

## **The ventilation and circulation of the southern Indian Ocean on glacial / interglacial timescales**

With this project, we want to enhance our knowledge of the global carbon cycle on glacial/interglacial time-scales. To achieve this objective, it is of crucial importance to understand the role of the Southern Ocean on the release and uptake of greenhouse gases. As the southern Indian Ocean is currently fundamentally underrepresented in paleoceanographic reconstructions, it is the aim of this project to reconstruct the contribution of this ocean to the atmospheric pattern of CO<sub>2</sub>. Therefore, we plan to use a novel multiproxy-approach, combining stable ( $\delta^{13}\text{C}$ ) and radiogenic ( $\Delta^{14}\text{C}$ ) isotope reconstructions with analyses of B/Ca-derived carbonate ion concentrations on a sediment core depth transect of the Kerguelen Islands. These analyses will provide a detailed insight into the history of water mass ventilation in the Indian Ocean on glacial/interglacial timescales. Ultimately, we want to combine the findings of this project with other water mass ventilation studies (e.g. Skinner et al., 2010; Sarnthein et al., 2013; Ronge et al., under review) and Earth System Modeling. These findings, in combination with previous studies from the Atlantic and Pacific Oceans will for the first time allow a comprehensive reconstruction of CO<sub>2</sub>-enriched deep-water during the last glacial, the ventilation throughout the deglaciation and the contribution to the atmospheric CO<sub>2</sub>-level.