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NEW MAGNETOSTRATIGRAPHIC INSIGHTS FROM ICEBERG ALLEY ON THE RHYTHMS OF ANTARCTIC CLIMATE DURING THE PLIO-PLEISTOCENE (Invited Presentation)

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International Ocean Discovery Program (IODP) Expedition 382 in the Scotia Sea's "Iceberg Alley" recovered among the most continuous and highest resolution stratigraphic records in the Southern Ocean near Antarctica spanning the last 3.3 Myr. Sites drilled in Dove Basin (U1536/U1537) have well-resolved magnetostratigraphy and a strong imprint of orbital forcing in their lithostratigraphy. All magnetic reversals of the last 3.3 Myr are identified, providing a robust age model independent of orbital tuning. In this presentation, we discuss the alternation of warmer (diatom-rich) versus cooler (silty clays) Dove Basin lithologies in comparison to the LR04 benthic $\delta^{18}\text{O}$ stack using an ensemble of possible age models constrained by the magnetic reversals. To account for limitation in the age model resolution, we begin by comparing the amplitude modulation of the eccentricity, obliquity, and precession frequency bands for different age-depth model possibilities. Then we compare the position of the magnetic reversals relative to local facies changes in Dove Basin and the same magnetic reversals relative to benthic $\delta^{18}\text{O}$ at North Atlantic IODP Site U1308. Finally, to establish a higher resolution age model in the latest Pliocene and early Pleistocene, we explore the possibility of interhemispheric stratigraphic correlation between North Atlantic IODP sites and Dove Basin using Relative Paleointensity (RPI). We demonstrate Dove Basin facies change at different times than benthic $\delta^{18}\text{O}$ during intervals between ~3-1 Ma. These differences are consistent with precession phase shifts and suggests climate signals with a Southern Hemisphere summer insolation phase were recorded around Antarctica. If Dove Basin lithology reflects local Antarctic ice volume changes, these signals could represent ice sheet precession variations not captured in benthic $\delta^{18}\text{O}$ during the 41-kyr world.

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