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Linking IODP Expedition 318 Sites to Seismic Profiles: Implications for Depositional Paleoenvironments

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The Wilkes Land drilling program was developed to constrain the age, nature, and paleoenvironments of deposition for glacial sequences that previously were inferred from seismic profiles. Our objective was to obtain a long-term record of Antarctic glaciation and its relationships with global paleoclimate, paleoceanographic and eustatic sea level changes.

Sediment cores collected during the Integrated Ocean Drilling Program (IODP) Expedition 318 to the East Antarctic Wilkes Land margin (January-March 2010) confirmed our previous interpretations about the age and nature of glacial seismic sequences, and their bounding unconformities. The recovered sediment allows the first reconstruction of a chronostratigraphic framework for this sector of the East Antarctic margin. Shipboard, we linked the information from the different lithologic units, based on core physical properties data (i.e. density data and core index velocities), to our acoustic database. Post-cruise, information from each site has been extended regionally through the grid of seismic profiles. Our new isopach maps for the different glacial seismic units, have provided information on changes in the location of depocenters and depositional environments. Our preliminary interpretations on the factors controlling these changes will be discussed in terms of tectonic and glacial evolution.

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