Sediment drifts at the eastern Kerguelen Plateau: Archives of climate and circulation development

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The Kerguelen Plateau, southern Indian Ocean rises up 2000 m above the surrounding seafloor and hence forms an obstacle for the flow of the Antarctic Circumpolar Current (ACC) and the Antarctic Bottomwater (AABW). The ACC is strongly deviated in its flow towards the north. A branch of the AABW flows northwards along the eastern flank of the plateau and in its path is steered by several basement highs and William’s Ridge. Seismic data collected during RV Sonne cruise SO272 image sediment drifts shaped in the Labuan Basin, which document onset and variabilities in pathway and intensity of this AABW branch in relation to the development of the Antarctic ice sheet and tectonic processes, e.g., the opening of the Tasman gateway. The eastern flank of the Kerguelen shows strong erosion of the post-mid Eocene sequences. In places, the Paleocene/early Eocene sequences are also affected by thinning and erosion. A moat can be observed along the Kerguelen Plateau flank indicating the flowpath of the north setting AAWB branch. Sediment drifts and sediment waves are formed east of the moat. Similar features are observed at the inner, western flank of William’s Ridge thus outlining the recirculation of the AABW branch in the Labuan Basin. The chronological and spatial will be reconstructed via the analysis of those sedimentary structures to provide constraints on climate and ocean circulation variability.