221

THE PROXIMAL RECORD OF ANTARCTIC ICE VOLUME CHANGE ACROSS THE OLIGOCENE-MIOCENE BOUNDARY AND IMPLICATIONS FOR GLOBAL SEA-LEVEL RECONSTRUCTION.

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It is widely hypothesised that Antarctic ice sheets displayed an unstable mode of behaviour 15 to 33 million years ago, when planetary temperature was 2-3ºC warmer. Oxygen isotope records from deep-sea sediment cores suggest that fluctuations in global temperature and high-latitude continental ice volume, during this time, were influenced by Milankovitch cycles. Yet, direct calibration of inferred ice volume changes with actual oscillations of Antarctic ice sheets are only now being established (e.g. Naish et al, 2001). Recently, a number of studies have attempted to calibrate the ice-volume component of the marine oxygen isotope record using eustatic estimates deconvolved from far-field continental margin sequences (e.g. Miller et al., 2005; Pekar and DeConto, 2006). The results imply a dynamic EAIS paced by eccentricity (400 and 100kyr) modulated obliquity (40-kyr), with some fluctuations in volume equal to or greater than the present day ice sheet. Here, we use proximal glacimarine sedimentary records from western Ross Sea to evaluate the new ice volume calibration of the late Oligocene-early Miocene oxygen isotope curve. In doing so we also present a new age model for well-dated glacimarine sequences spanning the Oligocene-Miocene boundary, that is calibrated to the astronomical timescale (e.g. Shackleton et al., 2000; Billups et al., 2004).