0.1
72	WI-03-37	0	New UGA	4	7679	1.146	0.262					
72	WI-03-37	0	New UGA	5	6363	1.129	0.187					
72	WI-03-37	0	New UGA	6	5341	1.227	0.443					
72	WI-03-37	0	New UGA	7	4536	1.153	0.249					
72	WI-03-37	0	New UGA	8	3830	1.179	0.301					
72	WI-03-37	0	New UGA	9	3236	1.067	0.1					
72	WI-03-37	0	New UGA	10	2730	1.11	0.071					
72	WI-03-37	0	New UGA	11	2306	1.077	-0.004					
72	WI-03-37	0	New UGA	12	1951	1.106	-0.06					
72	WI-03-37	0	New UGA	13	1646	1.104	-0.072	7679	1.1	0.1	0.0	0.2
73	WI-03-13	0	New UGA	4	7299	1.282	-0.212					
73	WI-03-13	0	New UGA	5	6056	1.296	-0.168					
73	WI-03-13	0	New UGA	6	5100	1.223	-0.221					
73	WI-03-13	0	New UGA	7	4313	1.243	-0.342					
73	WI-03-13	0	New UGA	8	3644	1.279	-0.184					
73	WI-03-13	0	New UGA	9	3077	1.207	-0.482					
73	WI-03-13	0	New UGA	10	2604	1.274	-0.342					
73	WI-03-13	0	New UGA	11	2201	1.225	-0.403					
73	WI-03-13	0	New UGA	12	1861	1.263	-0.438					
73	WI-03-13	0	New UGA	13	1571	1.259	-0.541	7299	1.3	-0.3	0.0	0.1
74	WI-02-47	0	New UGA	4	8892	0.564	0.005					
74	WI-02-47	0	New UGA	5	7332	0.478	-0.147					
74	WI-02-47	0	New UGA	6	6145	0.549	0.065					
74	WI-02-47	0	New UGA	7	5197	0.39	-0.291					

74	WI-02-47	0	New UGA	8	4381	0.394	-0.269					
74	WI-02-47	0	New UGA	9	3701	0.343	-0.344					
74	WI-02-47	0	New UGA	10	3127	0.381	-0.378					
74	WI-02-47	0	New UGA	11	2643	0.336	-0.427					
74	WI-02-47	0	New UGA	12	2232	0.356	-0.526					
74	WI-02-47	0	New UGA	13	1884	0.415	-0.414	8892	0.4	-0.3	0.1	0.2
76	WI-03-39	0	New UGA	4	9897	1.248	0.357					
76	WI-03-39	0	New UGA	5	8216	1.212	0.331					
76	WI-03-39	0	New UGA	6	6920	1.155	0.254					
76	WI-03-39	0	New UGA	7	5823	1.266	0.554					
76	WI-03-39	0	New UGA	8	4943	1.226	0.451					
76	WI-03-39	0	New UGA	9	4186	1.134	0.14					
76	WI-03-39	0	New UGA	10	3547	1.125	0.137					
76	WI-03-39	0	New UGA	11	2993	1.1	0.05					
76	WI-03-39	0	New UGA	12	2534	1.14	-0.014					
76	WI-03-39	0	New UGA	13	2145	1.118	-0.044	9897	1.2	0.2	0.1	0.2
77	WI-03-27	0	New UGA	4	11217	1.363	0.361					
77	WI-03-27	0	New UGA	5	9247	1.307	0.274					
77	WI-03-27	0	New UGA	6	7786	1.194	0.244					
77	WI-03-27	0	New UGA	7	6556	1.187	0.189					
77	WI-03-27	0	New UGA	8	5510	1.21	0.133					
77	WI-03-27	0	New UGA	9	4655	1.171	0.054					
77	WI-03-27	0	New UGA	10	3923	1.147	0.045					
77	WI-03-27	0	New UGA	11	3309	1.132	0.041					
77	WI-03-27	0	New UGA	12	2792	1.155	-0.041					
77	WI-03-27	0	New UGA	13	2360	1.194	-0.077	11217	1.2	0.1	0.1	0.1
78	WI-03-08	0	New UGA	4	6756	1.592	-0.233					
78	WI-03-08	0	New UGA	5	5590	1.572	-0.238					
78	WI-03-08	0	New UGA	6	4713	1.536	-0.294					
78	WI-03-08	0	New UGA	7	3981	1.499	-0.298					
78	WI-03-08	0	New UGA	8	3364	1.523	-0.433					
78	WI-03-08	0	New UGA	9	2836	1.496	-0.383					
78	WI-03-08	0	New UGA	10	2399	1.523	-0.439					
78	WI-03-08	0	New UGA	11	2023	1.505	-0.45					
78	WI-03-08	0	New UGA	12	1711	1.576	-0.462					

78	WI-03-08	0	New UGA	13	1444	1.578	-0.509	6756	1.5	-0.4	0.0	0.1
79	WI-08-10	0	New UGA	4	7570	1.711	-0.002					
79	WI-08-10	0	New UGA	5	6276	1.67	-0.047					
79	WI-08-10	0	New UGA	6	5293	1.633	-0.08					
79	WI-08-10	0	New UGA	7	4459	1.649	-0.075					
79	WI-08-10	0	New UGA	8	3763	1.596	-0.157					
79	WI-08-10	0	New UGA	9	3184	1.635	-0.195					
79	WI-08-10	0	New UGA	10	2687	1.656	-0.187					
79	WI-08-10	0	New UGA	11	2273	1.681	-0.208					
79	WI-08-10	0	New UGA	12	1920	1.691	-0.202					
79	WI-08-10	0	New UGA	13	1624	1.605	-0.308	7570	1.7	-0.1	0.0	0.1
80	WI-03-36	0	New UGA	4	6149	1.146	0.157					
80	WI-03-36	0	New UGA	5	5110	1.15	0.162					
80	WI-03-36	0	New UGA	6	4338	1.111	0.166					
80	WI-03-36	0	New UGA	7	3684	1.083	0.024					
80	WI-03-36	0	New UGA	8	3123	1.1	0.018					
80	WI-03-36	0	New UGA	9	2645	1.115	0.064					
80	WI-03-36	0	New UGA	10	2248	1.057	0.041					
80	WI-03-36	0	New UGA	11	1903	1.149	-0.025					
80	WI-03-36	0	New UGA	12	1611	1.161	-0.055					
80	WI-03-36	0	New UGA	13	1365	1.21	-0.189	6149	1.1	0.0	0.0	0.1
81	WI-03-04	0	New UGA	4	7067	2.337	0.621					
81	WI-03-04	0	New UGA	5	5836	2.215	0.388					
81	WI-03-04	0	New UGA	6	4902	2.277	0.582					
81	WI-03-04	0	New UGA	7	4076	2.3	0.603					
81	WI-03-04	0	New UGA	8	3486	2.176	0.178					
81	WI-03-04	0	New UGA	9	2937	2.091	0.231					
81	WI-03-04	0	New UGA	10	2480	2.148	0.214					
81	WI-03-04	0	New UGA	11	2090	2.161	0.209					
81	WI-03-04	0	New UGA	12	1771	2.145	0.075					
81	WI-03-04	0	New UGA	13	1492	2.196	0.03	7067	2.2	0.3	0.1	0.2
82	WI-03-30	0	New UGA	4	7586	1.277	0.055					
82	WI-03-30	0	New UGA	5	6270	1.236	0.031					
82	WI-03-30	0	New UGA	6	5283	1.207	0.014					
82	WI-03-30	0	New UGA	7	4460	1.203	-0.062					

82	WI-03-30	0	New UGA	8	3766	1.198	-0.096					
82	WI-03-30	0	New UGA	9	3181	1.132	-0.099					
82	WI-03-30	0	New UGA	10	2686	1.203	-0.135					
82	WI-03-30	0	New UGA	11	2275	1.213	-0.264					
82	WI-03-30	0	New UGA	12	1923	1.125	-0.29					
82	WI-03-30	0	New UGA	13	1626	1.223	-0.273	7586	1.2	-0.1	0.0	0.1
84	WI-03-19	0	New UGA	4	9476	1.256	-0.013					
84	WI-03-19	0	New UGA	5	7826	1.172	-0.147					
84	WI-03-19	0	New UGA	6	6583	1.234	0.099					
84	WI-03-19	0	New UGA	7	5581	1.111	-0.19					
84	WI-03-19	0	New UGA	8	4704	1.068	-0.17					
84	WI-03-19	0	New UGA	9	3995	1.089	-0.223					
84	WI-03-19	0	New UGA	10	3381	1.092	-0.269					
84	WI-03-19	0	New UGA	11	2848	1.088	-0.302					
84	WI-03-19	0	New UGA	12	2415	1.113	-0.348					
84	WI-03-19	0	New UGA	13	2041	1.147	-0.375	9476	1.1	-0.2	0.1	0.1
85	WI-03-23	0	New UGA	4	8166	1.324	0.177					
85	WI-03-23	0	New UGA	5	6760	1.293	0.087					
85	WI-03-23	0	New UGA	6	5702	1.254	0.09					
85	WI-03-23	0	New UGA	7	4824	1.264	0.096					
85	WI-03-23	0	New UGA	8	4080	1.207	0.077					
85	WI-03-23	0	New UGA	9	3466	1.272	0.092					
85	WI-03-23	0	New UGA	10	2926	1.191	-0.062					
85	WI-03-23	0	New UGA	11	2473	1.253	-0.137					
85	WI-03-23	0	New UGA	12	2092	1.278	-0.095					
85	WI-03-23	0	New UGA	13	1780	1.28	-0.2	8166	1.3	0.0	0.0	0.1
86	WI-03-03	0	New UGA	4	6954	2.1	0.308					
86	WI-03-03	0	New UGA	5	5743	2.11	0.367					
86	WI-03-03	0	New UGA	6	4829	2.07	0.332					
86	WI-03-03	0	New UGA	7	4067	2.084	0.231					
86	WI-03-03	0	New UGA	8	3428	2.083	0.268					
86	WI-03-03	0	New UGA	9	2888	2.061	0.171					
86	WI-03-03	0	New UGA	10	2429	2.069	0.114					
86	WI-03-03	0	New UGA	11	2046	2.009	0.133					
86	WI-03-03	0	New UGA	12	1725	2.106	0.071					

86	WI-03-03	0	New UGA	13	1456	2.089	-0.025	6954	2.1	0.2	0.0	0.1
87	WI-03-40	0	New UGA	4	11017	1.247	0.29					
87	WI-03-40	0	New UGA	5	9096	1.222	0.274					
87	WI-03-40	0	New UGA	6	7630	1.126	0.237					
87	WI-03-40	0	New UGA	7	6421	1.069	0.133					
87	WI-03-40	0	New UGA	8	5404	1.06	0.06					
87	WI-03-40	0	New UGA	9	4567	1.108	0.191					
87	WI-03-40	0	New UGA	10	3844	1.074	0.072					
87	WI-03-40	0	New UGA	11	3250	1.118	0.037					
87	WI-03-40	0	New UGA	12	2741	1.17	0.274					
87	WI-03-40	0	New UGA	13	2312	1.045	-0.079	11017	1.1	0.1	0.1	0.1
88	WI-03-38	0	New UGA	4	10687	1.395	0.526					
88	WI-03-38	0	New UGA	5	8793	1.353	0.528					
88	WI-03-38	0	New UGA	6	7442	1.311	0.406					
88	WI-03-38	0	New UGA	7	6275	1.211	0.412					
88	WI-03-38	0	New UGA	8	5290	1.129	0.129					
88	WI-03-38	0	New UGA	9	4458	1.088	0.108					
88	WI-03-38	0	New UGA	10	3777	1.078	0.09					
88	WI-03-38	0	New UGA	11	3179	1.1	-0.009					
88	WI-03-38	0	New UGA	12	2681	1.082	-0.04					
88	WI-03-38	0	New UGA	13	2277	1.109	-0.002	10687	1.2	0.2	0.1	0.2
89	WI-03-16	0	New UGA	4	10744	1.223	0.198					
89	WI-03-16	0	New UGA	5	8968	1.036	-0.132					
89	WI-03-16	0	New UGA	6	7568	0.976	-0.211					
89	WI-03-16	0	New UGA	7	6380	0.939	-0.239					
89	WI-03-16	0	New UGA	8	5357	0.867	-0.313					
89	WI-03-16	0	New UGA	9	4500	0.994	0.014					
89	WI-03-16	0	New UGA	10	3811	0.852	-0.397					
89	WI-03-16	0	New UGA	11	3229	0.892	-0.422					
89	WI-03-16	0	New UGA	12	2720	0.877	-0.453					
89	WI-03-16	0	New UGA	13	2293	1.007	-0.218	10744	1.0	-0.2	0.1	0.2
90	WI-02-40	0	New UGA	4	10335	0.517	-0.065					
90	WI-02-40	0	New UGA	5	8511	0.424	-0.157					
90	WI-02-40	0	New UGA	6	7169	0.421	-0.155					
90	WI-02-40	0	New UGA	7	6035	0.352	-0.198					

90	WI-02-40	0	New UGA	8	5112	0.391	-0.189					
90	WI-02-40	0	New UGA	9	4302	0.323	-0.247					
90	WI-02-40	0	New UGA	10	3635	0.333	-0.311					
90	WI-02-40	0	New UGA	11	3070	0.336	-0.33					
90	WI-02-40	0	New UGA	12	2597	0.292	-0.397					
90	WI-02-40	0	New UGA	13	2195	0.373	-0.376	10335	0.4	-0.2	0.1	0.1
92	WI-03-33	0	New UGA	4	10141	1.308	0.245					
92	WI-03-33	0	New UGA	5	8341	1.321	0.46					
92	WI-03-33	0	New UGA	6	7023	1.224	0.136					
92	WI-03-33	0	New UGA	7	5920	1.185	0.15					
92	WI-03-33	0	New UGA	8	4983	1.201	0.106					
92	WI-03-33	0	New UGA	9	4184	1.128	0.014					
92	WI-03-33	0	New UGA	10	3529	1.129	0.003					
92	WI-03-33	0	New UGA	11	2955	1.303	0.356					
92	WI-03-33	0	New UGA	12	2513	1.179	-0.032					
92	WI-03-33	0	New UGA	13	2121	1.165	-0.079	10141	1.2	0.1	0.1	0.2
93	WI-03-22	0	New UGA	4	10691	1.54	0.103					
93	WI-03-22	0	New UGA	5	8810	1.491	0.07					
93	WI-03-22	0	New UGA	6	7430	1.5	0.198					
93	WI-03-22	0	New UGA	7	6273	1.42	-0.026					
93	WI-03-22	0	New UGA	8	5294	1.405	-0.065					
93	WI-03-22	0	New UGA	9	4461	1.36	0.123					
93	WI-03-22	0	New UGA	10	3769	1.361	-0.222					
93	WI-03-22	0	New UGA	11	3189	1.344	-0.202					
93	WI-03-22	0	New UGA	12	2693	1.359	-0.206					
93	WI-03-22	0	New UGA	13	2279	1.3	-0.211	10691	1.4	0.0	0.1	0.2
94	WI-03-18	0	New UGA	4	7160	1.101	-0.186					
94	WI-03-18	0	New UGA	5	5923	1.118	-0.18					
94	WI-03-18	0	New UGA	6	4996	1.033	-0.213					
94	WI-03-18	0	New UGA	7	4218	1.039	-0.299					
94	WI-03-18	0	New UGA	8	3575	1.126	-0.148					
94	WI-03-18	0	New UGA	9	3010	1.073	-0.338					
94	WI-03-18	0	New UGA	10	2548	1.044	-0.369					
94	WI-03-18	0	New UGA	11	2151	1.051	-0.357					
94	WI-03-18	0	New UGA	12	1823	1.096	-0.534					

94	WI-03-18	0	New UGA	13	1540	1.038	-0.431	7160	1.1	-0.3	0.0	0.1
95	WI-03-11	0	New UGA	4	5702	1.689	-0.077					
95	WI-03-11	0	New UGA	5	4698	1.717	-0.01					
95	WI-03-11	0	New UGA	6	3962	1.679	-0.088					
95	WI-03-11	0	New UGA	7	3327	1.683	-0.022					
95	WI-03-11	0	New UGA	8	2802	1.69	-0.059					
95	WI-03-11	0	New UGA	9	2359	1.677	-0.167					
95	WI-03-11	0	New UGA	10	1986	1.692	-0.228					
95	WI-03-11	0	New UGA	11	1676	1.687	-0.192					
95	WI-03-11	0	New UGA	12	1410	1.729	-0.171					
95	WI-03-11	0	New UGA	13	1191	1.727	-0.48	5702	1.7	-0.1	0.0	0.1
96	WI-03-01	0	New UGA	4	8444	1.418	0.186					
96	WI-03-01	0	New UGA	5	6965	1.377	0.118					
96	WI-03-01	0	New UGA	6	5877	1.329	0.074					
96	WI-03-01	0	New UGA	7	4953	1.319	0.052					
96	WI-03-01	0	New UGA	8	4186	1.266	0.07					
96	WI-03-01	0	New UGA	9	3540	1.278	0.034					
96	WI-03-01	0	New UGA	10	2990	1.286	-0.065					
96	WI-03-01	0	New UGA	11	2526	1.313	-0.06					
96	WI-03-01	0	New UGA	12	2139	1.307	-0.17					
96	WI-03-01	0	New UGA	13	1813	1.285	-0.227	8444	1.3	0.0	0.0	0.1
97	WI-03-32	0	New UGA	4	13301	1.483	0.556					
97	WI-03-32	0	New UGA	5	10931	1.326	0.343					
97	WI-03-32	0	New UGA	6	9183	1.252	0.232					
97	WI-03-32	0	New UGA	7	7737	1.203	0.187					
97	WI-03-32	0	New UGA	8	6518	1.153	0.137					
97	WI-03-32	0	New UGA	9	5500	1.154	0.134					
97	WI-03-32	0	New UGA	10	4634	1.155	0.047					
97	WI-03-32	0	New UGA	11	3914	1.12	0.047					
97	WI-03-32	0	New UGA	12	3303	1.144	0.05					
97	WI-03-32	0	New UGA	13	2788	1.122	-0.013	13301	1.2	0.2	0.1	0.2
98	WI-03-26	0	New UGA	4	11272	1.244	0.401					
98	WI-03-26	0	New UGA	5	9345	1.21	0.354					
98	WI-03-26	0	New UGA	6	7848	1.129	0.297					
98	WI-03-26	0	New UGA	7	6613	1.086	0.217					

98	WI-03-26	0	New UGA	8	5585	1.054	0.184					
98	WI-03-26	0	New UGA	9	4714	1.084	0.123					
98	WI-03-26	0	New UGA	10	3980	1.095	0.149					
98	WI-03-26	0	New UGA	11	3365	1.077	0.094					
98	WI-03-26	0	New UGA	12	2840	1.014	0.04					
98	WI-03-26	0	New UGA	13	2410	1.066	-0.011	11272	1.1	0.2	0.1	0.1
100	WI-03-28	0	New UGA	4	10852	1.385	0.301					
100	WI-03-28	0	New UGA	5	8940	1.328	0.28					
100	WI-03-28	0	New UGA	6	7521	1.252	0.195					
100	WI-03-28	0	New UGA	7	6331	1.227	0.179					
100	WI-03-28	0	New UGA	8	5348	1.195	0.173					
100	WI-03-28	0	New UGA	9	4510	1.21	0.068					
100	WI-03-28	0	New UGA	10	3811	1.112	0.089					
100	WI-03-28	0	New UGA	11	3212	1.181	0.095					
100	WI-03-28	0	New UGA	12	2715	1.179	-0.045					
100	WI-03-28	0	New UGA	13	2295	1.207	-0.046	10852	1.2	0.1	0.1	0.1
101	WI-03-06	0	New UGA	4	12036	2.173	0.285					
101	WI-03-06	0	New UGA	5	9943	2.091	0.26					
101	WI-03-06	0	New UGA	6	8425	2.059	0.22					
101	WI-03-06	0	New UGA	7	7101	2.047	0.337					
101	WI-03-06	0	New UGA	8	5944	2.079	0.39					
101	WI-03-06	0	New UGA	9	5088	2.031	0.212					
101	WI-03-06	0	New UGA	10	4316	1.986	0.107					
101	WI-03-06	0	New UGA	11	3631	2.039	0.269					
101	WI-03-06	0	New UGA	12	3099	2.003	0.111					
101	WI-03-06	0	New UGA	13	2624	1.973	-0.118	12036	2.0	0.2	0.1	0.1
102	WI-03-21	0	New UGA	4	13765	1.639	0.176					
102	WI-03-21	0	New UGA	5	11286	1.534	0.07					
102	WI-03-21	0	New UGA	6	9476	1.441	-0.056					
102	WI-03-21	0	New UGA	7	7985	1.399	-0.09					
102	WI-03-21	0	New UGA	8	6719	1.348	-0.097					
102	WI-03-21	0	New UGA	9	5667	1.343	-0.148					
102	WI-03-21	0	New UGA	10	4767	1.316	-0.249					
102	WI-03-21	0	New UGA	11	4014	1.32	-0.193					
102	WI-03-21	0	New UGA	12	3392	1.214	-0.239					

102	WI-03-21	0	New UGA	13	2865	1.314	-0.354	13765	1.4	-0.1	0.1	0.2
103	WI-02-51	0	New UGA	4	11420	0.393	-0.142					
103	WI-02-51	0	New UGA	5	9455	0.363	-0.144					
103	WI-02-51	0	New UGA	6	7975	0.285	-0.225					
103	WI-02-51	0	New UGA	7	6685	0.357	-0.065					
103	WI-02-51	0	New UGA	8	5665	0.278	-0.275					
103	WI-02-51	0	New UGA	9	4776	0.167	-0.387					
103	WI-02-51	0	New UGA	10	4024	0.193	-0.192					
103	WI-02-51	0	New UGA	11	3389	0.311	-0.144					
103	WI-02-51	0	New UGA	12	2873	0.175	-0.531					
103	WI-02-51	0	New UGA	13	2430	0.146	-0.452	11420	0.3	-0.3	0.1	0.2
104	WI-03-24	0	New UGA	4	12045	1.449	0.44					
104	WI-03-24	0	New UGA	5	9877	1.306	0.283					
104	WI-03-24	0	New UGA	6	8314	1.23	0.223					
104	WI-03-24	0	New UGA	7	6999	1.217	0.155					
104	WI-03-24	0	New UGA	8	5887	1.178	0.136					
104	WI-03-24	0	New UGA	9	4967	1.158	0.047					
104	WI-03-24	0	New UGA	10	4201	1.165	0.08					
104	WI-03-24	0	New UGA	11	3532	1.277	0.317					
104	WI-03-24	0	New UGA	12	2990	1.146	0.037					
104	WI-03-24	0	New UGA	13	2531	1.198	-0.038	12045	1.2	0.2	0.1	0.1
105	WI-03-35	0	New UGA	4	8458	1.266	0.184					
105	WI-03-35	0	New UGA	5	6969	1.211	0.158					
105	WI-03-35	0	New UGA	6	5858	1.143	0.108					
105	WI-03-35	0	New UGA	7	4933	1.164	0.118					
105	WI-03-35	0	New UGA	8	4160	1.137	0.091					
105	WI-03-35	0	New UGA	9	3502	1.126	-0.058					
105	WI-03-35	0	New UGA	10	2952	1.144	0.014					
105	WI-03-35	0	New UGA	11	2492	1.092	-0.05					
105	WI-03-35	0	New UGA	12	2102	1.081	-0.084					
105	WI-03-35	0	New UGA	13	1774	1.228	-0.133	8458	1.2	0.0	0.1	0.1
106	WI-02-53	0	New UGA	4	6433	0.35	-0.361					
106	WI-02-53	0	New UGA	5	5297	0.295	-0.351					
106	WI-02-53	0	New UGA	6	4463	0.261	-0.402					
106	WI-02-53	0	New UGA	7	3764	0.27	-0.448					

106	WI-02-53	0	New UGA	8	3174	0.228	-0.417					
106	WI-02-53	0	New UGA	9	2678	0.254	-0.457					
106	WI-02-53	0	New UGA	10	2256	0.299	-0.485					
106	WI-02-53	0	New UGA	11	1905	0.311	-0.614					
106	WI-02-53	0	New UGA	12	1609	0.327	-0.596					
106	WI-02-53	0	New UGA	13	1356	0.299	-0.698	6433	0.3	-0.5	0.0	0.1
108	WI-03-09	0	New UGA	4	8693	1.44	-0.317					
108	WI-03-09	0	New UGA	5	7179	1.422	-0.337					
108	WI-03-09	0	New UGA	6	6051	1.356	-0.351					
108	WI-03-09	0	New UGA	7	5103	1.387	-0.413					
108	WI-03-09	0	New UGA	8	4314	1.337	-0.446					
108	WI-03-09	0	New UGA	9	3633	1.313	-0.528					
108	WI-03-09	0	New UGA	10	3071	1.325	-0.537					
108	WI-03-09	0	New UGA	11	2596	1.336	-0.563					
108	WI-03-09	0	New UGA	12	2190	1.351	-0.602					
108	WI-03-09	0	New UGA	13	1852	1.327	-0.619	8693	1.4	-0.5	0.0	0.1
109	WI-03-29	0	New UGA	4	7859	1.265	-0.02					
109	WI-03-29	0	New UGA	5	6497	1.231	-0.076					
109	WI-03-29	0	New UGA	6	5475	1.156	-0.072					
109	WI-03-29	0	New UGA	7	4627	1.149	-0.122					
109	WI-03-29	0	New UGA	8	3902	1.161	-0.127					
109	WI-03-29	0	New UGA	9	3303	1.191	-0.176					
109	WI-03-29	0	New UGA	10	2788	1.162	-0.208					
109	WI-03-29	0	New UGA	11	2358	1.21	-0.227					
109	WI-03-29	0	New UGA	12	1995	1.179	-0.272					
109	WI-03-29	0	New UGA	13	1686	1.177	-0.356	7859	1.2	-0.2	0.0	0.1
110	WI-03-61	0	New UGA	4	10892	1.013	-0.45					
110	WI-03-61	0	New UGA	5	8986	0.857	-0.613					
110	WI-03-61	0	New UGA	6	7557	0.818	-0.725					
110	WI-03-61	0	New UGA	7	6376	0.781	-0.752					
110	WI-03-61	0	New UGA	8	5377	0.728	-0.763					
110	WI-03-61	0	New UGA	9	4532	0.738	-0.771					
110	WI-03-61	0	New UGA	10	3825	0.723	-0.855					
110	WI-03-61	0	New UGA	11	3227	0.755	-0.801					
110	WI-03-61	0	New UGA	12	2727	0.786	-0.924					

110	WI-03-61	0	New UGA	13	2309	0.777	-0.921	10892	0.8	-0.8	0.1	0.1
111	WI-03-43	0	New UGA	4	12742	1.375	0.187					
111	WI-03-43	0	New UGA	5	10515	1.275	0.091					
111	WI-03-43	0	New UGA	6	8842	1.178	0.078					
111	WI-03-43	0	New UGA	7	7459	1.147	-0.01					
111	WI-03-43	0	New UGA	8	6285	1.119	-0.04					
111	WI-03-43	0	New UGA	9	5295	1.089	-0.084					
111	WI-03-43	0	New UGA	10	4476	1.101	-0.098					
111	WI-03-43	0	New UGA	11	3780	1.021	-0.183					
111	WI-03-43	0	New UGA	12	3194	1.104	-0.181					
111	WI-03-43	0	New UGA	13	2699	1.116	-0.198	12742	1.2	0.0	0.1	0.1
112	WI-03-48	0	New UGA	4	9529	1.078	-0.436					
112	WI-03-48	0	New UGA	5	7846	1.012	-0.479					
112	WI-03-48	0	New UGA	6	6595	0.965	-0.511					
112	WI-03-48	0	New UGA	7	5555	0.965	-0.515					
112	WI-03-48	0	New UGA	8	4692	0.974	-0.567					
112	WI-03-48	0	New UGA	9	3956	0.967	-0.55					
112	WI-03-48	0	New UGA	10	3337	1.03	-0.463					
112	WI-03-48	0	New UGA	11	2813	0.972	-0.678					
112	WI-03-48	0	New UGA	12	2369	1.001	-0.674					
112	WI-03-48	0	New UGA	13	2004	1.034	-0.657	9529	1.0	-0.6	0.0	0.1
113	WI-03-53	0	New UGA	4	13181	1.026	-0.073					
113	WI-03-53	0	New UGA	5	10802	0.944	-0.161					
113	WI-03-53	0	New UGA	6	9096	0.894	-0.201					
113	WI-03-53	0	New UGA	7	7643	0.819	-0.226					
113	WI-03-53	0	New UGA	8	6439	0.792	-0.262					
113	WI-03-53	0	New UGA	9	5432	0.778	-0.352					
113	WI-03-53	0	New UGA	10	4581	0.78	-0.367					
113	WI-03-53	0	New UGA	11	3871	0.762	-0.456					
113	WI-03-53	0	New UGA	12	3268	0.796	-0.428					
113	WI-03-53	0	New UGA	13	2766	0.767	-0.532	13181	0.8	-0.3	0.1	0.1
114	WI-03-57	0	New UGA	4	12059	1.325	-0.242					
114	WI-03-57	0	New UGA	5	9967	1.247	-0.349					
114	WI-03-57	0	New UGA	6	8386	1.185	-0.364					
114	WI-03-57	0	New UGA	7	7083	1.162	-0.425					

114	WI-03-57	0	New UGA	8	5982	1.162	-0.385					
114	WI-03-57	0	New UGA	9	5056	1.121	-0.466					
114	WI-03-57	0	New UGA	10	4271	1.103	-0.447					
114	WI-03-57	0	New UGA	11	3619	1.123	-0.535					
114	WI-03-57	0	New UGA	12	3054	1.134	-0.516					
114	WI-03-57	0	New UGA	13	2586	1.117	-0.524	12059	1.2	-0.4	0.1	0.1
116	WI-03-54	0	New UGA	4	11889	1.094	-0.239					
116	WI-03-54	0	New UGA	5	9809	1.034	-0.285					
116	WI-03-54	0	New UGA	6	8276	0.961	-0.373					
116	WI-03-54	0	New UGA	7	6977	0.913	-0.445					
116	WI-03-54	0	New UGA	8	5894	0.86	-0.442					
116	WI-03-54	0	New UGA	9	4983	0.904	-0.53					
116	WI-03-54	0	New UGA	10	4217	0.839	-0.567					
116	WI-03-54	0	New UGA	11	3568	0.823	-0.569					
116	WI-03-54	0	New UGA	12	3019	0.883	-0.595					
116	WI-03-54	0	New UGA	13	2557	0.91	-0.613	11889	0.9	-0.5	0.1	0.1
117	WI-03-41	0	New UGA	4	8916	1.251	0.08					
117	WI-03-41	0	New UGA	5	7355	1.194	0.072					
117	WI-03-41	0	New UGA	6	6196	1.157	0.008					
117	WI-03-41	0	New UGA	7	5221	1.15	-0.026					
117	WI-03-41	0	New UGA	8	4404	1.072	-0.058					
117	WI-03-41	0	New UGA	9	3719	1.128	-0.06					
117	WI-03-41	0	New UGA	10	3138	1.074	-0.132					
117	WI-03-41	0	New UGA	11	2653	1.097	-0.15					
117	WI-03-41	0	New UGA	12	2239	1.136	-0.153					
117	WI-03-41	0	New UGA	13	1893	1.096	-0.241	8916	1.1	-0.1	0.1	0.1
118	WI-03-62	0	New UGA	4	16610	1.103	-0.378					
118	WI-03-62	0	New UGA	5	13696	0.98	-0.437					
118	WI-03-62	0	New UGA	6	11493	0.902	-0.497					
118	WI-03-62	0	New UGA	7	9680	0.858	-0.54					
118	WI-03-62	0	New UGA	8	8155	0.794	-0.635					
118	WI-03-62	0	New UGA	9	6865	0.763	-0.718					
118	WI-03-62	0	New UGA	10	5795	0.743	-0.748					
118	WI-03-62	0	New UGA	11	4901	0.735	-0.708					
118	WI-03-62	0	New UGA	12	4143	0.737	-0.816					

118	WI-03-62	0	New UGA	13	3500	0.713	-0.745	16610	0.8	-0.6	0.1	0.1
119	WI-03-64	0	New UGA	4	16273	0.461	-0.423					
119	WI-03-64	0	New UGA	5	13378	0.371	-0.536					
119	WI-03-64	0	New UGA	6	11272	0.283	-0.6					
119	WI-03-64	0	New UGA	7	9478	0.218	-0.647					
119	WI-03-64	0	New UGA	8	7987	0.168	-0.68					
119	WI-03-64	0	New UGA	9	6733	0.146	-0.772					
119	WI-03-64	0	New UGA	10	5694	0.17	-0.819					
119	WI-03-64	0	New UGA	11	4798	0.138	-0.792					
119	WI-03-64	0	New UGA	12	4060	0.113	-0.851					
119	WI-03-64	0	New UGA	13	3433	0.124	-0.874	16273	0.2	-0.7	0.1	0.1
120	WI-03-42	0	New UGA	4	7659	1.171	-0.006					
120	WI-03-42	0	New UGA	5	6325	1.147	-0.013					
120	WI-03-42	0	New UGA	6	5338	1.136	-0.084					
120	WI-03-42	0	New UGA	7	4505	1.121	-0.083					
120	WI-03-42	0	New UGA	8	3805	1.077	-0.117					
120	WI-03-42	0	New UGA	9	3218	1.071	-0.151					
120	WI-03-42	0	New UGA	10	2728	1.123	-0.204					
120	WI-03-42	0	New UGA	11	2309	1.176	-0.24					
120	WI-03-42	0	New UGA	12	1952	1.128	-0.248					
120	WI-03-42	0	New UGA	13	1653	1.182	-0.263	7659	1.1	-0.1	0.0	0.1
121	WI-03-50	0	New UGA	4	10977	1.082	-0.115					
121	WI-03-50	0	New UGA	5	9061	1.04	-0.152					
121	WI-03-50	0	New UGA	6	7619	0.962	-0.233					
121	WI-03-50	0	New UGA	7	6428	0.926	-0.267					
121	WI-03-50	0	New UGA	8	5422	0.903	-0.314					
121	WI-03-50	0	New UGA	9	4578	0.913	-0.323					
121	WI-03-50	0	New UGA	10	3861	0.86	-0.299					
121	WI-03-50	0	New UGA	11	3264	0.931	-0.389					
121	WI-03-50	0	New UGA	12	2763	0.928	-0.395					
121	WI-03-50	0	New UGA	13	2334	0.958	-0.385	10977	1.0	-0.3	0.1	0.1
122	WI-03-51	0	New UGA	4	11956	1.17	-0.226					
122	WI-03-51	0	New UGA	5	9810	1.098	-0.249					
122	WI-03-51	0	New UGA	6	8237	1.035	-0.27					
122	WI-03-51	0	New UGA	7	6931	1.02	-0.361					

122	WI-03-51	0	New UGA	8	5835	0.97	-0.379					
122	WI-03-51	0	New UGA	9	4918	0.99	-0.419					
122	WI-03-51	0	New UGA	10	4154	0.977	-0.421					
122	WI-03-51	0	New UGA	11	3493	0.984	-0.433					
122	WI-03-51	0	New UGA	12	2949	0.953	-0.528					
122	WI-03-51	0	New UGA	13	2485	0.975	-0.478	11956	1.0	-0.4	0.1	0.1
124	WI-03-46	0	New UGA	4	10717	1.071	-0.113					
124	WI-03-46	0	New UGA	5	8854	0.985	-0.202					
124	WI-03-46	0	New UGA	6	7463	0.942	-0.258					
124	WI-03-46	0	New UGA	7	6297	0.909	-0.264					
124	WI-03-46	0	New UGA	8	5318	0.872	-0.334					
124	WI-03-46	0	New UGA	9	4494	0.856	-0.358					
124	WI-03-46	0	New UGA	10	3799	0.816	-0.339					
124	WI-03-46	0	New UGA	11	3214	0.851	-0.423					
124	WI-03-46	0	New UGA	12	2720	0.876	-0.52					
124	WI-03-46	0	New UGA	13	2302	0.903	-0.475	10717	0.9	-0.3	0.1	0.1
125	WI-03-56	0	New UGA	4	12617	1.377	-0.313					
125	WI-03-56	0	New UGA	5	10387	1.319	-0.375					
125	WI-03-56	0	New UGA	6	8751	1.22	-0.478					
125	WI-03-56	0	New UGA	7	7363	1.185	-0.499					
125	WI-03-56	0	New UGA	8	6214	1.181	-0.565					
125	WI-03-56	0	New UGA	9	5240	1.159	-0.589					
125	WI-03-56	0	New UGA	10	4422	1.158	-0.614					
125	WI-03-56	0	New UGA	11	3730	1.155	-0.64					
125	WI-03-56	0	New UGA	12	3154	1.153	-0.709					
125	WI-03-56	0	New UGA	13	2663	1.092	-0.702	12617	1.2	-0.5	0.1	0.1
126	WI-03-60	0	New UGA	4	14950	1.213	-0.202					
126	WI-03-60	0	New UGA	5	12247	1.114	-0.267					
126	WI-03-60	0	New UGA	6	10255	1.026	-0.322					
126	WI-03-60	0	New UGA	7	8606	0.962	-0.39					
126	WI-03-60	0	New UGA	8	7218	0.925	-0.44					
126	WI-03-60	0	New UGA	9	6074	0.877	-0.494					
126	WI-03-60	0	New UGA	10	5109	0.872	-0.547					
126	WI-03-60	0	New UGA	11	4299	0.834	-0.551					
126	WI-03-60	0	New UGA	12	3616	0.818	-0.57					

126	WI-03-60	0	New UGA	13	3048	0.846	-0.528	14950	0.9	-0.4	0.1	0.1
127	WI-03-52	0	New UGA	4	8045	0.926	-0.431					
127	WI-03-52	0	New UGA	5	6667	0.891	-0.423					
127	WI-03-52	0	New UGA	6	5638	0.846	-0.43					
127	WI-03-52	0	New UGA	7	4770	0.861	-0.479					
127	WI-03-52	0	New UGA	8	4043	0.869	-0.5					
127	WI-03-52	0	New UGA	9	3420	0.805	-0.532					
127	WI-03-52	0	New UGA	10	2899	0.84	-0.541					
127	WI-03-52	0	New UGA	11	2459	0.842	-0.598					
127	WI-03-52	0	New UGA	12	2085	0.901	-0.57					
127	WI-03-52	0	New UGA	13	1768	0.906	-0.691	8045	0.9	-0.5	0.0	0.1
128	WI-03-58	0	New UGA	4	12404	1.386	-0.395					
128	WI-03-58	0	New UGA	5	10198	1.329	-0.446					
128	WI-03-58	0	New UGA	6	8566	1.269	-0.511					
128	WI-03-58	0	New UGA	7	7204	1.203	-0.6					
128	WI-03-58	0	New UGA	8	6061	1.164	-0.553					
128	WI-03-58	0	New UGA	9	5110	1.149	-0.609					
128	WI-03-58	0	New UGA	10	4309	1.162	-0.635					
128	WI-03-58	0	New UGA	11	3635	1.215	-0.682					
128	WI-03-58	0	New UGA	12	3069	1.201	-0.681					
128	WI-03-58	0	New UGA	13	2591	1.191	-0.746	12404	1.2	-0.6	0.1	0.1
129	WI-03-63	0	New UGA	4	10314	0.701	-0.72					
129	WI-03-63	0	New UGA	5	8469	0.676	-0.741					
129	WI-03-63	0	New UGA	6	7116	0.576	-0.775					
129	WI-03-63	0	New UGA	7	5979	0.549	-0.764					
129	WI-03-63	0	New UGA	8	5027	0.539	-0.885					
129	WI-03-63	0	New UGA	9	4234	0.464	-0.857					
129	WI-03-63	0	New UGA	10	3563	0.557	-0.878					
129	WI-03-63	0	New UGA	11	3005	0.527	-0.953					
129	WI-03-63	0	New UGA	12	2534	0.515	-0.944					
129	WI-03-63	0	New UGA	13	2135	0.573	-0.975	10314	0.6	-0.8	0.1	0.1
130	WI-03-59	0	New UGA	4	11896	1.219	-0.489					
130	WI-03-59	0	New UGA	5	9782	1.171	-0.539					
130	WI-03-59	0	New UGA	6	8239	1.086	-0.626					
130	WI-03-59	0	New UGA	7	6942	1.058	-0.586					

130	WI-03-59	0	New UGA	8	5864	1.019	-0.708					
130	WI-03-59	0	New UGA	9	4942	1.013	-0.708					
130	WI-03-59	0	New UGA	10	4174	0.952	-0.744					
130	WI-03-59	0	New UGA	11	3523	0.993	-0.749					
130	WI-03-59	0	New UGA	12	2977	1	-0.815					
130	WI-03-59	0	New UGA	13	2517	1.027	-0.746	11896	1.1	-0.7	0.1	0.1
132	WI-03-47	0	New UGA	4	12570	1.204	-0.076					
132	WI-03-47	0	New UGA	5	10357	1.11	-0.1					
132	WI-03-47	0	New UGA	6	8701	1.071	-0.151					
132	WI-03-47	0	New UGA	7	7328	1.024	-0.214					
132	WI-03-47	0	New UGA	8	6165	1.028	-0.249					
132	WI-03-47	0	New UGA	9	5194	0.984	-0.246					
132	WI-03-47	0	New UGA	10	4386	0.938	-0.29					
132	WI-03-47	0	New UGA	11	3699	0.977	-0.299					
132	WI-03-47	0	New UGA	12	3124	0.965	-0.321					
132	WI-03-47	0	New UGA	13	2637	1.008	-0.334	12570	1.0	-0.2	0.1	0.1
133	WI-03-44	0	New UGA	4	11865	1.217	0.058					
133	WI-03-44	0	New UGA	5	9792	1.144	0.009					
133	WI-03-44	0	New UGA	6	8264	1.104	-0.019					
133	WI-03-44	0	New UGA	7	6984	1.02	-0.111					
133	WI-03-44	0	New UGA	8	5886	1.044	-0.112					
133	WI-03-44	0	New UGA	9	4979	0.995	-0.113					
133	WI-03-44	0	New UGA	10	4216	0.954	-0.139					
133	WI-03-44	0	New UGA	11	3564	1.014	-0.238					
133	WI-03-44	0	New UGA	12	3021	1.039	-0.183					
133	WI-03-44	0	New UGA	13	2559	1.047	-0.242	11865	1.1	-0.1	0.1	0.1
134	WI-03-55	0	New UGA	4	12085	1.277	-0.291					
134	WI-03-55	0	New UGA	5	9987	1.19	-0.368					
134	WI-03-55	0	New UGA	6	8404	1.139	-0.387					
134	WI-03-55	0	New UGA	7	7089	1.11	-0.501					
134	WI-03-55	0	New UGA	8	5981	1.041	-0.45					
134	WI-03-55	0	New UGA	9	5053	1.047	-0.487					
134	WI-03-55	0	New UGA	10	4268	1.003	-0.556					
134	WI-03-55	0	New UGA	11	3609	1.068	-0.594					
134	WI-03-55	0	New UGA	12	3051	1.006	-0.624					

134	WI-03-55	0	New UGA	13	2582	1.056	-0.563	12085	1.1	-0.5	0.1	0.1
135	WI-03-49	0	New UGA	4	9129	1.105	-0.367					
135	WI-03-49	0	New UGA	5	7567	1.009	-0.451					
135	WI-03-49	0	New UGA	6	6387	1.018	-0.452					
135	WI-03-49	0	New UGA	7	5403	0.964	-0.526					
135	WI-03-49	0	New UGA	8	4562	0.962	-0.545					
135	WI-03-49	0	New UGA	9	3858	0.954	-0.631					
135	WI-03-49	0	New UGA	10	3263	0.97	-0.557					
135	WI-03-49	0	New UGA	11	2766	1.003	-0.619					
135	WI-03-49	0	New UGA	12	2342	0.922	-0.648					
135	WI-03-49	0	New UGA	13	1983	1.025	-0.639	9129	1.0	-0.5	0.1	0.1
136	WI-03-45	0	New UGA	4	12261	1.166	0.083					
136	WI-03-45	0	New UGA	5	10054	1.1	0.046					
136	WI-03-45	0	New UGA	6	8450	1.002	-0.011					
136	WI-03-45	0	New UGA	7	7105	0.969	-0.054					
136	WI-03-45	0	New UGA	8	5982	0.971	-0.036					
136	WI-03-45	0	New UGA	9	5032	0.912	-0.103					
136	WI-03-45	0	New UGA	10	4241	0.875	-0.188					
136	WI-03-45	0	New UGA	11	3576	0.892	-0.159					
136	WI-03-45	0	New UGA	12	3020	0.926	-0.229					
136	WI-03-45	0	New UGA	13	2546	1.004	-0.215	12261	1.0	-0.1	0.1	0.1
137	WI-07-23	0	New UGA	4	8791	1.118	-0.053					
137	WI-07-23	0	New UGA	5	7279	1.164	0.17					
137	WI-07-23	0	New UGA	6	6144	1.073	-0.101					
137	WI-07-23	0	New UGA	7	5191	0.958	-0.107					
137	WI-07-23	0	New UGA	8	4383	1.019	-0.187					
137	WI-07-23	0	New UGA	9	3710	0.988	-0.166					
137	WI-07-23	0	New UGA	10	3138	0.999	-0.224					
137	WI-07-23	0	New UGA	11	2668	1.023	-0.193					
137	WI-07-23	0	New UGA	12	2252	0.981	-0.276					
137	WI-07-23	0	New UGA	13	1906	1	-0.32	8791	1.0	-0.1	0.1	0.1
138	WI-07-09	0	New UGA	4	6025	1.469	0.119					
138	WI-07-09	0	New UGA	5	4983	1.55	0.232					
138	WI-07-09	0	New UGA	6	4203	1.509	0.138					
138	WI-07-09	0	New UGA	7	3549	1.462	0.051					

138	WI-07-09	0	New UGA	8	2990	1.456	0.022					
138	WI-07-09	0	New UGA	9	2527	1.455	-0.109					
138	WI-07-09	0	New UGA	10	2143	1.488	-0.094					
138	WI-07-09	0	New UGA	11	1803	1.438	-0.172					
138	WI-07-09	0	New UGA	12	1527	1.454	-0.124					
138	WI-07-09	0	New UGA	13	1286	1.524	-0.228	6025	1.5	0.0	0.0	0.2
140	WI-07-05	0	New UGA	4	5913	2.203	0.827					
140	WI-07-05	0	New UGA	5	4861	2.142	0.862					
140	WI-07-05	0	New UGA	6	4087	2.148	0.884					
140	WI-07-05	0	New UGA	7	3438	2.158	0.78					
140	WI-07-05	0	New UGA	8	2901	2.142	0.801					
140	WI-07-05	0	New UGA	9	2440	2.159	0.795					
140	WI-07-05	0	New UGA	10	2063	2.191	0.674					
140	WI-07-05	0	New UGA	11	1733	2.12	0.634					
140	WI-07-05	0	New UGA	12	1460	2.165	0.601					
140	WI-07-05	0	New UGA	13	1230	2.164	0.616	5913	2.2	0.7	0.0	0.1
141	WI-07-19	0	New UGA	4	7453	0.863	0.185					
141	WI-07-19	0	New UGA	5	6145	0.818	0.202					
141	WI-07-19	0	New UGA	6	5187	0.805	0.15					
141	WI-07-19	0	New UGA	7	4384	0.782	0.142					
141	WI-07-19	0	New UGA	8	3705	0.813	0.149					
141	WI-07-19	0	New UGA	9	3134	0.784	0.142					
141	WI-07-19	0	New UGA	10	2651	0.803	0.142					
141	WI-07-19	0	New UGA	11	2243	0.885	-0.007					
141	WI-07-19	0	New UGA	12	1898	0.869	0.064					
141	WI-07-19	0	New UGA	13	1615	0.964	-0.025	7453	0.8	0.1	0.1	0.1
142	WI-07-10	0	New UGA	4	7445	1.07	0.235					
142	WI-07-10	0	New UGA	5	6167	1.071	0.242					
142	WI-07-10	0	New UGA	6	5200	1.039	0.155					
142	WI-07-10	0	New UGA	7	4373	0.98	0.117					
142	WI-07-10	0	New UGA	8	3682	0.993	0.155					
142	WI-07-10	0	New UGA	9	3100	0.971	0.057					
142	WI-07-10	0	New UGA	10	2610	0.995	0.088					
142	WI-07-10	0	New UGA	11	2201	0.976	-0.109					
142	WI-07-10	0	New UGA	12	1856	1.033	-0.021					

142	WI-07-10	0	New UGA	13	1565	0.997	-0.096	7445	1.0	0.1	0.0	0.1
143	WI-07-17	0	New UGA	4	5742	0.92	0.236					
143	WI-07-17	0	New UGA	5	4792	0.918	0.325					
143	WI-07-17	0	New UGA	6	4054	0.902	0.284					
143	WI-07-17	0	New UGA	7	3427	0.845	0.216					
143	WI-07-17	0	New UGA	8	2895	0.881	0.221					
143	WI-07-17	0	New UGA	9	2451	0.888	0.171					
143	WI-07-17	0	New UGA	10	2073	0.924	0.119					
143	WI-07-17	0	New UGA	11	1753	0.891	0.199					
143	WI-07-17	0	New UGA	12	1489	0.976	-0.029					
143	WI-07-17	0	New UGA	13	1257	1.008	0.38	5742	0.9	0.2	0.0	0.1
144	WI-07-08	0	New UGA	4	7538	2.242	0.679					
144	WI-07-08	0	New UGA	5	6227	2.214	0.73					
144	WI-07-08	0	New UGA	6	5257	2.174	0.65					
144	WI-07-08	0	New UGA	7	4436	2.136	0.603					
144	WI-07-08	0	New UGA	8	3745	2.132	0.621					
144	WI-07-08	0	New UGA	9	3166	2.137	0.584					
144	WI-07-08	0	New UGA	10	2672	2.188	0.569					
144	WI-07-08	0	New UGA	11	2259	2.214	0.551					
144	WI-07-08	0	New UGA	12	1910	2.238	0.465					
144	WI-07-08	0	New UGA	13	1624	2.276	0.423	7538	2.2	0.6	0.1	0.1
145	WI-07-25	0	New UGA	4	11315	1.075	0.043					
145	WI-07-25	0	New UGA	5	9325	0.941	-0.023					
145	WI-07-25	0	New UGA	6	7868	0.935	-0.079					
145	WI-07-25	0	New UGA	7	6630	0.875	-0.094					
145	WI-07-25	0	New UGA	8	5585	0.854	-0.106					
145	WI-07-25	0	New UGA	9	4714	0.857	-0.124					
145	WI-07-25	0	New UGA	10	3978	0.85	-0.141					
145	WI-07-25	0	New UGA	11	3362	0.837	-0.227					
145	WI-07-25	0	New UGA	12	2845	0.845	-0.2					
145	WI-07-25	0	New UGA	13	2405	0.919	-0.277	11315	0.9	-0.1	0.1	0.1

16610

0.13153 0.227728

Row	Identifier 1			
55	WI-03-31	9856	1.2	0.2
56	WI-03-20	9533	1.4	0.0
57	WI-02-48	8434	0.3	-0.3
58	WI-02-52	11033	0.2	-0.3
60	WI-03-02	5824	1.7	0.4
61	WI-03-12	7344	1.1	-0.4
62	WI-03-34	6849	1.2	0.2
63	WI-03-05	4660	2.1	-0.1
64	WI-03-15	6641	1.0	-0.4
65	WI-02-50	11066	0.3	-0.4
66	WI-02-49	11136	0.3	-0.4
68	WI-03-25	8863	1.0	0.2
69	WI-03-07	5900	1.7	-0.3
70	WI-03-17	12177	1.2	0.0
71	WI-03-14	4119	1.0	-0.7
72	WI-03-37	7679	1.1	0.1
73	WI-03-13	7299	1.3	-0.3
74	WI-02-47	8892	0.4	-0.3
76	WI-03-39	9897	1.2	0.2
77	WI-03-27	11217	1.2	0.1
78	WI-03-08	6756	1.5	-0.4
79	WI-08-10	7570	1.7	-0.1
80	WI-03-36	6149	1.1	0.0
81	WI-03-04	7067	2.2	0.3
82	WI-03-30	7586	1.2	-0.1
84	WI-03-19	9476	1.1	-0.2
85	WI-03-23	8166	1.3	0.0
86	WI-03-03	6954	2.1	0.2
87	WI-03-40	11017	1.1	0.1
88	WI-03-38	10687	1.2	0.2
89	WI-03-16	10744	1.0	-0.2
90	WI-02-40	10335	0.4	-0.2
92	WI-03-33	10141	1.2	0.1
93	WI-03-22	10691	1.4	0.0
94	WI-03-18	7160	1.1	-0.3
95	WI-03-11	5702	1.7	-0.1
96	WI-03-01	8444	1.3	0.0
97	WI-03-32	13301	1.2	0.2
98	WI-03-26	11272	1.1	0.2
100	WI-03-28	10852	1.2	0.1
101	WI-03-06	12036	2.0	0.2
102	WI-03-21	13765	1.4	-0.1
103	WI-02-51	11420	0.3	-0.3
104	WI-03-24	12045	1.2	0.2
105	WI-03-35	8458	1.2	0.0
106	WI-02-53	6433	0.3	-0.5
108	WI-03-09	8693	1.4	-0.5
109	WI-03-29	7859	1.2	-0.2

110	WI-03-61	10892	0.8	-0.8
111	WI-03-43	12742	1.2	0.0
112	WI-03-48	9529	1.0	-0.6
113	WI-03-53	13181	0.8	-0.3
114	WI-03-57	12059	1.2	-0.4
116	WI-03-54	11889	0.9	-0.5
117	WI-03-41	8916	1.1	-0.1
118	WI-03-62	16610	0.8	-0.6
119	WI-03-64	16273	0.2	-0.7
120	WI-03-42	7659	1.1	-0.1
121	WI-03-50	10977	1.0	-0.3
122	WI-03-51	11956	1.0	-0.4
124	WI-03-46	10717	0.9	-0.3
125	WI-03-56	12617	1.2	-0.5
126	WI-03-60	14950	0.9	-0.4
127	WI-03-52	8045	0.9	-0.5
128	WI-03-58	12404	1.2	-0.6
129	WI-03-63	10314	0.6	-0.8
130	WI-03-59	11896	1.1	-0.7
132	WI-03-47	12570	1.0	-0.2
133	WI-03-44	11865	1.1	-0.1
134	WI-03-55	12085	1.1	-0.5
135	WI-03-49	9129	1.0	-0.5
136	WI-03-45	12261	1.0	-0.1
137	WI-07-23	8791	1.0	-0.1
138	WI-07-09	6025	1.5	0.0
140	WI-07-05	5913	2.2	0.7
141	WI-07-19	7453	0.8	0.1
142	WI-07-10	7445	1.0	0.1
143	WI-07-17	5742	0.9	0.2
144	WI-07-08	7538	2.2	0.6
145	WI-07-25	11315	0.9	-0.1

55	WI-03-31	9856	1.2	0.2	-0.68097	0.9	1.3	1.2	0.107	0.280
56	WI-03-20	9533	1.4	0.0	-0.69335	0.6	1.5	0.9		
57	WI-02-48	8434	0.3	-0.3	-0.70573	0.4	0.4	0.7		
58	WI-02-52	11033	0.2	-0.3	-0.71811	0.4	0.3	0.7		
60	WI-03-02	5824	1.7	0.4	-0.74288	1.1	1.9	1.4		
61	WI-03-12	7344	1.1	-0.4	-0.75526	0.3	1.2	0.6		
62	WI-03-34	6849	1.2	0.2	-0.76764	1.0	1.3	1.2		
63	WI-03-05	4660	2.1	-0.1	-0.78002	0.7	2.2	1.0		
64	WI-03-15	6641	1.0	-0.4	-0.7924	0.4	1.1	0.7		
65	WI-02-50	11066	0.3	-0.4	-0.80478	0.4	0.4	0.7		
66	WI-02-49	11136	0.3	-0.4	-0.81716	0.4	0.4	0.7		
68	WI-03-25	8863	1.0	0.2	-0.84193	1.1	1.2	1.4		
69	WI-03-07	5900	1.7	-0.3	-0.85431	0.6	1.8	0.9		
70	WI-03-17	12177	1.2	0.0	-0.86669	0.8	1.3	1.1		
71	WI-03-14	4119	1.0	-0.7	-0.87907	0.2	1.1	0.5		
72	WI-03-37	7679	1.1	0.1	-0.89145	1.0	1.2	1.3		
73	WI-03-13	7299	1.3	-0.3	-0.90383	0.6	1.4	0.9		
74	WI-02-47	8892	0.4	-0.3	-0.91621	0.6	0.5	0.9		
76	WI-03-39	9897	1.2	0.2	-0.94098	1.2	1.3	1.4		
77	WI-03-27	11217	1.2	0.1	-0.95336	1.1	1.3	1.4		
78	WI-03-08	6756	1.5	-0.4	-0.96574	0.6	1.6	0.9		
79	WI-08-10	7570	1.7	-0.1	-0.97812	0.8	1.8	1.1		
80	WI-03-36	6149	1.1	0.0	-0.9905	1.0	1.2	1.3		
81	WI-03-04	7067	2.2	0.3	-1.00288	1.3	2.3	1.6		
82	WI-03-30	7586	1.2	-0.1	-1.01526	0.9	1.3	1.2		
84	WI-03-19	9476	1.1	-0.2	-1.04003	0.8	1.2	1.1		
85	WI-03-23	8166	1.3	0.0	-1.05241	1.1	1.4	1.3		
86	WI-03-03	6954	2.1	0.2	-1.06479	1.3	2.2	1.5		
87	WI-03-40	11017	1.1	0.1	-1.07717	1.2	1.2	1.5		
88	WI-03-38	10687	1.2	0.2	-1.08955	1.3	1.3	1.6		
89	WI-03-16	10744	1.0	-0.2	-1.10193	0.9	1.1	1.2		
90	WI-02-40	10335	0.4	-0.2	-1.11432	0.9	0.5	1.2		
92	WI-03-33	10141	1.2	0.1	-1.13908	1.3	1.3	1.6		
93	WI-03-22	10691	1.4	0.0	-1.15146	1.1	1.5	1.4		
94	WI-03-18	7160	1.1	-0.3	-1.16384	0.9	1.2	1.1		

95	WI-03-11	5702	1.7	-0.1	-1.17622	1.0	1.8	1.3
96	WI-03-01	8444	1.3	0.0	-1.1886	1.2	1.4	1.5
97	WI-03-32	13301	1.2	0.2	-1.20098	1.4	1.3	1.7
98	WI-03-26	11272	1.1	0.2	-1.21337	1.4	1.2	1.7
100	WI-03-28	10852	1.2	0.1	-1.23813	1.4	1.3	1.6
101	WI-03-06	12036	2.0	0.2	-1.25051	1.5	2.2	1.7
102	WI-03-21	13765	1.4	-0.1	-1.26289	1.1	1.5	1.4
103	WI-02-51	11420	0.3	-0.3	-1.27527	1.0	0.4	1.3
104	WI-03-24	12045	1.2	0.2	-1.28765	1.5	1.3	1.7
105	WI-03-35	8458	1.2	0.0	-1.30003	1.3	1.3	1.6
106	WI-02-53	6433	0.3	-0.5	-1.31242	0.8	0.4	1.1
108	WI-03-09	8693	1.4	-0.5	-1.33718	0.9	1.5	1.1
109	WI-03-29	7859	1.2	-0.2	-1.34956	1.2	1.3	1.5
110	WI-03-61	10892	0.8	-0.8	-1.36194	0.6	0.9	0.9
111	WI-03-43	12742	1.2	0.0	-1.37432	1.3	1.3	1.6
112	WI-03-48	9529	1.0	-0.6	-1.3867	0.8	1.1	1.1
113	WI-03-53	13181	0.8	-0.3	-1.39908	1.1	0.9	1.4
114	WI-03-57	12059	1.2	-0.4	-1.41147	1.0	1.3	1.3
116	WI-03-54	11889	0.9	-0.5	-1.43623	1.0	1.0	1.3
117	WI-03-41	8916	1.1	-0.1	-1.44861	1.4	1.2	1.7
118	WI-03-62	16610	0.8	-0.6	-1.46099	0.8	0.9	1.1
119	WI-03-64	16273	0.2	-0.7	-1.47337	0.8	0.3	1.1
120	WI-03-42	7659	1.1	-0.1	-1.48575	1.3	1.2	1.6
121	WI-03-50	10977	1.0	-0.3	-1.49813	1.2	1.1	1.5
122	WI-03-51	11956	1.0	-0.4	-1.51052	1.1	1.1	1.4
124	WI-03-46	10717	0.9	-0.3	-1.53528	1.2	1.0	1.5
125	WI-03-56	12617	1.2	-0.5	-1.54766	1.0	1.3	1.3
126	WI-03-60	14950	0.9	-0.4	-1.56004	1.1	1.1	1.4
127	WI-03-52	8045	0.9	-0.5	-1.57242	1.1	1.0	1.3
128	WI-03-58	12404	1.2	-0.6	-1.5848	1.0	1.3	1.3
129	WI-03-63	10314	0.6	-0.8	-1.59719	0.7	0.7	1.0
130	WI-03-59	11896	1.1	-0.7	-1.60957	0.9	1.2	1.2
132	WI-03-47	12570	1.0	-0.2	-1.63433	1.4	1.1	1.7
133	WI-03-44	11865	1.1	-0.1	-1.64671	1.5	1.2	1.8
134	WI-03-55	12085	1.1	-0.5	-1.65909	1.2	1.2	1.5

135	WI-03-49	9129	1.0	-0.5	-1.67147	1.1	1.1	1.4
136	WI-03-45	12261	1.0	-0.1	-1.68385	1.6	1.1	1.9
137	WI-07-23	8791	1.0	-0.1	-1.69624	1.6	1.1	1.8
138	WI-07-09	6025	1.5	0.0	-1.70862	1.7	1.6	2.0
140	WI-07-05	5913	2.2	0.7	-1.73338	2.5	2.3	2.8
141	WI-07-19	7453	0.8	0.1	-1.74576	1.9	0.9	2.1
142	WI-07-10	7445	1.0	0.1	-1.75814	1.8	1.1	2.1
143	WI-07-17	5742	0.9	0.2	-1.77052	2.0	1.0	2.3
144	WI-07-08	7538	2.2	0.6	-1.7829	2.4	2.3	2.7
145	WI-07-25	11315	0.9	-0.1	-1.79529	1.7	1.0	2.0

APPENDIX 2.1. Stable Carbon and Oxygen Isotope Data for Analysis

Sample Name	d13C	d18O	Shock line	Sample	Distance	Notes
CB-03-01	-0.8	0.3	0	CB-03	0	
CB-03-02	0.6	0.5	0	CB-03	1	
CB-03-03	1.5	0.1	0	CB-03	2	
CB-03-04	1.5	0	0	CB-03	3	
CB-03-05	1.4	0	1	CB-03	4	
CB-03-06	1.2	-0.3	0	CB-03	5	
CB-03-07	1.4	0.1	0	CB-03	6	
CB-03-08	1.1	0	0	CB-03	7	
CB-03-09	1.3	0	1	CB-03	8	
CB-03-10	1.3	-0.4	0	CB-03	9	
CB-03-11	1.1	-0.1	0	CB-03	10	
CB-03-12	1	-0.1	0	CB-03	11	
CB-03-13	0.6	-0.5	0	CB-03	12	
CB-03-14	1.2	-0.4	0	CB-03	13	
CB-03-15	0.4	-1	0	CB-03	14	
CB-03-16	0.4	-0.8	1	CB-03	15	
CB-03-17	0.2	-1.2	0	CB-03	16	
CB-03-18	0.1	-1.2	0	CB-03	17	
CB-03-19	0.1	-1.2	1	CB-03	18	
CB-03-20	0	-1.1	0	CB-03	19	
CB-03-21	-0.2	-1.3	0	CB-03	20	

CB-03-22	0	-1	0	CB-03	21	
CB-03-23	-0.1	-1.7	0	CB-03	22	
CB-03-24	0	-1.2	0	CB-03	23	
CB-03-25	-0.2	-1.8	0	CB-03	24	
CB-03-26	-0.1	-2.1	0	CB-03	25	
CB-03-27	-0.2	-1.6	0	CB-03	26	
CB-03-28	-0.2	-1	0	CB-03	27	
CB-03-29	-0.4	-2.5	1	CB-03	28	
CB-03-30	-0.5	-1.5	0	CB-03	29	
CB-03-31	-0.4	-1.3	0	CB-03	30	
CB-03-32	-0.4	-1.8	0	CB-03	31	
CB-03-33	-0.4	-1.6	0	CB-03	32	
CB-03-34	-0.4	-1.5	0	CB-03	33	
CB-03-35	-0.3	-1.7	0	CB-03	34	
CB-03-36	-0.4	-2.4	0	CB-03	35	
CB-03-37	-0.4	-2.6	0	CB-03	36	
CB-03-38	-0.4	-1.9	0	CB-03	37	
CB-03-39	-0.3	-1.5	0	CB-03	38	
CB-03-40	-0.3	-2.4	0	CB-03	39	
CB-03-41	-0.3	-2.3	0	CB-03	40	
CB-03-42	-0.1	-1.8	0	CB-03	41	
CB-03-43	0	-1.6	0	CB-03	42	
CB-03-44	0.1	-1.9	1	CB-03	43	

CB-03-45	0	-1.5	0	CB-03	44	
CB-03-46	0.1	-1.4	0	CB-03	45	
CB-03-47	0.1	-1.7	0	CB-03	46	
CB-03-48	0.3	-1.1	0	CB-03	47	
CB-03-49	0	-1.3	0	CB-03	48	
CB-03-50	0.1	-1.2	0	CB-03	49	
CB-03-51	0.1	-0.9	0	CB-03	50	
CB-03-52	0.2	-1.8	0	CB-03	51	
CB-03-53	-0.1	-1	1	CB-03	52	
CB-03-54	-0.6	-1.5	0	CB-03	53	
CB-03-55	-0.5	-1.9	0	CB-03	54	
WI-03-01	1.4	1.5	0	WI-03	0	
WI-03-02	1.9	1.4	0	WI-03	1	
WI-03-03	2.2	1.5	0	WI-03	2	
WI-03-04	2.3	1.6	1	WI-03	3	
WI-03-05	2.2	1	0	WI-03	4	
WI-03-06	2.2	1.7	0	WI-03	5	
WI-03-07	1.8	0.9	0	WI-03	6	
WI-03-08	1.6	0.9	0	WI-03	7	
WI-03-09	1.5	1.1	1	WI-03	8	
WI-03-10	1.8	1.1	0	WI-03	9	labeled WI-08-10 in raw data by mistake
WI-03-11	1.8	1.3	0	WI-03	10	
WI-03-12	1.2	0.6	0	WI-03	11	

WI-03-13	1.4	0.9	0	WI-03	12	
WI-03-14	1.1	0.5	0	WI-03	13	
WI-03-15	1.1	0.7	0	WI-03	14	
WI-03-16	1.1	1.2	0	WI-03	15	
WI-03-17	1.3	1.1	0	WI-03	16	
WI-03-18	1.2	1.1	1	WI-03	17	
WI-03-19	1.2	1.1	0	WI-03	18	
WI-03-20	1.5	0.9	0	WI-03	19	
WI-03-21	1.5	1.4	0	WI-03	20	
WI-03-22	1.5	1.4	0	WI-03	21	
WI-03-23	1.4	1.3	0	WI-03	22	
WI-03-24	1.3	1.7	0	WI-03	23	
WI-03-25	1.2	1.4	1	WI-03	24	
WI-03-26	1.2	1.7	0	WI-03	25	
WI-03-27	1.3	1.4	0	WI-03	26	
WI-03-28	1.3	1.6	0	WI-03	27	
WI-03-29	1.3	1.5	0	WI-03	28	
WI-03-30	1.3	1.2	0	WI-03	29	
WI-03-31	1.3	1.2	1	WI-03	30	
WI-03-32	1.3	1.7	1	WI-03	31	
WI-03-33	1.3	1.6	0	WI-03	32	
WI-03-34	1.3	1.2	0	WI-03	33	
WI-03-35	1.3	1.6	0	WI-03	34	

WI-03-36	1.2	1.3	0	WI-03	35	
WI-03-37	1.2	1.3	1	WI-03	36	
WI-03-38	1.3	1.6	0	WI-03	37	
WI-03-39	1.3	1.4	0	WI-03	38	
WI-03-40	1.2	1.5	0	WI-03	39	
WI-03-41	1.2	1.7	0	WI-03	40	
WI-03-42	1.2	1.6	0	WI-03	41	
WI-03-43	1.3	1.6	0	WI-03	42	
WI-03-44	1.2	1.8	0	WI-03	43	
WI-03-45	1.1	1.9	1	WI-03	44	
WI-03-46	1	1.5	0	WI-03	45	
WI-03-47	1.1	1.7	0	WI-03	46	
WI-03-48	1.1	1.1	0	WI-03	47	
WI-03-49	1.1	1.4	0	WI-03	48	
WI-03-50	1.1	1.5	0	WI-03	49	
WI-03-51	1.1	1.4	1	WI-03	50	
WI-03-52	1	1.3	0	WI-03	51	
WI-03-53	0.9	1.4	0	WI-03	52	
WI-03-54	1	1.3	0	WI-03	53	
WI-03-55	1.2	1.5	0	WI-03	54	
WI-03-56	1.3	1.3	0	WI-03	55	
WI-03-57	1.3	1.3	1	WI-03	56	
WI-03-58	1.3	1.3	0	WI-03	57	

WI-03-59	1.2	1.2	0	WI-03	58	
WI-03-60	1.1	1.4	0	WI-03	59	
WI-03-61	0.9	0.9	0	WI-03	60	
WI-03-62	0.9	1.1	0	WI-03	61	
WI-03-63	0.7	1	0	WI-03	62	
WI-03-64	0.3	1.1	0	WI-03	63	
CB-05-01	0	0.5	0	CB-05	0	
CB-05-02	0.6	0.8	0	CB-05	1	
CB-05-03	1.5	1.4	0	CB-05	2	
CB-05-04	1.7	1.4	1	CB-05	3	
CB-05-05	1.7	1.1	0	CB-05	4	
CB-05-06	0.8	0.5	1	CB-05	5	
CB-05-07	0.6	0.3	0	CB-05	6	
CB-05-08	0.5	0.5	0	CB-05	7	
CB-05-09	1	0.8	0	CB-05	8	
CB-05-10	0.4	0.4	0	CB-05	9	
CB-05-11	0.4	0.4	1	CB-05	10	
CB-05-12	0.1	0.3	0	CB-05	11	
CB-05-13	-0.2	0.1	0	CB-05	12	
CB-05-14	-0.1	0	0	CB-05	13	
CB-05-15	0.1	0.3	1	CB-05	14	
CB-05-16	0.2	0.3	0	CB-05	15	
CB-05-17	-0.1	0.3	0	CB-05	16	

CB-05-18	0	0.6	0	CB-05	17	
CB-05-19	0.1	0.5	0	CB-05	18	
CB-05-20	0.2	0.8	0	CB-05	19	
CB-05-21	0.1	0.3	0	CB-05	20	
CB-05-22	0.1	0.7	0	CB-05	21	
CB-05-23	0.3	0.3	0	CB-05	22	
CB-05-24	0	0.3	1	CB-05	23	
CB-05-25	0.2	0.1	0	CB-05	24	
CB-05-26	0.2	0.6	0	CB-05	25	
CB-05-27	0.3	0.3	0	CB-05	26	
CB-05-28	0.1	0.2	0	CB-05	27	
CB-05-29	0.2	0.2	0	CB-05	28	
CB-05-30	0.1	0.3	1	CB-05	29	
CB-05-31	-0.3	0	0	CB-05	30	
CB-05-32	-0.2	-0.3	0	CB-05	31	
CB-05-33	-0.4	-0.4	0	CB-05	32	
CB-04-01	1.1	0.7	0	CB-04	0	
CB-04-02	2.3	0.7	0	CB-04	1	
CB-04-03	2.1	0.3	0	CB-04	2	
CB-04-04	1.4	0.9	0	CB-04	3	
CB-04-05	1.1	-0.1	0	CB-04	4	
CB-04-06	0.2	-0.4	0	CB-04	5	
CB-04-07	0.3	-0.6	1	CB-04	6	

CB-04-08	0.6	-0.7	0	CB-04	7	
CB-04-09	-0.1	0	1	CB-04	8	Measured on Delta V Plus at 50 oC
CB-04-10	-0.3	-0.5	0	CB-04	9	Measured on July 11 2024
CB-04-11	-0.1	0.6	0	CB-04	10	
CB-04-12	-0.2	0.4	0	CB-04	11	
CB-04-13	-0.3	0.3	0	CB-04	12	
CB-04-14	-0.1	0.4	0	CB-04	13	
CB-04-15	0	0.5	0	CB-04	14	
CB-04-16	-0.1	0.6	0	CB-04	15	
CB-04-17	-0.1	0.4	0	CB-04	16	
CB-04-18	0	0.4	0	CB-04	17	
CB-04-19	-0.1	0.5	0	CB-04	18	
CB-04-20	-0.4	0.3	0	CB-04	19	
CB-04-21	0.1	0.6	0	CB-04	20	
CB-04-22	-0.4	0.1	0	CB-04	21	
CB-04-23	-0.4	0.5	0	CB-04	22	
CB-04-24	-0.3	0.2	0	CB-04	23	
CB-04-25	-0.3	0.2	0	CB-04	24	
CB-04-26	-0.4	0.3	0	CB-04	25	
CB-04-27	-0.4	0.2	0	CB-04	26	
CB-04-28	-0.8	0.2	0	CB-04	27	
CB-04-29	-0.7	0	0	CB-04	28	
CB-04-30	-0.5	-0.2	1	CB-04	29	

CB-04-31	0.1	-0.2	0	CB-04	30	
CB-04-32	-0.5	0	0	CB-04	31	
CB-04-33	-0.8	-0.1	1	CB-04	32	
CB-01-01	0.6	-0.5	0	CB-01	0	Measured on Delta V Plus at 50 oC
CB-01-02	1.1	-0.6	0	CB-01	1	Measured on July 1 2024
CB-01-03	1.7	-0.4	0	CB-01	2	
CB-01-04	1.6	-0.5	1	CB-01	3	
CB-01-05	1.6	-0.8	0	CB-01	4	
CB-01-06	1.7	-0.7	0	CB-01	5	
CB-01-07	1.3	-1.1	0	CB-01	6	
CB-01-08	1.3	-1.1	0	CB-01	7	
CB-01-09	1.3	-0.8	0	CB-01	8	
CB-01-10	1.2	-0.7	0	CB-01	9	
CB-01-11	1.1	-0.4	0	CB-01	10	
CB-01-12	0.4	-1.2	1	CB-01	11	
CB-01-13	0.3	-1.2	0	CB-01	12	
CB-01-14	0.4	-1	0	CB-01	13	
CB-01-15	0.3	-1	1	CB-01	14	
CB-01-16	0	-1.7	0	CB-01	15	
CB-01-17	-0.1	-1.6	0	CB-01	16	
CB-01-18	-0.1	-1	0	CB-01	17	
CB-01-19	0	-0.9	0	CB-01	18	
CB-01-20	-0.1	-0.9	0	CB-01	19	

CB-01-21	-0.2	-0.7	0	CB-01	20	
CB-01-22	-0.2	-1.3	0	CB-01	21	
CB-01-23	0	-0.5	0	CB-01	22	
CB-01-24	0	-0.8	0	CB-01	23	
CB-01-25	0	-0.9	0	CB-01	24	
CB-01-26	-0.1	-0.9	1	CB-01	25	
CB-01-27	-0.1	-1.1	0	CB-01	26	
CB-01-28	-0.1	-0.5	0	CB-01	27	
CB-01-29	-0.1	-1	0	CB-01	28	
CB-01-30	0	-0.7	0	CB-01	29	
CB-01-31	0.2	-0.2	0	CB-01	30	
CB-01-32	0.1	-0.6	0	CB-01	31	
CB-01-33	0.1	-0.8	0	CB-01	32	
CB-01-34	0.2	-0.6	0	CB-01	33	
CB-01-35	0	-1	0	CB-01	34	
CB-01-36	0	-0.9	1	CB-01	35	
CB-01-37	0	-1.1	0	CB-01	36	
CB-01-38	0.2	-0.5	0	CB-01	37	
CB-01-39	0.2	-1.2	0	CB-01	38	
CB-01-40	0.3	-0.3	0	CB-01	39	
CB-01-41	0.4	0	0	CB-01	40	
CB-01-42	0.3	-0.2	0	CB-01	41	
CB-01-43	0.2	-0.6	0	CB-01	42	

CB-01-44	0.2	-0.6	0	CB-01	43	
CB-01-45	0.2	-0.7	0	CB-01	44	
CB-01-46	0.1	-0.4	0	CB-01	45	
CB-01-47	0	-0.5	1	CB-01	46	
CB-01-48	0.2	-0.2	0	CB-01	47	
CB-01-49	-0.1	-0.7	0	CB-01	48	
CB-01-50	-0.4	-1.4	0	CB-01	49	
CB-01-51	-0.1	-1.1	0	CB-01	50	
CB-02-01	0.2	-0.7	0	CB-02	0	Samples "missing" will be measured in a
CB-02-02	1.2	-0.6	0	CB-02	1	
CB-02-03	1.3	-0.5	0	CB-02	2	
CB-02-04	1.1	-1.2	1	CB-02	3	
CB-02-05	0.8	-1	0	CB-02	4	
CB-02-06	1	-0.2	0	CB-02	5	Measured on Delta V Plus at 50 oC
CB-02-07	1.1	-0.2	0	CB-02	6	Measured on July 9 2024
CB-02-08	0.9	-0.2	1	CB-02	7	
CB-02-09	0.9	-0.2	0	CB-02	8	
CB-02-10	1.1	-0.3	0	CB-02	9	
CB-02-11	1.2	-0.4	0	CB-02	10	
CB-02-12	1.1	-0.7	0	CB-02	11	
CB-02-13	0.9	-0.8	0	CB-02	12	
CB-02-14	0.4	-1.2	0	CB-02	13	
CB-02-15	0.7	-0.5	1	CB-02	14	

CB-02-16	0.6	0	0	CB-02	15	
CB-02-17	0.3	-0.7	0	CB-02	16	
CB-02-18	0	-0.7	0	CB-02	17	
CB-02-19	0.5	-0.6	0	CB-02	18	
CB-02-20	-0.1	-1.4	1	CB-02	19	
CB-02-21	0.1	-1.6	0	CB-02	20	
CB-02-22	-0.1	-1.5	0	CB-02	21	
CB-02-23	0	-0.8	0	CB-02	22	
CB-02-24	-0.1	-0.7	0	CB-02	23	
CB-02-25	-0.3	-1.3	0	CB-02	24	
CB-02-26	-0.1	0.1	0	CB-02	25	
CB-02-27	-0.3	-1.2	0	CB-02	26	
CB-02-28	-0.5	-0.6	0	CB-02	27	
CB-02-29	-0.4	-0.5	0	CB-02	28	
CB-02-30	0	-0.4	1	CB-02	29	
CB-02-31	-0.6	-1.5	0	CB-02	30	
CB-02-32	0	-0.8	0	CB-02	31	
CB-02-33	0.1	-1	0	CB-02	32	
CB-02-34	0.1	-1.2	0	CB-02	33	
CB-02-35	0.2	-1.1	0	CB-02	34	
CB-02-36	0	-0.8	0	CB-02	35	
CB-02-37	-0.1	-0.9	0	CB-02	36	
CB-02-38	-0.1	-0.8	0	CB-02	37	

CB-02-39	0.1	-0.7	0	CB-02	38	
CB-02-40	0	-1.1	1	CB-02	39	
CB-02-41	0	-1.3	0	CB-02	40	
CB-02-42	-0.1	-1.3	0	CB-02	41	
CB-02-43	-0.2	-1.3	0	CB-02	42	
CB-02-44	-0.3	-1.3	0	CB-02	43	
CB-02-45	-0.4	-1.3	0	CB-02	44	
CB-02-46	-1.4	-0.9	0	CB-02	45	

[illegible]

A 2.2. Amplitude Data for Mean Calculations

Shell	AMPS
CB-01	0.7
CB-01	0.8
CB-01	0.7
CB-01	0.8
CB-01	0.8
CB-01	1.2
CB-01	1.2
CB-02	1
CB-02	1.2
CB-02	1
CB-02	1.1
CB-02	1.1
CB-02	0.6
CB-03	0.8
CB-03	1.1
CB-03	1.1
CB-03	1.5
CB-03	1.1
CB-03	0.8
CB-03	0.9
CB-04	0.4
CB-04	1.6
CB-04	1.1
CB-04	0.3
CB-04	0.3
CB-04	0.4
CB-05	1.1
CB-05	0.8
CB-05	0.3
CB-05	0.5
CB-05	0.4
CB-05	0.5
WI-03	0.6
WI-03	0.8
WI-03	0.8
WI-03	0.5
WI-03	0.8

A 2.3. Mean Amplitude and Paleotemperature Data

Shell	AMP	Temp 1‰	Temp 1.5‰	Temp 1.2‰	Temp -0.35‰
CB-01	1.7	22.06	24.49	23.03	15.67
CB-02	1.5	22.24	24.68	23.21	15.85
CB-03	2	23.95	26.41	24.93	17.48
CB-04	1.6	17.38	19.74	18.32	11.19
CB-05	1	16.33	18.67	17.26	10.19
WI-03	1	12.22	14.5	13.13	6.26

A 2.4. Stable Isotope Data Comparison with Zimmt et al., 2022

Site	Sample	d13C	d18O	Reference
CB	CB-01	0.3353	-0.7863	This study
CB	CB-02	0.2348	-0.8239	This study
CB	CB-03	0.1709	-1.1745	This study
CB	CB-04	0.0606	0.197	This study
CB	CB-05	0.309	0.4212	This study
CB	CB3TS.1	0.27	-1.22	Zimmt et al., 2022
CB	CB3TS.2	0.16	-1.21	Zimmt et al., 2022
CB	CB3TS.3	0.18	-1.15	Zimmt et al., 2022
CB	CB3TS.4	0.32	-0.99	Zimmt et al., 2022
CB	CB3TS.5	0.26	-1.13	Zimmt et al., 2022
CB	CB4TS.1	0.9	-1.1	Zimmt et al., 2022
CB	CB4TS.2	0.83	-0.9	Zimmt et al., 2022
CB	CB4TS.3	0.9	-0.79	Zimmt et al., 2022
CB	CB4TS.4	0.66	-1.14	Zimmt et al., 2022

APPENDIX A 3.1. Isotope Plot Code

```

setwd("/Users/grace/Documents/thesisData")
myData <- read.csv('isoData.csv', header=TRUE)

#CB-01 PLOT
dev.new(height=7, width=15)

plot(myData$Distance[myData$Sample == "CB-01"], myData$d180[myData$Sample == "CB-01"], type =
"n", las = 1, main = "Chesapeake Beach 01", xlab = "Distance from Umbo (mm)", ylab = "", ylim =
c(-2, 2))
abline(0,0, lwd = 2)
ylab_right <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")),side=4, line=1, cex=1.2, col
= "darkorange2")
ylab_left <- mtext(expression(paste(delta^{18}, "O (\u2030 VPDB)")),side=2, line=2, cex=1.2)

points(myData$Distance[myData$Sample == "CB-01"], myData$d180[myData$Sample == "CB-01"], type =
"b", pch = 16, cex = 1.2, lwd = 1.5)
points(myData$Distance[myData$Sample == "CB-01"], myData$d13C[myData$Sample == "CB-01"], type =
"b", col = "darkorange2", pch = 16, cex = 1.2, lwd = 1.5)
abline(v=myData$Distance[myData$Sample == "CB-01" & myData$Shock.line == "1"],lty=2, lwd=1,
col='grey')

rect(0, -1.2, 11, 1.8, col=rgb(red=0.255, green=0.252, blue=0, alpha=0.2), border=NA)

#CB-02 PLOT
dev.new(height=10, width=20)

plot(myData$Distance[myData$Sample == "CB-02"], myData$d180[myData$Sample == "CB-02"], type =
"n", las = 1, main = "Chesapeake Beach 02", xlab = "Distance from Umbo (mm)", ylab = "", ylim =
c(-2, 2))
abline(0,0, lwd = 2)
ylab_right <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")),side=4, line=1, cex=1.2, col
= "darkorange2")
ylab_left <- mtext(expression(paste(delta^{18}, "O (\u2030 VPDB)")),side=2, line=2, cex=1.2)

points(myData$d180[myData$Sample == "CB-02"], type = "b", pch = 16, cex = 1.2, lwd = 1.5)
points(myData$d13C[myData$Sample == "CB-02"], type = "b", col = "darkorange2", pch = 16, cex =

```

```

1.2, lwd = 1.5)
abline(v=myData$Distance[myData$Sample == "CB-02" & myData$Shock.line == "1"],lty=2, lwd=1,
col='grey')

rect(0, -1.2, 14, 1.6, col=rgb(red=0.255, green=0.252, blue=0, alpha=0.2), border=NA)

#CB-03 PLOT
dev.new(height=10, width=20)

plot(myData$Distance[myData$Sample == "CB-03"], myData$d180[myData$Sample == "CB-03"], type =
"n", las = 1, main = "Chesapeake Beach 03", xlab = "Distance from Umbo (mm)", ylab = "", ylim =
c(-2.5, 2))
abline(0,0, lwd = 2)
ylab_right <- mtext(expression(paste(delta^{13},"C (\u2030 VPDB)")),side=4, line=1, cex=1.2, col
= "darkorange2")
ylab_left <- mtext(expression(paste(delta^{18},"O (\u2030 VPDB)")),side=2, line=2, cex=1.2)

points(myData$d180[myData$Sample == "CB-03"], type = "b", pch = 16, cex = 1.2, lwd= 1.5)
points(myData$d13C[myData$Sample == "CB-03"], type = "b", col = "darkorange2", pch = 16, cex =
1.2, lwd= 1.5)
abline(v=myData$Distance[myData$Sample == "CB-03" & myData$Shock.line == "1"],lty=2, lwd=1,
col='grey')

rect(0, -1.2, 15, 1.6, col=rgb(red=0.255, green=0.252, blue=0, alpha=0.2), border=NA)

#CB-04 PLOT
dev.new(height=10, width=20)

plot(myData$Distance[myData$Sample == "CB-04"], myData$d180[myData$Sample == "CB-04"], type =
"n", las= 1, main = "Chesapeake Beach 04", xlab = "Distance from Umbo (mm)", ylab = "", ylim =
c(-2, 2.5))
abline(0,0, lwd = 2)
ylab_right <- mtext(expression(paste(delta^{13},"C (\u2030 VPDB)")),side=4, line=1, cex=1.2, col
= "darkorange2")
ylab_left <- mtext(expression(paste(delta^{18},"O (\u2030 VPDB)")),side=2, line=2, cex=1.2)

```

```

points(myData$d180[myData$Sample == "CB-04"], type = "b", pch = 16, cex= 1.2, lwd= 1.5)
points(myData$d13C[myData$Sample == "CB-04"], type = "b", col = "darkorange2", pch = 16, cex=
1.2, lwd= 1.5)
abline(v=myData$Distance[myData$Sample == "CB-04" & myData$Shock.line == "1"],lty=2, lwd=1,
col='grey')

rect(0, -1, 8, 2.4, col=rgb(red=0.255, green=0.252, blue=0, alpha=0.2), border=NA)

#CB-05 PLOT
dev.new(height=10, width=20)

plot(myData$Distance[myData$Sample == "CB-05"], myData$d180[myData$Sample == "CB-05"], type =
"n", las= 1, main = "Chesapeake Beach 05", xlab = "Distance from Umbo (mm)", ylab = "", ylim =
c(-2, 2))
abline(0,0, lwd = 2)
ylab_right <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")),side=4, line=1, cex=1.2, col
= "darkorange2")
ylab_left <- mtext(expression(paste(delta^{18}, "O (\u2030 VPDB)")),side=2, line=2, cex=1.2)

points(myData$d13C[myData$Sample == "CB-05"], type = "b", col = "darkorange2", pch = 16, cex=
1.2, lwd= 1.5)
points(myData$d180[myData$Sample == "CB-05"], type = "b", pch = 1, lwd= 1.5, cex= 1.2)
abline(v=myData$Distance[myData$Sample == "CB-05" & myData$Shock.line == "1"],lty=2, lwd=1,
col='grey')

rect(0, -0.5, 10, 1.8, col=rgb(red=0.255, green=0.252, blue=0, alpha=0.2), border=NA)

#WI-03 PLOT
dev.new(height=7, width=15)

plot(myData$Distance[myData$Sample == "WI-03"], myData$d180[myData$Sample == "WI-03"] , type =
"n", las= 1, main = "Willows 03", xlab = "Distance from Umbo (mm)", ylab = "" , ylim = c(-2,
2.5))
abline(0,0, lwd = 2)
ylab_right <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")),side=4, line=1, cex=1.2, col

```

```

= "darkorange2")
ylab_left <- mtext(expression(paste(delta^{18}, "0 (\u2030 VPDB)")), side=2, line=2, cex=1.2)

points(myData$Distance[myData$Sample == "WI-03"], myData$d13C[myData$Sample == "WI-03"], type =
"b", col = "darkorange2", pch = 16, cex= 1.2, lwd= 1.5)
points(myData$Distance[myData$Sample == "WI-03"], myData$d18O[myData$Sample == "WI-03"], type =
"b", pch = 1, lwd = 1.5, cex= 1.2)
abline(v=myData$Distance[myData$Sample == "WI-03" & myData$Shock.line == "1"], lty=2, lwd=1,
col='grey')

rect(0, 2.4, 11, 0.8, col=rgb(red=0.255, green=0.252, blue=0, alpha=0.2), border=NA)

#180 mean plot CB
mean180 <- c(TtBB01$estimate, TtBB02$estimate, TtBB03$estimate, TtBB04$estimate, TtBB05$estimate,
TtWI03$estimate)

dev.new(height=10, width=20)
plot(mean180, pch = 16, ylab = "", ylim= c(-2,2.5), xlab = "Chesapeake Beach and Willows", xaxt =
"n", las= 1, main = "Oxygen Isotope Mean Values", cex= 1.2)
ylab_left <- mtext(expression(paste(delta^{18}, "0 (\u2030 VPDB)")), side=2, line=2, cex=1.2)
samplernames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplernames)

arrows(x0= 1, y0= min(TtBB01$conf.int), x1= 1, y1= max(TtBB01$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(TtBB02$conf.int), x1= 2, y1= max(TtBB02$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 3, y0= min(TtBB03$conf.int), x1= 3, y1= max(TtBB03$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 4, y0= min(TtBB04$conf.int), x1= 4, y1= max(TtBB04$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 5, y0= min(TtBB05$conf.int), x1= 5, y1= max(TtBB05$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 6, y0= min(TtWI03$conf.int), x1= 6, y1= max(TtWI03$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)

```

```

#13C mean plot CB
mean13C <- c(tCBB01$estimate, tCBB02$estimate, tCBB03$estimate, tCBB04$estimate, tCBB05$estimate,
tCWI03$estimate)

dev.new(height=10, width=20)
plot(mean13C, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows", xaxt =
"n", col="darkorange2", las= 1, cex= 1.2, main = "Carbon Isotope Mean Values")
ylab_left <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")),side=2, line=2, cex=1.2,
col="darkorange2")
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplenames)

arrows(x0= 1, y0= min(tCBB01$conf.int), x1= 1, y1= max(tCBB01$conf.int), angle = 90, length =
0.1, code = 3, col="darkorange2", lwd = 1.5)
arrows(x0= 2, y0= min(tCBB02$conf.int), x1= 2, y1= max(tCBB02$conf.int), angle = 90, length =
0.1, code = 3, col="darkorange2", lwd = 1.5)
arrows(x0= 3, y0= min(tCBB03$conf.int), x1= 3, y1= max(tCBB03$conf.int), angle = 90, length =
0.1, code = 3, col= "darkorange2", lwd = 1.5)
arrows(x0= 4, y0= min(tCBB04$conf.int), x1= 4, y1= max(tCBB04$conf.int), angle = 90, length =
0.1, code = 3, col="darkorange2", lwd = 1.5)
arrows(x0= 5, y0= min(tCBB05$conf.int), x1= 5, y1= max(tCBB05$conf.int), angle = 90, length =
0.1, code = 3, col="darkorange2", lwd = 1.5)
arrows(x0= 6, y0= min(tCWI03$conf.int), x1= 6, y1= max(tCWI03$conf.int), angle = 90, length =
0.1, code = 3, col="darkorange2", lwd = 1.5)

#Ontogenetic mean (>= 15mm) baby
meanBaby <- c(ttSM01b$estimate, ttSM02b$estimate, ttSM03b$estimate, ttSM04b$estimate,
ttSM05b$estimate, ttSMWI03b$estimate)
OmeanBaby <- c(t.tempSM01b$estimate, t.tempSM02b$estimate, t.tempSM03b$estimate,
t.tempSM04b$estimate, t.tempSM05b$estimate, t.tempSMWI03b$estimate)

dev.new(height=10, width=20)
plot(meanBaby, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows", las =
1, cex= 1.2, xaxt = "n", main="Ontogenetic Juvenile", col = "cyan3")
ylab_left <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")),side=2, line=2, cex=1.2, col =

```

```

"cyan3")
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplenames)

arrows(x0= 1, y0= min(ttSM01b$conf.int), x1= 1, y1= max(ttSM01b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 2, y0= min(ttSM02b$conf.int), x1= 2, y1= max(ttSM02b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 3, y0= min(ttSM03b$conf.int), x1= 3, y1= max(ttSM03b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 4, y0= min(ttSM04b$conf.int), x1= 4, y1= max(ttSM04b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 5, y0= min(ttSM05b$conf.int), x1= 5, y1= max(ttSM05b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 6, y0= min(ttSMWI03b$conf.int), x1= 6, y1= max(ttSMWI03b$conf.int), angle = 90, length
= 0.1, code = 3, col = "cyan3", lwd = 1.5)

dev.new(height=10, width=20)
plot(0meanBaby, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows", xaxt =
"n", las= 1, cex= 1.2, main= "Ontogenetic Juvenile", col = "cyan3")
ylab_left <- mtext(expression(paste(delta^{18}, "O (\u2030 VPDB)")), side=2, line=2, cex=1.2, col =
"cyan3")
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplenames)

arrows(x0= 1, y0= min(t.tempSM01b$conf.int), x1= 1, y1= max(t.tempSM01b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 2, y0= min(t.tempSM02b$conf.int), x1= 2, y1= max(t.tempSM02b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 3, y0= min(t.tempSM03b$conf.int), x1= 3, y1= max(t.tempSM03b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 4, y0= min(t.tempSM04b$conf.int), x1= 4, y1= max(t.tempSM04b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 5, y0= min(t.tempSM05b$conf.int), x1= 5, y1= max(t.tempSM05b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 6, y0= min(t.tempSMWI03b$conf.int), x1= 6, y1= max(t.tempSMWI03b$conf.int), angle =

```

```
90, length = 0.1, code = 3, col = "cyan3", lwd = 1.5)
```

```
#Ontogenetic mean (>15 mm) adult
```

```
meanAdult <- c(ttSM01a$estimate, ttSM02a$estimate, ttSM03a$estimate, ttSM04a$estimate,
ttSM05a$estimate, ttSMWI03a$estimate)
```

```
OmeanAdult <- c(t.tempSM01a$estimate, t.tempSM02a$estimate, t.tempSM03a$estimate,
t.tempSM04a$estimate, t.tempSM05a$estimate, t.tempSMWI03a$estimate)
```

```
dev.new(height=10, width=20)
```

```
plot(meanAdult, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows", las=
1, cex= 1.2, xaxt = "n", main="Ontogenetic Adult")
```

```
ylab_left <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")), side=2, line=2, cex=1.2)
```

```
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
```

```
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplenames)
```

```
arrows(x0= 1, y0= min(ttSM01a$conf.int), x1= 1, y1= max(ttSM01a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
```

```
arrows(x0= 2, y0= min(ttSM02a$conf.int), x1= 2, y1= max(ttSM02a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
```

```
arrows(x0= 3, y0= min(ttSM03a$conf.int), x1= 3, y1= max(ttSM03a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
```

```
arrows(x0= 4, y0= min(ttSM04a$conf.int), x1= 4, y1= max(ttSM04a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
```

```
arrows(x0= 5, y0= min(ttSM05a$conf.int), x1= 5, y1= max(ttSM05a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
```

```
arrows(x0= 6, y0= min(ttSMWI03a$conf.int), x1= 6, y1= max(ttSMWI03a$conf.int), angle = 90, length
= 0.1, code = 3, lwd = 1.5)
```

```
dev.new(height=10, width=20)
```

```
plot(OmeanAdult, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows",
las=1, cex= 1.2, xaxt = "n", main="Ontogenetic Adult")
```

```
ylab_left <- mtext(expression(paste(delta^{18}, "O (\u2030 VPDB)")), side=2, line=2, cex=1.2)
```

```
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
```

```
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplenames)
```

```

arrows(x0= 1, y0= min(t.tempSM01a$conf.int), x1= 1, y1= max(t.tempSM01a$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(t.tempSM02a$conf.int), x1= 2, y1= max(t.tempSM02a$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)
arrows(x0= 3, y0= min(t.tempSM03a$conf.int), x1= 3, y1= max(t.tempSM03a$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)
arrows(x0= 4, y0= min(t.tempSM04a$conf.int), x1= 4, y1= max(t.tempSM04a$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)
arrows(x0= 5, y0= min(t.tempSM05a$conf.int), x1= 5, y1= max(t.tempSM05a$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)
arrows(x0= 6, y0= min(t.tempSMWI03a$conf.int), x1= 6, y1= max(t.tempSMWI03a$conf.int), angle =
90, length = 0.1, code = 3, lwd = 1.5)

```

```

#Ontogenetic baby and adult
dev.new(height=10, width=20)
plot(0meanAdult, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows", las=
1, xaxt = "n", main="Mean Oxygen Ontogenetic", type = "n")
ylab_left <- mtext(expression(paste(delta^{18}, "O (\u2030 VPDB)")), side=2, line=2, cex=1.2)
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1,2,3,4,5,6), labels = samplenames)

```

```

points(0meanAdult, pch = 16, cex= 1.2)
points(0meanBaby, pch = 16, col= "cyan3", cex= 1.2)

```

```

arrows(x0= 1, y0= min(t.tempSM01a$conf.int), x1= 1, y1= max(t.tempSM01a$conf.int), angle = 90,
length = 0.1, code = 3, lwd=1.5)
arrows(x0= 2, y0= min(t.tempSM02a$conf.int), x1= 2, y1= max(t.tempSM02a$conf.int), angle = 90,
length = 0.1, code = 3, lwd=1.5)
arrows(x0= 3, y0= min(t.tempSM03a$conf.int), x1= 3, y1= max(t.tempSM03a$conf.int), angle = 90,
length = 0.1, code = 3, lwd=1.5)
arrows(x0= 4, y0= min(t.tempSM04a$conf.int), x1= 4, y1= max(t.tempSM04a$conf.int), angle = 90,
length = 0.1, code = 3, lwd=1.5)
arrows(x0= 5, y0= min(t.tempSM05a$conf.int), x1= 5, y1= max(t.tempSM05a$conf.int), angle = 90,
length = 0.1, code = 3, lwd=1.5)
arrows(x0= 6, y0= min(t.tempSMWI03a$conf.int), x1= 6, y1= max(t.tempSMWI03a$conf.int), angle =
90, length = 0.1, code = 3, lwd=1.5)

```



```

arrows(x0= 1, y0= min(t.tempSM01b$conf.int), x1= 1, y1= max(t.tempSM01b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd=1.5)
arrows(x0= 2, y0= min(t.tempSM02b$conf.int), x1= 2, y1= max(t.tempSM02b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd=1.5)
arrows(x0= 3, y0= min(t.tempSM03b$conf.int), x1= 3, y1= max(t.tempSM03b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd=1.5)
arrows(x0= 4, y0= min(t.tempSM04b$conf.int), x1= 4, y1= max(t.tempSM04b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd=1.5)
arrows(x0= 5, y0= min(t.tempSM05b$conf.int), x1= 5, y1= max(t.tempSM05b$conf.int), angle = 90,
length = 0.1, code = 3, col = "cyan3", lwd=1.5)
arrows(x0= 6, y0= min(t.tempSMWI03b$conf.int), x1= 6, y1= max(t.tempSMWI03b$conf.int), angle =
90, length = 0.1, code = 3, col = "cyan3", lwd=1.5)

```

```

dev.new(height=10, width=20)
plot(meanAdult, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows", las=
1, xaxt = "n", main="Mean Ontogenetic Carbon", type = "n")
ylab_left <- mtext(expression(paste(delta^{13}, "C (\u2030 VPDB)")), side=2, line=2, cex=1.2)
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1,2,3,4,5,6), labels = samplenames)

```

```

points(meanAdult, pch = 16, cex=1.2)
points(meanBaby, pch = 16, col= "cyan3", cex= 1.2)

```

```

arrows(x0= 1, y0= min(ttSM01a$conf.int), x1= 1, y1= max(ttSM01a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(ttSM02a$conf.int), x1= 2, y1= max(ttSM02a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 3, y0= min(ttSM03a$conf.int), x1= 3, y1= max(ttSM03a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 4, y0= min(ttSM04a$conf.int), x1= 4, y1= max(ttSM04a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 5, y0= min(ttSM05a$conf.int), x1= 5, y1= max(ttSM05a$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 6, y0= min(ttSMWI03a$conf.int), x1= 6, y1= max(ttSMWI03a$conf.int), angle = 90, length
= 0.1, code = 3, lwd = 1.5)

```

```

arrows(x0= 1, y0= min(ttSM01b$conf.int), x1= 1, y1= max(ttSM01b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 2, y0= min(ttSM02b$conf.int), x1= 2, y1= max(ttSM02b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 3, y0= min(ttSM03b$conf.int), x1= 3, y1= max(ttSM03b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 4, y0= min(ttSM04b$conf.int), x1= 4, y1= max(ttSM04b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 5, y0= min(ttSM05b$conf.int), x1= 5, y1= max(ttSM05b$conf.int), angle = 90, length =
0.1, code = 3, col = "cyan3", lwd = 1.5)
arrows(x0= 6, y0= min(ttSMWI03b$conf.int), x1= 6, y1= max(ttSMWI03b$conf.int), angle = 90, length
= 0.1, code = 3, col = "cyan3", lwd = 1.5)

```

A 3.2. Mean Analysis and Ontogenetic Analysis

```

setwd("/Users/grace/Documents/thesisData")
myData <- read.csv('isoData.csv', header=TRUE)

#CB-01
TtBB01 <- t.test(myData$d180[myData$Sample == "CB-01"])
TtBB01$conf.int
TtBB01$estimate

#13C
SM01b <- myData$Sample == "CB-01" & myData$Distance <= 15
ttSM01b <- t.test(myData$d13C[SM01b])
ttSM01b$estimate
ttSM01b$conf.int

SM01a <- myData$Sample == "CB-01" & myData$Distance > 15
ttSM01a <- t.test(myData$d13C[SM01a])
ttSM01a$estimate
ttSM01a$conf.int

#180
tempSM01b <- myData$Sample == "CB-01" & myData$Distance <= 15
t.tempSM01b <- t.test(myData$d180[tempSM01b])
t.tempSM01b$estimate
t.tempSM01b$conf.int

tempSM01a <- myData$Sample == "CB-01" & myData$Distance > 15
t.tempSM01a <- t.test(myData$d180[tempSM01a])
t.tempSM01a$estimate
t.tempSM01a$conf.int

#CB-02
TtBB02 <- t.test(myData$d180[myData$Sample == "CB-02"])
TtBB02$estimate
TtBB02$conf.int

```

```
SM02b <- myData$Sample == "CB-02" & myData$Distance <= 15
ttSM02b <- t.test(myData$d13C[SM02b])
ttSM02b$estimate
ttSM02b$conf.int
```

```
SM02a <- myData$Sample == "CB-02" & myData$Distance > 15
ttSM02a <- t.test(myData$d13C[SM02a])
ttSM02a$estimate
ttSM02a$conf.int
```

```
#180
```

```
tempSM02b <- myData$Sample == "CB-02" & myData$Distance <= 15
t.tempSM02b <- t.test(myData$d180[tempSM02b])
t.tempSM02b$estimate
t.tempSM02b$conf.int
```

```
tempSM02a <- myData$Sample == "CB-02" & myData$Distance > 15
t.tempSM02a <- t.test(myData$d180[tempSM02a])
t.tempSM02a$estimate
t.tempSM02a$conf.int
```

```
#CB-03
```

```
TtBB03 <- t.test(myData$d180[myData$Sample == "CB-03"])
TtBB03$estimate
TtBB03$conf.int
```

```
#13C
```

```
SM03b <- myData$Sample == "CB-03" & myData$Distance <= 15
ttSM03b <- t.test(myData$d13C[SM03b])
ttSM03b$estimate
ttSM03b$conf.int
```

```
SM03a <- myData$Sample == "CB-03" & myData$Distance > 15
ttSM03a <- t.test(myData$d13C[SM03a])
ttSM03a$estimate
ttSM03a$conf.int
```

```

#180
tempSM03b <- myData$Sample == "CB-03" & myData$Distance <= 15
t.tempSM03b <- t.test(myData$d180[tempSM03b])
t.tempSM03b$estimate
t.tempSM03b$conf.int

tempSM03a <- myData$Sample == "CB-03" & myData$Distance > 15
t.tempSM03a <- t.test(myData$d180[tempSM03a])
t.tempSM03a$estimate
t.tempSM03a$conf.int

#CB-04
TtBB04 <- t.test(myData$d180[myData$Sample == "CB-04"])
TtBB04$estimate
TtBB04$conf.int

#13C
SM04b <- myData$Sample == "CB-04" & myData$Distance <= 15
ttSM04b <- t.test(myData$d13C[SM04b])
ttSM04b$estimate
ttSM04b$conf.int

SM04a <- myData$Sample == "CB-04" & myData$Distance > 15
ttSM04a <- t.test(myData$d13C[SM04a])
ttSM04a$estimate
ttSM04a$conf.int

#180
tempSM04b <- myData$Sample == "CB-04" & myData$Distance <= 15
t.tempSM04b <- t.test(myData$d180[tempSM04b])
t.tempSM04b$estimate
t.tempSM04b$conf.int

tempSM04a <- myData$Sample == "CB-04" & myData$Distance > 15
t.tempSM04a <- t.test(myData$d180[tempSM04a])
t.tempSM04a$estimate

```

```
t.tempSM04a$conf.int
```

```
#CB-05
```

```
TtBB05 <- t.test(myData$d180[myData$Sample == "CB-05"])
```

```
TtBB05$estimate
```

```
TtBB05$conf.int
```

```
#13C
```

```
SM05b <- myData$Sample == "CB-05" & myData$Distance <= 15
```

```
ttSM05b <- t.test(myData$d13C[SM05b])
```

```
ttSM05b$estimate
```

```
ttSM05b$conf.int
```

```
SM05a <- myData$Sample == "CB-05" & myData$Distance > 15
```

```
ttSM05a <- t.test(myData$d13C[SM05a])
```

```
ttSM05a$estimate
```

```
ttSM05a$conf.int
```

```
#180
```

```
tempSM05b <- myData$Sample == "CB-05" & myData$Distance <= 15
```

```
t.tempSM05b <- t.test(myData$d180[tempSM05b])
```

```
t.tempSM05b$estimate
```

```
t.tempSM05b$conf.int
```

```
tempSM05a <- myData$Sample == "CB-05" & myData$Distance > 15
```

```
t.tempSM05a <- t.test(myData$d180[tempSM05a])
```

```
t.tempSM05a$estimate
```

```
t.tempSM05a$conf.int
```

```
#WI-03
```

```
TtWI03 <- t.test(myData$d180[myData$Sample == "WI-03"])
```

```
TtWI03$estimate
```

```
TtWI03$conf.int
```

```
#13C
```

```
SMWI03b <- myData$Sample == "WI-03" & myData$Distance <= 15
```

```
ttSMWI03b <- t.test(myData$d13C[SMWI03b])
ttSMWI03b$estimate
ttSMWI03b$conf.int
```

```
SMWI03a <- myData$Sample == "WI-03" & myData$Distance > 15
ttSMWI03a <- t.test(myData$d13C[SMWI03a])
ttSMWI03a$estimate
ttSMWI03a$conf.int
```

```
#180
tempSMWI03b <- myData$Sample == "WI-03" & myData$Distance <= 15
t.tempSMWI03b <- t.test(myData$d180[tempSMWI03b])
t.tempSMWI03b$estimate
t.tempSMWI03b$conf.int
```

```
tempSMWI03a <- myData$Sample == "WI-03" & myData$Distance > 15
t.tempSMWI03a <- t.test(myData$d180[tempSMWI03a])
t.tempSMWI03a$estimate
t.tempSMWI03a$conf.int
```

```
#pooled warm and cool
warmCB <- mean(c(myData$d180[myData$Sample == "CB-01"], myData$d180[myData$Sample == "CB-02"],
myData$d180[myData$Sample == "CB-03"]))
coolCB <- mean(c(myData$d180[myData$Sample == "CB-04"], myData$d180[myData$Sample == "CB-05"]))
meanWI <- mean(myData$d180[myData$Sample == "WI-03"])
```

A 3.3. Mean Carbon Analysis

```
setwd("/Users/grace/Documents/thesisData")
myData <- read.csv('isoData.csv', header=TRUE)

#CB-01
tCBB01 <- t.test(myData$d13C[myData$Sample == "CB-01"])
tCBB01$estimate
tCBB01$conf.int

#CB-02
tCBB02 <- t.test(myData$d13C[myData$Sample == "CB-02"])
tCBB02$estimate
tCBB02$conf.int

#CB-03
tCBB03 <- t.test(myData$d13C[myData$Sample == "CB-03"])
tCBB03$estimate
tCBB03$conf.int

#CB-04
tCBB04 <- t.test(myData$d13C[myData$Sample == "CB-04"])
tCBB04$estimate
tCBB04$conf.int

#CB-05
tCBB05 <- t.test(myData$d13C[myData$Sample == "CB-05"])
tCBB05$estimate
tCBB05$conf.int

#WI-03
tCWI03 <- t.test(myData$d13C[myData$Sample == "WI-03"])
tCWI03$estimate
tCWI03$conf.int
```


A 3.4 Mean Amplitude

```

setwd("/Users/grace/Documents")
AMP <- read.csv('meanAMP.csv', header=TRUE, sep = ",")

#t.tests
amBB01 <- t.test(AMP$AMPS[AMP$Shell == "CB-01"])
amBB01$conf.int
amBB01$estimate

amBB02 <- t.test(AMP$AMPS[AMP$Shell == "CB-02"])
amBB02$conf.int
amBB02$estimate

amBB03 <- t.test(AMP$AMPS[AMP$Shell == "CB-03"])
amBB03$conf.int
amBB03$estimate

amBB04 <- t.test(AMP$AMPS[AMP$Shell == "CB-04"])
amBB04$conf.int
amBB04$estimate

amBB05 <- t.test(AMP$AMPS[AMP$Shell == "CB-05"])
amBB05$conf.int
amBB05$estimate

amWI03 <- t.test(AMP$AMPS[AMP$Shell == "WI-03"])
amWI03$conf.int
amWI03$estimate

#mean plot
meanAMPS <- c(amBB01$estimate, amBB02$estimate, amBB03$estimate, amBB04$estimate,
amBB05$estimate, amWI03$estimate)

```

```

dev.new(height=10, width=20)
plot(meanAMPS, pch = 16, ylab = "", ylim= c(-2,2), xlab = "Chesapeake Beach and Willows",
xaxt = "n", las = 1, cex = 1.2, main = "Mean Amplitude")
ylab_left <- mtext(expression(paste(delta^{18}, "0 (\u2030 VPDB)")),side=2, line=2, cex=1.2)
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplenames)

arrows(x0= 1, y0= min(amBB01$conf.int), x1= 1, y1= max(amBB01$conf.int), angle = 90, length
= 0.1, code = 3)
arrows(x0= 2, y0= min(amBB02$conf.int), x1= 2, y1= max(amBB02$conf.int), angle = 90, length
= 0.1, code = 3)
arrows(x0= 3, y0= min(amBB03$conf.int), x1= 3, y1= max(amBB03$conf.int), angle = 90, length
= 0.1, code = 3)
arrows(x0= 4, y0= min(amBB04$conf.int), x1= 4, y1= max(amBB04$conf.int), angle = 90, length
= 0.1, code = 3)
arrows(x0= 5, y0= min(amBB05$conf.int), x1= 5, y1= max(amBB05$conf.int), angle = 90, length
= 0.1, code = 3)
arrows(x0= 6, y0= min(amWI03$conf.int), x1= 6, y1= max(amWI03$conf.int), angle = 90, length
= 0.1, code = 3)

```

A 3.5 Paleotemperature

```

setwd("/Users/grace/Documents")
AMPS <- read.csv('AMPS.csv', header=TRUE, sep = ",")

dev.new()
plot(AMPS$AMP, pch = 16, ylab = "", ylim= c(0,2.5), xlab = "Sample", xaxt = "n", main = "Max
Amplitude", cex = 1.2, las = 1)
ylab_left <- mtext(expression(paste(delta^{18}, "O (\u2030 VPDB)")), side=2, line=2, cex=1)
samplenames <- c("CB-01", "CB-02", "CB-03", "CB-04", "CB-05", "WI-03")
axis(1, at = c(1, 2, 3, 4, 5, 6), labels = samplenames)

#Temperature
meanCB1 <- t.test(AMPS$X1)
meanCB1$estimate
meanCB1$conf.int

meanCB1.5 <- t.test(AMPS$X1.5)
meanCB1.5$estimate
meanCB1.5$conf.int

meanCB1.2 <- t.test(AMPS$X1.2)
meanCB1.2$estimate
meanCB1.2$conf.int

meanCB0.35 <- t.test(AMPS$X.0.35)
meanCB0.35$estimate
meanCB0.35$conf.int

dev.new()
plot(meanCB1$estimate, pch = 16, ylab = "", ylim= c(0,30), xlab = "SMOW (\u2030 VPDB)", las = 1,
main = "Site Mean Temperature", type = "n", xlim = c(-0.5, 2))
ylab_left <- mtext(expression(paste("Temperature (", "\u00b0", "C)", sep="")), side=2, line=2,
cex=1.2)

```

```
points(-0.35, meanCB0.35$estimate, pch = 16, cex= 1.2)
points(-0.35, AMPS$X.0.35[AMPS$Shell=="WI-03"], pch = 17, cex = 1.2)
points(1, meanCB1$estimate, pch = 16, cex = 1.2)
```

```
points(1, AMPS$X1[AMPS$Shell=="WI-03"], pch = 17, cex = 1.2)
points(1.2, meanCB1.2$estimate, pch = 16, cex = 1.2)
points(1.2, AMPS$X1.2[AMPS$Shell=="WI-03"], pch = 17, cex = 1.2)
points(1.5, meanCB1.5$estimate, pch= 16, cex = 1.2)
points(1.5, AMPS$X1.5[AMPS$Shell=="WI-03"], pch= 17, cex = 1.2)
```

```
arrows(x0= -0.35, y0= min(meanCB0.35$conf.int), x1= -0.35, y1= max(meanCB0.35$conf.int), angle
= 90, length = 0.1, code = 3)
arrows(x0= 1, y0= min(meanCB1$conf.int), x1= 1, y1= max(meanCB1$conf.int), angle = 90, length =
0.1, code = 3)
arrows(x0= 1.2, y0= min(meanCB1.2$conf.int), x1= 1.2, y1= max(meanCB1.2$conf.int), angle = 90,
length = 0.1, code = 3)
arrows(x0= 1.5, y0= min(meanCB1.5$conf.int), x1= 1.5, y1= max(meanCB1.5$conf.int), angle = 90,
length = 0.1, code = 3)
```

A 3.6 Isotope Data Comparison

```

setwd("/Users/grace/Documents")
compData <- read.csv('compZimmt.csv', header=TRUE, sep = ",")

burnsMean <- t.test(compData$d180[compData$Reference == "This study"])
burnsMean$conf.int
burnsMean$estimate
burnsMeanC <- t.test(compData$d13C[compData$Reference == "This study"])
burnsMeanC$conf.int
burnsMeanC$estimate

zimmtMean <- t.test(compData$d180[compData$Reference == "Zimmt et al., 2022"])
zimmtMean$conf.int
zimmtMean$estimate
zimmtMeanC <- t.test(compData$d13C[compData$Reference == "Zimmt et al., 2022"])
zimmtMeanC$conf.int
zimmtMeanC$estimate

warmMean <- t.test(compData$d180[compData$Sample == "CB-01" | compData$Sample == "CB-02" |
compData$Sample == "CB-03"])
warmMean$conf.int
warmMean$estimate

warmMeanC <- t.test(compData$d13C[compData$Sample == "CB-01" | compData$Sample == "CB-02" |
compData$Sample == "CB-03"])
warmMeanC$conf.int
warmMeanC$estimate

coolMean <- mean(c(compData$d180[compData$Sample == "CB-04"], compData$d180[compData$Sample ==
"CB-05"]))
coolMeanC <- mean(c(compData$d13C[compData$Sample == "CB-04"], compData$d13C[compData$Sample
== "CB-05"]))

```

APPENDIX B1.1. Raw Morphometric Data

Species	Specimen #	Valve	Inflation	Shell Height	Shell Width	Growth Cess
C.coccy	212-J	Top	6.48	38.90	34.13	NA
C.coccy	CMM-I-825	Top	4.80	31.36	31.79	NA
C.coccy	727-12	Top	4.74	26.60	25.26	3
C.coccy	12J	Top	2.95	29.86	29.01	NA
C.coccy	12J	Bottom	4.96	31.46	29.04	NA
C.coccy		0 Top	2.94	24.80	22.78	1
C.coccy	12Ja	Top	NA	40.16	38.90	3
C.coccy	12Jb	Bottom	NA	39.59	37.90	3
C.coccy	12J	Bottom	3.20	33.31	30.48	NA
C.coccy		0 Top	3.36	20.49	18.67	NA
C.coccy		0 Bottom	3.13	20.39	18.87	2
C.coccy	CMM-I-2251	Top	5.59	41.40	40.61	7
C.coccy	CMM-I-2251	Top	7.76	45.77	45.95	3
C.coccy	CMM-I-578	Top	7.64	41.84	39.75	4
C.coccy		0 Top	3.90	18.88	18.03	1
C.sp	CMM-2379	NA	7.56	36.50	32.82	4
C.coccy	CMM-2379	Bottom	3.70	30.25	28.03	5
C.coccy	CMM-2379	Top	4.04	21.42	19.23	3
C.coccy	CMM-2379	Top	4.71	23.56	19.73	NA
C.coccy	CMM-2379	Top	4.40	18.66	16.90	5
C.coccy	CMM-2379	NA	2.43	16.73	15.69	6
C.coccy	CMM-2379	NA	3.39	15.16	13.22	NA
C.coccy	CMM-2379	Top	2.44	13.16	12.11	NA
C.coccy	CMM-2379	Top	NA	7.87	6.49	NA
C.coccy	CMM-2379	NA	NA	9.58	8.45	NA
C.coccy	CMM-I-6131	Top	NA	27.48	25.27	
C.coccy	CMM-I-6131	Top	31.29	28.60	NA	
C.coccy	CMM-I-6131	NA	37.67	36.84	NA	
C.coccy	CMM-I-6131	Bottom	NA	26.81	25.56	NA

C.coccy	CMM-I-6131	Top	NA		16.76	15.13	2
C.coccy	CMM-I-6131	Bottom	NA		19.76	19.68	2
C.coccy	CMM-I-6131	Top	NA		19.48	18.03	3
C.coccy	CMM-I-6131	Bottom	NA		20.83	19.69 NA	
C.coccy	CMM-I-6131	Bottom	NA		21.36	20.18 NA	
C.coccy	CMM-I-6131	Top	NA		21.01	19.69 NA	
C.coccy	CMM-I-6131	Bottom	NA		15.78	14.42 NA	
C.coccy	CMM-I-6131	Bottom	NA		10.90	10.98	2
C.sp	CMM-I-1288	Bottom		7.86	33.33	32.84	5
C.sp	CMM-I-1541	Top		4.39	27.68	25.87 NA	
C.coccy	CMM-I-2627	Bottom		2.75	26.03	23.38 NA	
C.coccy	CMM-I-2627	Bottom		2.55	20.88	18.69 NA	
C.coccy	CMM-I-2812	Top		4.18	31.60	30.99	5
C.coccy	CMM-I-2812	Bottom		3.70	30.43	27.53	6
C.sp	CMM-I-2812	Top		6.89	32.62	30.34	6
C.coccy	CMM-I-2812	NA	NA		8.12	6.78 NA	
C.covepointe	CMM-I-1790	Bottom		3.93	43.36	43.88	2
C.coccy	CMM-I-2812	Top		6.75	32.23	30.77 NA	
C.coccy	CMM-I-2812	NA		4.48	31.61	31.08 NA	
C.coccy	CMM-I-2812	Bottom		3.51	30.48	27.40 NA	
C.coccy	CMM-I-3487	Bottom		5.21	47.65	45.47	1
C.coccy	CMM-I-3487	Top		6.19	33.36	32.12 4?	
C.coccy	CMM-I-3487	Top		5.50	24.69	22.65	3
C.coccy	CMM-I-3487	Top		5.29	27.14	25.04 1?	
C.coccy	CMM-I-3487	NA		2.80	20.56	19.98 1?	
C.coccy	CMM-I-3487	Top	NA		20.11	18.58 NA	
C.coccy	CMM-I-3487	NA		2.77	20.92	19.44	3
C.coccy	CMM-I-3487	Bottom		2.65	16.91	15.84	1
C.coccy	CMM-I-3487	Bottom		2.16	17.48	16.03	1
C.coccy	CMM-I-3487	Bottom		2.23	11.38	10.43 NA	
C.coccy	CMM-I-3487	Bottom		1.67	12.75	11.61 2?	

C.coccy	CMM-I-3487	NA	2.57	12.51	11.14 3?	
C.coccy	CMM-I-3568	Bottom	4.77	34.81	33.49	2
C.coccy	CMM-I-3568	Bottom	4.86	34.57	32.94	2
C.coccy	CMM-I-3568	Bottom	3.13	31.20	30.14 NA	
C.coccy	CMM-I-3487	Top	5.30	29.08	28.34	2
C.coccy	CMM-I-3487	NA	2.97	24.58	22.92	2
C.coccy	CMM-I-3487	NA	2.61	23.74	21.07 4?	
C.coccy	CMM-I-4535	Bottom	3.99	28.57	26.43 NA	
C.coccy	CMM-I-4537	Top	2.20	13.53	11.23	1
C.coccy	CMM-I-4536	Bottom	1.71	12.50	10.88 2?	
C.coccy	CMM-I-2689	Bottom	NA	49.31	48.51 NA	
C.coccy	CMM-I-2689	Top	NA	49.16	48.78 NA	
C.coccy	CMM-I-2902	NA	3.60	27.45	25.40 NA	
C.coccy	CMM-I-2902	Bottom	2.53	16.58	15.17	1
C.coccy	CMM-I-3537	Bottom	4.17	35.28	34.66	2
C.coccy	CMM-I-3537	Bottom	2.94	22.49	20.45	1
C.sp	CMM-I-576	Top	7.89	34.09	33.70 NA	
C.coccy	CMM-I-2610	Bottom	5.02	42.28	42.30	2
C.coccy	CMM-I-2610	Bottom	4.85	41.48	41.16	3
C.coccy	CMM-I-2610	Top	6.17	42.85	42.12	2
C.coccy	CMM-I-2610	Bottom	3.54	29.39	28.16	2
C.coccy	CMM-I-2610	Bottom	4.26	29.59	28.23	2
C.coccy	CMM-I-2610	Bottom	2.57	27.65	25.41 4?	
C.coccy	CMM-I-2610	Bottom	2.93	23.49	21.33 NA	
C.coccy	CMM-I-2610	Bottom	3.09	23.05	19.88	1
C.coccy	CMM-I-2610	NA	NA	32.89	30.92	1
C.coccy	CMM-I-2495	Bottom	3.64	27.52	25.14 NA	
C.coccy	CMM-I-2495	Bottom	NA	13.79	12.24 NA	
C.coccy	CMM-I-2500	Top	10.67	66.74	67.66 NA	
C.coccy	CMM-I-2500	Bottom	4.92	66.49	61.60	
C.coccy	CMM-I-1264	Top	5.44	32.19	31.67	1

C.coccy	CMM-I-1264	Top	5.39	30.04	29.30	1
C.coccy	CMM-I-1264	Top	5.31	27.38	25.67 NA	
C.coccy	CMM-I-1264	Top	4.30	23.72	22.28	1
C.coccy	CMM-I-1264	Top	2.91	16.09	15.13 NA	
C.coccy	CMM-I-1264	Top	3.11	14.55	12.50 NA	
C.coccy	CMM-I-1264	Bottom	1.44	9.96	9.04 NA	
C.coccy	CMM-I-1062	Top	4.66	20.23	18.70	1
C.coccy	CMM-I-1078	Bottom	1.87	17.69	14.51	
C.coccy	CMM-I-1062	Top	2.61	12.31	10.77 NA	
C.sp	CMM-I-2270	Top	4.30	21.58	19.60 NA	
C.coccy	CMM-I-579	Top	8.36	47.79	45.93	3
C.coccy	CMM-I-579	Top	6.37	35.68	33.67 NA	
C.coccy	CMM-I-579	Top	6.73	33.46	30.93	1
C.coccy	CMM-I-579	Top	4.97	27.90	26.49	1
C.coccy	CMM-I-579	Bottom	3.86	26.47	24.81	1
C.coccy	CMM-I-579	Bottom	3.68	22.46	20.85	1
C.coccy	CMM-I-577	Top	5.17	27.09	24.80	
C.sp	CMM-I-2108	Top	9.37	49.02	47.23	2
C.coccy	CMM-I-2108	Top	6.53	39.79	37.44	2
C.coccy	CMM-I-1914	Top	5.84	37.36	35.65 NA	
C.coccy	CMM-I-1914	Top	4.41	24.17	20.78	1
C.coccy	CMM-I-575	Top	7.18	41.30	40.82	2
C.sp	CMM-I-575	Top	6.69	33.11	32.78	1
C.coccy	CMM-I-1645	Top	11.93	59.18	59.89	1
C.coccy	CMM-I-1645	NA	5.36	49.20	50.53	2
C.sp	CMM-I-1645	Top	8.03	42.74	40.78 NA	
C.coccy	CMM-I-1645	Bottom	2.79	18.21	15.82 NA	
C.coccy	CMM-I-1645	Bottom	2.68	19.00	17.46	1
C.coccy	CMM-I-1630	Top	3.12	15.85	14.00	1
C.coccy	CMM-I-1630	Top	1.82	9.08	8.69 NA	
C.coccy	CMM-I-573	NA	4.96	19.03	19.50 NA	

C.sp	CMM-1594	NA	9.71	65.84	66.32 NA
C.sp	CR-Cs-5-a	Top	7.13	32.37	30.85 NA
C.sp	CR-Cs-5-b	Bottom	4.98	32.02	30.76 NA
C.coccy	CB articulated	Top	5.71	37.94	35.59 NA
C.coccy	CB articulated	Bottom	4.25	37.80	36.40 NA
C.coccy	BB-05	Bottom	3.12	22.84	21.21 NA
C.coccy	BB-04	Bottom	3.24	24.81	21.79 NA
C.coccy	BB-03	Bottom	4.33	35.54	33.54 NA
C.coccy	BB-02	Bottom	4.18	32.22	29.18 NA
C.coccy	BB-01	Bottom	3.81	31.89	30.28 NA
C.coccy	WI-03	Bottom	4.94	36.13	34.04 NA
C.coccy	WI-07	Bottom	4.33	27.97	26.81 NA
C.coccy	WI-08	Bottom	3.90	29.45	28.12 NA
C.coccy	CR-18	Bottom	4.29	29.56	27.01 NA
C.coccy	CR-30	Bottom	3.96	30.05	28.71 NA
C.coccy	CR-26	Bottom	4.77	37.54	38.03 NA
C.sp	CR-Cs-1	Top	7.08	39.42	38.82 NA
C.sp	CR-Cs-2	Top	5.39	30.09	28.30 NA
C.sp	CR-Cs-3	Top	5.33	27.09	25.05 NA
C.sp	CR-Cs-4	Top	5.84	33.50	31.67 NA
C.sp	CMM-I-2270	Top	4.30	21.58	19.60 NA
C.sp	CMM-I-576	Top	7.89	34.09	33.70 NA
C.sp	CMM-I-1288	Bottom	7.86	33.33	32.84 NA
C.coccy	CR-CC-1	Top	6.57	35.89	36.54 NA
C.coccy	CR-CC-2	Top	5.42	33.46	33.58 NA
C.coccy	CR-CC-3	Top	5.19	30.10	28.98 NA
C.coccy	CR-CC-4	Top	4.02	26.35	25.22 NA
C.sp	BB-Cs-1	Top	5.89	32.30	29.85 NA
C.sp	HW-Cs-1	Top	6.32	30.11	28.44 NA
C.coccy	WI-01	Top	6.27	28.79	26.86 NA
C.sp	HW-Cs-2-a	Top	8.19	39.93	37.69 NA

C.sp	HW-Cs-2-b	Bottom	4.81	38.97	38.02 NA
C.sp	HW-Cs-3-b	Top	7.53	37.87 NA	NA
C.sp	HW-Cs-3-a	Bottom	4.36	39.14	37.89 NA
C.coccy	HW-CC-1	Top	7.77	49.43	49.86 NA
C.sp	USNM193443	Top	7.12	38.73	37.30 NA
C.sp	USNM193441	Bottom	4.14	36.86	35.66 NA
C.coccy	USNM87754	Top	5.08	30.28	24.54 NA

Notes

Slightly inflated, smooth, holes in center

Smooth

Smooth

Smooth

Murisid? Hole on left

Articulated pair

Articulated pair

Barnicle on umbo

Rusty sediment

C.coccymelus, CMM-I-2251, bed 10 Miocene, Plum Point

C.coccymelus, CMM-I-2251, bed 10 Miocene, Plum Point

CMM-I-578 C.coccymelus, Rogers Mill Brook, Bed 10 Miocene; slightly inflated

CMM-I-578 C.coccymelus, Rogers Mill Brook, Bed 10 Miocene

C. sp CF C. coccymelus, Willows, Unit 10, CMM-I-2379; evidence of barnicle, slightly inflated, No ears cant tell top or bottom

Sediment in ridges

Pronounced umbo, Slightly inflated

Slightly inflated, smooth, holes in center

Sediment in ridges, Slightly inflated

Sediment in ridges

Tiny

Tiny

CMM-I-6131, C. coccymelus, Cocktown creek tributary, Calvert, Bed 13; Sediment in ridges

Sediment in interior

Sediment on front

Sediment in ridges

Sediment in interior

Rice's Pit Hampton VA, *C. coccymelus*?, Yorktown Fm, morehouse, pliocene; Scabrus, inflated, not *C. coccymelus*

CMM-I-1481, *C. coccymelus*/sp.?, Parkers Creek North (2nd cliff) Calvert fm Unit 12

C. coccymelus, Cape St. Mary's marina south, St. Mary's county MD; Murisid drill hole

C. coccymelus, Willows North 300' Calvert fm Unit 10 Miocene

C. sp?, inflated, very scabrus

Tiny

C. sp CF *C. covepointensis*, little cove pt. Driftwood beach, st Mary's units 21-23; not inflated

C. coccymelus, Willowa North 300' Calvert fm Unit 10 Miocene

C. coccymelus, Aquvasco, Prince George's CO, bed 10

Murisid hole

no oricle top valve?

C.coccymelus, Brownies beach, calvert co, bed 10 plum point fm.

heavily damaged

C.coccymelus, willows, Calvert co bed 10

C.coccymelus, Willows bed 10

C.coccymelus, Willows bed 10

C.coccymelus, Willows north, unit 10 on 11 slump; paired valves

C.coccymelus, Willows north, unit 10 on 11 slump; paired valves

C.coccymelus, brownies beach south, units 4-9, 10

C.coccymelus, plum point south of andersons, calvert -10

C.coccymelus, plum pt. rd. cliff 1 1/4 mi south, calvert zone 10; inflated

C.coccymelus, plum point south calvert unit 10

altered shell edge, indented on right side

Paired valves

C.coccymelus, Aquasco, Prince George's CO, bed 10

C.coccymelus, Aquasco, Prince George's CO, bed 10; altered shell edge

Shell edge chipped left side

C.coccymelus, Willows bed 10, south of Community beach

C.coccymelus, willows slump ~1/5 mi s. of community beach, corbula bed in zone 4-9

C.coccymelus, Willows slump 1st. Cliff N of stream calvert zone 10

C.coccymelus, plum point 1/2 mi S of road calvert unit 10; scabrus, inflated

C.coccymelus, Willows bed 10

Altrnating dark and light bands

C.coccymelus, camp roosevelt, south end zone 10

C.coccymelus N. of Dares beach, unit 10?; inflated, scabrus

Chesapecten CF *coccymelus*, Randalls cliff, 1.4 mi N, Calvert unit 4-9

c. coccymelus, plum point S. of van Irelands Calvert zone 10

inflated

C.coccymelus, plum point south calvert unit 10

altered shell edge

Inflated, missing unbo and R oricle

C.coccymelus, plum pt. 1/4 mi south, clavert zone 10

C.coccymelus, plum pt. calvert zone 10; I think its Jeffersonian, smooth wide ridges

C.sp CF coccymelus, parkers creek south, calvert unit 12

B 1.2. Morphometric Measurement Data

Species	Valve (T1B2)	Sample.Num	Angle	Convexity	Shell height (	Shell width (r LA	RIB	
C.sp	1	CR-Cs-5-a	86	7.13	32.37	30.85	19.21	17
C.sp	2	CR-Cs-5-b	94	4.98	32.02	30.76	20.26	17
C.coccy	1	CB articulate	91	5.71	37.94	35.59	21.65	17
C.coccy	2	CB articulate	99	4.25	37.8	36.4	21.85	18
C.coccy	2	BB-05	90	3.12	22.84	21.21	15.09	17
C.coccy	2	BB-04	88	3.24	24.81	21.79	14.09	17
C.coccy	2	BB-03	95	4.33	35.54	33.54	21.4	17
C.coccy	2	BB-02	89	4.18	32.22	29.18	19.17	18
C.coccy	2	BB-01	93	3.81	31.89	30.28	17.66	18
C.coccy	2	WI-03	92	4.94	36.13	34.04	20.64	18
C.coccy	2	WI-07	96	4.33	27.97	26.81	20.25	17
C.coccy	2	WI-08	96	3.9	29.45	28.12	19.16	16
C.coccy	2	CR-18	93	4.29	29.56	27.01 NA		16
C.coccy	2	CR-30	93	3.96	30.05	28.71	17.87	20
C.coccy	2	CR-26	101	4.77	37.54	38.03	22.8	17
C.sp	1	CR-Cs-1	94	7.08	39.42	38.82	22.1	17
C.sp	1	CR-Cs-2	93	5.39	30.09	28.3	17.46	17
C.sp	1	CR-Cs-3	89	5.33	27.09	25.05	15.45	15
C.sp	1	CR-Cs-4	97	5.84	33.5	31.67	18.29	16
C.sp	1	CMM-I-2270	89	4.3	21.58	19.6 NA		17
C.sp	1	CMM-I-576	95	7.89	34.09	33.7 NA		17
C.sp	2	CMM-I-1288	87	7.86	33.33	32.84 NA		19
C.coccy	1	CR-CC-1	101	6.57	35.89	36.54	22.73	18
C.coccy	1	CR-CC-2	102	5.42	33.46	33.58	20.38	18
C.coccy	1	CR-CC-3	90	5.19	30.1	28.98	16.79	17
C.coccy	1	CR-CC-4	96	4.02	26.35	25.22	15.62	17
C.sp	1	BB-Cs-1	89	5.89	32.3	29.85	18.14	17
C.sp	1	HW-Cs-1	89	6.32	30.11	28.44	19.15	18
C.coccy	1	WI-01	99	6.27	28.79	26.86 NA		17

C.sp	1 HW-Cs-2-a	95	8.19	39.93	37.69	NA	16
C.sp	2 HW-Cs-2-b	95	4.81	38.97	38.02	24.37	17
C.sp	1 HW-Cs-3-b	95	7.53	37.87	NA	NA	18
C.sp	2 HW-Cs-3-a	100	4.36	39.14	37.89	22.98	19
C.coccy	1 HW-CC-1	101	7.77	49.43	49.86	30.8	21
C.sp	1 USNM19344	100	7.12	38.73	37.3	24.63	17
C.sp	2 USNM19344	104	4.14	36.86	35.66	22.47	16
C.coccy	1 USNM87754	91	5.08	30.28	24.54	NA	18

Shape	Notes
1.04927067	
1.04096229	
1.06602978	
1.03846154	
1.07685054	
1.13859569	
1.05963029	
1.10418095	
1.05317041	
1.06139836	
1.04326744	
1.0472973	
1.09440948	
1.04667363	
0.98711544	
1.01545595	
1.06325088	
1.08143713	
1.05778339	
1.10102041	
1.0115727	
1.01492083	
0.98221128	
0.99642644	
1.03864734	
1.04480571	
1.08207705	
1.05872011	
1.07185406	

1.05943221

1.02498685

NA

1.03299024

0.99137585

1.0383378 Species unlabeled in collections; W&B(1975) say *C.coccy*. I think could be *C. sp*

1.03365115

1.23390383 Width measurement affected by chip

B 1.3. Body Shape Data

Species	Specimen..	Valve	Convexity	Shell.Height	Shell.Width	Growth.Cessations
C.coccy	212-J	Top	6.48	38.9	34.13	NA
C.coccy	CMM-I-825	Top	4.8	31.36	31.79	NA
C.coccy	727-12	Top	4.74	26.6	25.26	3
C.coccy	12J	Top	2.95	29.86	29.01	NA
C.coccy	12J	Bottom	4.96	31.46	29.04	NA
C.coccy	0	Top	2.94	24.8	22.78	1
C.coccy	12Ja	Top	NA	40.16	38.9	3
C.coccy	12Jb	Bottom	NA	39.59	37.9	3
C.coccy	12J	Bottom	3.2	33.31	30.48	NA
C.coccy	0	Top	3.36	20.49	18.67	NA
C.coccy	0	Bottom	3.13	20.39	18.87	2
C.coccy	CMM-I-2251	Top	5.59	41.4	40.61	7
C.coccy	CMM-I-2251	Top	7.76	45.77	45.95	3
C.coccy	CMM-I-578	Top	7.64	41.84	39.75	4
C.coccy	0	Top	3.9	18.88	18.03	1
C.sp	CMM-2379	NA	7.56	36.5	32.82	4
C.coccy	CMM-2379	Bottom	3.7	30.25	28.03	5
C.coccy	CMM-2379	Top	4.04	21.42	19.23	3
C.coccy	CMM-2379	Top	4.71	23.56	19.73	NA
C.coccy	CMM-2379	Top	4.4	18.66	16.9	5
C.coccy	CMM-2379	NA	2.43	16.73	15.69	6

C.coccy	CMM-2379	NA	3.39	15.16	13.22	NA	
C.coccy	CMM-2379	Top	2.44	13.16	12.11	NA	
C.coccy	CMM-2379	Top	NA	7.87	6.49	NA	
C.coccy	CMM-2379	NA	NA	9.58	8.45	NA	
C.coccy	CMM-I-6131	Top	NA	27.48	25.27		
C.coccy	CMM-I-6131	Top	31.29	28.6	NA		
C.coccy	CMM-I-6131	NA	37.67	36.84	NA		
C.coccy	CMM-I-6131	Bottom	NA	26.81	25.56	NA	
C.coccy	CMM-I-6131	Top	NA	16.76	15.13		2
C.coccy	CMM-I-6131	Bottom	NA	19.76	19.68		2
C.coccy	CMM-I-6131	Top	NA	19.48	18.03		3
C.coccy	CMM-I-6131	Bottom	NA	20.83	19.69	NA	
C.coccy	CMM-I-6131	Bottom	NA	21.36	20.18	NA	
C.coccy	CMM-I-6131	Top	NA	21.01	19.69	NA	
C.coccy	CMM-I-6131	Bottom	NA	15.78	14.42	NA	
C.coccy	CMM-I-6131	Bottom	NA	10.9	10.98		2
C.sp	CMM-I-1288	Bottom	7.86	33.33	32.84		5
C.sp	CMM-I-1541	Top	4.39	27.68	25.87	NA	
C.coccy	CMM-I-2627	Bottom	2.75	26.03	23.38	NA	
C.coccy	CMM-I-2627	Bottom	2.55	20.88	18.69	NA	
C.coccy	CMM-I-2812	Top	4.18	31.6	30.99		5
C.coccy	CMM-I-2812	Bottom	3.7	30.43	27.53		6
C.sp	CMM-I-2812	Top	6.89	32.62	30.34		6

C.coccy	CMM-I-2812	NA	NA	8.12	6.78	NA	
C.covepointensis	CMM-I-1790	Bottom	3.93	43.36	43.88		2
C.coccy	CMM-I-2812	Top	6.75	32.23	30.77	NA	
C.coccy	CMM-I-2812	NA	4.48	31.61	31.08	NA	
C.coccy	CMM-I-2812	Bottom	3.51	30.48	27.4	NA	
C.coccy	CMM-I-3487	Bottom	5.21	47.65	45.47		1
C.coccy	CMM-I-3487	Top	6.19	33.36	32.12	4?	
C.coccy	CMM-I-3487	Top	5.5	24.69	22.65		3
C.coccy	CMM-I-3487	Top	5.29	27.14	25.04	1?	
C.coccy	CMM-I-3487	NA	2.8	20.56	19.98	1?	
C.coccy	CMM-I-3487	Top	NA	20.11	18.58	NA	
C.coccy	CMM-I-3487	NA	2.77	20.92	19.44		3
C.coccy	CMM-I-3487	Bottom	2.65	16.91	15.84		1
C.coccy	CMM-I-3487	Bottom	2.16	17.48	16.03		1
C.coccy	CMM-I-3487	Bottom	2.23	11.38	10.43	NA	
C.coccy	CMM-I-3487	Bottom	1.67	12.75	11.61	2?	
C.coccy	CMM-I-3487	NA	2.57	12.51	11.14	3?	
C.coccy	CMM-I-3568	Bottom	4.77	34.81	33.49		2
C.coccy	CMM-I-3568	Bottom	4.86	34.57	32.94		2
C.coccy	CMM-I-3568	Bottom	3.13	31.2	30.14	NA	
C.coccy	CMM-I-3487	Top	5.3	29.08	28.34		2
C.coccy	CMM-I-3487	NA	2.97	24.58	22.92		2
C.coccy	CMM-I-3487	NA	2.61	23.74	21.07	4?	

C.coccy	CMM-I-4535	Bottom	3.99	28.57	26.43	NA	
C.coccy	CMM-I-4537	Top	2.2	13.53	11.23		1
C.coccy	CMM-I-4536	Bottom	1.71	12.5	10.88	2?	
C.coccy	CMM-I-2689	Bottom	NA	49.31	48.51	NA	
C.coccy	CMM-I-2689	Top	NA	49.16	48.78	NA	
C.coccy	CMM-I-2902	NA	3.6	27.45	25.4	NA	
C.coccy	CMM-I-2902	Bottom	2.53	16.58	15.17		1
C.coccy	CMM-I-3537	Bottom	4.17	35.28	34.66		2
C.coccy	CMM-I-3537	Bottom	2.94	22.49	20.45		1
C.sp	CMM-I-576	Top	7.89	34.09	33.7	NA	
C.coccy	CMM-I-2610	Bottom	5.02	42.28	42.3		2
C.coccy	CMM-I-2610	Bottom	4.85	41.48	41.16		3
C.coccy	CMM-I-2610	Top	6.17	42.85	42.12		2
C.coccy	CMM-I-2610	Bottom	3.54	29.39	28.16		2
C.coccy	CMM-I-2610	Bottom	4.26	29.59	28.23		2
C.coccy	CMM-I-2610	Bottom	2.57	27.65	25.41	4?	
C.coccy	CMM-I-2610	Bottom	2.93	23.49	21.33	NA	
C.coccy	CMM-I-2610	Bottom	3.09	23.05	19.88		1
C.coccy	CMM-I-2610	NA	NA	32.89	30.92		1
C.coccy	CMM-I-2495	Bottom	3.64	27.52	25.14	NA	
C.coccy	CMM-I-2495	Bottom	NA	13.79	12.24	NA	
C.coccy	CMM-I-2500	Top	10.67	66.74	67.66	NA	
C.coccy	CMM-I-2500	Bottom	4.92	66.49	61.6		

C.coccy	CMM-I-1264	Top	5.44	32.19	31.67	1
C.coccy	CMM-I-1264	Top	5.39	30.04	29.3	1
C.coccy	CMM-I-1264	Top	5.31	27.38	25.67	NA
C.coccy	CMM-I-1264	Top	4.3	23.72	22.28	1
C.coccy	CMM-I-1264	Top	2.91	16.09	15.13	NA
C.coccy	CMM-I-1264	Top	3.11	14.55	12.5	NA
C.coccy	CMM-I-1264	Bottom	1.44	9.96	9.04	NA
C.coccy	CMM-I-1062	Top	4.66	20.23	18.7	1
C.coccy	CMM-I-1078	Bottom	1.87	17.69	14.51	
C.coccy	CMM-I-1062	Top	2.61	12.31	10.77	NA
C.sp	CMM-I-2270	Top	4.3	21.58	19.6	NA
C.coccy	CMM-I-579	Top	8.36	47.79	45.93	3
C.coccy	CMM-I-579	Top	6.37	35.68	33.67	NA
C.coccy	CMM-I-579	Top	6.73	33.46	30.93	1
C.coccy	CMM-I-579	Top	4.97	27.9	26.49	1
C.coccy	CMM-I-579	Bottom	3.86	26.47	24.81	1
C.coccy	CMM-I-579	Bottom	3.68	22.46	20.85	1
C.coccy	CMM-I-577	Top	5.17	27.09	24.8	
C.coccy	CMM-I-2108	Top	9.37	49.02	47.23	2
C.coccy	CMM-I-2108	Top	6.53	39.79	37.44	2
C.coccy	CMM-I-1914	Top	5.84	37.36	35.65	NA
C.coccy	CMM-I-1914	Top	4.41	24.17	20.78	1
C.coccy	CMM-I-575	Top	7.18	41.3	40.82	2

C.sp	CMM-I-575	Top	6.69	33.11	32.78	1
C.coccy	CMM-I-1645	Top	11.93	59.18	59.89	1
C.coccy	CMM-I-1645	NA	5.36	49.2	50.53	2
C.sp	CMM-I-1645	Top	8.03	42.74	40.78	NA
C.coccy	CMM-I-1645	Bottom	2.79	18.21	15.82	NA
C.coccy	CMM-I-1645	Bottom	2.68	19	17.46	1
C.coccy	CMM-I-1630	Top	3.12	15.85	14	1
C.coccy	CMM-I-1630	Top	1.82	9.08	8.69	NA
C.coccy	CMM-I-573	NA	4.96	19.03	19.5	NA
C.sp	CMM-1594	NA	9.71	65.84	66.32	NA
C.sp	CR-Cs-5-a	Top	7.13	32.37	30.85	NA
C.sp	CR-Cs-5-b	Bottom	4.98	32.02	30.76	NA
C.coccy	CB articulated	Top	5.71	37.94	35.59	NA
C.coccy	CB articulated	Bottom	4.25	37.8	36.4	NA
C.coccy	BB-05	Bottom	3.12	22.84	21.21	NA
C.coccy	BB-04	Bottom	3.24	24.81	21.79	NA
C.coccy	BB-03	Bottom	4.33	35.54	33.54	NA
C.coccy	BB-02	Bottom	4.18	32.22	29.18	NA
C.coccy	BB-01	Bottom	3.81	31.89	30.28	NA
C.coccy	WI-03	Bottom	4.94	36.13	34.04	NA
C.coccy	WI-07	Bottom	4.33	27.97	26.81	NA
C.coccy	WI-08	Bottom	3.9	29.45	28.12	NA
C.coccy	CR-18	Bottom	4.29	29.56	27.01	NA

C.coccy	CR-30	Bottom	3.96	30.05	28.71	NA
C.coccy	CR-26	Bottom	4.77	37.54	38.03	NA
C.sp	CR-Cs-1	Top	7.08	39.42	38.82	NA
C.sp	CR-Cs-2	Top	5.39	30.09	28.3	NA
C.sp	CR-Cs-3	Top	5.33	27.09	25.05	NA
C.sp	CR-Cs-4	Top	5.84	33.5	31.67	NA
C.sp	CMM-I-2270	Top	4.3	21.58	19.6	NA
C.sp	CMM-I-576	Top	7.89	34.09	33.7	NA
C.sp	CMM-I-1288	Bottom	7.86	33.33	32.84	NA
C.coccy	CR-CC-1	Top	6.57	35.89	36.54	NA
C.coccy	CR-CC-2	Top	5.42	33.46	33.58	NA
C.coccy	CR-CC-3	Top	5.19	30.1	28.98	NA
C.coccy	CR-CC-4	Top	4.02	26.35	25.22	NA
C.sp	BB-Cs-1	Top	5.89	32.3	29.85	NA
C.sp	HW-Cs-1	Top	6.32	30.11	28.44	NA
C.coccy	WI-01	Top	6.27	28.79	26.86	NA
C.sp	HW-Cs-2-a	Top	8.19	39.93	37.69	NA
C.sp	HW-Cs-2-b	Bottom	4.81	38.97	38.02	NA
C.sp	HW-Cs-3-a	Top	7.53	37.87	NA	NA
C.sp	HW-Cs-3-b	Bottom	4.36	39.14	37.89	NA
C.coccy	HW-CC-1	Top	7.77	49.43	49.86	NA
C.coccy	USNM193440	Top	7.12	38.73	37.3	NA
C.coccy	USNM193441	Bottom	4.14	36.86	35.66	NA

C.sp	USNM87754	Top	5.08	30.28	24.54	NA
-------------	-----------	-----	------	-------	-------	----

Notes
Slightly inflated, smooth, holes in center
Smooth
Smooth
Smooth
Murid? Hole on left
Articulated pair
Articulated pair
Barnicle on umbo
Rusty sediment
C.coccymelus, CMM-I-2251, bed 10 Miocene, Plum Point
C.coccymelus, CMM-I-2251, bed 10 Miocene, Plum Point
CMM-I-578 C.coccymelus, Rogers Mill Brook, Bed 10 Miocene; slightly inflated
CMM-I-578 C.coccymelus, Rogers Mill Brook, Bed 10 Miocene
C. sp CF C. coccymelus, Willows, Unit 10, CMM-I-2379; evidence of barnicle, slightly inflated, No ears cant tell top or bottom
Sediment in ridges
Pronounced umbo, Slightly inflated
Slightly inflated, smooth, holes in center

Sediment in ridges, Slightly inflated
Sediment in ridges
Tiny
Tiny
CMM-I-6131, <i>C. coccymelus</i> , Cocktown creek tributary, Calvert, Bed 13; Sediment in ridges
Sediment in interior
Sediment on front
Sediment in ridges
Sediment in interior
Rice's Pit Hampton VA, <i>C. coccymelus</i> ?, Yorktown Fm, morehouse, pliocene; Scabrus, inflated, not <i>C.coccymelus</i>
CMM-I-1481, <i>C. coccymelus</i> /sp.?, Parkers Creek North (2nd cliff) Calvert fm Unit 12
<i>C.coccymelus</i> , Cape St. Mary's marina south, St. Mary's county MD; Murisid drill hole
<i>C.coccymelus</i> , Willows North 300' Calvert fm Unit 10 Miocene
<i>C.sp?</i> , inflated, very scabrus

Tiny
C.sp CF C.covepointensis, little cove pt. Driftwood beach, st Mary's units 21-23; not inflated
C.coccymelus, Willowa North 300' Calvert fm Unit 10 Miocene
C.coccymelus, Aquvasco, Prince George's CO, bed 10
Murid hole
no oricle top valve?
C.coccymelus, Brownies beach, calvert co, bed 10 plum point fm.
heavily damaged

C.coccymelus, willows, Calvert co bed 10
C.coccymelus, Willows bed 10
C.coccymelus, Willows bed 10
C.coccymleus, Willows north, unit 10 on 11 slump; paird valves
C.coccymleus, Willows north, unit 10 on 11 slump; paird valves
C.coccymelus, brownies beach south, units 4-9, 10
C.coccymleus, plum point south of andersons, calvert -10
C.coccymelus, plum pt. rd. cliff 1 1/4 mi south, clavert zone 10; inflated
C.coccymelus, plum point south calvert unit 10
altered shell edge, indented on right side
Paired valves
C.coccymelus, Aquvasco, Prince George's CO, bed 10
C.coccymelus, Aquvasco, Prince George's CO, bed 10; altered shell edge
Shell edge chipped left side

C.coccymelus, Willows bed 10, south of Community beach
C.coccymelus, willows slump ~1/5 mi s. of community beach, corbula bed in zone 4-9
C.coccymelus, Willows slump 1st. Cliff N of stream calvert zone 10
C.coccymelus, plum point 1/2 mi S of road calvert unit 10; scabrus, inflated
C.coccymelus, Willows bed 10
Altrnating dark and light bands
C.coccymelus, camp roosevelt, south end zone 10
C.coccymelus N. of Dares beach, unit 10?; inflated, scabrus
Chesapecten CF coccymelus, Randalls cliff, 1.4 mi N, Calvert unit 4-9
c. coccymelus, plum point S. of van Irelands Calvert zone 10

[illegible]

B 1.4. Data of Varified Species Shells

Sample	Convexity	1 Spine Row	Acute Commisure	Straight Auricle	Inflated	Valve
CR-Cs-5-a	7.13	Yes	Yes	Yes	Yes	Top
CR-Cs-5-b	4.98	Yes	Yes	Yes	No	Bottom
CB articulate	5.71	No	No	No	No	Top
CB articulate	4.25	No	No	No	No	Bottom
BB-05	3.12	No	No	No	No	Bottom
BB-04	3.24	No	No	No	No	Bottom
BB-03	4.33	No	No	No	No	Bottom
BB-02	4.18	No	No	No	No	Bottom
BB-01	3.81	No	No	No	No	Bottom
WI-03	4.94	No	No	No	No	Bottom
WI-07	4.33	No	No	No	No	Bottom
WI-08	3.9	No	No	No	No	Bottom
CR-18	4.29	No	No	No	No	Bottom
CR-30	3.96	No	No	No	No	Bottom
CR-26	4.77	No	No	No	No	Bottom
CR-Cs-1	7.08	Yes	Yes	Yes	Yes	Top
CR-Cs-2	5.39	Yes	Yes	Yes	Yes	Top
CR-Cs-3	5.33	Yes	Yes	Yes	Yes	Top
CR-Cs-4	5.84	Yes	Yes	Yes	Yes	Top
CMM-I-2270	4.3	Yes	NA	NA	Yes	Top
CMM-I-576	7.89	NA	No	Yes	Yes	Top
CMM-I-1288	7.86	Yes	Yes	NA	Yes	Bottom
CR-CC-1	6.57	No	No	No	No	Top
CR-CC-2	5.42	No	No	No	No	Top
CR-CC-3	5.19	No	No	No	No	Top
CR-CC-4	4.02	No	No	No	No	Top
BB-Cs-1	5.89	Yes	Yes	Yes	Yes	Top
HW-Cs-1	6.32	Yes	Yes	Yes	Yes	Top
WI-01	6.27	No	No	No	Yes	Top

HW-Cs-2-a	8.19	Yes	Yes	NA	Yes	Top
HW-Cs-2-b	4.81	Yes	Yes	NA	No	Bottom
HW-Cs-3-a	7.53	Yes	Yes	Yes	Yes	Top
HW-Cs-3-b	4.36	Yes	Yes	Yes	No	Bottom
HW-CC-1	7.77	No	No	NA	No	Top
USNM19344(	7.12	No	No	Yes	No	Top
USNM19344:	4.14	NA	No	Yes	No	Bottom
USNM87754	5.08	Yes	Yes	NA	Yes	Top

APPENDIX B 2.1 Genus Level Analysis

```

setwd("/Users/grace/Documents")
spData <- read.csv('spData2025.csv', header=TRUE, sep = ",")
noNa <- na.omit(spData)

colnames(noNa)
bodysize <- noNa[ , c(4,5,8,9,10)]

spPca <- prcomp(bodysize, scale.=TRUE)

sd <- spPca$sdev
loadings <- spPca$rotation
rownames(loadings) <- colnames(bodysize)
scores <- spPca$x

var <- sd^2
varPercent <- var/sum(var) * 100
dev.new()

barplot(varPercent, xlab="PC", ylab="Percent Variance", names.arg=1:length(varPercent), las=1,
ylim=c(0, max(varPercent)), col="gray")

abline(h=1/ncol(bodysize)*100, col="red")

varPercent[1:3]
sum(varPercent[1:3])

loadings
sqrt(1/ncol(bodysize))

dev.new(height=7, width=7)
biplot(spPca, cex=0.7)

```

```

dev.new(height=7, width=7)

plot(scores[, 1], scores[, 2], xlab="PC 1", ylab="PC 2", type="n", asp=1, las=1)

scaling <- 5

textNudge <- 1.2

arrows(0, 0, loadings[, 1]* scaling, loadings[, 2]* scaling, length=0.1, angle=20, col="red")
text(loadings[, 1]*scaling*textNudge, loadings[, 2]*scaling*textNudge, rownames(loadings),
col="red", cex=0.7)

text(scores[, 1], scores[, 2], rownames(scores), col="blue", cex=0.7)

dev.new(height=7, width=7)
C.sp <- noNa$Species == "C.sp "
C.coccy <- noNa$Species == "C.coccy"

plot(scores[, 1], scores[, 2], xlab="PC 1", ylab="PC 2", type="n", asp=1, las=1)

arrows(0, 0, loadings[, 1]* scaling, loadings[, 2]* scaling, length=0.1, angle=20)
text(loadings[, 1]*scaling*textNudge, loadings[, 2]*scaling*textNudge, rownames(loadings),
cex=0.7)

points(scores[C.sp, 1], scores[C.sp, 2], pch=16, cex=1.2, col="skyblue1")
points(scores[C.coccy, 1], scores[C.coccy, 2], pch=16, cex=1.2, col="sienna1")

text(2, -4, "Convexity", cex=0.7)
text(-2, 1.7, "C. coccymelus", col="sienna1")
text(-1.8, -2, "Chesapecten n. sp.", col="skyblue1")

summary(spPca)

```

```

#LDA

library(MASS)

pairs(noNa[ , c(4,5,8,9,10)], gap=0, cex.labels=2.3)

speciesLog <- noNa

speciesLog[ , c(4,5,8,9,10)] <- log(noNa[ , c(4,5,8,9,10)]+1)

LDA <- lda(Species ~ Angle + Convexity + LA + RIB + Shape, data=speciesLog)

predictions <- predict(LDA)
predictions
round(predictions$posterior, 2)
round(apply(predictions$posterior, MARGIN=1, FUN=max), 2)

plot(LDA, cex=1.1)

dev.new(height=7, width=7)
plot(LDA, dimen=1, type="both", las=1)

loadings <- round(LDA$scaling, 2)

acc <- table(speciesLog$Species, predictions$class)
acc
sum(diag(acc)) / sum(acc)

jackknife <- lda(Species ~ Angle + Convexity + LA + RIB, data=speciesLog, CV=TRUE)
accJack <- table(speciesLog$Species, jackknife$class)
accJack
sum(diag(accJack)) / sum(accJack)

```

B 2.2 Body Shape Analysis

```

setwd("/Users/grace/Documents")
bsData <- read.csv('body_size_data2025.csv', header=TRUE, sep = ",")
bsData$Shape <- bsData$Shell.Height / bsData$Shell.Width
bsDataTop <- subset(bsData, Valve == "Top")
topOnly <- na.omit(bsDataTop)

#t-test for Convexity
ccConvexity <- t.test(topOnly$Convexity[topOnly$Species == "C.coccy"])
ccConvexity$conf.int
ccConvexity$estimate

spConvexity <- t.test(topOnly$Convexity[topOnly$Species == "C.sp"])
spConvexity$conf.int
spConvexity$estimate

meanConvex <- c(ccConvexity$estimate, spConvexity$estimate)
dev.new(height=10, width=20)
plot(meanConvex, pch = 16, ylab = "", ylim= c(0, 8), xlim = c(0, 3), xlab = "Species", xaxt =
"n", las= 1, main = "Mean Convexity", cex= 1.2)
ylab_left <- mtext(expression(paste(delta^{18}, "0 (\u2030 VPDB)")),side=2, line=2, cex=1.2)
speciesnames <- c("C. coccy", "C. n.sp")
axis(1, at = c(1,2), labels = speciesnames)

arrows(x0= 1, y0= min(ccConvexity$conf.int), x1= 1, y1= max(ccConvexity$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(spConvexity$conf.int), x1= 2, y1= max(spConvexity$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)

#PCA code
colnames(topOnly)
bodysize <- topOnly[, c(4,9)]

```



```

bsPca <- prcomp(bodysize, scale.=TRUE)
sd <- bsPca$sdev
loadings <- bsPca$rotation

rownames(loadings) <- colnames(bodysize)
scores <- bsPca$x

var <- sd^2
varPercent <- var/sum(var) * 100
dev.new()

barplot(varPercent, xlab="PC", ylab="Percent Variance", names.arg=1:length(varPercent),
las=1, ylim=c(0, max(varPercent)), col="gray")

abline(h=1/ncol(bodysize)*100, col="red")

varPercent[1:3]
sum(varPercent[1:3])

loadings
sqrt(1/ncol(bodysize))

dev.new(height=7, width=7)
biplot(bsPca, cex=0.7)

dev.new(height=7, width=7)
plot(scores[, 1], scores[, 2], xlab="PC 1", ylab="PC 2", type="n", asp=1, las=1)

scaling <- 5
textNudge <- 1.2

arrows(0, 0, loadings[, 1]* scaling, loadings[, 2]* scaling, length=0.1, angle=20, col="red")

```

```

text(loadings[, 1]*scaling*textNudge, loadings[, 2]*scaling*textNudge,
rownames(loadings), col="red", cex=0.7)

text(scores[, 1], scores[, 2], rownames(scores), col="blue", cex=0.7)

dev.new(height=7, width=7)
C.sp <- topOnly$Species == "C.sp"
C.coccy <- topOnly$Species == "C.coccy"
plot(scores[, 1], scores[, 2], xlab="PC 1", ylab="PC 2", type="n", asp=1, las=1)
arrows(0, 0, loadings[, 1]* scaling, loadings[, 2]* scaling, length=0.1, angle=20)

points(scores[C.sp, 1], scores[C.sp, 2], pch=16, cex=1.2, col="skyblue1")

points(scores[C.coccy, 1], scores[C.coccy, 2], pch=16, cex=1.2, col="sienna1")

scaling <- 5
textNudge <- 1.2

text(loadings[, 1]*scaling*textNudge, loadings[, 2]*scaling*textNudge,
rownames(loadings), cex=0.7)
text(-2.6, 3.25, "Shape")
text(2.5, 3.25, "Convexity")
text(-1.2, -1.5, "C. coccymelus", col= "sienna1")
text(2.5, 0.5, "Chesapecten n. sp.", col= "skyblue1")

summary(bsPca)

#LDA code
library(MASS)

pairs(topOnly[, c(4,5,6,9)], gap=0, cex.labels=2.3)
sampleLog <- topOnly
sampleLog[, c(4,5,6,9)] <- log(topOnly[, c(4,5,6,9)]+1)

```

```

LDA <- lda(Species ~ Convexity + Shape, data=sampleLog)
predictions <- predict(LDA)
predictions
round(predictions$posterior, 2)
round(apply(predictions$posterior, MARGIN=1, FUN=max), 2)

plot(LDA, cex=1.1)

dev.new(height=7, width=7)
plot(LDA, dimen=2, type="both")

loadings <- round(LDA$scaling, 2)

acc <- table(sampleLog$Species, predictions$class)
acc
sum(diag(acc)) / sum(acc)

jackknife <- lda(Species ~ Convexity + Shape, data=sampleLog, CV=TRUE)
accJack <- table(sampleLog$Species, jackknife$class)
accJack
sum(diag(accJack)) / sum(accJack)

#Plot shape and convexity by species (Shape is height/width)
dev.new()
plot(topOnly$Convexity, topOnly$Shape, pch=16, type="n", ylim = c(min(topOnly$Shape),
max(topOnly$Shape)), xlab = "Convexity (mm)", ylab = "Shape", las = 1, main = "Shape and
Convexity by Species")
points(topOnly$Convexity[C.sp],topOnly$Shape[C.sp] , pch=16, col= "skyblue1", cex = 1.2)
points(topOnly$Convexity[C.coccy],topOnly$Shape[C.coccy] , pch=16, col = "sienna1", cex = 1.2)

```

B2.3 Species Description

```

setwd("/Users/grace/Documents")
descData <- read.csv('C.spDescriptions.csv', header=TRUE, sep = ",")
topValves <- subset(descData, Valve == "Top")

#t.test Convexity
coxConvexity <- t.test(topValves$Convexity[topValves$Species == "Cocc"])
coxConvexity$conf.int
coxConvexity$estimate

nspConvexity <- t.test(topValves$Convexity[topValves$Species == "New"])
nspConvexity$conf.int
nspConvexity$estimate

#t.test Angle
coxAng <- t.test(topValves$Angle[topValves$Species == "Cocc"])
coxAng$conf.int
coxAng$estimate

nspAng <- t.test(topValves$Angle[topValves$Species == "New"])
nspAng$conf.int
nspAng$estimate

#t.test LA
coxLA <- t.test(topValves$LA[topValves$Species == "Cocc"])
coxLA$conf.int
coxLA$estimate

nspLA <- t.test(topValves$LA[topValves$Species == "New"])
nspLA$conf.int
nspLA$estimate

```

```

#t.test RIB
coxRIB <- t.test(topValves$RIB[topValves$Species == "Cocc"])
coxRIB$conf.int
coxRIB$estimate

nspRIB <- t.test(topValves$RIB[topValves$Species == "New"])
nspRIB$conf.int
nspRIB$estimate

#Plots
Convex <- c(coxConvexity$estimate, nspConvexity$estimate)
dev.new(height=10, width=20)
plot(Convex, pch = 16, ylim= c(0, 8), xlim = c(0, 3), ylab = "Convexity (mm)", xlab = "Species",
xaxt = "n", las= 1, main = "Mean Convexity", cex= 1.2)
speciesnames <- c("C. coccy", "C. n.sp.")
axis(1, at = c(1,2), labels = speciesnames)

arrows(x0= 1, y0= min(coxConvexity$conf.int), x1= 1, y1= max(coxConvexity$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(nspConvexity$conf.int), x1= 2, y1= max(nspConvexity$conf.int), angle = 90,
length = 0.1, code = 3, lwd = 1.5)

Angle <- c(coxAng$estimate, nspAng$estimate)
dev.new(height=10, width=20)
plot(Angle, pch = 16, ylim= c(0, 110), xlim = c(0, 3), ylab = "Angle (°)", xlab = "Species",
xaxt = "n", las= 1, main = "Mean Angle", cex= 1.2)
speciesnames <- c("C. coccy", "C. n.sp.")
axis(1, at = c(1,2), labels = speciesnames)

arrows(x0= 1, y0= min(coxAng$conf.int), x1= 1, y1= max(coxAng$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(nspAng$conf.int), x1= 2, y1= max(nspAng$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)

```

```

LA <- c(coxLA$estimate, nspLA$estimate)
dev.new(height=10, width=20)
plot(LA, pch = 16, ylim= c(0, 30), xlim = c(0, 3), ylab = "Auricle Length (mm)", xlab =
"Species", xaxt = "n", las= 1, main = "Mean Auricle Length", cex= 1.2)
speciesnames <- c("C. coccy", "C. n.sp.")
axis(1, at = c(1,2), labels = speciesnames)

arrows(x0= 1, y0= min(coxLA$conf.int), x1= 1, y1= max(coxLA$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(nspLA$conf.int), x1= 2, y1= max(nspLA$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)

RIB <- c(coxRIB$estimate, nspRIB$estimate)
dev.new(height=10, width=20)
plot(RIB, pch = 16, ylim= c(0, 20), xlim = c(0, 3), ylab = "Number of Ribs", xlab = "Species",
xaxt = "n", las= 1, main = "Mean Rib Number", cex= 1.2)
speciesnames <- c("C. coccy", "C. n.sp.")
axis(1, at = c(1,2), labels = speciesnames)
arrows(x0= 1, y0= min(coxRIB$conf.int), x1= 1, y1= max(coxRIB$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)
arrows(x0= 2, y0= min(nspRIB$conf.int), x1= 2, y1= max(nspRIB$conf.int), angle = 90, length =
0.1, code = 3, lwd = 1.5)

#kw test
spineResult <- kruskal.test(topValves$Species~topValves$Spine.Row)
infResult <- kruskal.test(topValves$Species~topValves$Inflated)
commResult <- kruskal.test(topValves$Species~topValves$Commissure.Shape)
convResult <- kruskal.test(topValves$Species~topValves$Convex)
auriResult <- kruskal.test(topValves$Species~topValves$Auricle.Shape)

#t.test
ttConv <- t.test(topValves$Convex~topValves$Species)
ttAng <- t.test(topValves$Angle~topValves$Species)

```

```
#box plot
dev.new(height=10, width=10)
boxplot(topValves$Convexity ~ topValves$Species, main = "Convexity Boxplot", xlab = "Species",
ylab = "Convexity", col = c("sienna1", "skyblue1"))
points(Convex, pch = 16, cex= 1.2)
```