**Tropical North Atlantic sea surface temperature variability over the last 2000 years:**

**High-resolution foraminiferal Mg/Ca records from the Cariaco Basin, Venezuela**

A Thesis Presented

by

**Jennifer Beth Wurtzel**

to

The Graduate School

in Partial Fulfillment of the

Requirements

for the Degree of

**Master of Science**

in

**Marine and Atmospheric Science**

Stony Brook University

**May 2012**

**Stony Brook University**

The Graduate School

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Abstract of the Thesis

**Tropical North Atlantic sea surface temperature variability over the last 2000 years: High-resolution foraminiferal Mg/Ca records from the Cariaco Basin, Venezuela**

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**2012**

There are critical gaps in our understanding of tropical Atlantic climate variability on sub-decadal to centennial time scales for the past two millennia. This is in part due to the limited spatial and temporal extent of the instrumental record, but also due to a lack of tropical proxy records of sufficient length and resolution to establish a baseline range of variability, to which we can compare modern signals. This study presents a high-resolution marine sediment-derived reconstruction of seasonal tropical Atlantic SSTs from the Cariaco Basin, Venezuela, spanning the past two millennia that are correlated with instrumental sea surface temperatures (SSTs) for the period of overlap. Two seasonally-representative species of foraminifera were picked at 3-4 year sample resolution for Mg/Ca analysis. Using *Globigerina bulloides* and *Globigerinoides ruber*, quantitative SST records were generated for winter and summer, respectively. The results demonstrate that the rate and magnitude of temperature changes in the twentieth century, while remarkable, are not unprecedented.

Despite the apparent success of the calibrations to instrumental SSTs described, examination of the long-term results suggest the signal recorded by the respective species is more complicated than originally thought. Anti-phasing between *G. bulloides* and *G. ruber* temperatures throughout large portions of the record indicates that *G. bulloides* may not be consistently representative of a surface signal, but rather often records a subsurface signal that is anti-correlated with the surface.

This makes sense in the context of Atlantic meridional overturning circulation (AMOC) variations, for which an anti-correlated relationship between the surface and subsurface has been observed in modeling studies. Thus, it would appear that multidecadal- and centennial-scale temperature variability in the tropical Atlantic are related to AMOC fluctuations and its associated northward heat transport that in turn may be driven by solar variability.

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# Acknowledgements

This thesis would not have been possible without the guidance and support of Dave Black. As my advisor, he has not only overseen and supported my research, but has also made sure that I was afforded every opportunity to expand my horizons beyond the requirements of my research and grow as a scientist. For that, I am ever grateful.

I would also like to thank my committee members, Kirk Cochran and Dave Anderson. In addition to his invaluable feedback on my thesis, Kirk generously granted me access to his lab and personnel, enabling me to complete a critical component of my research. Over the course of my research, Dave has enthusiastically sent me insightful comments, suggestions, and relevant papers, all of which have contributed to the success of my thesis.

Many people were involved in the processing and analysis of my samples. I would especially like to thank Shaily Rahman, Christina Heilbrun, and the undergraduates of the Black Paleoceanography and Paleoclimatology lab – Gizem Eren, Alison Huenger, and Kristen Butler. I would also like to thank Eric Tappa and the rest of Bob Thunell’s Marine Sediments Research Lab at the University of South Carolina for their hospitality and help during my visits to their facility.

I would also like to recognize all the members of SoMAS, and particularly the softball team, for the sense of community they have provided during my time at Stony Brook.

A very special thanks to Elyse Walker, John Gondek, Alicia Brown, Jen Hertzberg, Shari Rosen, and Jim Micucci, all of whom have provided critical moral support and encouragement from start to finish.

Lastly, even though my family still doesn’t quite understand what it is I do, they have been cheering me on to keep doing it and to succeed. For their enduring support, I thank my grandmothers, my brother, and my parents.

# 1. Introduction

## 1.1 Thesis Objectives

Sea surface temperature (SST) in the tropics is one of the most important components of the coupled ocean-atmosphere system, affecting heat and moisture distribution to the global climate system as a whole. In the Pacific, patterns in SST variability have been clearly linked to the El Niño Southern Oscillation (ENSO) and the Asian summer monsoon through numerous modeling and high-resolution proxy studies [*Charles et al.*, 1997; *Cobb et al.*, 2003; *Ju and Slingo*, 1995; *Urban et al.*, 2000]. In the Atlantic, changes in SST patterns have a direct connection to changes in trade wind strength, Intertropical Convergence Zone (ITCZ) position, precipitation patterns from northern Brazil to Central America, drought in the African Sahel, flooding on the Gold and Ivory coasts, and rates of hurricane formation [*Carton et al.*, 1996; *Folland et al.*, 1986; *Gray and Sheaffer*, 1991; *Hastenrath and Heller*, 1977; *Moura and Shukla*, 1981].

Despite the importance of this basic climate variable, our understanding of tropical Atlantic SST variability is largely limited to instrumental records that extend back barely a century, and most studies of tropical Atlantic SST variability only use instrumental data collected within the last 50 years. Simply put, there does not exist a long enough tropical Atlantic SST record to characterize the full range of interannual to subcentennial scale variability. Additionally, the variations observed in the modern record likely contain an anthropogenic component that is not easily distinguished from the natural background of the system.

One need only to look at the distribution of surface paleotemperature records used to create commonly cited global and hemispheric temperature reconstructions [*Mann and Jones*, 2003; *Mann et al.*, 1998] to emphasize the need for a tropical Atlantic SST record – neither of the often-cited Mann et al. reconstructions contain proxy data from the tropical Atlantic, but instead, draw mainly from northern hemisphere mid-latitude tree-ring studies [*Mann and Jones*, 2003; *Mann et al.*, 1998]. The goal of this tropical Atlantic SST study is to help define patterns in the tropics and identify teleconnections between the mid- and low latitudes on decadal to multi-centennial timescales.

I address the following questions in this thesis:

*1. What are the natural (pre-anthropogenic) rates and ranges of decadal-to century-scale tropical Atlantic SST variability?* Distinguishing anthropogenic forcing from natural variability relies on the ability to answer this question. Of particular interest is whether 20$^{th}$ century trends are anomalous relative to baseline variability. This study presents a quantitative temperature record of the past 2000 years, which is capable of addressing this issue.

*2. Do the currently recognized frequencies of tropical Atlantic SST variability change through time?* Analyses of instrumental data indicate periodicities of 2-5 years, 13 years, and a multidecadal mode (the Atlantic Multidecadal Oscillation) that is poorly characterized by the limited length of the instrumental record [*Carton et al.*, 1996; *Chang et al.*, 1997; *Enfield and Mayer*, 1997]. Though unable to accurately resolve variability in the interannual, my record does allow us to examine the strength and persistence of longer modes.

*3. What is modulating climate in the tropical Atlantic?* Although variations in Earth's orbital properties are known to be the primary forcing mechanism for changes on glacial-interglacial timescales, less is known about what is controlling climate on shorter timescales. In this thesis, I am able to draw links between Atlantic SST, and variations in Atlantic Meridional Overturning Circulation (AMOC) and solar variability.

This study has generated seasonal (winter/spring and summer/fall) records of tropical Atlantic SST spanning the last 2000 years with individual sample resolutions of 3 to 4 years. This was accomplished by measuring down-core Mg/Ca ratios from seasonally-representative foraminifera, and calibrating the most recently deposited sediments directly to historical instrumental SSTs.

## 1.2 Tropical Atlantic Climate Variability and Possible Causes of Tropical Atlantic SST Variability

Unlike the tropical Pacific where the influence of the ENSO phenomenon dominates SST variability, the tropical Atlantic appears to respond to multiple competing influences on interannual to decadal time scales. Numerous studies of instrumental data have shown that the cross-equatorial SST gradient is one of the largest influences on sea level pressure distributions, trade wind intensity, and the ITCZ system has a whole [*Chiang et al.*, 2002; *Hastenrath and Greischar*, 1993; *Nobre and Shukla*, 1996]. SST variability in the tropical Atlantic and ITCZ position and intensity fluctuations are strongly intertwined. For example, anomalously warm waters in the northern tropical Atlantic could induce surface cross-equatorial flow by strengthening the southern trade winds and weakening the northern trade winds. Along with a northward displacement of the ITCZ and associated rainfall (and hence potentially spatial variations in sea surface salinity), the lighter winds to the north in turn reduce evaporative latent heat removal, thus amplifying the initial warm anomaly [*Chang et al.*, 2000; *Czaja et al.*, 2002; *Huang and Shukla*, 2005].

Tropical Atlantic SST and climate are also influenced by higher latitude phenomena on interannual to decadal time scales, and by the North Atlantic Oscillation (NAO) in particular.

Changes in the trade winds are controlled in part by fluctuations in strength and location of the Azores High, eventually impacting SSTs through latent heat transfer [*Marshall et al.*, 2001]. However, it is also possible that the NAO may be influenced by tropical and subtropical SST anomalies [*Rajagopalan et al.*, 1998; *Sutton et al.*, 2000; *Tourre et al.*, 1999]. Marshall et al. (2001) suggest that the Hadley circulation may act as an atmospheric "bridge" to mid-latitudes, thus modulating mid-latitude NAO variability [*Marshall et al.*, 2001].

In addition to responding to changes driven from the circum-Atlantic region, the tropical Atlantic has also been shown to be influenced by changes in tropical Pacific convection associated with ENSO and anomalies in the Walker circulation [*Alexander and Scott*, 2002; *Chiang et al.*, 2002]. Analyses of instrumental SSTs reveal anomalous SST variability associated with Pacific ENSO and a reduction in the Atlantic northeast trade winds [*Enfield and Mayer*, 1997].

Analyses of instrumental tropical Atlantic SSTs reveal variations with frequencies of 2-5 years, ~13 years, and a multidecadal oscillation. The 2-5 year variability is associated with processes similar to ENSO in the Pacific, where the western Atlantic trade winds weaken and eastern equatorial Atlantic thermocline waters shift westward [*Carton et al.*, 1996]. Variability around 13 years has been related to cross-equatorial SST structure of the tropical Atlantic, sometimes referred to as the Atlantic dipole [*Chang et al.*, 1997; *Chu*, 1984]. The same 13-year pattern has been shown to coincide with a cycle of the same duration in the Pacific, identified in a tropical coral proxy study [*Cobb et al.*, 2001]. Modeling studies have suggested that the Atlantic Multidecadal Oscillation is related to changes in Atlantic thermohaline circulation, but the instrumental record is not long enough to verify this hypothesis [*Knight et al.*, 2005].

## 1.3 Existing Tropical Reconstructions

In Asia and the Pacific, the few existing high-resolution tropical records for the past two millennia mostly characterize variability within either the Asian monsoon or ENSO. Reconstructions of precipitation, inferred from the $\delta^{18}O$ signature in speleothems, are useful for understanding the history of the monsoon [*Burns et al.*, 2002; *Yadava and Ramesh,* 2005]. Corals are often used to reconstruct tropical Pacific SST as it relates to ENSO, though many of those records are shorter (~100-200 years), serving to validate and extend data already available from instrumental records.

Similarly, high-resolution work on marine sediments from the Arabian Sea has been used to reconstruct the Asian monsoon on several different time-scales. In one such study, the abundance of the upwelling foraminiferal species *Globigerina bulloides* was used as a proxy for wind strength over the past millenium. Upwelling is proportional to the square of the wind speed, resulting in large responses of *G. bulloides* abundance to small changes in the wind. The records derived from this study were then compared to the Mann et al. (1999) multi-proxy, temperature reconstruction for the Northern Hemisphere, where similar variations are observed during phases such as the LIA and Maunder Minimum [*Anderson et al.*, 2002; *Mann et al.*, 1999].

There are several terrestrial East African records which possess sufficient temporal resolution to identify climate anomalies over the past two millennia. These sources have recorded East African climate in terms of wetter and drier periods and have been used to demonstrate the influence of the LIA in regions outside of the Atlantic [*Brown and Johnson*, 2005; *Verschuren et al.*, 2000]. Brown et al. (2005) note similarities between their record of biogenic silica at Lake Malawi in East Africa with Ti in sediments from Cariaco, indicating that there was a similar southward migration of the ITCZ across the tropics during the LIA and perhaps implying broader tropical teleconnections (Figure 1.1) [*Brown and Johnson*, 2005].

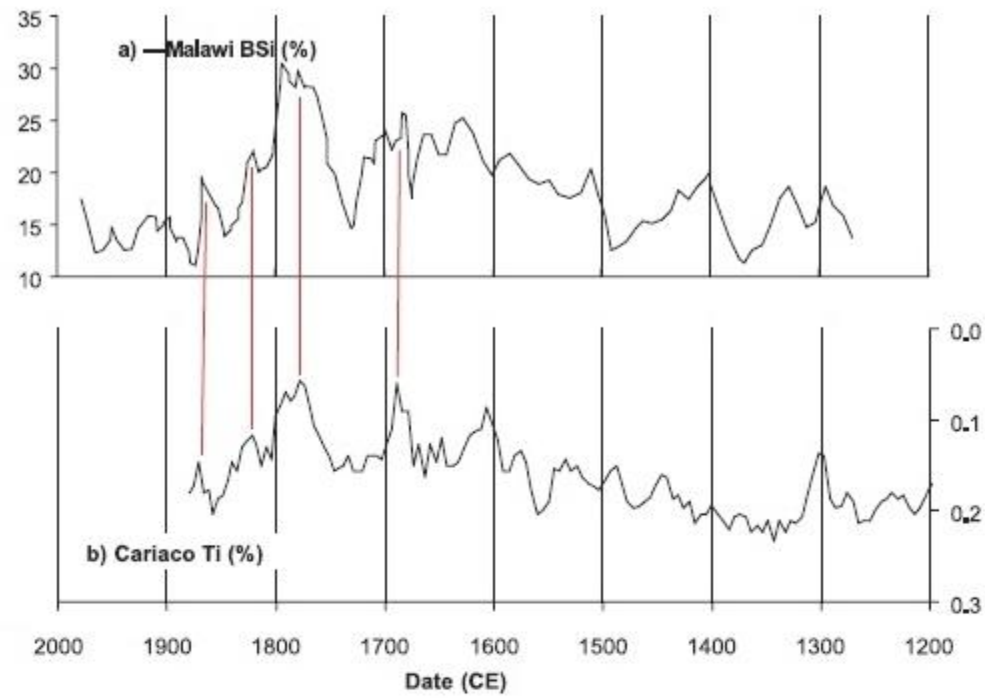


**Figure 1.1 - East African proxy compared to Cariaco Basin proxy. The (a) Malawi BSi record [Brown et al., 2005] is very similar to the record of (b) Ti in Cariaco sediments [Haug et al., 2001]. (Figure from Brown et al., 2005)**

In the Atlantic, there are relatively few existing tropical records for the past 2000 years and many of them are either terrestrial-based, low-temporal resolution, or non-quantitative, and therefore cannot be used to quantify sub-centennial scale Atlantic SST variability. Still, the importance of these records should not be overlooked. For example, high-resolution lake records from the Yucatan Peninsula have provided unparalleled views of continental hydrographic variability and potential forcing mechanisms over the time period of interest [*Hodell et al.*, 1995]. $\delta^{18}O$ and other geochemical data from this region represent continental temperature and precipitation variability, and have been linked to regional paleo-SST records of varying length and location [*Hodell et al.*, 2001; *Hodell et al.*, 2005]. In other examples, foraminiferal oxygen isotope analyses and titanium and iron concentrations from Cariaco sediments have been used to track the migration of the ITCZ through northern South America and to infer continental input to the basin, but the signal is generally thought of as "warm and wet" or "cold and dry," and is thus not a quantitative estimate of paleo-SST [*Haug et al.*, 2001; *Haug et al.*, 2003; *Tedesco and Thunell*, 2003a]. These records demonstrate how tropical Atlantic regional climate has changed over the last two millennia. In order to understand why these climatic changes have occurred, it is vital to have a high-resolution, quantitative tropical Atlantic SST record from which we can infer patterns in variability.

There have been very few quantitative tropical Atlantic paleo-SST studies that span the approximately the last 2000 years with sub-century resolution, and they are quite different from one another. Richey et al. (2007) presented a 1500-yr long Mg/Ca record with 12-yr sample resolution from the Gulf of Mexico (Figure 1.2a) [*Richey et al.*, 2007]. This study noted a relatively early Medieval Warm Period (~ 500-1000 A. D.), followed by an extended cool period (~ 1000-1900 A. D.) including the Little Ice Age, and was found to be similar to peaks and minimums in the Esper et al. (2002) tree-ring study [*Esper et al.*, 2002].

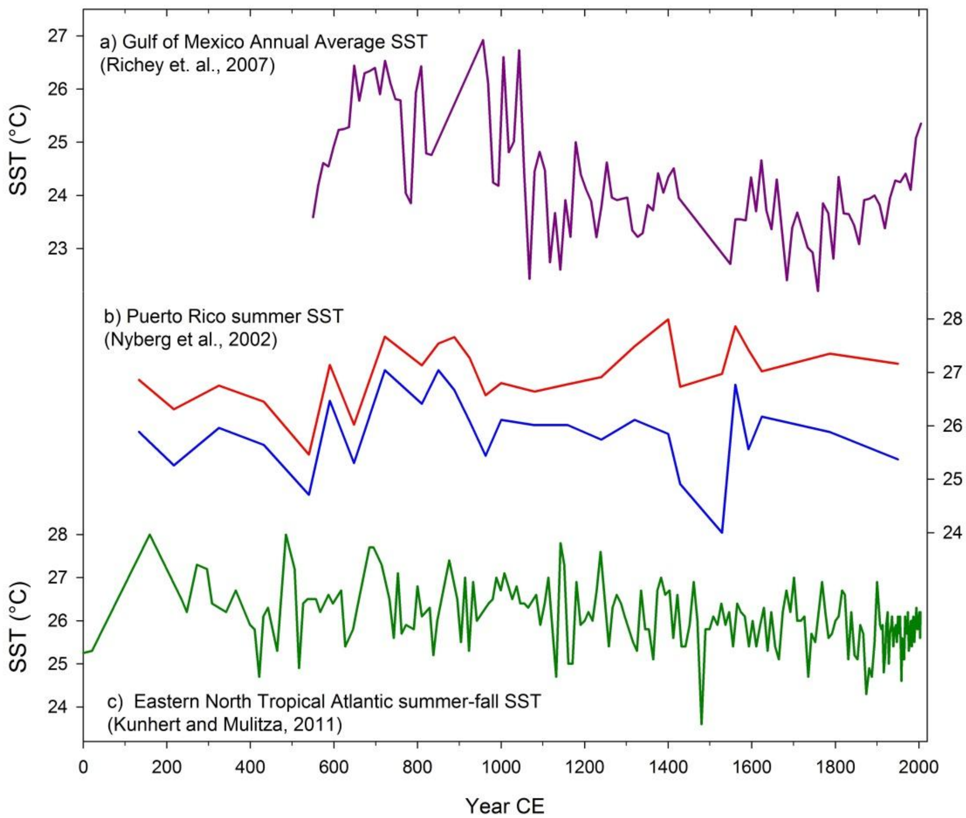


**Figure 1.2 - Existing paleo-SST data for the tropical Atlantic that span the last 2000 years with sub-centennial scale resolution. (a) Gulf of Mexico G. ruber (white) Mg/Ca-SST (from Richey et al., 2007), (b) Puerto Rico summer (top) and winter (bottom) SSTs using an artificial neural net on relative abundance of 26 foraminiferal species (from Nyberg et al, 2002), (c) eastern North Tropical Atlantic *G. ruber* (pink) Mg/Ca-SST (from Kuhnert and Mulitza, 2011).**

The study also examined the *G. ruber* (white) $\delta^{18}O$ and *G. sacculifer* abundance records over the same time interval, noting an abrupt shift in both of these records ca. 600 yr B.P. that was not seen in the Mg/Ca analysis, suggesting that the Gulf of Mexico SSTs are mostly independent of the regional hydrology, though the hydrology shows links with North Atlantic atmospheric circulation [*Richey et al.*, 2007]. Nyberg et al. (2002) reconstructed winter and summer northern Caribbean SSTs using an artificial neural net based on the relationship between planktic foraminifera abundances and measured SSTs (Figure 1.2b) . This record indicates substantial SST variability over the last 2000 years as well as seasonality changes associated with events such as the MWP and the LIA. There are several problems with this record – due to increased bioturbation during some time intervals, there were some inconsistencies in dating. Furthermore, data points are more than 70 years apart on average, and thus cannot address questions about interannual to sub-centennial scale variability. Kuhnert and Mulitza, 2011 created a Mg/Ca-SST based reconstruction in the eastern tropical Atlantic, in which the LIA does not appear to be particularly cool, nor is there a clear rise in SSTs subsequent to the LIA (Figure 1.2c). However, as they note in their paper, the eastern tropical Atlantic is subject to different climatological patterns and may even have a dipolar relationship with the western tropical Atlantic.

Even high-resolution tropical Atlantic SST reconstructions spanning just the last 500-1000 years are surprisingly rare. One of the highest resolution reconstructions over this shorter interval is based on sclerosponge Sr/Ca data from Jamaica [*Haase-Schramm et al.*, 2005]. With an average sample spacing of 3-4 years and extending back to the mid-1300's, this record shows a decreasing trend in SSTs from the end of the Medieval Warm Period through the Little Ice Age, and a long-term warming trend beginning in the early-1800's extending through the present (Figure 1.3a). Coral growth rates in the Bahamas have been used to reconstruct SST anomalies at yearly resolution since 1552 (Figure 1.3b) [*Saenger et al.*, 2009]. Moving slightly away from the Caribbean and tropical Atlantic, sclerosponge Sr/Ca data from Bermuda were used to reconstruct SSTs for the last 230 years with interannual resolution (Figure 1.3) [*Goodkin et al.*, 2005].

A variety of high-resolution paleo-SST records exist for the late-19$^{th}$ and 20$^{th}$ centuries [*Rosenheim et al.*, 2005; *Sanders et al.*, 1996], and narrow (5-year) time slices have been reconstructed [*Watanabe et al.*, 2001], but these records do not extend far enough into the past to characterize the full range of tropical Atlantic interannual- to centennial-scale variability, and the more recent records are most likely subject to anthropogenic influences.

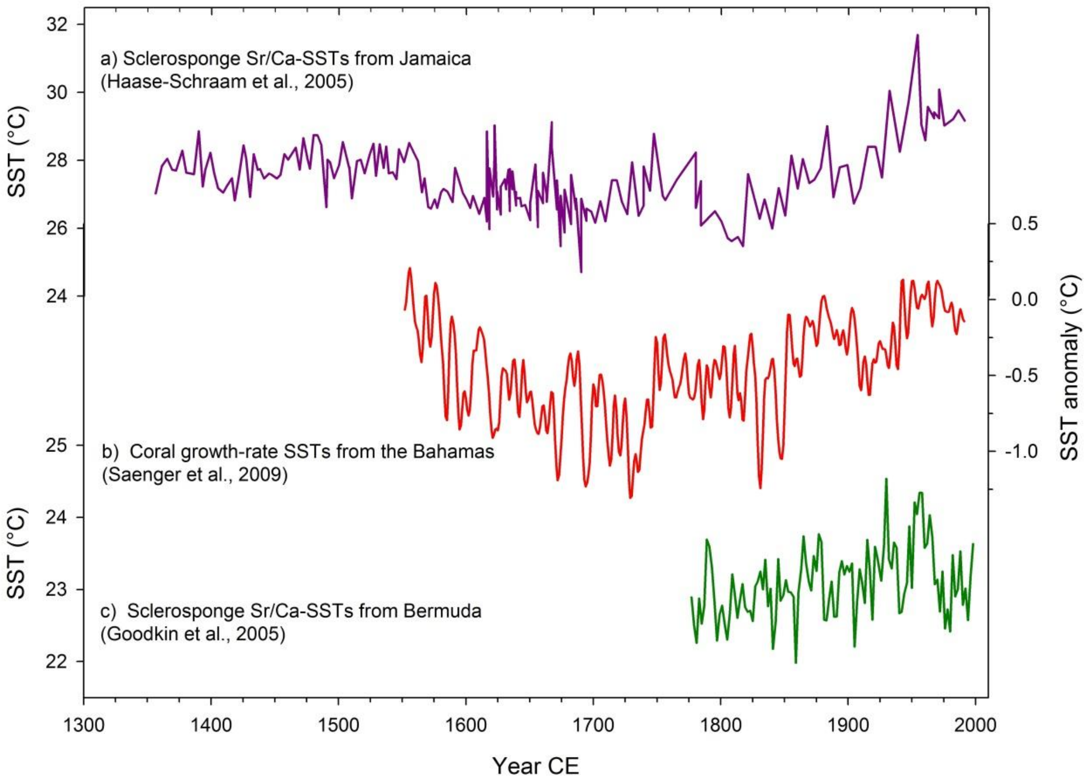


**Figure 1.3 - High resolution tropical Atlantic paleo-SST records that extend back more than a few centuries. (a) Jamaica sclerosponge Sr/Ca-SSTs (from Haase-Schraam et al., 2005), (b) SST anomalies based on *Siderastrea sidereal* coral growth-rates from the Bahamas (from Saenger et al., 2009), (c) Bermuda sclerosponge Sr/Ca-SSTs (from Goodkin et al., 2005).**

# 2. Study Area

## 2.1 Geographic and Physical Setting

The Cariaco Basin is a zonally-trending pull-apart basin located off the northern coast of Venezuela (10°N, 64°W), measuring 160 km long and 50 km wide [*Peterson et al.*, 1991]. It is comprised of two sub-basins, eastern and western, both reaching depths of ~1400 m and separated from each other by a ~900 m sill [*Schubert*, 1982]. Additionally, there are two smaller depressions, the Araya and Margarita Basins (550 m and 412 m water depth, respectively), located to the east of the larger basins [*Richards*, 1975]. Bound by the Tortuga bank on its northern margin, the Cariaco Basin's only connections to the open ocean are via the Centinela channel in the northwest (146 m) and the Tortuga channel in the northeast (135 m) [*Alvera-Azcárate et al.*, 2009; *Richards*, 1975]. Presently, the Cariaco Basin is one of the largest anoxic basins in the world, second only to the Black Sea [*Richards*, 1975].

Terrigenous input into the Cariaco Basin is comprised of approximately 10% æolian sources and 90% fluvial input from four local rivers [*Elmore et al.*, 2009]. Fluvial input into the basin comes primarily from the Tuy River, which contributes an estimated $12 \times 10^6$ tons of terrigenous material per year [*Milliman and Syvitski*, 1992]. The Manzanares, Unare, and Neveri Rivers contribute an additional $1.5 \times 10^6$ tons/year [*Lorenzoni et al.*, 2009]. The nearby Orinoco and Amazon Rivers, while larger, are thought to play a negligible role [*Martinez et al.*, 2010].

## 2.2 Regional Climatology

The Cariaco Basin lies at the northernmost extent of the latitudinal range of the Intertropical Convergence Zone (ITCZ) [*Haug et al.*, 2001]. The ITCZ is a circum-equatorial region of low atmospheric pressure marking the convergence of the north- and south-east trade winds, where warm moist air rises, then cools and condenses into clouds and precipitation [*Chiang et al.*, 2002]. The migration and variability of the ITCZ is driven by seasonal changes in the cross-equatorial SST gradient, as well as remote forcing from Walker circulation in the Pacific [*Chiang et al.*, 2002].

During boreal winter, between January and March, the Atlantic ITCZ is at its southernmost position just below the equator, over the South American continent [*Peterson et al.*, 1991]. During this time, strong easterly trades induce Ekman upwelling along the Venezuelan coast, bringing cool, nutrient-rich waters to the surface [*Peterson et al.*, 1991], and triggering high biological productivity [*Muller-Karger et al.*, 2001; *Peterson and Haug*, 2006]. Beginning in June or July, the ITCZ shifts northward to sit over the Cariaco region, and initiates the Venezuelan rainy season (Figure 2.1). This period is associated with decreased trade wind strength and diminished upwelling, but greatly increased precipitation [*Peterson et al.*, 1991]. The rainfall over the continent drains directly into the Cariaco Basin, resulting in the deposition of a seasonal layer of terrigenous sediment by way of increased fluvial discharge from local rivers [*Lin et al.*, 1997].

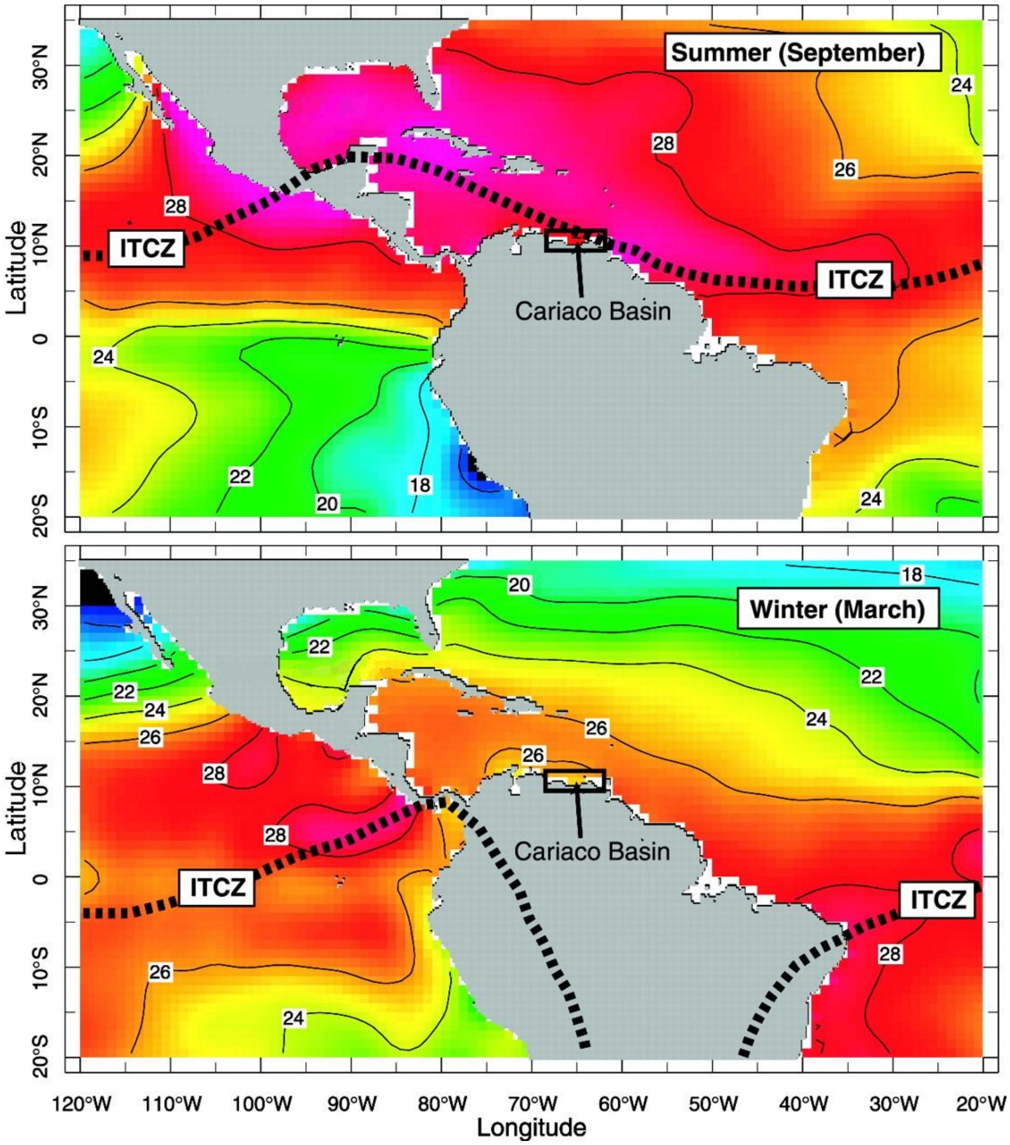


**Figure 2.1 - Seasonal variations in the mean position of the Intertropical Convergence Zone, illustrated for typical summer (September) (top) and winter (March) (bottom) conditions. Numbers and colors reflect sea surface temperatures in degrees Celsius. Location of the Cariaco Basin study area is indicated. (After Haug et al., 2003)**

A secondary upwelling peak in July-August has been observed, initially detected as an upward anomaly in isotherm patterns, and attributed to a southward component of the trade winds [*Astor et al.*, 2003]. While SSTs during the primary (winter) upwelling season can drop up to 2°C relative to the surrounding waters, the secondary upwelling in July is reflected more strongly at 50 m depth than the surface, where summer heat fluxes prevent cooling [*Alvera-Azcárate et al.*, 2009]. Waters below sill depth experience very little variation in temperature throughout the year [*Alvera-Azcárate et al.*, 2009].

## 2.3 Seasonal Biology

Changes in Cariaco Basin biota are directly related to the annual cycle of upwelling and trade wind strength [*Muller-Karger et al.*, 2001; *Tedesco et al.*, 2007]. During the wind-driven upwelling season, primary production is at a maximum, with diatoms as the main phytoplankton [*Peterson et al.*, 1991]. Planktonic foraminiferal flux also increases as a result of increased food availability from ~100 shells $m^{-2}$ $day^{-1}$ during the non-upwelling season to 4000-8000 shells $m^{-2}$ $day^{-1}$ during the upwelling season [*Tedesco and Thunell*, 2003b]. The upwelling season represents the period of peak annual flux of all major species of foraminifera in the basin, however the relative and absolute abundances of individual species vary seasonally [*Tedesco and Thunell*, 2003b].

*Globigerina bulloides* dominates the winter-spring assemblage [*Bé and Tolderlund*, 1971], contributing 60-80% of the total [*Tedesco and Thunell*, 2003b]. Generally a subpolar species, its abundance can also be controlled by variations in surface productivity rather than temperature, hence its maximum flux during the upwelling season [*Thunell and Reynolds*, 1984]. Though observed in the basin year-round, *G. bulloides* reaches its minimum flux and lowest contribution to the total assemblage during late summer [*Peterson et al.*, 1991; *Tedesco and Thunell*, 2003b].

*Globigerinoides ruber* is a subtropical to tropical species inhabiting the suface mixed layer. A prominent feature is the existence of two morphotypes – white and pink - each with their own preferred habitats [*Bé and Tolderlund*, 1971; *Tolderlund and Bé*, 1971]. The white variety frequently dwells in shallower waters between 0-45 meters depth, while the pink form is found in slightly deeper waters, between 25-65 meters depth [*Bé*, 1982]. Furthermore, studies have shown that the intensity of the pink pigmentation is temperature-dependent, with white tests predominating in winter and early spring months [*Bé and Tolderlund*, 1971; *Tolderlund and Bé*, 1971]. A positive correlation has been noted between the frequency of the pink variety and temperature, such that pink tests predominate as SSTs reach maximum values in late summer [*Tolderlund and Bé*, 1971].

The overall contribution of both morphotypes accounts for less than 10% of the total annual flux; however, when *G. bulloides* reaches its minimum, during the non-upwelling season, the relative abundance of *G. ruber* is at its highest, constituting 20-30% of the total assemblage [*Peterson et al.*, 1991; *Tedesco and Thunell*, 2003b].

## 2.4 Hydrography and Water Column Geochemistry

The hydrography of the Cariaco Basin is greatly dependent on surrounding sill depth [*Astor et al.*, 2003]. Water exchange is limited to surface currents, dominated by the east-to-west flow of the Caribbean Current. The upper portion of the water column interacts with, and is therefore similar to that of the open Caribbean Sea, with surface property values varying seasonally and geographically [*Alvera-Azcárate et al.*, 2009; *Astor et al.*, 2003; *Richards*, 1975]. The shallow sills formed by the Tortuga and Centinela channels, while allowing flow and exchange of surface water, restrict horizontal water exchange below sill depth [*Peterson et al.*, 1991]. A strong, temperature-dominated pycnocline beneath the 150 m thick mixed layer prevents vertical mixing, such that conservative properties in waters below sill depth are largely uniform. [*Richards*, 1975; *Scranton et al.*, 1987].

Temperature, salinity, and dissolved oxygen levels are among those properties that exhibit seasonal patterns in surface waters (Figure 2.2). Temperature maxima in the basin occur between September and October, coeval with minima in salinity and dissolved oxygen [*Astor et al.*, 2003]. Conversely, maxima in salinity and dissolved oxygen occur during the dry, windy season between January and April, when temperature is at its lowest.

Oxygen is supplied to the basin only by air-sea gas exchange and photosynthesis [*Astor et al.*, 2003]; the vertical and horizontal restriction of water exchange prevents new additions of deep water and dissolved oxygen [*Holmen and Rooth*, 1990; *Peterson et al.*, 1991]. In combination with high seasonal productivity and the decomposition of settling organic matter, this results in anoxia below ~300 m depth [*Muller-Karger et al.*, 2001; *Peterson et al.*, 1991]. Due to the lack of oxygen, benthic organisms are nearly non-existent in the sediment, largely eliminating the threat of bioturbation, and leading to the excellent preservation of marine sediment cores [*Hughen et al.*, 1996; *Lin et al.*, 1997].

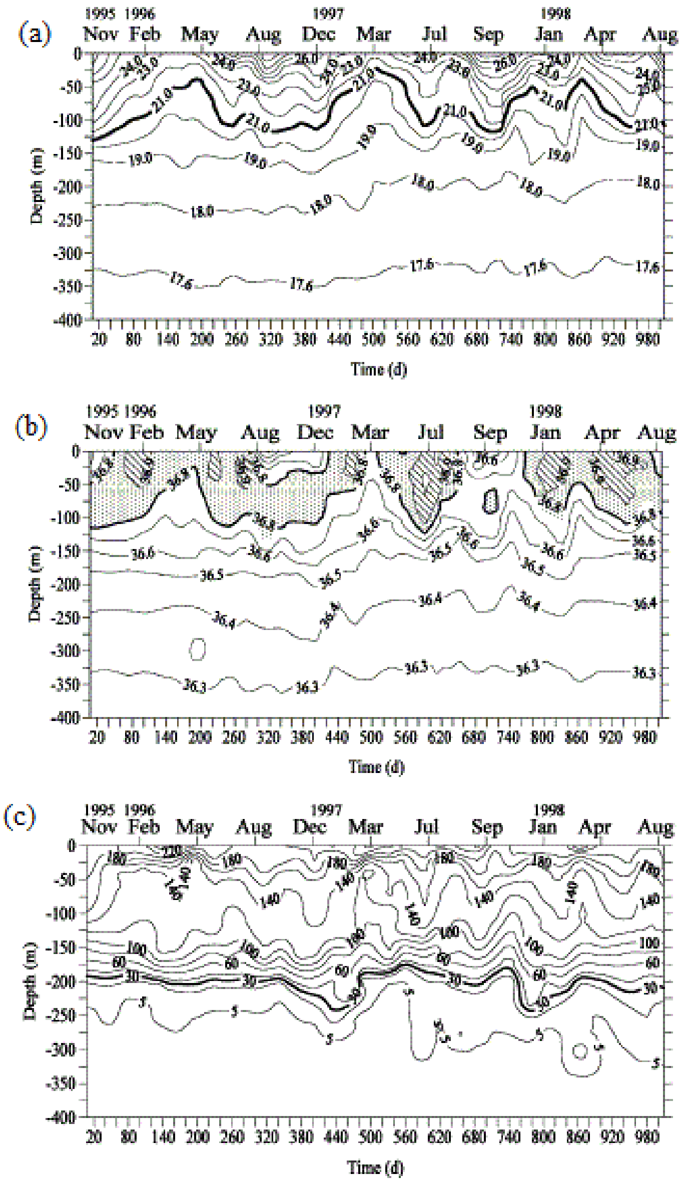


**Figure 2.2 - (a) Temperature (°C), (b) salinity (with maxima tracing the subtropical underwater shaded), and (c) dissolved oxygen (μM) variations in the Cariaco Basin between November 1995–August 1998. (After Astor et al., 2003).**

## 2.5 Sediment Characteristics

Sediment composition in the Cariaco Basin is primarily terrigenous and carbonate, where terrigenous material is more predominant closer to locals rivers, and the biogenic carbonate component becomes more important away from the coast [*Martinez et al.*, 2010]. Sedimentation rates have been estimated to be between 30 to 100 cm per thousand years, depending on the period [*Haug et al.*, 2001; *Lin et al.*, 1997; *Peterson et al.*, 2000]. The largest amount of terrigenous material, both fluvial and æolian, is deposited during the summer rainy season, when the ITCZ is overhead of the Cariaco Basin [*Elmore et al.*, 2009].

The seasonal cycle of terrigenous input and biological productivity are visible in sediment cores as alternating dark and light laminae, respectively, where each set represents an annual varve [*Haug et al.*, 2001; *Hughen et al.*, 1996]. Over longer time scales, variations in terrigenous input, inferred from bulk iron and titanium content of Cariaco sediments, have also been used to identify a climatological response that mimics the seasonal cycle of deposition. During periods of cooler North Atlantic SSTs, the southward migration of the mean latitudinal position of the ITCZ leads to drier conditions, higher carbonate content and lower fluvial input in Cariaco records. Conversely, warmer periods have overall increased values of terrigenous input associated with wetter climate over the Cariaco Basin [*Haug et al.*, 2001; *Peterson and Haug*, 2006]. Deeper intervals also show evidence of bioturbation and contain benthic foraminifera, suggesting that the basin has oscillated between oxic and anoxic states in the past[*Peterson et al.*, 2000], though it has remained anoxic for the period of this study.

# 3. Materials, Methods, and Analyses

## 3.1 Sediment Cores and Initial Processing

Cores collected from several cruises to the Cariaco Basin were used for this study, including those taken in 1990 aboard the *R/V Thomas Washington*, and in 1998 and 2008 aboard the *R/V Hermano Gines*. Three cores – two box cores and a gravity core – were spliced together to create a 2000-year Mg/Ca record, with two additional cores used to establish an age model (Table 3.1). The same two cores were used to create the *G. ruber* Mg/Ca calibration subsequently described in a later chapter. The same sampling method was applied to all five cores. The cores were first split in half, and the exposed surface was gently scraped with a glass slide to remove material that may have been dragged down core during the splitting process. Tape measures with 1 mm markings were placed on both sides of the core-half. A straight edge was placed across the core using the 1 mm markings as a guide, and a glass slide was used to scrape off 1 mm sections from the end of the working core. Each individual sample was then freeze-dried to allow for preservation, storage, and ultimately, easier sample processing. The presence of pteropods (aragonite) was noted in all cores during sampling, suggesting that foraminifer (calcite) preservation is still excellent.

**Table 3.1 – Core data for gravity and box-cores used in this study**

| Core | Core Type | Year taken | Water Depth (m) | Location (Lat, Long) | Length (cm) | Used for: |
|---|---|---|---|---|---|---|
| PL07-72GGC | Gravity | 1990 | 390 | 10° 45.77'N 64° 42.25'W | 107.9 | Mg/Ca record |
| PL07-73BC | Box | 1990 | 450 | 10° 45.98'N 64° 46.20'W | 56.9 | Mg/Ca record |
| CAR25-1 | Box | 2008 | 503 | 10° 40.05'N 64° 39.01'W | 9.9 | Mg/Ca record |
| PL07-71BC | Box | 1990 | 395 | 10° 45.46'N 64° 41.86'W | 56.4 | Age model Calibration |
| CAR7-2 | Gravity | 1998 | 449 | 10° 39.06'N 64° 39.60'W | 220 | Age model Calibration |

In order to isolate the foraminifera in the sample from the sediment, the next phase of processing was washing the samples. Two-thirds of each freeze-dried sample were weighed out into a 250 mL beaker and rehydrated using deionized water to disaggregate the sediment before wet-sieving it through a 63 μm sieve. Once completely cleaned, the > 63 μm fraction was oven-dried, and the fine fraction (< 63 μm) sat in 1 L beakers under heat lamps to settle and dry as the deionized water was evaporated. This smaller size fraction was saved for mineralogy and nano-fossil analyses, which were not a component of this project.

Once the coarse fraction (> 63 μm) was fully dried, it was weighed, recorded and then separated by sieve into a 63-150 μm fraction and a >150 μm fraction. The latter of these two fractions was used for the study presented here.

## 3.2 Age Model

### *3.2.1 Faunal Census Correlation*

The age model for our Mg/Ca-SST record was established primarily through faunal census correlations to nearby cores with well-constrained age models [*Black et al.*, 2004; *Black et al.*, 1999]. PL07-71BC and CAR7-2 have sediment ages derived from a combination of varve counts, $^{210}$Pb dating, and accelerator mass spectrometry (AMS) $^{14}$C dates. Black et al. (2004) successfully spliced PL07-71BC and CAR7-2 together using overlapping faunal census data to create a 2000-year composite biostratigraphy. New core material could then easily be matched to the stratigraphy by correlating planktic foraminifera species variations to the composite stratigraphy.

In order to patch the cores used in this study to existing Cariaco composite biostratigraphy, foraminiferal census counts were performed on the >150 µm size fractions. Each sample was split using a Sepor microsplitter to create aliquots between 300-600 tests. A minimum of 300 individuals per split has been shown to reduce statistical errors [*Imbrie and Kipp*, 1971]. The divided samples were then evenly distributed onto a gridded tray and selected species were counted under a stereomicroscope and recorded. Distinct species-specific downcore abundance patterns allowed the records from the various cores to be spliced together using data from overlapping intervals. An example of this type of faunal correlation is shown in Figure 3.1. Abundance variations of the pink morphotype of *Globigerinoides ruber* are easily identifiable in multiple cores and could thus be used to choose tie points for PL07-72GGC with nearby, dated core CAR7-2. An age model was created by linearly interpolating between these tie points and then verified using correlations between multiple other species. PL07-72GGC's age model was then spliced together with PL07-73BC, which was previously dated [*Black et al.*, 2007] using the same 2000-year composite biostratigraphy.

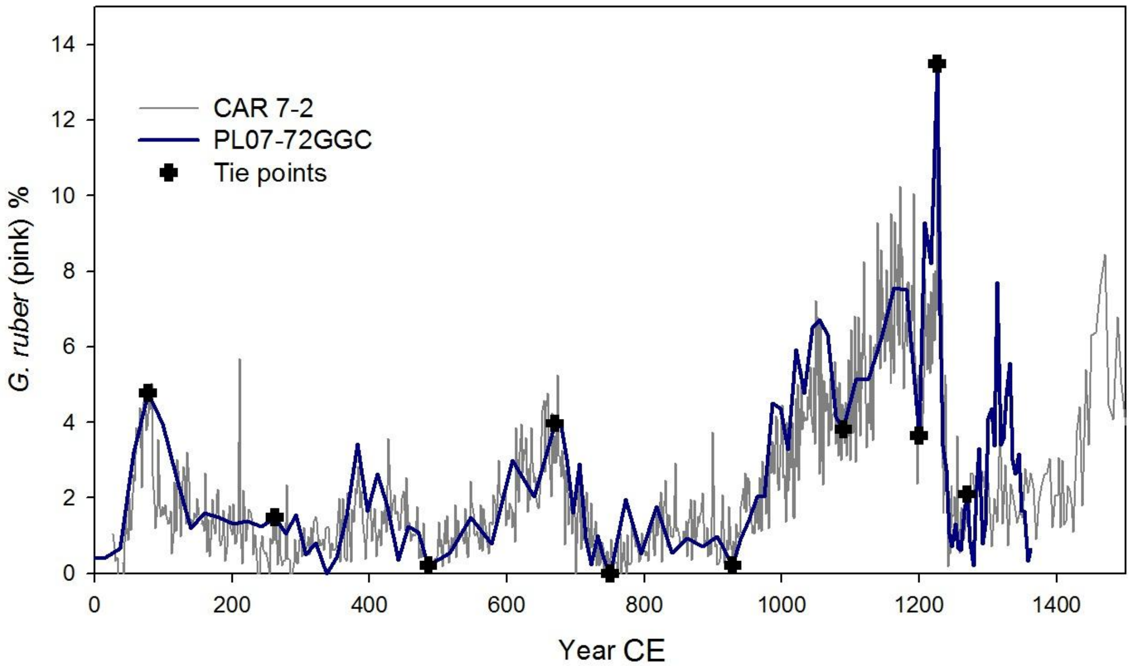


**Figure 3.1 – The age model for Cariaco Basin gravity core PL07-72GGC is based on faunal correlations with well-dated gravity core CAR7-2. An example of this type of faunal correlation is shown for the relative abundance of planktic foraminifer *Globigerinoides ruber*; multiple species were used to check and verify the correlations.**

### *3.2.2 $^{210}$Pb Dating*

CAR25-1 provides more recent sediment (1990 to 2008) than the cores collected in 1990, and was patched in to PL07-73BC using $^{210}$Pb dates produced from 13 samples taken at various intervals of the 10cm long core. The activity of $^{210}$Pb is measured indirectly through counts of its granddaughter product, $^{210}$Po, with which it is in secular equilibrium. In order to use $^{210}$Pb activity as an age model, we must know what the supported (background) levels of $^{210}$Pb are in the sediment column, as it is the change in unsupported (excess) $^{210}$Pb over time which provides a sedimentation rate. Unsupported $^{210}$Pb activity is determined as the difference between the total and supported activities. $^{210}$Pb has a half-life of ~22.3 years, limiting its usefulness as a dating tool to within the last ~130 years [*Noller*, 2000]. CAR25-1 includes sediment deposition starting in the 1930s, placing it well within the range of $^{210}$Pb dating, but preventing determination of supported levels of $^{210}$Pb. Therefore, in addition to the 13 samples from CAR25-1, two samples at 21.3 and 28.6 cm depth were run from PL07-73BC in order to establish the baseline (supported) $^{210}$Pb activity in the Cariaco.

The dry < 63 µm fraction was weighed out (0.2 – 0.9 g) for each sample and poured into a 250 mL Teflon beaker with a small amount of deionized water. $^{208}$Po was added as a tracer at ~200 µl per gram of sample. 10-15 mL each of concentrated HCl, $HNO_3$, and HF were then also added to each sample. The samples were heated on a hot plate with a Teflon watch glass partially covering the beakers and were kept on low heat until evaporation was nearly complete. The heating/evaporation process was repeated twice more, with the second time omitting the HF, and the third time omitting both HF and $HNO_3$. The process was repeated with HCl if total dissolution has not been reached by this point.

In preparation for Po plating, 50 mL of 1.5 N HCl was added to each sample, which were then transferred to 100 mL glass beakers. Ascorbic acid was stirred in until all Fe was complexed. This was visually confirmed by the removal of most of the yellow coloring. Silver discs were prepared by polishing and rinsing and backing with Glyptal red insulating enamel. The discs were placed in teflon holders, which were then added to the sample solutions. The beakers were covered with watch glasses and put over low heat for 2-3 hours, during which time they were gently stirred. Afterward, the discs were removed from the solution, rinsed with water and acetone, labeled and counted on a Canberra Quad Alpha Spectrometer 7404.

Based on the PL07-73BC samples, the supported activity in the sediment column was ~1.8 dpm/g. This value was subtracted from the total activity measured in the CAR25-1 samples. The remainder represented the excess $^{210}$Pb activity. The natural log of the excess $^{210}$Pb plotted against depth produces a linear plot, with slope, m, equaling the negative of the decay constant of $^{210}$Pb, $\lambda = .0311\ yr^{-1}$, divided by the sedimentation rate, S (Figure 3.2). Solving for S gives us a sediment accumulation rate of ~.143 cm/yr ($r^2 = .966$), which we can then use to establish an age model extrapolating back from the year the core was taken, 2008. In addition to providing an age model for CAR25-1, dates which overlapped with PL07-73BC were used to splice the two age models together.

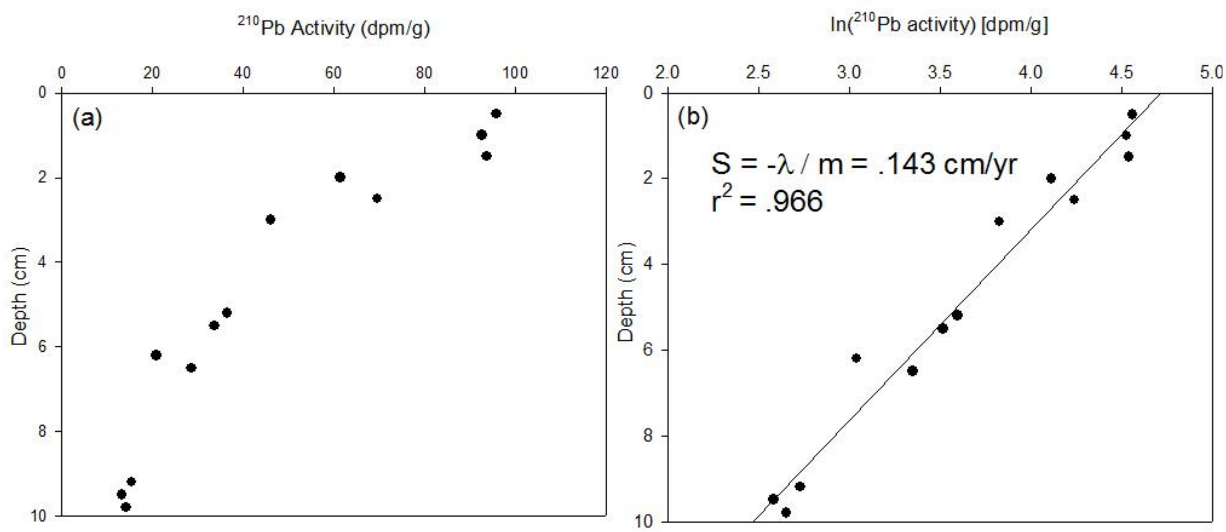


**Figure 3.2 - (a) Downcore profile of Pb-210 activity in core CAR25-1; (b) Downcore profile of excess Pb-210 activity (natural log of Pb-210 activity), where the slope, m, is equal to the negative of the decay constant, λ, divided by the sedimentation rate, S.**

### *3.2.3 Refinement and Error*

The faunal correlations and $^{210}Pb$ dates have been constrained by varve counts and a series of AMS $^{14}C$ dates run on monospecific samples of *G. bulloides* and generated by Dr. John Southon at the W. M. Keck Carbon Cycle Accelerator Mass Spectrometry Laboratory, University of California, Irvine.

Based on current and prior proxy-instrumental correlations, the dating error for the period of instrumental overlap (~A. D. 1990-1870) is less than one year. The AMS $^{14}C$ date errors down core reach approximately ± 40-50 years for sediments deposited 2000 years ago. The error in the calendar age has little effect on the temporal resolution of individual samples as the last 2000 years are represented by ~1000 samples – changing the basal absolute age by ± 40-50 years has only a very small impact.

While age control is insufficient to address subdecadal-scale leads and lags between tropical and higher latitude variability beyond the 20$^{th}$ century, the age model is more than precise enough to explore subdecadal frequency variability as well as phase differences between the tropics and higher latitudes for climate events such as the Little Ice Age and the Medieval Warm Period.

## 3.3 Mg/Ca Analysis

Specimens of *G. bulloides* (212-250 µm) and *G. ruber* (pink; 212-425 µm) were picked from each 1 mm sample for Mg/Ca analyses. Using a microbalance, both species were weighed out to 200 – 240 µg, equivalent to ~60 *G. bulloides* and ~14 *G. ruber*. The picked samples of *G. bulloides* and *G. ruber* were cleaned using a procedure modified from *Boyle* [1981] to remove possible contamination from clays and organic matter. The samples were first gently crushed within a folded piece of weighing paper, using a glass slide to break open the chambers and placed in microcentrifuge tubes.

They were then sonicated in 100 µL of methanol for one minute, after which 400µL of ultrapure water was added to disturb the sample, and then siphoned off to remove clays. This step was repeated twice, but with 100 µL of ultra-pure water rather than methanol. Next, the samples were sonicated for one minute in 300 µL of methanol. The lower viscosity of methanol helps dislodge clay particles that may still be attached to the foram tests [*Barker et al.*, 2003]. The supernatant was siphoned off and the methanol step was repeated. After the methanol was removed, the sample was rinsed with 400 µL of ultrapure water, sonicated for one minute, siphoned, and then rinsed again.

250 µL of an oxidizing solution consisting of 0.15% $H_2O_2$ in 0.1 N NaOH was added to each sample tube. The samples were then boiled for 10 minutes with 1 minute of sonication in the middle, and removal of the supernatant at the end. The boiling in an oxidizing solution step was repeated to ensure removal of all organic material. The samples were rinsed with ultrapure water twice with another sonication in between to remove all the oxidizing reagent. Following removal of the oxidizing agent, the samples were transferred to new acid-leached microcentrifuge tubes. They were then mildly acid-leached, four at a time, with a 0.001 M $HNO_3$ solution, sonicated for 30 seconds, rinsed twice more with ultrapure water and sonicated, and then finally dried.

The cleaned samples were then sealed in acid-leached microcentrifuge tubes and sent to Dr. Robert Thunell at the University of South Carolina. There, the samples were dissolved in 5% $HNO_3$ in a volume sufficient to yield a Ca concentration of 80 ppm, Magnesium and calcium were simultaneously measured on a Jobin Yvon Ultima Inductively Coupled Plasma Atomic

Emission Spectrophotometer.  The Mg/Ca values were corrected relative to a standard solution [*Schrag*, 1999] run between every sample.

# 4. Foraminiferal Mg/Ca Ratios as a Temperature Proxy

## 4.1 Overview

Measurements of the stable oxygen isotopic ($\delta^{18}O$) composition in foraminiferal calcite has long been one of the primary proxies used for marine paleothermometry [*Emiliani*, 1955; *Urey*, 1947]. However, $\delta^{18}O$ variations are not only a function of calcification temperature, but also of the oxygen isotopic composition of the seawater in which calcification occurs, and is a function of local salinity and ice volume variations [*Epstein et al.*, 1953; *Shackleton and Opdyke*, 1973].

Mg/Ca ratios provide temperature estimates that are largely independent of salinity and ice volume components, and thus can also be used to deconvolve the $\delta^{18}O$ signal into its respective parts. The substitution of magnesium into calcite was first recognized as being temperature dependent in the early 1950s, where higher magnesium content was positively correlated with temperature [*Chave*, 1954]. However, subsequent studies failed to demonstrate a distinct relationship between Mg and calcification temperature and it was concluded by several of these studies that ecological (e.g. growth rate) and environmental (e.g. dissolution) parameters play a large role in determining the magnesium content in biogenic calcite [*Delaney et al.*, 1985; *Savin and Douglas*, 1973].

Though uncertainty about the usefulness of Mg/Ca ratios existed, Mg concentration was recognized as having paleoclimatic significance when Cronblad and Malmgren [1981] produced the first downcore record of Mg variability in foraminiferal calcite and found that it correlated with late-Quaternary climatic oscillations. Later studies have reinforced the temperature dependence of foraminiferal Mg/Ca ratios through culture [*Lea et al.*, 1999; *Mashiotta et al.*, 1999; *Nürnberg et al.*, 1996], core-top [*Elderfield and Ganssen*, 2000; *Nürnberg*, 1995] and sediment trap [*Anand et al.*, 2003; *McConnell and Thunell*, 2005] calibrations.

## 4.2 Mg/Ca Equation and Previous Calibrations

Modern Mg/Ca-SST calibrations are traditionally expressed through an exponential equation of the form:

$$\text{Mg/Ca} = A \exp(BT) \qquad \textbf{Equation 4.1}$$

where T is the calcification temperature in °C, and A and B are derived constants that are dependent on the relevant species [*Barker et al.*, 2005]. As mentioned previously, the constants for various species and locations have been determined and refined through a number of calibration studies, which have utilized several different approaches (Table 4.1).

**Table 4.1 – Calibration equations where Mg/Ca = Aexp(BT)**

| Species | A | B | Source Material | Temperature Range (°C) | Reference |
|---|---|---|---|---|---|
| *G. ruber (w)* | 0.69 | 0.068 | Sediment trap | 20 – 33 | [*McConnell and Thunell*, 2005] |
| *G. ruber (w)* | 0.34 (±0.08) | 0.102 (±0.01) | Sediment trap | 22 – 28 | [*Anand et al.*, 2003] |
| *G. ruber (w)* | 0.38 | 0.090 | Core tops | 21 – 29 | [*Dekens et al.*, 2002] |
| *G. bulloides* | 1.20 | 0.057 | Sediment trap | 16 – 31 | [*McConnell and Thunell*, 2005] |
| *G. bulloides* | 0.53 | 0.100 | Culture | 16 – 25 | [*Lea et al.*, 1999] |
| *G. bulloides* | 0.47 (±0.03) | 0.107 (±0.003) | Culture/core tops | 10 – 25 | [*Mashiotta et al.*, 1999] |

Culture calibrations have a distinct advantage in that foraminiferal tests calcify under known conditions and temperature is an independent variable. By using controlled settings in which one variable is changed while others are held constant, these studies have established that the effects of pH and salinity are secondary, whereas temperature is the dominant control on Mg/Ca [*Lea et al.*, 1999; *Nürnberg et al.*, 1996]. However, because the samples are grown in a laboratory setting, the calcification may differ from that in the natural environment where other factors, such as dissolution and gametogenesis, may play a role [*Barker et al.*, 2005].

To that end, core-top calibrations are useful to account for post-depositional effects. Partial dissolution of calcite reduces Mg/Ca [*Brown and Elderfield*, 1996; *Rosenthal et al.*, 2000]. Dissolution occurs when waters are undersaturated with respect to calcite; the depth at which this transition occurs is known as the lysocline [*Berger et al.*, 1982]. Dekens *et al.* [2002] presents species- and ocean-specific dissolution corrections based on the depth at which the core is taken. Although dissolution is controlled by carbonate chemistry, there is a clear relationship between depth and change in carbonate ion ($\Delta CO_3^{2-}$) saturation due to the pressure effect, which allows the use of depth as a proxy for $\Delta CO_3^{2-}$ [*Dekens et al.*, 2002]. Their Mg/Ca-SST equation takes the general form:

$$\mathbf{Mg/Ca = A\ exp\ [B\ (SST - C(d_c))]} \qquad \textbf{Equation 4.2}$$

where A, B, and C are species-specific constants and $d_c$ is the core depth in kilometers [*Dekens et al.*, 2002]. In the Cariaco Basin, where aragonite is present in samples, it is assumed that dissolution is not an issue and need not be taken into consideration.

Sediment trap data allows for high resolution comparison of well-preserved foraminifera with simultaneous *in situ* temperature records [*Anand et al.*, 2003; *McConnell and Thunell*, 2005]. McConnell and Thunell [2005] use white *G. ruber* and *G. bulloides*, each of which has a distinct temperature range and dominates their study site (Gulf of California) at different times of year.  This highlights the need for separate Mg/Ca-SST equations which account for the respectively different temperature ranges [*McConnell and Thunell*, 2005].

## 4.3 Calibration to Modern Instrumental Data

The Cariaco Basin is one of the few places in the world with sufficiently high sedimentation rates and no bioturbation (at least during the Holocene) such that down-core material may be directly calibrated to the instrumental time-series at annual to near-annual resolution.  This study utilized its own species-specific calibrations for both *G.* bulloides and *G. ruber* (pink) to convert from the raw Mg/Ca values to SST (Figure 4.1).  The direct calibration to modern instrumental data for *G. bulloides* was established in a previous study that sought to determine if material recovered from Cariaco Basin sediments could accurately reconstruct instrument-equivalent records of SST [*Black et al.*, 2007].  The *G. bulloides* Mg/Ca data is compared to the Hadley SST data set [*Rayner et al.*, 2003] Cariaco Basin grid square (1° x 1°, centered on 10.5 N, 64.5 W) for the period of A. D. 1870-1990.  The Mg/Ca record was initially compared to individual monthly SST series from 1870-1990.  Correlations are highest for the months of March, April, and May, strongly agreeing with recent Cariaco Basin sediment trap data indicating that *G. bulloides* fluxes are highest during March, April, May (Figure 4.2) [*Tedesco and Thunell*, 2003b].

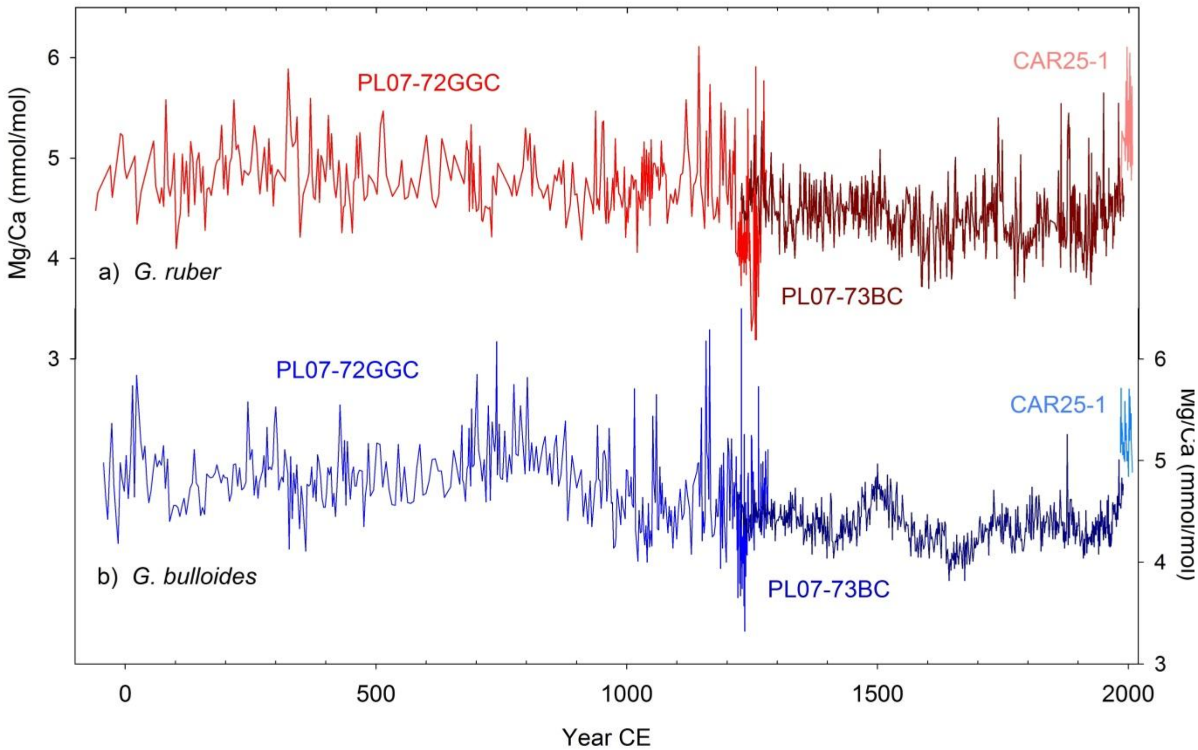


**Figure 4.1 – Raw Mg/Ca data gravity core PL07-72GGC and box cores PL07-73BC and CAR25-1 for a) *G. ruber* and b) *G. bulloides*.**

Having established the strongest monthly correlations, the Mg/Ca data are then compared to March-May average SSTs over the period of instrumental overlap in order to derive constants for the Mg/Ca-SST equation, using linear regression. The resulting Mg/Ca-SST equation constants are A = 0.368 and B = 0.092. This was the first time a down-core sediment Mg/Ca record had ever been directly calibrated to instrumental SSTs.

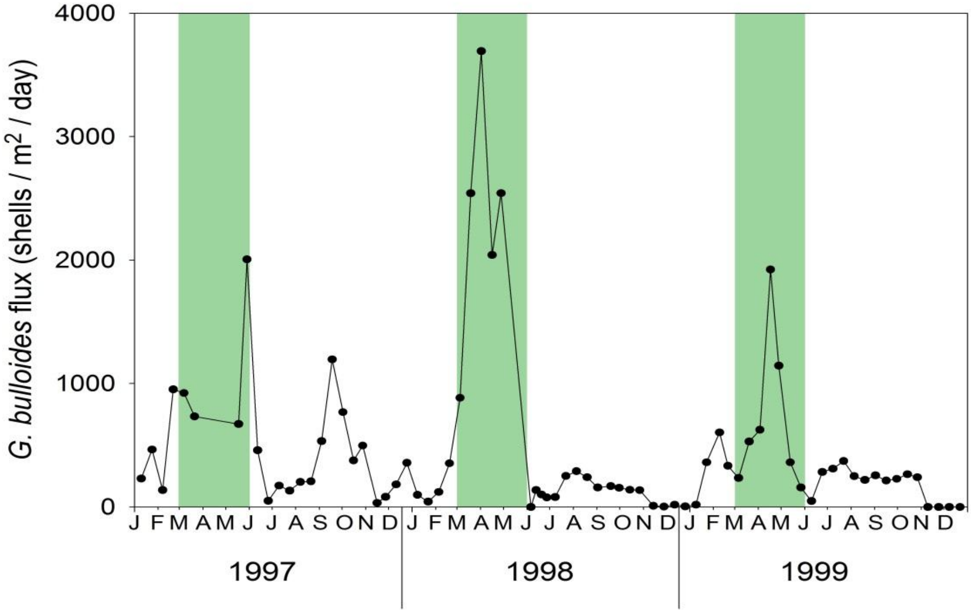


**Figure 4.2 – *G. bulloides* fluxes from a Cariaco sediment trap for the years 1997-1999. Green bars represent the winter/upwelling season when the highest flux occurs.**

The *G. ruber* (pink) calibration was approached in an unorthodox fashion, due to ecological complications. The non-upwelling season peak flux in *G. ruber* (pink) occurs during September, October, and November (SON; Figure 4.3 ) [*Tedesco and Thunell*, 2003b], and the raw Mg/Ca data appear to track SST from those months (Figure 4.4). However, applying previously published Mg/Ca temperature equations [*Anand et al.*, 2003; *Dekens et al.*, 2002; *McConnell and Thunell*, 2005] to Cariaco *G. ruber* (pink) Mg/Ca produced SSTs with greater variability and a lower mean than SON Hadley SST [*Rayner et al.*, 2003] over the same period (Figure 4.5). The larger range in temperatures and bias towards cooler temperatures is most likely caused by an upwelling component present in the Mg/Ca values. While *G. ruber* dominates the summer assemblage in terms of a percentage, sediment trap data from the Cariaco Basin have shown that *G. ruber* has two annual peaks in flux – one during the late summer/early fall months and another during the upwelling season in March, April, and May, when SSTs are cooler.

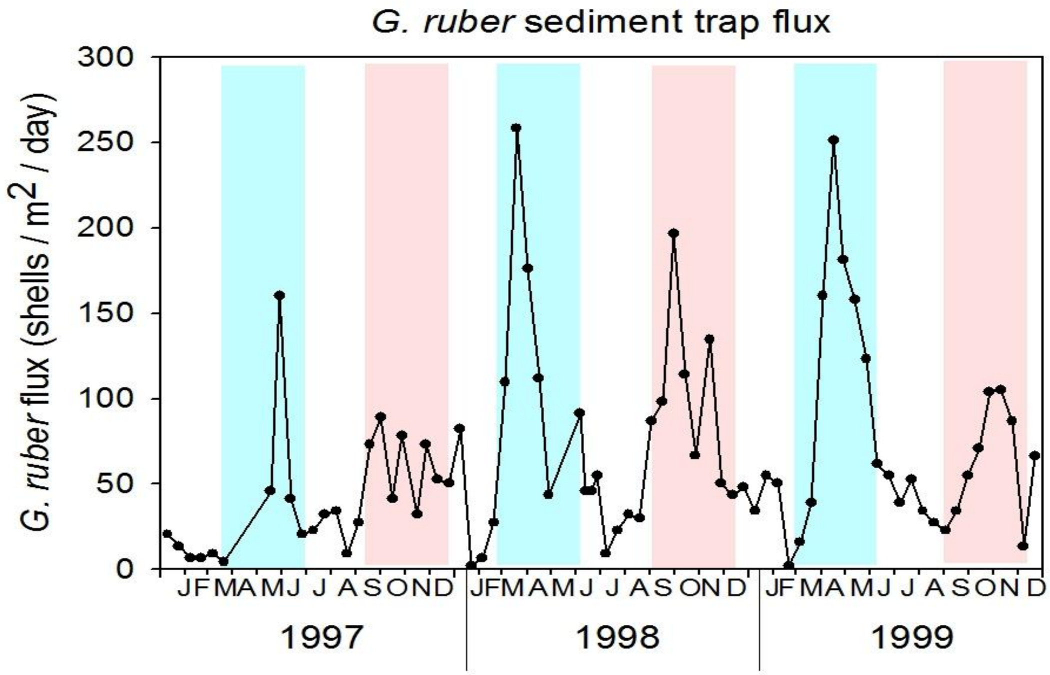


**Figure 4.3 - Pink *G. ruber* fluxes from a Cariaco sediment trap for the years 1997-1999. Blue bars represent the winter/spring upwelling season, pink bars represent the summer/fall non-upwelling season.**

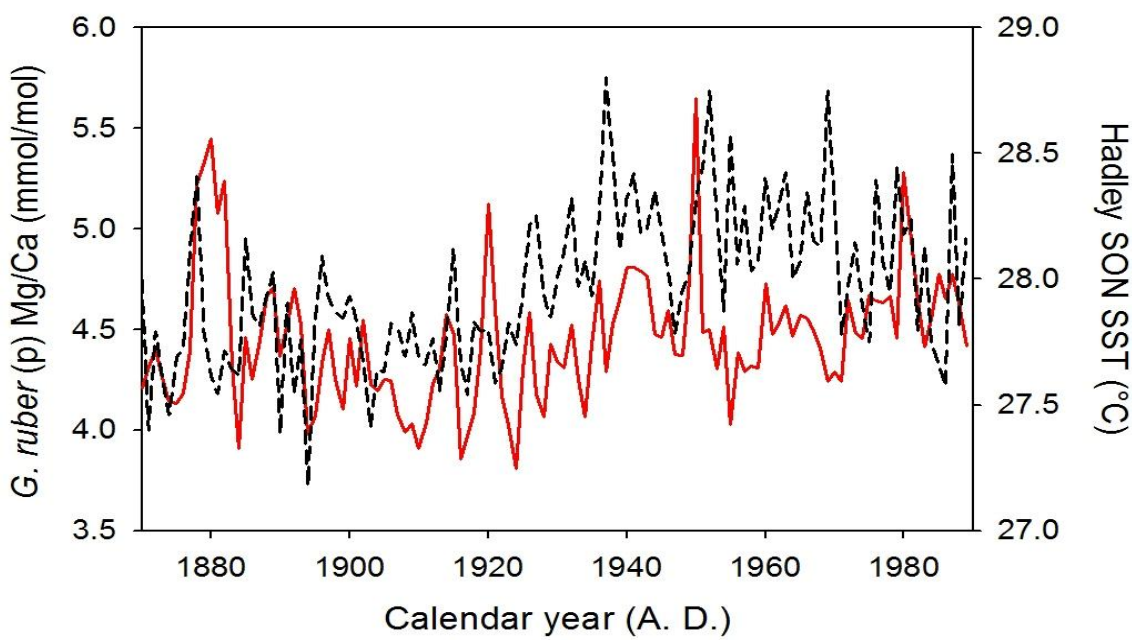


**Figure 4.4 - Raw pink *G. ruber* Mg/Ca ratios (red line) compared to instrumental SON SSTs for the Cariaco Basin (dashed black line).**

Several approaches were tried to compensate for the upwelling component in the *G. ruber* Mg/Ca signal. We first tried to directly subtract the Mg/Ca values from *Globigerina bulloides*, the planktic foraminifer that dominates the upwelling season assemblage, and then scale the residuals to instrumental SST. This approach yielded unsatisfactory correlations between the proxy and instrumental data for the non-upwelling season. We next tried to adjust the constants in the Mg/Ca-SST equation such that the output yielded the highest correlation with instrumental SST. This method generated statistically significant correlations between proxy SSTs and instrumental summer/fall SSTs, but the values for the constants in the Mg/Ca-SST equation were unlike any previously published values (B = 0.2, for example), and suggested that Mg/Ca was only half as sensitive to changes in SST than any previous study had indicated. This approach did not try to remove or compensate for the upwelling season, but instead ignored the upwelling component altogether by decreasing Mg/Ca sensitivity.

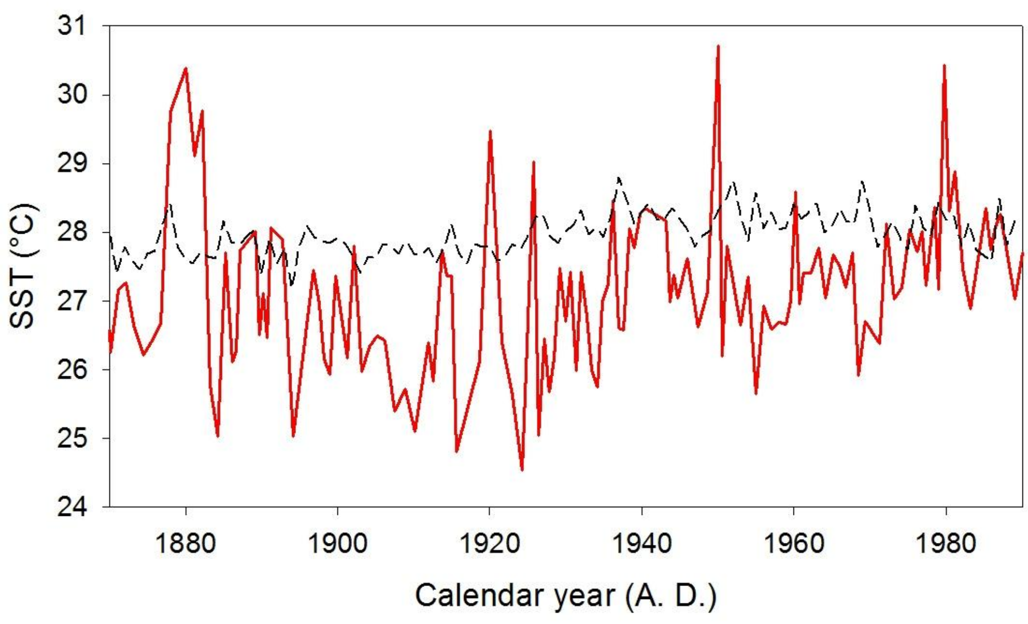


**Figure 4.5 - Time series of instrumental SON SSTs (dashed black line) compared to Mg/Ca-estimated SSTs using previously published equation for *G. ruber* (red line) [Mg/Ca = .068exp(.069*T)] (from McConnell and Thunell, 2005).**

The most successful approach and the one ultimately used in this study, was to create a factor based on *G. ruber* (pink and white) faunal abundance data (Equation 4.3) from nearby cores (PL07-71BC, CAR7-2) to account for the upwelling component of the temperature signal and to enhance the summer/fall signal. An arbitrary scale from 0-1 was used, where 0 represents the lowest abundance recorded, and 1 represents the highest, and values in between were linearly interpolated. The intensity of the pink coloring in *G. ruber* has been observed to be temperature-dependent, with white tests predominating in winter and early spring months. Pink tests predominate as SSTs reach maximum values in late summer [*Be and Tolderlund*, 1971]. This relationship was used to accentuate the summer/fall signal by adding the relative abundance of the pink variety (with respect to white) of *G. ruber* to the new Mg/Ca value calculated in Equation 4.4. A larger *G. ruber* (pink) abundance will emphasize warmer years and years in which upwelling had a weaker influence.

We assumed that a year with stronger upwelling in March-April-May will bias the Mg/Ca values towards upwelling season SSTs. To quantify that bias, we applied the following set of equations to the *G. ruber* Mg/Ca values:

$$\mathbf{F = P / (P+W)} \qquad \textbf{Equation 4.3}$$

$$\mathbf{Proxy_{summer/fall} = Mg/Ca_{\mathit{ruber\ (p)}} + (Mg/Ca_{\mathit{ruber\ (p)}} \times F)} \qquad \textbf{Equation 4.4}$$

where F is the correction factor, P is the absolute abundance of pink *G. ruber* and W is the absolute abundance of the white morphotype of *G. ruber*.

The proxy dataset was rescaled to the Hadley SST data [*Rayner et al.*, 2003], using the minimum and maximum for the range of the proxy data ($P_r$; $P_r$ = max(Proxy) – min(Proxy)

Equation 4.5) and the average ± 2σ as the range for the

Hadley data set ($H_r$; $H_r$ = mean(HadleySON-SSTs) ± 2σ

Equation 4.6)

$$P_r = \max(\text{Proxy}) - \min(\text{Proxy}) \qquad \text{Equation 4.5}$$

$$H_r = \text{mean(HadleySON-SSTs)} \pm 2\sigma \qquad \text{Equation 4.6}$$

The full range of instrumental data was not used in order to avoid scaling our dataset to outliers. The proxy range was then divided by the instrumental range to create a rescale factor,

$$R = P_r / H_r \, , \qquad \text{Equation 4.7}$$

which was then divided into the proxy data at each data point,

$$\text{Proxy}_{rescaled} = \text{Proxy./ } R \, , \qquad \text{Equation 4.8}$$

such that the rescaled proxy data's range was comparable to the instrumental temperature range. This effectively converted the proxy units into temperature units. To convert to actual temperatures, the offset (C; C = mean(HadleySON-SSTs) – mean($Proxy_{rescaled}$)

Equation 4.9) of the averages of the two datasets was added to the rescaled proxy data to convert it to SST ($T_{proxy}$; $T_{proxy}$ = $Proxy_{rescaled}$ + C

Equation 4.10)

$$C = \text{mean(HadleySON-SSTs)} - \text{mean}(\text{Proxy}_{rescaled}) \qquad \text{Equation 4.9}$$

$$T_{proxy} = \text{Proxy}_{rescaled} + C \qquad \text{Equation 4.10}$$

When compared with the Hadley data set for SON, the new calibration values are shown to be statistically significant ($r=0.40$, $N=120$, $p<0.0001$ (two-tailed)) (Figure 4.6). Although it has been typical to use a best-fit regression line to derive a Mg/Ca-SST equation, the traditional method assumes a strict dependence on the calcification temperature and attenuates the range of possible SSTs by treating extreme values in the dataset as noise or error.  Accepted exponential Mg/Ca-SST equations used in previous studies [*Anand et al.*, 2003; *Dekens et al.*, 2002; *Lea et al.*, 1999; *McConnell and Thunell*, 2005] have yielded errors on the order of ± 1-2 °C, accounting for 7-15% of the total temperature range for these studies.   For this study, with a modern instrumental range of ~2 °C, an error of that magnitude would rend any SST estimates unusable (Figure 4.7).  Assuming that the Mg/Ca-temperature relationship within such a small range is essentially linear, we were able to preserve the extremes in our record and retain the r = 0.4035 correlation from the non-scaled data.

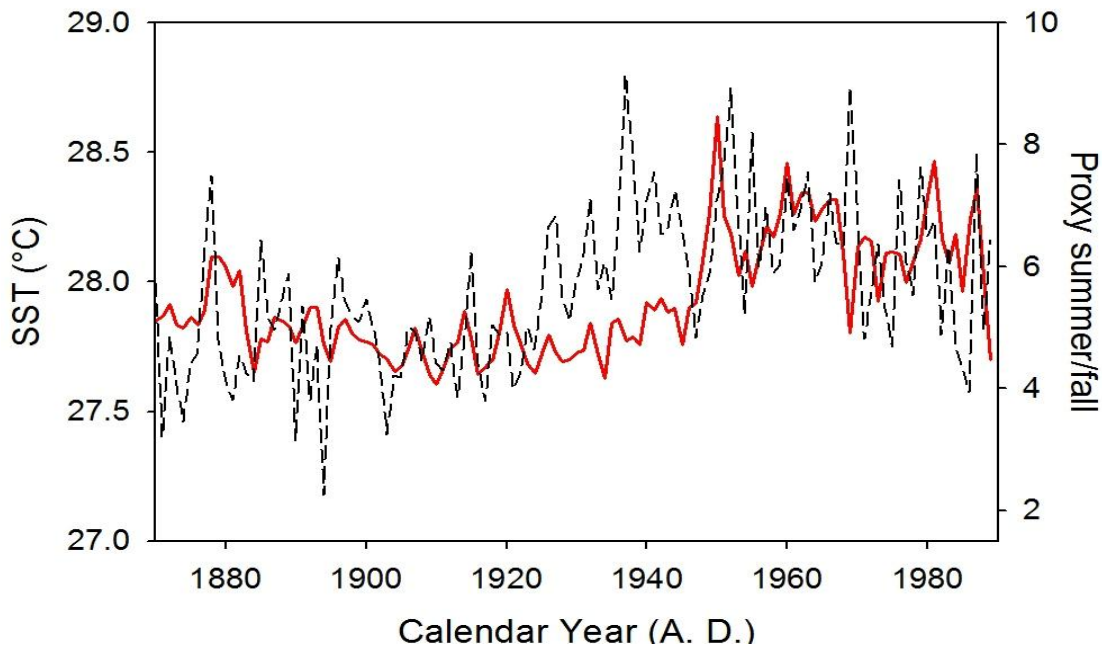


**Figure 4.6 - Comparison of instrumental SON SSTs (dashed black line) for the Cariaco Basin with proxy based on scaling of the *G. ruber* Mg/Ca with *G. ruber* (pink and white) population data (red line).**

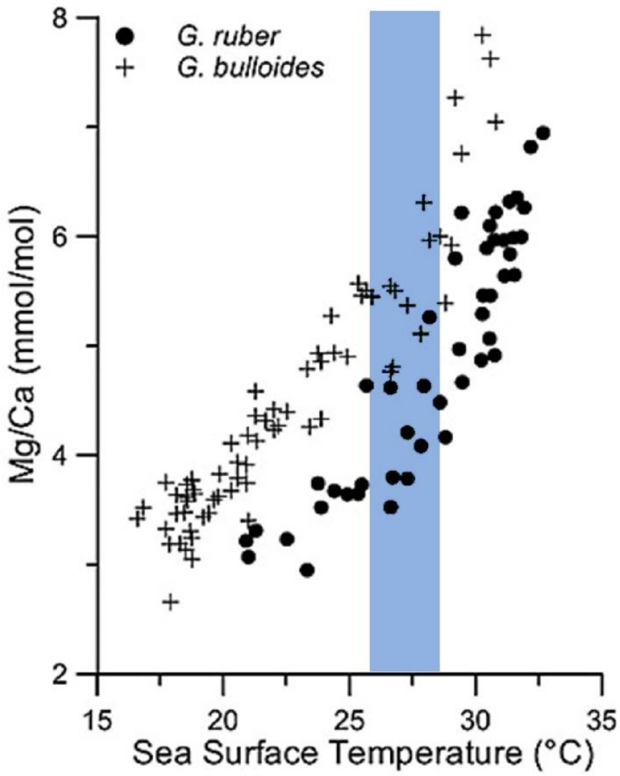


**Figure 4.7 - Mg/Ca:SST relationship for *G. ruber* (circles) and *G. bulloides* (crosses) (after McConnell and Thunell, 2005). Shaded area indicates the average instrumental range of temperatures for this study.**

# 5. Results and Discussion

This chapter presents the complete 2000-year Mg/Ca records for *G. ruber* (pink) and *G. bulloides*. The original intent of this study was to produce a near-annually resolved SST record for the tropical North Atlantic using seasonally-representative foraminifera that in turn could be used to reconstruct past annual average SST conditions and seasonality variations through time. Despite the apparent success of our calibrations to instrumental SSTs described in the previous chapter, examination of the long-term results suggest the signal recorded by the respective species is more complex than the initial calibration indicated. Below I present the individual species' data and discuss them in the context of temporal variability, comparisons to other regional SST histories, and possible forcing mechanisms.

## 5.1 Sea Surface Temperature Reconstructions

### *5.1.1 The G. ruber (pink) Mg/Ca-Temperature Record*

The Mg/Ca-SST data for *G. ruber* (Figure 5.1a) indicate summer/fall SST variations fluctuated consistently around a mean of approximately 28.2 °C between 20 BC and 900 C.E. Summer/fall temperatures then increased by over 1.2 °C between 900 and 1150 C.E. and then cooled by approximately 1.3 °C between 1150 and 1900 C.E., reaching a minimum of 27.7 °C in the late 19$^{th}$ century. Sea surface temperatures then rose abruptly by 1.3 °C over the 20$^{th}$ century. In general, summer/fall SST variations were restricted to a 1.5 °C range over the length of the record, reaching a maximum of 29.5 °C during the 12$^{th}$ century after a long period of about 1 °C warming coincident with the period known as the Medieval Climate Anomaly (MCA), and a two-stage cooler interval associated with the Little Ice Age (LIA). Twentieth century temperatures, while not unprecedented in their magnitude, increase by a rate of over 0.12 °C per decade. Though remarkably fast, a similarly quick warming is seen during a 40-year interval between 1405 and 1447 C.E., where temperatures spike at nearly 0.16 °C per decade.

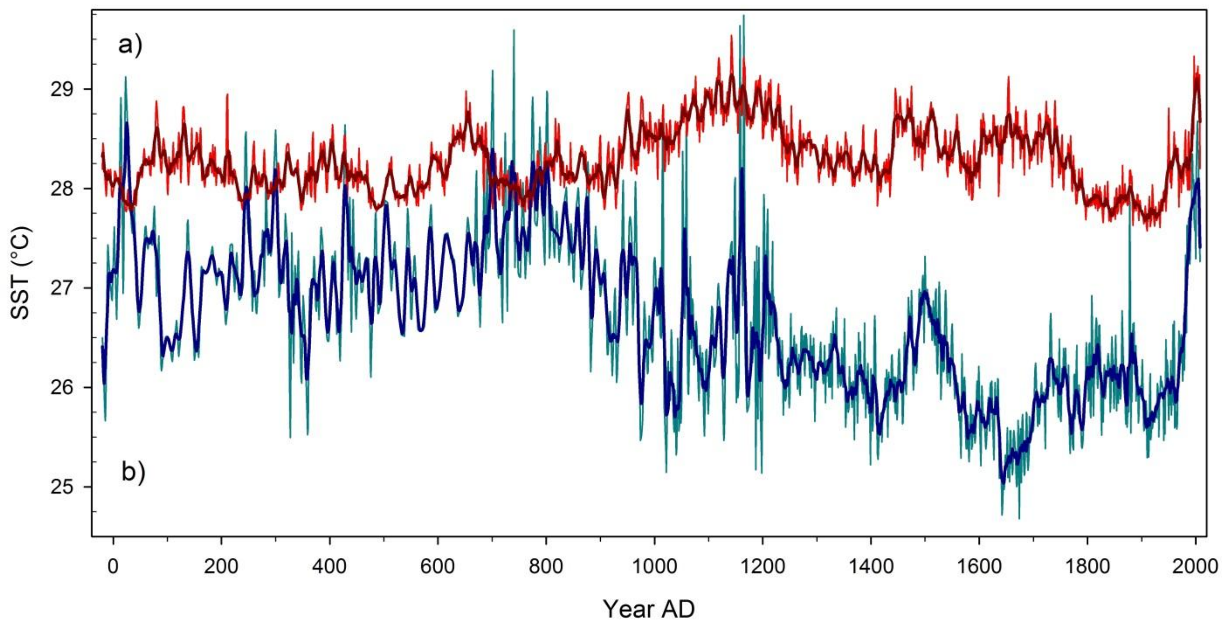


**Figure 5.1 - Mg/Ca-SSTs for the period 20BC – 2008C.E. (a) *G. ruber* summer/fall Mg/Ca-SSTs (red) with overlapping 9-point running mean (dark red) and (b) *G. bulloides* winter/spring Mg/Ca-SSTs (blue) with overlapping 9-point running mean (dark blue).**

The other major, albeit slower, warming in the proxy record, during the MCA, occurs at approximately 0.03 °C per decade, over an interval of ~230 years. The MCA has been defined broadly as a positive temperature excursion occurring between 800 – 1300 C.E., first articulated by Lamb [1965], who used mostly European records in his analysis. There is still much debate about the spatial and temporal extent of the MCA, but many reconstructions from around the globe have recorded climatic deviations during that period, and suggest that the MCA is a large-scale event for which different locations have different responses [*Bradley et al.*, 2003; *Broecker*, 2001; *Cronin et al.*, 2010; *Graham et al.*, 2011; *Keigwin*, 1996]. Our summer/fall proxy record indicates a warming from approximately 900 – 1280 C.E., peaking at 1150 C.E. Compared to other Atlantic records, the *G. ruber* reconstruction exhibits a similar but muted MCA. The [*Mann et al.*, 2009] AMO reconstruction, which uses averaged North Atlantic SSTs, shows a warm anomaly from 965 – 1070 C.E. (Figure 5.2c). A sustained warm interval from ~600 – 1000 C.E. in a foraminiferal Mg/Ca reconstruction from the Gulf of Mexico was identified as the beginning of the MCA (Figure 5.2b) [*Richey et al.*, 2007]. Their proxy for mean annual SSTs then shows Mg/Ca-SSTs decreasing by 2 -3 °C after 1000 C.E. The timing and temperature range of the Richey (2007) data suggests that summer SSTs in the Cariaco Basin responded differently, and more weakly, to forcings associated with the MCA. Alternatively, the differing responses may be attributed to the different calibrations or a remnant upwelling signal associated with the migration of the ITCZ.

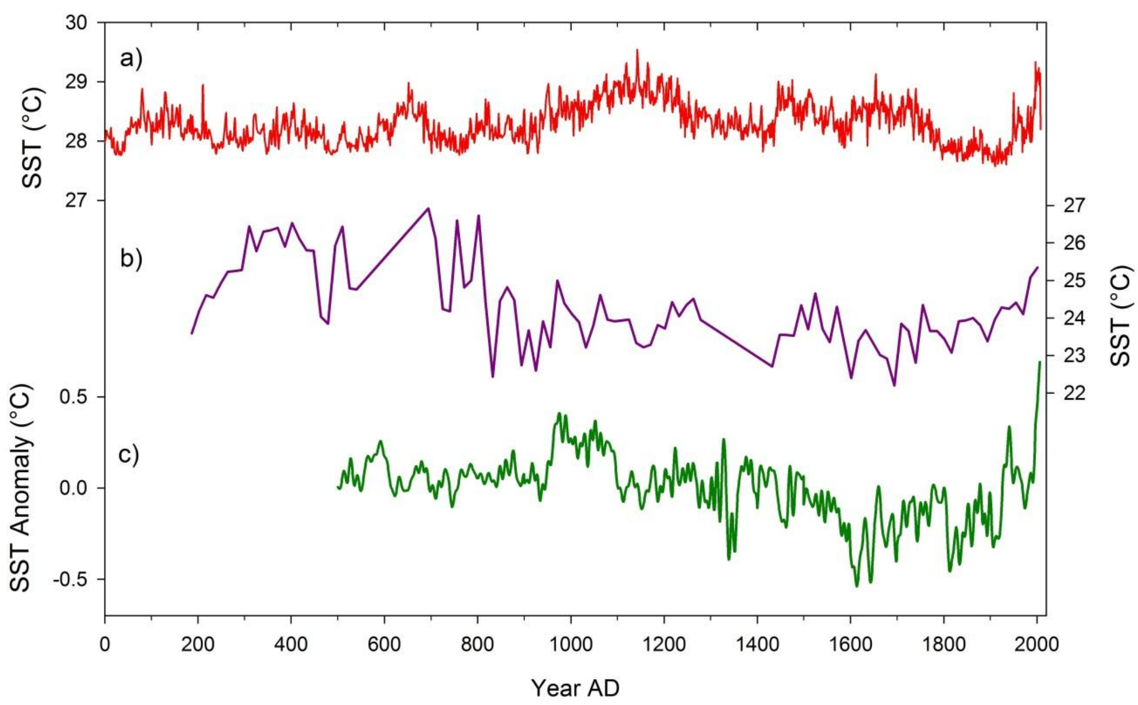


**Figure 5.2 - Comparison to records which also cover period of MCA and LIA (a) *G. ruber* Mg/Ca-SST (this study), (b) Gulf of Mexico G. ruber (white) Mg/Ca-SST (from Richey et al., 2007), (c) North Atlantic AMO region SST reconstruction (Mann et al., 2009).**

Following the MCA, the LIA is a period characterized by generally cooler temperatures from 1300 – 1800 C.E. Again, summer proxy temperature variability is limited during this period, but starting in ~1450 C.E., temperatures begin to gradually decrease by 0.04 °C per decade until 1590 C.E., after which they hover around a mean of 28.5 °C until 1740. The second part of the LIA begins with a temperature decrease in 1740 at a rate identical to the previous cooling. However, this 0.7 °C decrease culminates in the coolest temperatures of the record, 27.8 °C between 1830 and 1915, before the 20$^{th}$ century warming starts.

The duration, magnitude and timing of the LIA vary between proxy records, but compared to most of the spatially closest records, our summer proxy has a much muted LIA response. Summer SSTs are generally less variable and may not compare well to reconstructions using annual average SSTs [*Czaja*, 2004]. Few other seasonal records exist, but a reconstruction of summer temperatures from northern and central France, based on grape harvesting dates back to 1370 C.E., seems to support the idea that LIA cooling may not be manifested in summer records, with the exception of the nineteenth century [*Crowley and North*, 1991; *Le Roy Ladurie and Baulant*, 1980].

Average temperatures prior to the MCA are comparable to average temperatures in the last millennium. Likewise, the range of high frequency variability does not appear to vary significantly. Century-scale variability appears to be present consistently though the length of the record with hints of multi-decadal variability appearing at intervals in both the first and second millennia.

### *5.1.2 The G. bulloides Mg/Ca-Temperature Record*

Mg/Ca-estimated winter/spring SSTs from *G. bulloides* average approximately 27 °C between 20 BC and 900 C.E., but there are frequent and large deviations of as much as 2 °C around the mean over the same time period (Figure 5.1b). Winter/spring SSTs cooled by 2.5 °C between 780 and 1640 C.E., punctuated by two small 200-year warming intervals of 1.5 °C and 1 °C, centered at 1160 and 1500 C.E., respectively. There is a particularly sharp drop in SST (0.6 °C) at the onset of the Maunder Minimum between 1630 and 1640 C.E. Temperatures rose by about 1 °C between 1700 and 1890 C.E., followed by nearly 2.5 °C warming over the 20$^{th}$ century.

Similar to the *G. ruber* data in trend, but larger in overall magnitude, the *G. bulloides* record indicates slightly cooler temperatures during the Dark Ages, warmer SSTs during the MCA, and significantly cooler temperatures during the LIA. Likewise, the rate of warming during the 20$^{th}$ century is also unusually fast compared to the rest of the record (0.2 °C per decade), but is not unprecedented. A 40-year interval at the beginning of the record exhibits an increase of 0.5 °C per decade, rising from 26.4 °C to 28.1 °C.

A direct comparison of the two records reveals more differences than similarities between summer and winter temperature variability. The vast contrast in the range of variability is one of the most prominent features, with winter temperatures covering a range of ~3.5 °C and including deviations of up to 2 °C around the mean. Summer temperatures tend not to vary more than 1 °C about the mean and the full range is restricted to less than 1.5 °C. This is in agreement with instrumental records, which also show greater variability during boreal winter than summer [*Czaja*, 2004]. Temperatures, on average, are approximately the same in both the first and second millennia for the *G. ruber* reconstruction. The *G. bulloides* data show distinctly cooler temperatures in the second millennium as compared to the first.

Perhaps the most intriguing aspect of the reconstruction is the apparent anti-phasing of the two datasets during considerable portions of the record. The records exhibit distinctly opposite trends from 20 BC – 300 C.E., 750 – 1050 C.E., and 1550 – 1750 C.E. From 300 – 430 C.E., there is a minimum in the winter record while the summer record remains relative constant. This is followed by a period of concurrent temperature increase in both datasets until 650 C.E., at which point summer temperatures begin to decrease while winter temperatures continue to rise to one of three prominent maxima in the record. From 1050 – 1260 C.E., winter temperatures experience several large temperature oscillations with ranges of up to 2 °C around a mean of 26.6 °C. At the same time, summer temperatures are high, centered on a peak at 1140 C.E., and relatively stable. Both proxy datasets then decrease until ~1420 C.E. Between 1420 and 1550, summer and winter temperatures operate very independently, with changes in temperature trends occurring at different times. In 1770, the summer proxy stabilizes at a temperature slightly below the post-1200 C.E. mean, while the winter proxy returns to the post-1200 C.E. mean. Around 1930, both proxy records dramatically increase to a modern day maximum. A possible explanation for the alternating phasing and anti-phasing of the data is expounded later in this chapter.

### *5.1.3 Comparison to Other Records*

Several regional records indicate a regime shift in the character of variability post-1200 C.E. Comparing the Cariaco Basin *G. bulloides* temperature record with records of titanium concentration (a proxy for fluvial input) and *G. bulloides* abundance reveals a decrease to lower average values in all three from the first to second millennia (Figure 5.3a, b, and c) [*Black et al.*, 1999; *Haug et al.*, 2003]. Though often used as an indicator of upwelling intensity, the Cariaco Basin *G. bulloides* population changes appear more directly related to nutrient availability regardless of source, including fluvially-derived nutrient input. Because upwelling brings cold, nutrient-rich water to the surface, *G. bulloides* abundance has been shown on occasion to positively correlate with colder temperatures, however, it is important to note that the abundance is not temperature-dependent. This is evident when comparing the *G.* bulloides absolute abundance record with the Mg/Ca temperature record, where, on multi-centennial timescales at least, larger populations correspond to warmer temperatures (Figure 5.3a and c).

Reduced titanium concentrations in Cariaco sediment are interpreted as a decrease in terrigenous sediment delivery associated with a southward shift of the ITCZ's maximum rainfall band. Higher titanium concentrations are then related to increased terrigenous input from the local watersheds which feed into the Cariaco Basin [*Haug et al.*, 2001; *Haug et al.*, 2003; *Peterson and Haug*, 2006]. On average, warmer *G. bulloides* temperatures are correlated with higher titanium percentage, and higher *G. bulloides* abundances (Figure 5.3a, b, and c). If *G. bulloides* abundance is taken strictly as a proxy for upwelling strength, we would expect to see an inverse correlation between fluvial input and abundance. A comparison of these datasets reveals that the region was subject to increased precipitation at the time of abundance increases. This suggests that nutrient availability associated with increased fluvial input, rather than upwelling, may be the major control on abundance.

The oxygen isotope ($\delta^{18}O$) value of foraminiferal calcite is a function of both temperature and salinity. Black et al. (2004) present $\delta^{18}O$ reconstructions for the last 2000-years from the

Cariaco Basin. Interestingly, despite a clear decrease in mean temperature during the second half of the *G. bulloides* Mg/Ca record, the *G. bulloides* $\delta^{18}O$ remains relatively constant over the entirety of the record (Figure 5.3d) [*Black et al.*, 2004]. As a decrease in seawater temperature should act to increase $\delta^{18}O$, maintaining constant $\delta^{18}O$ values would then require an isotopically equivalent decrease via a corresponding negative salinity anomaly. This is puzzling because during the same period, it is expected that the ITCZ is shifted south and rainfall is at a minimum. Likewise, stronger trade winds should enhance evaporation. Both of these mechanisms contribute towards a salinity increase.

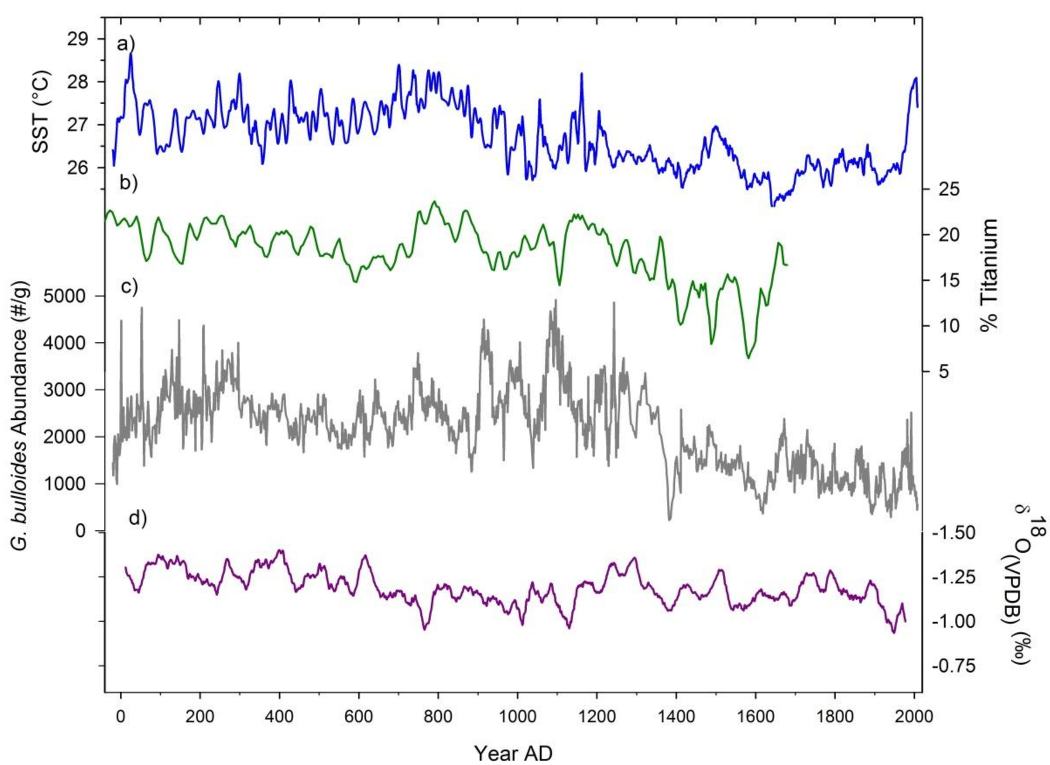


**Figure 5.3 – Comparison of Cariaco Basin records. (a) 9-point running mean of *G. bulloides* Mg/Ca-SST (this study), (b) 3-point running mean of titanium (Ti) concentration; higher Ti reflects greater terrigenous input (Haug et al., 2003), (c) Absolute abundance of *G. bulloides*; abundance is controlled by nutrient availability (Black et al., 1999), (d) oxygen isotope record for *G. bulloides* using a 25-year running mean; $\delta^{18}O$ is a function of temperature and salinity variations (Black et al., 2004).**

## 5.2 Discussion

### *5.2.1 AMOC, Atlantic SSTs, and the "Bipolar Seesaw"*

The Atlantic meridional overturning circulation (AMOC) has garnered much attention in recent decades, because of its critical role in moderating global climate on decadal to millennial timescales (e.g.)[*Broecker*, 1991; *Broecker et al.*, 1985; *Weaver et al.*, 1999]. In the North Atlantic, differential heating between the tropics and poles accelerates the northward flow of warm, saline surface waters from the equator [*Clark et al.*, 2002]. At high latitudes, the water cools through evaporative heat loss to the atmosphere, increasing its density, and allowing it to sink to depth, where it begins its southward flow [*Bentsen et al.*, 2004]. This thermohaline circulation (THC) is responsible for a substantial component of poleward heat transport and is a contributor to the mild climate over much of North America and Europe [*Bentsen et al.*, 2004; *Ganachaud and Wunsch*, 2000]. Because water density at high latitudes is largely salinity-dependent, freshwater balance is an important determining factor in the strength of AMOC [*Weaver et al.*, 1999]. Disturbances to the AMOC as a result of freshwater input are thought to be responsible for millennial-scale climate fluctuations (e.g., Dansgaard-Oeschger events), such as those recorded in North Atlantic sediment cores and the Greenland ice cores [*Alley et al.*, 2003; *Bond et al.*, 1993; *Broecker*, 1990; *Rahmstorf*, 2002]. As such, there has been considerable interest in understanding the response of AMOC to the possibility of large meltwater additions in a warming world [*Wen et al.*, 2010]. This has motivated numerous 'water-hosing' experiments in which a freshwater source is introduced to the North Atlantic in general circulation models (GCMs) in order to mimic meltwater input [*Dahl et al.*, 2005; *Manabe and Stouffer*, 1995; *Vellinga and Wu*, 2004; *Zhang and Delworth*, 2005]. These studies ubiquitously reveal that an anomalous freshwater event would likely cause a reduction or ‘shutdown’ of AMOC flow and have classified such a response as one of two stable states of Atlantic circulation [*Krebs and Timmermann*, 2007; *Manabe and Stouffer*, 1988; *Stouffer et al.*, 2006].

The concept of a bimodal AMOC, initially suggested in 1961 [*Stommel*, 1961] but since advanced, suggests that there are two stable states of deep-water circulation – “strong” (“on”) and “weak” (“off”) – which correspond to rapid warming and cooling, respectively, in the North Atlantic [*Broecker et al.*, 1985]. Modern circulation is considered to be strong, but shedding light on the threshold at which the regime transitions from strong to weak and the global response and recovery to the weak state is the goal of the aforementioned ‘water-hosing’ experiments.

The general consensus of these studies is that a weakened AMOC is associated with a cooler North Atlantic and a warmer South Atlantic, a dipole-type pattern commonly referred to as the ‘bipolar seesaw’ [*Stocker et al.*, 2007; *Stouffer et al.*, 2006; *Vellinga and Wu*, 2004; *Zhang and Delworth*, 2005], related to the cessation of northward cross-equatorial heat transport. The larger temperature gradient causes a southward shift in the ITCZ, which strengthens the northeast trade winds over the tropical North Atlantic (TNA) and increases evaporation and latent heat flux loss, further amplifying surface cooling [*Vellinga and Wu*, 2004; *Zhang*, 2007]. In its simplest form, the surface dipole in the tropics is caused by competing oceanic and atmospheric processes [*Wan et al.*, 2009] where oceanic processes are responsible for South Atlantic warming [*Chiang et al.*, 2008], and atmospheric processes (wind-evaporation-SST feedback) are responsible for the cooling in the North Atlantic (Figure 5.4) [*Chang et al.*, 2008].

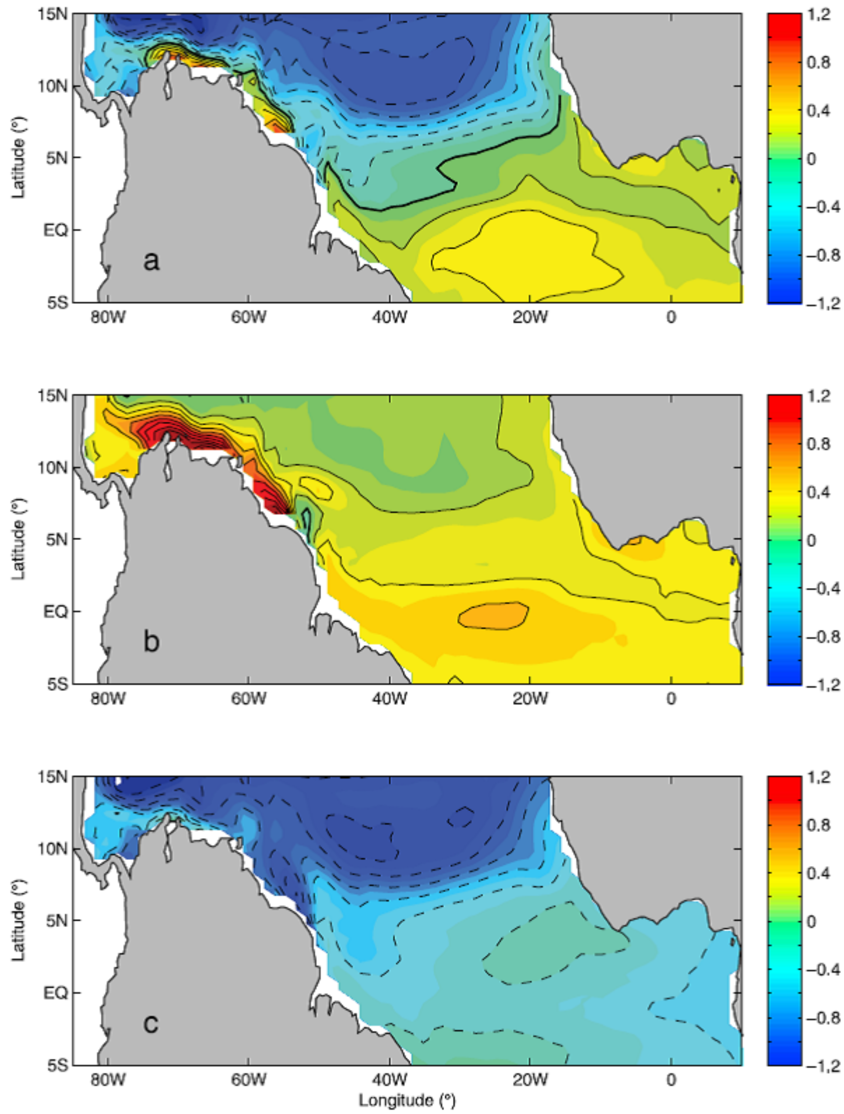


**Figure 5.4 – Simulated SST anomalies in three water-hosing scenarios with respect to a control. (a) Combined effect of atmospheric and ocean processes on tropical SSTs, (b) Effect of only ocean circulation changes on tropical SSTs, (c) Effect of only atmospheric processes on tropical SSTs. (from Wan et al., 2009)**

However, more recent modeling and proxy studies indicate that TNA cooling is limited to a very thin surface layer (~30 m) and that the pooling of heat in the South Atlantic actually extends to the North Atlantic, reaching up to 1000 m depth in the equatorial region [*Chiang et al.*, 2008; *Zarriess et al.*, 2011]. Zhang [2007] showed that observed TNA SSTs are strongly anti-correlated with TNA subsurface temperatures on multidecadal time scales, and argued that they are inextricably linked to AMOC, such that subsurface temperature anomalies may be used as a proxy for AMOC variability.  A subsequent modeling study was able to apply that theory with considerable success, using instrumental subsurface temperatures as predictors for future AMOC variability [*Mahajan et al.*, 2011].  That study was limited by the short length of the instrumental record, but highlights the importance of creating a subsurface temperature record that extends back in time, allowing for the possibility of AMOC reconstructions.

Though numerous modeling studies have suggested a link between variability in North Atlantic temperatures and AMOC strength [*Delworth and Mann*, 2000; *Knight et al.*, 2005; *Timmermann et al.*, 1998], reconstructing AMOC through proxy records remains challenging.  In models, AMOC disturbance and recovery have been shown to occur on timescales as short as decades but thus far, proxy data has only linked AMOC to millennial-scale climate variations. Little evidence has existed to this point to suggest that variations in AMOC strength could be responsible for the two major climatic events of the last 2000 years; the Little Ice Age and the Medieval Climate Anomaly.  The few existing AMOC flow reconstructions are spatially distant and focus on specific currents that exist as part of the THC.  Foraminiferal data from the Florida Straits was used to reconstruct Gulf Stream density structure, from which the authors inferred a 10% decrease in AMOC strength in that region during the LIA [*Lund et al.*, 2006].  Another study used grain size to reconstruct deep-water flow in the northern North Atlantic and also found evidence of reduced and strengthened flow during the LIA and MCA, respectively [*Bianchi and McCave*, 1999].

In the next section, I present an alternative interpretation of the *G. bulloides* record, which may add to the proxy evidence which supports the concept that AMOC variations are responsible for climatic deviations on centennial timescales.

### *5.2.2 Globigerina bulloides as a Subsurface Indicator*

*Globigerina bulloides'* depth habitat has been well-constrained, living in or above the thermocline in the surface mixed layer [*Tedesco and Thunell*, 2003b], leading it to be used as an indicator of surface or near-surface conditions in many paleoceanographic studies [*Black et al.*, 2007; *Farmer et al.*, 2010; *Hessler et al.*, 2011]. Several studies have established that *G. bulloides* Mg/Ca ratios are in best agreement with water temperatures at ~30m depth [*Mekik et al.*, 2007; *Pak et al.*, 2004]. *G. bulloides* proxies are often compared to surface data because of limited instrumental subsurface data and because at the peak of their abundance during the upwelling season, they are at their nearest to the surface [*Black et al.*, 2007; *Tedesco et al.*, 2007].

A direct comparison of the summer and winter proxy reconstructions in this study reveals some surprising features, which may suggest that the *G. bulloides* record may not be a straightforward SST indicator in the Cariaco region. Some of the more prominently unusual intervals include convergences of the two proxies at the base of the record and again between C.E. 680 and C.E. 805. More intriguingly, it is not only a rise in *G. bulloides,* but a concurrent drop in the *G. ruber* temperature that leads to the reduction and, sometimes, reversal of seasonality.

Rather than suggest the scenario in which winter temperatures warm above summer temperatures, it is possible that there are periods in which the subsurface warms, while the surface cools, as described in the previous section. In these cases, *G. bulloides*, at 30m depth, is recording a subsurface signal which has diverged from the surface signal; a scenario which is unique to the tropical North Atlantic and may require re-interpretation of how *G. bulloides* can be used as a proxy in the Caribbean.

*Globigerina bulloides* does not appear to persistently track subsurface temperature; however, the fact that it seems to partially capture the subsurface signal has important implications for creating such a record from a Cariaco Basin core, perhaps by using a deeper-dwelling species of planktonic foraminifer.

### *5.2.3 Wavelet Analysis*

The summer record displays some weak multidecadal variability, but is dominated by periodicities in the centennial to multicentennial range. The character of variability in the winter record exhibits an abrupt shift after ~1200 C.E., in which almost all decadal- to multidecadal-scale variability vanishes (Figure 5.5). Prior to 1200 C.E., during the warmer half of the record, there are significant but variable periodicities within the 30-100 year range, as well as non-persistent intervals of shorter periodicity. Interestingly, the one interval in the summer proxy during which shorter modes of variability appear and centennial variability significantly weakens is the warmest interval in the record, between 1000 and 1250 C.E. Likewise, in the summer and winter records both, periods that are overall cooler lack multidecadal variability, potentially linking persistent multidecadal variability to warmer climates.

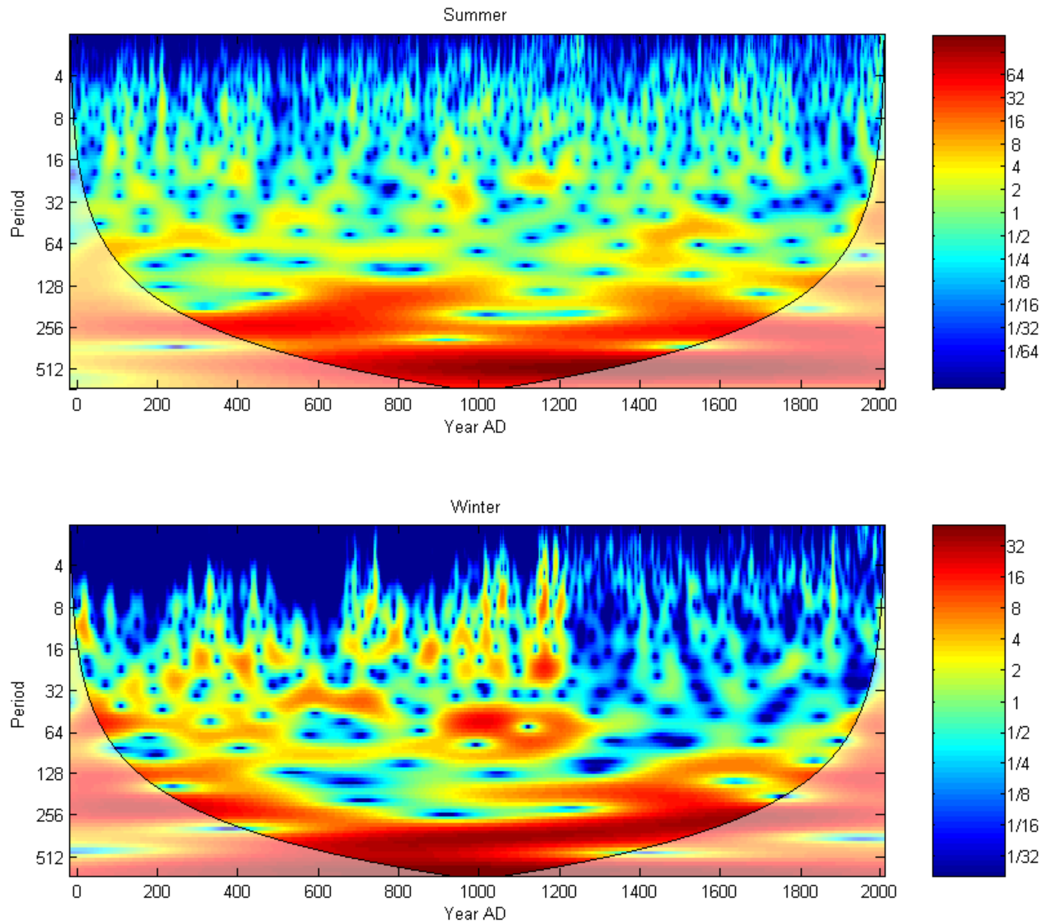


**Figure 5.5 - Morlet continuous wavelet power spectrum for summer (top) and winter (bottom) SSTs. The significance level colour code to the right. The lightly shaded area represents the cone of influence where edge effects might distort the analysis.**

### *5.2.4 Solar Forcing*

Several studies of circum-tropical Atlantic climate variability have suggested links to solar variability [*Black et al.*, 1999; *Hodell et al.*, 2001; *Peterson et al.*, 1991; *Verschuren et al.*, 2000]. A comparison between the proxy winter SST record with one of past solar variability [*Reimer et al.*, 2004; *Stuiver and Quay*, 1980] reveals an intriguing inverse correlation over the last millennium, with periods of warmer SST corresponding to times of reduced solar activity (Figure 5.6). While initially counterintuitive, the relationship is plausible when considered in the context of AMOC variations. Stuiver and Braziunas (1993) suggested that a minor reduction in the solar constant over an extended period of time produces both a small temperature reduction and a precipitation increase in the North Atlantic where deep waters form. A paleo-lake level study in the Alps [*Magny*, 1993] indicates that this initial assumption of increased precipitation/reduced temperatures is valid on at least a regional basis, although on a global scale lower temperatures would result in decreased precipitation as less water vapor is available [*Rind and Overpeck*, 1993]. Alternatively, other models indicate that solar fluctuations can induce changes in the Hadley circulation that could in turn affect tropical SSTs through latent heat flux [*Rind and Overpeck*, 1993]. However, solar variability leads the Cariaco temperature record by 25-40 years, suggesting the linkage between solar variability and tropical SSTs is driven by relatively slow marine processes rather than faster atmospheric ones. The first half of the Mg/Ca record challenges this hypothesis, as the relationship between the Cariaco record and solar variability seems to break down, but that may be attributed to the inconsistency of *G. bulloides* as either a surface or subsurface temperature indicator. It is also possible that the early portion of the Mg/Ca record may have been dominantly forced by something other than solar variability, with the solar correlation only becoming relevant later in the record. The data sets distinctly diverge in 1950, possibly as a result of anthropogenic influences dominating the more recent tropical SST signal or another shift in the *G. bulloides* proxy.

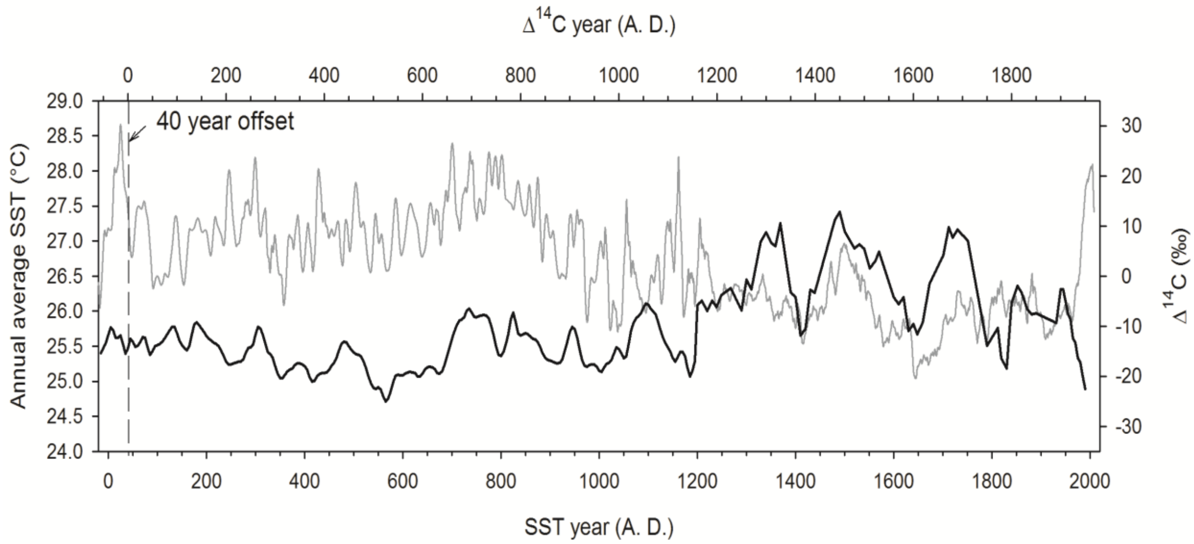


**Figure 5.6 – Comparison of the *G. bulloides* SST data (grey line) to $\Delta^{14}C$ (black line), a measure of past solar variability. $\Delta^{14}C$ is plotted with a 40-year lead of SSTs. In the latter half of the record, temperatures appear warmer during times of decreased solar variability (higher $\Delta^{14}C$ values).**

### *5.2.5 Seasonality and Annual Average SSTs*

Given the ambiguous nature and complicated interpretation of the *G. bulloides* proxy, it then becomes necessary to ask whether or not the difference and average of the winter and summer records has significance.

The difference between summer/fall and winter/spring SSTs is considered to represent seasonality. If taken to represent seasonal SSTs, as was the original intent of this study, variance in the seasonality record is dominated by fluctuations in winter/spring SSTs, with greater seasonality during colder intervals and reduced seasonality during warm periods. Such control is clearly demonstrated by a large decrease in the proxy record of tropical Atlantic seasonality during the 20$^{th}$ century that is largely due to an increase in winter/spring SSTs over this interval.

Other analyses of tropical North Atlantic (TNA) instrumental records have noted greater year-to-year SST variability during boreal winter/spring and weaker year-to-year variations during boreal summer/fall as well [*Czaja*, 2004]. Seasonality is overall weaker for the first 1000 years of the record, even disappearing altogether at times, as winter temperatures rose and summer temperatures remained constant (Figure 5.7). Seasonality is strongest during the LIA, the coolest part of the record, which is again mostly controlled by a drop in winter temperatures.

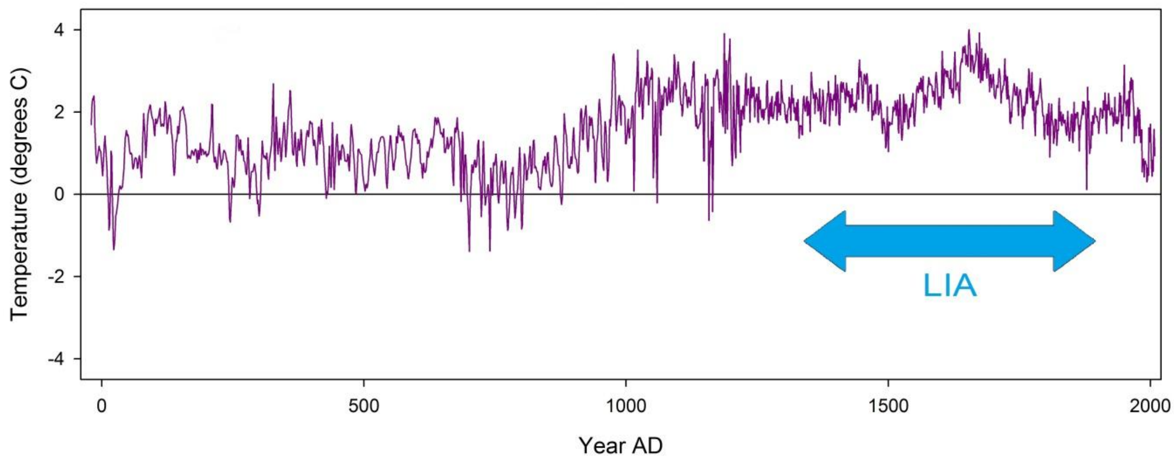


**Figure 5.7 – The difference between the *G. ruber* (summer) and *G. bulloides* (winter) temperature records, generally considered to represent seasonality.**

If *G. bulloides* were consistently recording a subsurface signal and *G. ruber* were used as an indicator of mean surface conditions, the SST difference between the two combined with the $\delta^{18}O$ signals might be used to infer water mass stratification changes [*Moros et al.*, 2009].

The annual average (not shown) is a muted version of the winter record, due to the variable nature of the winter record versus the relative constancy of summer temperatures. More likely though, the average of the two datasets is not particularly significant, representing the temperature somewhere midway between the depth habitats of the two species.

# 6. Summary and Conclusions

## 6.1 Summary

I have presented here a 2000-year record of Mg/Ca-SSTs for two species of planktic foraminifera in the western tropical North Atlantic. *Globigerinoides ruber*, a proxy for summer temperatures, remains relatively constant over the entire record. Two temperature peaks stand out; one in the twelfth century, and another in the past decade. *Globigerina bulloides*, a winter or subsurface proxy, varies as much as 2 °C around the mean.

It seems likely that the major control on SSTs in the tropical Atlantic is variation in the Atlantic Meridional Overturning Circulation. Modeling studies have shown that a freshwater input into the North Atlantic will cause a reduction of AMOC, which creates a bipolar SST distribution about the equator. The North Atlantic cools as a result of stronger trade winds, which amplify surface cooling by way of increased latent heat loss. The South Atlantic warms as northward heat transport across the equator is shut down. The dipole is limited to surface waters while subsurface waters in the North Atlantic remain warm as well. The anti-phasing of the *G. ruber* and *G. bulloides*' records lend support to the theory that an AMOC reduction may be responsible for the two major climatic events of the last two millennia – the Medieval Climate Anomaly and the Little Ice Age.

Furthermore, the *G. bulloides* record provides evidence that solar variability may have played a role in forcing SST variability starting around the thirteenth century. Prior to that, another forcing mechanism may have played the dominant role. The SST and solar variability data diverge again in the 1950s, possibly as a result of anthropogenic influences.

## 6.2 Conclusions

Here, I reiterate and answer the questions put forth in the introduction.

*1. What are the natural (pre-anthropogenic) rates and ranges of decadal-to century-scale tropical Atlantic SST variability?* Of recent interest is whether or not the warming trend of the last century has been an unprecedented event. The *G. ruber* and *G. bulloides* data record a 0.12 and 0.20 °C per decade increase, respectively, over the twentieth century. While these rates are remarkably fast, both records have a comparable warming feature at some point earlier in their history. Likewise, the magnitude of warming in the twentieth century is not unmatched in either record. It should be noted that precedence does not preclude the possibility that anthropogenic influences play a role in the recent warming trend. However, these results do not provide conclusive evidence for either predominantly natural or predominantly anthropogenic forcing.

*2. Do the currently recognized frequencies of tropical Atlantic SST variability change through time?* Wavelet analysis clearly shows that periodicities in the summer record remain persistent in the centennial scale, while winter temperature frequencies are quite variable over time. Multidecadal variability in the winter record abruptly disappears around 1300 C.E. There is a hint of its return at the beginning of the twentieth century, but it is clearly not a persistent mode. Alternatively, this may be a result of *G. bulloides* losing the surface signal.

*3. What is modulating climate in the tropical Atlantic?* This is still a difficult question to answer, but the results strongly suggest linkages to AMOC, and indirectly, solar variability. There appears to be a viable link between the *G. bulloides* record and solar variability, which breaks down in the 1950s, indicating that another forcing mechanism, possibly anthropogenic, becomes the primary player. However, there is no periodic mode of variability evident over the record.

There is much room for expansion upon this project. The results generated many more questions than were initially posed, and further work will help reinforce some of the findings. *Globigerina bulloides* does not seem to be a consistent recorder of either surface or subsurface conditions. It is worth exploring as to whether a calibration can be derived to link *G. bulloides* to AMOC strength, based on whether surface or subsurface temperatures are being recorded. A record from a deeper dwelling species of foraminifer in conjunction with the *G. ruber* record would not only assist in determining *G. bulloides*' environment but could also create a depth temperature profile that could then be used to infer stratification conditions over time. Once a Mg/Ca signal is isolated, paleo-salinity may be reconstructed by removing the temperature signal from the oxygen isotope record. It may also be of use to recalibrate the *G. ruber* record as an annual mean SST signal. Replicate Mg/Ca analyses and C.E.ditional AMS $^{14}C$ dates would refine and verify the current results.

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# Appendix I

Total $^{210}Pb$ activities for cores CAR25-1 and PL07-73BC. PL07-73BC was used to obtain the supported levels of $^{210}Pb$.

| Core | Depth (cm) | Pb-210 activity (dpm/g) | |
|---|---|---|---|
| CAR25-1 | 0.5 | 97.71 | |
| CAR25-1 | 1.0 | 94.38 | |
| CAR25-1 | 1.5 | 95.59 | |
| CAR25-1 | 2.0 | 63.17 | |
| CAR25-1 | 2.5 | 71.31 | |
| CAR25-1 | 3.0 | 47.81 | |
| CAR25-1 | 5.2 | 38.25 | |
| CAR25-1 | 5.5 | 35.48 | |
| CAR25-1 | 6.2 | 22.70 | |
| CAR25-1 | 6.5 | 30.39 | |
| CAR25-1 | 9.2 | 17.14 | |
| CAR25-1 | 9.5 | 15.05 | |
| CAR25-1 | 9.8 | 16.02 | |
| PL07-73BC | 21.3 | 1.79 | *supported |
| PL07-73BC | 38.6 | 1.81 | *supported |

# Appendix II

Mg/Ca ratios for listed sediment cores. Species abbreviations are as follows:

*G.b* = *Globigerina bulloides*, *G.r* = *Globigerinoides ruber* (pink)

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 1282.32 | 18.2 | | | 1990 | 0 | 4.77 | 4.6211 | 2008 | 0 | 4.8866 | |
| 1281.88 | 18.3 | 5.11 | | 1989 | 0.1 | 4.66 | 4.4169 | 2007.301 | 0.1 | | 4.9331 |
| 1281 | 18.5 | 4.38 | | 1987.209 | 0.2 | 4.83 | 4.7968 | 2006.602 | 0.2 | | 5.7121 |
| 1280.12 | 18.7 | 4.74 | | 1986.542 | 0.3 | 4.78 | 4.7354 | 2005.903 | 0.3 | 5.1674 | 5.0427 |
| 1279.24 | 18.9 | 4.59 | | 1985.876 | 0.4 | 4.62 | 4.6307 | 2005.204 | 0.4 | 5.4618 | 4.7791 |
| 1277.48 | 19.3 | | 4.86 | 1985.209 | 0.5 | 4.53 | 4.8217 | 2004.505 | 0.5 | 5.309 | 5.0772 |
| 1276.6 | 19.5 | 5.09 | 4.88 | 1983.209 | 0.6 | 4.58 | 4.3757 | 2003.806 | 0.6 | | 5.8132 |
| 1275.72 | 19.7 | 4.44 | 4.43 | 1982.209 | 0.7 | 4.56 | 4.5502 | 2003.107 | 0.7 | 5.6325 | 4.9148 |
| 1274.84 | 19.9 | 4.83 | 4.65 | 1981.209 | 0.8 | 5.01 | 4.998 | 2002.408 | 0.8 | 5.199 | 6.0443 |
| 1273.96 | 20.1 | 4.24 | 4.74 | 1980.473 | 0.9 | 4.68 | 4.8117 | 2001.709 | 0.9 | 5.7057 | 5.9066 |
| 1273.08 | 20.3 | 4.71 | 5.16 | 1979.736 | 1 | 4.56 | 5.5439 | 2001.01 | 1 | 5.3184 | 5.315 |
| 1272.2 | 20.5 | 4.57 | 5.77 | 1979 | 1.1 | 4.42 | 4.4581 | 2000.311 | 1.1 | 4.8447 | 4.965 |
| 1271.32 | 20.7 | 4.99 | 4.57 | 1978.5 | 1.2 | 4.57 | 4.8254 | 1999.612 | 1.2 | | 5.5736 |
| 1270.44 | 20.9 | 4.47 | 4.97 | 1978 | 1.3 | 4.65 | 4.6659 | 1998.914 | 1.3 | 5.0916 | 5.3644 |
| 1269.56 | 21.1 | 4.55 | 4.79 | 1977.4 | 1.4 | 4.58 | 4.4726 | 1998.215 | 1.4 | | 4.8827 |
| 1268.68 | 21.3 | 4.32 | 5.09 | 1976.8 | 1.5 | 4.5 | 4.7154 | 1997.516 | 1.5 | 4.996 | |
| 1267.8 | 21.5 | 4.97 | | 1976.2 | 1.6 | 4.35 | 4.624 | 1996.817 | 1.6 | | 6.1054 |
| 1266.92 | 21.7 | 4.6 | | 1975.201 | 1.7 | 4.48 | 4.7234 | 1996.118 | 1.7 | 5.2525 | 5.1285 |
| 1266.04 | 21.9 | 4.3 | 3.96 | 1974.202 | 1.8 | 4.42 | 4.466 | 1995.419 | 1.8 | 5.3663 | 5.7162 |
| 1265.16 | 22.1 | 4.52 | | 1973.203 | 1.9 | 4.57 | 4.4142 | 1994.72 | 1.9 | 5.2025 | 5.7619 |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 1264.28 | 22.3 | 4.52 | 4.32 | 1972.203 | 2 | 4.56 | 4.7499 | 1994.021 | 2 | | 5.4316 |
| 1263.4 | 22.5 | 4.51 | | 1971.204 | 2.1 | 4.47 | 4.2311 | 1993.322 | 2.1 | 5.5844 | 4.9954 |
| 1262.52 | 22.7 | 5.73 | 4.5 | 1969.3 | 2.2 | 4.59 | 4.3215 | 1992.623 | 2.2 | 4.9923 | 4.973 |
| 1261.64 | 22.9 | 4.52 | 3.62 | 1968.482 | 2.3 | 4.57 | 4.0993 | 1991.924 | 2.3 | 5.09 | 5.199 |
| 1260.76 | 23.1 | 4.5 | | 1967.664 | 2.4 | 4.28 | 4.6175 | 1991.225 | 2.4 | 5.0185 | |
| 1259.88 | 23.3 | 4.39 | 4.13 | 1966.845 | 2.5 | 4.4 | 4.466 | 1990.526 | 2.5 | 5.1806 | 5.1725 |
| 1259 | 23.5 | 4.5 | | 1966.027 | 2.6 | 4.21 | 4.5544 | 1989.827 | 2.6 | | |
| 1258.12 | 23.7 | 4.45 | 4.52 | 1965.209 | 2.7 | 4.16 | 4.6097 | 1989.128 | 2.7 | 5.0571 | |
| 1257.24 | 23.9 | 4.52 | 3.19 | 1964.209 | 2.8 | 4.28 | 4.4213 | 1988.429 | 2.8 | 5.2466 | |
| 1256.36 | 24.1 | | 5.91 | 1963.209 | 2.9 | 4.15 | 4.64 | 1987.73 | 2.9 | 5.3156 | |
| 1255.48 | 24.3 | 4.58 | 3.19 | 1962.209 | 3 | 4.37 | 4.5301 | 1987.031 | 3 | 5.3724 | |
| 1254.6 | 24.5 | 4.71 | | 1961.209 | 3.1 | 4.16 | 4.53 | 1986.332 | 3.1 | 5.1638 | 5.2666 |
| 1253.72 | 24.7 | 4.12 | | 1960.709 | 3.2 | 4.23 | 4.3939 | 1985.633 | 3.2 | 5.7137 | |
| 1252.84 | 24.9 | 4.33 | 5.13 | 1960.209 | 3.3 | 4.66 | 4.8992 | 1984.934 | 3.3 | 5.0797 | 4.5965 |
| 1251.96 | 25.1 | 4.89 | 3.46 | 1959.605 | 3.4 | 4.56 | 4.4063 | 1984.235 | 3.4 | 5.4286 | |
| 1251.08 | 25.3 | 4.37 | | 1959 | 3.5 | 4.28 | 4.3077 | | | | |
| 1249.32 | 25.7 | 5.21 | | 1958 | 3.6 | 4.61 | 4.3171 | | | | |
| 1248.44 | 25.9 | 5.25 | | 1957 | 3.7 | 4.34 | 4.2905 | | | | |
| 1247.56 | 26.1 | 4.31 | 3.28 | 1956 | 3.8 | 4.34 | 4.3852 | | | | |
| 1246.68 | 26.3 | 4.44 | | 1955 | 3.9 | 4.24 | 4.0259 | | | | |
| 1245.8 | 26.5 | 4.29 | | 1954 | 4 | 4.46 | 4.513 | | | | |
| 1244.92 | 26.7 | 4.22 | | 1953 | 4.1 | 4.28 | 4.3057 | | | | |
| 1244.04 | 26.9 | 4.21 | 4.25 | 1951.209 | 4.2 | 4.44 | 4.6502 | | | | |
| 1243.16 | 27.1 | 4.29 | 3.98 | 1950.605 | 4.3 | 4.25 | 4.1768 | | | | |
| 1242.28 | 27.3 | 4.88 | 4.64 | 1950 | 4.4 | 4.22 | 5.6468 | | | | |
| 1241.4 | 27.5 | 4.81 | 4.69 | 1948.67 | 4.5 | 4.37 | 4.4475 | | | | |
| 1240.52 | 27.7 | 4.59 | 5.49 | 1947.34 | 4.6 | 4.5 | 4.2975 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 1239.64 | 27.9 | 4.07 | 4.08 | 1946.01 | 4.7 | 4.35 | 4.5944 | | | | |
| 1238.76 | 28.1 | 4.29 | 4 | 1944.68 | 4.8 | 4.61 | 4.418 | | | | |
| 1237.88 | 28.3 | 4.3 | 4.82 | 1944.19 | 4.9 | 4.41 | 4.5215 | | | | |
| 1237 | 28.5 | 3.86 | 3.84 | 1943.699 | 5 | 4.31 | 4.4041 | | | | |
| 1236.12 | 28.7 | 4.43 | 4.26 | 1943.209 | 5.1 | 4.16 | 4.7632 | | | | |
| 1235.24 | 28.9 | 3.32 | 3.96 | 1942.51 | 5.2 | 4.18 | | | | | |
| 1234.36 | 29.1 | 5.26 | 4.04 | 1941.81 | 5.3 | 4.4 | | | | | |
| 1233.48 | 29.3 | 3.57 | 4.45 | 1941.111 | 5.4 | 4.08 | | | | | |
| 1232.6 | 29.5 | 4.54 | 3.86 | 1940.411 | 5.5 | 4.47 | 4.8214 | | | | |
| 1231.72 | 29.7 | 3.99 | 4.25 | 1939.712 | 5.6 | 4.21 | 4.7974 | | | | |
| 1230.84 | 29.9 | 4.25 | 3.99 | 1939.013 | 5.7 | 4.35 | 4.6395 | | | | |
| 1229.96 | 30.1 | 3.74 | 4.23 | 1938.313 | 5.8 | 4.32 | 4.7265 | | | | |
| 1229.08 | 30.3 | 4.16 | 3.96 | 1937.614 | 5.9 | 4.41 | 4.2846 | | | | |
| 1228.64 | 30.4 | 6.4979 | | 1936.915 | 6 | 4.37 | 4.2921 | | | | |
| 1228.2 | 30.5 | 4.02 | 4.59 | 1936.215 | 6.1 | 4.39 | 4.8588 | | | | |
| 1227.32 | 30.7 | 4.86 | 3.73 | 1935.516 | 6.2 | 4.27 | 4.4794 | | | | |
| 1226.44 | 30.9 | 3.67 | 4.04 | 1934.817 | 6.3 | 4.44 | 4.4042 | | | | |
| 1226 | 31 | 4.4169 | | 1934.117 | 6.4 | 4.31 | 4.0548 | | | | |
| 1225.133 | 31.1 | 3.79 | 4.46 | 1933.418 | 6.5 | 4.27 | 4.1182 | | | | |
| 1224.267 | 31.2 | 4.5195 | | 1932.719 | 6.6 | 4.35 | 4.3422 | | | | |
| 1223.4 | 31.3 | 4.67 | 3.93 | 1932.019 | 6.7 | 4.15 | 4.5324 | | | | |
| 1222.533 | 31.4 | 4.6076 | | 1931.32 | 6.8 | 4.36 | 4.1175 | | | | |
| 1221.667 | 31.5 | 3.65 | 4.36 | 1930.621 | 6.9 | 4.2 | 4.5315 | | | | |
| 1220.8 | 31.6 | 4.6916 | | 1929.921 | 7 | 4.37 | 4.3204 | | | | |
| 1219.933 | 31.7 | 4.12 | 4.02 | 1929.222 | 7.1 | 4.35 | 4.5506 | | | | |
| 1219.067 | 31.8 | 4.5205 | | 1928.522 | 7.2 | 4.4 | 4.1642 | | | | |
| 1218.2 | 31.9 | 5.04 | 4.05 | 1927.823 | 7.3 | 4.17 | 4.0341 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 1217.333 | 32 | 4.7729 | | 1927.124 | 7.4 | 4.31 | 4.2473 | | | | |
| 1216.467 | 32.1 | | 4.06 | 1926.424 | 7.5 | 4.17 | 3.8672 | | | | |
| 1215.6 | 32.2 | 4.7325 | | 1925.725 | 7.6 | 4.28 | 5.0479 | | | | |
| 1214.733 | 32.3 | 4.45 | 5.4 | 1925.026 | 7.7 | 4.26 | 4.3259 | | | | |
| 1213.867 | 32.4 | 4.7862 | | 1924.326 | 7.8 | 4.2 | 3.7409 | | | | |
| 1213 | 32.5 | | 4.84 | 1923 | 7.9 | 4.25 | 4.0214 | | | | |
| 1212.133 | 32.6 | 4.5156 | | 1921.552 | 8 | 4.24 | 4.2347 | | | | |
| 1211.267 | 32.7 | 4.33 | 5.07 | 1920.105 | 8.1 | 4.18 | 5.1975 | | | | |
| 1210.4 | 32.8 | 4.7757 | | 1918.657 | 8.2 | 4.28 | 4.1599 | | | | |
| 1209.533 | 32.9 | | 4.7 | 1917.209 | 8.3 | 4.09 | | | | | |
| 1208.667 | 33 | 5.2155 | | 1915.6 | 8.4 | 4.51 | 3.809 | | | | |
| 1207.8 | 33.1 | | 4.29 | 1914.963 | 8.5 | 4.35 | 4.5179 | | | | |
| 1206.933 | 33.2 | 4.8042 | | 1914.326 | 8.6 | 4.34 | 4.5173 | | | | |
| 1206.067 | 33.3 | | 4.63 | 1913.689 | 8.7 | 4.09 | 4.6314 | | | | |
| 1205.2 | 33.4 | 4.411 | | 1913.052 | 8.8 | 4.07 | | | | | |
| 1204.333 | 33.5 | | 5.08 | 1912.526 | 8.9 | 4.15 | 4.0773 | | | | |
| 1203.467 | 33.6 | 5.0911 | | 1912 | 9 | 4.23 | 4.2312 | | | | |
| 1202.6 | 33.7 | | 4.76 | 1910.209 | 9.1 | 4.04 | 3.8845 | | | | |
| 1201.733 | 33.8 | 5.2208 | | 1908.876 | 9.2 | 4.27 | 4.0485 | | | | |
| 1200.867 | 33.9 | | 4.54 | 1907.542 | 9.3 | 4.31 | 3.9615 | | | | |
| 1198.167 | 34.1 | 4 | 4.66 | 1906.209 | 9.4 | 4.23 | 4.2428 | | | | |
| 1194.5 | 34.3 | 4.39 | 5.47 | 1905.209 | 9.5 | 4.19 | 4.2606 | | | | |
| 1192.667 | 34.4 | 5.0757 | | 1904.209 | 9.6 | 4.16 | 4.218 | | | | |
| 1190.833 | 34.5 | 4.14 | 4.73 | 1903.209 | 9.7 | 4.25 | 4.1159 | | | | |
| 1189 | 34.6 | 4.9575 | | 1902.209 | 9.8 | 4.37 | 4.6485 | | | | |
| 1187.167 | 34.7 | 3.94 | 5.55 | 1901.209 | 9.9 | 4.5 | 4.1703 | | | | |
| 1185.333 | 34.8 | 4.9305 | | 1900.474 | 10 | 4.37 | | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 1183.5 | 34.9 | | 4.36 | 1899.739 | 10.1 | 4.36 | 4.5174 | | | | |
| 1181.667 | 35 | 4.452 | | 1899.005 | 10.2 | 4.35 | 4.1046 | | | | |
| 1179.833 | 35.1 | 4.45 | 4.61 | 1898.27 | 10.3 | 4.35 | 4.167 | | | | |
| 1178 | 35.2 | 4.6211 | | 1897.535 | 10.4 | 4.26 | 4.3946 | | | | |
| 1176.167 | 35.3 | 4.36 | 4.43 | 1896.8 | 10.5 | 4.39 | 4.5404 | | | | |
| 1174.333 | 35.4 | 4.2752 | | 1894.209 | 10.6 | 4.18 | 3.8653 | | | | |
| 1172.5 | 35.5 | | 4.39 | 1892.709 | 10.7 | 4.39 | 4.6819 | | | | |
| 1170.667 | 35.6 | 4.25 | | 1891.209 | 10.8 | 4.49 | 4.7327 | | | | |
| 1168.833 | 35.7 | 4.4 | 4.63 | 1890.709 | 10.9 | 4.26 | 4.2519 | | | | |
| 1167 | 35.8 | 4.51 | | 1890.209 | 11 | 4.27 | 4.441 | | | | |
| 1165.167 | 35.9 | 6.29 | 5.73 | 1889.709 | 11.1 | 4.33 | 4.2628 | | | | |
| 1163.333 | 36 | 4.62 | | 1889.209 | 11.2 | 4.54 | 4.7159 | | | | |
| 1161.5 | 36.1 | 5.02 | 4.52 | 1887.209 | 11.3 | 4.37 | 4.6288 | | | | |
| 1159.667 | 36.2 | 5.08 | | 1886.709 | 11.4 | 4.45 | 4.1968 | | | | |
| 1157.833 | 36.3 | 6.18 | 5.27 | 1886.209 | 11.5 | 4.62 | 4.1537 | | | | |
| 1156 | 36.4 | 4.42 | | 1885.209 | 11.6 | 4.61 | 4.6182 | | | | |
| 1154.167 | 36.5 | 4.29 | 4.3 | 1884.209 | 11.7 | 4.62 | 3.8655 | | | | |
| 1152.333 | 36.6 | 4.5 | | 1883.209 | 11.8 | 4.59 | 4.0635 | | | | |
| 1150.5 | 36.7 | 4.21 | 4.57 | 1882.209 | 11.9 | 4.24 | 5.3026 | | | | |
| 1148.667 | 36.8 | 5.52 | | 1881.209 | 12 | 4.49 | 4.9957 | | | | |
| 1146.833 | 36.9 | 4.74 | 4.73 | 1880.605 | 12.1 | 4.28 | | | | | |
| 1145 | 37 | 4.55 | | 1880 | 12.2 | 4.17 | 5.4474 | | | | |
| 1143.167 | 37.1 | 4.98 | 6.11 | 1878 | 12.3 | 5.26 | 5.219 | | | | |
| 1141.333 | 37.2 | 4.97 | | 1876.802 | 12.4 | 4.34 | 4.2332 | | | | |
| 1139.5 | 37.3 | 4.89 | 4.86 | 1875.605 | 12.5 | 4.21 | 4.1625 | | | | |
| 1135.833 | 37.5 | | 4.76 | 1874.407 | 12.6 | 4.3 | 4.1013 | | | | |
| 1132.167 | 37.7 | 4.76 | 4.73 | 1873.209 | 12.7 | 4.14 | 4.2254 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 1128.5 | 37.9 | 4.08 | 4.42 | 1872.209 | 12.8 | 4.39 | 4.408 | | | | |
| 1124.833 | 38.1 | 4.53 | 4.9 | 1871.209 | 12.9 | 4.2 | 4.3726 | | | | |
| 1121.167 | 38.3 | 4.66 | 5.1 | 1870.209 | 13 | 4.22 | 4.1147 | | | | |
| 1117.5 | 38.5 | 4.81 | 5.58 | 1869.209 | 13.1 | 4.4 | 4.555 | | | | |
| 1113.833 | 38.7 | 4.48 | 5.1 | 1868.209 | 13.2 | 4.36 | 4.1861 | | | | |
| 1110.167 | 38.9 | 4.42 | 4.85 | 1867.209 | 13.3 | 4.36 | 4.3119 | | | | |
| 1106.5 | 39.1 | 4.72 | 4.83 | 1866.209 | 13.4 | 4.44 | 4.1244 | | | | |
| 1102.833 | 39.3 | 4.5 | 4.64 | 1865.209 | 13.5 | 4.54 | 5.541 | | | | |
| 1099.167 | 39.5 | 4.23 | 4.54 | 1864.209 | 13.6 | 4.71 | 3.9102 | | | | |
| 1095.5 | 39.7 | 4.55 | 4.69 | 1862.729 | 13.7 | 4.43 | 4.45 | | | | |
| 1091.833 | 39.9 | 4.14 | 4.55 | 1861.25 | 13.8 | 4.29 | 4.158 | | | | |
| 1088.85 | 40.1 | 4.51 | | 1859.77 | 13.9 | 4.37 | 4.8727 | | | | |
| 1086.55 | 40.3 | 4.36 | 4.64 | 1858.29 | 14 | 4.4 | 4.3785 | | | | |
| 1084.25 | 40.5 | 4.55 | | 1856.811 | 14.1 | 4.27 | 4.2722 | | | | |
| 1081.95 | 40.7 | 4.29 | | 1855.331 | 14.2 | 4.49 | | | | | |
| 1079.65 | 40.9 | 4.45 | 4.35 | 1853.851 | 14.3 | 4.23 | | | | | |
| 1077.35 | 41.1 | 4.64 | 4.83 | 1852.371 | 14.4 | 4.59 | 4.3509 | | | | |
| 1075.05 | 41.3 | | 4.85 | 1850.892 | 14.5 | 4.49 | | | | | |
| 1072.75 | 41.5 | 4.43 | 4.95 | 1849.412 | 14.6 | 4.23 | | | | | |
| 1070.45 | 41.7 | 4.78 | 4.82 | 1847.932 | 14.7 | 4.36 | | | | | |
| 1068.15 | 41.9 | 4.48 | 5.17 | 1846.453 | 14.8 | 4.47 | | | | | |
| 1065.85 | 42.1 | 4.94 | 4.75 | 1844.973 | 14.9 | 4.56 | | | | | |
| 1063.55 | 42.3 | 4.32 | 4.68 | 1843.493 | 15 | 4.35 | 4.3818 | | | | |
| 1061.25 | 42.5 | 4.33 | 4.91 | 1842.014 | 15.1 | 4.25 | | | | | |
| 1058.95 | 42.7 | 5.65 | 4.82 | 1840.534 | 15.2 | 4.44 | 4.2162 | | | | |
| 1056.65 | 42.9 | 4.59 | 4.91 | 1839.054 | 15.3 | 4.46 | | | | | |
| 1054.35 | 43.1 | 4.76 | 4.95 | 1837.574 | 15.4 | 4.5 | 4.5978 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 1052.05 | 43.3 | 5.44 | 4.94 | 1836.095 | 15.5 | 4.39 | 4.5493 | | | | |
| 1049.75 | 43.5 | 4.16 | 4.6 | 1834.615 | 15.6 | 4.4 | 4.221 | | | | |
| 1047.45 | 43.7 | 4.31 | 5.18 | 1833.135 | 15.7 | 4.29 | | | | | |
| 1045.15 | 43.9 | 4.15 | 4.33 | 1831.656 | 15.8 | 4.46 | 4.6979 | | | | |
| 1042.85 | 44.1 | 4.58 | 5.05 | 1830.176 | 15.9 | 4.42 | 4.2925 | | | | |
| 1040.55 | 44.3 | 4 | 4.62 | 1828.696 | 16 | 4.16 | 3.9217 | | | | |
| 1038.25 | 44.5 | 4.36 | 5.08 | 1827.217 | 16.1 | 4.4 | 4.4057 | | | | |
| 1035.95 | 44.7 | 4.17 | 4.58 | 1825.737 | 16.2 | 4.11 | 4.4 | | | | |
| 1033.65 | 44.9 | 4.32 | 5.16 | 1824.257 | 16.3 | 4.44 | 4.5834 | | | | |
| 1031.35 | 45.1 | 4.64 | 4.48 | 1822.777 | 16.4 | 4.55 | 4.6361 | | | | |
| 1029.05 | 45.3 | 4.3 | 5.01 | 1821.298 | 16.5 | 4.66 | 4.1743 | | | | |
| 1026.75 | 45.5 | 4.29 | 4.5 | 1819.818 | 16.6 | 4.38 | 4.5335 | | | | |
| 1024.45 | 45.7 | 4.51 | | 1818.338 | 16.7 | 4.32 | 4.3506 | | | | |
| 1022.15 | 45.9 | 4.01 | 4.67 | 1816.859 | 16.8 | 4.65 | 4.6597 | | | | |
| 1019.85 | 46.1 | 4.17 | 4.06 | 1815.379 | 16.9 | 4.63 | 4.0006 | | | | |
| 1017.55 | 46.3 | 4.3 | 4.78 | 1813.899 | 17 | 4.44 | 4.3365 | | | | |
| 1015.25 | 46.5 | 5.71 | 4.78 | 1812.42 | 17.1 | 4.4 | 4.2361 | | | | |
| 1012.95 | 46.7 | 4.54 | 4.69 | 1810.94 | 17.2 | 4.23 | 4.2037 | | | | |
| 1010.65 | 46.9 | 4.57 | 4.81 | 1809.46 | 17.3 | 4.48 | 4.3039 | | | | |
| 1008.35 | 47.1 | 4.84 | 4.83 | 1807.98 | 17.4 | 4.74 | 4.1272 | | | | |
| 1006.05 | 47.3 | 4.65 | 4.51 | 1806.501 | 17.5 | 4.22 | 4.1851 | | | | |
| 1003.75 | 47.5 | 4.65 | 4.71 | 1805.021 | 17.6 | 4.25 | 4.1204 | | | | |
| 1001.45 | 47.7 | 4.9 | 4.36 | 1803.541 | 17.7 | 4.66 | 4.3031 | | | | |
| 999.15 | 47.9 | 4.91 | 4.51 | 1802.062 | 17.8 | 4.29 | 4.0574 | | | | |
| 996.85 | 48.1 | 4.43 | 4.21 | 1800.582 | 17.9 | 4.41 | 4.0662 | | | | |
| 994.55 | 48.3 | 4.49 | 4.91 | 1799.102 | 18 | 4.43 | 4.2656 | | | | |
| 992.25 | 48.5 | 4.54 | 4.62 | 1797.623 | 18.1 | 4.57 | 4.0662 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 989.95 | 48.7 | 4.65 | 4.509 | 1796.143 | 18.2 | 4.3 | 4.0001 | | | | |
| 987.65 | 48.9 | 4.37 | | 1794.663 | 18.3 | 4.34 | 4.2207 | | | | |
| 985.35 | 49.1 | | 4.6299 | 1793.183 | 18.4 | 4.23 | 4.0417 | | | | |
| 983.05 | 49.3 | 4.62 | 4.6458 | 1791.704 | 18.5 | 4.15 | 3.7653 | | | | |
| 980.75 | 49.5 | 4.72 | 4.8704 | 1790.224 | 18.6 | 4.11 | 4.2542 | | | | |
| 978.45 | 49.7 | 4.24 | 4.7144 | 1788.744 | 18.7 | 4.12 | 4.1527 | | | | |
| 976.15 | 49.9 | 4.16 | 5.1915 | 1787.265 | 18.8 | 4.23 | 4.1391 | | | | |
| 973.85 | 50.1 | 4.14 | 4.4812 | 1785.785 | 18.9 | 4.21 | 4.0924 | | | | |
| 971.55 | 50.3 | 4.59 | 4.7981 | 1784.305 | 19 | 4.39 | 5.0308 | | | | |
| 969.25 | 50.5 | 4.58 | | 1782.826 | 19.1 | 4.24 | 4.256 | | | | |
| 966.95 | 50.7 | 4.94 | 4.4873 | 1781.346 | 19.2 | 4.25 | 4.2159 | | | | |
| 964.65 | 50.9 | 5.32 | 4.4605 | 1779.866 | 19.3 | 4.55 | 4.0937 | | | | |
| 962.35 | 51.1 | 4.76 | 4.3538 | 1778.386 | 19.4 | 4.3 | 3.8276 | | | | |
| 960.05 | 51.3 | 4.6 | 4.803 | 1776.907 | 19.5 | 4.22 | 4.4899 | | | | |
| 957.75 | 51.5 | 5.01 | 4.3494 | 1775.427 | 19.6 | 4.52 | 4.511 | | | | |
| 955.45 | 51.7 | 5.1 | 4.5272 | 1773.947 | 19.7 | 4.09 | 4.8065 | | | | |
| 953.15 | 51.9 | 5.07 | 5.3668 | 1772.468 | 19.8 | 4.13 | 3.6018 | | | | |
| 950.85 | 52.1 | 4.7141 | 5.3554 | 1770.988 | 19.9 | 4.21 | 4.0563 | | | | |
| 948.55 | 52.3 | 4.53 | | 1769.508 | 20 | 4.26 | 4.3384 | | | | |
| 946.25 | 52.5 | 4.8 | | 1768.029 | 20.1 | 4.09 | 4.4293 | | | | |
| 943.95 | 52.7 | 4.82 | 4.4835 | 1766.549 | 20.2 | 4.16 | 4.284 | | | | |
| 941.65 | 52.9 | 5.35 | 4.5956 | 1765.069 | 20.3 | 4.45 | 4.0928 | | | | |
| 939.35 | 53.1 | 4.81 | 4.5322 | 1763.59 | 20.4 | 4.24 | 4.354 | | | | |
| 937.05 | 53.3 | 4.7655 | 5.4687 | 1762.11 | 20.5 | 4.35 | 4.121 | | | | |
| 934.75 | 53.5 | | 4.8751 | 1760.63 | 20.6 | 4.41 | 4.2355 | | | | |
| 932.45 | 53.7 | 4.5 | 4.4466 | 1759.15 | 20.7 | 4.53 | | | | | |
| 930.15 | 53.9 | 4.35 | 4.5293 | 1757.671 | 20.8 | 4.35 | 4.2698 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 926.7625 | 54.1 | 4.8 | | 1756.191 | 20.9 | 4.54 | 4.1587 | | | | |
| 922.2875 | 54.3 | 4.3783 | | 1754.711 | 21 | 4.31 | 4.3393 | | | | |
| 917.8125 | 54.5 | 4.68 | 4.8045 | 1753.341 | 21.1 | 4.47 | 4.2933 | | | | |
| 913.3375 | 54.7 | 4.45 | 4.5213 | 1751.971 | 21.2 | 4.3 | 4.1816 | | | | |
| 908.8625 | 54.9 | 4.91 | 4.1848 | 1750.601 | 21.3 | 4.18 | 4.3381 | | | | |
| 904.3875 | 55.1 | 4.82 | 4.4055 | 1749.231 | 21.4 | 4.28 | 4.5509 | | | | |
| 899.9125 | 55.3 | 4.73 | 4.6424 | 1747.861 | 21.5 | 4.58 | 5.1795 | | | | |
| 895.4375 | 55.5 | | 4.6321 | 1746.491 | 21.6 | 4.2 | 4.5654 | | | | |
| 890.9625 | 55.7 | 5.05 | 4.9548 | 1745.121 | 21.7 | 4.29 | 4.6379 | | | | |
| 886.4875 | 55.9 | 4.71 | 4.5454 | 1743.75 | 21.8 | 4.47 | 4.5741 | | | | |
| 882.0125 | 56.1 | 4.41 | | 1742.38 | 21.9 | 4.38 | 4.7523 | | | | |
| 877.5375 | 56.3 | 5.39 | 4.3073 | 1741.01 | 22 | 4.36 | | | | | |
| 873.0625 | 56.5 | 5.14 | 4.9746 | 1739.64 | 22.1 | 4.45 | 5.4001 | | | | |
| 868.5875 | 56.7 | 4.86 | 4.7389 | 1738.27 | 22.2 | 4.39 | 4.8609 | | | | |
| 864.1125 | 56.9 | 4.75 | 4.9036 | 1736.9 | 22.3 | 4.31 | 4.0009 | | | | |
| 859.6375 | 57.1 | 5.25 | 4.7734 | 1735.53 | 22.4 | 4.38 | 4.7444 | | | | |
| 855.1625 | 57.3 | 5.13 | 4.8303 | 1734.16 | 22.5 | 4.45 | 4.1689 | | | | |
| 850.6875 | 57.5 | 4.77 | | 1732.79 | 22.6 | 4.59 | 4.1789 | | | | |
| 846.2125 | 57.7 | 5.0712 | 4.4804 | 1731.419 | 22.7 | 4.71 | 4.7063 | | | | |
| 841.7375 | 57.9 | 4.86 | 4.736 | 1730.049 | 22.8 | 4.35 | 4.3632 | | | | |
| 837.2625 | 58.1 | 5.24 | | 1728.679 | 22.9 | 4.47 | 4.4869 | | | | |
| 832.7875 | 58.3 | 5.15 | 4.5992 | 1727.309 | 23 | 4.26 | 4.8232 | | | | |
| 828.3125 | 58.5 | | 4.6745 | 1725.939 | 23.1 | 4.45 | 4.3997 | | | | |
| 823.8375 | 58.7 | 4.88 | 4.7063 | 1724.569 | 23.2 | 4.31 | 4.5579 | | | | |
| 819.3625 | 58.9 | 5.14 | 4.8212 | 1723.199 | 23.3 | 4.39 | 4.4864 | | | | |
| 814.8875 | 59.1 | 4.8987 | 5.1251 | 1721.829 | 23.4 | 4.07 | 4.5558 | | | | |
| 810.4125 | 59.3 | 5.1753 | 4.6229 | 1720.459 | 23.5 | 4.32 | 4.3223 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 805.9375 | 59.5 | 4.8991 | 5.2402 | 1719.088 | 23.6 | 4.33 | 4.5404 | | | | |
| 801.4625 | 59.7 | 5.82 | 4.9778 | 1717.718 | 23.7 | 4.33 | 4.5109 | | | | |
| 796.9875 | 59.9 | 4.87 | 5.2983 | 1716.348 | 23.8 | 4.3 | 4.0987 | | | | |
| 792.5125 | 60.1 | 5.18 | 4.9012 | 1714.978 | 23.9 | 4.37 | 3.9987 | | | | |
| 788.0375 | 60.3 | 5.54 | | 1713.608 | 24 | 4.31 | 4.691 | | | | |
| 783.5625 | 60.5 | 5.05 | | 1712.238 | 24.1 | 4.26 | 4.8943 | | | | |
| 779.0875 | 60.7 | 5.0622 | 4.6262 | 1710.868 | 24.2 | 4.2 | 4.1592 | | | | |
| 774.6125 | 60.9 | 5.75 | 4.8289 | 1709.498 | 24.3 | 4.38 | 4.8247 | | | | |
| 770.1375 | 61.1 | 4.8688 | 4.6226 | 1708.128 | 24.4 | 4.19 | 4.4016 | | | | |
| 765.6625 | 61.3 | 5.06 | 4.7012 | 1706.757 | 24.5 | 4.26 | 4.352 | | | | |
| 761.1875 | 61.5 | 4.79 | | 1705.387 | 24.6 | 4.38 | 4.4242 | | | | |
| 756.7125 | 61.7 | 5.2903 | | 1704.017 | 24.7 | 4.45 | 4.3963 | | | | |
| 752.2375 | 61.9 | 4.8165 | | 1702.647 | 24.8 | 4.4 | 4.3831 | | | | |
| 749.1111 | 62.1 | 4.8241 | | 1701.277 | 24.9 | 4.24 | 4.1926 | | | | |
| 747.3333 | 62.3 | 4.85 | | 1699.907 | 25 | 4.18 | 4.2722 | | | | |
| 745.5556 | 62.5 | 5.36 | | 1698.537 | 25.1 | 4.17 | 4.2771 | | | | |
| 743.7778 | 62.7 | 5.06 | | 1697.167 | 25.2 | 4.24 | 4.223 | | | | |
| 742 | 62.9 | 4.86 | 4.9462 | 1695.797 | 25.3 | 4.15 | 4.3935 | | | | |
| 740.2222 | 63.1 | 6.1727 | 4.7824 | 1694.426 | 25.4 | 4.14 | 4.8304 | | | | |
| 738.4444 | 63.3 | 5.2479 | 4.6317 | 1693.056 | 25.5 | 4.24 | 4.0846 | | | | |
| 736.6667 | 63.5 | 5.0948 | | 1691.686 | 25.6 | 4.09 | 4.306 | | | | |
| 734.8889 | 63.7 | 5.17 | | 1690.316 | 25.7 | 4.01 | 4.3203 | | | | |
| 733.1111 | 63.9 | | 4.8227 | 1688.946 | 25.8 | 4.09 | 4.4187 | | | | |
| 731.3333 | 64.1 | 5.38 | 4.8115 | 1687.576 | 25.9 | 4.31 | 4.4708 | | | | |
| 729.5556 | 64.3 | 5.07 | 4.2148 | 1686.206 | 26 | 4.17 | 4.6599 | | | | |
| 727.7778 | 64.5 | 4.61 | | 1684.836 | 26.1 | 4.07 | 4.6534 | | | | |
| 726 | 64.7 | 5.06 | 4.5083 | 1683.466 | 26.2 | 3.98 | 4.1737 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 724.2222 | 64.9 | 5.54 | 4.4914 | 1682.095 | 26.3 | 4.07 | 4.309 | | | | |
| 720.6667 | 65.3 | 4.97 | | 1680.725 | 26.4 | 4.19 | 4.4702 | | | | |
| 718.8889 | 65.5 | 4.5943 | | 1679.355 | 26.5 | 4.29 | | | | | |
| 717.1111 | 65.7 | | 4.5197 | 1677.985 | 26.6 | 3.98 | 4.624 | | | | |
| 715.3333 | 65.9 | 5.0113 | | 1676.615 | 26.7 | 4.2 | 4.3578 | | | | |
| 711.7778 | 66.3 | 4.8 | 4.3694 | 1675.245 | 26.8 | 4.17 | 4.5604 | | | | |
| 710 | 66.5 | | 4.3844 | 1673.875 | 26.9 | 3.82 | | | | | |
| 708.2222 | 66.7 | 4.98 | 4.7859 | 1672.505 | 27 | 4.26 | 4.0036 | | | | |
| 706.4444 | 66.9 | | 5.1181 | 1671.135 | 27.1 | 4.15 | 4.2856 | | | | |
| 704.6667 | 67.1 | 5.1007 | 4.5796 | 1669.764 | 27.2 | 3.94 | 4.0739 | | | | |
| 702.8889 | 67.3 | 5.33 | 4.4869 | 1668.394 | 27.3 | 3.99 | 4.4908 | | | | |
| 701.1111 | 67.5 | 5.85 | | 1667.024 | 27.4 | 4.11 | 4.3754 | | | | |
| 699.3333 | 67.7 | | 4.4698 | 1665.654 | 27.5 | 4.11 | 4.3791 | | | | |
| 697.5556 | 67.9 | 5.33 | 4.5854 | 1664.284 | 27.6 | 4.19 | 4.3268 | | | | |
| 695.7778 | 68.1 | 4.9612 | 4.6821 | 1662.914 | 27.7 | 4.14 | 4.3924 | | | | |
| 694 | 68.3 | | 4.9483 | 1661.544 | 27.8 | 3.98 | 4.3645 | | | | |
| 692.2222 | 68.5 | 4.94 | 4.4973 | 1660.174 | 27.9 | 4.06 | 4.4118 | | | | |
| 690.4444 | 68.7 | 5.51 | 4.8086 | 1658.804 | 28 | 4.05 | 4.6577 | | | | |
| 688.6667 | 68.9 | 4.75 | 5.3317 | 1657.434 | 28.1 | 4.27 | 4.3054 | | | | |
| 686.8889 | 69.1 | 4.9807 | 4.8881 | 1656.063 | 28.2 | 3.98 | 4.3013 | | | | |
| 685.1111 | 69.3 | 5.32 | 4.4696 | 1654.693 | 28.3 | 4.09 | 5.0062 | | | | |
| 683.3333 | 69.5 | 4.95 | 5.0719 | 1653.323 | 28.4 | 3.94 | 4.8504 | | | | |
| 681.5556 | 69.7 | 4.92 | 5.0864 | 1651.953 | 28.5 | 4.2 | 4.2657 | | | | |
| 679.7778 | 69.9 | 4.7725 | 5.1727 | 1650.583 | 28.6 | 4.02 | 4.0881 | | | | |
| 678 | 70.1 | 4.6 | 5.0058 | 1649.213 | 28.7 | 4.05 | 4.3938 | | | | |
| 676.2222 | 70.3 | | 4.8561 | 1647.843 | 28.8 | 4.09 | 3.8732 | | | | |
| 674.4444 | 70.5 | 4.78 | 4.7439 | 1646.473 | 28.9 | 3.92 | 3.7965 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 672.6667 | 70.7 | 4.8111 | | 1645.103 | 29 | 4.03 | 4.2385 | | | | |
| 670.8889 | 70.9 | 5.35 | | 1643.732 | 29.1 | 3.97 | 3.977 | | | | |
| 666.9333 | 71.1 | 4.77 | | 1642.362 | 29.2 | 3.82 | 4.1662 | | | | |
| 654.6667 | 71.5 | 5.1 | 5.0279 | 1640.992 | 29.3 | 3.99 | 3.9967 | | | | |
| 648.5333 | 71.7 | 4.74 | 4.7772 | 1639.622 | 29.4 | 4.13 | 4.8627 | | | | |
| 642.4 | 71.9 | 4.69 | 4.9149 | 1638.252 | 29.5 | 4.09 | 4.3638 | | | | |
| 636.2667 | 72.1 | 4.6381 | 5.0668 | 1636.882 | 29.6 | 3.99 | 3.8196 | | | | |
| 630.1333 | 72.3 | 4.8967 | 5.1918 | 1635.512 | 29.7 | 4.37 | 4.3218 | | | | |
| 624 | 72.5 | 4.9 | 4.6286 | 1634.142 | 29.8 | 4.4 | 4.5526 | | | | |
| 617.8667 | 72.7 | 5.02 | 4.5061 | 1632.772 | 29.9 | 4.26 | 4.4563 | | | | |
| 611.7333 | 72.9 | 5.0098 | 4.5924 | 1631.401 | 30 | 4.31 | 4.2053 | | | | |
| 605.6 | 73.1 | 4.8 | 4.8823 | 1630.031 | 30.1 | 4.31 | 4.1353 | | | | |
| 599.4667 | 73.3 | 4.68 | 5.2256 | 1628.661 | 30.2 | 4.39 | 4.239 | | | | |
| 593.3333 | 73.5 | 4.66 | | 1627.291 | 30.3 | 4.04 | 4.4297 | | | | |
| 587.2 | 73.7 | 5.16 | | 1625.921 | 30.4 | 4.17 | 4.4887 | | | | |
| 581.0667 | 73.9 | 4.93 | 4.6019 | 1624.551 | 30.5 | 4.22 | 3.8009 | | | | |
| 574.9333 | 74.1 | 4.6 | | 1623.181 | 30.6 | 4.39 | 4.1667 | | | | |
| 568.8 | 74.3 | 4.58 | 4.7993 | 1621.811 | 30.7 | 4.28 | 4.1844 | | | | |
| 562.6667 | 74.5 | 4.59 | 4.615 | 1620.441 | 30.8 | 4.43 | 4.32 | | | | |
| 556.5333 | 74.7 | 4.94 | 4.5896 | 1619.07 | 30.9 | 4.17 | 4.5466 | | | | |
| 550.4 | 74.9 | 4.6 | 4.9786 | 1617.7 | 31 | 4.33 | 4.2993 | | | | |
| 544.2667 | 75.1 | 5.16 | 4.7249 | 1615.859 | 31.1 | 4.28 | 4.3211 | | | | |
| 538.1333 | 75.3 | 4.56 | | 1614.018 | 31.2 | 4.17 | 3.7742 | | | | |
| 532 | 75.5 | 4.568 | 4.6173 | 1612.176 | 31.3 | 4.1 | 4.0557 | | | | |
| 525.8667 | 75.7 | 4.71 | | 1610.335 | 31.4 | 4.2 | 4.2821 | | | | |
| 519.7333 | 75.9 | 4.99 | 4.8296 | 1608.493 | 31.5 | 4.25 | 4.6688 | | | | |
| 513.6 | 76.1 | 4.74 | 5.4675 | 1606.652 | 31.6 | 4.23 | 4.6035 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 507.4667 | 76.3 | 5.1593 | 5.3302 | 1604.811 | 31.7 | 4.37 | 4.3889 | | | | |
| 501.3333 | 76.5 | 5.1738 | 4.6399 | 1602.969 | 31.8 | 4.04 | 4.4028 | | | | |
| 495.2 | 76.7 | 4.71 | 4.7441 | 1601.128 | 31.9 | 4.18 | 3.7005 | | | | |
| 489.0667 | 76.9 | 4.65 | 4.7993 | 1599.286 | 32 | 4.47 | 4.306 | | | | |
| 484.5133 | 77.1 | 5.17 | 4.8307 | 1597.445 | 32.1 | 4.25 | 4.1564 | | | | |
| 481.54 | 77.3 | 4.79 | 4.6264 | 1595.604 | 32.2 | 4.41 | 4.072 | | | | |
| 478.5667 | 77.5 | 4.65 | | 1593.762 | 32.3 | 4.17 | 4.0325 | | | | |
| 475.5933 | 77.7 | 4.35 | 4.5775 | 1591.921 | 32.4 | 4.13 | 3.9737 | | | | |
| 472.62 | 77.9 | 4.8984 | | 1590.079 | 32.5 | 4.19 | 4.4352 | | | | |
| 466.6733 | 78.3 | 4.9073 | 5.2538 | 1588.238 | 32.6 | 4.27 | 3.7206 | | | | |
| 463.7 | 78.5 | 4.87 | 4.8028 | 1586.397 | 32.7 | 4.05 | 3.7237 | | | | |
| 460.7267 | 78.7 | 4.75 | 5.2201 | 1584.555 | 32.8 | 4.32 | 4.3704 | | | | |
| 457.7533 | 78.9 | 4.75 | 4.8044 | 1582.714 | 32.9 | 4.2 | 4.7311 | | | | |
| 454.78 | 79.1 | 4.94 | 4.7603 | 1580.872 | 33 | 4.05 | 4.0268 | | | | |
| 451.8067 | 79.3 | 4.88 | 4.2532 | 1579.031 | 33.1 | 4.24 | 4.2412 | | | | |
| 448.8333 | 79.5 | 4.62 | 4.4682 | 1577.19 | 33.2 | 4.11 | 4.4572 | | | | |
| 445.86 | 79.7 | 4.82 | | 1575.348 | 33.3 | 4.11 | 4.7042 | | | | |
| 442.8867 | 79.9 | 5.19 | 4.7601 | 1573.507 | 33.4 | 4.4 | 4.1903 | | | | |
| 439.9133 | 80.1 | 4.56 | 4.9421 | 1571.665 | 33.5 | 4.37 | 4.6148 | | | | |
| 436.94 | 80.3 | 5.2 | 4.5282 | 1569.824 | 33.6 | 4.26 | 4.1319 | | | | |
| 433.9667 | 80.5 | 4.8 | 4.5112 | 1567.983 | 33.7 | 4.49 | 4.3819 | | | | |
| 430.9933 | 80.7 | 5.19 | 4.256 | 1566.141 | 33.8 | 4.06 | 4.0622 | | | | |
| 428.02 | 80.9 | 5.55 | 4.7999 | 1564.3 | 33.9 | 4.24 | 4.5179 | | | | |
| 425.0467 | 81.1 | 5.09 | 4.9761 | 1562.458 | 34 | 4.21 | 4.6387 | | | | |
| 422.0733 | 81.3 | 4.73 | 4.7477 | 1560.617 | 34.1 | 4.37 | 4.5468 | | | | |
| 419.1 | 81.5 | 4.45 | 4.6077 | 1558.776 | 34.2 | 4.36 | 4.6584 | | | | |
| 416.1267 | 81.7 | 4.68 | 4.7216 | 1556.934 | 34.3 | 4.4 | 4.7084 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 413.1533 | 81.9 | 4.55 | 4.9121 | 1555.093 | 34.4 | 4.3 | 4.5144 | | | | |
| 410.18 | 82.1 | 4.94 | 5.2416 | 1553.251 | 34.5 | 4.38 | 4.4107 | | | | |
| 407.2067 | 82.3 | 4.86 | 4.8898 | 1551.41 | 34.6 | 4.46 | 4.3545 | | | | |
| 404.2333 | 82.5 | 4.93 | 5.4227 | 1549.569 | 34.7 | 4.66 | 4.5817 | | | | |
| 401.26 | 82.7 | 4.68 | 4.9818 | 1547.727 | 34.8 | 4.43 | 4.0176 | | | | |
| 398.2867 | 82.9 | 4.54 | 4.764 | 1545.886 | 34.9 | 4.35 | 4.3191 | | | | |
| 395.3133 | 83.1 | 4.54 | 4.8765 | 1544.044 | 35 | 4.44 | 4.4396 | | | | |
| 392.34 | 83.3 | 4.63 | 4.9816 | 1542.203 | 35.1 | 4.46 | 3.9854 | | | | |
| 389.3667 | 83.5 | 4.85 | 5.0256 | 1540.362 | 35.2 | 4.32 | 4.3802 | | | | |
| 386.3933 | 83.7 | 4.98 | 4.5571 | 1538.52 | 35.3 | 4.79 | 4.5313 | | | | |
| 383.42 | 83.9 | 5.06 | 5.0879 | 1536.679 | 35.4 | 4.68 | 4.5062 | | | | |
| 380.4467 | 84.1 | 4.6 | 4.8402 | 1534.837 | 35.5 | 4.4 | 4.1081 | | | | |
| 377.4733 | 84.3 | 4.81 | 4.5864 | 1532.996 | 35.6 | 4.43 | 4.4331 | | | | |
| 374.5 | 84.5 | 4.64 | 4.6142 | 1531.155 | 35.7 | 4.6 | 4.1898 | | | | |
| 371.5267 | 84.7 | 4.94 | 4.8291 | 1529.313 | 35.8 | 4.22 | 4.3409 | | | | |
| 368.5533 | 84.9 | 4.77 | 5.5936 | 1527.472 | 35.9 | 4.7 | 4.0872 | | | | |
| 365.58 | 85.1 | 4.75 | 4.8555 | 1525.63 | 36 | 4.82 | 4.3875 | | | | |
| 362.6067 | 85.3 | 4.77 | 4.7879 | 1524.102 | 36.1 | 4.57 | 4.2748 | | | | |
| 359.6333 | 85.5 | 4.11 | | 1522.573 | 36.2 | 4.34 | 4.352 | | | | |
| 353.6867 | 85.9 | 4.61 | 4.635 | 1521.044 | 36.3 | 4.56 | 4.5775 | | | | |
| 350.7133 | 86.1 | 4.75 | | 1519.515 | 36.4 | 4.86 | 4.1441 | | | | |
| 347.74 | 86.3 | 4.33 | 4.2127 | 1517.987 | 36.5 | 4.52 | 4.4742 | | | | |
| 344.7667 | 86.5 | 4.6 | | 1516.458 | 36.6 | 4.56 | 4.4463 | | | | |
| 341.7933 | 86.7 | 4.96 | 5.4082 | 1514.929 | 36.7 | 4.72 | 4.6539 | | | | |
| 338.82 | 86.9 | 4.68 | 5.1656 | 1513.4 | 36.8 | 4.51 | 4.825 | | | | |
| 335.8467 | 87.1 | 4.88 | | 1511.872 | 36.9 | 4.64 | 4.491 | | | | |
| 332.8733 | 87.3 | 4.43 | 5.1135 | 1510.343 | 37 | 4.71 | 4.4979 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 329.9 | 87.5 | 5.04 | 5.2322 | 1508.814 | 37.1 | 4.61 | 4.5984 | | | | |
| 326.9267 | 87.7 | 4.13 | 5.5568 | 1507.285 | 37.2 | 4.75 | 4.5334 | | | | |
| 323.9533 | 87.9 | 4.88 | 5.8884 | 1505.757 | 37.3 | 4.62 | 4.291 | | | | |
| 320.98 | 88.1 | 4.99 | | 1504.228 | 37.4 | 4.77 | 5.0837 | | | | |
| 318.0067 | 88.3 | 5.11 | 4.7686 | 1502.699 | 37.5 | 4.72 | 4.548 | | | | |
| 315.0333 | 88.5 | 4.79 | | 1501.17 | 37.6 | 4.72 | 4.815 | | | | |
| 312.06 | 88.7 | 4.84 | | 1499.642 | 37.7 | 4.97 | 4.3262 | | | | |
| 309.0867 | 88.9 | 4.8 | | 1498.113 | 37.8 | 4.51 | 4.6649 | | | | |
| 306.1133 | 89.1 | 4.71 | | 1496.584 | 37.9 | 4.84 | 4.5488 | | | | |
| 303.14 | 89.3 | 5.17 | 4.8855 | 1495.055 | 38 | 4.8 | 4.1872 | | | | |
| 300.1667 | 89.5 | 5.53 | | 1493.527 | 38.1 | 4.6 | 4.3397 | | | | |
| 297.1933 | 89.7 | 5.35 | 4.8006 | 1491.998 | 38.2 | 4.75 | 4.7447 | | | | |
| 294.22 | 89.9 | 4.98 | 4.5231 | 1490.469 | 38.3 | 4.62 | 4.6376 | | | | |
| 291.2467 | 90.1 | 4.91 | 4.9307 | 1488.94 | 38.4 | 4.77 | 4.8725 | | | | |
| 288.2733 | 90.3 | 4.94 | 4.8413 | 1487.412 | 38.5 | 4.57 | 4.1659 | | | | |
| 285.3 | 90.5 | 4.91 | 5.1936 | 1485.883 | 38.6 | 4.53 | 4.6511 | | | | |
| 282.3267 | 90.7 | 5.33 | 4.6705 | 1484.354 | 38.7 | 4.37 | 4.4992 | | | | |
| 279.3533 | 90.9 | 4.74 | | 1482.825 | 38.8 | 4.53 | 4.3741 | | | | |
| 276.38 | 91.1 | 5.05 | 5.1058 | 1481.297 | 38.9 | 4.51 | 4.2275 | | | | |
| 273.4067 | 91.3 | 4.9 | | 1479.768 | 39 | 4.43 | 4.7581 | | | | |
| 267.46 | 91.7 | 4.79 | 4.6408 | 1478.239 | 39.1 | 4.31 | 4.771 | | | | |
| 264.4867 | 91.9 | 4.63 | 4.8176 | 1476.71 | 39.2 | 4.5 | 4.2903 | | | | |
| 260.9444 | 92.1 | 4.85 | 5.1303 | 1475.182 | 39.3 | 4.79 | 4.8231 | | | | |
| 256.8333 | 92.3 | 4.66 | 5.3206 | 1473.653 | 39.4 | 4.52 | 4.445 | | | | |
| 252.7222 | 92.5 | 5.11 | | 1472.124 | 39.5 | 4.66 | 4.3858 | | | | |
| 248.6111 | 92.7 | 5.01 | 4.8736 | 1470.595 | 39.6 | 4.64 | 4.6378 | | | | |
| 244.5 | 92.9 | 5.58 | 4.8325 | 1469.067 | 39.7 | 4.74 | 4.3964 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 240.3889 | 93.1 | 4.79 | | 1467.538 | 39.8 | 4.45 | 4.8143 | | | | |
| 236.2778 | 93.3 | 4.73 | 4.8759 | 1466.009 | 39.9 | 4.44 | 4.4226 | | | | |
| 232.1667 | 93.5 | 4.7133 | 4.7298 | 1464.48 | 40 | 4.26 | 4.3142 | | | | |
| 228.0556 | 93.7 | 4.93 | 5.0012 | 1462.952 | 40.1 | 4.54 | 4.4533 | | | | |
| 223.9444 | 93.9 | 4.75 | 5.1324 | 1461.423 | 40.2 | 4.6 | 4.204 | | | | |
| 219.8333 | 94.1 | 4.97 | 5.0851 | 1459.894 | 40.3 | 4.28 | 4.7173 | | | | |
| 215.7222 | 94.3 | 4.96 | 5.5773 | 1458.365 | 40.4 | 4.16 | 4.4357 | | | | |
| 211.6111 | 94.5 | 4.6799 | 5.0119 | 1456.837 | 40.5 | 4.35 | 4.723 | | | | |
| 207.5 | 94.7 | 4.6 | 4.9446 | 1455.308 | 40.6 | 4.32 | 4.3771 | | | | |
| 203.3889 | 94.9 | 4.83 | 4.6337 | 1453.779 | 40.7 | 4.36 | 4.6906 | | | | |
| 199.2778 | 95.1 | 4.83 | 5.0238 | 1452.25 | 40.8 | 4.51 | 4.4735 | | | | |
| 195.1667 | 95.3 | 4.86 | 4.6928 | 1450.722 | 40.9 | 4.49 | 4.2949 | | | | |
| 191.0556 | 95.5 | 4.78 | 5.3265 | 1449.193 | 41 | 4.26 | 4.7118 | | | | |
| 186.9444 | 95.7 | | 4.9882 | 1447.664 | 41.1 | 4.21 | 4.4441 | | | | |
| 182.8333 | 95.9 | 4.96 | 4.9764 | 1446.135 | 41.2 | 4.41 | 4.6758 | | | | |
| 178.7222 | 96.1 | 4.88 | 4.9214 | 1444.607 | 41.3 | 4.19 | 4.7666 | | | | |
| 174.6111 | 96.3 | 4.84 | 4.7737 | 1443.078 | 41.4 | 4.4 | 4.6835 | | | | |
| 170.5 | 96.5 | 4.83 | 4.6282 | 1441.549 | 41.5 | 4.25 | 4.4739 | | | | |
| 166.3889 | 96.7 | 4.8458 | 4.7053 | 1440.02 | 41.6 | 4.37 | 4.4965 | | | | |
| 162.2778 | 96.9 | 4.87 | 4.6872 | 1438.492 | 41.7 | 4.54 | 4.4976 | | | | |
| 158.1667 | 97.1 | 4.47 | 4.2801 | 1436.963 | 41.8 | 4.35 | 4.5647 | | | | |
| 154.0556 | 97.3 | 4.54 | 4.9142 | 1435.434 | 41.9 | 4.28 | 4.3357 | | | | |
| 149.9444 | 97.5 | 4.46 | 4.6565 | 1433.905 | 42 | 4.34 | 4.5187 | | | | |
| 145.8333 | 97.7 | 4.74 | 5.0515 | 1432.377 | 42.1 | 4.46 | 4.2408 | | | | |
| 141.7222 | 97.9 | 4.78 | 4.9633 | 1430.848 | 42.2 | 4.12 | 4.5397 | | | | |
| 137.6111 | 98.1 | 5.11 | 4.5385 | 1429.319 | 42.3 | 4.47 | 4.4683 | | | | |
| 133.5 | 98.3 | 4.78 | 4.9931 | 1427.79 | 42.4 | 4.24 | 4.5179 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 129.3889 | 98.5 | 4.73 | 5.1636 | 1426.262 | 42.5 | 4.42 | 4.5588 | | | | |
| 125.2778 | 98.7 | | 4.4208 | 1424.733 | 42.6 | 4.23 | 4.7421 | | | | |
| 121.1667 | 98.9 | 4.47 | 4.9666 | 1423.204 | 42.7 | 4.27 | 4.2232 | | | | |
| 117.0556 | 99.1 | 4.63 | 4.6453 | 1421.675 | 42.8 | 4.26 | 4.3215 | | | | |
| 112.9444 | 99.3 | 4.55 | 5.0397 | 1420.147 | 42.9 | 4.12 | 4.6511 | | | | |
| 108.8333 | 99.5 | 4.4512 | 4.4505 | 1418.618 | 43 | 4.28 | | | | | |
| 104.7222 | 99.7 | 4.5382 | 4.3273 | 1417.089 | 43.1 | 4.2 | 4.4835 | | | | |
| 100.6111 | 99.9 | 4.5618 | 4.0977 | 1415.56 | 43.2 | 4.21 | | | | | |
| 96.5 | 100.1 | 4.5578 | 5.0464 | 1414.032 | 43.3 | 4.13 | 4.4584 | | | | |
| 92.3889 | 100.3 | | 4.747 | 1412.503 | 43.4 | 4.04 | 4.1091 | | | | |
| 88.2778 | 100.5 | 4.4035 | 4.6207 | 1410.974 | 43.5 | 4.2 | 4.4501 | | | | |
| 84.1667 | 100.7 | 5.0166 | 4.7366 | 1409.445 | 43.6 | 4.21 | 4.6466 | | | | |
| 80.0556 | 100.9 | 4.7267 | 5.5795 | 1407.917 | 43.7 | 4.6 | 4.8309 | | | | |
| 75.9444 | 101.1 | 5.1502 | 4.5189 | 1406.388 | 43.8 | 4.68 | 4.7114 | | | | |
| 71.8333 | 101.3 | 4.954 | 4.7032 | 1404.859 | 43.9 | 4.31 | 4.2501 | | | | |
| 67.7222 | 101.5 | 5.0021 | 4.5516 | 1403.33 | 44 | 4.16 | 4.368 | | | | |
| 63.6111 | 101.7 | 4.9382 | | 1402.242 | 44.1 | 4.22 | 4.6626 | | | | |
| 59.5 | 101.9 | 5.065 | 4.7235 | 1401.153 | 44.2 | 4.35 | 4.355 | | | | |
| 55.3889 | 102.1 | 4.8949 | 5.1693 | 1400.065 | 44.3 | 4.45 | 4.4309 | | | | |
| 51.2778 | 102.3 | 4.7031 | | 1398.976 | 44.4 | 4.04 | 4.4336 | | | | |
| 47.1667 | 102.5 | 4.5872 | | 1397.888 | 44.5 | 4.23 | 4.5996 | | | | |
| 43.0556 | 102.7 | 4.7701 | | 1396.799 | 44.6 | 4.35 | 4.7138 | | | | |
| 38.9444 | 102.9 | 5.1447 | | 1395.711 | 44.7 | 4.21 | 4.4507 | | | | |
| 34.8333 | 103.1 | 5.0115 | | 1394.622 | 44.8 | 4.39 | 4.8545 | | | | |
| 30.7222 | 103.3 | 5.1856 | 4.6624 | 1393.534 | 44.9 | 4.49 | 4.8565 | | | | |
| 22.5 | 103.7 | 5.8392 | 4.3427 | 1392.445 | 45 | 4.28 | 4.6639 | | | | |
| 18.3889 | 103.9 | 4.6413 | 5.0188 | 1391.357 | 45.1 | 4.36 | 4.2772 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| 14.2778 | 104.1 | 5.7391 | | 1390.268 | 45.2 | 4.18 | 4.0751 | | | | |
| 10.1667 | 104.3 | 4.9818 | | 1389.18 | 45.3 | 4.38 | | | | | |
| 6.0556 | 104.5 | 4.6277 | | 1388.091 | 45.4 | 4.64 | | | | | |
| 1.9444 | 104.7 | 5.0523 | 4.7953 | 1387.003 | 45.5 | 4.37 | 4.4462 | | | | |
| -2.1667 | 104.9 | 4.6999 | 4.8961 | 1385.914 | 45.6 | 4.3 | 4.7742 | | | | |
| -6.2778 | 105.1 | 4.8129 | 5.2244 | 1384.826 | 45.7 | 4.44 | | | | | |
| -10.3889 | 105.3 | 4.979 | 5.2445 | 1383.737 | 45.8 | 4.29 | 4.3639 | | | | |
| -14.5 | 105.5 | 4.1845 | | 1382.649 | 45.9 | 4.44 | 4.6536 | | | | |
| -18.6111 | 105.7 | 4.4509 | | 1381.56 | 46 | 4.33 | 4.3059 | | | | |
| -22.7222 | 105.9 | 4.7596 | | 1380.032 | 46.1 | 4.54 | 4.4283 | | | | |
| -26.8333 | 106.1 | 5.3684 | 4.61 | 1378.503 | 46.2 | 4.42 | 4.1675 | | | | |
| -30.9444 | 106.3 | 4.9863 | 4.926 | 1376.974 | 46.3 | 4.58 | 4.7842 | | | | |
| -35.0556 | 106.5 | 4.4228 | | 1375.445 | 46.4 | 4.16 | 4.5327 | | | | |
| -39.1667 | 106.7 | 4.6518 | | 1373.917 | 46.5 | 4.33 | 4.3521 | | | | |
| -43.2778 | 106.9 | 4.9805 | | 1372.388 | 46.6 | 4.44 | 4.7731 | | | | |
| -55.6111 | 107.5 | | 4.6572 | 1370.859 | 46.7 | 4.49 | 4.4756 | | | | |
| -59.7222 | 107.7 | | 4.4779 | 1369.33 | 46.8 | 4.08 | 4.3775 | | | | |
| | | | | 1367.802 | 46.9 | 4.38 | 4.7311 | | | | |
| | | | | 1366.273 | 47 | 4.37 | 4.2001 | | | | |
| | | | | 1364.744 | 47.1 | 4.25 | 4.3133 | | | | |
| | | | | 1363.215 | 47.2 | 4.38 | 4.8462 | | | | |
| | | | | 1361.687 | 47.3 | 4.31 | 4.5234 | | | | |
| | | | | 1360.158 | 47.4 | 4.46 | 4.1881 | | | | |
| | | | | 1358.629 | 47.5 | 4.21 | 4.5089 | | | | |
| | | | | 1357.1 | 47.6 | 4.31 | 4.4905 | | | | |
| | | | | 1355.572 | 47.7 | 4.33 | 4.8513 | | | | |
| | | | | 1354.043 | 47.8 | 4.24 | 4.4968 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| | | | | 1352.514 | 47.9 | 4.17 | 4.8573 | | | | |
| | | | | 1350.985 | 48 | 4.64 | 4.2379 | | | | |
| | | | | 1349.457 | 48.1 | 4.38 | 4.4465 | | | | |
| | | | | 1347.928 | 48.2 | 4.35 | 4.5639 | | | | |
| | | | | 1346.399 | 48.3 | 4.57 | 4.5201 | | | | |
| | | | | 1344.87 | 48.4 | 4.35 | 4.9354 | | | | |
| | | | | 1343.342 | 48.5 | 4.36 | 4.5401 | | | | |
| | | | | 1341.813 | 48.6 | 4.44 | 4.3804 | | | | |
| | | | | 1340.284 | 48.7 | 4.45 | 4.4916 | | | | |
| | | | | 1338.755 | 48.8 | 4.33 | 4.3552 | | | | |
| | | | | 1337.227 | 48.9 | 4.49 | 4.4299 | | | | |
| | | | | 1335.698 | 49 | 4.73 | 4.2064 | | | | |
| | | | | 1334.169 | 49.1 | 4.51 | 4.0035 | | | | |
| | | | | 1332.64 | 49.2 | 4.54 | 4.1632 | | | | |
| | | | | 1331.112 | 49.3 | 4.53 | 4.3806 | | | | |
| | | | | 1329.583 | 49.4 | 4.66 | 4.1722 | | | | |
| | | | | 1328.054 | 49.5 | 4.29 | 4.2706 | | | | |
| | | | | 1326.525 | 49.6 | 4.69 | 4.5281 | | | | |
| | | | | 1324.997 | 49.7 | 4.35 | 4.3491 | | | | |
| | | | | 1323.468 | 49.8 | 4.61 | 4.7467 | | | | |
| | | | | 1321.939 | 49.9 | 4.34 | 4.5895 | | | | |
| | | | | 1320.41 | 50 | 4.49 | 4.2724 | | | | |
| | | | | 1318.882 | 50.1 | 4.39 | 4.3085 | | | | |
| | | | | 1317.353 | 50.2 | 4.51 | 4.1034 | | | | |
| | | | | 1315.824 | 50.3 | 4.26 | 4.3693 | | | | |
| | | | | 1314.295 | 50.4 | 4.56 | 4.0607 | | | | |
| | | | | 1312.767 | 50.5 | 4.36 | 4.3426 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| | | | | 1311.238 | 50.6 | 4.37 | 4.9431 | | | | |
| | | | | 1309.709 | 50.7 | 4.45 | 4.5571 | | | | |
| | | | | 1308.18 | 50.8 | 4.42 | 4.6099 | | | | |
| | | | | 1306.652 | 50.9 | 4.57 | 4.6065 | | | | |
| | | | | 1305.123 | 51 | 4.44 | 4.7959 | | | | |
| | | | | 1303.594 | 51.1 | 4.45 | 4.0417 | | | | |
| | | | | 1302.065 | 51.2 | 4.41 | 4.4388 | | | | |
| | | | | 1300.537 | 51.3 | 4.42 | 4.4681 | | | | |
| | | | | 1299.008 | 51.4 | 4.41 | 4.3798 | | | | |
| | | | | 1297.479 | 51.5 | 4.37 | 4.4689 | | | | |
| | | | | 1295.95 | 51.6 | 4.21 | 4.4386 | | | | |
| | | | | 1294.422 | 51.7 | 4.6 | 4.4286 | | | | |
| | | | | 1292.893 | 51.8 | 4.43 | 4.5956 | | | | |
| | | | | 1291.364 | 51.9 | 4.58 | 4.6188 | | | | |
| | | | | 1289.835 | 52 | 4.32 | 4.8351 | | | | |
| | | | | 1288.307 | 52.1 | 4.62 | 4.2434 | | | | |
| | | | | 1286.778 | 52.2 | 4.35 | 5.0524 | | | | |
| | | | | 1285.249 | 52.3 | 4.5 | 4.7344 | | | | |
| | | | | 1283.72 | 52.4 | 4.47 | 4.6834 | | | | |
| | | | | 1282.192 | 52.5 | 4.5 | 4.3697 | | | | |
| | | | | 1280.663 | 52.6 | 4.56 | 4.4316 | | | | |
| | | | | 1279.134 | 52.7 | 4.59 | 4.5202 | | | | |
| | | | | 1277.605 | 52.8 | 4.33 | 4.5764 | | | | |
| | | | | 1276.077 | 52.9 | 4.57 | 4.3119 | | | | |
| | | | | 1274.548 | 53 | 4.45 | 4.8509 | | | | |
| | | | | 1273.019 | 53.1 | 4.47 | 4.506 | | | | |
| | | | | 1271.49 | 53.2 | 4.67 | | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| | | | | 1269.962 | 53.3 | 4.4 | 4.8183 | | | | |
| | | | | 1268.433 | 53.4 | 4.27 | 5.3674 | | | | |
| | | | | 1266.904 | 53.5 | 4.5 | 4.9535 | | | | |
| | | | | 1265.375 | 53.6 | 4.37 | 4.4948 | | | | |
| | | | | 1263.847 | 53.7 | 4.34 | 4.2396 | | | | |
| | | | | 1262.318 | 53.8 | 4.55 | 4.3985 | | | | |
| | | | | 1260.789 | 53.9 | 4.44 | 4.822 | | | | |
| | | | | 1259.26 | 54 | 4.44 | 4.7972 | | | | |
| | | | | 1257.732 | 54.1 | 4.59 | 4.6457 | | | | |
| | | | | 1256.203 | 54.2 | 4.39 | 4.7236 | | | | |
| | | | | 1254.674 | 54.3 | 4.54 | 4.7965 | | | | |
| | | | | 1253.145 | 54.4 | 4.41 | 5.2274 | | | | |
| | | | | 1251.617 | 54.5 | 4.74 | 4.6823 | | | | |
| | | | | 1250.088 | 54.6 | 4.34 | 4.6984 | | | | |
| | | | | 1248.559 | 54.7 | 4.24 | 4.4676 | | | | |
| | | | | 1247.03 | 54.8 | 4.47 | 4.9699 | | | | |
| | | | | 1245.502 | 54.9 | 4.46 | 4.5295 | | | | |
| | | | | 1243.973 | 55 | 4.36 | 4.7909 | | | | |
| | | | | 1242.444 | 55.1 | 4.29 | 4.6121 | | | | |
| | | | | 1240.915 | 55.2 | 4.31 | 4.4104 | | | | |
| | | | | 1239.387 | 55.3 | 4.43 | 4.3762 | | | | |
| | | | | 1237.858 | 55.4 | 4.22 | 4.4498 | | | | |
| | | | | 1236.329 | 55.5 | 4.59 | 4.3851 | | | | |
| | | | | 1234.8 | 55.6 | 4.37 | 4.4678 | | | | |
| | | | | 1233.272 | 55.7 | 4.38 | 4.3526 | | | | |
| | | | | 1231.743 | 55.8 | 4.54 | 4.6203 | | | | |
| | | | | 1230.214 | 55.9 | 4.57 | 4.449 | | | | |

| PL07-72GGC | | | | PL07-73BC | | | | CAR25-1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) | Age Model (Year CE) | Depth (cm) | *G. b* Mg/Ca (mmol/mol) | *G. r* Mg/Ca (mmol/mol) |
| | | | | 1228.685 | 56 | 4.35 | 4.7475 | | | | |
| | | | | 1227.157 | 56.1 | 4.46 | 4.5827 | | | | |
| | | | | 1225.628 | 56.2 | 4.69 | | | | | |
| | | | | 1224.099 | 56.3 | 4.63 | | | | | |
| | | | | 1222.57 | 56.4 | 4.58 | | | | | |
| | | | | 1221.042 | 56.5 | 4.67 | | | | | |

# Appendix III

Absolute abundance data for listed sediment cores. Species abbreviations are as follows:

*G.b* = *Globigerina bulloides*, *N.d* = *Neogloboquadrina dutertrei*, *O.u* = *Orbulina universa*, *G.a* = Globigerinella *aequilateralis*, *G.c* = *Globorotalia crassiformis*, *P.o* = *Pulleniatina obliquiloculata*, *G.m* = *Globorotalia menardii*, *G.r*(p) = *Globigerinoides ruber* (pink), *G.r*(w) = *Globigerinoides ruber* (white), *G.s* = *Globigerinoides sacculifer*, *G.g* = *Globigerinita glutinata*, *G.t* = *Globorotalia truncatulinoides*, *G.rs* = *Globigerina rubescens*

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 1743.5 | 1788.4 | 342.6 | 312.3 | 156.2 | 20.2 | 45.3 | 65.5 | 47.9 | 166.2 | 55.4 | 75.6 | 5.0 | 5.0 | 70.53 |
| 0.1 | 1740.7 | 1531.5 | 213.7 | 167.1 | 131.5 | 2.7 | 49.3 | 54.8 | 74.0 | 60.3 | 35.6 | 76.7 | 5.5 | 2.7 | 16.44 |
| 0.2 | 1737.9 | 1537.4 | 202.5 | 239.4 | 110.5 | 4.6 | 73.6 | 36.8 | 59.8 | 105.9 | 27.6 | 92.1 | 0.0 | 0.0 | 32.22 |
| 0.3 | 1735.1 | 1217.2 | 184.2 | 176.2 | 140.1 | 8.0 | 32.0 | 52.1 | 68.1 | 64.1 | 28.0 | 56.1 | 8.0 | 0.0 | 32.03 |
| 0.4 | 1732.3 | 2177.9 | 343.0 | 287.2 | 175.8 | 12.9 | 94.3 | 90.0 | 98.6 | 128.6 | 42.9 | 90.0 | 0.0 | 0.0 | 25.72 |
| 0.5 | 1729.5 | 705.4 | 146.3 | 131.3 | 108.8 | 7.5 | 33.8 | 37.5 | 33.8 | 30.0 | 15.0 | 33.8 | 3.8 | 0.0 | 22.51 |
| 0.6 | 1726.6 | 1012.2 | 165.5 | 290.4 | 138.4 | 0.0 | 57.0 | 46.1 | 38.0 | 19.0 | 38.0 | 59.7 | 0.0 | 5.4 | 19.00 |
| 0.7 | 1723.8 | 684.2 | 164.1 | 198.1 | 92.9 | 3.1 | 31.0 | 34.1 | 61.9 | 43.3 | 21.7 | 55.7 | 0.0 | 3.1 | 30.96 |
| 0.8 | 1719.4 | 1795.4 | 283.9 | 208.8 | 158.7 | 8.4 | 108.6 | 79.3 | 71.0 | 125.3 | 33.4 | 108.6 | 12.5 | 0.0 | 16.70 |
| 0.9 | 1714.9 | 2224.1 | 302.5 | 229.7 | 156.9 | 0.0 | 106.4 | 67.2 | 61.6 | 67.2 | 44.8 | 100.8 | 5.6 | 11.2 | 44.82 |
| 1.0 | 1711.2 | 1691.1 | 243.0 | 238.0 | 172.2 | 20.3 | 131.6 | 96.2 | 116.5 | 45.6 | 15.2 | 121.5 | 5.1 | 0.0 | 45.57 |
| 1.1 | 1707.5 | 1904.2 | 326.8 | 321.1 | 180.3 | 11.3 | 112.7 | 56.3 | 90.1 | 73.2 | 45.1 | 129.6 | 5.6 | 0.0 | 39.44 |
| 1.2 | 1703.8 | 1527.9 | 288.5 | 360.7 | 118.0 | 6.6 | 65.6 | 91.8 | 78.7 | 78.7 | 39.3 | 45.9 | 6.6 | 0.0 | 26.23 |
| 1.3 | 1700.1 | 1269.5 | 182.6 | 231.6 | 93.5 | 26.7 | 84.6 | 40.1 | 89.1 | 40.1 | 40.1 | 75.7 | 0.0 | 13.4 | 0.00 |
| 1.4 | 1696.4 | 1571.3 | 185.9 | 304.1 | 126.7 | 4.2 | 42.2 | 63.4 | 71.8 | 38.0 | 29.6 | 76.0 | 0.0 | 0.0 | 42.24 |
| 1.5 | 1692.7 | 3778.8 | 682.0 | 792.6 | 368.7 | 18.4 | 202.8 | 73.7 | 184.3 | 147.5 | 55.3 | 147.5 | 18.4 | 0.0 | 18.43 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.6 | 1688.6 | 1580.1 | 225.7 | 257.2 | 162.7 | 0.0 | 68.2 | 26.2 | 105.0 | 63.0 | 26.2 | 68.2 | 0.0 | 0.0 | 10.50 |
| 1.7 | 1684.5 | 2249.5 | 372.1 | 329.8 | 245.2 | 25.4 | 203.0 | 109.9 | 219.9 | 126.8 | 84.6 | 152.2 | 0.0 | 25.4 | 8.46 |
| 1.8 | 1680.5 | 1534.1 | 248.2 | 284.8 | 134.3 | 12.2 | 85.5 | 48.8 | 93.6 | 61.0 | 44.8 | 57.0 | 0.0 | 4.1 | 28.48 |
| 1.9 | 1677.0 | 1982.7 | 446.9 | 239.2 | 188.8 | 12.6 | 81.8 | 81.8 | 119.6 | 69.2 | 18.9 | 94.4 | 6.3 | 6.3 | 25.18 |
| 2.0 | 1673.6 | 1436.2 | 209.5 | 262.9 | 152.4 | 7.6 | 95.2 | 99.0 | 114.3 | 53.3 | 19.0 | 53.3 | 0.0 | 0.0 | 22.86 |
| 2.1 | 1670.2 | 1771.4 | 204.1 | 244.9 | 130.6 | 8.2 | 89.8 | 98.0 | 114.3 | 65.3 | 40.8 | 106.1 | 0.0 | 16.3 | 40.82 |
| 2.2 | 1666.8 | 1367.7 | 219.4 | 303.2 | 96.8 | 0.0 | 51.6 | 64.5 | 83.9 | 51.6 | 25.8 | 64.5 | 0.0 | 0.0 | 19.35 |
| 2.3 | 1663.4 | 2304.6 | 249.0 | 365.6 | 190.7 | 21.2 | 127.2 | 47.7 | 100.7 | 63.6 | 21.2 | 90.1 | 0.0 | 0.0 | 68.87 |
| 2.4 | 1659.9 | 1622.5 | 232.9 | 265.1 | 96.4 | 16.1 | 64.3 | 48.2 | 72.3 | 16.1 | 24.1 | 24.1 | 0.0 | 0.0 | 24.10 |
| 2.5 | 1656.5 | 1485.9 | 272.0 | 245.4 | 152.6 | 19.9 | 132.7 | 92.9 | 112.8 | 86.2 | 39.8 | 59.7 | 0.0 | 6.6 | 26.53 |
| 2.6 | 1653.4 | 1808.1 | 207.1 | 232.3 | 141.4 | 10.1 | 151.5 | 75.8 | 111.1 | 65.7 | 35.4 | 90.9 | 0.0 | 5.1 | 30.30 |
| 2.7 | 1650.3 | 1172.6 | 142.9 | 148.8 | 74.4 | 3.0 | 151.8 | 56.5 | 68.5 | 65.5 | 23.8 | 62.5 | 0.0 | 8.9 | 26.79 |
| 2.8 | 1647.2 | 1807.6 | 189.0 | 261.2 | 82.5 | 3.4 | 120.3 | 68.7 | 110.0 | 85.9 | 30.9 | 85.9 | 3.4 | 3.4 | 44.67 |
| 2.9 | 1644.1 | 1339.8 | 242.7 | 213.6 | 97.1 | 9.7 | 68.0 | 63.1 | 106.8 | 87.4 | 29.1 | 34.0 | 9.7 | 9.7 | 33.98 |
| 3.0 | 1641.0 | 1351.9 | 238.0 | 258.2 | 182.3 | 5.1 | 141.8 | 55.7 | 121.5 | 55.7 | 50.6 | 50.6 | 10.1 | 5.1 | 20.25 |
| 3.1 | 1637.9 | 973.3 | 176.5 | 213.9 | 117.6 | 16.0 | 74.9 | 53.5 | 69.5 | 16.0 | 10.7 | 32.1 | 5.3 | 0.0 | 21.39 |
| 3.2 | 1634.8 | 784.2 | 105.3 | 215.8 | 84.2 | 10.5 | 94.7 | 78.9 | 63.2 | 36.8 | 31.6 | 52.6 | 5.3 | 0.0 | 10.53 |
| 3.3 | 1631.7 | 1376.4 | 220.5 | 212.9 | 60.8 | 30.4 | 144.5 | 83.7 | 136.9 | 76.0 | 53.2 | 60.8 | 0.0 | 0.0 | 22.81 |
| 3.4 | 1628.5 | 1189.0 | 292.4 | 257.8 | 96.2 | 7.7 | 169.3 | 50.0 | 127.0 | 53.9 | 61.6 | 88.5 | 3.8 | 7.7 | 7.70 |
| 3.5 | 1625.4 | 959.2 | 191.8 | 167.9 | 86.3 | 4.8 | 81.5 | 57.6 | 91.1 | 95.9 | 33.6 | 67.1 | 9.6 | 4.8 | 23.98 |
| 3.6 | 1622.3 | 1237.8 | 223.8 | 195.8 | 97.9 | 0.0 | 167.8 | 97.9 | 97.9 | 49.0 | 28.0 | 76.9 | 7.0 | 0.0 | 48.95 |
| 3.7 | 1620.0 | 903.0 | 172.8 | 105.8 | 60.0 | 7.1 | 134.0 | 45.9 | 134.0 | 70.5 | 49.4 | 38.8 | 3.5 | 0.0 | 21.16 |
| 3.8 | 1617.7 | 385.5 | 138.4 | 154.9 | 39.5 | 0.0 | 65.9 | 52.7 | 52.7 | 39.5 | 46.1 | 32.9 | 6.6 | 0.0 | 19.77 |
| 3.9 | 1611.6 | 1269.2 | 200.4 | 189.7 | 82.8 | 10.7 | 122.9 | 61.5 | 90.8 | 80.2 | 37.4 | 80.2 | 5.3 | 2.7 | 21.38 |
| 4.0 | 1605.4 | 989.0 | 147.6 | 158.6 | 96.9 | 8.8 | 103.5 | 57.3 | 92.5 | 88.1 | 28.6 | 22.0 | 6.6 | 4.4 | 22.03 |
| 4.1 | 1599.3 | 1344.7 | 158.0 | 123.8 | 128.1 | 4.3 | 111.0 | 64.0 | 55.5 | 81.1 | 76.8 | 72.6 | 21.3 | 0.0 | 29.88 |
| 4.2 | 1593.2 | 1016.0 | 192.0 | 100.0 | 96.0 | 8.0 | 68.0 | 52.0 | 96.0 | 36.0 | 44.0 | 12.0 | 12.0 | 8.0 | 8.00 |
| 4.3 | 1587.1 | 1485.4 | 264.2 | 144.1 | 140.7 | 6.9 | 78.9 | 75.5 | 109.8 | 89.2 | 41.2 | 48.0 | 6.9 | 0.0 | 24.01 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.4 | 1580.9 | 1587.1 | 175.3 | 92.3 | 120.0 | 9.2 | 110.7 | 55.4 | 110.7 | 92.3 | 69.2 | 55.4 | 4.6 | 0.0 | 9.23 |
| 4.5 | 1578.7 | 211.6 | 39.7 | 39.7 | 21.2 | 0.0 | 7.9 | 13.2 | 39.7 | 18.5 | 7.9 | 5.3 | 2.6 | 0.0 | 13.23 |
| 4.6 | 1576.5 | 1294.6 | 280.6 | 124.2 | 148.3 | 4.0 | 76.2 | 40.1 | 104.2 | 104.2 | 68.1 | 40.1 | 4.0 | 0.0 | 8.02 |
| 4.7 | 1574.3 | 288.3 | 84.1 | 81.1 | 45.0 | 3.0 | 18.0 | 18.0 | 54.1 | 9.0 | 18.0 | 6.0 | 0.0 | 0.0 | 15.02 |
| 4.8 | 1568.9 | 528.0 | 74.7 | 122.7 | 64.0 | 5.3 | 13.3 | 32.0 | 66.7 | 32.0 | 32.0 | 18.7 | 2.7 | 0.0 | 8.00 |
| 4.9 | 1563.5 | 636.1 | 125.4 | 129.9 | 89.6 | 9.0 | 13.4 | 33.6 | 78.4 | 31.4 | 31.4 | 4.5 | 4.5 | 0.0 | 17.92 |
| 5.0 | 1558.1 | 543.9 | 161.8 | 123.9 | 44.8 | 0.0 | 20.7 | 27.5 | 55.1 | 24.1 | 37.9 | 6.9 | 6.9 | 3.4 | 27.54 |
| 5.1 | 1552.7 | 1114.2 | 178.1 | 127.9 | 132.4 | 9.1 | 54.8 | 54.8 | 114.2 | 45.7 | 27.4 | 22.8 | 9.1 | 0.0 | 13.70 |
| 5.2 | 1547.3 | 805.8 | 129.5 | 163.1 | 91.1 | 9.6 | 48.0 | 43.2 | 100.7 | 38.4 | 28.8 | 28.8 | 9.6 | 0.0 | 23.98 |
| 5.3 | 1541.8 | 1087.4 | 235.3 | 187.6 | 124.0 | 12.7 | 54.1 | 38.2 | 101.7 | 44.5 | 35.0 | 25.4 | 6.4 | 0.0 | 6.36 |
| 5.4 | 1536.4 | 1712.8 | 271.8 | 164.1 | 159.0 | 5.1 | 87.2 | 46.2 | 97.4 | 76.9 | 51.3 | 56.4 | 5.1 | 0.0 | 10.26 |
| 5.5 | 1531.0 | 2578.7 | 357.4 | 289.4 | 195.7 | 8.5 | 68.1 | 102.1 | 246.8 | 76.6 | 119.1 | 51.1 | 0.0 | 8.5 | 25.53 |
| 5.6 | 1525.6 | 745.5 | 145.0 | 221.4 | 68.7 | 0.0 | 33.1 | 17.8 | 81.4 | 35.6 | 48.3 | 10.2 | 0.0 | 5.1 | 15.27 |
| 5.7 | 1519.4 | 1047.1 | 251.0 | 235.3 | 98.0 | 3.9 | 31.4 | 27.5 | 121.6 | 27.5 | 58.8 | 19.6 | 0.0 | 0.0 | 35.29 |
| 5.8 | 1513.2 | 1734.8 | 355.1 | 238.2 | 130.3 | 4.5 | 98.9 | 49.4 | 170.8 | 80.9 | 94.4 | 49.4 | 0.0 | 0.0 | 22.47 |
| 5.9 | 1507.0 | 2224.7 | 301.6 | 226.2 | 150.8 | 0.0 | 125.7 | 37.7 | 106.8 | 56.6 | 81.7 | 31.4 | 0.0 | 0.0 | 25.14 |
| 6.0 | 1500.8 | 685.6 | 99.5 | 135.0 | 42.6 | 0.0 | 88.8 | 42.6 | 60.4 | 24.9 | 39.1 | 10.7 | 0.0 | 0.0 | 7.10 |
| 6.1 | 1494.6 | 905.4 | 164.3 | 151.9 | 83.7 | 0.0 | 43.4 | 18.6 | 89.9 | 27.9 | 49.6 | 15.5 | 0.0 | 0.0 | 9.30 |
| 6.2 | 1488.4 | 361.4 | 84.2 | 62.5 | 13.6 | 0.0 | 24.5 | 16.3 | 65.2 | 8.2 | 10.9 | 5.4 | 0.0 | 0.0 | 10.87 |
| 6.3 | 1482.2 | 1637.8 | 302.4 | 189.0 | 126.0 | 0.0 | 170.1 | 37.8 | 126.0 | 94.5 | 56.7 | 12.6 | 0.0 | 0.0 | 50.39 |
| 6.4 | 1476.0 | 1169.4 | 147.9 | 202.9 | 86.0 | 10.3 | 96.3 | 51.6 | 96.3 | 44.7 | 68.8 | 13.8 | 0.0 | 0.0 | 24.08 |
| 6.5 | 1469.8 | 854.4 | 201.6 | 99.2 | 44.8 | 3.2 | 70.4 | 35.2 | 147.2 | 60.8 | 57.6 | 9.6 | 9.6 | 3.2 | 9.60 |
| 6.6 | 1463.6 | 1069.6 | 190.9 | 119.3 | 127.2 | 11.9 | 87.5 | 35.8 | 163.0 | 55.7 | 43.7 | 8.0 | 4.0 | 0.0 | 23.86 |
| 6.7 | 1457.4 | 994.1 | 143.7 | 79.2 | 64.5 | 2.9 | 70.4 | 32.3 | 114.4 | 41.1 | 32.3 | 20.5 | 5.9 | 2.9 | 14.66 |
| 6.8 | 1451.2 | 1082.4 | 198.7 | 188.2 | 151.6 | 20.9 | 83.7 | 68.0 | 141.2 | 62.7 | 36.6 | 26.1 | 10.5 | 0.0 | 10.46 |
| 6.9 | 1446.7 | 1723.9 | 343.3 | 149.3 | 134.3 | 0.0 | 141.8 | 29.9 | 104.5 | 97.0 | 59.7 | 29.9 | 0.0 | 0.0 | 44.78 |
| 7.0 | 1442.3 | 1261.3 | 225.8 | 132.5 | 132.5 | 4.9 | 152.1 | 4.9 | 127.6 | 68.7 | 44.2 | 9.8 | 4.9 | 4.9 | 19.63 |
| 7.1 | 1437.8 | 1692.0 | 194.1 | 147.7 | 126.6 | 4.2 | 113.9 | 25.3 | 63.3 | 97.0 | 59.1 | 33.8 | 8.4 | 8.4 | 12.66 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.2 | 1433.4 | 1675.5 | 226.4 | 181.1 | 249.1 | 0.0 | 83.0 | 60.4 | 135.8 | 75.5 | 37.7 | 0.0 | 0.0 | 0.0 | 22.64 |
| 7.3 | 1429.0 | 1777.8 | 237.9 | 181.5 | 169.0 | 0.0 | 81.4 | 62.6 | 118.9 | 106.4 | 75.1 | 0.0 | 0.0 | 0.0 | 6.26 |
| 7.4 | 1424.5 | 2340.9 | 247.0 | 225.5 | 204.0 | 0.0 | 85.9 | 26.8 | 43.0 | 134.2 | 48.3 | 37.6 | 10.7 | 0.0 | 48.32 |
| 7.5 | 1421.9 | 2004.1 | 252.1 | 148.8 | 181.8 | 0.0 | 103.3 | 70.2 | 74.4 | 95.0 | 57.9 | 78.5 | 4.1 | 12.4 | 45.45 |
| 7.6 | 1419.3 | 1916.5 | 296.8 | 173.1 | 216.4 | 0.0 | 74.2 | 68.0 | 80.4 | 74.2 | 86.6 | 61.8 | 6.2 | 0.0 | 30.91 |
| 7.7 | 1416.7 | 1462.1 | 229.8 | 182.8 | 182.8 | 0.0 | 88.8 | 41.8 | 67.9 | 62.7 | 73.1 | 52.2 | 0.0 | 0.0 | 31.33 |
| 7.8 | 1414.1 | 891.1 | 101.2 | 108.9 | 81.7 | 0.0 | 62.3 | 31.1 | 35.0 | 42.8 | 19.5 | 31.1 | 3.9 | 0.0 | 19.46 |
| 7.9 | 1411.5 | 763.0 | 141.6 | 118.5 | 66.5 | 2.9 | 49.1 | 40.5 | 23.1 | 69.4 | 26.0 | 11.6 | 2.9 | 2.9 | 20.23 |
| 8.0 | 1409.0 | 945.0 | 224.8 | 100.9 | 123.9 | 0.0 | 59.6 | 36.7 | 68.8 | 50.5 | 50.5 | 18.3 | 4.6 | 0.0 | 22.94 |
| 8.1 | 1406.4 | 1240.3 | 160.2 | 211.9 | 165.4 | 10.3 | 36.2 | 72.4 | 46.5 | 72.4 | 41.3 | 51.7 | 0.0 | 5.2 | 25.84 |
| 8.2 | 1403.8 | 1206.6 | 168.6 | 132.2 | 175.2 | 0.0 | 102.5 | 49.6 | 79.3 | 95.9 | 89.3 | 39.7 | 0.0 | 3.3 | 23.14 |
| 8.3 | 1401.2 | 1582.5 | 242.4 | 87.5 | 215.5 | 6.7 | 101.0 | 53.9 | 67.3 | 141.4 | 47.1 | 40.4 | 6.7 | 0.0 | 47.14 |
| 8.4 | 1397.3 | 1425.2 | 311.8 | 178.1 | 322.9 | 5.6 | 66.8 | 116.9 | 61.2 | 111.3 | 61.2 | 27.8 | 0.0 | 5.6 | 5.57 |
| 8.5 | 1393.3 | 738.3 | 241.6 | 214.8 | 140.9 | 13.4 | 60.4 | 87.2 | 33.6 | 67.1 | 40.3 | 20.1 | 0.0 | 0.0 | 13.42 |
| 8.6 | 1389.4 | 606.2 | 228.1 | 103.1 | 128.1 | 0.0 | 34.4 | 34.4 | 53.1 | 59.4 | 56.3 | 28.1 | 3.1 | 6.2 | 9.37 |
| 8.7 | 1385.5 | 259.3 | 142.1 | 81.2 | 74.4 | 2.3 | 20.3 | 13.5 | 27.1 | 15.8 | 31.6 | 13.5 | 0.0 | 0.0 | 4.51 |
| 8.8 | 1381.6 | 213.6 | 62.2 | 73.6 | 48.1 | 4.2 | 19.8 | 22.6 | 25.5 | 35.4 | 21.2 | 11.3 | 1.4 | 0.0 | 14.14 |
| 8.9 | 1377.6 | 1003.0 | 138.4 | 82.2 | 106.3 | 6.0 | 36.1 | 24.1 | 46.1 | 86.3 | 42.1 | 50.2 | 2.0 | 6.0 | 26.08 |
| 9.0 | 1373.6 | 1492.5 | 197.8 | 172.0 | 146.2 | 4.3 | 60.2 | 68.8 | 64.5 | 107.5 | 55.9 | 68.8 | 0.0 | 0.0 | 38.71 |
| 9.1 | 1369.6 | 1620.2 | 245.2 | 230.8 | 125.0 | 9.6 | 48.1 | 57.7 | 33.7 | 91.3 | 48.1 | 86.5 | 4.8 | 4.8 | 57.69 |
| 9.2 | 1365.7 | 1783.8 | 221.1 | 235.9 | 255.5 | 0.0 | 78.6 | 78.6 | 78.6 | 152.3 | 59.0 | 54.1 | 4.9 | 9.8 | 39.31 |
| 9.3 | 1361.7 | 2027.7 | 318.3 | 276.8 | 221.5 | 6.9 | 83.0 | 90.0 | 103.8 | 103.8 | 90.0 | 34.6 | 0.0 | 0.0 | 41.52 |
| 9.4 | 1357.7 | 2067.9 | 358.0 | 302.5 | 216.0 | 0.0 | 49.4 | 43.2 | 80.2 | 142.0 | 74.1 | 80.2 | 18.5 | 18.5 | 49.38 |
| 9.5 | 1353.7 | 2672.8 | 271.6 | 240.7 | 228.4 | 0.0 | 74.1 | 86.4 | 123.5 | 92.6 | 86.4 | 67.9 | 6.2 | 12.3 | 49.38 |
| 9.6 | 1349.8 | 2517.6 | 317.6 | 282.4 | 305.9 | 0.0 | 82.4 | 23.5 | 70.6 | 105.9 | 105.9 | 129.4 | 0.0 | 0.0 | 70.59 |
| 9.7 | 1345.8 | 2371.9 | 181.6 | 216.7 | 275.3 | 17.6 | 70.3 | 35.1 | 70.3 | 99.6 | 70.3 | 76.1 | 5.9 | 11.7 | 76.13 |
| 9.8 | 1341.8 | 2518.8 | 193.8 | 318.8 | 262.5 | 6.3 | 56.3 | 37.5 | 62.5 | 87.5 | 81.3 | 87.5 | 6.3 | 0.0 | 37.50 |
| 9.9 | 1337.8 | 2259.2 | 163.4 | 225.4 | 281.7 | 5.6 | 84.5 | 28.2 | 67.6 | 45.1 | 95.8 | 62.0 | 16.9 | 16.9 | 73.24 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.0 | 1333.9 | 2646.2 | 296.3 | 337.2 | 224.8 | 10.2 | 163.5 | 112.4 | 112.4 | 153.3 | 81.7 | 92.0 | 0.0 | 30.7 | 51.09 |
| 10.1 | 1329.9 | 2691.3 | 337.7 | 337.7 | 285.0 | 0.0 | 137.2 | 105.5 | 42.2 | 84.4 | 147.8 | 105.5 | 10.6 | 21.1 | 52.77 |
| 10.2 | 1325.9 | 2698.5 | 312.4 | 407.8 | 312.4 | 0.0 | 95.4 | 86.8 | 138.8 | 147.5 | 156.2 | 60.7 | 8.7 | 8.7 | 104.12 |
| 10.3 | 1322.0 | 3368.9 | 357.8 | 447.2 | 288.2 | 0.0 | 139.1 | 49.7 | 79.5 | 188.8 | 129.2 | 99.4 | 19.9 | 19.9 | 79.50 |
| 10.4 | 1318.0 | 3016.9 | 313.6 | 423.7 | 313.6 | 16.9 | 127.1 | 101.7 | 203.4 | 84.7 | 127.1 | 76.3 | 16.9 | 8.5 | 67.80 |
| 10.5 | 1313.2 | 3100.0 | 400.0 | 311.1 | 322.2 | 11.1 | 122.2 | 77.8 | 77.8 | 100.0 | 122.2 | 100.0 | 11.1 | 33.3 | 77.78 |
| 10.6 | 1309.2 | 2670.6 | 344.2 | 368.0 | 201.8 | 47.5 | 47.5 | 11.9 | 95.0 | 130.6 | 83.1 | 59.3 | 0.0 | 47.5 | 106.82 |
| 10.7 | 1305.4 | 2771.0 | 417.4 | 394.2 | 568.1 | 0.0 | 34.8 | 81.2 | 46.4 | 127.5 | 69.6 | 127.5 | 11.6 | 0.0 | 162.32 |
| 10.8 | 1301.7 | 2655.4 | 295.0 | 311.9 | 278.2 | 8.4 | 33.7 | 67.4 | 92.7 | 92.7 | 126.4 | 101.2 | 0.0 | 16.9 | 59.01 |
| 10.9 | 1298.2 | 1972.4 | 285.1 | 256.0 | 232.7 | 11.6 | 58.2 | 58.2 | 110.5 | 93.1 | 162.9 | 46.5 | 0.0 | 11.6 | 46.55 |
| 11.0 | 1294.8 | 2077.2 | 295.8 | 263.7 | 147.9 | 6.4 | 70.7 | 90.0 | 90.0 | 70.7 | 115.8 | 109.3 | 6.4 | 0.0 | 51.45 |
| 11.1 | 1291.6 | 2148.1 | 154.9 | 215.5 | 262.6 | 20.2 | 60.6 | 107.7 | 107.7 | 121.2 | 74.1 | 94.3 | 0.0 | 20.2 | 74.07 |
| 11.2 | 1288.6 | 2251.7 | 242.4 | 251.7 | 186.5 | 0.0 | 46.6 | 51.3 | 93.2 | 97.9 | 74.6 | 65.3 | 0.0 | 9.3 | 51.28 |
| 11.3 | 1285.7 | 2263.8 | 191.8 | 307.0 | 249.4 | 0.0 | 38.4 | 38.4 | 86.3 | 86.3 | 134.3 | 57.6 | 19.2 | 0.0 | 47.96 |
| 11.4 | 1282.9 | 2610.3 | 235.3 | 308.8 | 279.4 | 22.1 | 44.1 | 51.5 | 95.6 | 66.2 | 117.6 | 117.6 | 7.4 | 0.0 | 95.59 |
| 11.5 | 1280.3 | 3013.3 | 231.1 | 204.4 | 240.0 | 0.0 | 8.9 | 97.8 | 97.8 | 97.8 | 133.3 | 97.8 | 8.9 | 0.0 | 62.22 |
| 11.6 | 1277.8 | 3273.2 | 244.0 | 467.6 | 294.8 | 0.0 | 40.7 | 91.5 | 142.3 | 111.8 | 193.1 | 101.7 | 0.0 | 0.0 | 60.99 |
| 11.7 | 1275.4 | 3419.8 | 293.1 | 390.8 | 293.1 | 24.4 | 73.3 | 85.5 | 146.6 | 109.9 | 146.6 | 24.4 | 12.2 | 0.0 | 36.64 |
| 11.8 | 1273.1 | 2992.3 | 296.8 | 296.8 | 234.9 | 0.0 | 12.4 | 61.8 | 61.8 | 98.9 | 148.4 | 61.8 | 0.0 | 12.4 | 86.55 |
| 11.9 | 1271.0 | 3319.4 | 202.4 | 283.4 | 283.4 | 0.0 | 0.0 | 121.4 | 65.8 | 70.8 | 131.6 | 60.7 | 10.1 | 0.0 | 50.60 |
| 12.0 | 1268.9 | 2905.9 | 173.0 | 207.6 | 302.7 | 17.3 | 8.6 | 86.5 | 77.8 | 77.8 | 112.4 | 69.2 | 0.0 | 0.0 | 51.89 |
| 12.1 | 1267.0 | 3682.3 | 181.5 | 272.3 | 285.3 | 0.0 | 0.0 | 129.7 | 77.8 | 116.7 | 116.7 | 25.9 | 0.0 | 0.0 | 64.83 |
| 12.2 | 1265.2 | 3535.7 | 187.5 | 419.6 | 223.2 | 0.0 | 17.9 | 80.4 | 62.5 | 125.0 | 80.4 | 80.4 | 0.0 | 8.9 | 116.07 |
| 12.3 | 1263.5 | 2954.6 | 212.8 | 287.9 | 162.8 | 0.0 | 0.0 | 112.7 | 50.1 | 100.2 | 112.7 | 75.1 | 12.5 | 12.5 | 62.60 |
| 12.4 | 1261.9 | 2991.8 | 204.9 | 360.7 | 180.3 | 0.0 | 16.4 | 41.0 | 82.0 | 114.8 | 106.6 | 49.2 | 0.0 | 0.0 | 81.97 |
| 12.5 | 1260.4 | 3316.8 | 260.9 | 273.3 | 236.0 | 0.0 | 0.0 | 62.1 | 87.0 | 149.1 | 124.2 | 49.7 | 12.4 | 0.0 | 24.84 |
| 12.6 | 1258.9 | 3365.9 | 154.1 | 272.6 | 237.0 | 0.0 | 0.0 | 35.6 | 35.6 | 94.8 | 83.0 | 59.3 | 0.0 | 0.0 | 82.96 |
| 12.7 | 1257.6 | 3240.6 | 267.4 | 224.6 | 267.4 | 0.0 | 10.7 | 85.6 | 64.2 | 42.8 | 96.3 | 139.0 | 0.0 | 10.7 | 96.26 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.8 | 1256.3 | 2741.0 | 181.6 | 297.2 | 255.9 | 0.0 | 8.3 | 99.1 | 49.5 | 82.6 | 82.6 | 115.6 | 16.5 | 16.5 | 66.05 |
| 12.9 | 1255.2 | 2563.9 | 160.2 | 308.2 | 283.5 | 0.0 | 24.7 | 172.6 | 160.2 | 123.3 | 61.6 | 110.9 | 24.7 | 0.0 | 73.96 |
| 13.0 | 1254.1 | 2400.0 | 222.2 | 364.4 | 177.8 | 0.0 | 17.8 | 53.3 | 62.2 | 106.7 | 88.9 | 106.7 | 0.0 | 17.8 | 62.22 |
| 13.1 | 1253.0 | 1752.4 | 304.8 | 182.9 | 137.1 | 0.0 | 15.2 | 76.2 | 53.3 | 38.1 | 129.5 | 38.1 | 7.6 | 15.2 | 53.33 |
| 13.2 | 1252.1 | 1928.6 | 272.7 | 220.8 | 259.7 | 13.0 | 0.0 | 90.9 | 77.9 | 84.4 | 103.9 | 39.0 | 13.0 | 6.5 | 97.40 |
| 13.3 | 1251.2 | 2331.0 | 308.6 | 235.5 | 251.8 | 0.0 | 8.1 | 105.6 | 65.0 | 89.3 | 73.1 | 48.7 | 0.0 | 0.0 | 105.58 |
| 13.4 | 1248.0 | 1534.6 | 320.8 | 314.5 | 257.9 | 6.3 | 12.6 | 69.2 | 50.3 | 81.8 | 119.5 | 81.8 | 0.0 | 18.9 | 56.60 |
| 13.5 | 1247.3 | 2495.7 | 437.6 | 294.0 | 218.8 | 0.0 | 6.8 | 102.6 | 109.4 | 129.9 | 143.6 | 47.9 | 13.7 | 6.8 | 136.75 |
| 13.6 | 1246.7 | 2974.4 | 438.2 | 261.1 | 373.0 | 0.0 | 18.6 | 83.9 | 74.6 | 74.6 | 158.5 | 139.9 | 9.3 | 18.6 | 65.27 |
| 13.7 | 1246.1 | 2913.8 | 370.7 | 267.7 | 226.5 | 0.0 | 0.0 | 72.1 | 92.7 | 72.1 | 164.7 | 10.3 | 10.3 | 10.3 | 72.07 |
| 13.8 | 1245.5 | 2596.1 | 431.4 | 305.9 | 258.8 | 0.0 | 7.8 | 94.1 | 54.9 | 117.6 | 109.8 | 31.4 | 0.0 | 0.0 | 101.96 |
| 13.9 | 1245.0 | 2629.2 | 419.4 | 245.5 | 255.8 | 0.0 | 0.0 | 61.4 | 25.6 | 71.6 | 92.1 | 51.2 | 0.0 | 10.2 | 102.30 |
| 14.0 | 1244.5 | 2980.2 | 403.1 | 268.7 | 183.2 | 12.2 | 12.2 | 109.9 | 73.3 | 73.3 | 48.9 | 97.7 | 0.0 | 0.0 | 146.56 |
| 14.1 | 1244.1 | 3767.9 | 357.1 | 410.7 | 250.0 | 0.0 | 0.0 | 71.4 | 125.0 | 89.3 | 89.3 | 71.4 | 0.0 | 0.0 | 142.86 |
| 14.2 | 1243.7 | 3520.0 | 454.2 | 309.7 | 258.1 | 0.0 | 31.0 | 165.2 | 103.2 | 92.9 | 134.2 | 103.2 | 0.0 | 0.0 | 82.58 |
| 14.3 | 1243.3 | 3861.3 | 439.3 | 277.5 | 208.1 | 11.6 | 0.0 | 80.9 | 69.4 | 92.5 | 46.2 | 150.3 | 11.6 | 11.6 | 69.36 |
| 14.4 | 1243.0 | 4900.4 | 414.7 | 305.6 | 76.4 | 10.9 | 10.9 | 109.1 | 49.1 | 76.4 | 65.5 | 54.6 | 0.0 | 0.0 | 141.88 |
| 14.5 | 1242.7 | 3835.7 | 473.4 | 309.2 | 193.2 | 9.7 | 48.3 | 77.3 | 19.3 | 96.6 | 193.2 | 67.6 | 0.0 | 0.0 | 106.28 |
| 14.6 | 1242.4 | 3541.7 | 416.7 | 302.1 | 208.3 | 0.0 | 0.0 | 72.9 | 72.9 | 135.4 | 31.3 | 104.2 | 0.0 | 0.0 | 83.33 |
| 14.7 | 1242.1 | 3608.1 | 276.7 | 334.3 | 161.4 | 34.6 | 11.5 | 115.3 | 69.2 | 126.8 | 103.7 | 103.7 | 0.0 | 23.1 | 207.49 |
| 14.8 | 1241.9 | 3984.7 | 381.7 | 290.1 | 259.5 | 0.0 | 30.5 | 152.7 | 106.9 | 106.9 | 91.6 | 91.6 | 0.0 | 0.0 | 45.80 |
| 14.9 | 1241.6 | 3719.6 | 269.7 | 298.1 | 213.0 | 14.2 | 0.0 | 56.8 | 63.9 | 71.0 | 85.2 | 28.4 | 0.0 | 28.4 | 127.77 |
| 15.0 | 1241.4 | 3772.3 | 450.1 | 289.4 | 203.6 | 32.2 | 10.7 | 85.7 | 123.2 | 96.5 | 150.0 | 107.2 | 0.0 | 21.4 | 107.17 |
| 15.1 | 1241.2 | 3478.3 | 347.8 | 376.8 | 202.9 | 14.5 | 14.5 | 58.0 | 108.7 | 72.5 | 101.4 | 87.0 | 0.0 | 0.0 | 115.94 |
| 15.2 | 1241.0 | 3138.1 | 353.6 | 206.3 | 221.0 | 0.0 | 0.0 | 29.5 | 95.8 | 58.9 | 58.9 | 73.7 | 14.7 | 14.7 | 88.40 |
| 15.3 | 1240.8 | 3070.5 | 292.4 | 188.0 | 135.8 | 0.0 | 0.0 | 94.0 | 114.9 | 104.4 | 52.2 | 73.1 | 0.0 | 20.9 | 83.55 |
| 15.4 | 1240.7 | 4105.3 | 300.8 | 345.9 | 255.6 | 0.0 | 0.0 | 60.2 | 157.9 | 15.0 | 195.5 | 150.4 | 0.0 | 0.0 | 195.49 |
| 15.5 | 1240.5 | 3755.4 | 317.4 | 185.1 | 145.5 | 0.0 | 13.2 | 52.9 | 105.8 | 66.1 | 105.8 | 132.2 | 0.0 | 0.0 | 79.34 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15.6 | 1240.3 | 2969.0 | 229.1 | 286.4 | 210.0 | 0.0 | 28.6 | 47.7 | 105.0 | 28.6 | 114.6 | 95.5 | 0.0 | 9.5 | 105.01 |
| 15.7 | 1240.2 | 3009.4 | 338.6 | 388.7 | 137.9 | 12.5 | 0.0 | 100.3 | 225.7 | 62.7 | 75.2 | 50.2 | 0.0 | 12.5 | 137.93 |
| 15.8 | 1240.0 | 3343.5 | 385.1 | 157.5 | 192.6 | 0.0 | 0.0 | 87.5 | 201.3 | 175.1 | 87.5 | 87.5 | 0.0 | 0.0 | 122.54 |
| 15.9 | 1239.8 | 3339.7 | 431.7 | 368.3 | 190.5 | 0.0 | 12.7 | 38.1 | 120.6 | 114.3 | 190.5 | 101.6 | 0.0 | 12.7 | 101.59 |
| 16.0 | 1239.6 | 2716.5 | 348.9 | 361.4 | 261.7 | 0.0 | 12.5 | 74.8 | 168.2 | 62.3 | 87.2 | 74.8 | 12.5 | 24.9 | 62.31 |
| 16.1 | 1239.4 | 3073.6 | 421.4 | 520.5 | 74.4 | 0.0 | 12.4 | 148.7 | 179.7 | 123.9 | 99.1 | 111.5 | 0.0 | 0.0 | 136.33 |
| 16.2 | 1239.3 | 3720.2 | 499.1 | 650.3 | 121.0 | 0.0 | 15.1 | 181.5 | 242.0 | 136.1 | 121.0 | 121.0 | 0.0 | 0.0 | 60.49 |
| 16.3 | 1239.1 | 2656.8 | 252.3 | 460.1 | 282.0 | 0.0 | 0.0 | 148.4 | 237.5 | 89.1 | 118.7 | 74.2 | 14.8 | 14.8 | 118.74 |
| 16.4 | 1238.9 | 2897.0 | 388.2 | 435.5 | 132.5 | 18.9 | 0.0 | 75.7 | 208.3 | 75.7 | 75.7 | 75.7 | 0.0 | 18.9 | 94.67 |
| 16.5 | 1238.6 | 2582.8 | 461.2 | 360.6 | 201.3 | 8.4 | 8.4 | 117.4 | 117.4 | 83.9 | 50.3 | 16.8 | 8.4 | 8.4 | 50.31 |
| 16.6 | 1238.4 | 2350.5 | 335.8 | 377.8 | 226.7 | 0.0 | 16.8 | 83.9 | 218.3 | 75.6 | 75.6 | 75.6 | 0.0 | 0.0 | 159.50 |
| 16.7 | 1238.2 | 2536.3 | 290.2 | 315.5 | 176.7 | 12.6 | 25.2 | 88.3 | 126.2 | 63.1 | 63.1 | 88.3 | 12.6 | 0.0 | 88.33 |
| 16.8 | 1237.9 | 2629.0 | 197.9 | 325.1 | 155.5 | 0.0 | 14.1 | 84.8 | 226.1 | 127.2 | 155.5 | 98.9 | 0.0 | 0.0 | 56.54 |
| 16.9 | 1237.7 | 2709.8 | 409.7 | 265.9 | 208.4 | 0.0 | 14.4 | 93.4 | 150.9 | 79.1 | 79.1 | 71.9 | 0.0 | 0.0 | 107.82 |
| 17.0 | 1237.4 | 2556.5 | 339.1 | 200.0 | 147.8 | 0.0 | 0.0 | 43.5 | 139.1 | 104.3 | 34.8 | 34.8 | 0.0 | 8.7 | 113.04 |
| 17.1 | 1237.1 | 2716.5 | 310.8 | 115.1 | 80.6 | 11.5 | 11.5 | 69.1 | 195.7 | 138.1 | 69.1 | 57.6 | 0.0 | 11.5 | 241.73 |
| 17.2 | 1236.8 | 2542.8 | 313.7 | 156.9 | 189.9 | 0.0 | 0.0 | 41.3 | 165.1 | 132.1 | 140.4 | 66.0 | 0.0 | 0.0 | 57.79 |
| 17.3 | 1236.5 | 2623.4 | 225.1 | 155.8 | 207.8 | 0.0 | 43.3 | 60.6 | 164.5 | 138.5 | 103.9 | 77.9 | 0.0 | 0.0 | 51.95 |
| 17.4 | 1236.1 | 3590.1 | 311.3 | 197.1 | 290.5 | 0.0 | 20.8 | 103.8 | 108.9 | 176.4 | 124.5 | 51.9 | 10.4 | 10.4 | 51.88 |
| 17.5 | 1235.8 | 2734.9 | 325.3 | 132.5 | 180.7 | 0.0 | 48.2 | 12.0 | 84.3 | 60.2 | 84.3 | 0.0 | 0.0 | 0.0 | 108.43 |
| 17.6 | 1235.4 | 2440.7 | 259.9 | 67.8 | 192.1 | 0.0 | 0.0 | 45.2 | 101.7 | 90.4 | 101.7 | 67.8 | 0.0 | 0.0 | 112.99 |
| 17.7 | 1235.0 | 2292.2 | 374.5 | 102.1 | 227.0 | 0.0 | 0.0 | 68.1 | 181.6 | 113.5 | 90.8 | 79.4 | 0.0 | 0.0 | 68.09 |
| 17.8 | 1234.6 | 2162.4 | 345.2 | 101.5 | 213.2 | 10.2 | 10.2 | 30.5 | 111.7 | 152.3 | 111.7 | 142.1 | 10.2 | 0.0 | 233.50 |
| 17.9 | 1234.1 | 2307.1 | 261.9 | 74.8 | 155.9 | 0.0 | 6.2 | 68.6 | 143.4 | 106.0 | 49.9 | 56.1 | 0.0 | 0.0 | 149.65 |
| 18.0 | 1233.7 | 2189.6 | 352.5 | 149.5 | 117.5 | 0.0 | 0.0 | 128.2 | 213.6 | 117.5 | 96.1 | 85.4 | 0.0 | 0.0 | 64.09 |
| 18.1 | 1233.2 | 2344.0 | 272.0 | 152.0 | 152.0 | 8.0 | 0.0 | 32.0 | 264.0 | 80.0 | 112.0 | 56.0 | 0.0 | 0.0 | 104.00 |
| 18.2 | 1232.7 | 2061.6 | 212.9 | 100.8 | 123.2 | 0.0 | 0.0 | 22.4 | 190.5 | 78.4 | 56.0 | 78.4 | 0.0 | 0.0 | 123.25 |
| 18.3 | 1232.2 | 2114.0 | 323.7 | 118.9 | 151.9 | 0.0 | 6.6 | 72.7 | 264.2 | 72.7 | 112.3 | 46.2 | 0.0 | 6.6 | 19.82 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18.4 | 1231.6 | 1872.8 | 237.7 | 228.2 | 133.1 | 0.0 | 9.5 | 47.5 | 318.5 | 28.5 | 95.1 | 57.0 | 0.0 | 9.5 | 38.03 |
| 18.5 | 1231.1 | 1653.9 | 195.1 | 139.4 | 130.1 | 18.6 | 0.0 | 65.0 | 288.0 | 55.7 | 102.2 | 37.2 | 0.0 | 0.0 | 37.17 |
| 18.6 | 1230.5 | 1505.0 | 345.6 | 122.4 | 93.6 | 0.0 | 0.0 | 50.4 | 223.2 | 86.4 | 86.4 | 72.0 | 0.0 | 0.0 | 36.00 |
| 18.7 | 1229.9 | 2032.7 | 249.6 | 202.1 | 154.5 | 0.0 | 0.0 | 59.4 | 261.5 | 142.6 | 95.1 | 83.2 | 0.0 | 0.0 | 83.21 |
| 18.8 | 1229.3 | 1304.7 | 293.3 | 182.0 | 70.8 | 0.0 | 0.0 | 40.5 | 273.1 | 60.7 | 121.4 | 80.9 | 0.0 | 0.0 | 80.91 |
| 18.9 | 1228.7 | 1454.5 | 285.5 | 172.4 | 123.9 | 0.0 | 16.2 | 91.6 | 210.1 | 10.8 | 97.0 | 64.6 | 0.0 | 16.2 | 26.94 |
| 19.0 | 1228.0 | 2186.7 | 333.3 | 240.0 | 80.0 | 0.0 | 0.0 | 80.0 | 333.3 | 80.0 | 133.3 | 66.7 | 0.0 | 13.3 | 146.67 |
| 19.1 | 1227.3 | 1596.6 | 170.8 | 281.8 | 85.4 | 0.0 | 0.0 | 76.8 | 264.7 | 68.3 | 119.5 | 68.3 | 0.0 | 0.0 | 68.30 |
| 19.2 | 1226.6 | 1391.6 | 174.8 | 213.6 | 64.7 | 0.0 | 6.5 | 51.8 | 220.1 | 51.8 | 84.1 | 45.3 | 0.0 | 0.0 | 71.20 |
| 19.3 | 1225.9 | 1895.5 | 252.7 | 291.6 | 145.8 | 0.0 | 9.7 | 48.6 | 486.0 | 97.2 | 136.1 | 68.0 | 0.0 | 9.7 | 106.93 |
| 19.4 | 1225.2 | 1960.9 | 238.9 | 304.8 | 107.1 | 8.2 | 41.2 | 24.7 | 238.9 | 140.1 | 90.6 | 90.6 | 0.0 | 0.0 | 74.15 |
| 19.5 | 1224.4 | 2227.6 | 310.3 | 234.5 | 117.2 | 0.0 | 6.9 | 48.3 | 269.0 | 75.9 | 137.9 | 41.4 | 6.9 | 0.0 | 34.48 |
| 19.6 | 1223.6 | 2615.7 | 203.8 | 356.7 | 84.9 | 0.0 | 0.0 | 67.9 | 331.2 | 84.9 | 118.9 | 17.0 | 17.0 | 17.0 | 118.90 |
| 19.7 | 1222.8 | 3278.4 | 360.8 | 298.0 | 94.1 | 0.0 | 0.0 | 125.5 | 313.7 | 15.7 | 172.5 | 62.7 | 15.7 | 15.7 | 94.12 |
| 19.8 | 1222.0 | 2118.1 | 309.6 | 334.0 | 97.8 | 0.0 | 32.6 | 40.7 | 268.8 | 65.2 | 105.9 | 65.2 | 0.0 | 0.0 | 146.64 |
| 19.9 | 1221.2 | 3150.2 | 488.5 | 398.8 | 169.5 | 10.0 | 10.0 | 89.7 | 413.7 | 89.7 | 169.5 | 79.8 | 0.0 | 10.0 | 69.78 |
| 20.0 | 1220.3 | 3655.3 | 459.6 | 361.1 | 98.5 | 0.0 | 32.8 | 120.4 | 350.2 | 120.4 | 131.3 | 76.6 | 0.0 | 0.0 | 54.72 |
| 20.1 | 1219.5 | 3263.5 | 487.3 | 238.0 | 56.7 | 0.0 | 0.0 | 124.6 | 305.9 | 22.7 | 136.0 | 79.3 | 0.0 | 0.0 | 56.66 |
| 20.2 | 1218.6 | 3443.7 | 398.0 | 268.0 | 32.5 | 0.0 | 0.0 | 81.2 | 276.1 | 129.9 | 121.8 | 40.6 | 0.0 | 8.1 | 40.61 |
| 20.3 | 1217.7 | 3548.9 | 401.0 | 310.8 | 160.4 | 0.0 | 0.0 | 100.3 | 411.0 | 150.4 | 110.3 | 110.3 | 10.0 | 0.0 | 70.18 |
| 20.4 | 1216.8 | 3350.0 | 432.0 | 244.5 | 179.3 | 8.2 | 0.0 | 73.4 | 330.1 | 106.0 | 138.6 | 73.4 | 0.0 | 8.2 | 97.81 |
| 20.5 | 1215.9 | 3450.8 | 352.3 | 176.2 | 176.2 | 0.0 | 10.4 | 82.9 | 279.8 | 114.0 | 41.5 | 72.5 | 0.0 | 20.7 | 124.35 |
| 20.6 | 1214.9 | 3406.2 | 381.0 | 369.7 | 44.8 | 0.0 | 22.4 | 22.4 | 324.9 | 123.2 | 100.8 | 22.4 | 0.0 | 0.0 | 67.23 |
| 20.7 | 1214.0 | 3276.6 | 319.1 | 329.8 | 138.3 | 0.0 | 0.0 | 63.8 | 308.5 | 202.1 | 117.0 | 117.0 | 0.0 | 0.0 | 63.83 |
| 20.8 | 1213.0 | 2935.3 | 364.8 | 169.7 | 118.8 | 0.0 | 0.0 | 93.3 | 313.9 | 76.4 | 33.9 | 59.4 | 0.0 | 8.5 | 101.80 |
| 20.9 | 1212.0 | 3435.4 | 349.9 | 201.5 | 243.9 | 0.0 | 10.6 | 84.8 | 281.0 | 95.4 | 159.0 | 137.8 | 0.0 | 0.0 | 127.24 |
| 21.0 | 1211.0 | 3059.3 | 244.7 | 290.6 | 91.8 | 15.3 | 0.0 | 45.9 | 290.6 | 91.8 | 91.8 | 61.2 | 0.0 | 15.3 | 91.78 |
| 21.1 | 1210.0 | 2656.8 | 286.4 | 266.7 | 158.0 | 9.9 | 9.9 | 59.3 | 286.4 | 88.9 | 49.4 | 108.6 | 0.0 | 0.0 | 69.14 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21.2 | 1209.0 | 3448.3 | 536.4 | 168.6 | 137.9 | 0.0 | 15.3 | 122.6 | 360.2 | 183.9 | 153.3 | 153.3 | 0.0 | 0.0 | 153.26 |
| 21.3 | 1208.0 | 3034.2 | 370.0 | 207.2 | 133.2 | 0.0 | 14.8 | 103.6 | 377.4 | 118.4 | 103.6 | 118.4 | 14.8 | 0.0 | 148.01 |
| 21.4 | 1207.0 | 2653.4 | 318.9 | 273.3 | 182.2 | 11.4 | 0.0 | 79.7 | 222.1 | 79.7 | 125.3 | 79.7 | 11.4 | 0.0 | 148.04 |
| 21.5 | 1205.9 | 2518.2 | 342.6 | 205.6 | 248.4 | 17.1 | 25.7 | 94.2 | 188.4 | 119.9 | 119.9 | 42.8 | 0.0 | 0.0 | 154.18 |
| 21.6 | 1204.9 | 2780.0 | 331.6 | 263.5 | 127.5 | 8.5 | 8.5 | 85.0 | 195.5 | 59.5 | 51.0 | 59.5 | 0.0 | 0.0 | 178.53 |
| 21.7 | 1203.8 | 2710.5 | 511.7 | 414.9 | 152.1 | 13.8 | 0.0 | 41.5 | 159.0 | 96.8 | 124.5 | 69.1 | 0.0 | 0.0 | 138.29 |
| 21.8 | 1202.8 | 3490.9 | 443.3 | 263.2 | 110.8 | 0.0 | 13.9 | 69.3 | 228.6 | 193.9 | 138.5 | 180.1 | 0.0 | 13.9 | 55.41 |
| 21.9 | 1201.7 | 3090.5 | 521.6 | 273.8 | 182.6 | 0.0 | 0.0 | 52.2 | 228.2 | 130.4 | 78.2 | 65.2 | 0.0 | 13.0 | 169.52 |
| 22.0 | 1200.6 | 2809.3 | 356.5 | 285.2 | 171.1 | 0.0 | 14.3 | 71.3 | 171.1 | 156.9 | 28.5 | 57.0 | 0.0 | 0.0 | 156.86 |
| 22.1 | 1199.5 | 2672.1 | 393.4 | 303.3 | 123.0 | 16.4 | 0.0 | 57.4 | 155.7 | 114.8 | 98.4 | 57.4 | 0.0 | 0.0 | 114.75 |
| 22.2 | 1198.5 | 3013.9 | 443.2 | 295.5 | 147.7 | 14.8 | 0.0 | 59.1 | 243.8 | 59.1 | 88.6 | 29.5 | 0.0 | 0.0 | 118.19 |
| 22.3 | 1197.4 | 3696.4 | 392.9 | 232.1 | 285.7 | 0.0 | 0.0 | 71.4 | 133.9 | 53.6 | 160.7 | 53.6 | 0.0 | 17.9 | 160.71 |
| 22.4 | 1196.3 | 2644.5 | 347.2 | 194.0 | 142.9 | 0.0 | 0.0 | 91.9 | 209.3 | 91.9 | 71.5 | 91.9 | 0.0 | 10.2 | 71.47 |
| 22.5 | 1195.2 | 2855.3 | 321.0 | 295.7 | 211.2 | 0.0 | 25.3 | 92.9 | 211.2 | 84.5 | 101.4 | 25.3 | 0.0 | 0.0 | 143.61 |
| 22.6 | 1194.1 | 2472.6 | 303.8 | 244.7 | 151.9 | 0.0 | 16.9 | 92.8 | 236.3 | 135.0 | 109.7 | 92.8 | 0.0 | 0.0 | 109.70 |
| 22.7 | 1193.0 | 1888.9 | 290.6 | 213.7 | 145.3 | 0.0 | 8.5 | 51.3 | 170.9 | 85.5 | 76.9 | 59.8 | 0.0 | 8.5 | 59.83 |
| 22.8 | 1191.9 | 1570.1 | 355.1 | 211.8 | 112.1 | 0.0 | 12.5 | 74.8 | 292.8 | 74.8 | 62.3 | 31.2 | 0.0 | 0.0 | 62.31 |
| 22.9 | 1190.9 | 1940.6 | 361.3 | 237.4 | 144.5 | 0.0 | 41.3 | 82.6 | 232.3 | 72.3 | 82.6 | 72.3 | 0.0 | 0.0 | 134.19 |
| 23.0 | 1189.8 | 1954.4 | 373.5 | 234.5 | 139.0 | 0.0 | 0.0 | 95.5 | 278.0 | 165.0 | 112.9 | 86.9 | 0.0 | 8.7 | 86.86 |
| 23.1 | 1188.7 | 1704.1 | 295.9 | 224.9 | 153.8 | 0.0 | 23.7 | 118.3 | 224.9 | 130.2 | 47.3 | 59.2 | 0.0 | 11.8 | 94.67 |
| 23.2 | 1187.6 | 2024.6 | 211.5 | 287.1 | 120.9 | 0.0 | 7.6 | 120.9 | 234.2 | 105.8 | 60.4 | 60.4 | 0.0 | 7.6 | 45.33 |
| 23.3 | 1186.5 | 2376.0 | 312.0 | 224.0 | 120.0 | 0.0 | 16.0 | 120.0 | 240.0 | 168.0 | 96.0 | 176.0 | 0.0 | 8.0 | 96.00 |
| 23.4 | 1185.4 | 2150.4 | 210.5 | 225.6 | 180.5 | 0.0 | 0.0 | 90.2 | 218.0 | 60.2 | 75.2 | 75.2 | 15.0 | 0.0 | 75.19 |
| 23.5 | 1184.4 | 2462.3 | 353.2 | 207.8 | 187.0 | 0.0 | 10.4 | 62.3 | 322.1 | 155.8 | 93.5 | 103.9 | 0.0 | 0.0 | 83.12 |
| 23.6 | 1183.3 | 2326.4 | 334.1 | 228.9 | 142.3 | 6.2 | 6.2 | 80.4 | 290.8 | 86.6 | 105.2 | 37.1 | 0.0 | 6.2 | 61.87 |
| 23.7 | 1182.2 | 2471.0 | 368.6 | 204.8 | 95.6 | 0.0 | 0.0 | 150.2 | 245.7 | 109.2 | 136.5 | 27.3 | 0.0 | 0.0 | 54.61 |
| 23.8 | 1181.2 | 2315.6 | 287.3 | 235.0 | 69.6 | 0.0 | 8.7 | 104.5 | 269.9 | 130.6 | 87.1 | 104.5 | 0.0 | 0.0 | 60.94 |
| 23.9 | 1180.1 | 2118.6 | 320.2 | 227.9 | 123.2 | 12.3 | 0.0 | 73.9 | 234.0 | 98.5 | 129.3 | 43.1 | 6.2 | 6.2 | 36.95 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24.0 | 1179.1 | 2179.0 | 293.8 | 220.4 | 171.4 | 36.7 | 12.2 | 122.4 | 226.5 | 134.7 | 134.7 | 49.0 | 0.0 | 0.0 | 24.48 |
| 24.1 | 1178.1 | 3362.3 | 386.5 | 309.2 | 77.3 | 12.9 | 12.9 | 141.7 | 257.6 | 128.8 | 128.8 | 77.3 | 0.0 | 12.9 | 115.94 |
| 24.2 | 1177.0 | 2128.9 | 268.9 | 212.9 | 212.9 | 22.4 | 22.4 | 134.5 | 224.1 | 123.2 | 89.6 | 78.4 | 0.0 | 0.0 | 78.43 |
| 24.3 | 1176.0 | 1944.5 | 248.0 | 208.8 | 143.6 | 6.5 | 0.0 | 78.3 | 267.5 | 65.3 | 52.2 | 45.7 | 0.0 | 13.1 | 45.68 |
| 24.4 | 1175.0 | 1749.8 | 352.2 | 290.7 | 128.6 | 0.0 | 5.6 | 89.4 | 251.6 | 89.4 | 50.3 | 50.3 | 0.0 | 0.0 | 83.86 |
| 24.5 | 1174.0 | 2258.4 | 395.5 | 229.7 | 153.1 | 0.0 | 0.0 | 51.0 | 319.0 | 63.8 | 12.8 | 63.8 | 0.0 | 0.0 | 12.76 |
| 24.6 | 1173.0 | 1842.0 | 182.1 | 246.3 | 139.2 | 0.0 | 0.0 | 128.5 | 321.3 | 75.0 | 53.5 | 42.8 | 0.0 | 0.0 | 10.71 |
| 24.7 | 1172.1 | 1691.8 | 284.0 | 193.4 | 60.4 | 0.0 | 0.0 | 96.7 | 193.4 | 72.5 | 36.3 | 30.2 | 0.0 | 12.1 | 24.17 |
| 24.8 | 1171.1 | 2333.6 | 279.3 | 328.9 | 105.5 | 6.2 | 18.6 | 43.4 | 223.4 | 111.7 | 62.1 | 43.4 | 24.8 | 0.0 | 24.83 |
| 24.9 | 1170.1 | 1742.5 | 200.4 | 306.2 | 89.1 | 0.0 | 0.0 | 33.4 | 256.1 | 139.2 | 50.1 | 33.4 | 0.0 | 5.6 | 27.84 |
| 25.0 | 1169.2 | 2137.5 | 266.1 | 372.5 | 88.7 | 8.9 | 0.0 | 88.7 | 221.7 | 97.6 | 44.3 | 35.5 | 0.0 | 0.0 | 26.61 |
| 25.1 | 1168.2 | 2078.2 | 267.1 | 260.6 | 156.4 | 0.0 | 32.6 | 78.2 | 234.5 | 117.3 | 52.1 | 45.6 | 0.0 | 6.5 | 52.12 |
| 25.2 | 1167.3 | 2119.3 | 252.1 | 224.9 | 115.8 | 6.8 | 13.6 | 102.2 | 279.4 | 75.0 | 47.7 | 40.9 | 0.0 | 0.0 | 81.77 |
| 25.3 | 1166.4 | 2212.8 | 362.6 | 148.0 | 155.4 | 14.8 | 0.0 | 96.2 | 288.6 | 66.6 | 51.8 | 44.4 | 0.0 | 0.0 | 51.80 |
| 25.4 | 1165.5 | 2078.3 | 299.8 | 193.2 | 113.2 | 0.0 | 6.7 | 99.9 | 269.8 | 166.5 | 66.6 | 79.9 | 0.0 | 6.7 | 73.27 |
| 25.5 | 1164.6 | 2002.8 | 237.2 | 143.4 | 187.6 | 5.5 | 0.0 | 49.7 | 303.4 | 82.8 | 22.1 | 49.7 | 0.0 | 0.0 | 71.72 |
| 25.6 | 1163.7 | 2498.6 | 183.4 | 183.4 | 183.4 | 11.5 | 11.5 | 149.0 | 206.3 | 91.7 | 91.7 | 45.8 | 0.0 | 0.0 | 34.38 |
| 25.7 | 1162.9 | 2340.1 | 154.2 | 172.3 | 235.8 | 0.0 | 0.0 | 45.4 | 244.9 | 108.8 | 36.3 | 54.4 | 0.0 | 0.0 | 72.56 |
| 25.8 | 1162.0 | 2596.9 | 311.1 | 191.5 | 107.7 | 0.0 | 0.0 | 131.6 | 221.4 | 107.7 | 83.8 | 12.0 | 0.0 | 0.0 | 35.90 |
| 25.9 | 1160.8 | 2836.4 | 374.0 | 218.2 | 187.0 | 10.4 | 0.0 | 72.7 | 275.3 | 124.7 | 20.8 | 62.3 | 10.4 | 0.0 | 83.12 |
| 26.0 | 1159.7 | 2201.8 | 305.8 | 140.7 | 159.0 | 0.0 | 6.1 | 42.8 | 336.4 | 91.7 | 30.6 | 36.7 | 0.0 | 0.0 | 61.16 |
| 26.1 | 1158.5 | 2419.0 | 271.8 | 199.3 | 126.8 | 9.1 | 0.0 | 54.4 | 190.3 | 117.8 | 99.7 | 72.5 | 0.0 | 0.0 | 45.30 |
| 26.2 | 1157.3 | 2787.2 | 381.3 | 197.2 | 184.1 | 13.1 | 13.1 | 131.5 | 256.4 | 105.2 | 78.9 | 78.9 | 0.0 | 0.0 | 39.44 |
| 26.3 | 1156.1 | 2735.7 | 250.7 | 174.4 | 109.0 | 21.8 | 0.0 | 87.2 | 305.2 | 109.0 | 43.6 | 130.8 | 0.0 | 0.0 | 87.19 |
| 26.4 | 1155.0 | 2670.2 | 396.8 | 246.6 | 203.8 | 10.7 | 0.0 | 96.5 | 305.6 | 96.5 | 10.7 | 85.8 | 0.0 | 0.0 | 107.24 |
| 26.5 | 1153.8 | 2680.2 | 182.7 | 274.1 | 203.0 | 20.3 | 10.2 | 40.6 | 253.8 | 132.0 | 71.1 | 71.1 | 0.0 | 0.0 | 40.61 |
| 26.6 | 1152.6 | 2793.7 | 203.2 | 444.4 | 190.5 | 25.4 | 0.0 | 101.6 | 355.6 | 25.4 | 25.4 | 88.9 | 0.0 | 0.0 | 25.40 |
| 26.7 | 1151.5 | 2666.7 | 183.9 | 240.5 | 148.5 | 0.0 | 0.0 | 106.1 | 275.9 | 92.0 | 49.5 | 92.0 | 0.0 | 14.1 | 56.59 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26.8 | 1150.3 | 2510.0 | 310.8 | 239.0 | 103.6 | 0.0 | 0.0 | 71.7 | 215.1 | 87.6 | 55.8 | 47.8 | 0.0 | 0.0 | 63.75 |
| 26.9 | 1149.1 | 1430.5 | 148.8 | 124.0 | 124.0 | 0.0 | 0.0 | 57.9 | 153.0 | 33.1 | 16.5 | 66.1 | 0.0 | 0.0 | 66.15 |
| 27.0 | 1148.0 | 2640.5 | 251.5 | 212.2 | 165.0 | 7.9 | 7.9 | 78.6 | 290.8 | 110.0 | 47.2 | 78.6 | 15.7 | 15.7 | 62.87 |
| 27.1 | 1146.8 | 2358.6 | 138.1 | 201.9 | 159.4 | 0.0 | 10.6 | 74.4 | 276.2 | 106.2 | 63.7 | 63.7 | 0.0 | 0.0 | 74.37 |
| 27.2 | 1145.6 | 2290.6 | 264.7 | 287.8 | 184.2 | 11.5 | 0.0 | 126.6 | 264.7 | 126.6 | 69.1 | 115.1 | 0.0 | 0.0 | 46.04 |
| 27.3 | 1144.5 | 2716.4 | 184.9 | 241.8 | 199.1 | 0.0 | 0.0 | 56.9 | 362.7 | 184.9 | 56.9 | 99.6 | 0.0 | 14.2 | 42.67 |
| 27.4 | 1143.3 | 2397.6 | 225.5 | 332.3 | 225.5 | 0.0 | 0.0 | 213.6 | 219.6 | 130.6 | 47.5 | 71.2 | 0.0 | 0.0 | 83.09 |
| 27.5 | 1142.1 | 2379.7 | 194.1 | 329.1 | 202.5 | 0.0 | 0.0 | 109.7 | 320.7 | 67.5 | 75.9 | 84.4 | 0.0 | 8.4 | 151.90 |
| 27.6 | 1140.9 | 2773.1 | 359.1 | 299.3 | 179.6 | 0.0 | 10.0 | 129.7 | 279.3 | 129.7 | 89.8 | 69.8 | 20.0 | 0.0 | 99.75 |
| 27.7 | 1139.8 | 2582.9 | 262.9 | 194.3 | 160.0 | 0.0 | 0.0 | 68.6 | 382.9 | 137.1 | 91.4 | 114.3 | 11.4 | 0.0 | 57.14 |
| 27.8 | 1138.6 | 2431.0 | 222.4 | 238.3 | 198.6 | 7.9 | 0.0 | 127.1 | 230.4 | 71.5 | 63.6 | 111.2 | 0.0 | 0.0 | 71.50 |
| 27.9 | 1137.4 | 2807.2 | 349.4 | 433.7 | 277.1 | 12.0 | 0.0 | 156.6 | 283.1 | 144.6 | 36.1 | 108.4 | 0.0 | 0.0 | 36.14 |
| 28.0 | 1136.3 | 2499.0 | 206.2 | 164.9 | 132.0 | 0.0 | 16.5 | 74.2 | 239.2 | 132.0 | 49.5 | 115.5 | 0.0 | 8.2 | 49.48 |
| 28.1 | 1135.1 | 2750.9 | 243.0 | 359.7 | 223.6 | 9.7 | 0.0 | 97.2 | 252.7 | 145.8 | 106.9 | 106.9 | 9.7 | 9.7 | 77.76 |
| 28.2 | 1133.9 | 3518.5 | 333.6 | 257.8 | 212.3 | 0.0 | 0.0 | 45.5 | 310.9 | 75.8 | 75.8 | 136.5 | 0.0 | 15.2 | 91.00 |
| 28.3 | 1132.8 | 3448.5 | 329.6 | 253.6 | 190.2 | 12.7 | 12.7 | 76.1 | 190.2 | 152.1 | 76.1 | 139.5 | 0.0 | 0.0 | 152.14 |
| 28.4 | 1131.6 | 3557.0 | 226.2 | 351.9 | 100.5 | 0.0 | 0.0 | 188.5 | 282.8 | 62.8 | 75.4 | 125.7 | 0.0 | 0.0 | 100.55 |
| 28.5 | 1130.4 | 3615.4 | 186.8 | 252.7 | 186.8 | 0.0 | 0.0 | 65.9 | 197.8 | 87.9 | 87.9 | 120.9 | 11.0 | 11.0 | 87.91 |
| 28.6 | 1129.3 | 3088.1 | 212.3 | 222.0 | 202.7 | 0.0 | 0.0 | 96.5 | 289.5 | 77.2 | 67.6 | 135.1 | 0.0 | 0.0 | 57.90 |
| 28.7 | 1128.1 | 2584.1 | 261.9 | 198.2 | 162.8 | 7.1 | 0.0 | 56.6 | 162.8 | 77.9 | 28.3 | 99.1 | 0.0 | 0.0 | 63.72 |
| 28.8 | 1126.9 | 3406.0 | 163.9 | 234.1 | 245.8 | 11.7 | 0.0 | 23.4 | 193.1 | 117.0 | 58.5 | 140.5 | 0.0 | 11.7 | 105.34 |
| 28.9 | 1125.7 | 3360.4 | 248.9 | 152.1 | 262.7 | 0.0 | 27.7 | 55.3 | 214.3 | 41.5 | 83.0 | 96.8 | 13.8 | 13.8 | 27.66 |
| 29.0 | 1124.6 | 3244.0 | 210.5 | 220.1 | 239.2 | 0.0 | 9.6 | 86.1 | 191.4 | 47.8 | 47.8 | 162.7 | 0.0 | 9.6 | 86.12 |
| 29.1 | 1123.4 | 3294.7 | 236.7 | 246.6 | 256.5 | 0.0 | 0.0 | 148.0 | 167.7 | 138.1 | 69.1 | 98.6 | 0.0 | 9.9 | 69.05 |
| 29.2 | 1122.2 | 2829.1 | 247.9 | 239.3 | 256.4 | 0.0 | 8.5 | 76.9 | 196.6 | 111.1 | 51.3 | 111.1 | 0.0 | 0.0 | 59.83 |
| 29.3 | 1121.1 | 3314.1 | 262.0 | 385.4 | 323.7 | 0.0 | 0.0 | 123.3 | 300.6 | 138.7 | 61.7 | 123.3 | 0.0 | 0.0 | 46.24 |
| 29.4 | 1119.9 | 3086.4 | 247.5 | 422.2 | 305.7 | 0.0 | 0.0 | 131.0 | 414.9 | 116.5 | 58.2 | 101.9 | 0.0 | 0.0 | 58.23 |
| 29.5 | 1118.7 | 3126.4 | 285.1 | 367.8 | 211.5 | 0.0 | 0.0 | 101.1 | 312.6 | 82.8 | 137.9 | 55.2 | 0.0 | 9.2 | 91.95 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29.6 | 1117.6 | 2818.1 | 340.6 | 412.9 | 268.4 | 10.3 | 0.0 | 92.9 | 268.4 | 123.9 | 144.5 | 82.6 | 0.0 | 0.0 | 10.32 |
| 29.7 | 1116.4 | 3134.0 | 395.9 | 362.9 | 181.4 | 0.0 | 33.0 | 99.0 | 255.7 | 181.4 | 164.9 | 148.5 | 0.0 | 16.5 | 82.47 |
| 29.8 | 1115.2 | 2964.2 | 465.2 | 248.8 | 119.0 | 0.0 | 0.0 | 86.5 | 275.9 | 86.5 | 151.5 | 119.0 | 0.0 | 0.0 | 108.18 |
| 29.9 | 1114.1 | 3810.1 | 270.3 | 386.2 | 386.2 | 0.0 | 0.0 | 115.8 | 212.4 | 180.2 | 77.2 | 103.0 | 0.0 | 0.0 | 128.72 |
| 30.0 | 1112.9 | 4187.9 | 393.7 | 429.5 | 286.4 | 0.0 | 17.9 | 179.0 | 277.4 | 125.3 | 71.6 | 143.2 | 0.0 | 17.9 | 125.28 |
| 30.1 | 1111.7 | 3712.0 | 368.0 | 368.0 | 272.0 | 0.0 | 0.0 | 160.0 | 408.0 | 160.0 | 192.0 | 160.0 | 0.0 | 0.0 | 96.00 |
| 30.2 | 1110.5 | 4235.3 | 568.0 | 389.5 | 259.6 | 0.0 | 0.0 | 146.0 | 300.2 | 146.0 | 129.8 | 162.3 | 0.0 | 16.2 | 113.59 |
| 30.3 | 1109.4 | 3161.6 | 323.2 | 313.1 | 90.9 | 10.1 | 30.3 | 111.1 | 262.6 | 141.4 | 111.1 | 60.6 | 10.1 | 0.0 | 111.11 |
| 30.4 | 1108.2 | 3197.0 | 327.1 | 446.1 | 193.3 | 0.0 | 14.9 | 119.0 | 156.1 | 133.8 | 163.6 | 208.2 | 0.0 | 14.9 | 89.22 |
| 30.5 | 1107.0 | 2656.2 | 451.1 | 275.6 | 250.6 | 0.0 | 0.0 | 137.8 | 307.0 | 213.0 | 62.6 | 12.5 | 0.0 | 12.5 | 37.59 |
| 30.6 | 1105.9 | 3335.3 | 384.8 | 233.2 | 244.9 | 0.0 | 11.7 | 139.9 | 279.9 | 58.3 | 46.6 | 70.0 | 0.0 | 0.0 | 81.63 |
| 30.7 | 1104.7 | 3533.6 | 471.9 | 186.6 | 252.4 | 0.0 | 0.0 | 186.6 | 252.4 | 120.7 | 43.9 | 120.7 | 0.0 | 0.0 | 54.87 |
| 30.8 | 1103.5 | 4766.0 | 408.5 | 408.5 | 233.4 | 0.0 | 0.0 | 136.2 | 257.8 | 136.2 | 77.8 | 155.6 | 0.0 | 0.0 | 233.43 |
| 30.9 | 1102.1 | 3545.6 | 384.0 | 332.8 | 281.6 | 0.0 | 12.8 | 102.4 | 262.4 | 38.4 | 64.0 | 128.0 | 0.0 | 25.6 | 51.20 |
| 31.0 | 1100.7 | 3400.7 | 239.7 | 404.5 | 149.8 | 15.0 | 0.0 | 149.8 | 344.6 | 74.9 | 74.9 | 104.9 | 0.0 | 0.0 | 164.79 |
| 31.1 | 1099.2 | 3962.9 | 282.0 | 341.4 | 237.5 | 0.0 | 14.8 | 89.1 | 178.1 | 29.7 | 44.5 | 133.6 | 0.0 | 0.0 | 133.58 |
| 31.2 | 1097.8 | 3937.6 | 267.3 | 249.4 | 213.8 | 0.0 | 0.0 | 124.7 | 311.8 | 53.5 | 53.5 | 71.3 | 17.8 | 35.6 | 17.82 |
| 31.3 | 1096.3 | 5152.5 | 283.5 | 505.4 | 295.8 | 24.7 | 0.0 | 147.9 | 265.0 | 49.3 | 12.3 | 172.6 | 0.0 | 37.0 | 197.23 |
| 31.4 | 1094.9 | 4108.6 | 250.2 | 474.1 | 131.7 | 0.0 | 0.0 | 79.0 | 177.8 | 52.7 | 13.2 | 79.0 | 0.0 | 0.0 | 131.69 |
| 31.5 | 1093.4 | 5070.7 | 222.2 | 424.2 | 181.8 | 0.0 | 0.0 | 161.6 | 313.1 | 40.4 | 40.4 | 80.8 | 0.0 | 0.0 | 161.62 |
| 31.6 | 1092.0 | 3908.0 | 410.6 | 240.7 | 113.3 | 0.0 | 14.2 | 141.6 | 191.2 | 42.5 | 28.3 | 99.1 | 14.2 | 42.5 | 113.27 |
| 31.7 | 1090.5 | 3282.5 | 287.0 | 448.4 | 287.0 | 0.0 | 0.0 | 125.6 | 206.3 | 143.5 | 35.9 | 125.6 | 0.0 | 0.0 | 53.81 |
| 31.8 | 1089.0 | 4176.7 | 151.4 | 164.0 | 239.7 | 0.0 | 0.0 | 100.9 | 246.1 | 164.0 | 50.5 | 75.7 | 0.0 | 0.0 | 113.56 |
| 31.9 | 1087.6 | 4556.3 | 251.7 | 238.4 | 238.4 | 0.0 | 0.0 | 79.5 | 271.5 | 66.2 | 53.0 | 53.0 | 0.0 | 13.2 | 92.72 |
| 32.0 | 1086.1 | 4275.4 | 314.8 | 341.0 | 183.6 | 0.0 | 0.0 | 65.6 | 183.6 | 91.8 | 52.5 | 91.8 | 0.0 | 13.1 | 118.03 |
| 32.1 | 1084.6 | 4531.5 | 181.8 | 167.8 | 181.8 | 14.0 | 0.0 | 69.9 | 307.7 | 97.9 | 83.9 | 83.9 | 14.0 | 14.0 | 69.93 |
| 32.2 | 1083.1 | 4693.7 | 295.2 | 265.7 | 177.1 | 0.0 | 14.8 | 118.1 | 206.6 | 177.1 | 0.0 | 73.8 | 0.0 | 14.8 | 118.08 |
| 32.3 | 1081.7 | 4527.6 | 383.7 | 294.2 | 127.9 | 0.0 | 0.0 | 89.5 | 211.0 | 51.2 | 12.8 | 63.9 | 0.0 | 0.0 | 153.48 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32.4 | 1080.2 | 3913.6 | 259.3 | 222.2 | 197.5 | 12.3 | 12.3 | 86.4 | 265.4 | 86.4 | 49.4 | 49.4 | 0.0 | 0.0 | 98.77 |
| 32.5 | 1078.7 | 4022.2 | 321.3 | 232.7 | 210.5 | 0.0 | 0.0 | 99.7 | 199.4 | 133.0 | 110.8 | 44.3 | 0.0 | 11.1 | 121.88 |
| 32.6 | 1077.2 | 4162.0 | 176.7 | 284.7 | 166.9 | 0.0 | 0.0 | 98.2 | 323.9 | 127.6 | 68.7 | 88.3 | 9.8 | 9.8 | 98.16 |
| 32.7 | 1075.7 | 3179.8 | 353.3 | 302.8 | 353.3 | 0.0 | 0.0 | 84.1 | 210.3 | 16.8 | 100.9 | 67.3 | 0.0 | 0.0 | 67.30 |
| 32.8 | 1074.2 | 4110.7 | 347.8 | 347.8 | 173.9 | 0.0 | 0.0 | 79.1 | 245.1 | 126.5 | 15.8 | 110.7 | 0.0 | 0.0 | 110.67 |
| 32.9 | 1072.7 | 3744.5 | 298.5 | 316.6 | 199.0 | 18.1 | 9.0 | 126.6 | 203.5 | 108.5 | 54.3 | 72.4 | 0.0 | 9.0 | 99.49 |
| 33.0 | 1071.2 | 3271.8 | 349.1 | 269.3 | 199.5 | 0.0 | 10.0 | 39.9 | 249.4 | 69.8 | 20.0 | 99.8 | 0.0 | 0.0 | 79.80 |
| 33.1 | 1069.7 | 1862.6 | 195.4 | 140.5 | 177.1 | 0.0 | 6.1 | 36.6 | 116.0 | 48.9 | 42.7 | 30.5 | 0.0 | 18.3 | 79.39 |
| 33.2 | 1068.2 | 3009.8 | 327.9 | 177.0 | 137.7 | 6.6 | 0.0 | 98.4 | 150.8 | 118.0 | 72.1 | 65.6 | 0.0 | 13.1 | 91.80 |
| 33.3 | 1066.7 | 3055.8 | 434.9 | 217.5 | 240.3 | 0.0 | 0.0 | 57.2 | 211.7 | 125.9 | 91.6 | 114.4 | 0.0 | 0.0 | 0.00 |
| 33.4 | 1065.2 | 3353.6 | 409.6 | 230.4 | 179.2 | 0.0 | 0.0 | 115.2 | 236.8 | 115.2 | 64.0 | 89.6 | 0.0 | 12.8 | 38.40 |
| 33.5 | 1063.7 | 2952.0 | 253.3 | 157.2 | 183.4 | 8.7 | 0.0 | 69.9 | 183.4 | 113.5 | 69.9 | 43.7 | 8.7 | 8.7 | 26.20 |
| 33.6 | 1062.1 | 2330.4 | 196.4 | 151.8 | 178.6 | 17.9 | 0.0 | 80.4 | 187.5 | 98.2 | 133.9 | 89.3 | 0.0 | 0.0 | 44.64 |
| 33.7 | 1060.6 | 2402.2 | 216.4 | 115.4 | 223.6 | 14.4 | 7.2 | 64.9 | 86.6 | 101.0 | 36.1 | 43.3 | 0.0 | 28.9 | 57.71 |
| 33.8 | 1059.1 | 2946.0 | 251.4 | 167.6 | 180.5 | 6.4 | 0.0 | 109.6 | 128.9 | 122.5 | 45.1 | 58.0 | 6.4 | 6.4 | 109.59 |
| 33.9 | 1057.6 | 2580.9 | 231.5 | 180.1 | 205.8 | 17.1 | 8.6 | 162.9 | 210.1 | 77.2 | 68.6 | 85.7 | 0.0 | 8.6 | 60.02 |
| 34.0 | 1056.0 | 2690.4 | 264.0 | 172.6 | 253.8 | 0.0 | 0.0 | 121.8 | 284.3 | 111.7 | 91.4 | 60.9 | 10.2 | 20.3 | 40.61 |
| 34.1 | 1054.5 | 1899.7 | 219.4 | 169.3 | 131.7 | 6.3 | 6.3 | 94.0 | 87.8 | 75.2 | 69.0 | 37.6 | 0.0 | 0.0 | 62.70 |
| 34.2 | 1053.0 | 1924.4 | 164.9 | 146.6 | 91.6 | 0.0 | 9.2 | 73.3 | 210.8 | 174.1 | 55.0 | 55.0 | 0.0 | 18.3 | 54.98 |
| 34.3 | 1051.4 | 2676.9 | 294.7 | 159.6 | 184.2 | 0.0 | 0.0 | 86.0 | 214.9 | 110.5 | 98.2 | 86.0 | 12.3 | 0.0 | 49.12 |
| 34.4 | 1049.9 | 2357.9 | 224.6 | 224.6 | 154.4 | 0.0 | 0.0 | 168.4 | 273.7 | 84.2 | 70.2 | 70.2 | 0.0 | 28.1 | 42.11 |
| 34.5 | 1048.3 | 2220.0 | 210.0 | 150.0 | 150.0 | 10.0 | 0.0 | 40.0 | 120.0 | 140.0 | 30.0 | 70.0 | 0.0 | 0.0 | 70.00 |
| 34.6 | 1046.8 | 2031.0 | 276.5 | 171.6 | 143.0 | 0.0 | 0.0 | 66.7 | 181.2 | 152.6 | 76.3 | 19.1 | 0.0 | 0.0 | 47.68 |
| 34.7 | 1045.2 | 2309.2 | 197.4 | 190.8 | 151.3 | 6.6 | 0.0 | 39.5 | 131.6 | 138.2 | 13.2 | 59.2 | 6.6 | 0.0 | 98.68 |
| 34.8 | 1043.7 | 1905.1 | 327.3 | 150.6 | 229.1 | 0.0 | 0.0 | 72.0 | 137.5 | 130.9 | 58.9 | 39.3 | 0.0 | 0.0 | 98.20 |
| 34.9 | 1042.1 | 2434.8 | 240.8 | 133.8 | 187.3 | 0.0 | 8.9 | 8.9 | 205.1 | 169.5 | 89.2 | 89.2 | 0.0 | 0.0 | 35.67 |
| 35.0 | 1040.6 | 1834.0 | 168.5 | 178.4 | 317.2 | 0.0 | 9.9 | 39.7 | 158.6 | 138.8 | 79.3 | 69.4 | 0.0 | 29.7 | 49.57 |
| 35.1 | 1039.0 | 1331.9 | 195.2 | 160.5 | 156.2 | 0.0 | 0.0 | 47.7 | 104.1 | 82.4 | 26.0 | 56.4 | 0.0 | 4.3 | 39.05 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35.2 | 1037.5 | 1514.1 | 214.7 | 271.2 | 146.9 | 22.6 | 0.0 | 33.9 | 135.6 | 146.9 | 113.0 | 33.9 | 0.0 | 0.0 | 33.90 |
| 35.3 | 1035.9 | 1775.9 | 190.5 | 156.9 | 173.7 | 11.2 | 0.0 | 61.6 | 117.6 | 128.9 | 56.0 | 22.4 | 0.0 | 5.6 | 67.23 |
| 35.4 | 1034.3 | 2001.1 | 336.4 | 241.5 | 224.3 | 17.3 | 8.6 | 69.0 | 150.9 | 241.5 | 60.4 | 77.6 | 0.0 | 17.3 | 94.88 |
| 35.5 | 1032.8 | 2090.6 | 374.6 | 447.1 | 229.6 | 12.1 | 0.0 | 48.3 | 169.2 | 265.9 | 84.6 | 48.3 | 0.0 | 12.1 | 120.85 |
| 35.6 | 1031.2 | 2225.6 | 215.4 | 348.7 | 194.9 | 0.0 | 10.3 | 41.0 | 164.1 | 164.1 | 92.3 | 51.3 | 0.0 | 10.3 | 71.79 |
| 35.7 | 1029.6 | 2563.8 | 191.0 | 279.2 | 191.0 | 7.3 | 7.3 | 95.5 | 154.3 | 161.6 | 51.4 | 58.8 | 0.0 | 7.3 | 95.50 |
| 35.8 | 1028.1 | 3153.2 | 295.6 | 369.5 | 184.8 | 0.0 | 0.0 | 73.9 | 264.8 | 172.4 | 123.2 | 73.9 | 0.0 | 12.3 | 98.54 |
| 35.9 | 1026.5 | 2073.5 | 155.1 | 244.9 | 106.1 | 0.0 | 0.0 | 81.6 | 114.3 | 195.9 | 81.6 | 57.1 | 0.0 | 0.0 | 40.82 |
| 36.0 | 1024.9 | 2527.1 | 306.5 | 231.8 | 209.3 | 7.5 | 7.5 | 112.1 | 104.7 | 104.7 | 112.1 | 134.6 | 0.0 | 0.0 | 89.72 |
| 36.1 | 1023.3 | 2449.2 | 441.7 | 331.2 | 80.3 | 0.0 | 0.0 | 140.5 | 210.8 | 150.6 | 80.3 | 90.3 | 0.0 | 0.0 | 40.15 |
| 36.2 | 1021.7 | 2446.2 | 200.0 | 400.0 | 153.8 | 0.0 | 0.0 | 184.6 | 115.4 | 61.5 | 61.5 | 153.8 | 0.0 | 0.0 | 46.15 |
| 36.3 | 1020.2 | 2342.5 | 331.5 | 265.2 | 206.3 | 7.4 | 0.0 | 81.0 | 184.2 | 162.1 | 81.0 | 95.8 | 0.0 | 14.7 | 58.93 |
| 36.4 | 1018.6 | 3073.4 | 395.7 | 197.9 | 171.5 | 0.0 | 0.0 | 118.7 | 72.5 | 145.1 | 92.3 | 131.9 | 0.0 | 0.0 | 145.09 |
| 36.5 | 1017.0 | 2466.0 | 289.4 | 347.3 | 138.9 | 0.0 | 0.0 | 185.2 | 69.5 | 46.3 | 104.2 | 138.9 | 0.0 | 0.0 | 57.89 |
| 36.6 | 1015.4 | 2802.1 | 372.5 | 287.8 | 186.2 | 0.0 | 0.0 | 169.3 | 186.2 | 67.7 | 110.1 | 169.3 | 0.0 | 0.0 | 93.12 |
| 36.7 | 1013.8 | 2807.0 | 366.1 | 256.3 | 195.3 | 0.0 | 0.0 | 134.2 | 128.1 | 134.2 | 61.0 | 183.1 | 0.0 | 0.0 | 109.84 |
| 36.8 | 1012.2 | 2896.7 | 350.8 | 237.6 | 350.8 | 0.0 | 0.0 | 113.2 | 186.7 | 124.5 | 79.2 | 226.3 | 0.0 | 0.0 | 56.58 |
| 36.9 | 1010.6 | 3324.7 | 239.0 | 311.7 | 155.8 | 0.0 | 0.0 | 93.5 | 119.5 | 103.9 | 41.6 | 176.6 | 0.0 | 10.4 | 83.12 |
| 37.0 | 1009.0 | 2878.6 | 271.4 | 128.6 | 135.7 | 0.0 | 14.3 | 85.7 | 100.0 | 85.7 | 7.1 | 128.6 | 0.0 | 14.3 | 92.86 |
| 37.1 | 1007.4 | 3612.2 | 224.5 | 326.5 | 204.1 | 0.0 | 0.0 | 122.4 | 214.3 | 122.4 | 112.2 | 112.2 | 10.2 | 20.4 | 40.82 |
| 37.2 | 1005.8 | 4075.0 | 363.3 | 347.5 | 157.9 | 0.0 | 0.0 | 157.9 | 86.9 | 252.7 | 47.4 | 189.5 | 0.0 | 0.0 | 110.56 |
| 37.3 | 1004.2 | 3178.3 | 373.2 | 325.1 | 108.4 | 0.0 | 0.0 | 156.5 | 126.4 | 108.4 | 60.2 | 120.4 | 0.0 | 12.0 | 60.20 |
| 37.4 | 1002.6 | 3275.7 | 291.2 | 276.6 | 116.5 | 0.0 | 0.0 | 247.5 | 123.7 | 58.2 | 131.0 | 72.8 | 0.0 | 0.0 | 0.00 |
| 37.5 | 1001.0 | 3479.5 | 287.7 | 342.5 | 219.2 | 0.0 | 13.7 | 150.7 | 239.7 | 95.9 | 54.8 | 191.8 | 0.0 | 41.1 | 123.29 |
| 37.6 | 999.4 | 3065.0 | 265.6 | 276.6 | 143.8 | 0.0 | 11.1 | 166.0 | 204.7 | 166.0 | 33.2 | 188.1 | 11.1 | 22.1 | 77.46 |
| 37.7 | 997.8 | 3560.3 | 321.7 | 257.4 | 235.9 | 10.7 | 0.0 | 193.0 | 176.9 | 118.0 | 64.3 | 96.5 | 0.0 | 0.0 | 21.45 |
| 37.8 | 996.1 | 3258.2 | 152.5 | 180.2 | 97.1 | 0.0 | 0.0 | 194.1 | 110.9 | 97.1 | 69.3 | 180.2 | 0.0 | 0.0 | 83.19 |
| 37.9 | 994.5 | 3528.0 | 306.8 | 188.8 | 212.4 | 0.0 | 0.0 | 188.8 | 129.8 | 153.4 | 82.6 | 153.4 | 0.0 | 0.0 | 59.00 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38.0 | 992.9 | 2994.3 | 394.9 | 238.8 | 192.9 | 18.4 | 0.0 | 101.0 | 192.9 | 119.4 | 55.1 | 137.8 | 0.0 | 18.4 | 27.55 |
| 38.1 | 991.3 | 3190.2 | 175.6 | 234.1 | 185.4 | 19.5 | 0.0 | 68.3 | 195.1 | 48.8 | 117.1 | 117.1 | 0.0 | 29.3 | 78.05 |
| 38.2 | 989.7 | 3138.8 | 227.8 | 199.3 | 185.1 | 14.2 | 0.0 | 106.8 | 121.0 | 156.6 | 21.4 | 113.9 | 0.0 | 0.0 | 49.82 |
| 38.3 | 988.0 | 3342.4 | 343.5 | 150.8 | 150.8 | 0.0 | 8.4 | 25.1 | 159.2 | 150.8 | 100.5 | 242.9 | 0.0 | 0.0 | 50.26 |
| 38.4 | 986.4 | 3542.5 | 445.7 | 176.0 | 176.0 | 0.0 | 0.0 | 58.7 | 181.8 | 117.3 | 93.8 | 164.2 | 0.0 | 0.0 | 93.84 |
| 38.5 | 984.8 | 3138.5 | 393.8 | 184.6 | 258.5 | 24.6 | 12.3 | 49.2 | 135.4 | 73.8 | 86.2 | 160.0 | 0.0 | 24.6 | 86.15 |
| 38.6 | 983.2 | 3558.1 | 373.9 | 181.3 | 351.3 | 11.3 | 11.3 | 79.3 | 181.3 | 170.0 | 79.3 | 181.3 | 11.3 | 11.3 | 79.32 |
| 38.7 | 981.5 | 3653.4 | 332.1 | 216.6 | 259.9 | 0.0 | 0.0 | 43.3 | 65.0 | 101.1 | 115.5 | 43.3 | 0.0 | 14.4 | 28.88 |
| 38.8 | 979.9 | 3538.6 | 304.6 | 143.3 | 161.3 | 0.0 | 9.0 | 152.3 | 89.6 | 107.5 | 125.4 | 152.3 | 0.0 | 9.0 | 80.63 |
| 38.9 | 978.3 | 3385.1 | 304.3 | 101.4 | 240.9 | 0.0 | 12.7 | 88.7 | 145.8 | 50.7 | 76.1 | 76.1 | 0.0 | 0.0 | 25.36 |
| 39.0 | 976.6 | 2817.1 | 202.3 | 140.1 | 108.9 | 0.0 | 0.0 | 202.3 | 70.0 | 46.7 | 108.9 | 155.6 | 0.0 | 15.6 | 62.26 |
| 39.1 | 975.0 | 2520.4 | 346.9 | 193.9 | 183.7 | 10.2 | 10.2 | 142.9 | 112.2 | 51.0 | 102.0 | 163.3 | 0.0 | 30.6 | 71.43 |
| 39.2 | 973.4 | 3284.9 | 362.2 | 187.4 | 212.3 | 0.0 | 0.0 | 124.9 | 118.7 | 124.9 | 112.4 | 262.3 | 0.0 | 25.0 | 24.98 |
| 39.3 | 971.7 | 2661.4 | 220.5 | 173.2 | 189.0 | 15.7 | 0.0 | 118.1 | 126.0 | 110.2 | 70.9 | 126.0 | 0.0 | 15.7 | 149.61 |
| 39.4 | 970.1 | 2776.8 | 377.6 | 212.4 | 212.4 | 0.0 | 0.0 | 141.6 | 55.1 | 110.1 | 70.8 | 110.1 | 0.0 | 23.6 | 86.53 |
| 39.5 | 968.4 | 2943.1 | 267.6 | 133.8 | 120.4 | 0.0 | 0.0 | 107.0 | 120.4 | 80.3 | 120.4 | 294.3 | 0.0 | 0.0 | 40.13 |
| 39.6 | 966.8 | 2417.0 | 408.5 | 178.7 | 85.1 | 0.0 | 0.0 | 144.7 | 51.1 | 119.1 | 51.1 | 110.6 | 0.0 | 17.0 | 59.57 |
| 39.7 | 965.1 | 1379.9 | 142.4 | 71.2 | 142.4 | 0.0 | 5.5 | 71.2 | 43.8 | 38.3 | 65.7 | 21.9 | 0.0 | 5.5 | 27.38 |
| 39.8 | 963.5 | 2729.2 | 284.6 | 155.2 | 142.3 | 12.9 | 0.0 | 64.7 | 58.2 | 103.5 | 51.7 | 155.2 | 0.0 | 25.9 | 103.48 |
| 39.9 | 961.8 | 2603.7 | 526.7 | 139.1 | 208.7 | 9.9 | 9.9 | 139.1 | 89.4 | 79.5 | 49.7 | 99.4 | 0.0 | 0.0 | 89.44 |
| 40.0 | 960.2 | 2782.3 | 274.2 | 88.7 | 225.8 | 0.0 | 0.0 | 145.2 | 48.4 | 72.6 | 80.6 | 80.6 | 8.1 | 16.1 | 72.58 |
| 40.1 | 958.5 | 2784.4 | 446.8 | 228.6 | 218.2 | 10.4 | 0.0 | 135.1 | 62.3 | 31.2 | 31.2 | 51.9 | 10.4 | 10.4 | 124.68 |
| 40.2 | 956.9 | 2721.1 | 326.9 | 130.7 | 130.7 | 8.2 | 0.0 | 155.3 | 49.0 | 81.7 | 49.0 | 89.9 | 0.0 | 16.3 | 89.89 |
| 40.3 | 955.2 | 2990.0 | 232.5 | 128.3 | 168.3 | 0.0 | 0.0 | 184.4 | 72.1 | 48.1 | 80.2 | 96.2 | 0.0 | 16.0 | 112.22 |
| 40.4 | 953.6 | 2888.0 | 242.4 | 147.6 | 210.8 | 10.5 | 0.0 | 147.6 | 79.1 | 94.9 | 105.4 | 73.8 | 10.5 | 10.5 | 115.94 |
| 40.5 | 951.9 | 2833.5 | 160.2 | 140.2 | 220.3 | 0.0 | 0.0 | 90.1 | 110.1 | 70.1 | 110.1 | 260.3 | 0.0 | 40.1 | 50.06 |
| 40.6 | 950.3 | 2368.1 | 245.4 | 171.8 | 257.7 | 0.0 | 0.0 | 171.8 | 110.4 | 85.9 | 147.2 | 171.8 | 0.0 | 24.5 | 110.43 |
| 40.7 | 948.6 | 2571.4 | 313.4 | 147.5 | 175.1 | 9.2 | 9.2 | 129.0 | 73.7 | 46.1 | 110.6 | 267.3 | 0.0 | 9.2 | 110.60 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40.8 | 946.9 | 2658.6 | 241.7 | 139.0 | 157.1 | 12.1 | 6.0 | 108.8 | 108.8 | 72.5 | 30.2 | 235.6 | 0.0 | 24.2 | 60.42 |
| 40.9 | 945.3 | 2280.6 | 614.5 | 200.9 | 200.9 | 11.8 | 0.0 | 153.6 | 76.8 | 70.9 | 130.0 | 189.1 | 11.8 | 11.8 | 153.62 |
| 41.0 | 943.6 | 2408.8 | 313.3 | 186.0 | 235.0 | 0.0 | 0.0 | 117.5 | 97.9 | 97.9 | 107.7 | 313.3 | 0.0 | 9.8 | 48.96 |
| 41.1 | 941.9 | 2252.9 | 206.9 | 241.4 | 218.4 | 11.5 | 0.0 | 92.0 | 80.5 | 92.0 | 80.5 | 241.4 | 0.0 | 11.5 | 80.46 |
| 41.2 | 940.3 | 2556.2 | 260.4 | 165.7 | 213.0 | 0.0 | 0.0 | 189.3 | 76.9 | 142.0 | 82.8 | 213.0 | 0.0 | 11.8 | 94.67 |
| 41.3 | 938.6 | 2653.0 | 397.4 | 327.2 | 198.7 | 0.0 | 0.0 | 187.0 | 52.6 | 46.7 | 46.7 | 303.9 | 0.0 | 23.4 | 81.81 |
| 41.4 | 936.9 | 2406.8 | 356.1 | 196.5 | 257.9 | 0.0 | 0.0 | 122.8 | 43.0 | 135.1 | 110.5 | 135.1 | 0.0 | 12.3 | 110.51 |
| 41.5 | 935.3 | 3748.5 | 335.3 | 179.6 | 227.5 | 12.0 | 0.0 | 131.7 | 71.9 | 83.8 | 119.8 | 299.4 | 0.0 | 12.0 | 155.69 |
| 41.6 | 933.6 | 3829.2 | 269.7 | 197.8 | 377.5 | 0.0 | 0.0 | 125.8 | 80.9 | 89.9 | 71.9 | 341.6 | 0.0 | 0.0 | 125.84 |
| 41.7 | 931.9 | 3087.6 | 328.5 | 116.8 | 124.1 | 0.0 | 14.6 | 87.6 | 29.2 | 102.2 | 51.1 | 94.9 | 0.0 | 0.0 | 72.99 |
| 41.8 | 930.2 | 3681.2 | 421.3 | 255.0 | 155.2 | 0.0 | 0.0 | 66.5 | 49.9 | 177.4 | 99.8 | 77.6 | 0.0 | 11.1 | 166.32 |
| 41.9 | 928.6 | 3571.7 | 250.4 | 171.3 | 224.1 | 13.2 | 0.0 | 184.5 | 6.6 | 145.0 | 105.4 | 197.7 | 13.2 | 0.0 | 210.87 |
| 42.0 | 926.9 | 4071.1 | 266.7 | 337.8 | 177.8 | 0.0 | 0.0 | 142.2 | 44.4 | 124.4 | 124.4 | 88.9 | 0.0 | 0.0 | 124.44 |
| 42.1 | 925.2 | 4367.5 | 256.9 | 342.6 | 85.6 | 0.0 | 0.0 | 157.0 | 50.0 | 114.2 | 85.6 | 99.9 | 0.0 | 0.0 | 128.46 |
| 42.2 | 923.5 | 3655.4 | 299.6 | 299.6 | 239.7 | 0.0 | 15.0 | 104.9 | 97.4 | 89.9 | 44.9 | 89.9 | 0.0 | 0.0 | 134.83 |
| 42.3 | 921.9 | 3968.8 | 145.5 | 249.4 | 239.0 | 0.0 | 0.0 | 72.7 | 41.6 | 114.3 | 83.1 | 72.7 | 0.0 | 10.4 | 155.84 |
| 42.4 | 920.2 | 4090.9 | 318.2 | 197.0 | 181.8 | 0.0 | 0.0 | 75.8 | 53.0 | 90.9 | 75.8 | 60.6 | 0.0 | 30.3 | 15.15 |
| 42.5 | 918.5 | 3567.4 | 181.6 | 299.1 | 181.6 | 0.0 | 0.0 | 117.5 | 32.0 | 96.1 | 53.4 | 128.2 | 0.0 | 0.0 | 117.49 |
| 42.6 | 916.8 | 3863.6 | 280.2 | 309.7 | 309.7 | 14.7 | 0.0 | 147.5 | 22.1 | 88.5 | 103.2 | 132.7 | 0.0 | 0.0 | 132.72 |
| 42.7 | 915.1 | 4566.3 | 249.1 | 308.4 | 308.4 | 0.0 | 0.0 | 154.2 | 77.1 | 71.2 | 94.9 | 118.6 | 0.0 | 23.7 | 59.30 |
| 42.8 | 913.4 | 3672.5 | 236.2 | 397.3 | 236.2 | 0.0 | 0.0 | 139.6 | 112.8 | 118.1 | 21.5 | 64.4 | 0.0 | 10.7 | 128.86 |
| 42.9 | 911.7 | 4410.4 | 178.0 | 435.1 | 178.0 | 0.0 | 0.0 | 138.4 | 49.4 | 118.7 | 59.3 | 39.6 | 0.0 | 19.8 | 158.22 |
| 43.0 | 910.1 | 3798.0 | 242.4 | 282.8 | 383.8 | 0.0 | 0.0 | 161.6 | 30.3 | 80.8 | 80.8 | 60.6 | 0.0 | 20.2 | 181.82 |
| 43.1 | 908.4 | 3988.9 | 296.6 | 266.9 | 266.9 | 14.8 | 0.0 | 163.1 | 22.2 | 103.8 | 133.5 | 14.8 | 0.0 | 0.0 | 88.97 |
| 43.2 | 906.7 | 3717.3 | 192.5 | 372.9 | 264.7 | 0.0 | 0.0 | 120.3 | 18.0 | 96.2 | 144.4 | 84.2 | 0.0 | 0.0 | 120.30 |
| 43.3 | 905.0 | 3196.3 | 283.9 | 384.7 | 329.7 | 0.0 | 0.0 | 137.4 | 41.2 | 109.9 | 64.1 | 27.5 | 0.0 | 36.6 | 109.90 |
| 43.4 | 903.3 | 2010.1 | 323.8 | 458.7 | 323.8 | 0.0 | 0.0 | 121.4 | 40.5 | 148.4 | 134.9 | 40.5 | 0.0 | 0.0 | 134.91 |
| 43.5 | 901.6 | 2905.1 | 404.7 | 621.5 | 274.6 | 14.5 | 0.0 | 101.2 | 50.6 | 144.5 | 115.6 | 43.4 | 0.0 | 0.0 | 43.36 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43.6 | 899.9 | 2916.7 | 245.0 | 260.3 | 252.6 | 0.0 | 0.0 | 38.3 | 160.8 | 122.5 | 38.3 | 7.7 | 0.0 | 0.0 | 68.90 |
| 43.7 | 898.2 | 2056.6 | 271.6 | 362.2 | 310.4 | 12.9 | 0.0 | 168.1 | 58.2 | 64.7 | 64.7 | 38.8 | 0.0 | 0.0 | 103.48 |
| 43.8 | 896.5 | 2634.0 | 424.5 | 413.6 | 348.3 | 10.9 | 0.0 | 195.9 | 27.2 | 152.4 | 65.3 | 21.8 | 0.0 | 10.9 | 108.84 |
| 43.9 | 894.8 | 1961.2 | 233.0 | 436.9 | 378.6 | 0.0 | 0.0 | 68.0 | 38.8 | 58.3 | 77.7 | 9.7 | 0.0 | 0.0 | 38.83 |
| 44.0 | 893.1 | 1641.7 | 329.7 | 370.1 | 235.5 | 0.0 | 0.0 | 87.5 | 20.2 | 67.3 | 94.2 | 33.6 | 0.0 | 0.0 | 47.10 |
| 44.1 | 891.4 | 1793.4 | 365.1 | 275.4 | 333.1 | 12.8 | 0.0 | 83.3 | 44.8 | 89.7 | 70.5 | 25.6 | 0.0 | 0.0 | 96.08 |
| 44.2 | 889.7 | 1717.9 | 252.6 | 227.4 | 294.7 | 0.0 | 0.0 | 75.8 | 33.7 | 126.3 | 33.7 | 16.8 | 8.4 | 8.4 | 101.05 |
| 44.3 | 888.0 | 1667.0 | 310.5 | 294.2 | 343.2 | 0.0 | 0.0 | 106.2 | 32.7 | 130.7 | 89.9 | 40.9 | 16.3 | 0.0 | 98.06 |
| 44.4 | 886.3 | 1583.2 | 308.8 | 218.9 | 314.4 | 11.2 | 11.2 | 112.3 | 44.9 | 61.8 | 61.8 | 44.9 | 0.0 | 0.0 | 157.19 |
| 44.5 | 884.6 | 1179.3 | 366.5 | 207.2 | 382.5 | 0.0 | 0.0 | 111.6 | 63.7 | 143.4 | 71.7 | 15.9 | 0.0 | 0.0 | 95.62 |
| 44.6 | 882.9 | 1402.6 | 301.0 | 270.9 | 204.7 | 6.0 | 12.0 | 96.3 | 48.2 | 108.4 | 72.2 | 24.1 | 0.0 | 12.0 | 60.20 |
| 44.7 | 881.2 | 1639.6 | 289.8 | 219.1 | 204.9 | 7.1 | 7.1 | 134.3 | 49.5 | 77.7 | 49.5 | 21.2 | 7.1 | 0.0 | 70.67 |
| 44.8 | 879.5 | 1594.0 | 288.9 | 189.3 | 388.5 | 0.0 | 0.0 | 79.7 | 49.8 | 159.4 | 129.5 | 49.8 | 0.0 | 0.0 | 69.74 |
| 44.9 | 877.7 | 1555.3 | 242.6 | 180.7 | 180.7 | 4.8 | 0.0 | 85.6 | 47.6 | 90.4 | 47.6 | 19.0 | 0.0 | 9.5 | 66.59 |
| 45.0 | 876.0 | 2452.4 | 266.4 | 330.7 | 202.1 | 0.0 | 0.0 | 128.6 | 45.9 | 147.0 | 110.2 | 9.2 | 9.2 | 0.0 | 137.77 |
| 45.1 | 874.3 | 2540.8 | 469.2 | 343.3 | 286.1 | 0.0 | 0.0 | 148.8 | 45.8 | 160.2 | 80.1 | 22.9 | 11.4 | 0.0 | 80.11 |
| 45.2 | 872.6 | 2065.2 | 434.4 | 360.9 | 180.5 | 20.1 | 0.0 | 80.2 | 73.5 | 106.9 | 53.5 | 20.1 | 0.0 | 13.4 | 40.10 |
| 45.3 | 870.9 | 2224.4 | 485.5 | 304.9 | 282.3 | 11.3 | 0.0 | 56.5 | 39.5 | 90.3 | 67.7 | 22.6 | 0.0 | 11.3 | 79.04 |
| 45.4 | 869.2 | 2553.7 | 364.8 | 182.4 | 351.8 | 39.1 | 0.0 | 39.1 | 19.5 | 52.1 | 91.2 | 26.1 | 0.0 | 0.0 | 52.12 |
| 45.5 | 867.5 | 2648.0 | 279.3 | 290.5 | 301.7 | 33.5 | 0.0 | 55.9 | 83.8 | 111.7 | 78.2 | 44.7 | 0.0 | 11.2 | 67.04 |
| 45.6 | 865.7 | 2347.3 | 311.4 | 167.7 | 143.7 | 0.0 | 0.0 | 79.8 | 55.9 | 71.9 | 47.9 | 47.9 | 0.0 | 0.0 | 63.87 |
| 45.7 | 864.0 | 2619.2 | 284.7 | 324.6 | 205.0 | 11.4 | 11.4 | 79.7 | 56.9 | 85.4 | 62.6 | 56.9 | 0.0 | 5.7 | 74.02 |
| 45.8 | 862.3 | 2627.0 | 221.0 | 263.5 | 212.5 | 17.0 | 0.0 | 110.5 | 25.5 | 51.0 | 59.5 | 42.5 | 0.0 | 0.0 | 76.51 |
| 45.9 | 860.6 | 2112.9 | 300.9 | 194.4 | 169.3 | 12.5 | 0.0 | 81.5 | 56.4 | 94.0 | 56.4 | 25.1 | 0.0 | 12.5 | 68.97 |
| 46.0 | 858.9 | 2101.4 | 202.8 | 276.5 | 248.8 | 9.2 | 0.0 | 73.7 | 36.9 | 82.9 | 101.4 | 36.9 | 9.2 | 0.0 | 92.17 |
| 46.1 | 857.1 | 2106.9 | 255.4 | 344.8 | 217.1 | 0.0 | 0.0 | 102.2 | 44.7 | 140.5 | 63.8 | 38.3 | 0.0 | 25.5 | 51.08 |
| 46.2 | 855.4 | 2185.8 | 231.1 | 281.0 | 174.9 | 6.2 | 0.0 | 74.9 | 31.2 | 106.2 | 43.7 | 31.2 | 0.0 | 12.5 | 74.94 |
| 46.3 | 853.7 | 2394.1 | 279.9 | 206.3 | 176.8 | 0.0 | 0.0 | 73.7 | 44.2 | 147.3 | 81.0 | 7.4 | 7.4 | 7.4 | 66.30 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46.4 | 852.0 | 2239.3 | 153.5 | 270.9 | 234.8 | 36.1 | 0.0 | 90.3 | 36.1 | 117.4 | 81.3 | 36.1 | 0.0 | 18.1 | 45.15 |
| 46.5 | 850.2 | 1953.6 | 314.8 | 339.1 | 193.7 | 0.0 | 0.0 | 104.9 | 40.4 | 104.9 | 80.7 | 32.3 | 0.0 | 0.0 | 96.87 |
| 46.6 | 848.5 | 1932.0 | 168.8 | 375.1 | 150.1 | 0.0 | 0.0 | 103.2 | 46.9 | 112.5 | 112.5 | 28.1 | 0.0 | 9.4 | 56.27 |
| 46.7 | 846.8 | 1922.6 | 284.6 | 264.7 | 229.7 | 20.0 | 0.0 | 104.9 | 40.0 | 99.9 | 79.9 | 0.0 | 5.0 | 0.0 | 54.93 |
| 46.8 | 845.1 | 1630.8 | 184.6 | 282.1 | 138.5 | 10.3 | 0.0 | 194.9 | 87.2 | 71.8 | 87.2 | 46.2 | 0.0 | 5.1 | 71.79 |
| 46.9 | 843.3 | 2001.9 | 247.3 | 177.8 | 224.2 | 0.0 | 0.0 | 201.0 | 46.4 | 146.9 | 61.8 | 30.9 | 0.0 | 7.7 | 108.21 |
| 47.0 | 841.6 | 1815.7 | 279.3 | 395.7 | 147.4 | 0.0 | 0.0 | 263.8 | 38.8 | 131.9 | 116.4 | 15.5 | 7.8 | 0.0 | 77.59 |
| 47.1 | 839.9 | 2105.7 | 234.0 | 342.0 | 207.0 | 27.0 | 0.0 | 270.0 | 45.0 | 144.0 | 63.0 | 45.0 | 18.0 | 0.0 | 53.99 |
| 47.2 | 838.1 | 2156.2 | 269.5 | 441.0 | 245.0 | 0.0 | 0.0 | 330.8 | 49.0 | 85.8 | 49.0 | 49.0 | 0.0 | 12.3 | 36.75 |
| 47.3 | 836.4 | 1822.4 | 312.7 | 375.2 | 196.5 | 8.9 | 0.0 | 321.6 | 58.1 | 160.8 | 80.4 | 62.5 | 0.0 | 0.0 | 35.73 |
| 47.4 | 834.7 | 2223.0 | 341.3 | 399.8 | 224.3 | 0.0 | 0.0 | 360.8 | 63.4 | 165.8 | 117.0 | 48.8 | 0.0 | 0.0 | 87.75 |
| 47.5 | 832.9 | 2208.9 | 392.4 | 327.0 | 254.3 | 29.1 | 0.0 | 472.3 | 36.3 | 123.5 | 87.2 | 29.1 | 0.0 | 0.0 | 87.19 |
| 47.6 | 831.2 | 2085.8 | 343.3 | 414.6 | 259.1 | 13.0 | 0.0 | 304.5 | 103.6 | 155.5 | 116.6 | 58.3 | 6.5 | 0.0 | 90.69 |
| 47.7 | 829.5 | 2232.3 | 441.9 | 339.9 | 238.0 | 0.0 | 0.0 | 339.9 | 85.0 | 181.3 | 68.0 | 45.3 | 11.3 | 11.3 | 147.31 |
| 47.8 | 827.7 | 1861.6 | 459.1 | 421.4 | 157.2 | 18.9 | 0.0 | 295.6 | 69.2 | 144.7 | 75.5 | 37.7 | 0.0 | 6.3 | 6.29 |
| 47.9 | 826.0 | 2269.8 | 297.7 | 347.3 | 347.3 | 12.4 | 0.0 | 334.9 | 24.8 | 86.8 | 86.8 | 37.2 | 0.0 | 0.0 | 99.22 |
| 48.0 | 824.3 | 2498.8 | 464.2 | 365.4 | 256.8 | 0.0 | 0.0 | 128.4 | 98.8 | 79.0 | 108.6 | 39.5 | 0.0 | 0.0 | 88.89 |
| 48.1 | 822.5 | 2164.8 | 504.6 | 366.2 | 268.6 | 8.1 | 0.0 | 154.6 | 81.4 | 48.8 | 122.1 | 89.5 | 0.0 | 0.0 | 65.11 |
| 48.2 | 820.8 | 2548.0 | 355.9 | 323.6 | 202.2 | 8.1 | 0.0 | 250.8 | 56.6 | 105.2 | 129.4 | 64.7 | 8.1 | 0.0 | 40.44 |
| 48.3 | 819.0 | 2695.5 | 389.7 | 422.2 | 205.7 | 0.0 | 0.0 | 129.9 | 54.1 | 108.3 | 184.0 | 54.1 | 0.0 | 0.0 | 32.48 |
| 48.4 | 817.3 | 2326.4 | 403.6 | 474.8 | 237.4 | 0.0 | 0.0 | 142.4 | 71.2 | 47.5 | 174.1 | 71.2 | 0.0 | 7.9 | 55.39 |
| 48.5 | 815.6 | 2388.2 | 399.5 | 463.1 | 208.9 | 0.0 | 0.0 | 72.6 | 27.2 | 63.6 | 118.0 | 36.3 | 9.1 | 9.1 | 81.73 |
| 48.6 | 813.8 | 2470.6 | 352.9 | 524.9 | 289.6 | 0.0 | 0.0 | 144.8 | 36.2 | 171.9 | 153.8 | 36.2 | 0.0 | 9.0 | 36.20 |
| 48.7 | 812.1 | 2557.7 | 245.1 | 621.0 | 245.1 | 0.0 | 8.2 | 40.9 | 65.4 | 130.7 | 89.9 | 57.2 | 8.2 | 0.0 | 49.03 |
| 48.8 | 810.3 | 2090.1 | 269.1 | 413.2 | 240.2 | 4.8 | 4.8 | 158.6 | 43.2 | 100.9 | 158.6 | 43.2 | 0.0 | 9.6 | 28.83 |
| 48.9 | 808.6 | 2944.0 | 290.9 | 314.2 | 267.6 | 0.0 | 0.0 | 116.4 | 64.0 | 104.7 | 104.7 | 93.1 | 0.0 | 0.0 | 46.55 |
| 49.0 | 806.8 | 2383.1 | 280.8 | 481.4 | 144.4 | 0.0 | 0.0 | 96.3 | 40.1 | 96.3 | 96.3 | 40.1 | 0.0 | 0.0 | 80.24 |
| 49.1 | 805.1 | 2404.5 | 358.1 | 409.3 | 281.4 | 12.8 | 12.8 | 191.8 | 19.2 | 76.7 | 127.9 | 38.4 | 0.0 | 12.8 | 89.53 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49.2 | 803.3 | 2678.6 | 392.9 | 375.0 | 312.5 | 0.0 | 8.9 | 241.1 | 35.7 | 71.4 | 160.7 | 80.4 | 0.0 | 0.0 | 80.36 |
| 49.3 | 801.6 | 3126.8 | 472.0 | 306.8 | 519.2 | 0.0 | 0.0 | 177.0 | 29.5 | 94.4 | 106.2 | 70.8 | 11.8 | 0.0 | 47.20 |
| 49.4 | 799.8 | 2513.7 | 325.0 | 583.0 | 334.5 | 0.0 | 0.0 | 152.9 | 38.2 | 162.5 | 229.4 | 66.9 | 0.0 | 0.0 | 19.12 |
| 49.5 | 798.1 | 2486.2 | 375.7 | 254.1 | 375.7 | 44.2 | 0.0 | 143.6 | 44.2 | 77.3 | 254.1 | 77.3 | 0.0 | 0.0 | 77.35 |
| 49.6 | 796.3 | 2215.9 | 353.7 | 353.7 | 374.5 | 0.0 | 0.0 | 145.6 | 52.0 | 145.6 | 104.0 | 41.6 | 0.0 | 0.0 | 83.22 |
| 49.7 | 794.6 | 2774.6 | 393.1 | 285.2 | 300.6 | 0.0 | 0.0 | 123.3 | 23.1 | 138.7 | 185.0 | 53.9 | 0.0 | 0.0 | 107.90 |
| 49.8 | 792.8 | 2643.4 | 381.3 | 355.8 | 266.9 | 0.0 | 12.7 | 114.4 | 19.1 | 127.1 | 165.2 | 63.5 | 0.0 | 0.0 | 127.08 |
| 49.9 | 791.1 | 2611.2 | 307.9 | 307.9 | 443.4 | 0.0 | 0.0 | 98.5 | 30.8 | 98.5 | 172.4 | 37.0 | 0.0 | 0.0 | 184.76 |
| 50.0 | 789.3 | 2721.0 | 421.6 | 594.0 | 440.7 | 0.0 | 0.0 | 134.1 | 47.9 | 191.6 | 134.1 | 76.6 | 0.0 | 0.0 | 114.97 |
| 50.1 | 787.6 | 3338.7 | 310.1 | 401.4 | 291.9 | 0.0 | 0.0 | 91.2 | 45.6 | 182.4 | 200.7 | 91.2 | 18.2 | 0.0 | 127.71 |
| 50.2 | 785.8 | 2583.5 | 389.0 | 448.9 | 309.2 | 0.0 | 0.0 | 159.6 | 49.9 | 79.8 | 219.5 | 20.0 | 10.0 | 10.0 | 149.63 |
| 50.3 | 784.0 | 3258.7 | 477.9 | 445.3 | 423.6 | 0.0 | 0.0 | 173.8 | 59.7 | 76.0 | 97.8 | 32.6 | 0.0 | 10.9 | 97.76 |
| 50.4 | 782.3 | 2785.5 | 403.7 | 471.0 | 309.5 | 13.5 | 0.0 | 148.0 | 74.0 | 201.9 | 121.1 | 40.4 | 0.0 | 0.0 | 107.65 |
| 50.5 | 780.5 | 2704.7 | 308.1 | 433.7 | 239.7 | 0.0 | 0.0 | 79.9 | 22.8 | 34.2 | 148.4 | 45.6 | 22.8 | 0.0 | 125.53 |
| 50.6 | 778.8 | 2622.8 | 225.6 | 507.6 | 150.4 | 9.4 | 0.0 | 131.6 | 18.8 | 122.2 | 216.2 | 56.4 | 0.0 | 0.0 | 150.41 |
| 50.7 | 777.0 | 2708.1 | 236.0 | 447.2 | 236.0 | 12.4 | 0.0 | 49.7 | 18.6 | 136.6 | 87.0 | 37.3 | 0.0 | 24.8 | 49.69 |
| 50.8 | 775.2 | 2962.0 | 297.4 | 582.5 | 285.1 | 12.4 | 12.4 | 62.0 | 55.8 | 161.1 | 185.9 | 86.8 | 24.8 | 12.4 | 123.93 |
| 50.9 | 773.5 | 2325.3 | 254.7 | 442.9 | 354.3 | 11.1 | 11.1 | 55.4 | 5.5 | 121.8 | 77.5 | 33.2 | 0.0 | 0.0 | 110.73 |
| 51.0 | 771.7 | 2727.1 | 370.2 | 385.3 | 309.7 | 15.1 | 0.0 | 83.1 | 22.7 | 128.4 | 136.0 | 15.1 | 7.6 | 7.6 | 60.43 |
| 51.1 | 770.0 | 2847.3 | 349.0 | 413.3 | 303.1 | 0.0 | 0.0 | 73.5 | 45.9 | 137.8 | 73.5 | 36.7 | 9.2 | 9.2 | 64.29 |
| 51.2 | 768.2 | 2309.5 | 266.5 | 555.2 | 244.3 | 22.2 | 0.0 | 166.6 | 16.7 | 122.1 | 155.4 | 55.5 | 0.0 | 11.1 | 122.14 |
| 51.3 | 766.4 | 2614.7 | 330.3 | 449.5 | 339.4 | 9.2 | 0.0 | 156.0 | 9.2 | 146.8 | 110.1 | 45.9 | 0.0 | 9.2 | 27.52 |
| 51.4 | 764.7 | 2484.7 | 289.7 | 568.2 | 256.3 | 0.0 | 0.0 | 156.0 | 55.7 | 144.8 | 66.9 | 22.3 | 0.0 | 0.0 | 133.70 |
| 51.5 | 762.9 | 2840.4 | 330.1 | 286.6 | 130.3 | 17.4 | 0.0 | 139.0 | 52.1 | 147.7 | 78.2 | 17.4 | 0.0 | 0.0 | 43.43 |
| 51.6 | 761.1 | 2557.1 | 357.1 | 485.7 | 242.9 | 0.0 | 0.0 | 228.6 | 7.1 | 157.1 | 85.7 | 71.4 | 0.0 | 14.3 | 85.71 |
| 51.7 | 759.4 | 2617.0 | 246.2 | 285.0 | 246.2 | 0.0 | 0.0 | 181.4 | 19.4 | 285.0 | 103.6 | 51.8 | 0.0 | 13.0 | 77.73 |
| 51.8 | 757.6 | 3322.7 | 268.4 | 293.9 | 242.8 | 12.8 | 0.0 | 63.9 | 19.2 | 191.7 | 115.0 | 76.7 | 0.0 | 0.0 | 115.02 |
| 51.9 | 755.8 | 2858.2 | 249.8 | 409.7 | 329.8 | 30.0 | 0.0 | 139.9 | 15.0 | 179.9 | 119.9 | 20.0 | 0.0 | 0.0 | 59.96 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52.0 | 754.1 | 2891.9 | 225.2 | 272.6 | 284.4 | 11.9 | 0.0 | 94.8 | 11.9 | 201.5 | 59.3 | 23.7 | 0.0 | 11.9 | 71.11 |
| 52.1 | 752.3 | 3635.0 | 264.1 | 295.1 | 357.3 | 31.1 | 0.0 | 170.9 | 54.4 | 170.9 | 93.2 | 31.1 | 0.0 | 0.0 | 77.67 |
| 52.2 | 750.5 | 3065.5 | 279.5 | 227.1 | 366.8 | 8.7 | 0.0 | 87.3 | 26.2 | 183.4 | 78.6 | 17.5 | 0.0 | 0.0 | 43.67 |
| 52.3 | 748.7 | 3915.1 | 330.7 | 205.6 | 357.5 | 0.0 | 0.0 | 107.3 | 8.9 | 160.9 | 89.4 | 44.7 | 0.0 | 8.9 | 17.88 |
| 52.4 | 747.0 | 3212.1 | 294.4 | 147.2 | 294.4 | 8.7 | 0.0 | 129.9 | 30.3 | 86.6 | 43.3 | 43.3 | 0.0 | 0.0 | 51.95 |
| 52.5 | 745.2 | 3355.7 | 337.3 | 155.7 | 311.4 | 0.0 | 0.0 | 129.7 | 34.6 | 147.0 | 34.6 | 34.6 | 0.0 | 8.6 | 8.65 |
| 52.6 | 743.4 | 3504.9 | 233.0 | 184.5 | 349.5 | 19.4 | 0.0 | 87.4 | 19.4 | 97.1 | 29.1 | 9.7 | 0.0 | 0.0 | 58.25 |
| 52.7 | 741.6 | 3241.8 | 254.0 | 209.2 | 283.8 | 44.8 | 0.0 | 59.8 | 7.5 | 179.3 | 89.6 | 89.6 | 29.9 | 0.0 | 29.88 |
| 52.8 | 739.9 | 3314.3 | 249.4 | 114.3 | 322.1 | 10.4 | 10.4 | 103.9 | 36.4 | 62.3 | 31.2 | 41.6 | 0.0 | 0.0 | 0.00 |
| 52.9 | 738.1 | 3513.8 | 269.6 | 154.0 | 231.0 | 0.0 | 0.0 | 105.9 | 43.3 | 134.8 | 67.4 | 105.9 | 0.0 | 0.0 | 28.88 |
| 53.0 | 736.3 | 2508.9 | 223.2 | 169.6 | 294.6 | 8.9 | 0.0 | 89.3 | 17.9 | 80.4 | 44.6 | 35.7 | 0.0 | 0.0 | 35.71 |
| 53.1 | 734.5 | 2445.1 | 168.1 | 160.5 | 252.1 | 15.3 | 0.0 | 129.9 | 15.3 | 122.3 | 68.8 | 22.9 | 0.0 | 15.3 | 68.77 |
| 53.2 | 732.7 | 2102.1 | 178.7 | 178.7 | 297.9 | 0.0 | 0.0 | 76.6 | 34.0 | 127.7 | 42.6 | 42.6 | 0.0 | 8.5 | 25.53 |
| 53.3 | 731.0 | 2723.7 | 171.2 | 233.5 | 225.7 | 0.0 | 0.0 | 77.8 | 15.6 | 85.6 | 93.4 | 46.7 | 7.8 | 15.6 | 70.04 |
| 53.4 | 729.2 | 2575.9 | 198.1 | 214.7 | 264.2 | 8.3 | 0.0 | 57.8 | 57.8 | 66.0 | 66.0 | 49.5 | 8.3 | 8.3 | 8.26 |
| 53.5 | 727.4 | 3007.4 | 166.4 | 249.6 | 214.0 | 0.0 | 0.0 | 35.7 | 59.4 | 154.5 | 35.7 | 71.3 | 0.0 | 23.8 | 11.89 |
| 53.6 | 725.6 | 2437.1 | 181.2 | 199.3 | 172.1 | 9.1 | 0.0 | 81.5 | 36.2 | 63.4 | 36.2 | 9.1 | 9.1 | 9.1 | 27.18 |
| 53.7 | 723.8 | 2438.6 | 201.2 | 233.4 | 257.5 | 8.0 | 0.0 | 32.2 | 32.2 | 96.6 | 64.4 | 48.3 | 8.0 | 8.0 | 24.14 |
| 53.8 | 722.1 | 2048.6 | 106.0 | 220.8 | 176.6 | 0.0 | 0.0 | 53.0 | 57.4 | 106.0 | 17.7 | 17.7 | 0.0 | 0.0 | 52.98 |
| 53.9 | 720.3 | 2133.0 | 136.9 | 215.9 | 142.2 | 0.0 | 0.0 | 42.1 | 21.1 | 168.5 | 15.8 | 21.1 | 5.3 | 15.8 | 26.33 |
| 54.0 | 718.5 | 2343.0 | 181.2 | 323.6 | 258.9 | 0.0 | 0.0 | 38.8 | 45.3 | 116.5 | 90.6 | 38.8 | 0.0 | 0.0 | 38.83 |
| 54.1 | 716.7 | 2431.1 | 132.0 | 170.9 | 170.9 | 7.8 | 0.0 | 54.4 | 77.7 | 85.4 | 77.7 | 15.5 | 7.8 | 7.8 | 31.07 |
| 54.2 | 714.9 | 2140.4 | 303.9 | 607.8 | 436.0 | 13.2 | 0.0 | 118.9 | 85.9 | 132.1 | 158.5 | 13.2 | 0.0 | 13.2 | 13.21 |
| 54.3 | 713.1 | 2619.0 | 214.5 | 366.5 | 205.6 | 0.0 | 0.0 | 26.8 | 44.7 | 187.7 | 62.6 | 26.8 | 0.0 | 17.9 | 26.82 |
| 54.4 | 711.3 | 2248.6 | 179.2 | 152.3 | 241.9 | 0.0 | 0.0 | 62.7 | 35.8 | 98.5 | 26.9 | 44.8 | 0.0 | 0.0 | 0.00 |
| 54.5 | 709.5 | 2499.0 | 275.9 | 389.5 | 405.7 | 0.0 | 0.0 | 194.7 | 89.2 | 227.2 | 97.4 | 64.9 | 16.2 | 0.0 | 32.45 |
| 54.6 | 707.8 | 2254.6 | 264.3 | 264.3 | 248.8 | 31.1 | 0.0 | 124.4 | 31.1 | 171.0 | 62.2 | 62.2 | 0.0 | 23.3 | 46.65 |
| 54.7 | 706.0 | 2399.3 | 274.6 | 361.3 | 281.8 | 21.7 | 0.0 | 108.4 | 86.7 | 159.0 | 86.7 | 79.5 | 0.0 | 14.5 | 14.45 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54.8 | 704.2 | 2501.6 | 326.7 | 531.0 | 296.1 | 20.4 | 0.0 | 183.8 | 117.4 | 265.5 | 91.9 | 40.8 | 0.0 | 10.2 | 40.84 |
| 54.9 | 702.4 | 2527.0 | 283.8 | 432.4 | 391.9 | 13.5 | 13.5 | 148.6 | 74.3 | 121.6 | 108.1 | 40.5 | 0.0 | 13.5 | 67.57 |
| 55.0 | 700.6 | 2299.0 | 403.9 | 403.9 | 170.9 | 0.0 | 15.5 | 217.5 | 7.8 | 186.4 | 93.2 | 46.6 | 0.0 | 0.0 | 77.67 |
| 55.1 | 698.8 | 2824.6 | 360.2 | 928.9 | 208.5 | 19.0 | 0.0 | 170.6 | 85.3 | 151.7 | 113.7 | 94.8 | 0.0 | 19.0 | 94.79 |
| 55.2 | 697.0 | 2630.8 | 490.3 | 430.5 | 119.6 | 0.0 | 0.0 | 227.2 | 89.7 | 299.0 | 215.2 | 71.7 | 0.0 | 12.0 | 155.46 |
| 55.3 | 695.2 | 2605.1 | 443.4 | 406.5 | 258.7 | 27.7 | 0.0 | 129.3 | 55.4 | 203.2 | 120.1 | 73.9 | 0.0 | 0.0 | 92.38 |
| 55.4 | 693.4 | 2679.5 | 631.4 | 600.6 | 231.0 | 0.0 | 0.0 | 138.6 | 100.1 | 123.2 | 200.2 | 61.6 | 15.4 | 0.0 | 61.60 |
| 55.5 | 691.6 | 2108.9 | 391.5 | 429.4 | 277.8 | 0.0 | 0.0 | 176.8 | 69.5 | 138.9 | 138.9 | 12.6 | 12.6 | 25.3 | 25.26 |
| 55.6 | 689.8 | 2547.4 | 529.5 | 357.8 | 343.5 | 14.3 | 0.0 | 214.7 | 64.4 | 114.5 | 114.5 | 57.2 | 0.0 | 28.6 | 71.56 |
| 55.7 | 688.0 | 2107.0 | 266.8 | 312.8 | 220.8 | 0.0 | 0.0 | 156.4 | 78.2 | 82.8 | 82.8 | 73.6 | 0.0 | 27.6 | 27.60 |
| 55.8 | 686.2 | 1824.7 | 245.0 | 287.2 | 152.1 | 8.4 | 0.0 | 194.3 | 92.9 | 101.4 | 118.3 | 25.3 | 0.0 | 0.0 | 42.24 |
| 55.9 | 684.4 | 1785.8 | 301.7 | 337.9 | 265.5 | 12.1 | 0.0 | 96.5 | 36.2 | 229.3 | 24.1 | 6.0 | 0.0 | 0.0 | 36.20 |
| 56.0 | 682.6 | 1939.4 | 335.7 | 335.7 | 223.8 | 0.0 | 0.0 | 177.2 | 93.2 | 102.6 | 55.9 | 46.6 | 0.0 | 0.0 | 37.30 |
| 56.1 | 680.8 | 2097.1 | 252.9 | 376.3 | 283.7 | 6.2 | 0.0 | 123.4 | 123.4 | 135.7 | 104.9 | 55.5 | 0.0 | 6.2 | 43.18 |
| 56.2 | 679.0 | 1967.3 | 300.7 | 411.8 | 241.8 | 0.0 | 0.0 | 183.0 | 98.0 | 156.9 | 111.1 | 71.9 | 6.5 | 6.5 | 13.07 |
| 56.3 | 677.2 | 2261.5 | 261.5 | 476.9 | 130.8 | 0.0 | 0.0 | 138.5 | 123.1 | 161.5 | 76.9 | 46.2 | 0.0 | 0.0 | 38.46 |
| 56.4 | 675.4 | 1893.3 | 356.9 | 434.5 | 178.5 | 15.5 | 0.0 | 162.9 | 116.4 | 162.9 | 85.4 | 54.3 | 15.5 | 7.8 | 23.28 |
| 56.5 | 673.6 | 1734.4 | 303.5 | 354.1 | 209.6 | 7.2 | 0.0 | 122.9 | 173.4 | 93.9 | 93.9 | 28.9 | 7.2 | 7.2 | 43.36 |
| 56.6 | 671.8 | 2097.9 | 332.0 | 431.5 | 205.8 | 26.6 | 0.0 | 106.2 | 112.9 | 139.4 | 66.4 | 33.2 | 6.6 | 0.0 | 79.67 |
| 56.7 | 670.0 | 2164.8 | 233.4 | 385.1 | 268.4 | 5.8 | 0.0 | 134.2 | 140.0 | 210.1 | 70.0 | 52.5 | 0.0 | 0.0 | 17.51 |
| 56.8 | 668.2 | 2129.6 | 287.2 | 378.3 | 259.2 | 7.0 | 0.0 | 70.1 | 112.1 | 196.1 | 56.0 | 49.0 | 7.0 | 0.0 | 42.03 |
| 56.9 | 666.4 | 2602.9 | 354.1 | 248.8 | 124.4 | 0.0 | 0.0 | 172.2 | 177.0 | 220.1 | 38.3 | 76.6 | 0.0 | 9.6 | 38.28 |
| 57.0 | 664.6 | 2249.2 | 453.1 | 214.2 | 189.5 | 16.5 | 0.0 | 131.8 | 82.4 | 131.8 | 82.4 | 49.4 | 0.0 | 0.0 | 49.43 |
| 57.1 | 662.8 | 2322.6 | 309.7 | 331.8 | 317.1 | 14.7 | 7.4 | 103.2 | 103.2 | 140.1 | 103.2 | 14.7 | 7.4 | 0.0 | 81.11 |
| 57.2 | 661.0 | 2407.2 | 327.1 | 353.2 | 183.2 | 26.2 | 0.0 | 78.5 | 137.4 | 183.2 | 91.6 | 91.6 | 0.0 | 26.2 | 91.58 |
| 57.3 | 659.1 | 2524.3 | 350.8 | 343.2 | 228.8 | 7.6 | 0.0 | 83.9 | 198.3 | 99.1 | 76.3 | 68.6 | 7.6 | 0.0 | 7.63 |
| 57.4 | 657.3 | 2381.5 | 264.6 | 379.3 | 194.0 | 0.0 | 0.0 | 123.5 | 176.4 | 141.1 | 61.7 | 61.7 | 0.0 | 8.8 | 17.64 |
| 57.5 | 655.5 | 2641.4 | 311.3 | 429.0 | 193.5 | 0.0 | 0.0 | 143.0 | 117.8 | 84.1 | 92.5 | 33.6 | 0.0 | 0.0 | 33.65 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 57.6 | 653.7 | 2618.8 | 211.2 | 346.4 | 261.9 | 8.4 | 0.0 | 101.4 | 194.3 | 177.4 | 92.9 | 33.8 | 0.0 | 0.0 | 16.90 |
| 57.7 | 651.9 | 2601.9 | 304.2 | 252.4 | 148.9 | 0.0 | 6.5 | 58.3 | 168.3 | 51.8 | 84.1 | 77.7 | 6.5 | 0.0 | 6.47 |
| 57.8 | 650.1 | 2730.2 | 251.9 | 394.9 | 265.5 | 6.8 | 0.0 | 143.0 | 163.4 | 170.2 | 108.9 | 68.1 | 6.8 | 0.0 | 20.43 |
| 57.9 | 648.3 | 3082.9 | 260.2 | 234.1 | 130.1 | 0.0 | 13.0 | 91.1 | 117.1 | 143.1 | 39.0 | 52.0 | 0.0 | 26.0 | 39.02 |
| 58.0 | 646.5 | 2395.4 | 365.7 | 329.1 | 164.6 | 18.3 | 9.1 | 73.1 | 73.1 | 118.9 | 82.3 | 45.7 | 0.0 | 0.0 | 36.57 |
| 58.1 | 644.6 | 2789.6 | 221.2 | 215.1 | 178.2 | 6.1 | 0.0 | 86.0 | 73.7 | 73.7 | 79.9 | 61.4 | 0.0 | 18.4 | 30.72 |
| 58.2 | 642.8 | 2788.8 | 298.6 | 251.1 | 142.5 | 6.8 | 0.0 | 88.2 | 88.2 | 88.2 | 108.6 | 101.8 | 0.0 | 6.8 | 74.64 |
| 58.3 | 641.0 | 3228.6 | 197.7 | 219.6 | 197.7 | 0.0 | 11.0 | 32.9 | 115.3 | 98.8 | 76.9 | 43.9 | 0.0 | 0.0 | 76.87 |
| 58.4 | 639.2 | 2443.3 | 163.4 | 179.8 | 187.9 | 0.0 | 0.0 | 49.0 | 89.9 | 138.9 | 57.2 | 57.2 | 0.0 | 0.0 | 32.69 |
| 58.5 | 637.4 | 2790.0 | 206.4 | 185.1 | 142.3 | 21.4 | 0.0 | 78.3 | 121.0 | 149.5 | 64.1 | 49.8 | 7.1 | 14.2 | 35.59 |
| 58.6 | 635.5 | 2518.7 | 203.9 | 215.9 | 239.9 | 24.0 | 0.0 | 60.0 | 149.9 | 167.9 | 60.0 | 60.0 | 0.0 | 12.0 | 35.98 |
| 58.7 | 633.7 | 2277.2 | 245.6 | 245.6 | 132.8 | 0.0 | 0.0 | 79.7 | 73.0 | 119.5 | 139.4 | 73.0 | 0.0 | 0.0 | 59.75 |
| 58.8 | 631.9 | 2140.4 | 264.9 | 233.1 | 190.7 | 10.6 | 0.0 | 53.0 | 100.7 | 169.5 | 95.4 | 74.2 | 0.0 | 21.2 | 74.17 |
| 58.9 | 630.1 | 2237.7 | 230.0 | 150.4 | 212.3 | 8.8 | 0.0 | 61.9 | 57.5 | 115.0 | 61.9 | 88.4 | 0.0 | 0.0 | 61.91 |
| 59.0 | 628.3 | 1909.5 | 316.0 | 138.3 | 270.0 | 13.2 | 0.0 | 65.8 | 118.5 | 105.3 | 85.6 | 79.0 | 0.0 | 0.0 | 19.75 |
| 59.1 | 626.4 | 1797.0 | 262.2 | 211.0 | 281.4 | 12.8 | 6.4 | 76.7 | 102.3 | 127.9 | 70.3 | 76.7 | 0.0 | 6.4 | 12.79 |
| 59.2 | 624.6 | 2111.3 | 276.6 | 155.1 | 209.1 | 6.7 | 0.0 | 67.5 | 114.7 | 134.9 | 80.9 | 87.7 | 0.0 | 6.7 | 47.22 |
| 59.3 | 622.8 | 2003.1 | 249.6 | 274.6 | 193.4 | 18.7 | 0.0 | 81.1 | 93.6 | 162.2 | 68.6 | 99.8 | 0.0 | 0.0 | 37.44 |
| 59.4 | 621.0 | 1926.7 | 277.5 | 166.5 | 261.6 | 7.9 | 0.0 | 126.9 | 134.8 | 118.9 | 87.2 | 39.6 | 0.0 | 7.9 | 63.43 |
| 59.5 | 619.1 | 2054.6 | 410.9 | 253.6 | 209.8 | 0.0 | 8.7 | 87.4 | 122.4 | 218.6 | 96.2 | 69.9 | 8.7 | 0.0 | 8.74 |
| 59.6 | 617.3 | 2565.3 | 342.8 | 276.4 | 331.7 | 0.0 | 0.0 | 110.6 | 82.9 | 188.0 | 55.3 | 121.6 | 0.0 | 0.0 | 33.17 |
| 59.7 | 615.5 | 2124.8 | 249.6 | 256.3 | 222.6 | 0.0 | 0.0 | 54.0 | 80.9 | 202.4 | 80.9 | 74.2 | 0.0 | 0.0 | 26.98 |
| 59.8 | 613.6 | 1439.6 | 234.1 | 292.6 | 245.8 | 0.0 | 0.0 | 117.0 | 111.2 | 128.7 | 46.8 | 70.2 | 0.0 | 0.0 | 46.82 |
| 59.9 | 611.8 | 2408.6 | 242.9 | 202.4 | 141.7 | 10.1 | 0.0 | 161.9 | 35.4 | 202.4 | 60.7 | 81.0 | 0.0 | 0.0 | 50.60 |
| 60.0 | 610.0 | 2868.6 | 329.6 | 329.6 | 169.3 | 0.0 | 0.0 | 124.7 | 80.2 | 187.1 | 89.1 | 151.4 | 0.0 | 8.9 | 53.45 |
| 60.1 | 608.2 | 2517.2 | 405.1 | 405.1 | 188.1 | 7.2 | 0.0 | 79.6 | 57.9 | 245.9 | 50.6 | 123.0 | 0.0 | 7.2 | 65.10 |
| 60.2 | 606.3 | 2698.0 | 337.3 | 243.1 | 180.4 | 7.8 | 7.8 | 125.5 | 78.4 | 133.3 | 102.0 | 125.5 | 0.0 | 7.8 | 54.90 |
| 60.3 | 604.5 | 2140.5 | 321.1 | 294.3 | 280.9 | 13.4 | 0.0 | 107.0 | 73.6 | 120.4 | 107.0 | 80.3 | 0.0 | 0.0 | 40.13 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60.4 | 602.7 | 3186.1 | 318.6 | 249.4 | 304.8 | 0.0 | 0.0 | 166.2 | 76.2 | 263.2 | 152.4 | 27.7 | 0.0 | 0.0 | 69.26 |
| 60.5 | 600.8 | 2345.0 | 390.8 | 287.1 | 231.3 | 8.0 | 0.0 | 135.6 | 71.8 | 159.5 | 39.9 | 55.8 | 0.0 | 16.0 | 87.74 |
| 60.6 | 599.0 | 2734.4 | 274.5 | 254.1 | 162.6 | 20.3 | 0.0 | 30.5 | 55.9 | 233.8 | 50.8 | 111.8 | 0.0 | 0.0 | 71.16 |
| 60.7 | 597.2 | 2656.5 | 403.4 | 228.4 | 175.1 | 15.2 | 0.0 | 83.7 | 99.0 | 205.5 | 45.7 | 144.6 | 7.6 | 7.6 | 38.06 |
| 60.8 | 595.3 | 2418.0 | 339.7 | 179.9 | 166.5 | 6.7 | 13.3 | 106.6 | 86.6 | 193.2 | 60.0 | 106.6 | 6.7 | 6.7 | 13.32 |
| 60.9 | 593.5 | 2322.8 | 378.0 | 354.3 | 173.2 | 15.7 | 0.0 | 63.0 | 78.7 | 173.2 | 63.0 | 63.0 | 0.0 | 0.0 | 15.75 |
| 61.0 | 591.6 | 2205.8 | 223.6 | 386.3 | 244.0 | 0.0 | 0.0 | 91.5 | 76.2 | 152.5 | 40.7 | 61.0 | 0.0 | 0.0 | 40.66 |
| 61.1 | 589.8 | 1967.0 | 332.6 | 252.3 | 183.5 | 0.0 | 0.0 | 103.2 | 74.6 | 160.6 | 51.6 | 63.1 | 0.0 | 0.0 | 63.08 |
| 61.2 | 588.0 | 2107.4 | 276.2 | 347.8 | 276.2 | 10.2 | 0.0 | 51.2 | 112.5 | 133.0 | 61.4 | 61.4 | 0.0 | 0.0 | 0.00 |
| 61.3 | 586.1 | 2304.9 | 331.8 | 313.9 | 242.2 | 9.0 | 0.0 | 89.7 | 71.7 | 125.6 | 80.7 | 53.8 | 0.0 | 9.0 | 26.91 |
| 61.4 | 584.3 | 1980.2 | 277.2 | 277.2 | 198.0 | 9.9 | 0.0 | 99.0 | 49.5 | 237.6 | 108.9 | 49.5 | 9.9 | 0.0 | 9.90 |
| 61.5 | 582.4 | 1938.2 | 303.1 | 398.8 | 247.3 | 0.0 | 0.0 | 95.7 | 71.8 | 159.5 | 47.9 | 95.7 | 8.0 | 0.0 | 55.83 |
| 61.6 | 580.6 | 1784.6 | 312.7 | 297.4 | 236.4 | 0.0 | 0.0 | 106.8 | 76.3 | 221.2 | 99.1 | 114.4 | 0.0 | 7.6 | 38.13 |
| 61.7 | 578.8 | 2077.1 | 308.3 | 330.3 | 264.2 | 0.0 | 0.0 | 66.1 | 51.4 | 183.5 | 66.1 | 36.7 | 0.0 | 0.0 | 29.36 |
| 61.8 | 576.9 | 1949.1 | 336.6 | 328.8 | 328.8 | 0.0 | 0.0 | 117.4 | 50.9 | 164.4 | 62.6 | 54.8 | 0.0 | 7.8 | 31.31 |
| 61.9 | 575.1 | 2063.9 | 420.8 | 350.7 | 200.4 | 10.0 | 0.0 | 120.2 | 55.1 | 190.4 | 100.2 | 120.2 | 0.0 | 20.0 | 70.13 |
| 62.0 | 573.2 | 1729.5 | 268.5 | 323.8 | 308.0 | 0.0 | 0.0 | 86.9 | 23.7 | 173.7 | 79.0 | 23.7 | 7.9 | 0.0 | 15.79 |
| 62.1 | 571.4 | 1917.9 | 319.6 | 301.9 | 195.3 | 0.0 | 0.0 | 150.9 | 35.5 | 88.8 | 62.2 | 79.9 | 0.0 | 0.0 | 17.76 |
| 62.2 | 569.5 | 1684.2 | 323.0 | 230.7 | 196.1 | 0.0 | 5.8 | 196.1 | 40.4 | 242.2 | 92.3 | 57.7 | 0.0 | 0.0 | 46.14 |
| 62.3 | 567.7 | 2116.2 | 360.8 | 402.4 | 277.5 | 6.9 | 0.0 | 131.8 | 62.4 | 242.8 | 48.6 | 111.0 | 0.0 | 20.8 | 20.82 |
| 62.4 | 565.8 | 2159.1 | 272.7 | 181.8 | 181.8 | 0.0 | 0.0 | 125.0 | 68.2 | 113.6 | 68.2 | 68.2 | 11.4 | 0.0 | 68.18 |
| 62.5 | 564.0 | 1875.1 | 246.7 | 240.6 | 259.1 | 0.0 | 0.0 | 129.5 | 24.7 | 228.2 | 43.2 | 80.2 | 0.0 | 0.0 | 0.00 |
| 62.6 | 562.1 | 1960.9 | 342.9 | 312.8 | 186.5 | 6.0 | 0.0 | 138.3 | 66.2 | 168.4 | 72.2 | 24.1 | 6.0 | 0.0 | 24.06 |
| 62.7 | 560.3 | 1799.3 | 379.9 | 322.6 | 279.6 | 14.3 | 0.0 | 129.0 | 28.7 | 258.1 | 71.7 | 43.0 | 0.0 | 0.0 | 0.00 |
| 62.8 | 558.4 | 2479.6 | 244.3 | 280.5 | 171.9 | 0.0 | 0.0 | 90.5 | 45.2 | 171.9 | 63.3 | 81.4 | 9.0 | 0.0 | 45.25 |
| 62.9 | 556.6 | 1695.8 | 302.8 | 225.7 | 176.2 | 22.0 | 0.0 | 132.1 | 38.5 | 203.7 | 66.1 | 22.0 | 0.0 | 22.0 | 44.05 |
| 63.0 | 554.7 | 1830.5 | 432.2 | 271.2 | 203.4 | 8.5 | 0.0 | 169.5 | 42.4 | 203.4 | 93.2 | 110.2 | 0.0 | 0.0 | 8.47 |
| 63.1 | 552.9 | 1748.2 | 241.7 | 257.8 | 201.4 | 16.1 | 8.1 | 112.8 | 40.3 | 185.3 | 80.6 | 72.5 | 0.0 | 0.0 | 120.85 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 63.2 | 551.0 | 1846.2 | 336.2 | 266.5 | 164.9 | 12.7 | 0.0 | 114.2 | 57.1 | 209.4 | 44.4 | 50.8 | 6.3 | 19.0 | 38.07 |
| 63.3 | 549.1 | 1800.3 | 286.9 | 270.0 | 146.3 | 16.9 | 0.0 | 67.5 | 61.9 | 213.8 | 39.4 | 33.8 | 0.0 | 11.3 | 50.63 |
| 63.4 | 547.3 | 1723.4 | 356.1 | 267.1 | 248.0 | 25.4 | 0.0 | 127.2 | 82.7 | 171.7 | 63.6 | 50.9 | 0.0 | 0.0 | 0.00 |
| 63.5 | 545.4 | 2156.8 | 324.2 | 155.1 | 148.0 | 14.1 | 0.0 | 105.7 | 56.4 | 162.1 | 77.5 | 21.1 | 0.0 | 7.0 | 42.29 |
| 63.6 | 543.6 | 2025.8 | 295.3 | 281.5 | 171.7 | 0.0 | 6.9 | 89.3 | 20.6 | 144.2 | 48.1 | 41.2 | 0.0 | 13.7 | 82.40 |
| 63.7 | 541.7 | 1991.3 | 376.3 | 277.9 | 162.1 | 0.0 | 0.0 | 92.6 | 23.2 | 237.3 | 40.5 | 28.9 | 0.0 | 11.6 | 86.83 |
| 63.8 | 539.8 | 2060.9 | 293.5 | 206.1 | 143.6 | 0.0 | 0.0 | 106.2 | 62.5 | 199.8 | 74.9 | 37.5 | 12.5 | 12.5 | 62.45 |
| 63.9 | 538.0 | 2167.8 | 290.2 | 254.0 | 181.4 | 0.0 | 0.0 | 108.8 | 36.3 | 244.9 | 27.2 | 27.2 | 9.1 | 18.1 | 54.42 |
| 64.0 | 536.1 | 2259.4 | 276.7 | 215.2 | 222.9 | 7.7 | 7.7 | 53.8 | 38.4 | 199.8 | 92.2 | 46.1 | 7.7 | 7.7 | 115.27 |
| 64.1 | 534.3 | 2105.7 | 354.7 | 241.5 | 203.8 | 22.6 | 0.0 | 90.6 | 45.3 | 226.4 | 37.7 | 45.3 | 0.0 | 7.5 | 30.19 |
| 64.2 | 532.4 | 2169.9 | 341.9 | 206.0 | 140.3 | 8.8 | 0.0 | 109.6 | 39.5 | 192.9 | 48.2 | 35.1 | 0.0 | 4.4 | 83.29 |
| 64.3 | 530.5 | 2430.7 | 312.8 | 181.1 | 120.7 | 0.0 | 11.0 | 98.8 | 43.9 | 235.9 | 65.8 | 43.9 | 0.0 | 5.5 | 60.36 |
| 64.4 | 528.7 | 2026.2 | 323.1 | 122.3 | 104.8 | 43.7 | 0.0 | 61.1 | 52.4 | 235.8 | 26.2 | 52.4 | 0.0 | 0.0 | 43.67 |
| 64.5 | 526.8 | 1889.7 | 337.9 | 248.3 | 193.1 | 13.8 | 6.9 | 96.6 | 20.7 | 255.2 | 48.3 | 75.9 | 13.8 | 6.9 | 68.97 |
| 64.6 | 524.9 | 1982.6 | 368.7 | 222.6 | 146.1 | 13.9 | 0.0 | 118.3 | 69.6 | 320.0 | 76.5 | 62.6 | 0.0 | 0.0 | 83.48 |
| 64.7 | 523.1 | 2094.5 | 338.6 | 212.6 | 149.6 | 7.9 | 0.0 | 47.2 | 39.4 | 204.7 | 94.5 | 39.4 | 7.9 | 0.0 | 70.87 |
| 64.8 | 521.2 | 2168.9 | 270.2 | 165.1 | 217.6 | 7.5 | 0.0 | 52.5 | 30.0 | 255.2 | 67.5 | 37.5 | 0.0 | 0.0 | 60.04 |
| 64.9 | 519.3 | 2165.2 | 381.1 | 154.1 | 162.2 | 8.1 | 0.0 | 89.2 | 36.5 | 227.1 | 56.8 | 40.5 | 0.0 | 32.4 | 56.77 |
| 65.0 | 517.5 | 2444.2 | 353.4 | 314.1 | 137.4 | 9.8 | 0.0 | 78.5 | 29.4 | 186.5 | 58.9 | 117.8 | 9.8 | 9.8 | 49.08 |
| 65.1 | 515.6 | 2914.7 | 396.9 | 347.3 | 62.0 | 12.4 | 0.0 | 24.8 | 18.6 | 161.2 | 74.4 | 62.0 | 0.0 | 0.0 | 148.84 |
| 65.2 | 513.7 | 2610.2 | 369.6 | 354.2 | 107.8 | 7.7 | 0.0 | 61.6 | 69.3 | 207.9 | 130.9 | 61.6 | 0.0 | 7.7 | 61.60 |
| 65.3 | 511.8 | 2923.9 | 271.7 | 315.2 | 65.2 | 10.9 | 0.0 | 87.0 | 38.0 | 260.9 | 87.0 | 32.6 | 0.0 | 21.7 | 54.35 |
| 65.4 | 510.0 | 2867.6 | 378.9 | 318.6 | 129.2 | 8.6 | 0.0 | 60.3 | 68.9 | 258.3 | 68.9 | 60.3 | 0.0 | 8.6 | 68.89 |
| 65.5 | 508.1 | 2314.7 | 370.6 | 265.7 | 132.9 | 0.0 | 0.0 | 111.9 | 35.0 | 209.8 | 76.9 | 69.9 | 0.0 | 14.0 | 69.93 |
| 65.6 | 506.2 | 2523.8 | 278.9 | 183.7 | 115.6 | 13.6 | 0.0 | 74.8 | 13.6 | 122.4 | 88.4 | 74.8 | 0.0 | 27.2 | 129.25 |
| 65.7 | 504.4 | 2684.1 | 324.6 | 179.7 | 104.3 | 11.6 | 5.8 | 115.9 | 40.6 | 133.3 | 63.8 | 81.2 | 0.0 | 23.2 | 57.97 |
| 65.8 | 502.5 | 2491.8 | 393.4 | 283.0 | 110.4 | 0.0 | 0.0 | 82.8 | 34.5 | 186.4 | 48.3 | 117.3 | 0.0 | 20.7 | 55.22 |
| 65.9 | 500.6 | 2471.2 | 371.1 | 207.8 | 133.6 | 0.0 | 0.0 | 51.9 | 59.4 | 222.6 | 81.6 | 103.9 | 0.0 | 22.3 | 81.63 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 66.0 | 498.7 | 2598.5 | 264.1 | 127.8 | 119.3 | 0.0 | 0.0 | 76.7 | 25.6 | 255.6 | 68.2 | 127.8 | 0.0 | 34.1 | 93.72 |
| 66.1 | 496.5 | 3001.0 | 353.5 | 328.9 | 131.6 | 8.2 | 0.0 | 49.3 | 24.7 | 213.8 | 41.1 | 74.0 | 0.0 | 24.7 | 123.33 |
| 66.2 | 494.2 | 2004.6 | 280.3 | 322.9 | 91.4 | 30.5 | 0.0 | 91.4 | 18.3 | 237.6 | 79.2 | 30.5 | 0.0 | 0.0 | 60.93 |
| 66.3 | 492.0 | 2433.9 | 326.3 | 300.2 | 124.0 | 6.5 | 0.0 | 78.3 | 13.1 | 182.7 | 52.2 | 84.8 | 0.0 | 19.6 | 137.03 |
| 66.4 | 489.7 | 2238.6 | 374.6 | 383.5 | 133.8 | 17.8 | 0.0 | 151.6 | 17.8 | 178.4 | 53.5 | 80.3 | 0.0 | 8.9 | 142.70 |
| 66.5 | 487.5 | 2590.6 | 437.9 | 401.4 | 73.0 | 18.2 | 0.0 | 136.8 | 9.1 | 237.2 | 54.7 | 82.1 | 0.0 | 0.0 | 118.59 |
| 66.6 | 485.2 | 2451.1 | 347.4 | 193.0 | 57.9 | 19.3 | 0.0 | 115.8 | 9.7 | 241.3 | 38.6 | 57.9 | 19.3 | 9.7 | 86.85 |
| 66.7 | 483.0 | 2432.0 | 228.6 | 310.9 | 146.3 | 9.1 | 9.1 | 82.3 | 18.3 | 201.1 | 36.6 | 0.0 | 0.0 | 0.0 | 137.14 |
| 66.8 | 480.7 | 2289.9 | 260.9 | 251.2 | 96.6 | 9.7 | 0.0 | 106.3 | 24.2 | 173.9 | 29.0 | 67.6 | 9.7 | 0.0 | 173.91 |
| 66.9 | 478.5 | 2361.6 | 559.0 | 433.2 | 251.5 | 41.9 | 0.0 | 69.9 | 62.9 | 181.7 | 69.9 | 69.9 | 0.0 | 14.0 | 97.82 |
| 67.0 | 476.2 | 2331.3 | 409.0 | 343.6 | 180.0 | 0.0 | 16.4 | 81.8 | 24.5 | 237.2 | 32.7 | 65.4 | 0.0 | 0.0 | 130.88 |
| 67.1 | 474.0 | 2595.3 | 280.9 | 321.1 | 147.2 | 13.4 | 0.0 | 120.4 | 33.4 | 187.3 | 40.1 | 160.5 | 0.0 | 0.0 | 120.40 |
| 67.2 | 471.8 | 2612.4 | 154.6 | 398.8 | 146.5 | 16.3 | 0.0 | 81.4 | 24.4 | 284.8 | 65.1 | 113.9 | 0.0 | 0.0 | 113.94 |
| 67.3 | 469.5 | 2302.5 | 399.4 | 446.4 | 141.0 | 11.7 | 0.0 | 152.7 | 76.4 | 141.0 | 23.5 | 70.5 | 0.0 | 0.0 | 246.70 |
| 67.4 | 467.3 | 2506.4 | 327.4 | 327.4 | 102.3 | 20.5 | 0.0 | 102.3 | 51.2 | 286.4 | 61.4 | 71.6 | 0.0 | 0.0 | 112.53 |
| 67.5 | 465.1 | 2081.8 | 361.0 | 251.8 | 125.9 | 8.4 | 0.0 | 67.2 | 42.0 | 184.7 | 42.0 | 83.9 | 0.0 | 0.0 | 83.95 |
| 67.6 | 462.8 | 2242.2 | 344.3 | 488.5 | 160.2 | 32.0 | 0.0 | 128.1 | 48.0 | 184.2 | 24.0 | 56.1 | 0.0 | 0.0 | 80.08 |
| 67.7 | 460.6 | 1540.2 | 182.9 | 253.2 | 126.6 | 14.1 | 0.0 | 70.3 | 24.6 | 147.7 | 42.2 | 21.1 | 0.0 | 0.0 | 42.20 |
| 67.8 | 458.4 | 2473.9 | 407.0 | 342.7 | 160.6 | 0.0 | 10.7 | 107.1 | 58.9 | 160.6 | 53.5 | 85.7 | 0.0 | 0.0 | 96.39 |
| 67.9 | 456.2 | 2408.2 | 263.9 | 450.9 | 121.0 | 11.0 | 0.0 | 77.0 | 49.5 | 197.9 | 55.0 | 77.0 | 0.0 | 0.0 | 98.97 |
| 68.0 | 453.9 | 2711.2 | 400.7 | 414.0 | 146.9 | 26.7 | 0.0 | 53.4 | 113.5 | 120.2 | 106.8 | 80.1 | 0.0 | 0.0 | 53.42 |
| 68.1 | 451.7 | 2424.2 | 366.3 | 334.0 | 150.8 | 32.3 | 0.0 | 86.2 | 48.5 | 150.8 | 86.2 | 43.1 | 10.8 | 0.0 | 64.65 |
| 68.2 | 449.5 | 1869.5 | 388.5 | 315.6 | 157.8 | 6.1 | 0.0 | 109.3 | 78.9 | 145.7 | 85.0 | 103.2 | 0.0 | 0.0 | 91.05 |
| 68.3 | 447.3 | 1806.5 | 387.1 | 354.8 | 182.8 | 0.0 | 0.0 | 107.5 | 75.3 | 118.3 | 43.0 | 32.3 | 21.5 | 10.8 | 107.53 |
| 68.4 | 445.1 | 1935.9 | 256.2 | 341.6 | 94.9 | 9.5 | 0.0 | 85.4 | 47.4 | 161.3 | 28.5 | 66.4 | 0.0 | 0.0 | 237.25 |
| 68.5 | 442.8 | 2287.4 | 493.6 | 397.3 | 180.6 | 0.0 | 0.0 | 132.4 | 54.2 | 228.7 | 120.4 | 48.2 | 0.0 | 0.0 | 240.78 |
| 68.6 | 440.6 | 2422.9 | 265.9 | 384.1 | 73.9 | 0.0 | 0.0 | 73.9 | 66.5 | 118.2 | 103.4 | 29.5 | 0.0 | 0.0 | 73.87 |
| 68.7 | 438.4 | 1893.1 | 371.6 | 294.5 | 105.2 | 14.0 | 0.0 | 70.1 | 56.1 | 154.3 | 70.1 | 28.0 | 0.0 | 0.0 | 63.10 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 68.8 | 436.2 | 2336.2 | 433.0 | 330.5 | 125.4 | 0.0 | 0.0 | 57.0 | 85.5 | 193.7 | 136.8 | 11.4 | 11.4 | 0.0 | 113.96 |
| 68.9 | 434.0 | 1953.2 | 366.7 | 374.2 | 134.7 | 0.0 | 0.0 | 37.4 | 67.4 | 97.3 | 89.8 | 37.4 | 0.0 | 0.0 | 52.39 |
| 69.0 | 431.8 | 1924.1 | 335.0 | 241.5 | 171.4 | 15.6 | 0.0 | 70.1 | 54.5 | 233.7 | 70.1 | 38.9 | 0.0 | 0.0 | 38.95 |
| 69.1 | 429.6 | 2210.5 | 323.3 | 323.3 | 172.9 | 0.0 | 0.0 | 67.7 | 82.7 | 82.7 | 75.2 | 15.0 | 0.0 | 7.5 | 37.59 |
| 69.2 | 427.4 | 2240.5 | 426.1 | 336.8 | 206.2 | 6.9 | 0.0 | 55.0 | 144.3 | 137.5 | 123.7 | 82.5 | 0.0 | 0.0 | 103.09 |
| 69.3 | 425.2 | 1944.2 | 318.7 | 229.5 | 63.7 | 12.7 | 6.4 | 63.7 | 38.2 | 102.0 | 51.0 | 44.6 | 0.0 | 0.0 | 38.25 |
| 69.4 | 423.0 | 2145.3 | 507.3 | 338.2 | 148.0 | 21.1 | 0.0 | 52.8 | 84.5 | 137.4 | 74.0 | 52.8 | 10.6 | 0.0 | 31.70 |
| 69.5 | 420.8 | 2346.3 | 280.0 | 280.0 | 181.6 | 0.0 | 0.0 | 15.1 | 53.0 | 174.1 | 83.3 | 22.7 | 0.0 | 7.6 | 45.41 |
| 69.6 | 418.6 | 2406.1 | 364.8 | 364.8 | 139.0 | 8.7 | 0.0 | 26.1 | 69.5 | 173.7 | 86.9 | 34.7 | 0.0 | 0.0 | 43.43 |
| 69.7 | 416.4 | 2447.7 | 456.4 | 290.4 | 152.1 | 0.0 | 0.0 | 20.7 | 34.6 | 165.9 | 83.0 | 48.4 | 13.8 | 0.0 | 89.89 |
| 69.8 | 414.2 | 2637.3 | 299.9 | 211.7 | 158.8 | 17.6 | 0.0 | 35.3 | 52.9 | 114.7 | 61.7 | 61.7 | 26.5 | 0.0 | 114.66 |
| 69.9 | 412.0 | 2905.6 | 558.3 | 291.8 | 139.6 | 25.4 | 12.7 | 38.1 | 44.4 | 177.6 | 101.5 | 50.8 | 12.7 | 0.0 | 50.75 |
| 70.0 | 409.8 | 2897.5 | 355.4 | 273.3 | 182.2 | 0.0 | 9.1 | 27.3 | 27.3 | 164.0 | 72.9 | 18.2 | 0.0 | 0.0 | 82.00 |
| 70.1 | 407.7 | 2814.7 | 326.7 | 242.9 | 67.0 | 8.4 | 0.0 | 58.6 | 75.4 | 125.7 | 75.4 | 33.5 | 0.0 | 0.0 | 67.02 |
| 70.2 | 405.5 | 2535.5 | 297.3 | 271.0 | 122.4 | 17.5 | 0.0 | 17.5 | 52.5 | 52.5 | 43.7 | 96.2 | 8.7 | 0.0 | 96.17 |
| 70.3 | 403.3 | 2569.3 | 318.5 | 244.2 | 201.7 | 0.0 | 0.0 | 21.2 | 37.2 | 95.6 | 74.3 | 84.9 | 0.0 | 0.0 | 42.47 |
| 70.4 | 401.1 | 2423.9 | 337.9 | 314.6 | 116.5 | 0.0 | 0.0 | 46.6 | 75.7 | 93.2 | 139.8 | 11.7 | 0.0 | 0.0 | 69.92 |
| 70.5 | 398.9 | 2321.5 | 283.1 | 242.7 | 105.2 | 8.1 | 0.0 | 40.4 | 72.8 | 145.6 | 72.8 | 40.4 | 0.0 | 0.0 | 48.53 |
| 70.6 | 396.7 | 2730.5 | 328.5 | 212.1 | 68.4 | 13.7 | 0.0 | 34.2 | 61.6 | 130.0 | 61.6 | 27.4 | 0.0 | 0.0 | 136.87 |
| 70.7 | 394.6 | 2341.8 | 350.6 | 322.5 | 140.2 | 0.0 | 0.0 | 42.1 | 21.0 | 196.3 | 126.2 | 28.0 | 0.0 | 0.0 | 70.11 |
| 70.8 | 392.4 | 2724.4 | 354.3 | 259.8 | 102.4 | 23.6 | 0.0 | 7.9 | 39.4 | 94.5 | 78.7 | 31.5 | 0.0 | 0.0 | 102.36 |
| 70.9 | 390.2 | 2802.5 | 326.1 | 203.8 | 142.7 | 20.4 | 10.2 | 20.4 | 61.1 | 91.7 | 40.8 | 61.1 | 0.0 | 0.0 | 91.72 |
| 71.0 | 388.0 | 2582.1 | 371.5 | 543.6 | 117.8 | 0.0 | 0.0 | 9.1 | 99.7 | 126.8 | 126.8 | 63.4 | 0.0 | 0.0 | 135.90 |
| 71.1 | 385.9 | 2602.9 | 524.9 | 437.5 | 164.0 | 10.9 | 0.0 | 54.7 | 82.0 | 164.0 | 120.3 | 65.6 | 0.0 | 0.0 | 142.17 |
| 71.2 | 383.7 | 2574.0 | 416.8 | 219.4 | 153.6 | 14.6 | 7.3 | 29.3 | 117.0 | 160.9 | 73.1 | 43.9 | 0.0 | 0.0 | 73.13 |
| 71.3 | 381.5 | 2999.3 | 413.3 | 212.5 | 141.7 | 0.0 | 0.0 | 47.2 | 100.4 | 200.7 | 153.5 | 59.0 | 11.8 | 0.0 | 165.31 |
| 71.4 | 379.4 | 2698.6 | 562.7 | 447.6 | 115.1 | 0.0 | 0.0 | 76.7 | 108.7 | 217.4 | 127.9 | 38.4 | 0.0 | 0.0 | 166.27 |
| 71.5 | 377.2 | 2580.6 | 483.9 | 387.1 | 153.2 | 48.4 | 0.0 | 24.2 | 64.5 | 161.3 | 72.6 | 32.3 | 0.0 | 0.0 | 153.23 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71.6 | 375.0 | 2613.9 | 632.7 | 466.2 | 91.6 | 0.0 | 16.6 | 99.9 | 83.2 | 199.8 | 116.5 | 8.3 | 0.0 | 0.0 | 108.22 |
| 71.7 | 372.9 | 2664.5 | 517.0 | 371.2 | 119.3 | 0.0 | 0.0 | 79.5 | 19.9 | 185.6 | 132.6 | 26.5 | 0.0 | 0.0 | 92.79 |
| 71.8 | 370.7 | 2652.2 | 391.3 | 315.2 | 141.3 | 0.0 | 0.0 | 21.7 | 48.9 | 163.0 | 76.1 | 32.6 | 0.0 | 0.0 | 65.22 |
| 71.9 | 368.6 | 2102.4 | 391.4 | 327.6 | 145.6 | 9.1 | 9.1 | 36.4 | 81.9 | 127.4 | 100.1 | 63.7 | 0.0 | 9.1 | 18.20 |
| 72.0 | 366.4 | 1717.1 | 456.6 | 287.8 | 148.9 | 19.9 | 0.0 | 49.6 | 19.9 | 208.4 | 29.8 | 109.2 | 9.9 | 9.9 | 19.85 |
| 72.1 | 364.2 | 2558.6 | 368.0 | 490.7 | 140.2 | 17.5 | 0.0 | 87.6 | 26.3 | 149.0 | 78.9 | 52.6 | 17.5 | 0.0 | 96.39 |
| 72.2 | 362.1 | 2149.6 | 384.1 | 288.1 | 118.2 | 7.4 | 7.4 | 36.9 | 73.9 | 103.4 | 44.3 | 66.5 | 0.0 | 7.4 | 51.71 |
| 72.3 | 359.9 | 2572.5 | 389.8 | 341.0 | 146.2 | 0.0 | 0.0 | 68.2 | 63.3 | 185.1 | 136.4 | 19.5 | 9.7 | 0.0 | 116.93 |
| 72.4 | 357.8 | 2353.6 | 430.9 | 221.0 | 143.6 | 0.0 | 0.0 | 77.3 | 16.6 | 99.4 | 99.4 | 77.3 | 0.0 | 0.0 | 88.40 |
| 72.5 | 355.6 | 2311.1 | 469.8 | 368.3 | 177.8 | 12.7 | 0.0 | 38.1 | 82.5 | 165.1 | 101.6 | 25.4 | 0.0 | 0.0 | 76.19 |
| 72.6 | 353.5 | 2029.1 | 365.9 | 266.1 | 99.8 | 0.0 | 0.0 | 24.9 | 49.9 | 124.7 | 116.4 | 24.9 | 16.6 | 0.0 | 58.21 |
| 72.7 | 351.3 | 2249.3 | 394.2 | 313.0 | 139.1 | 0.0 | 0.0 | 34.8 | 29.0 | 173.9 | 46.4 | 34.8 | 11.6 | 11.6 | 104.35 |
| 72.8 | 349.2 | 2721.2 | 405.5 | 202.7 | 148.1 | 7.8 | 0.0 | 46.8 | 31.2 | 101.4 | 46.8 | 23.4 | 15.6 | 0.0 | 54.58 |
| 72.9 | 347.1 | 2366.5 | 484.8 | 277.1 | 115.4 | 23.1 | 0.0 | 46.2 | 28.9 | 184.7 | 115.4 | 46.2 | 11.5 | 0.0 | 34.63 |
| 73.0 | 344.9 | 2246.6 | 403.2 | 273.6 | 129.6 | 7.2 | 0.0 | 72.0 | 36.0 | 223.2 | 64.8 | 21.6 | 7.2 | 14.4 | 93.61 |
| 73.1 | 342.8 | 2247.6 | 428.4 | 266.9 | 91.3 | 7.0 | 14.0 | 84.3 | 21.1 | 168.6 | 42.1 | 0.0 | 0.0 | 0.0 | 63.21 |
| 73.2 | 340.6 | 2398.6 | 344.7 | 251.3 | 79.0 | 0.0 | 0.0 | 50.3 | 50.3 | 143.6 | 64.6 | 0.0 | 7.2 | 0.0 | 136.45 |
| 73.3 | 338.5 | 2417.4 | 348.6 | 236.1 | 179.9 | 22.5 | 0.0 | 33.7 | 50.6 | 191.1 | 90.0 | 0.0 | 11.2 | 0.0 | 56.22 |
| 73.4 | 336.4 | 2531.5 | 285.2 | 294.2 | 151.5 | 8.9 | 8.9 | 62.4 | 49.0 | 160.4 | 89.1 | 8.9 | 0.0 | 0.0 | 71.31 |
| 73.5 | 334.2 | 2512.9 | 267.1 | 509.9 | 109.3 | 12.1 | 0.0 | 133.5 | 36.4 | 157.8 | 109.3 | 0.0 | 12.1 | 0.0 | 109.26 |
| 73.6 | 332.1 | 2624.9 | 383.4 | 361.3 | 103.2 | 0.0 | 0.0 | 66.4 | 44.2 | 191.7 | 125.3 | 7.4 | 0.0 | 0.0 | 191.71 |
| 73.7 | 330.0 | 2886.1 | 354.4 | 313.9 | 111.4 | 0.0 | 10.1 | 81.0 | 40.5 | 192.4 | 91.1 | 10.1 | 0.0 | 0.0 | 81.01 |
| 73.8 | 327.8 | 2136.3 | 371.0 | 371.0 | 157.4 | 0.0 | 0.0 | 101.2 | 39.4 | 236.1 | 78.7 | 22.5 | 0.0 | 11.2 | 157.41 |
| 73.9 | 325.7 | 2740.9 | 232.4 | 387.4 | 174.3 | 9.7 | 0.0 | 29.1 | 33.9 | 222.8 | 87.2 | 0.0 | 0.0 | 9.7 | 125.91 |
| 74.0 | 323.6 | 2778.3 | 299.2 | 256.5 | 142.5 | 21.4 | 0.0 | 114.0 | 64.1 | 213.7 | 178.1 | 0.0 | 0.0 | 0.0 | 71.24 |
| 74.1 | 321.4 | 2797.3 | 368.9 | 307.4 | 169.1 | 0.0 | 0.0 | 46.1 | 69.2 | 153.7 | 76.8 | 7.7 | 0.0 | 0.0 | 69.16 |
| 74.2 | 319.3 | 2847.6 | 315.1 | 338.4 | 128.4 | 23.3 | 0.0 | 70.0 | 64.2 | 105.0 | 81.7 | 23.3 | 23.3 | 0.0 | 221.74 |
| 74.3 | 317.2 | 2774.3 | 376.6 | 330.5 | 130.6 | 30.7 | 0.0 | 61.5 | 38.4 | 161.4 | 69.2 | 0.0 | 0.0 | 7.7 | 92.22 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 74.4 | 315.1 | 2744.2 | 341.0 | 276.0 | 157.0 | 16.2 | 5.4 | 65.0 | 54.1 | 200.3 | 48.7 | 16.2 | 5.4 | 0.0 | 59.54 |
| 74.5 | 312.9 | 2715.2 | 407.3 | 184.2 | 155.2 | 0.0 | 0.0 | 58.2 | 29.1 | 145.5 | 48.5 | 0.0 | 9.7 | 9.7 | 126.06 |
| 74.6 | 310.8 | 2885.2 | 426.2 | 303.3 | 131.1 | 8.2 | 0.0 | 73.8 | 49.2 | 180.3 | 73.8 | 16.4 | 0.0 | 8.2 | 32.79 |
| 74.7 | 308.7 | 2739.5 | 291.2 | 218.4 | 145.6 | 18.2 | 0.0 | 54.6 | 36.4 | 227.5 | 18.2 | 0.0 | 9.1 | 0.0 | 54.61 |
| 74.8 | 306.6 | 2729.7 | 264.7 | 264.7 | 128.5 | 15.1 | 0.0 | 52.9 | 30.2 | 83.2 | 90.7 | 15.1 | 15.1 | 15.1 | 90.74 |
| 74.9 | 304.5 | 2361.6 | 282.6 | 222.0 | 127.8 | 0.0 | 6.7 | 67.3 | 47.1 | 94.2 | 53.8 | 6.7 | 6.7 | 6.7 | 67.28 |
| 75.0 | 302.4 | 2556.4 | 264.7 | 215.1 | 124.1 | 0.0 | 0.0 | 33.1 | 24.8 | 215.1 | 57.9 | 33.1 | 8.3 | 0.0 | 66.18 |
| 75.1 | 300.2 | 2582.5 | 245.3 | 288.5 | 129.8 | 7.2 | 0.0 | 43.3 | 43.3 | 173.1 | 28.9 | 14.4 | 0.0 | 0.0 | 115.42 |
| 75.2 | 298.1 | 2621.9 | 307.0 | 268.6 | 89.5 | 6.4 | 0.0 | 38.4 | 38.4 | 76.7 | 95.9 | 19.2 | 6.4 | 12.8 | 63.95 |
| 75.3 | 296.0 | 4019.6 | 235.7 | 301.1 | 144.0 | 13.1 | 0.0 | 39.3 | 26.2 | 235.7 | 0.0 | 26.2 | 52.4 | 0.0 | 39.28 |
| 75.4 | 293.9 | 2961.7 | 192.9 | 272.3 | 102.1 | 0.0 | 11.3 | 90.8 | 22.7 | 90.8 | 34.0 | 0.0 | 11.3 | 0.0 | 90.78 |
| 75.5 | 291.8 | 3114.7 | 245.6 | 206.8 | 129.2 | 12.9 | 0.0 | 12.9 | 45.2 | 168.0 | 77.5 | 25.8 | 0.0 | 0.0 | 219.71 |
| 75.6 | 289.7 | 3262.4 | 215.9 | 335.8 | 119.9 | 12.0 | 0.0 | 48.0 | 18.0 | 107.9 | 72.0 | 12.0 | 0.0 | 0.0 | 179.91 |
| 75.7 | 287.6 | 3186.9 | 308.4 | 233.6 | 196.3 | 0.0 | 0.0 | 56.1 | 9.3 | 74.8 | 46.7 | 18.7 | 9.3 | 0.0 | 289.72 |
| 75.8 | 285.5 | 3250.0 | 271.7 | 358.7 | 282.6 | 0.0 | 0.0 | 21.7 | 5.4 | 119.6 | 65.2 | 10.9 | 0.0 | 0.0 | 250.00 |
| 75.9 | 283.4 | 2851.7 | 266.2 | 349.8 | 83.7 | 7.6 | 7.6 | 68.4 | 22.8 | 83.7 | 76.0 | 7.6 | 0.0 | 22.8 | 182.51 |
| 76.0 | 281.3 | 3899.0 | 404.0 | 484.8 | 90.9 | 0.0 | 0.0 | 50.5 | 25.3 | 121.2 | 101.0 | 10.1 | 0.0 | 0.0 | 313.13 |
| 76.1 | 279.2 | 3096.8 | 296.3 | 430.1 | 238.9 | 19.1 | 0.0 | 19.1 | 114.7 | 172.0 | 9.6 | 0.0 | 0.0 | 0.0 | 76.46 |
| 76.2 | 277.1 | 3370.1 | 224.7 | 393.2 | 248.7 | 0.0 | 0.0 | 32.1 | 24.1 | 112.3 | 120.4 | 32.1 | 0.0 | 0.0 | 88.26 |
| 76.3 | 275.0 | 3559.3 | 339.0 | 491.5 | 203.4 | 0.0 | 0.0 | 50.8 | 25.4 | 152.5 | 101.7 | 0.0 | 16.9 | 33.9 | 169.49 |
| 76.4 | 272.9 | 3597.4 | 355.6 | 324.2 | 209.2 | 0.0 | 0.0 | 104.6 | 20.9 | 94.1 | 115.0 | 20.9 | 10.5 | 20.9 | 198.69 |
| 76.5 | 270.8 | 3657.1 | 378.8 | 496.3 | 248.2 | 0.0 | 13.1 | 65.3 | 32.7 | 143.7 | 143.7 | 13.1 | 26.1 | 26.1 | 222.04 |
| 76.6 | 268.7 | 3607.6 | 501.4 | 446.9 | 348.8 | 10.9 | 0.0 | 98.1 | 98.1 | 218.0 | 119.9 | 10.9 | 0.0 | 10.9 | 174.39 |
| 76.7 | 266.6 | 3112.1 | 254.1 | 444.6 | 232.9 | 10.6 | 0.0 | 52.9 | 13.2 | 116.4 | 84.7 | 10.6 | 10.6 | 10.6 | 158.78 |
| 76.8 | 264.5 | 3324.7 | 182.9 | 748.1 | 199.5 | 16.6 | 0.0 | 49.9 | 70.6 | 232.7 | 99.7 | 16.6 | 33.2 | 0.0 | 49.87 |
| 76.9 | 262.4 | 3419.0 | 245.7 | 448.7 | 171.0 | 0.0 | 0.0 | 42.7 | 45.4 | 256.4 | 32.1 | 74.8 | 21.4 | 0.0 | 74.79 |
| 77.0 | 260.3 | 3408.5 | 330.9 | 446.7 | 281.3 | 16.5 | 0.0 | 16.5 | 74.5 | 115.8 | 66.2 | 16.5 | 16.5 | 16.5 | 182.01 |
| 77.1 | 258.3 | 2791.6 | 337.2 | 674.5 | 356.0 | 0.0 | 0.0 | 18.7 | 56.2 | 131.1 | 131.1 | 56.2 | 0.0 | 0.0 | 168.62 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 77.2 | 256.2 | 3920.2 | 444.4 | 638.2 | 216.5 | 11.4 | 11.4 | 57.0 | 79.8 | 410.3 | 125.4 | 11.4 | 0.0 | 0.0 | 159.54 |
| 77.3 | 254.1 | 2978.1 | 423.4 | 540.1 | 204.4 | 0.0 | 0.0 | 43.8 | 14.6 | 262.8 | 29.2 | 14.6 | 0.0 | 0.0 | 58.39 |
| 77.4 | 252.0 | 3159.9 | 311.5 | 408.0 | 118.7 | 7.4 | 0.0 | 66.8 | 18.5 | 296.7 | 51.9 | 14.8 | 0.0 | 0.0 | 89.01 |
| 77.5 | 249.9 | 3153.5 | 219.7 | 478.2 | 193.9 | 0.0 | 0.0 | 25.8 | 38.8 | 232.6 | 51.7 | 38.8 | 0.0 | 12.9 | 90.47 |
| 77.6 | 247.8 | 2877.0 | 293.0 | 473.2 | 142.7 | 0.0 | 0.0 | 60.1 | 30.0 | 210.3 | 37.6 | 37.6 | 0.0 | 0.0 | 112.68 |
| 77.7 | 245.8 | 2535.6 | 175.7 | 393.3 | 167.4 | 0.0 | 0.0 | 58.6 | 33.5 | 326.4 | 66.9 | 0.0 | 8.4 | 0.0 | 92.05 |
| 77.8 | 243.7 | 3048.6 | 213.2 | 319.8 | 106.6 | 0.0 | 0.0 | 42.6 | 48.0 | 287.8 | 21.3 | 85.3 | 0.0 | 21.3 | 95.94 |
| 77.9 | 241.6 | 3751.5 | 394.0 | 438.7 | 143.3 | 0.0 | 0.0 | 17.9 | 40.3 | 241.7 | 53.7 | 44.8 | 0.0 | 9.0 | 107.44 |
| 78.0 | 239.5 | 3023.9 | 191.4 | 357.3 | 165.9 | 0.0 | 0.0 | 63.8 | 6.4 | 204.1 | 76.6 | 89.3 | 0.0 | 0.0 | 153.11 |
| 78.1 | 237.4 | 2446.5 | 346.4 | 357.2 | 216.5 | 0.0 | 10.8 | 54.1 | 10.8 | 173.2 | 65.0 | 75.8 | 0.0 | 0.0 | 184.03 |
| 78.2 | 235.4 | 3011.6 | 378.4 | 301.2 | 100.4 | 15.4 | 0.0 | 46.3 | 38.6 | 278.0 | 84.9 | 92.7 | 92.7 | 15.4 | 92.66 |
| 78.3 | 233.3 | 2562.0 | 305.8 | 355.4 | 198.3 | 0.0 | 8.3 | 74.4 | 49.6 | 247.9 | 82.6 | 74.4 | 8.3 | 8.3 | 66.12 |
| 78.4 | 231.2 | 2467.1 | 226.8 | 263.0 | 108.8 | 0.0 | 0.0 | 45.4 | 22.7 | 217.7 | 45.4 | 127.0 | 9.1 | 18.1 | 145.12 |
| 78.5 | 229.1 | 1836.3 | 231.5 | 351.3 | 47.9 | 16.0 | 0.0 | 24.0 | 47.9 | 231.5 | 79.8 | 47.9 | 0.0 | 0.0 | 79.84 |
| 78.6 | 227.1 | 2556.6 | 259.9 | 358.2 | 98.3 | 0.0 | 14.0 | 42.1 | 70.2 | 316.1 | 63.2 | 70.2 | 0.0 | 0.0 | 49.17 |
| 78.7 | 225.0 | 2463.1 | 274.8 | 427.5 | 183.2 | 0.0 | 10.2 | 101.8 | 76.3 | 274.8 | 112.0 | 152.7 | 0.0 | 0.0 | 101.78 |
| 78.8 | 222.9 | 3030.4 | 288.6 | 315.7 | 144.3 | 9.0 | 0.0 | 45.1 | 72.2 | 243.5 | 36.1 | 135.3 | 0.0 | 0.0 | 117.25 |
| 78.9 | 220.9 | 3077.7 | 300.5 | 279.8 | 248.7 | 0.0 | 10.4 | 82.9 | 51.8 | 321.2 | 72.5 | 103.6 | 0.0 | 0.0 | 248.70 |
| 79.0 | 218.8 | 2878.5 | 308.1 | 221.4 | 105.9 | 0.0 | 0.0 | 48.1 | 67.4 | 356.2 | 57.8 | 38.5 | 0.0 | 0.0 | 115.52 |
| 79.1 | 216.7 | 2270.0 | 253.4 | 275.5 | 132.2 | 0.0 | 22.0 | 77.1 | 88.2 | 253.4 | 44.1 | 0.0 | 0.0 | 0.0 | 110.19 |
| 79.2 | 214.7 | 2787.4 | 230.5 | 307.3 | 120.7 | 11.0 | 0.0 | 43.9 | 21.9 | 274.3 | 65.8 | 76.8 | 0.0 | 0.0 | 186.56 |
| 79.3 | 212.6 | 3435.4 | 342.2 | 273.7 | 164.2 | 0.0 | 13.7 | 123.2 | 58.2 | 355.9 | 95.8 | 41.1 | 0.0 | 27.4 | 136.87 |
| 79.4 | 210.6 | 3060.0 | 332.0 | 505.2 | 187.6 | 0.0 | 14.4 | 129.9 | 277.9 | 28.9 | 72.2 | 86.6 | 0.0 | 28.9 | 115.47 |
| 79.5 | 208.5 | 4805.2 | 515.3 | 631.2 | 231.9 | 0.0 | 25.8 | 128.8 | 96.6 | 322.1 | 90.2 | 77.3 | 12.9 | 0.0 | 219.00 |
| 79.6 | 206.4 | 2690.1 | 242.4 | 281.5 | 195.5 | 0.0 | 0.0 | 62.6 | 39.1 | 172.0 | 31.3 | 31.3 | 0.0 | 7.8 | 86.02 |
| 79.7 | 204.4 | 1522.0 | 128.2 | 172.8 | 55.7 | 0.0 | 0.0 | 44.6 | 22.3 | 83.6 | 27.9 | 5.6 | 0.0 | 0.0 | 44.60 |
| 79.8 | 202.3 | 2651.9 | 256.4 | 318.2 | 88.4 | 35.4 | 0.0 | 53.0 | 79.6 | 203.3 | 44.2 | 44.2 | 0.0 | 8.8 | 88.40 |
| 79.9 | 200.3 | 2902.8 | 336.9 | 276.5 | 138.2 | 8.6 | 0.0 | 43.2 | 51.8 | 250.5 | 43.2 | 25.9 | 0.0 | 0.0 | 112.31 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80.0 | 198.2 | 2474.7 | 364.9 | 319.3 | 193.9 | 22.8 | 11.4 | 79.8 | 51.3 | 136.8 | 102.6 | 0.0 | 11.4 | 0.0 | 68.42 |
| 80.1 | 196.1 | 2685.6 | 249.3 | 260.6 | 102.0 | 0.0 | 0.0 | 56.7 | 73.7 | 170.0 | 22.7 | 0.0 | 0.0 | 0.0 | 181.30 |
| 80.2 | 194.1 | 2854.4 | 240.6 | 240.6 | 98.4 | 0.0 | 43.7 | 76.6 | 60.2 | 142.2 | 21.9 | 0.0 | 0.0 | 10.9 | 131.24 |
| 80.3 | 192.0 | 2406.6 | 196.9 | 175.0 | 102.1 | 0.0 | 0.0 | 43.8 | 29.2 | 124.0 | 36.5 | 21.9 | 14.6 | 0.0 | 80.22 |
| 80.4 | 190.0 | 2901.6 | 262.5 | 414.5 | 193.4 | 13.8 | 0.0 | 55.3 | 20.7 | 165.8 | 55.3 | 27.6 | 0.0 | 13.8 | 110.54 |
| 80.5 | 187.9 | 1664.3 | 255.3 | 302.6 | 104.0 | 0.0 | 0.0 | 75.7 | 56.7 | 94.6 | 47.3 | 28.4 | 0.0 | 0.0 | 189.13 |
| 80.6 | 185.9 | 2968.6 | 261.9 | 316.5 | 174.6 | 10.9 | 0.0 | 87.3 | 49.1 | 185.5 | 98.2 | 0.0 | 0.0 | 10.9 | 174.62 |
| 80.7 | 183.8 | 2972.6 | 219.5 | 349.1 | 89.8 | 0.0 | 0.0 | 49.9 | 39.9 | 49.9 | 99.8 | 20.0 | 0.0 | 10.0 | 139.65 |
| 80.8 | 181.8 | 2366.3 | 188.1 | 383.9 | 164.5 | 0.0 | 0.0 | 133.2 | 39.2 | 133.2 | 62.7 | 7.8 | 7.8 | 15.7 | 117.53 |
| 80.9 | 179.8 | 2582.7 | 180.8 | 361.6 | 142.1 | 0.0 | 0.0 | 64.6 | 90.4 | 148.5 | 45.2 | 25.8 | 12.9 | 12.9 | 96.85 |
| 81.0 | 177.7 | 2234.0 | 251.7 | 31.5 | 86.5 | 0.0 | 0.0 | 15.7 | 70.8 | 133.7 | 47.2 | 7.9 | 0.0 | 7.9 | 102.26 |
| 81.1 | 175.7 | 2643.6 | 199.8 | 315.1 | 115.3 | 0.0 | 7.7 | 99.9 | 46.1 | 146.0 | 30.7 | 7.7 | 0.0 | 0.0 | 92.22 |
| 81.2 | 173.6 | 2530.9 | 313.4 | 336.9 | 0.0 | 0.0 | 0.0 | 70.5 | 54.8 | 125.4 | 54.8 | 15.7 | 15.7 | 7.8 | 47.01 |
| 81.3 | 171.6 | 3139.8 | 161.3 | 354.8 | 75.3 | 0.0 | 0.0 | 129.0 | 91.4 | 172.0 | 53.8 | 21.5 | 0.0 | 10.8 | 172.04 |
| 81.4 | 169.5 | 2295.9 | 304.8 | 345.4 | 91.4 | 0.0 | 0.0 | 111.7 | 35.6 | 132.1 | 40.6 | 10.2 | 0.0 | 20.3 | 101.59 |
| 81.5 | 167.5 | 3197.9 | 298.2 | 421.6 | 123.4 | 20.6 | 0.0 | 164.5 | 30.8 | 92.5 | 61.7 | 0.0 | 10.3 | 10.3 | 164.52 |
| 81.6 | 165.5 | 1817.1 | 233.2 | 225.1 | 72.4 | 0.0 | 8.0 | 120.6 | 48.2 | 120.6 | 32.2 | 8.0 | 0.0 | 0.0 | 120.60 |
| 81.7 | 163.4 | 2790.0 | 266.4 | 273.8 | 140.6 | 7.4 | 7.4 | 96.2 | 29.6 | 96.2 | 51.8 | 29.6 | 14.8 | 7.4 | 88.81 |
| 81.8 | 161.4 | 2376.4 | 181.4 | 393.0 | 90.7 | 12.1 | 0.0 | 90.7 | 96.7 | 54.4 | 24.2 | 0.0 | 6.0 | 0.0 | 102.80 |
| 81.9 | 159.3 | 2511.3 | 279.7 | 396.2 | 81.6 | 5.8 | 0.0 | 110.7 | 46.6 | 40.8 | 35.0 | 17.5 | 5.8 | 0.0 | 116.53 |
| 82.0 | 157.3 | 1503.1 | 242.2 | 320.6 | 99.7 | 7.1 | 7.1 | 64.1 | 42.7 | 57.0 | 28.5 | 7.1 | 7.1 | 7.1 | 121.10 |
| 82.1 | 155.3 | 3109.6 | 194.9 | 248.1 | 97.5 | 17.7 | 0.0 | 88.6 | 62.0 | 53.2 | 35.4 | 53.2 | 0.0 | 0.0 | 106.31 |
| 82.2 | 153.2 | | | | | | | | | | | | | | 0.00 |
| 82.3 | 151.2 | 2567.3 | 211.5 | 288.5 | 163.5 | 9.6 | 0.0 | 105.8 | 62.5 | 86.5 | 76.9 | 28.8 | 0.0 | 19.2 | 115.38 |
| 82.4 | 149.2 | 2422.3 | 269.9 | 321.0 | 124.0 | 0.0 | 0.0 | 124.0 | 76.6 | 116.7 | 36.5 | 21.9 | 0.0 | 0.0 | 167.81 |
| 82.5 | 147.1 | 4638.2 | 303.3 | 707.7 | 252.8 | 0.0 | 0.0 | 164.3 | 107.4 | 265.4 | 75.8 | 12.6 | 25.3 | 12.6 | 315.96 |
| 82.6 | 145.1 | 2570.1 | 252.6 | 230.3 | 170.8 | 7.4 | 0.0 | 81.7 | 66.9 | 66.9 | 44.6 | 22.3 | 7.4 | 7.4 | 170.84 |
| 82.7 | 143.1 | 2345.5 | 237.3 | 349.0 | 83.8 | 7.0 | 0.0 | 139.6 | 48.9 | 111.7 | 27.9 | 7.0 | 14.0 | 7.0 | 97.73 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 82.8 | 141.1 | 3726.0 | 271.4 | 271.4 | 146.1 | 20.9 | 0.0 | 135.7 | 78.3 | 135.7 | 62.6 | 10.4 | 0.0 | 31.3 | 166.99 |
| 82.9 | 139.0 | 2544.4 | 172.1 | 359.2 | 157.2 | 0.0 | 15.0 | 82.3 | 52.4 | 179.6 | 59.9 | 7.5 | 15.0 | 22.5 | 112.25 |
| 83.0 | 137.0 | 2381.0 | 269.8 | 285.7 | 103.2 | 0.0 | 0.0 | 63.5 | 95.2 | 134.9 | 79.4 | 15.9 | 0.0 | 7.9 | 134.92 |
| 83.1 | 135.0 | 3167.4 | 231.1 | 380.6 | 68.0 | 0.0 | 27.2 | 217.5 | 156.3 | 149.5 | 81.6 | 13.6 | 0.0 | 13.6 | 163.13 |
| 83.2 | 133.0 | 3090.1 | 219.7 | 233.5 | 151.1 | 13.7 | 0.0 | 109.9 | 61.8 | 82.4 | 96.1 | 0.0 | 27.5 | 0.0 | 109.87 |
| 83.3 | 130.9 | 3205.3 | 210.2 | 302.1 | 78.8 | 0.0 | 26.3 | 65.7 | 124.8 | 92.0 | 131.4 | 52.5 | 26.3 | 39.4 | 183.91 |
| 83.4 | 128.9 | 3888.5 | 271.5 | 242.4 | 97.0 | 0.0 | 9.7 | 135.8 | 155.2 | 106.7 | 38.8 | 19.4 | 9.7 | 19.4 | 164.85 |
| 83.5 | 126.9 | 3319.2 | 268.8 | 397.4 | 105.2 | 11.7 | 0.0 | 81.8 | 99.3 | 105.2 | 93.5 | 11.7 | 0.0 | 0.0 | 70.12 |
| 83.6 | 124.9 | 2969.3 | 291.6 | 344.7 | 66.3 | 0.0 | 0.0 | 106.0 | 46.4 | 119.3 | 39.8 | 39.8 | 0.0 | 0.0 | 79.54 |
| 83.7 | 122.8 | 2721.7 | 275.3 | 275.3 | 102.3 | 7.9 | 7.9 | 125.9 | 102.3 | 118.0 | 39.3 | 7.9 | 0.0 | 0.0 | 70.80 |
| 83.8 | 120.8 | 2865.8 | 207.8 | 346.3 | 51.9 | 8.7 | 0.0 | 121.2 | 129.9 | 138.5 | 69.3 | 26.0 | 0.0 | 8.7 | 51.95 |
| 83.9 | 118.8 | 2839.1 | 229.9 | 425.3 | 69.0 | 0.0 | 11.5 | 80.5 | 51.7 | 137.9 | 34.5 | 11.5 | 11.5 | 0.0 | 195.40 |
| 84.0 | 116.8 | 2871.8 | 282.1 | 222.2 | 59.8 | 0.0 | 0.0 | 111.1 | 102.6 | 128.2 | 51.3 | 17.1 | 0.0 | 17.1 | 34.19 |
| 84.1 | 114.8 | 3235.2 | 333.7 | 315.2 | 46.3 | 0.0 | 0.0 | 148.3 | 55.6 | 120.5 | 64.9 | 27.8 | 0.0 | 18.5 | 83.43 |
| 84.2 | 112.7 | 3450.5 | 295.4 | 319.1 | 82.7 | 0.0 | 11.8 | 153.6 | 29.5 | 118.2 | 35.5 | 11.8 | 0.0 | 0.0 | 70.90 |
| 84.3 | 110.7 | 2679.0 | 245.8 | 368.7 | 36.9 | 0.0 | 0.0 | 73.7 | 67.6 | 61.4 | 73.7 | 24.6 | 0.0 | 0.0 | 110.60 |
| 84.4 | 108.7 | 3342.1 | 260.2 | 330.2 | 80.1 | 30.0 | 0.0 | 70.0 | 65.0 | 120.1 | 120.1 | 20.0 | 0.0 | 10.0 | 130.08 |
| 84.5 | 106.7 | 3184.6 | 270.2 | 328.1 | 67.6 | 9.7 | 0.0 | 212.3 | 67.6 | 96.5 | 86.9 | 19.3 | 0.0 | 9.7 | 86.85 |
| 84.6 | 104.7 | 2444.1 | 193.8 | 355.3 | 86.1 | 0.0 | 10.8 | 75.4 | 64.6 | 96.9 | 64.6 | 43.1 | 0.0 | 10.8 | 75.37 |
| 84.7 | 102.7 | 3131.9 | 190.6 | 367.7 | 95.3 | 0.0 | 0.0 | 217.9 | 88.5 | 68.1 | 95.3 | 13.6 | 0.0 | 13.6 | 217.87 |
| 84.8 | 100.7 | 2457.2 | 305.7 | 339.7 | 34.0 | 11.3 | 11.3 | 158.5 | 62.3 | 169.9 | 34.0 | 0.0 | 0.0 | 11.3 | 56.62 |
| 84.9 | 98.7 | 2367.9 | 240.8 | 327.8 | 40.1 | 26.8 | 0.0 | 87.0 | 66.9 | 87.0 | 13.4 | 13.4 | 0.0 | 6.7 | 120.40 |
| 85.0 | 96.6 | 2009.1 | 245.5 | 309.1 | 45.5 | 0.0 | 0.0 | 90.9 | 54.5 | 109.1 | 63.6 | 0.0 | 0.0 | 9.1 | 109.09 |
| 85.1 | 94.6 | 3022.4 | 269.3 | 269.3 | 79.8 | 10.0 | 0.0 | 99.8 | 79.8 | 129.7 | 49.9 | 0.0 | 0.0 | 10.0 | 49.88 |
| 85.2 | 92.6 | 2452.3 | 240.4 | 420.7 | 96.2 | 0.0 | 24.0 | 60.1 | 138.2 | 132.2 | 24.0 | 0.0 | 0.0 | 0.0 | 144.25 |
| 85.3 | 90.6 | 2390.0 | 230.5 | 315.1 | 107.6 | 0.0 | 0.0 | 76.8 | 69.2 | 99.9 | 69.2 | 7.7 | 0.0 | 0.0 | 92.22 |
| 85.4 | 88.6 | 1726.8 | 209.1 | 357.5 | 101.2 | 20.2 | 0.0 | 128.2 | 40.5 | 101.2 | 80.9 | 0.0 | 6.7 | 13.5 | 53.96 |
| 85.5 | 86.6 | 2264.2 | 260.7 | 336.2 | 82.3 | 0.0 | 0.0 | 61.7 | 68.6 | 96.1 | 54.9 | 34.3 | 0.0 | 0.0 | 89.19 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 85.6 | 84.6 | 2202.9 | 276.5 | 276.5 | 71.3 | 0.0 | 0.0 | 160.5 | 98.1 | 142.7 | 89.2 | 8.9 | 0.0 | 0.0 | 142.70 |
| 85.7 | 82.6 | 2176.6 | 231.5 | 405.2 | 127.4 | 0.0 | 23.2 | 92.6 | 191.0 | 196.8 | 34.7 | 11.6 | 0.0 | 0.0 | 196.82 |
| 85.8 | 80.6 | 2218.7 | 263.0 | 205.9 | 148.7 | 0.0 | 0.0 | 102.9 | 154.4 | 160.1 | 68.6 | 11.4 | 0.0 | 11.4 | 91.49 |
| 85.9 | 78.6 | 1867.0 | 241.8 | 386.9 | 154.8 | 0.0 | 0.0 | 106.4 | 149.9 | 125.8 | 67.7 | 0.0 | 0.0 | 0.0 | 77.39 |
| 86.0 | 76.6 | 1490.0 | 191.2 | 167.3 | 79.7 | 8.0 | 0.0 | 151.4 | 103.6 | 159.4 | 39.8 | 8.0 | 8.0 | 0.0 | 71.71 |
| 86.1 | 74.6 | 1853.8 | 239.2 | 265.8 | 132.9 | 0.0 | 0.0 | 139.5 | 126.2 | 212.6 | 59.8 | 6.6 | 0.0 | 0.0 | 126.25 |
| 86.2 | 72.6 | 1832.8 | 180.9 | 236.0 | 47.2 | 15.7 | 15.7 | 141.6 | 149.5 | 180.9 | 47.2 | 0.0 | 0.0 | 7.9 | 47.20 |
| 86.3 | 70.6 | 2515.4 | 345.3 | 315.7 | 88.8 | 9.9 | 0.0 | 177.6 | 172.6 | 256.5 | 69.1 | 9.9 | 0.0 | 0.0 | 69.05 |
| 86.4 | 68.6 | 2812.2 | 333.9 | 526.5 | 128.4 | 25.7 | 12.8 | 141.3 | 109.1 | 282.5 | 64.2 | 0.0 | 0.0 | 0.0 | 64.21 |
| 86.5 | 66.6 | 1961.0 | 278.6 | 512.5 | 55.7 | 0.0 | 0.0 | 178.3 | 161.6 | 200.6 | 89.1 | 11.1 | 0.0 | 0.0 | 122.56 |
| 86.6 | 64.6 | 2121.1 | 210.3 | 493.7 | 73.1 | 0.0 | 0.0 | 118.9 | 137.1 | 201.1 | 100.6 | 9.1 | 0.0 | 9.1 | 91.43 |
| 86.7 | 62.6 | 1877.0 | 272.5 | 514.7 | 83.3 | 15.1 | 0.0 | 75.7 | 128.7 | 211.9 | 15.1 | 0.0 | 0.0 | 0.0 | 151.37 |
| 86.8 | 60.6 | 2365.3 | 193.3 | 398.0 | 136.5 | 0.0 | 0.0 | 125.1 | 153.5 | 295.7 | 68.2 | 0.0 | 0.0 | 0.0 | 113.72 |
| 86.9 | 58.6 | 1120.5 | 104.4 | 261.0 | 32.1 | 8.0 | 0.0 | 48.2 | 48.2 | 88.4 | 36.1 | 4.0 | 0.0 | 4.0 | 48.19 |
| 87.0 | 56.6 | 2810.0 | 215.1 | 602.2 | 114.7 | 14.3 | 0.0 | 172.0 | 121.9 | 200.7 | 86.0 | 0.0 | 0.0 | 0.0 | 71.68 |
| 87.1 | 54.6 | 2541.7 | 225.0 | 450.0 | 33.3 | 8.3 | 0.0 | 141.7 | 75.0 | 300.0 | 66.7 | 0.0 | 0.0 | 16.7 | 133.33 |
| 87.2 | 52.6 | 5301.9 | 306.3 | 1107.5 | 141.4 | 0.0 | 0.0 | 259.2 | 106.0 | 494.8 | 212.1 | 0.0 | 0.0 | 0.0 | 353.46 |
| 87.3 | 50.6 | 2390.2 | 349.2 | 436.6 | 21.8 | 10.9 | 0.0 | 98.2 | 87.3 | 229.2 | 65.5 | 10.9 | 0.0 | 0.0 | 109.14 |
| 87.4 | 48.6 | 2328.0 | 201.1 | 444.4 | 95.2 | 21.2 | 0.0 | 95.2 | 37.0 | 179.9 | 21.2 | 0.0 | 0.0 | 10.6 | 148.15 |
| 87.5 | 46.6 | 2326.6 | 187.9 | 528.0 | 98.4 | 8.9 | 0.0 | 71.6 | 53.7 | 170.0 | 62.6 | 0.0 | 0.0 | 8.9 | 170.02 |
| 87.6 | 44.6 | 2717.5 | 228.6 | 516.4 | 50.8 | 0.0 | 0.0 | 76.2 | 76.2 | 237.0 | 33.9 | 16.9 | 0.0 | 8.5 | 110.05 |
| 87.7 | 42.6 | 2580.3 | 176.7 | 483.1 | 153.2 | 0.0 | 0.0 | 106.0 | 11.8 | 247.4 | 94.3 | 11.8 | 0.0 | 0.0 | 82.47 |
| 87.8 | 40.6 | 2984.3 | 225.7 | 664.6 | 62.7 | 12.5 | 0.0 | 25.1 | 18.8 | 225.7 | 137.9 | 12.5 | 0.0 | 0.0 | 87.77 |
| 87.9 | 38.7 | 1897.2 | 154.9 | 464.6 | 77.4 | 29.0 | 0.0 | 58.1 | 24.2 | 96.8 | 48.4 | 0.0 | 0.0 | 9.7 | 183.91 |
| 88.0 | 36.7 | 2161.8 | 228.4 | 411.0 | 83.7 | 7.6 | 0.0 | 45.7 | 7.6 | 152.2 | 60.9 | 15.2 | 0.0 | 15.2 | 129.40 |
| 88.1 | 34.7 | 2464.3 | 178.6 | 488.1 | 71.4 | 0.0 | 0.0 | 59.5 | 6.0 | 142.9 | 11.9 | 0.0 | 0.0 | 11.9 | 142.86 |
| 88.2 | 32.7 | 2262.6 | 195.3 | 303.0 | 47.1 | 6.7 | 0.0 | 67.3 | 20.2 | 188.6 | 40.4 | 13.5 | 6.7 | 13.5 | 94.28 |
| 88.3 | 30.7 | 2407.4 | 272.5 | 261.2 | 45.4 | 11.4 | 0.0 | 79.5 | 17.0 | 272.5 | 79.5 | 11.4 | 0.0 | 11.4 | 34.07 |

**CAR7-2**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 88.4 | 28.7 | 2081.4 | 209.3 | 581.4 | 81.4 | 0.0 | 0.0 | 69.8 | 29.1 | 197.7 | 58.1 | 23.3 | 0.0 | 23.3 | 151.16 |
| 88.5 | 26.7 | 2976.2 | 167.8 | 391.6 | 44.8 | 0.0 | 0.0 | 78.3 | 50.3 | 145.5 | 123.1 | 11.2 | 0.0 | 11.2 | 246.15 |
| 88.6 | 24.7 | 2677.4 | 176.9 | 369.8 | 72.4 | 16.1 | 0.0 | 40.2 | 24.1 | 201.0 | 40.2 | 16.1 | 0.0 | 0.0 | 88.44 |
| 88.7 | 22.8 | 2442.0 | 229.9 | 388.5 | 63.4 | 0.0 | 0.0 | 47.6 | 23.8 | 150.6 | 55.5 | 0.0 | 0.0 | 39.6 | 71.36 |
| 88.8 | 20.8 | 1920.9 | 323.7 | 287.8 | 50.4 | 7.2 | 0.0 | 14.4 | 28.8 | 230.2 | 64.7 | 7.2 | 0.0 | 0.0 | 71.94 |
| 88.9 | 18.8 | 2082.6 | 182.0 | 276.3 | 47.2 | 13.5 | 0.0 | 60.7 | 33.7 | 134.8 | 53.9 | 27.0 | 0.0 | 40.4 | 101.10 |
| 89.0 | 16.8 | 2910.2 | 212.1 | 271.0 | 58.9 | 0.0 | 0.0 | 35.3 | 17.7 | 235.6 | 82.5 | 23.6 | 0.0 | 0.0 | 70.69 |
| 89.1 | 14.8 | 1826.3 | 288.8 | 163.9 | 54.6 | 7.8 | 0.0 | 54.6 | 15.6 | 163.9 | 93.7 | 0.0 | 0.0 | 7.8 | 78.05 |
| 89.2 | 12.8 | 2188.9 | 399.6 | 251.9 | 8.7 | 8.7 | 0.0 | 69.5 | 52.1 | 121.6 | 95.5 | 8.7 | 0.0 | 8.7 | 26.06 |
| 89.3 | 10.9 | 2208.2 | 280.7 | 374.3 | 37.4 | 18.7 | 0.0 | 37.4 | 46.8 | 224.6 | 46.8 | 18.7 | 0.0 | 9.4 | 74.85 |
| 89.4 | 8.9 | 1965.5 | 172.4 | 212.6 | 40.2 | 11.5 | 5.7 | 40.2 | 34.5 | 137.9 | 69.0 | 17.2 | 0.0 | 23.0 | 103.45 |
| 89.5 | 6.9 | 2668.6 | 324.9 | 452.5 | 58.0 | 11.6 | 0.0 | 92.8 | 40.6 | 150.8 | 139.2 | 23.2 | 11.6 | 11.6 | 58.01 |
| 89.6 | 4.9 | 1873.7 | 256.2 | 270.8 | 36.6 | 0.0 | 14.6 | 14.6 | 43.9 | 124.4 | 65.9 | 14.6 | 0.0 | 7.3 | 146.39 |
| 89.7 | 2.9 | 1917.4 | 288.5 | 282.5 | 48.1 | 6.0 | 6.0 | 36.1 | 60.1 | 150.3 | 48.1 | 12.0 | 0.0 | 6.0 | 36.06 |
| 89.8 | 1.0 | 4538.1 | 488.2 | 510.4 | 133.1 | 0.0 | 0.0 | 55.5 | 66.6 | 310.7 | 55.5 | 22.2 | 0.0 | 11.1 | 188.63 |
| 89.9 | -1.0 | 1760.9 | 320.7 | 279.9 | 64.1 | 5.8 | 5.8 | 58.3 | 17.5 | 139.9 | 81.6 | 11.7 | 0.0 | 0.0 | 145.77 |
| 90.0 | -3.0 | 1602.6 | 292.0 | 292.0 | 26.0 | 0.0 | 0.0 | 32.4 | 26.0 | 207.6 | 32.4 | 6.5 | 0.0 | 0.0 | 97.32 |
| 90.1 | -5.0 | 1896.5 | 375.5 | 259.9 | 57.8 | 0.0 | 0.0 | 19.3 | 48.1 | 163.7 | 144.4 | 38.5 | 0.0 | 0.0 | 154.03 |
| 90.2 | -7.0 | 2077.9 | 311.7 | 233.8 | 43.3 | 0.0 | 0.0 | 43.3 | 34.6 | 164.5 | 43.3 | 8.7 | 0.0 | 0.0 | 86.58 |
| 90.3 | -8.9 | 986.2 | 186.7 | 143.6 | 23.9 | 0.0 | 0.0 | 14.4 | 14.4 | 57.5 | 28.7 | 9.6 | 0.0 | 4.8 | 62.24 |
| 90.4 | -10.9 | 1057.4 | 124.7 | 114.7 | 10.0 | 20.0 | 0.0 | 10.0 | 15.0 | 59.9 | 10.0 | 20.0 | 0.0 | 5.0 | 99.75 |
| 90.5 | -12.9 | 1831.1 | 203.5 | 130.2 | 48.8 | 8.1 | 0.0 | 24.4 | 8.1 | 122.1 | 48.8 | 0.0 | 0.0 | 8.1 | 73.25 |
| 90.6 | -14.9 | 2025.1 | 193.9 | 165.2 | 50.3 | 7.2 | 0.0 | 7.2 | 21.5 | 122.1 | 0.0 | 7.2 | 0.0 | 7.2 | 71.81 |
| 90.7 | -16.8 | 1875.4 | 262.3 | 157.4 | 45.9 | 0.0 | 0.0 | 19.7 | 39.3 | 85.2 | 13.1 | 6.6 | 0.0 | 6.6 | 111.48 |
| 90.8 | -18.8 | 1121.4 | 111.0 | 177.7 | 77.7 | 5.6 | 0.0 | 5.6 | 44.4 | 50.0 | 22.2 | 16.7 | 5.6 | 0.0 | 33.31 |
| 90.9 | -20.8 | 1656.4 | 203.8 | 193.3 | 20.9 | 5.2 | 0.0 | 36.6 | 36.6 | 135.9 | 26.1 | 10.5 | 0.0 | 10.5 | 52.25 |

**PL07-72GGC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *G. r (p)* #/g | *O. u* #/g | *G. c* #/g | Other #/g |
|---|---|---|---|---|---|---|
| 0.0 | 1362.4 | 993.3 | 14.8 | 200.1 | 51.9 | 1052.6 |
| 1.0 | 1358.0 | 1286.4 | 9.3 | 157.3 | 83.3 | 1314.2 |
| 2.0 | 1353.6 | 1418.2 | 53.0 | 291.6 | 66.3 | 1391.7 |
| 3.0 | 1349.2 | 2467.0 | 75.3 | 489.6 | 94.2 | 1431.3 |
| 4.0 | 1344.8 | 1314.1 | 90.8 | 192.3 | 128.2 | 1148.5 |
| 5.0 | 1340.4 | 1094.3 | 62.7 | 353.4 | 91.2 | 769.4 |
| 6.0 | 1336.0 | 1521.3 | 85.9 | 171.9 | 128.9 | 962.6 |
| 7.0 | 1331.6 | 789.7 | 107.1 | 190.5 | 158.7 | 678.6 |
| 8.0 | 1327.2 | 1007.7 | 91.2 | 95.4 | 165.9 | 580.6 |
| 9.0 | 1322.8 | 296.7 | 28.8 | 34.6 | 51.9 | 394.7 |
| 10.0 | 1318.4 | 889.8 | 56.2 | 64.8 | 56.2 | 578.8 |
| 11.0 | 1314.0 | 594.4 | 118.1 | 160.0 | 38.1 | 621.1 |
| 12.0 | 1309.6 | 1705.6 | 115.1 | 295.1 | 93.6 | 1194.7 |
| 13.0 | 1305.2 | 1484.9 | 135.6 | 235.6 | 142.8 | 1113.7 |
| 14.0 | 1300.8 | 1255.4 | 122.3 | 211.6 | 136.4 | 1255.4 |
| 15.0 | 1296.4 | 2250.1 | 50.2 | 223.6 | 118.7 | 1214.1 |
| 16.0 | 1292.0 | 1279.8 | 22.9 | 325.7 | 137.1 | 1114.1 |
| 17.0 | 1287.6 | 1759.2 | 116.9 | 289.1 | 36.9 | 1328.6 |
| 18.0 | 1283.2 | 1797.2 | 67.6 | 191.5 | 67.6 | 923.9 |
| 19.0 | 1278.8 | 1450.3 | 5.7 | 193.4 | 28.4 | 870.2 |
| 20.0 | 1274.4 | 5925.9 | 100.9 | 1235.6 | 75.7 | 4766.0 |
| 21.0 | 1270.0 | 1703.9 | 67.0 | 275.3 | 0.0 | 1153.3 |
| 22.0 | 1265.6 | 2862.3 | 87.7 | 422.6 | 0.0 | 1793.9 |
| 23.0 | 1261.2 | 2630.1 | 26.4 | 251.1 | 0.0 | 1440.6 |
| 24.0 | 1256.8 | 2092.1 | 28.8 | 307.1 | 0.0 | 1909.8 |
| 25.0 | 1252.4 | 2257.1 | 53.2 | 362.0 | 0.0 | 1373.4 |
| 26.0 | 1248.0 | 3051.4 | 36.9 | 221.5 | 0.0 | 1784.1 |
| 27.0 | 1243.6 | 2138.9 | 36.9 | 122.9 | 0.0 | 1192.4 |

**PL07-72GGC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *G. r (p)* #/g | *O. u* #/g | *G. c* #/g | Other #/g |
|---|---|---|---|---|---|---|
| 28.0 | 1239.2 | 3263.2 | 151.8 | 379.4 | 0.0 | 1770.8 |
| 29.0 | 1234.8 | 1563.7 | 110.6 | 292.2 | 0.0 | 1295.2 |
| 30.0 | 1230.4 | 889.4 | 140.4 | 130.7 | 0.0 | 895.5 |
| 31.0 | 1226.0 | 715.3 | 215.2 | 83.1 | 0.0 | 582.0 |
| 32.0 | 1217.3 | 1632.5 | 265.4 | 177.0 | 5.9 | 1156.2 |
| 33.0 | 1208.7 | 2153.3 | 379.8 | 244.2 | 0.0 | 1311.2 |
| 34.0 | 1200.0 | 1549.1 | 94.9 | 189.8 | 8.3 | 767.3 |
| 35.0 | 1186.5 | 816.3 | 107.5 | 63.5 | 0.0 | 444.8 |
| 36.0 | 1172.9 | 1133.0 | 161.2 | 173.6 | 6.2 | 657.2 |
| 37.0 | 1159.4 | 1342.4 | 153.6 | 73.9 | 0.0 | 904.4 |
| 38.0 | 1145.8 | 1908.7 | 184.8 | 308.0 | 0.0 | 1188.1 |
| 39.0 | 1132.3 | 1621.1 | 200.0 | 273.7 | 0.0 | 1800.0 |
| 40.0 | 1118.7 | 1260.6 | 79.1 | 79.1 | 4.7 | 655.9 |
| 41.0 | 1105.2 | 1752.0 | 135.7 | 111.0 | 12.3 | 1258.5 |
| 42.0 | 1091.6 | 2761.4 | 318.6 | 331.9 | 0.0 | 1632.9 |
| 43.0 | 1078.1 | 3805.1 | 495.7 | 535.9 | 26.8 | 2518.8 |
| 44.0 | 1064.5 | 3014.4 | 375.2 | 362.7 | 12.5 | 2013.8 |
| 45.0 | 1051.0 | 1579.3 | 157.2 | 247.0 | 0.0 | 1309.9 |
| 46.0 | 1037.4 | 1951.8 | 207.4 | 237.9 | 6.1 | 1097.9 |
| 47.0 | 1023.9 | 2007.8 | 125.5 | 156.9 | 0.0 | 1537.3 |
| 48.0 | 1010.3 | 1955.5 | 176.4 | 279.4 | 0.0 | 1624.7 |
| 49.0 | 996.8 | 3073.1 | 246.5 | 147.9 | 0.0 | 2004.9 |
| 50.0 | 983.2 | 1846.5 | 72.9 | 137.7 | 16.2 | 1498.3 |
| 51.0 | 969.7 | 1763.7 | 78.5 | 164.2 | 0.0 | 1842.2 |
| 52.0 | 956.1 | 1963.7 | 61.8 | 185.5 | 0.0 | 2156.9 |
| 53.0 | 942.6 | 3146.1 | 55.0 | 275.2 | 0.0 | 2412.3 |
| 54.0 | 929.0 | 2919.8 | 10.9 | 217.9 | 0.0 | 2026.4 |
| 55.0 | 906.6 | 1816.6 | 47.5 | 653.0 | 23.7 | 2291.5 |

**PL07-72GGC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *G. r (p)* #/g | *O. u* #/g | *G. c* #/g | Other #/g |
|---|---|---|---|---|---|---|
| 56.0 | 884.3 | 1187.5 | 19.5 | 188.2 | 0.0 | 1304.3 |
| 57.0 | 861.9 | 2161.8 | 35.4 | 259.9 | 0.0 | 1370.3 |
| 58.0 | 839.5 | 1667.0 | 16.9 | 338.5 | 0.0 | 1133.9 |
| 59.0 | 817.1 | 2285.5 | 87.9 | 545.0 | 0.0 | 2048.1 |
| 60.0 | 794.8 | 2308.9 | 24.4 | 422.8 | 0.0 | 1975.6 |
| 61.0 | 772.4 | 2322.1 | 93.3 | 455.1 | 0.0 | 1890.3 |
| 62.0 | 750.0 | 1959.4 | 0.0 | 303.1 | 10.8 | 1515.6 |
| 63.0 | 732.4 | 2604.6 | 20.0 | 641.1 | 0.0 | 1923.4 |
| 64.0 | 714.8 | 1995.3 | 42.8 | 376.8 | 0.0 | 1849.7 |
| 65.0 | 697.2 | 2673.4 | 10.6 | 328.9 | 0.0 | 1453.4 |
| 66.0 | 679.6 | 1853.7 | 33.7 | 229.2 | 0.0 | 1496.5 |
| 67.0 | 662.0 | 4102.6 | 230.2 | 795.4 | 0.0 | 2825.7 |
| 68.0 | 644.4 | 1942.2 | 60.1 | 500.6 | 10.0 | 1241.4 |
| 69.0 | 626.8 | 2182.1 | 130.6 | 270.4 | 0.0 | 1725.1 |
| 70.0 | 609.2 | 2024.0 | 151.8 | 215.1 | 0.0 | 1530.7 |
| 71.0 | 591.6 | 1624.8 | 166.9 | 307.4 | 0.0 | 2107.8 |
| 72.0 | 574.0 | 1592.1 | 76.9 | 219.6 | 0.0 | 1899.5 |
| 73.0 | 556.4 | 2174.0 | 149.2 | 405.0 | 10.7 | 2227.3 |
| 74.0 | 538.8 | 1394.0 | 19.7 | 131.5 | 0.0 | 933.7 |
| 75.0 | 521.2 | 1970.7 | 57.0 | 307.6 | 0.0 | 1526.4 |
| 76.0 | 503.6 | 1415.2 | 15.9 | 119.3 | 0.0 | 1383.4 |
| 77.0 | 486.0 | 2436.0 | 11.1 | 244.7 | 11.1 | 2369.3 |
| 78.0 | 469.0 | 2591.0 | 55.4 | 166.1 | 0.0 | 2269.9 |
| 79.0 | 452.0 | 1352.8 | 45.7 | 338.2 | 0.0 | 1947.0 |
| 80.0 | 435.0 | 1028.1 | 9.2 | 146.9 | 0.0 | 1395.3 |
| 81.0 | 418.0 | 1466.5 | 62.2 | 231.1 | 0.0 | 1742.0 |
| 82.0 | 401.0 | 2467.9 | 146.7 | 653.7 | 0.0 | 2281.1 |
| 83.0 | 384.0 | 2293.2 | 73.4 | 204.0 | 0.0 | 1885.1 |

**PL07-72GGC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *G. r (p)* #/g | *O. u* #/g | *G. c* #/g | Other #/g |
|---|---|---|---|---|---|---|
| 84.0 | 367.0 | 2703.4 | 179.4 | 474.1 | 0.0 | 1870.6 |
| 85.0 | 350.0 | 2074.2 | 63.9 | 490.1 | 0.0 | 1534.4 |
| 86.0 | 333.0 | 2240.2 | 16.6 | 215.7 | 0.0 | 1460.3 |
| 87.0 | 316.0 | 1683.7 | 0.0 | 258.2 | 10.3 | 1198.2 |
| 88.0 | 299.0 | 2909.3 | 39.1 | 260.9 | 0.0 | 1591.7 |
| 89.0 | 282.0 | 2602.6 | 23.4 | 445.5 | 0.0 | 1653.0 |
| 90.0 | 265.0 | 2501.0 | 85.1 | 542.8 | 0.0 | 2394.6 |
| 91.0 | 248.0 | 2335.8 | 50.1 | 621.6 | 0.0 | 1784.5 |
| 92.0 | 231.0 | 2058.6 | 68.2 | 681.7 | 0.0 | 1813.2 |
| 93.0 | 214.0 | 2312.7 | 59.6 | 436.7 | 0.0 | 1995.0 |
| 94.0 | 197.0 | 3196.4 | 77.0 | 333.8 | 12.8 | 1899.9 |
| 95.0 | 180.0 | 2959.5 | 69.9 | 337.9 | 0.0 | 1934.2 |
| 96.0 | 163.0 | 2343.8 | 77.4 | 541.7 | 11.1 | 2266.4 |
| 97.0 | 146.0 | 2234.9 | 60.6 | 188.5 | 0.0 | 1279.0 |
| 98.0 | 129.0 | 3766.8 | 68.1 | 329.0 | 0.0 | 1565.7 |
| 99.0 | 112.0 | 1474.0 | 70.2 | 228.1 | 0.0 | 973.9 |
| 100.0 | 95.0 | 1442.9 | 109.3 | 255.1 | 0.0 | 954.6 |
| 101.0 | 78.0 | 1099.4 | 131.5 | 225.5 | 0.0 | 1306.1 |
| 102.0 | 61.0 | 651.8 | 44.6 | 205.4 | 0.0 | 491.1 |
| 103.0 | 44.0 | 1883.7 | 23.5 | 459.2 | 0.0 | 1189.1 |
| 104.0 | 27.0 | 548.5 | 4.5 | 80.9 | 0.0 | 427.1 |
| 105.0 | 10.0 | 258.7 | 2.4 | 57.5 | 0.0 | 287.5 |
| 106.0 | -7.0 | 1086.8 | 15.0 | 156.1 | 0.0 | 897.6 |
| 107.0 | -24.0 | 1043.8 | 40.5 | 273.6 | 0.0 | 1246.5 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 0.0 | 1990.0 | 426.2 | 8.3 | 5.5 | 24.9 | 11.1 | 0.0 | 168.8 |
| 0.1 | 1989.0 | 800.1 | 24.9 | 3.1 | 40.5 | 18.7 | 12.5 | 451.4 |
| 0.2 | 1988.0 | 751.2 | 33.1 | 11.8 | 33.1 | 26.0 | 7.1 | 581.2 |
| 0.3 | 1987.0 | 877.4 | 36.2 | 36.2 | 40.7 | 36.2 | 36.2 | 705.6 |
| 0.4 | 1986.0 | 1132.8 | 50.4 | 31.5 | 44.1 | 50.4 | 12.6 | 849.6 |
| 0.5 | 1985.0 | 1095.7 | 47.6 | 21.7 | 91.0 | 52.0 | 17.3 | 879.2 |
| 0.6 | 1984.0 | 1838.6 | 99.2 | 72.8 | 109.1 | 92.6 | 39.7 | 1213.6 |
| 0.7 | 1983.0 | 1671.5 | 146.4 | 46.2 | 84.7 | 69.3 | 0.0 | 1324.9 |
| 0.8 | 1982.0 | 2367.1 | 193.2 | 77.3 | 135.3 | 251.2 | 29.0 | 2492.7 |
| 0.9 | 1981.0 | 1354.7 | 126.8 | 51.9 | 51.9 | 23.1 | 17.3 | 1112.6 |
| 1.0 | 1980.1 | 1550.4 | 136.4 | 49.6 | 111.6 | 62.0 | 12.4 | 1190.7 |
| 1.1 | 1979.3 | 1720.5 | 136.1 | 116.7 | 155.5 | 145.8 | 29.2 | 1351.1 |
| 1.2 | 1978.4 | 1601.2 | 99.5 | 79.6 | 149.2 | 99.5 | 39.8 | 1103.9 |
| 1.3 | 1977.5 | 1830.9 | 174.9 | 58.3 | 174.9 | 186.6 | 116.6 | 1224.5 |
| 1.4 | 1976.6 | 1703.8 | 177.3 | 68.9 | 216.7 | 118.2 | 49.2 | 1290.2 |
| 1.5 | 1975.8 | 1295.8 | 185.1 | 123.4 | 231.4 | 138.8 | 15.4 | 1450.1 |
| 1.6 | 1974.9 | 1800.2 | 231.8 | 95.5 | 204.6 | 81.8 | 40.9 | 1513.8 |
| 1.7 | 1974.0 | 1470.3 | 164.3 | 86.5 | 147.0 | 95.1 | 86.5 | 1158.9 |
| 1.8 | 1973.1 | 1683.4 | 88.2 | 48.1 | 184.4 | 24.1 | 48.1 | 1394.8 |
| 1.9 | 1972.3 | 1766.6 | 227.0 | 79.0 | 167.8 | 88.8 | 128.3 | 1263.3 |
| 2.0 | 1971.4 | 1359.1 | 132.6 | 110.5 | 132.6 | 110.5 | 55.3 | 961.3 |
| 2.1 | 1970.5 | 1355.8 | 65.7 | 98.6 | 98.6 | 123.3 | 16.4 | 1117.5 |
| 2.2 | 1969.6 | 1845.8 | 95.3 | 71.5 | 119.1 | 59.5 | 59.5 | 1536.2 |
| 2.3 | 1968.8 | 1609.7 | 201.2 | 40.2 | 254.9 | 107.3 | 67.1 | 1113.3 |
| 2.4 | 1967.9 | 1198.0 | 168.0 | 67.2 | 78.4 | 44.8 | 33.6 | 1063.7 |
| 2.5 | 1967.0 | 870.6 | 142.0 | 129.7 | 123.5 | 74.1 | 49.4 | 870.6 |
| 2.6 | 1966.1 | 977.2 | 233.7 | 106.2 | 106.2 | 95.6 | 95.6 | 722.3 |
| 2.7 | 1965.1 | 1282.1 | 131.7 | 175.6 | 202.0 | 105.4 | 52.7 | 1229.4 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 2.8 | 1964.2 | 999.4 | 194.9 | 132.0 | 157.1 | 119.4 | 81.7 | 804.5 |
| 2.9 | 1963.3 | 943.2 | 171.5 | 85.7 | 100.0 | 142.9 | 57.2 | 1028.9 |
| 3.0 | 1962.3 | 1136.9 | 190.5 | 184.2 | 152.4 | 95.3 | 133.4 | 990.8 |
| 3.1 | 1961.4 | 1037.4 | 180.2 | 101.1 | 123.1 | 61.5 | 79.1 | 848.3 |
| 3.2 | 1960.5 | 701.6 | 151.7 | 90.1 | 85.3 | 109.0 | 118.5 | 564.1 |
| 3.3 | 1959.5 | 949.7 | 132.8 | 107.2 | 76.6 | 107.2 | 81.7 | 740.4 |
| 3.4 | 1958.6 | 874.4 | 138.8 | 90.2 | 97.2 | 62.5 | 76.3 | 749.5 |
| 3.5 | 1957.7 | 912.2 | 73.6 | 78.5 | 103.0 | 98.1 | 73.6 | 926.9 |
| 3.6 | 1956.7 | 831.1 | 103.2 | 92.3 | 86.9 | 97.8 | 38.0 | 858.2 |
| 3.7 | 1955.8 | 599.7 | 84.0 | 72.0 | 137.9 | 96.0 | 54.0 | 599.7 |
| 3.8 | 1954.9 | 608.5 | 122.5 | 69.4 | 110.3 | 77.6 | 36.8 | 629.0 |
| 3.9 | 1953.0 | 468.2 | 120.8 | 85.6 | 166.1 | 85.6 | 80.6 | 508.5 |
| 4.0 | 1951.3 | 841.2 | 142.8 | 102.0 | 112.2 | 112.2 | 45.9 | 846.3 |
| 4.1 | 1949.7 | 1191.5 | 156.1 | 131.5 | 164.3 | 197.2 | 82.2 | 1290.1 |
| 4.2 | 1948.0 | 1340.3 | 166.7 | 125.0 | 215.3 | 111.1 | 97.2 | 1201.4 |
| 4.3 | 1947.5 | 995.3 | 135.4 | 67.7 | 189.6 | 196.3 | 121.9 | 968.2 |
| 4.4 | 1947.1 | 1139.6 | 89.0 | 59.4 | 184.0 | 142.5 | 112.8 | 872.5 |
| 4.5 | 1946.6 | 894.4 | 72.7 | 44.7 | 162.1 | 72.7 | 61.5 | 765.8 |
| 4.6 | 1946.1 | 895.9 | 89.6 | 31.6 | 168.6 | 68.5 | 89.6 | 653.5 |
| 4.7 | 1945.6 | 692.9 | 93.8 | 41.7 | 88.6 | 125.0 | 62.5 | 635.6 |
| 4.8 | 1945.2 | 800.2 | 77.9 | 10.4 | 119.5 | 119.5 | 62.4 | 722.3 |
| 4.9 | 1944.7 | 792.3 | 111.1 | 26.3 | 157.9 | 105.3 | 67.2 | 760.1 |
| 5.0 | 1944.2 | 870.2 | 125.0 | 28.9 | 110.6 | 144.2 | 144.2 | 956.7 |
| 5.1 | 1943.7 | 635.2 | 72.7 | 29.1 | 111.5 | 92.1 | 101.8 | 960.0 |
| 5.2 | 1943.3 | 449.0 | 118.7 | 26.0 | 174.4 | 77.9 | 103.9 | 738.4 |
| 5.3 | 1942.8 | 426.3 | 90.1 | 42.0 | 252.2 | 78.1 | 72.1 | 588.4 |
| 5.4 | 1942.3 | 530.1 | 106.0 | 30.3 | 170.4 | 64.4 | 98.5 | 685.3 |
| 5.5 | 1941.8 | 580.7 | 44.7 | 38.3 | 172.3 | 63.8 | 121.3 | 657.3 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 5.6 | 1941.4 | 403.8 | 89.4 | 37.5 | 158.6 | 66.3 | 72.1 | 519.2 |
| 5.7 | 1940.9 | 245.9 | 52.0 | 13.9 | 110.8 | 72.7 | 52.0 | 315.2 |
| 5.8 | 1940.4 | 424.3 | 84.3 | 38.1 | 136.0 | 59.8 | 54.4 | 451.5 |
| 5.9 | 1940.0 | 360.2 | 40.5 | 22.5 | 128.3 | 110.3 | 58.5 | 414.2 |
| 6.0 | 1939.5 | 535.0 | 55.2 | 22.1 | 132.4 | 82.7 | 66.2 | 659.1 |
| 6.1 | 1939.0 | 768.7 | 94.5 | 12.6 | 163.8 | 56.7 | 88.2 | 705.7 |
| 6.2 | 1938.1 | 565.2 | 56.5 | 23.6 | 202.5 | 70.7 | 51.8 | 456.9 |
| 6.3 | 1937.2 | 628.5 | 73.9 | 43.1 | 209.5 | 73.9 | 43.1 | 720.9 |
| 6.4 | 1936.3 | 691.4 | 56.4 | 14.1 | 202.3 | 136.4 | 75.3 | 733.8 |
| 6.5 | 1935.4 | 596.2 | 97.5 | 48.7 | 157.5 | 108.7 | 33.8 | 659.9 |
| 6.6 | 1934.5 | 561.8 | 77.5 | 16.1 | 158.2 | 100.1 | 61.4 | 804.0 |
| 6.7 | 1933.6 | 418.3 | 87.6 | 9.7 | 136.2 | 116.7 | 48.6 | 710.1 |
| 6.8 | 1932.7 | 540.6 | 67.1 | 24.7 | 166.1 | 106.0 | 56.5 | 706.7 |
| 6.9 | 1931.8 | 378.8 | 96.8 | 24.9 | 129.9 | 94.0 | 24.9 | 588.9 |
| 7.0 | 1931.0 | 497.6 | 52.6 | 19.1 | 148.3 | 71.8 | 57.4 | 722.5 |
| 7.1 | 1930.1 | 638.5 | 89.7 | 21.1 | 179.4 | 89.7 | 52.8 | 802.1 |
| 7.2 | 1929.2 | 493.3 | 69.7 | 10.7 | 166.2 | 96.5 | 32.2 | 713.1 |
| 7.3 | 1928.3 | 605.1 | 60.5 | 13.0 | 103.7 | 56.2 | 43.2 | 635.4 |
| 7.4 | 1927.4 | 727.6 | 62.0 | 20.7 | 95.1 | 53.7 | 28.9 | 678.0 |
| 7.5 | 1926.5 | 911.8 | 93.4 | 16.5 | 148.3 | 71.4 | 27.5 | 802.0 |
| 7.6 | 1925.6 | 1057.4 | 96.1 | 26.7 | 202.9 | 48.1 | 64.1 | 1052.1 |
| 7.7 | 1924.7 | 1109.0 | 92.8 | 13.9 | 120.7 | 88.2 | 51.0 | 923.4 |
| 7.8 | 1923.8 | 1106.1 | 105.9 | 37.1 | 195.8 | 100.6 | 42.3 | 899.7 |
| 7.9 | 1922.9 | 1285.0 | 88.9 | 20.5 | 136.7 | 109.4 | 88.9 | 881.7 |
| 8.0 | 1922.0 | 1436.2 | 49.8 | 21.3 | 106.7 | 135.1 | 49.8 | 966.9 |
| 8.1 | 1920.6 | 1201.3 | 76.2 | 22.4 | 156.9 | 53.8 | 53.8 | 771.0 |
| 8.2 | 1919.2 | 1350.8 | 79.0 | 29.1 | 162.1 | 83.1 | 37.4 | 798.0 |
| 8.3 | 1917.8 | 1455.7 | 53.5 | 23.8 | 160.4 | 71.3 | 59.4 | 909.1 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 8.4 | 1916.4 | 1224.8 | 93.4 | 22.0 | 131.8 | 76.9 | 54.9 | 631.6 |
| 8.5 | 1915.0 | 822.8 | 66.9 | 20.6 | 149.1 | 61.7 | 41.1 | 658.3 |
| 8.6 | 1914.7 | 1077.2 | 83.5 | 37.6 | 104.4 | 79.3 | 41.8 | 672.2 |
| 8.7 | 1914.3 | 1098.1 | 76.4 | 14.3 | 133.7 | 57.3 | 23.9 | 678.0 |
| 8.8 | 1914.0 | 1083.9 | 46.3 | 33.1 | 152.0 | 72.7 | 26.4 | 839.4 |
| 8.9 | 1913.7 | 1274.4 | 27.6 | 13.8 | 147.2 | 64.4 | 59.8 | 662.5 |
| 9.0 | 1913.3 | 1183.8 | 44.7 | 31.0 | 213.4 | 65.4 | 27.5 | 877.5 |
| 9.1 | 1913.0 | 1366.0 | 59.9 | 38.1 | 234.0 | 70.8 | 10.9 | 936.1 |
| 9.2 | 1911.7 | 779.5 | 62.8 | 26.2 | 162.2 | 73.2 | 31.4 | 643.5 |
| 9.3 | 1910.3 | 774.8 | 64.1 | 16.0 | 165.6 | 80.2 | 42.8 | 646.5 |
| 9.4 | 1909.0 | 705.7 | 52.6 | 15.0 | 138.9 | 60.1 | 60.1 | 626.9 |
| 9.5 | 1908.5 | 797.1 | 65.1 | 28.5 | 170.8 | 105.7 | 48.8 | 711.7 |
| 9.6 | 1908.0 | 892.9 | 78.0 | 34.7 | 164.7 | 39.0 | 60.7 | 810.6 |
| 9.7 | 1907.0 | 981.2 | 92.7 | 60.0 | 196.2 | 60.0 | 70.9 | 790.4 |
| 9.8 | 1906.5 | 846.0 | 69.9 | 23.3 | 216.5 | 109.9 | 50.0 | 766.0 |
| 9.9 | 1906.0 | 802.5 | 47.2 | 26.2 | 173.1 | 73.4 | 31.5 | 655.7 |
| 10.0 | 1905.6 | 1152.6 | 35.6 | 49.8 | 199.2 | 64.0 | 85.4 | 782.6 |
| 10.1 | 1905.2 | 1039.7 | 52.6 | 23.4 | 280.4 | 75.9 | 81.8 | 841.1 |
| 10.2 | 1904.8 | 1089.2 | 59.1 | 26.3 | 282.2 | 65.6 | 65.6 | 794.0 |
| 10.3 | 1904.4 | 1041.7 | 36.9 | 14.8 | 280.8 | 73.9 | 44.3 | 990.0 |
| 10.4 | 1904.0 | 1158.9 | 51.1 | 17.0 | 204.5 | 98.0 | 89.5 | 869.2 |
| 10.5 | 1903.4 | 1095.1 | 64.4 | 22.7 | 250.1 | 56.8 | 49.3 | 966.3 |
| 10.6 | 1902.8 | 983.4 | 77.6 | 31.7 | 232.6 | 49.4 | 95.2 | 853.0 |
| 10.7 | 1902.2 | 937.0 | 42.9 | 10.7 | 186.0 | 78.7 | 60.8 | 865.4 |
| 10.8 | 1901.6 | 750.3 | 104.4 | 14.9 | 178.9 | 19.9 | 44.7 | 829.8 |
| 10.9 | 1901.0 | 549.5 | 50.7 | 29.6 | 167.0 | 97.2 | 50.7 | 579.0 |
| 11.0 | 1899.8 | 590.6 | 42.2 | 22.3 | 183.6 | 64.5 | 39.7 | 506.2 |
| 11.1 | 1898.7 | 492.8 | 49.8 | 49.8 | 174.2 | 52.3 | 54.8 | 577.4 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 11.2 | 1897.5 | 489.7 | 24.5 | 24.5 | 146.9 | 66.5 | 38.5 | 489.7 |
| 11.3 | 1896.3 | 467.4 | 58.9 | 33.1 | 125.1 | 58.9 | 47.9 | 552.1 |
| 11.4 | 1895.2 | 373.0 | 34.8 | 17.4 | 136.8 | 47.3 | 32.3 | 487.4 |
| 11.5 | 1894.0 | 553.7 | 57.9 | 41.3 | 161.2 | 41.3 | 24.8 | 603.3 |
| 11.6 | 1892.8 | 310.8 | 69.5 | 40.9 | 163.6 | 24.5 | 49.1 | 478.5 |
| 11.7 | 1891.7 | 472.1 | 68.6 | 32.9 | 186.7 | 54.9 | 41.2 | 513.3 |
| 11.8 | 1890.5 | 309.7 | 75.8 | 26.4 | 148.3 | 29.7 | 19.8 | 438.2 |
| 11.9 | 1889.3 | 525.5 | 82.2 | 21.5 | 182.3 | 17.9 | 42.9 | 625.5 |
| 12.0 | 1888.2 | 658.9 | 114.2 | 39.5 | 281.1 | 48.3 | 30.8 | 601.8 |
| 12.1 | 1887.0 | 597.0 | 96.4 | 68.9 | 298.5 | 59.7 | 41.3 | 766.9 |
| 12.2 | 1886.0 | 834.4 | 143.2 | 49.8 | 274.0 | 43.6 | 56.0 | 797.0 |
| 12.3 | 1885.0 | 1008.1 | 142.1 | 47.4 | 338.3 | 94.7 | 88.0 | 1204.3 |
| 12.4 | 1884.0 | 1239.3 | 218.1 | 69.4 | 456.1 | 238.0 | 188.4 | 1566.5 |
| 12.5 | 1883.0 | 1437.3 | 212.7 | 90.2 | 431.8 | 206.3 | 244.9 | 1585.6 |
| 12.6 | 1880.0 | 708.7 | 111.9 | 52.2 | 328.2 | 111.9 | 97.0 | 872.8 |
| 12.7 | 1879.1 | 1136.8 | 120.8 | 63.9 | 291.3 | 63.9 | 120.8 | 774.4 |
| 12.8 | 1878.2 | 1475.8 | 111.5 | 51.5 | 223.1 | 103.0 | 103.0 | 832.3 |
| 12.9 | 1877.3 | 861.0 | 146.4 | 64.4 | 210.9 | 105.4 | 105.4 | 679.5 |
| 13.0 | 1876.5 | 1534.5 | 201.2 | 80.5 | 327.6 | 149.4 | 109.2 | 1114.9 |
| 13.1 | 1875.6 | 1041.9 | 247.2 | 79.5 | 247.2 | 114.8 | 70.6 | 874.2 |
| 13.2 | 1874.7 | 917.8 | 179.5 | 97.9 | 277.4 | 150.9 | 126.5 | 693.5 |
| 13.3 | 1873.8 | 742.4 | 142.2 | 90.2 | 343.5 | 86.7 | 114.5 | 662.6 |
| 13.4 | 1872.9 | 1105.8 | 185.5 | 96.5 | 385.9 | 89.1 | 148.4 | 823.8 |
| 13.5 | 1872.0 | 1511.1 | 189.9 | 79.1 | 261.1 | 63.3 | 94.9 | 1012.7 |
| 13.6 | 1871.1 | 1049.8 | 133.1 | 54.2 | 192.2 | 93.6 | 44.4 | 719.6 |
| 13.7 | 1870.3 | 970.6 | 127.6 | 63.8 | 250.6 | 100.3 | 100.3 | 774.7 |
| 13.8 | 1869.4 | 1510.6 | 130.9 | 65.5 | 141.0 | 136.0 | 35.3 | 856.0 |
| 13.9 | 1868.5 | 1113.7 | 112.9 | 46.7 | 151.9 | 93.5 | 19.5 | 829.4 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 14.0 | 1867.6 | 1782.1 | 141.2 | 48.5 | 167.6 | 127.9 | 17.6 | 1120.4 |
| 14.1 | 1866.7 | 1805.2 | 205.7 | 28.6 | 120.0 | 68.6 | 17.1 | 902.6 |
| 14.2 | 1865.8 | 1480.2 | 137.7 | 34.4 | 183.6 | 74.6 | 45.9 | 1118.8 |
| 14.3 | 1864.9 | 1323.4 | 154.2 | 54.7 | 174.1 | 89.6 | 14.9 | 845.8 |
| 14.4 | 1864.1 | 1056.1 | 79.2 | 44.0 | 127.6 | 79.2 | 30.8 | 677.7 |
| 14.5 | 1863.2 | 1776.3 | 194.1 | 58.2 | 174.7 | 106.8 | 29.1 | 1378.3 |
| 14.6 | 1862.3 | 1615.5 | 176.7 | 16.8 | 227.2 | 151.5 | 67.3 | 1203.2 |
| 14.7 | 1861.4 | 1493.4 | 144.3 | 67.9 | 254.6 | 110.3 | 76.4 | 1238.9 |
| 14.8 | 1860.5 | 1566.7 | 197.9 | 66.0 | 230.9 | 90.7 | 33.0 | 1344.1 |
| 14.9 | 1859.5 | 1189.9 | 276.9 | 37.4 | 194.6 | 209.5 | 67.4 | 1137.5 |
| 15.0 | 1858.6 | 1622.1 | 172.6 | 89.7 | 214.0 | 151.9 | 89.7 | 1214.8 |
| 15.1 | 1857.6 | 1774.2 | 199.0 | 34.1 | 187.7 | 125.1 | 45.5 | 1347.7 |
| 15.2 | 1856.7 | 1457.6 | 164.0 | 42.5 | 212.6 | 109.3 | 66.8 | 1330.1 |
| 15.3 | 1855.7 | 1799.6 | 220.1 | 13.0 | 103.6 | 194.2 | 90.6 | 1527.7 |
| 15.4 | 1854.7 | 1347.3 | 182.7 | 22.8 | 159.9 | 121.8 | 175.1 | 1217.9 |
| 15.5 | 1853.8 | 1856.8 | 57.0 | 82.4 | 164.8 | 152.1 | 190.1 | 1432.2 |
| 15.6 | 1852.8 | 1557.5 | 141.6 | 62.9 | 180.9 | 110.1 | 125.9 | 1604.7 |
| 15.7 | 1851.9 | 1596.4 | 210.8 | 30.1 | 233.4 | 120.5 | 75.3 | 1581.3 |
| 15.8 | 1850.9 | 1360.1 | 200.5 | 17.4 | 235.4 | 104.6 | 148.2 | 1569.3 |
| 15.9 | 1849.9 | 871.7 | 241.1 | 49.5 | 160.7 | 92.7 | 6.2 | 1230.3 |
| 16.0 | 1849.0 | 970.1 | 124.4 | 12.4 | 118.2 | 62.2 | 28.0 | 948.4 |
| 16.1 | 1848.0 | 1021.4 | 73.4 | 11.3 | 101.6 | 67.7 | 11.3 | 948.1 |
| 16.2 | 1847.0 | 834.6 | 82.7 | 7.9 | 78.7 | 19.7 | 11.8 | 728.3 |
| 16.3 | 1846.1 | 842.8 | 46.3 | 9.3 | 88.0 | 13.9 | 18.5 | 611.3 |
| 16.4 | 1845.1 | 1045.6 | 44.5 | 17.8 | 97.9 | 13.4 | 4.5 | 596.2 |
| 16.5 | 1844.1 | 823.1 | 32.9 | 9.0 | 98.8 | 21.0 | 9.0 | 502.9 |
| 16.6 | 1843.1 | 788.2 | 28.5 | 4.8 | 123.5 | 28.5 | 23.7 | 607.8 |
| 16.7 | 1842.2 | 746.6 | 31.5 | 31.5 | 184.4 | 22.5 | 9.0 | 512.7 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 16.8 | 1841.2 | 705.3 | 58.4 | 25.0 | 175.3 | 16.7 | 16.7 | 534.2 |
| 16.9 | 1840.2 | 998.4 | 86.8 | 15.8 | 236.8 | 39.5 | 11.8 | 714.3 |
| 17.0 | 1839.2 | 983.3 | 113.1 | 39.3 | 270.4 | 78.7 | 9.8 | 698.1 |
| 17.1 | 1838.2 | 835.0 | 111.3 | 25.3 | 161.9 | 55.7 | 5.1 | 688.3 |
| 17.2 | 1837.2 | 991.6 | 131.0 | 74.8 | 162.2 | 74.8 | 12.5 | 754.6 |
| 17.3 | 1836.2 | 998.6 | 212.3 | 23.6 | 180.9 | 78.6 | 31.5 | 794.2 |
| 17.4 | 1835.3 | 823.8 | 185.0 | 52.9 | 224.7 | 92.5 | 30.8 | 753.3 |
| 17.5 | 1834.3 | 987.7 | 227.9 | 46.8 | 187.0 | 81.8 | 40.9 | 765.6 |
| 17.6 | 1833.3 | 920.5 | 201.5 | 21.8 | 207.0 | 108.9 | 43.6 | 942.3 |
| 17.7 | 1832.3 | 1223.8 | 281.6 | 66.6 | 184.3 | 117.8 | 61.4 | 1034.3 |
| 17.8 | 1831.3 | 1213.8 | 252.1 | 65.4 | 317.5 | 121.4 | 28.0 | 952.4 |
| 17.9 | 1830.3 | 1117.1 | 334.6 | 59.4 | 232.1 | 118.7 | 54.0 | 998.4 |
| 18.0 | 1829.3 | 1009.1 | 302.1 | 36.3 | 247.7 | 132.9 | 24.2 | 1003.0 |
| 18.1 | 1828.3 | 1179.6 | 222.8 | 39.3 | 235.9 | 137.6 | 59.0 | 969.9 |
| 18.2 | 1827.2 | 1220.8 | 251.2 | 35.2 | 231.1 | 110.5 | 45.2 | 924.4 |
| 18.3 | 1826.2 | 1271.3 | 249.8 | 38.9 | 216.5 | 99.9 | 44.4 | 849.4 |
| 18.4 | 1825.2 | 1199.6 | 153.1 | 57.4 | 146.8 | 140.4 | 57.4 | 842.2 |
| 18.5 | 1824.2 | 1156.5 | 189.7 | 18.1 | 244.0 | 180.7 | 45.2 | 885.5 |
| 18.6 | 1823.2 | 1007.2 | 191.0 | 81.0 | 283.7 | 98.4 | 46.3 | 746.7 |
| 18.7 | 1822.2 | 920.9 | 251.9 | 62.0 | 169.3 | 177.6 | 62.0 | 838.3 |
| 18.8 | 1821.2 | 1192.6 | 219.7 | 39.2 | 204.0 | 102.0 | 62.8 | 1114.2 |
| 18.9 | 1820.1 | 919.5 | 162.3 | 66.1 | 198.3 | 90.1 | 30.1 | 883.4 |
| 19.0 | 1819.1 | 967.7 | 146.3 | 28.3 | 240.7 | 99.1 | 47.2 | 684.4 |
| 19.1 | 1818.1 | 856.7 | 232.1 | 50.6 | 168.8 | 130.8 | 59.1 | 755.4 |
| 19.2 | 1817.0 | 1017.9 | 259.2 | 61.3 | 212.1 | 136.7 | 75.4 | 862.4 |
| 19.3 | 1816.0 | 1045.3 | 246.0 | 72.7 | 145.3 | 139.7 | 39.1 | 777.0 |
| 19.4 | 1815.0 | 1128.3 | 193.2 | 49.9 | 187.0 | 106.0 | 56.1 | 1016.0 |
| 19.5 | 1813.9 | 1039.1 | 268.5 | 58.4 | 186.8 | 181.0 | 35.0 | 939.9 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 19.6 | 1812.9 | 818.5 | 212.6 | 79.7 | 223.2 | 79.7 | 69.1 | 754.7 |
| 19.7 | 1811.9 | 889.9 | 204.2 | 43.8 | 182.4 | 145.9 | 21.9 | 831.5 |
| 19.8 | 1810.8 | 882.5 | 212.8 | 62.6 | 162.7 | 87.6 | 75.1 | 801.1 |
| 19.9 | 1809.8 | 1015.2 | 269.6 | 86.0 | 183.5 | 103.2 | 63.1 | 929.2 |
| 20.0 | 1808.7 | 861.9 | 160.0 | 56.8 | 175.5 | 139.4 | 41.3 | 676.1 |
| 20.1 | 1807.7 | 975.3 | 179.3 | 64.5 | 236.6 | 93.2 | 35.9 | 738.6 |
| 20.2 | 1806.6 | 1123.3 | 220.0 | 75.3 | 191.1 | 156.3 | 40.5 | 822.2 |
| 20.3 | 1805.6 | 1162.9 | 303.1 | 77.2 | 220.5 | 88.2 | 66.1 | 876.3 |
| 20.4 | 1804.5 | 1314.8 | 246.5 | 54.8 | 239.7 | 109.6 | 61.6 | 986.1 |
| 20.5 | 1803.5 | 1203.0 | 223.4 | 94.5 | 257.8 | 128.9 | 77.3 | 867.9 |
| 20.6 | 1802.4 | 1031.5 | 185.7 | 46.4 | 185.7 | 128.9 | 61.9 | 809.7 |
| 20.7 | 1801.3 | 967.7 | 238.6 | 79.5 | 212.1 | 79.5 | 46.4 | 947.8 |
| 20.8 | 1800.3 | 1122.6 | 211.0 | 52.7 | 165.8 | 75.3 | 45.2 | 866.5 |
| 20.9 | 1799.2 | 1898.2 | 405.4 | 110.6 | 285.7 | 221.2 | 82.9 | 1677.0 |
| 21.0 | 1798.1 | 1653.9 | 377.5 | 71.9 | 278.7 | 197.8 | 116.9 | 1402.3 |
| 21.1 | 1797.0 | 1718.3 | 584.5 | 46.8 | 292.2 | 233.8 | 58.5 | 1355.9 |
| 21.2 | 1796.0 | 1583.7 | 390.0 | 94.6 | 319.1 | 260.0 | 153.6 | 1441.9 |
| 21.3 | 1794.9 | 1450.7 | 384.0 | 113.8 | 384.0 | 312.9 | 170.7 | 1962.7 |
| 21.4 | 1793.8 | 1693.2 | 336.2 | 120.1 | 408.3 | 360.3 | 156.1 | 2197.5 |
| 21.5 | 1792.7 | 929.1 | 120.7 | 73.5 | 99.7 | 115.5 | 68.2 | 1018.4 |
| 21.6 | 1791.6 | 706.4 | 151.6 | 55.5 | 107.3 | 92.5 | 25.9 | 628.7 |
| 21.7 | 1790.5 | 1113.2 | 191.2 | 82.0 | 109.3 | 61.5 | 27.3 | 1031.3 |
| 21.8 | 1789.5 | 847.7 | 164.5 | 94.9 | 101.2 | 63.3 | 69.6 | 974.2 |
| 21.9 | 1788.4 | 1391.2 | 169.7 | 87.3 | 174.5 | 82.4 | 33.9 | 1303.9 |
| 22.0 | 1787.3 | 975.0 | 157.0 | 99.2 | 123.9 | 132.2 | 57.8 | 1041.1 |
| 22.1 | 1786.2 | 851.1 | 196.4 | 87.3 | 158.2 | 125.5 | 81.8 | 1102.0 |
| 22.2 | 1785.1 | 872.2 | 116.7 | 79.9 | 202.7 | 86.0 | 36.9 | 896.8 |
| 22.3 | 1784.0 | 1077.0 | 144.0 | 106.5 | 269.3 | 112.7 | 68.9 | 1001.9 |

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| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 22.4 | 1782.8 | 995.9 | 151.0 | 77.6 | 163.3 | 106.1 | 44.9 | 959.2 |
| 22.5 | 1781.7 | 1185.2 | 138.3 | 87.6 | 193.7 | 133.7 | 138.3 | 1005.3 |
| 22.6 | 1780.6 | 921.9 | 175.2 | 73.8 | 248.9 | 101.4 | 73.8 | 755.9 |
| 22.7 | 1779.5 | 971.6 | 189.5 | 72.6 | 205.6 | 108.9 | 88.7 | 1007.9 |
| 22.8 | 1778.4 | 1000.8 | 188.8 | 88.1 | 188.8 | 69.2 | 37.8 | 874.9 |
| 22.9 | 1777.3 | 1019.3 | 186.0 | 110.2 | 172.2 | 96.4 | 89.5 | 847.1 |
| 23.0 | 1776.1 | 868.9 | 169.4 | 103.1 | 184.1 | 125.2 | 103.1 | 883.7 |
| 23.1 | 1775.0 | 954.4 | 172.3 | 86.2 | 159.1 | 59.7 | 86.2 | 1014.1 |
| 23.2 | 1773.9 | 1010.3 | 140.5 | 91.2 | 144.3 | 95.0 | 87.4 | 998.9 |
| 23.3 | 1772.8 | 765.5 | 200.5 | 121.5 | 158.0 | 72.9 | 48.6 | 856.6 |
| 23.4 | 1771.6 | 909.2 | 160.5 | 107.0 | 130.7 | 136.7 | 53.5 | 933.0 |
| 23.5 | 1770.5 | 1119.6 | 178.1 | 59.4 | 152.7 | 110.3 | 50.9 | 1255.3 |
| 23.6 | 1769.4 | 1354.0 | 258.7 | 172.5 | 77.6 | 129.4 | 103.5 | 1190.2 |
| 23.7 | 1768.2 | 1440.8 | 188.7 | 145.8 | 128.6 | 128.6 | 77.2 | 1277.9 |
| 23.8 | 1767.1 | 1242.5 | 203.1 | 65.7 | 89.6 | 83.6 | 65.7 | 1326.2 |
| 23.9 | 1765.9 | 1043.2 | 233.7 | 83.5 | 75.1 | 108.5 | 25.0 | 1026.5 |
| 24.0 | 1764.8 | 811.2 | 168.4 | 86.7 | 35.7 | 86.7 | 35.7 | 867.4 |
| 24.1 | 1763.6 | 777.4 | 152.1 | 50.7 | 42.3 | 63.4 | 25.4 | 659.1 |
| 24.2 | 1762.5 | 910.3 | 133.1 | 60.1 | 51.5 | 73.0 | 55.8 | 661.2 |
| 24.3 | 1761.3 | 775.5 | 116.5 | 40.1 | 36.4 | 43.7 | 32.8 | 651.7 |
| 24.4 | 1760.1 | 1107.5 | 99.5 | 48.2 | 51.4 | 61.0 | 28.9 | 828.3 |
| 24.5 | 1759.0 | 683.1 | 63.2 | 36.1 | 33.1 | 27.1 | 21.1 | 478.5 |
| 24.6 | 1757.8 | 996.3 | 61.7 | 38.9 | 45.4 | 38.9 | 16.2 | 675.0 |
| 24.7 | 1756.6 | 1292.7 | 105.0 | 39.4 | 45.9 | 59.1 | 19.7 | 898.9 |
| 24.8 | 1755.4 | 1483.1 | 140.6 | 38.4 | 115.1 | 102.3 | 19.2 | 1169.9 |
| 24.9 | 1754.3 | 1432.5 | 186.5 | 59.3 | 84.8 | 110.2 | 17.0 | 923.9 |
| 25.0 | 1753.1 | 1484.4 | 142.2 | 115.6 | 53.3 | 53.3 | 26.7 | 1057.8 |
| 25.1 | 1751.9 | 1410.7 | 246.2 | 75.7 | 47.3 | 85.2 | 28.4 | 861.5 |

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| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 25.2 | 1750.7 | 1544.1 | 240.4 | 51.0 | 80.1 | 94.7 | 14.6 | 1347.4 |
| 25.3 | 1749.5 | 1410.2 | 323.2 | 68.6 | 127.3 | 107.7 | 19.6 | 1322.1 |
| 25.4 | 1748.3 | 1345.7 | 205.5 | 66.3 | 99.4 | 66.3 | 39.8 | 1146.8 |
| 25.5 | 1747.1 | 1452.4 | 189.5 | 36.1 | 126.3 | 144.3 | 18.0 | 1335.1 |
| 25.6 | 1745.9 | 1729.9 | 171.7 | 72.6 | 105.7 | 52.8 | 13.2 | 1314.0 |
| 25.7 | 1744.7 | 1401.2 | 257.8 | 112.4 | 85.9 | 59.5 | 19.8 | 1163.3 |
| 25.8 | 1743.5 | 1389.8 | 305.2 | 142.9 | 71.4 | 103.9 | 52.0 | 1298.9 |
| 25.9 | 1742.3 | 872.2 | 160.9 | 36.3 | 51.9 | 72.7 | 20.8 | 758.0 |
| 26.0 | 1741.1 | 1692.0 | 266.7 | 119.5 | 119.5 | 82.8 | 64.4 | 1737.9 |
| 26.1 | 1739.9 | 1614.4 | 418.2 | 125.5 | 92.0 | 133.8 | 75.3 | 1455.5 |
| 26.2 | 1738.7 | 1849.1 | 315.4 | 100.3 | 86.0 | 107.5 | 57.3 | 1669.9 |
| 26.3 | 1737.5 | 1520.1 | 345.1 | 65.7 | 49.3 | 131.5 | 98.6 | 1495.5 |
| 26.4 | 1736.2 | 1664.3 | 434.7 | 62.1 | 74.5 | 149.1 | 49.7 | 1465.6 |
| 26.5 | 1735.0 | 1826.9 | 302.2 | 41.2 | 123.6 | 164.8 | 82.4 | 1579.7 |
| 26.6 | 1733.8 | 1775.6 | 291.9 | 145.9 | 109.5 | 133.8 | 60.8 | 1799.9 |
| 26.7 | 1732.6 | 1894.5 | 340.4 | 81.4 | 96.2 | 140.6 | 155.4 | 1716.9 |
| 26.8 | 1731.3 | 1686.9 | 302.1 | 138.5 | 50.4 | 214.0 | 151.1 | 1674.3 |
| 26.9 | 1730.1 | 2158.4 | 318.2 | 152.2 | 124.5 | 179.9 | 179.9 | 2033.9 |
| 27.0 | 1728.8 | 1995.2 | 395.2 | 163.9 | 96.4 | 221.7 | 134.9 | 1609.6 |
| 27.1 | 1727.6 | 1840.2 | 366.2 | 146.5 | 73.2 | 210.6 | 64.1 | 1977.6 |
| 27.2 | 1726.3 | 1492.6 | 403.2 | 154.4 | 85.8 | 145.8 | 111.5 | 1612.7 |
| 27.3 | 1725.1 | 1239.0 | 245.7 | 138.9 | 96.1 | 245.7 | 85.5 | 1538.0 |
| 27.4 | 1723.8 | 1075.6 | 254.4 | 167.2 | 29.1 | 167.2 | 116.3 | 1359.0 |
| 27.5 | 1722.6 | 1661.1 | 336.1 | 201.6 | 86.4 | 201.6 | 38.4 | 1565.1 |
| 27.6 | 1721.3 | 1562.7 | 300.5 | 160.3 | 90.2 | 80.1 | 120.2 | 1602.8 |
| 27.7 | 1720.0 | 1643.0 | 278.8 | 119.5 | 59.8 | 139.4 | 109.5 | 1802.3 |
| 27.8 | 1718.8 | 947.1 | 169.4 | 46.2 | 30.8 | 123.2 | 53.9 | 1231.9 |
| 27.9 | 1717.5 | 1029.1 | 175.5 | 119.7 | 95.7 | 103.7 | 95.7 | 1180.7 |

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| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 28.0 | 1716.2 | 1526.4 | 226.6 | 93.3 | 53.3 | 166.6 | 66.7 | 1526.4 |
| 28.1 | 1714.9 | 1847.5 | 290.2 | 106.2 | 77.9 | 148.7 | 77.9 | 1663.4 |
| 28.2 | 1713.7 | 1673.8 | 192.3 | 85.5 | 57.0 | 178.1 | 57.0 | 1709.4 |
| 28.3 | 1712.4 | 1465.2 | 278.8 | 123.2 | 77.8 | 129.7 | 58.4 | 1562.4 |
| 28.4 | 1711.1 | 1075.5 | 222.8 | 99.9 | 23.1 | 122.9 | 61.5 | 1190.7 |
| 28.5 | 1709.8 | 1637.7 | 244.9 | 191.3 | 84.2 | 137.8 | 99.5 | 1645.4 |
| 28.6 | 1708.5 | 1547.9 | 307.5 | 82.0 | 133.3 | 174.3 | 61.5 | 1250.6 |
| 28.7 | 1707.2 | 1459.0 | 300.4 | 104.2 | 92.0 | 141.0 | 85.8 | 1373.2 |
| 28.8 | 1705.9 | 1733.3 | 324.3 | 111.8 | 67.1 | 156.6 | 55.9 | 1498.5 |
| 28.9 | 1704.6 | 969.1 | 174.6 | 90.3 | 48.2 | 174.6 | 72.2 | 945.1 |
| 29.0 | 1703.3 | 1634.6 | 343.4 | 74.6 | 37.3 | 89.6 | 134.4 | 1507.7 |
| 29.1 | 1702.0 | 1629.9 | 323.8 | 100.5 | 89.3 | 167.5 | 44.7 | 1473.6 |
| 29.2 | 1700.6 | 1468.6 | 286.8 | 165.1 | 69.5 | 95.6 | 130.4 | 1381.7 |
| 29.3 | 1699.3 | 1178.8 | 326.6 | 79.7 | 63.7 | 95.6 | 79.7 | 1139.0 |
| 29.4 | 1698.0 | 808.0 | 255.2 | 60.8 | 48.6 | 60.8 | 66.8 | 710.8 |
| 29.5 | 1696.7 | 1540.9 | 378.9 | 50.5 | 50.5 | 88.4 | 94.7 | 959.9 |
| 29.6 | 1695.3 | 1497.0 | 340.6 | 63.4 | 79.2 | 110.9 | 79.2 | 974.3 |
| 29.7 | 1694.0 | 1683.0 | 494.6 | 73.8 | 73.8 | 81.2 | 66.4 | 1136.7 |
| 29.8 | 1692.7 | 1495.1 | 409.5 | 85.7 | 85.7 | 114.3 | 57.1 | 1257.0 |
| 29.9 | 1691.3 | 1389.0 | 258.2 | 71.2 | 53.4 | 124.7 | 80.1 | 828.1 |
| 30.0 | 1690.0 | 1060.2 | 325.0 | 74.6 | 48.0 | 117.2 | 95.9 | 852.4 |
| 30.1 | 1688.6 | 1036.1 | 265.1 | 96.4 | 62.7 | 57.8 | 81.9 | 944.6 |
| 30.2 | 1687.3 | 1205.8 | 352.2 | 54.2 | 27.1 | 121.9 | 67.7 | 928.0 |
| 30.3 | 1685.9 | 1277.2 | 378.4 | 114.9 | 47.3 | 162.2 | 47.3 | 1067.7 |
| 30.4 | 1684.6 | 937.0 | 274.3 | 96.0 | 50.3 | 100.6 | 45.7 | 932.5 |
| 30.5 | 1683.2 | 1266.2 | 251.7 | 61.0 | 106.8 | 61.0 | 45.8 | 991.6 |
| 30.6 | 1681.8 | 1136.4 | 362.7 | 153.1 | 88.7 | 72.5 | 64.5 | 999.4 |
| 30.7 | 1680.5 | 1382.5 | 307.2 | 105.6 | 67.2 | 76.8 | 86.4 | 1113.7 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 30.8 | 1679.1 | 1500.0 | 407.0 | 116.3 | 116.3 | 139.5 | 81.4 | 1395.3 |
| 30.9 | 1677.7 | 1617.3 | 392.1 | 127.4 | 78.4 | 107.8 | 98.0 | 1244.8 |
| 31.0 | 1676.3 | 2003.9 | 260.4 | 71.0 | 110.5 | 86.8 | 110.5 | 1325.4 |
| 31.1 | 1674.9 | 1932.4 | 253.2 | 133.3 | 66.6 | 133.3 | 93.3 | 1639.2 |
| 31.2 | 1673.5 | 2051.6 | 236.7 | 136.3 | 50.2 | 122.0 | 50.2 | 1563.8 |
| 31.3 | 1672.1 | 2415.1 | 204.3 | 108.1 | 48.1 | 156.2 | 120.2 | 1634.1 |
| 31.4 | 1670.7 | 2104.5 | 379.0 | 139.6 | 20.0 | 119.7 | 79.8 | 1795.3 |
| 31.5 | 1669.3 | 2109.2 | 271.9 | 115.4 | 82.4 | 123.6 | 98.9 | 1862.0 |
| 31.6 | 1667.9 | 1784.2 | 263.1 | 180.9 | 41.1 | 82.2 | 74.0 | 1652.6 |
| 31.7 | 1666.5 | 2117.5 | 243.5 | 116.5 | 63.5 | 95.3 | 74.1 | 1630.5 |
| 31.8 | 1665.1 | 1977.8 | 367.3 | 183.7 | 70.6 | 155.4 | 70.6 | 1667.0 |
| 31.9 | 1663.7 | 2043.7 | 322.0 | 136.2 | 49.5 | 74.3 | 74.3 | 1511.1 |
| 32.0 | 1662.3 | 1647.5 | 274.6 | 78.5 | 127.5 | 147.1 | 88.3 | 1520.0 |
| 32.1 | 1660.8 | 2007.0 | 315.5 | 96.4 | 52.6 | 131.5 | 70.1 | 1209.5 |
| 32.2 | 1659.4 | 1756.4 | 356.8 | 109.8 | 82.3 | 109.8 | 41.2 | 1248.7 |
| 32.3 | 1658.0 | 1601.3 | 312.5 | 130.2 | 52.1 | 104.2 | 71.6 | 1562.2 |
| 32.4 | 1656.5 | 1552.6 | 361.1 | 84.3 | 48.1 | 132.4 | 60.2 | 1540.5 |
| 32.5 | 1655.1 | 1231.7 | 257.3 | 140.3 | 46.8 | 62.4 | 39.0 | 1379.9 |
| 32.6 | 1653.6 | 1467.9 | 233.5 | 66.7 | 8.3 | 83.4 | 33.4 | 1317.8 |
| 32.7 | 1652.2 | 1591.9 | 279.8 | 183.3 | 48.2 | 67.5 | 106.1 | 1321.8 |
| 32.8 | 1650.7 | 1660.8 | 186.6 | 74.6 | 37.3 | 112.0 | 37.3 | 1175.7 |
| 32.9 | 1649.3 | 1018.4 | 149.3 | 101.0 | 39.5 | 61.5 | 17.6 | 904.3 |
| 33.0 | 1647.8 | 1097.6 | 119.4 | 87.3 | 27.6 | 68.9 | 36.7 | 987.4 |
| 33.1 | 1646.4 | 901.7 | 110.1 | 89.5 | 13.8 | 55.1 | 34.4 | 860.4 |
| 33.2 | 1644.9 | 866.7 | 183.7 | 84.8 | 28.3 | 47.1 | 65.9 | 800.8 |
| 33.3 | 1643.4 | 882.6 | 186.1 | 90.4 | 37.2 | 101.0 | 69.1 | 989.0 |
| 33.4 | 1641.9 | 1101.4 | 194.4 | 129.6 | 118.8 | 183.6 | 75.6 | 1209.3 |
| 33.5 | 1640.5 | 984.3 | 200.9 | 107.1 | 60.3 | 174.1 | 46.9 | 1084.7 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 33.6 | 1639.0 | 1260.4 | 262.6 | 157.6 | 105.0 | 105.0 | 52.5 | 1286.7 |
| 33.7 | 1637.5 | 954.8 | 301.5 | 108.9 | 67.0 | 159.1 | 67.0 | 1323.3 |
| 33.8 | 1636.0 | 1212.1 | 240.6 | 26.7 | 71.3 | 196.1 | 80.2 | 1461.7 |
| 33.9 | 1634.5 | 1238.0 | 318.6 | 137.6 | 72.4 | 217.2 | 65.2 | 1600.0 |
| 34.0 | 1633.0 | 1281.5 | 374.5 | 105.3 | 64.4 | 175.5 | 93.6 | 1375.1 |
| 34.1 | 1631.5 | 1105.2 | 266.5 | 104.0 | 45.5 | 247.0 | 52.0 | 1521.2 |
| 34.2 | 1630.0 | 983.0 | 404.0 | 141.4 | 47.1 | 114.5 | 40.4 | 1407.2 |
| 34.3 | 1628.4 | 897.2 | 297.2 | 157.0 | 61.7 | 123.4 | 22.4 | 942.1 |
| 34.4 | 1626.9 | 629.5 | 268.4 | 146.4 | 48.8 | 122.0 | 39.0 | 1005.2 |
| 34.5 | 1625.4 | 541.0 | 241.8 | 118.9 | 45.1 | 77.9 | 32.8 | 754.1 |
| 34.6 | 1623.9 | 733.8 | 314.5 | 110.7 | 64.1 | 75.7 | 40.8 | 920.2 |
| 34.7 | 1622.3 | 850.2 | 242.9 | 121.5 | 74.2 | 135.0 | 60.7 | 1018.9 |
| 34.8 | 1620.8 | 626.3 | 258.7 | 136.2 | 68.1 | 115.7 | 81.7 | 987.1 |
| 34.9 | 1619.3 | 536.9 | 238.6 | 99.4 | 59.7 | 139.2 | 46.4 | 802.0 |
| 35.0 | 1617.7 | 318.7 | 271.9 | 97.7 | 68.0 | 148.7 | 93.5 | 854.0 |
| 35.1 | 1616.2 | 503.0 | 299.9 | 96.7 | 53.2 | 53.2 | 72.6 | 967.4 |
| 35.2 | 1614.6 | 447.4 | 221.6 | 114.9 | 36.9 | 102.6 | 61.6 | 742.9 |
| 35.3 | 1613.0 | 428.3 | 215.8 | 166.0 | 59.8 | 93.0 | 79.7 | 757.0 |
| 35.4 | 1611.5 | 643.6 | 162.2 | 83.7 | 78.5 | 136.1 | 78.5 | 868.7 |
| 35.5 | 1609.9 | 684.3 | 179.7 | 152.1 | 55.3 | 145.2 | 72.6 | 794.9 |
| 35.6 | 1608.3 | 798.2 | 93.9 | 123.3 | 76.3 | 205.4 | 52.8 | 833.5 |
| 35.7 | 1606.8 | 695.2 | 178.8 | 119.2 | 46.4 | 119.2 | 53.0 | 860.8 |
| 35.8 | 1605.2 | 705.7 | 101.5 | 106.3 | 120.8 | 111.2 | 96.7 | 1019.8 |
| 35.9 | 1603.6 | 717.1 | 157.3 | 182.4 | 56.6 | 132.1 | 18.9 | 780.0 |
| 36.0 | 1602.0 | 675.7 | 140.3 | 118.2 | 59.1 | 110.8 | 70.2 | 764.3 |
| 36.1 | 1600.4 | 779.2 | 226.1 | 72.7 | 125.2 | 84.8 | 84.8 | 904.3 |
| 36.2 | 1598.8 | 892.2 | 161.2 | 120.9 | 86.3 | 57.6 | 74.8 | 1059.2 |
| 36.3 | 1597.2 | 897.5 | 139.5 | 121.3 | 127.4 | 91.0 | 103.1 | 994.5 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 36.4 | 1595.6 | 1100.5 | 184.2 | 73.7 | 78.3 | 59.9 | 82.9 | 1261.7 |
| 36.5 | 1594.0 | 890.1 | 230.8 | 85.7 | 105.5 | 145.1 | 118.7 | 843.9 |
| 36.6 | 1592.4 | 1117.7 | 236.9 | 140.6 | 111.0 | 81.4 | 44.4 | 1051.1 |
| 36.7 | 1590.8 | 982.8 | 220.5 | 113.4 | 50.4 | 132.3 | 44.1 | 938.7 |
| 36.8 | 1589.1 | 883.6 | 170.4 | 82.0 | 113.6 | 107.3 | 69.4 | 1016.1 |
| 36.9 | 1587.5 | 1154.7 | 198.9 | 71.8 | 105.0 | 99.5 | 60.8 | 950.3 |
| 37.0 | 1585.9 | 1076.8 | 140.2 | 63.7 | 127.4 | 101.9 | 31.9 | 1025.8 |
| 37.1 | 1584.2 | 1022.1 | 100.7 | 116.1 | 123.9 | 69.7 | 54.2 | 890.4 |
| 37.2 | 1582.6 | 1031.9 | 122.2 | 57.7 | 105.2 | 81.5 | 54.3 | 1014.9 |
| 37.3 | 1580.9 | 1472.6 | 63.7 | 63.7 | 141.6 | 162.8 | 70.8 | 1224.8 |
| 37.4 | 1579.3 | 1151.9 | 155.3 | 77.7 | 51.8 | 97.1 | 58.2 | 1100.2 |
| 37.5 | 1577.6 | 1073.4 | 84.1 | 84.1 | 90.5 | 109.9 | 71.1 | 1021.7 |
| 37.6 | 1576.0 | 906.7 | 122.5 | 24.5 | 98.0 | 155.2 | 65.4 | 980.2 |
| 37.7 | 1574.3 | 828.0 | 131.9 | 58.6 | 87.9 | 87.9 | 95.3 | 1099.1 |
| 37.8 | 1572.6 | 972.5 | 77.5 | 49.3 | 56.4 | 119.8 | 42.3 | 1191.0 |
| 37.9 | 1570.9 | 1078.0 | 179.7 | 89.8 | 98.0 | 122.5 | 98.0 | 1118.8 |
| 38.0 | 1569.3 | 1267.3 | 168.0 | 105.0 | 112.0 | 112.0 | 84.0 | 1267.3 |
| 38.1 | 1567.6 | 1248.6 | 137.6 | 88.5 | 88.5 | 98.3 | 39.3 | 1106.1 |
| 38.2 | 1565.9 | 1426.5 | 126.6 | 69.0 | 80.5 | 132.3 | 74.8 | 1553.0 |
| 38.3 | 1564.2 | 1445.9 | 195.9 | 65.3 | 121.3 | 139.9 | 84.0 | 1082.1 |
| 38.4 | 1562.5 | 1512.8 | 144.6 | 100.1 | 66.7 | 100.1 | 55.6 | 1156.8 |
| 38.5 | 1560.8 | 1852.5 | 180.3 | 130.2 | 100.1 | 110.2 | 120.2 | 1391.9 |
| 38.6 | 1559.1 | 1311.5 | 118.6 | 139.5 | 62.8 | 76.7 | 111.6 | 1283.6 |
| 38.7 | 1557.3 | 1601.3 | 151.9 | 107.6 | 82.3 | 101.3 | 63.3 | 1417.7 |
| 38.8 | 1555.6 | 1526.7 | 170.4 | 81.8 | 61.3 | 143.1 | 75.0 | 1560.7 |
| 38.9 | 1553.9 | 1628.9 | 110.8 | 97.7 | 65.2 | 143.4 | 97.7 | 1290.1 |
| 39.0 | 1552.2 | 1470.6 | 140.4 | 73.2 | 73.2 | 140.4 | 85.4 | 1208.2 |
| 39.1 | 1550.4 | 1438.1 | 82.2 | 68.5 | 95.9 | 95.9 | 89.0 | 1417.6 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 39.2 | 1548.7 | 1264.0 | 104.9 | 75.7 | 81.6 | 75.7 | 69.9 | 1432.9 |
| 39.3 | 1547.0 | 1516.6 | 157.9 | 56.4 | 16.9 | 101.5 | 84.6 | 1403.8 |
| 39.4 | 1545.2 | 1468.9 | 107.7 | 46.1 | 69.2 | 138.4 | 38.5 | 1530.5 |
| 39.5 | 1543.5 | 1407.9 | 43.7 | 98.2 | 65.5 | 109.1 | 87.3 | 1462.5 |
| 39.6 | 1541.7 | 1318.8 | 95.2 | 54.4 | 74.8 | 136.0 | 68.0 | 1210.1 |
| 39.7 | 1539.9 | 1531.8 | 234.1 | 73.6 | 113.7 | 160.5 | 107.0 | 1083.6 |
| 39.8 | 1538.2 | 1152.7 | 203.4 | 135.6 | 88.2 | 61.0 | 94.9 | 1105.3 |
| 39.9 | 1536.4 | 1462.2 | 136.7 | 170.8 | 95.7 | 177.7 | 143.5 | 1482.7 |
| 40.0 | 1534.6 | 1258.8 | 108.6 | 102.2 | 76.7 | 121.4 | 83.1 | 1444.1 |
| 40.1 | 1532.8 | 1167.2 | 140.4 | 122.9 | 114.1 | 122.9 | 114.1 | 1298.8 |
| 40.2 | 1531.0 | 1429.2 | 130.8 | 186.8 | 168.2 | 102.8 | 74.7 | 1307.8 |
| 40.3 | 1529.2 | 1368.4 | 161.6 | 97.0 | 97.0 | 204.7 | 86.2 | 1540.7 |
| 40.4 | 1527.4 | 1309.2 | 110.5 | 143.6 | 99.4 | 93.9 | 121.5 | 1624.1 |
| 40.5 | 1525.6 | 1169.8 | 113.7 | 81.2 | 73.1 | 154.4 | 113.7 | 1470.3 |
| 40.6 | 1523.8 | 1669.9 | 189.4 | 103.3 | 111.9 | 137.7 | 94.7 | 1558.0 |
| 40.7 | 1522.0 | 1318.3 | 180.8 | 105.5 | 52.7 | 135.6 | 52.7 | 1461.4 |
| 40.8 | 1520.2 | 1465.0 | 162.8 | 212.9 | 125.2 | 112.7 | 75.1 | 1540.1 |
| 40.9 | 1518.4 | 1397.5 | 335.8 | 118.0 | 45.4 | 163.3 | 36.3 | 1515.4 |
| 41.0 | 1516.5 | 1484.3 | 244.3 | 159.7 | 56.4 | 131.5 | 75.2 | 1315.2 |
| 41.1 | 1514.7 | 1194.9 | 148.7 | 159.7 | 66.1 | 165.2 | 55.1 | 1360.1 |
| 41.2 | 1512.9 | 1708.8 | 387.2 | 143.1 | 75.8 | 151.5 | 50.5 | 1355.2 |
| 41.3 | 1511.0 | 1473.9 | 299.9 | 154.2 | 34.3 | 128.5 | 68.6 | 1379.6 |
| 41.4 | 1509.2 | 1446.8 | 214.0 | 119.9 | 42.8 | 222.6 | 51.4 | 1301.2 |
| 41.5 | 1507.3 | 1539.3 | 137.1 | 84.3 | 42.2 | 242.5 | 42.2 | 1001.6 |
| 41.6 | 1505.5 | 1296.8 | 139.7 | 69.8 | 59.9 | 129.7 | 49.9 | 1067.3 |
| 41.7 | 1503.6 | 1437.1 | 187.5 | 135.4 | 104.1 | 104.1 | 41.7 | 978.9 |
| 41.8 | 1501.7 | 1249.9 | 274.6 | 113.6 | 66.3 | 170.4 | 85.2 | 1088.9 |
| 41.9 | 1499.8 | 1877.1 | 390.4 | 141.2 | 149.5 | 182.7 | 66.5 | 1603.0 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 42.0 | 1498.0 | 1756.6 | 229.6 | 206.7 | 149.3 | 206.7 | 91.9 | 1630.3 |
| 42.1 | 1496.1 | 1847.7 | 262.3 | 95.4 | 107.3 | 155.0 | 47.7 | 1609.3 |
| 42.2 | 1494.2 | 1807.1 | 238.4 | 100.4 | 125.5 | 213.3 | 87.8 | 1405.5 |
| 42.3 | 1492.3 | 1942.7 | 215.9 | 175.4 | 107.9 | 215.9 | 94.4 | 1699.8 |
| 42.4 | 1490.4 | 2139.9 | 268.5 | 134.3 | 100.7 | 142.7 | 25.2 | 1510.5 |
| 42.5 | 1488.5 | 1974.4 | 307.7 | 115.4 | 166.7 | 256.4 | 64.1 | 1333.3 |
| 42.6 | 1486.6 | 2084.5 | 254.4 | 164.1 | 65.7 | 114.9 | 32.8 | 1666.0 |
| 42.7 | 1484.6 | 2119.6 | 320.7 | 209.2 | 209.2 | 167.3 | 111.6 | 1422.3 |
| 42.8 | 1482.7 | 2272.9 | 203.5 | 254.4 | 169.6 | 288.4 | 50.9 | 1933.6 |
| 42.9 | 1480.8 | 1744.6 | 170.5 | 110.3 | 130.3 | 230.6 | 90.2 | 1263.3 |
| 43.0 | 1478.8 | 2252.8 | 265.8 | 139.2 | 75.9 | 202.5 | 25.3 | 1670.6 |
| 43.1 | 1476.9 | 1650.9 | 281.6 | 179.2 | 140.8 | 243.2 | 89.6 | 1228.6 |
| 43.2 | 1475.0 | 1371.0 | 278.0 | 182.2 | 38.4 | 268.5 | 86.3 | 1188.9 |
| 43.3 | 1473.0 | 1430.3 | 248.0 | 157.1 | 57.9 | 181.9 | 74.4 | 1273.2 |
| 43.4 | 1471.1 | 1524.2 | 374.4 | 196.1 | 80.2 | 187.2 | 71.3 | 1310.3 |
| 43.5 | 1469.1 | 1370.3 | 174.2 | 162.6 | 58.1 | 162.6 | 34.8 | 1300.6 |
| 43.6 | 1467.1 | 1428.0 | 266.2 | 258.2 | 72.6 | 169.4 | 104.9 | 1282.8 |
| 43.7 | 1465.1 | 1279.4 | 251.0 | 157.5 | 78.7 | 137.8 | 39.4 | 1215.4 |
| 43.8 | 1463.2 | 1728.1 | 279.4 | 217.3 | 82.8 | 248.4 | 62.1 | 1190.0 |
| 43.9 | 1461.2 | 1429.0 | 172.9 | 219.0 | 103.7 | 161.3 | 69.1 | 1175.4 |
| 44.0 | 1459.2 | 1418.4 | 189.8 | 189.8 | 119.9 | 239.7 | 30.0 | 1218.6 |
| 44.1 | 1457.2 | 1554.8 | 282.7 | 160.2 | 122.5 | 226.2 | 18.9 | 1404.0 |
| 44.2 | 1455.2 | 1344.8 | 232.4 | 330.9 | 84.5 | 190.1 | 49.3 | 1204.0 |
| 44.3 | 1453.2 | 1258.2 | 195.9 | 248.6 | 60.3 | 165.8 | 98.0 | 1182.9 |
| 44.4 | 1451.2 | 1271.2 | 192.6 | 208.0 | 92.5 | 208.0 | 30.8 | 1386.8 |
| 44.5 | 1449.2 | 1741.3 | 197.6 | 123.5 | 123.5 | 135.8 | 74.1 | 1247.3 |
| 44.6 | 1447.1 | 1778.0 | 176.7 | 265.1 | 77.3 | 176.7 | 55.2 | 1093.3 |
| 44.7 | 1445.1 | 2027.6 | 166.8 | 359.3 | 77.0 | 218.2 | 25.7 | 1180.6 |

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| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 44.8 | 1443.1 | 1711.4 | 224.3 | 70.8 | 82.6 | 212.5 | 35.4 | 1239.3 |
| 44.9 | 1441.0 | 1654.1 | 175.3 | 164.3 | 98.6 | 197.2 | 76.7 | 1336.4 |
| 45.0 | 1439.0 | 1604.2 | 250.0 | 97.2 | 97.2 | 194.4 | 48.6 | 1180.6 |
| 45.1 | 1436.9 | 1693.2 | 205.5 | 70.9 | 113.4 | 170.0 | 77.9 | 1105.2 |
| 45.2 | 1434.9 | 1745.5 | 278.8 | 48.5 | 181.8 | 230.3 | 72.7 | 1030.3 |
| 45.3 | 1432.8 | 1510.5 | 210.9 | 102.1 | 81.7 | 163.3 | 68.0 | 1231.5 |
| 45.4 | 1430.8 | 1623.3 | 185.3 | 44.1 | 132.3 | 194.1 | 44.1 | 1217.5 |
| 45.5 | 1428.7 | 1791.9 | 332.1 | 92.7 | 100.4 | 185.4 | 100.4 | 1305.3 |
| 45.6 | 1426.6 | 1834.6 | 281.6 | 56.3 | 185.1 | 169.0 | 88.5 | 1295.5 |
| 45.7 | 1424.5 | 1634.9 | 249.6 | 87.4 | 124.8 | 124.8 | 62.4 | 486.8 |
| 45.8 | 1422.4 | 1810.2 | 314.8 | 113.7 | 148.7 | 244.9 | 78.7 | 1215.6 |
| 45.9 | 1420.3 | 1659.8 | 269.0 | 59.1 | 111.5 | 118.1 | 59.1 | 1272.8 |
| 46.0 | 1418.2 | 1808.3 | 217.3 | 56.1 | 217.3 | 175.2 | 91.1 | 1149.5 |
| 46.1 | 1416.1 | 1981.2 | 217.6 | 60.0 | 105.1 | 172.6 | 90.1 | 1125.7 |
| 46.2 | 1414.0 | 1802.6 | 209.3 | 58.2 | 104.7 | 186.1 | 104.7 | 1395.5 |
| 46.3 | 1411.9 | 2628.9 | 249.2 | 37.4 | 162.0 | 162.0 | 112.1 | 1495.1 |
| 46.4 | 1409.8 | 2316.1 | 284.3 | 16.7 | 100.3 | 184.0 | 108.7 | 1371.2 |
| 46.5 | 1407.6 | 1941.5 | 254.8 | 72.8 | 145.6 | 169.9 | 12.1 | 1346.9 |
| 46.6 | 1405.5 | 2145.9 | 283.3 | 92.1 | 155.8 | 134.6 | 77.9 | 1664.3 |
| 46.7 | 1403.3 | 2057.7 | 447.3 | 29.8 | 79.5 | 159.1 | 59.6 | 1769.4 |
| 46.8 | 1401.2 | 1912.8 | 207.3 | 28.3 | 122.5 | 131.9 | 28.3 | 1187.3 |
| 46.9 | 1399.0 | 1279.0 | 221.6 | 80.6 | 100.7 | 151.1 | 20.1 | 1037.3 |
| 47.0 | 1396.9 | 989.2 | 220.7 | 65.4 | 130.8 | 130.8 | 40.9 | 1030.0 |
| 47.1 | 1394.7 | 917.4 | 191.8 | 83.4 | 75.1 | 158.5 | 50.0 | 942.5 |
| 47.2 | 1392.5 | 706.1 | 75.1 | 45.1 | 127.7 | 225.4 | 82.6 | 991.5 |
| 47.3 | 1390.3 | 709.8 | 146.3 | 38.7 | 81.7 | 129.1 | 47.3 | 950.7 |
| 47.4 | 1388.2 | 537.7 | 108.5 | 83.9 | 64.1 | 123.3 | 59.2 | 868.2 |
| 47.5 | 1386.0 | 547.3 | 155.4 | 56.5 | 81.2 | 95.3 | 63.6 | 801.6 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 47.6 | 1383.8 | 593.1 | 91.3 | 39.9 | 108.4 | 142.6 | 91.3 | 804.1 |
| 47.7 | 1381.6 | 414.4 | 83.5 | 74.5 | 107.3 | 125.2 | 98.4 | 623.1 |
| 47.8 | 1379.4 | 591.2 | 95.9 | 39.9 | 123.8 | 87.9 | 63.9 | 527.3 |
| 47.9 | 1377.1 | 945.5 | 206.4 | 33.6 | 86.4 | 115.2 | 43.2 | 1007.9 |
| 48.0 | 1374.9 | 547.0 | 121.6 | 51.4 | 74.8 | 135.6 | 56.1 | 687.2 |
| 48.1 | 1372.7 | 712.3 | 109.6 | 58.2 | 102.7 | 106.2 | 41.1 | 681.5 |
| 48.2 | 1370.5 | 731.9 | 127.3 | 21.2 | 53.0 | 132.6 | 21.2 | 440.2 |
| 48.3 | 1368.2 | 794.3 | 144.9 | 94.9 | 99.9 | 99.9 | 55.0 | 459.6 |
| 48.4 | 1366.0 | 1270.3 | 218.6 | 86.5 | 163.9 | 109.3 | 59.2 | 883.3 |
| 48.5 | 1363.7 | 889.1 | 193.3 | 58.0 | 149.8 | 91.8 | 67.7 | 666.8 |
| 48.6 | 1361.5 | 864.2 | 221.6 | 97.5 | 97.5 | 137.4 | 79.8 | 717.9 |
| 48.7 | 1359.2 | 1450.8 | 204.9 | 114.8 | 147.5 | 155.7 | 65.6 | 811.5 |
| 48.8 | 1356.9 | 1096.9 | 218.1 | 93.5 | 118.4 | 130.9 | 93.5 | 754.1 |
| 48.9 | 1354.7 | 900.2 | 182.8 | 41.4 | 82.8 | 106.9 | 34.5 | 689.8 |
| 49.0 | 1352.4 | 896.9 | 190.1 | 34.1 | 43.9 | 107.2 | 24.4 | 848.2 |
| 49.1 | 1350.1 | 829.2 | 158.1 | 81.0 | 96.4 | 142.7 | 38.6 | 667.2 |
| 49.2 | 1347.8 | 997.2 | 174.9 | 24.6 | 76.7 | 89.0 | 12.3 | 917.5 |
| 49.3 | 1345.5 | 416.6 | 76.7 | 19.2 | 30.2 | 41.1 | 2.7 | 339.8 |
| 49.4 | 1343.2 | 1054.7 | 146.3 | 53.9 | 46.2 | 42.3 | 19.3 | 881.4 |
| 49.5 | 1340.9 | 1129.5 | 148.3 | 28.2 | 70.6 | 120.0 | 35.3 | 833.0 |
| 49.6 | 1338.5 | 646.9 | 174.4 | 59.7 | 68.8 | 151.4 | 91.8 | 536.8 |
| 49.7 | 1336.2 | 1033.3 | 221.9 | 83.2 | 90.2 | 83.2 | 34.7 | 679.6 |
| 49.8 | 1333.9 | 1011.9 | 203.9 | 45.3 | 86.8 | 52.9 | 15.1 | 1038.3 |
| 49.9 | 1331.5 | 1154.5 | 347.2 | 60.8 | 147.6 | 95.5 | 26.0 | 902.8 |
| 50.0 | 1329.2 | 1023.0 | 95.6 | 56.2 | 101.2 | 73.1 | 45.0 | 657.7 |
| 50.1 | 1326.8 | 1034.5 | 235.1 | 82.3 | 82.3 | 47.0 | 35.3 | 740.6 |
| 50.2 | 1324.5 | 1267.2 | 412.1 | 77.8 | 93.3 | 178.8 | 93.3 | 1142.9 |
| 50.3 | 1322.1 | 1607.5 | 334.9 | 93.8 | 174.2 | 241.1 | 120.6 | 1446.7 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 50.4 | 1319.7 | 1524.9 | 455.5 | 99.0 | 118.8 | 267.4 | 108.9 | 1584.4 |
| 50.5 | 1317.4 | 2952.0 | 531.4 | 196.8 | 118.1 | 255.8 | 118.1 | 2460.0 |
| 50.6 | 1315.0 | 2590.3 | 410.0 | 149.1 | 167.7 | 298.2 | 149.1 | 2273.5 |
| 50.7 | 1312.6 | 2336.3 | 507.4 | 200.6 | 177.0 | 306.8 | 153.4 | 2430.7 |
| 50.8 | 1310.2 | 2156.4 | 589.8 | 202.7 | 165.9 | 221.2 | 110.6 | 2912.1 |
| 50.9 | 1307.8 | 1062.6 | 267.0 | 55.6 | 122.4 | 166.9 | 77.9 | 1029.2 |
| 51.0 | 1305.4 | 1989.3 | 405.2 | 147.4 | 159.6 | 343.8 | 110.5 | 2247.1 |
| 51.1 | 1303.0 | 1485.9 | 268.8 | 126.9 | 141.9 | 126.9 | 29.9 | 1478.4 |
| 51.2 | 1300.5 | 1380.3 | 353.9 | 70.8 | 118.0 | 141.6 | 70.8 | 1403.9 |
| 51.3 | 1298.1 | 1172.2 | 328.2 | 84.4 | 121.9 | 253.2 | 28.1 | 1378.5 |
| 51.4 | 1295.7 | 1003.7 | 229.7 | 74.9 | 129.8 | 194.8 | 20.0 | 893.9 |
| 51.5 | 1293.2 | 1751.4 | 408.4 | 94.3 | 70.7 | 164.9 | 39.3 | 1382.3 |
| 51.6 | 1290.8 | 1699.3 | 334.6 | 70.4 | 132.1 | 193.7 | 52.8 | 1567.2 |
| 51.7 | 1288.3 | 2127.7 | 308.4 | 72.0 | 123.4 | 174.7 | 82.2 | 1737.1 |
| 51.8 | 1285.9 | 2570.6 | 305.3 | 113.6 | 134.9 | 149.1 | 99.4 | 1732.7 |
| 51.9 | 1283.4 | 1531.4 | 294.8 | 90.1 | 131.0 | 163.8 | 106.5 | 794.3 |
| 52.0 | 1280.9 | 3057.0 | 533.8 | 80.9 | 80.9 | 307.3 | 226.5 | 2054.2 |
| 52.1 | 1278.4 | 2908.8 | 530.3 | 144.6 | 80.4 | 144.6 | 144.6 | 1751.7 |
| 52.2 | 1276.0 | 2326.8 | 390.4 | 78.1 | 109.3 | 281.1 | 93.7 | 1389.8 |
| 52.3 | 1273.5 | 2118.8 | 435.2 | 49.9 | 199.8 | 164.1 | 71.3 | 1298.4 |
| 52.4 | 1271.0 | 1506.4 | 284.1 | 79.3 | 79.3 | 185.0 | 145.4 | 918.4 |
| 52.5 | 1268.4 | 2319.7 | 392.8 | 73.6 | 122.7 | 220.9 | 135.0 | 1116.9 |
| 52.6 | 1265.9 | 2421.4 | 501.3 | 75.7 | 170.3 | 123.0 | 94.6 | 1693.1 |
| 52.7 | 1263.4 | 2108.3 | 433.4 | 46.9 | 140.6 | 105.4 | 46.9 | 1651.5 |
| 52.8 | 1260.9 | 2449.8 | 307.3 | 70.2 | 140.5 | 149.3 | 96.6 | 1694.7 |
| 52.9 | 1258.3 | 1747.3 | 323.6 | 97.1 | 64.7 | 140.2 | 53.9 | 938.4 |
| 53.0 | 1255.8 | 2634.1 | 424.9 | 70.8 | 155.8 | 141.6 | 141.6 | 2011.0 |
| 53.1 | 1253.3 | 2439.3 | 313.0 | 64.8 | 226.7 | 129.5 | 64.8 | 1942.8 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 53.2 | 1250.7 | 1888.2 | 273.0 | 45.5 | 113.7 | 106.2 | 68.3 | 1448.3 |
| 53.3 | 1248.1 | 1969.0 | 204.6 | 89.5 | 76.7 | 127.9 | 115.1 | 1432.0 |
| 53.4 | 1245.6 | 916.5 | 360.6 | 55.1 | 120.2 | 120.2 | 105.2 | 846.4 |
| 53.5 | 1243.0 | 1765.8 | 275.9 | 117.3 | 110.4 | 110.4 | 103.5 | 1310.6 |
| 53.6 | 1240.4 | 1692.9 | 279.8 | 90.9 | 111.9 | 146.9 | 111.9 | 1378.1 |
| 53.7 | 1237.8 | 1763.6 | 307.7 | 23.7 | 142.0 | 94.7 | 106.5 | 1349.3 |
| 53.8 | 1235.2 | 1534.5 | 313.2 | 62.6 | 156.6 | 156.6 | 101.8 | 1573.7 |
| 53.9 | 1232.6 | 1296.4 | 214.7 | 49.6 | 99.1 | 239.5 | 148.6 | 1032.2 |
| 54.0 | 1230.0 | 1656.0 | 297.9 | 69.3 | 131.7 | 242.5 | 48.5 | 1295.7 |
| 54.1 | 1227.4 | 1559.3 | 346.5 | 92.4 | 161.7 | 173.3 | 138.6 | 2032.9 |
| 54.2 | 1224.8 | 1826.1 | 389.4 | 67.1 | 120.9 | 376.0 | 80.6 | 1745.5 |
| 54.3 | 1222.1 | 1223.1 | 203.9 | 63.7 | 121.0 | 191.1 | 63.7 | 1076.6 |
| 54.4 | 1219.5 | 1294.8 | 255.9 | 69.8 | 131.8 | 186.1 | 124.1 | 938.2 |
| 54.5 | 1216.9 | 2091.7 | 251.0 | 59.8 | 107.6 | 155.4 | 95.6 | 1888.5 |
| 54.6 | 1214.2 | 2044.0 | 356.5 | 95.1 | 118.8 | 178.3 | 178.3 | 1675.6 |
| 54.7 | 1211.5 | 1940.8 | 280.3 | 35.0 | 98.1 | 252.2 | 77.1 | 1485.4 |
| 54.8 | 1208.9 | 1510.6 | 202.2 | 59.5 | 101.1 | 249.8 | 107.1 | 1242.9 |
| 54.9 | 1206.2 | 1309.0 | 250.7 | 48.7 | 132.3 | 167.1 | 118.4 | 988.7 |
| 55.0 | 1203.5 | 2252.3 | 323.5 | 74.7 | 62.2 | 273.8 | 74.7 | 1991.0 |
| 55.1 | 1200.8 | 2266.9 | 329.7 | 30.9 | 82.4 | 175.2 | 61.8 | 2194.7 |
| 55.2 | 1198.1 | 2597.4 | 232.1 | 88.4 | 77.4 | 154.7 | 66.3 | 2055.8 |
| 55.3 | 1195.4 | 1535.8 | 185.1 | 75.4 | 96.0 | 144.0 | 75.4 | 1110.7 |
| 55.4 | 1192.7 | 1081.6 | 248.1 | 57.3 | 63.6 | 114.5 | 82.7 | 897.1 |
| 55.5 | 1190.0 | 2591.1 | 472.1 | 94.4 | 136.4 | 188.8 | 73.4 | 2454.8 |
| 55.6 | 1187.3 | 2379.6 | 248.2 | 29.2 | 73.0 | 175.2 | 87.6 | 2058.4 |
| 55.7 | 1184.6 | 2405.6 | 300.7 | 57.3 | 100.2 | 143.2 | 171.8 | 1918.7 |
| 55.8 | 1181.8 | 1932.9 | 269.4 | 35.1 | 105.4 | 152.3 | 82.0 | 1218.3 |
| 55.9 | 1179.1 | 1316.7 | 220.5 | 116.8 | 84.3 | 149.2 | 110.3 | 823.7 |

**PL07-71BC**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *O. u* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *N. d* #/g | *G. m* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|
| 56.0 | 1176.3 | 2898.4 | 567.5 | 20.3 | 81.1 | 182.4 | 121.6 | 2229.5 |
| 56.1 | 1173.6 | 2343.8 | 336.6 | 162.1 | 74.8 | 162.1 | 124.7 | 2032.1 |
| 56.2 | 1170.8 | 2177.6 | 337.0 | 51.9 | 142.6 | 155.5 | 90.7 | 1983.1 |
| 56.3 | 1168.0 | 2464.2 | 311.8 | 100.6 | 70.4 | 271.6 | 120.7 | 1659.6 |
| 56.4 | 1165.3 | 1067.3 | 201.4 | 80.6 | 120.8 | 141.0 | 40.3 | 906.2 |

**CAR25-1**

| Depth (cm) | Age (Year CE) | *G. b* #/g | *N. d* #/g | *O. u* #/g | *G. a* #/g | *P. o* #/g | *G. c* #/g | *G. m* #/g | *G. r (p)* #/g | *G. r (w)* #/g | *G. s* #/g | *G. g* #/g | *G. t* #/g | *G. rs* #/g | Other #/g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 2008.0 | 557.8 | 78.1 | 60.2 | 29.0 | 4.5 | 29.0 | 44.6 | 26.8 | 29.0 | 40.2 | 6.7 | 4.5 | 0.0 | 29.0 |
| 0.1 | 2007.3 | 348.7 | 33.0 | 49.5 | 9.3 | 1.0 | 17.5 | 25.8 | 17.5 | 17.5 | 16.5 | 6.2 | 1.0 | 0.0 | 14.4 |
| 0.2 | 2006.6 | 565.6 | 51.4 | 100.9 | 33.6 | 0.0 | 59.3 | 33.6 | 81.1 | 15.8 | 55.4 | 15.8 | 5.9 | 0.0 | 23.7 |
| 0.3 | 2005.9 | 727.8 | 50.3 | 88.1 | 37.7 | 0.0 | 55.7 | 48.5 | 104.2 | 34.1 | 53.9 | 12.6 | 1.8 | 1.8 | 32.3 |
| 0.4 | 2005.2 | 592.1 | 52.0 | 84.6 | 28.2 | 2.2 | 45.5 | 49.9 | 82.4 | 26.0 | 32.5 | 13.0 | 0.0 | 0.0 | 49.9 |
| 0.5 | 2004.5 | 722.3 | 93.7 | 63.5 | 51.4 | 0.0 | 81.6 | 90.7 | 214.6 | 84.6 | 81.6 | 27.2 | 0.0 | 0.0 | 39.3 |
| 0.6 | 2003.8 | 854.3 | 100.2 | 106.1 | 100.2 | 11.8 | 100.2 | 117.8 | 223.9 | 111.9 | 94.3 | 29.5 | 0.0 | 0.0 | 29.5 |
| 0.7 | 2003.1 | 876.8 | 80.8 | 50.0 | 88.5 | 0.0 | 119.2 | 100.0 | 273.1 | 88.5 | 23.1 | 23.1 | 0.0 | 3.8 | 38.5 |
| 0.8 | 2002.4 | 650.8 | 88.9 | 28.3 | 84.9 | 0.0 | 56.6 | 105.1 | 287.0 | 52.6 | 16.2 | 12.1 | 0.0 | 0.0 | 8.1 |
| 0.9 | 2001.7 | 784.0 | 115.3 | 36.9 | 96.8 | 0.0 | 59.9 | 69.2 | 59.9 | 175.2 | 18.4 | 27.7 | 0.0 | 0.0 | 55.3 |
| 1.0 | 2001.0 | 822.2 | 79.3 | 36.1 | 108.2 | 3.6 | 75.7 | 86.5 | 191.1 | 72.1 | 21.6 | 25.2 | 0.0 | 0.0 | 14.4 |
| 1.1 | 2000.3 | 972.1 | 116.5 | 71.7 | 107.5 | 0.0 | 107.5 | 121.0 | 152.3 | 80.6 | 13.4 | 44.8 | 0.0 | 0.0 | 35.8 |
| 1.2 | 1999.6 | 957.7 | 64.4 | 64.4 | 111.7 | 4.3 | 98.8 | 85.9 | 167.5 | 85.9 | 21.5 | 77.3 | 0.0 | 0.0 | 47.2 |
| 1.3 | 1998.9 | 949.6 | 106.8 | 83.9 | 118.2 | 7.6 | 144.9 | 87.7 | 232.6 | 125.8 | 19.1 | 64.8 | 15.3 | 0.0 | 91.5 |
| 1.4 | 1998.2 | 1048.4 | 143.5 | 90.5 | 103.0 | 0.0 | 124.8 | 118.6 | 96.7 | 90.5 | 28.1 | 34.3 | 6.2 | 0.0 | 56.2 |
| 1.5 | 1997.5 | 888.1 | 82.9 | 75.0 | 82.9 | 3.9 | 146.0 | 71.0 | 185.5 | 47.4 | 23.7 | 63.2 | 0.0 | 0.0 | 35.5 |
| 1.6 | 1996.8 | 1054.1 | 109.5 | 68.4 | 89.0 | 0.0 | 126.6 | 85.6 | 75.3 | 61.6 | 44.5 | 30.8 | 3.4 | 3.4 | 37.6 |
| 1.7 | 1996.1 | 1180.0 | 91.0 | 120.2 | 109.3 | 3.6 | 120.2 | 76.5 | 76.5 | 116.5 | 21.9 | 21.9 | 0.0 | 0.0 | 32.8 |
| 1.8 | 1995.4 | 1074.9 | 126.5 | 113.8 | 113.8 | 4.2 | 71.7 | 97.0 | 59.0 | 67.4 | 21.1 | 25.3 | 4.2 | 0.0 | 29.5 |
| 1.9 | 1994.7 | 982.6 | 149.0 | 127.0 | 127.0 | 5.5 | 88.3 | 110.4 | 82.8 | 149.0 | 27.6 | 33.1 | 0.0 | 0.0 | 44.2 |
| 2.0 | 1994.0 | 850.6 | 160.0 | 78.0 | 117.1 | 15.6 | 117.1 | 132.7 | 85.8 | 109.3 | 35.1 | 19.5 | 0.0 | 0.0 | 46.8 |
| 2.1 | 1993.3 | 1523.2 | 194.0 | 145.5 | 223.1 | 9.7 | 174.6 | 252.2 | 87.3 | 145.5 | 38.8 | 87.3 | 0.0 | 0.0 | 19.4 |
| 2.2 | 1992.6 | 1557.0 | 203.5 | 123.9 | 194.6 | 17.7 | 194.6 | 132.7 | 97.3 | 106.2 | 35.4 | 8.8 | 0.0 | 0.0 | 88.5 |
| 2.3 | 1991.9 | 2637.3 | 245.7 | 131.9 | 185.8 | 12.0 | 215.8 | 125.9 | 89.9 | 185.8 | 42.0 | 12.0 | 6.0 | 6.0 | 53.9 |
| 2.4 | 1991.2 | 1884.6 | 164.9 | 86.4 | 172.8 | 15.7 | 149.2 | 149.2 | 70.7 | 133.5 | 31.4 | 23.6 | 0.0 | 7.9 | 62.8 |
| 2.5 | 1990.5 | 1646.1 | 137.9 | 80.1 | 124.6 | 4.4 | 146.8 | 146.8 | 44.5 | 106.8 | 17.8 | 17.8 | 8.9 | 8.9 | 62.3 |
| 2.6 | 1989.8 | 493.2 | 19.4 | 27.2 | 52.4 | 0.0 | 68.0 | 42.7 | 11.7 | 29.1 | 7.8 | 3.9 | 1.9 | 5.8 | 25.2 |
| 2.7 | 1989.1 | 1194.8 | 106.3 | 40.3 | 131.9 | 11.0 | 168.6 | 95.3 | 25.7 | 102.6 | 3.7 | 14.7 | 0.0 | 3.7 | 73.3 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.8 | 1988.4 | 1527.0 | 110.6 | 117.5 | 152.0 | 0.0 | 138.2 | 172.7 | 20.7 | 165.8 | 41.5 | 55.3 | 0.0 | 13.8 | 82.9 |
| 2.9 | 1987.7 | 1381.9 | 183.6 | 91.8 | 117.3 | 15.3 | 173.4 | 96.9 | 35.7 | 188.7 | 35.7 | 45.9 | 0.0 | 5.1 | 56.1 |
| 3.0 | 1987.0 | 1274.7 | 151.3 | 58.2 | 151.3 | 0.0 | 168.8 | 75.7 | 17.5 | 87.3 | 11.6 | 29.1 | 0.0 | 0.0 | 64.0 |