

A Sequence Stratigraphic approach to
interpreting the $\delta^{13}\text{C}$ record using an
Early Cambrian Carbonate Platform

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

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November 2013



THE UNIVERSITY
of ADELAIDE

TITLE

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RUNNING TITLE

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ABSTRACT

The Early Cambrian Wilkawillina Platform displays a continuous platform to basin facies that enables physical time surfaces to be used to compare roughly synchronous $\delta^{13}\text{C}$ values of carbonates to test their lateral variation in range. The two sections measured showed a progression from shallow water deposition of the Woodendinna Dolomite to deeper water deposition of the Oraparinna Shale in the basin while biostromes of *Archaeocyatha* developed on the shelf. Using a sequence stratigraphic approach, the sections were correlated using the time significant sequence boundaries shared between the two sections. Correlated by the sequence boundaries, stable isotopes ($\delta^{13}\text{C}$ and $\delta^{18}\text{O}$) were then compared and found to be out of phase with each other. A chronostratigraphic diagram shows that carbonate deposition is not continuous over time and therefore, the $\delta^{13}\text{C}$ record is episodic. This approach emphasises the punctuated nature of the record and the predominance of depositional hiatus in sections, while previous chemostratigraphic studies have assumed the $\delta^{13}\text{C}$ record to be largely continuous through time when making correlations.

KEYWORDS

Sequence Stratigraphy, $\delta^{13}\text{C}$ record, carbonate platforms, Wilkawillina Platform, Early Cambrian, stratigraphic correlation, chemostratigraphy.

TABLE OF CONTENTS

Title.....	2
Running title	2
Abstract.....	2
Keywords.....	2
List of Figures and Tables	4
Introduction	5
Geological Setting	13
Methods	17
Observations and Results	18
Stratigraphic Sections	18
Sequence Stratigraphy	23
Physical stratigraphic model.....	27
Stable Isotopes	29
Discussion.....	32
Conclusions	40
Acknowledgments	42
References	43
Appendix A: Methods	46
Appendix B: Supplementary Results.....	46

LIST OF FIGURES AND TABLES

Figure 1: Sequence boundaries separate lithologies, facies, and stable isotope signals; even if previously correlated. Only the younger stratigraphy lying above the SB can be correlated, and the older stratigraphy below, but never the stratigraphy from either side of the SB. Hence only $\delta^{13}\text{C}$ values from the same side of the boundary can be correlated.	12
Figure 2: Location Map for the Wilkawillina Platform, Flinders Ranges, South Australia.	13
Figure 3: (a) Section 1 represents the slope to basin facies of the Wilkawillina platform. (b) Section 2 represents the slope to platformal facies.	21
Figure 4: Evidence of diagenetic alteration. (a) Recrystallised oolite of the Woodendinna Dolomite stained with Alizarin red S, note the meteoric calcite cements infilling pore spaces around ooids (equant calcite; white arrow, XPL). (b) Recrystallised Bunkers Sandstone stained with Alizarin red S, calcite (red) and dolomite (yellow arrows) fill pore spaces in an interlocking pattern with quartz grains (XPL). (c) Red-dashed line shows the dolomitic front of discolouration at a karst surface. (d) Discoloured and brecciated karst surface atop biostrome three in section (e) Petrographic image (XPL) of an iron-stained fissure fill of detrital quartz grains from the Bunkers Sandstone (white arrow) in a dolomitised sample from (c). (f) Brecciated texture of a biostromal packstone, stained with Alizarin red S, calcite is red and dolomite does not stain. Secondary calcite veins (white arrow) crosscut the micritic matrix (PPL). Stained samples in (a), (b) and (f) are from Clarke (1988) samples JDAC 3-5-342, 3-5-353A, and, 3-5-379 respectively.	22
Figure 5: Sequence stratigraphic succession of the Wilkawillina Platform and adjacent basin.	25
Figure 6: Map of the Wilkawillina Platform	26
Figure 7: A physical stratigraphic model for the Wilkawillina platform and adjacent slope and basin (Bunkers graben) using two stratigraphic sections. SB = Sequence Boundary, MFS = Maximum Flooding Surface.	28
Figure 8: The covariance of $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ for section 1 (left) and section 2 (right). R^2 values do not show any significant linear relationship between $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$	30
Figure 9: Stable isotope results for the Wilkawillina Platform correlated using the physical stratigraphic model.	31
Figure 10: Evolution of the $\delta^{13}\text{C}$ curve from the complete sections in Figure 9 to sequence packages as shown in Figure 11.	37
Figure 11: Chronostratigraphic diagram for the Wilkawillina Platform and adjacent basin. With $\delta^{13}\text{C}$ curve from sections 1 and 2	38
Figure 12: Conceptual chronostratigraphic diagram of the Maloof <i>et al.</i> (2010a) global composite $\delta^{13}\text{C}$ data. Based on chemostratigraphic sections from Maloof <i>et al.</i> (2005)	39