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Cenozoic Sedimentation Processes off the Adelie Coast (Wilkes Land, East Antarctica)

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Sedimentation processes off the Adelie Coast (Wilkes Land, East Antarctica) are affected by cold and dense water masses formed into deep inner-shelf basins that eventually mix and descend the slope along canyons, leading to the formation of Adelie Land Bottom Water (ALBW), a branch of AABW found on the study area and further westward. Depositional conditions during the Pleistocene, linked to ALBW flow as well as to turbiditic currents related to the ice-sheet margin variations on the shelf, are recorded in a 32-meter long piston core recovered on the continental rise at water depth 3320 m during the MD 130 -Images X CADO cruise. Colour logging, bulk elemental composition and diatom biostratigraphic information enable to constrain a high-resolution age model. The model, established by correlation of reflectance and Ba vs. Al and Ti ratios to the available global LR04 benthic stack of oxygen stable isotope, indicates that the studied sequence reaches back to ca 500 kyr (MIS 13) with an average sedimentation rate of 6.8 cm/kyr. Down-core Mn and Mo values, on average very low, display distinct spikes in late Pleistocene glacial stages, and their variance appears in phase with recorded EPICA-DC ice core dust parameters. Glacial intervals are also characterised by spikes in volume magnetic susceptibility (kMS) and higher contents of Al, Fe, Ti. Down-core organic C and N contents and isotopes are matched by bulk Ni and Zn contents, although their isotopic signals are likely affected by remineralization processes. Lateral sediment focussing factor constrained by Th-excess data indicates that down-slope currents are more active in sediment delivery to the study area during glacial stages.