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Kerguelen Plateau – outstanding Southern Indian Ocean archives of Cenozoic climatic and oceanographic changes

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Previous scientific ocean drilling expeditions have revealed that sediments deposited in the Kerguelen Plateau region have the potential to provide an out-standing chronicle of regional and global climate changes. In particular, this area is an excellent location to monitor subantarctic and high-latitude climate dynamics and obtain far-field information documenting Antarctic climate history in a world warmer than today.

Here we report first results from site survey RV Sonne cruise SO272 that sailed January 11 to March 4 2020 from Port Louis, Mauritius, to Cape Town, South Africa. During the cruise ~4000 km of high resolution seismic reflection data were recorded along 18 seismic profiles across the central and southern Kerguelen Plateau. At 11 stations sediment cores with recoveries of up to 10m were retrieved [GU1] to complement the seismic studies and provide ages of the outcropping sediment at the sea floor. Three gravity cores targeted the Labuan Basin recovering Plio-Pleistocene diatom ooze with drop stones and rhythmic changes in reflectance. Eight gravity cores targeted the Raggatt Basin with the main objective to penetrate through the upper undifferentiated layer of surface sediment and probe the below much older outcropping sediment. Carbonate rich sediments were successfully retrieved at three locations with microfossil assemblages of late Eocene age. X-ray fluorescence core scanning, benthic stable isotope and biostratigraphic data will be presented. Seismic and geological datasets will form the base for an IODP full proposal to drill a complete Miocene to Paleocene high latitude sediment package, build upon the #983-Pre IODP proposal.