An Investigation into the Sedimentary laminations at West Basin Lake, Victoria: Are they Varves?

Thesis submitted in accordance with the requirements of the University of Adelaide for an Honours Degree in Geology

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November 2014

THE UNIVERSITY of ADELAIDE

TITLE

An Investigation into the Sedimentary laminations at West Basin Lake, Victoria: Are they Varves?

RUNNING TITLE

Are West Basin Lake Sediments Varved?

ABSTRACT

West Basin Lake, in the Western Victorian Volcanic Region, has characteristics conducive to deposition of annually laminated sediments known as varves. The uppermost 50 cm of lake sediment consists of finely laminated, organic-carbonate sediments of a size and frequency that are typically associated with varved lake sediments. Varves hold tremendous potential as palaeoclimate indicators, allowing for the development of precise chronologies and annual scale climate reconstructions. Through detailed micro-facies analysis and counting of the West Basin lake sediments, the study found that the number of laminations was in good agreement with radiometric depth age modelling, suggesting annual deposition. It was concluded that although seasonal lamina were unable to be classified by the scope of this study, good agreement with radiometric depth-age modelling in conjunction with meromixis of West Basin Lake, its sheltered nature and sediment-water interface anoxia, suggest the laminations more likely represent varves than non-annual laminations and should warrant further investigation.

KEYWORDS

Varves, West Basin Lake, Carbonates, Organic rich, Annual laminations, Meromixis, Anoxia, Laminated sediment

TABLE OF CONTENTS

Title i
Running title i
Abstract i
Keywords i
List of Figures and Tables 2
INTRODUCTION 7
METHODS 11
Coring and Storage 11
Subsampling 11
Resin Embedding 13
Thin Section Microscopy 14
Scanning Electron Microscope (SEM) 14
Lamination Counting 14
RESULTS: OBSERVATIONS AND INTERPRETATIONS 14
Petrography of Sediment Constituents 15
Carbonates 15
Organic Matter 15
Allogenic, Other and Unidentified Material 16
Diagenesis 18
Laminations 19
Dark vs Light 19
Carbonate Rich Laminations 20
Organic Rich Laminations 21
Lamination Counts 21
Depth – Age Relationship 24
Scanning electron microscope (SEM) Micro-facies Analysis 36
Low Vacuum SEM using soft sediment 36
Environmental SEM (ESEM) using soft sediment 36
High Vacuum SEM using resin embedded sediments 37
Down-core variability in Sediment Composition 39
DISCUSSION 39
Are the Laminations Varves? 39
Potential for Varve Deposition 40

Carbonate vs. Organic Deposition 42
Potential for Varve Preservation 43
West Basin Meromixis and Anoxia 43
Why not Varves? 44
Depth-Age Relationship 45
Future Direction 47
SEM (what else can this provide?) 47
LA-ICP-MS 48
Dating 48
Sediment Trap Studies 49
CONCLUSIONS 49
Acknowledgments 50
References 50
Appendix A: Extended methods, Resin Recipe & Misc. 53

LIST OF FIGURES AND TABLES

Figure 1: Location map of the study area. (d) Lake bathymetry and surrounding topography adapted from Gell et al. (1994). 10
Figure 2: Showing the aluminium boxes which have been embedded into the sediment core 12
Figure 3: Showing the desiccation apparatus with which a vacuum pump was attached to facilitate impregnation of the resin into the samples. The yellow fluid is the Spurr's resin. 12
Figure 4: Reflected light micrograph image showing what is likely an authigenic pyrite framboid which was growing within a spore. Width of image = 174 um. 18
Figure 5: (a) Shows lamination thickness variation through time and an increasing lamination thickness towards present day. This plot does not display thicknesses of zones where laminations appeared absent and hence, splices the laminated zones as a continuous chronology (i.e. the 621st lamination is likely older than 621 years). Thus, is only here to show the trend that lamination widths decrease with age. (b) Shows lamination frequency variation with depth and an increase in lamination frequency per 2 cm with depth. The widths of the laminations have been corrected for shrinkage and represent true widths in both plots. 23
Figure 6: A reproduction of the top of the depth-age model for West Basin Lake adapted from Gell et al. (1994). The shape of the curve is a smooth spline. The green data represent six independent Pb210 ages and the blue data represents the earliest of three ^{14}C radiocarbon age probability density histograms produced from West Basin Lake (Last and De Deckker 1990). The grey band represents the 95% confidence interval. The series of data points (black, open pinpoints) represents the cumulative

number of laminations per 2 cm of West Basin Lake sediment. 0 cal BP = 1986. The horizontal and vertical lines intersect at 50 cm depth and 621 cal BP respectively..... 25
Figure 7: Photomicrographs of some of the common constituents of the calcareous component of West Basin Lake sediments. (a) A typical sub-rounded, sub-spherical peloid of microcrystalline carbonates (micrite) also exhibiting a cloudiness which is not uncommon (PPL). (b) A similar peloid viewed under XPL displaying third order creamy birefringent colours. It also appears to have some organic matter, most obvious in the centre, and probably accounts for the slight brown colouration. (c) A peloid viewed under XPL with the λ 530 nm tint plate inserted, displaying third order birefringent colours giving an overall creamy green appearance. (d) A mineral commonly seen disseminated throughout the profile. Its relief changed upon stage rotation, a common property of carbonate minerals. The brown colouration could be a staining by organic matter, or may be the Fe bearing carbonate, siderite. (e) The same mineral grain viewed under XPL displaying first order orange/yellow birefringent colours. (f) A peloid/intraclast of unknown composition, potentially fecal in origin, sitting in a carbonate rich matrix. Its optical properties were not vastly different between PPL and XPL and may indicate an organic composition represented by the opaque material within it. A thin micritic envelope can also be seen around the grain. (g) A small cluster of acicular, colourless-grey minerals (potentially aragonite or needle-calcite) in an organic rich matrix. Relief changes were observed upon rotation of the stage and exhibited third order creamy birefringence colours under XPL. This crystal habit of carbonates or at least a clustering of them was a rare occurrence. (h) A small cluster of well-articulated ostracod valves in a carbonate rich matrix (XPL). They commonly exhibit a sweeping extinction in XPL (i) A peloid/intraclast of micrite viewed under XPL. Notice the inclusion to the left of centre of the clast which appears to truncate at the grain boundary. This might indicate the clast was already lithified and may originate from the nearshore hardgrounds of the lake. The light brown colouration of the clast and surrounding carbonate matrix probably indicates organic matter is also present..... 27
Figure 8: Photomicrographs of some of the common constituents of the organic component of West Basin Lake sediments. All images were acquired in PPL. (a) An organic particle of what may be a pollen spore or other plant component. It appears to have cellular structure. (b) A particle of amorphous organic matter. There is an associated pore space (colourless) which may have once been occupied by more matter which has since disintegrated. (c) A common, more tabular, elongate and larger particle of organic matter. Smaller particles of opaque amorphous organic matter can be seen speckled through the surrounding carbonate matrix. (d) The brown, triangular shaped particle in the centre is an example of another common particle of organic matter which appears translucent and brown - reddish brown in PPL but becomes opaque in XPL. Cellular structure is clearly evident. (e) A transverse image of what might be a vegetative stem. Cellular structure is strikingly prominent. (f) A very common component throughout the sediment. They are morphologically consistent and are likely to be pollen spores. (g) This image captures and organic rich zone, recognisable by the dark brown sediment and disseminated, black amorphous organic matter throughout. The ~ 200 um sized particle slightly left of centre, may represent another transverse through a vegetative stem. Although it is not easily visible at this scale, at higher magnifications, cell walls can be discerned. Another more reddish-brown cellular body can be seen toward the top right of the image. (h) An overview of a zone where the

largest organic and cellular, likely vegetative tissues have been deposited. (i) A large amorphous particle of organic matter in a carbonate and organic mixed matrix. This may also represent a particle of charcoal..... 29
Figure 9: Photomicrographs showing some of the non-carbonate minerals and the nature of grain coatings of West Basin Lake sediments. (a) A mineral grain with the development of a cement coating exhibiting similar third order birefringent orange - yellow colours as the grain in Figure 7 (e). It is not a micritic coating. (b) A mineral grain with a micritic envelope. The micritic envelopes often appear dark – nearly opaque, and hazy. The surrounding matrix is rich in carbonates (note the hazy grey appearance). (c) An XPL image showing a grain exhibiting very low first order yellow birefringence, verging on opaque with an asymmetrical envelope of micrite. (d) A PPL image potentially of the remains of a gastropod. Chambers have been filled with micrite and opaque material which may be organic. In the left most chamber, you can notice a segmentation type pattern in the calcareous wall. Blocky calcite appears to be replacing the original wall of the upper right chamber. A micritic envelope can be seen. (e) An XPL image showing a ghost grain with a rare example of a coating which is not micritic but is most likely calcitic or dolomitic. The original grain appears to have dissolved and micrite has begun filling in the space. (f) An XPL image of a quartz grain with an envelope of micrite. (g) A PPL image of a translucent clast containing smaller grains of quartz. (h) An XPL image of (h). The clast shows a mottled colouration and looks as though it may have undergone some chemical alteration. It may have originated from the nearshore hardgrounds of the lake. (i) An XPL image of a small grain of feldspar, exhibiting multiple twinning. The surrounding carbonate matrix has a brown colouration possibly attributable to the presence of organic matter. 31
Figure 10: Photomicrographs showing some of the diagenetic mineral precipitation of West basin Lake sediments. (a) A PPl image showing blocky carbonate crystals (likely calcite or dolomite) growing from one half of an ostracod valve. (b) An XPL image of an originally well-articulated ostracod valve appearing to have been replaced by microcrystalline carbonate crystals (calcite or dolomite). The fabric appears fibrous where the two valves meet. (c) A similar XPL image to (b) showing ostracod valves and fragments being replaced by microcrystalline carbonates. (d) An XPL image of vegetative tissue where the cellular structures have been replaced by calcareous cement. (e) An XPL image of more ostracods being replaced by microcrystalline carbonates. Notice the pore space has nearly been completely filled in the top-centre ostracods. The sweeping, cross-extinction can be seen, especially in the above centre ostracod. (f) An apparent growth of calcite forming around an unidentified nucleus (g) A PPL image showing two mineral grains with incomplete coatings of dark reddish-brown cement. Note how it cuts through the lowermost grain. Some relief change was noted in the crystals of the cement in the lowermost grain upon rotation of the stage, indicating it could be a carbonate (siderite). (h) An XPL image of (g). The central grain has a micritic envelope as well as the lowermost grain. 33
Figure 11: Photomicrographs showing the general characteristics of the laminations in West basin Lake sediments. The top of the core is to the left in all images. (a) A PPL image showing one of the lightest, slightly yellow laminations running sub-vertically through the centre. Fenestral type porosity can also be seen in the zones adjacent to the lamination. The adjacent sediment is also quite peloidal. The surrounding sediment either side is carbonate rich. It may have been a microbial mat which has since been removed and filled with resin. (b) A PPL image showing a thick carbonate lamination

also rich in organics, attributing the brown colour. Note the grading of coarser carbonate minerals at the base (right) into finer, more micritic, darker and denser sediment into the top (left). (c) An XPL image of (b) where the difference in coarseness can be more clearly noted. Also note the cloudy appearance of the lamination, characteristic of carbonate rich components. (d – f) Image series of organic rich laminations in PPL, XPL and XPL with the λ 530 nm tint plate inserted respectively. Notice how under XPL, without the tint plate (e), the laminations become much harder to distinguish as organic content remains opaque or becomes darker, creating the illusion of a homogenous sediment. Even the abundant clastics and non-carbonate grains are homogenously disseminated throughout. The darkest lamina is likely to be the richest in organics, whilst the lightest, slightly yellow appear sparse in any type of component and has mostly become occupied with resin. Notice that there appears to be a repetitive and cyclic deposition. (g – i) Image series of alternating carbonate and organic rich laminations taken under PPL, XPL and XPL + tint plate respectively. Note how the sediment appears nearly homogenously coloured and composite under PPL (g) but under XPL, without and with the tint plate inserted (h and i respectively), compositionally contrasting laminations are revealed. The XPL image (h) reveals a carbonate rich lamination in the centre, bracketed by darker, nearly opaque organic rich laminations either side. The XPL + tint plate image (i) showcases the diagnostic third order creamy green birefringence of carbonate rich lamina. Note how there is little change in the organic matter between PPL and XPL + tint plate, but sometimes appearing with orange hues as seen in (i). 35
Figure 12: A series of backscatter electron micrographs acquired using ESEM mode, imaging a ~ 50 x 50 x 50 mm cube of raw, wet West Basin Lake sediment extracted between 100 – 110 mm depth from the core. (a) Shows what is likely the surface of an ostracod shell - notice the porous texture. (b) Notice in the top of the image, an amorphous wavy, folded, slightly darker looking particle embedded in the matrix which is likely organic matter. (c) A good representation of the fineness of the carbonate and clay sized non-carbonate grains (bright white particles) embedded in what is probably an organic matrix (darker and grey). (d) Notice the larger, clumpy grains which probably reflect the peloid grains commonly observed in thin section of carbonate rich lamina. 37
Figure 13: A series of backscatter electron micrographs acquired using high vacuum mode imaging various solid, resin embedded West Basin Lake samples. The top of the core is to the left in all images (a) Notice the abunadance of peloidal grains constituting much of the sediment. There is a good degree of intergranular porosity amonst the peloids where dark grey resin has infiltrated. Several ostracods can also be seen and the voids within them have been infiltrated by resin. The more anhedral, broken up bright grains in the right portion of the image are likely to be carbonates and/or purely micritic peloids whereas the more euhedral grains are more likely non-carbonates such as quartz and other silicates. (b) The matrix here is much more dense and homogenised and peloids cannot be recognised. A lamination running vertically, slightly left of centre and is abundant with carbonate and various detrital grains can be distinguished. Two ostracod valves can be seen in the right portion of the image. Some dark grey material is speckled throughout and probably represents organic matter and/or potentially pore space. (c) A thin lamination running vertically through the centre of apparently homogenous looking sediment can be distinguished. It is likely richer in carbonates and/or silicates than the adjacent sediment either side. (d) Notice the large pore spaces

which appear to have been completely infiltrated with resin actually also contain large, cellular plant tissue which can no longer be discerned. 38
Figure 14: The uppermost plot shows mean monthly maximum temperature during the period 1899 – 1983 for the Colac region, Victoria. The lower plot shows mean monthly rainfall during the period 1898 – 2014 for the Colac region, Victoria. 41
Figure 15: The 70 – 140 mm carbonate rich zone where laminations appear absent/on hiatus..... 46

Table 1: The subsamples collected from each core half. One subsample was 1 cm longer than the other. WB; West Basin, N; North half, S; South half..... 13