

Seismic-Stratigraphic Based Reconstruction of Middle Miocene Meltwater Discharge and Other Glaciogenic Features on the Eastern Basin Outer Continental Shelf, Ross Sea, Antarctica

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Recent land-based investigations in the Labyrinth sector of the Transantarctic Mountain Dry Valleys region suggest that high-volume glacial-melt-discharge entered Ross Sea during the middle Miocene. Fresh-water discharge altered global thermohaline circulation and thus may have been a prime cause for the re-organization of meridional heat flow during the Middle Miocene Shift. The impact of these meltwater and bottom plumes should also be recorded in the stratigraphy of the adjacent Ross Sea continental shelf. However, the stratal manifestation of these discharge events has not been yet been explicitly investigated. Preliminary seismic-based analyses of middle-Miocene strata on the Eastern Basin, Ross Sea shelf show seismic facies successions interpreted to represent proximal till sheets and glacial-marine units containing channels. Ongoing seismic correlations and mapping of bounding unconformities support the view that a broad zone of offshore directed discharge extended to at least the middle continental shelf and that this outwash corridor was intermittently occluded by a grounded ice sheet.