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DERIVING A HIGH-RESOLUTION - CONTINUOUS RECORD OF CLIMATE CHANGE FOR THE PAST 15,000 CAL BP, MAXWELL BAY SEDIMENT CORE, SOUTH SHETLAND ISLANDS

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In the Antarctic Peninusla area, a climatic gradient, created by orographic and oceanographic effects, is manifested in extreme temperature and precipitation patterns. Thus, the area provides a natural laboratory to study the nature and timing of climate change at high southern latitudes during the past several thousand years. Two benchmark long term continuous records can now be compared; Maxwell Bay, situated in a warm wet subpolar climate setting and Palmer Deep (Domack et al., 2001), located in a cold wet subpolar climatic regime. Both of these records span the past 14000 years, document the LGM ice pullback and provide the means to contrast climate fluctuations in two different areas. This paper presents the preliminary results from a 108 m sediment core (93 % recovery) recovered from Maxwell Bay (South Shetland islands). The alternation of diatom ooze and diatomaceous mud is interpreted to represent climate driven oscillations of biogenic productivity. Magnetic susceptibility and other paleoenvironmental proxies track biogenic productivity and provide a means to quantify decadal, century, and millennia scales of climate change. Additionally, five global climate intervals are noted including, deglaciation, climatic reversal, Hypsithermal (Holocene Climatic Optimum), Neoglacial, and Little Ice Age. Several radiocarbon dates are used to establish an age model and show significant variations in sedimentation rates through time. The sedimentation rate variations correspond to sediment facies changes within the core. Preliminary analysis of magnetic susceptibility data shows decadal, century, and millennial scale cyclicity. Additionally, the character of the magnetic susceptibility signal changes within the core. The changes correspond to climate intervals noted in the Palmer Deep cores. Whereas the Palmer Deep record is derived from a biogenic productivity signal as a proxy for climate; the Maxwell Bay system potentially records a terrestrial sediment derived signal and is more directly linked to climatically driven glacial advance and retreat.