

Evolution of intermediate water masses and weathering inputs on the Agulhas Ridge in the Atlantic sector of the Southern Ocean: radiogenic Nd and Hf isotope evidence

PIs: Martin Frank, Veit Dausmann
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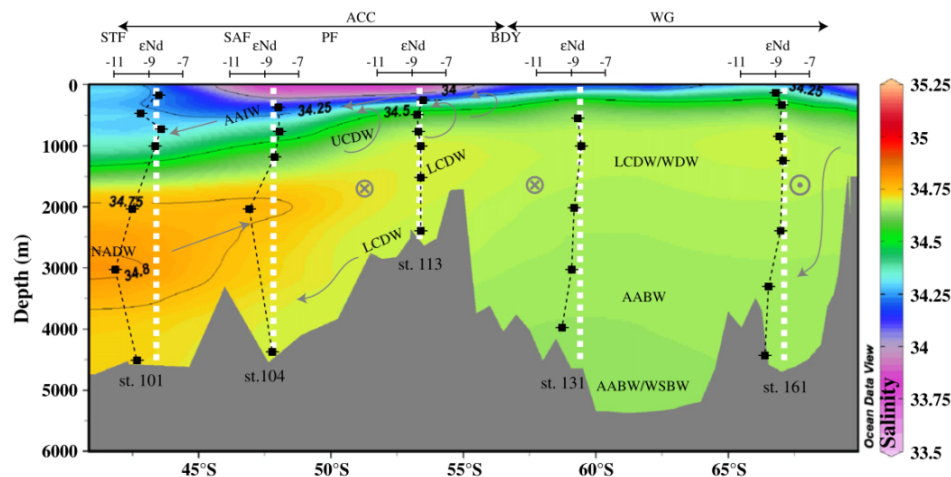


Fig. 1: Latitudinal section along the zero meridian showing salinity and Nd isotope profiles reflecting the admixture of NADW in the northern part (Stichel et al., 2012). The station closest to the Agulhas Ridge is station 101 (Lat. 40 – 45°S).

- ❑ With the Agulhas Leakage being the only location of net heat flux from the Southern to the Northern Hemisphere, past oceanographic changes in this region have had potential implications for global climate.
- ❑ This project will reconstruct the Hf and Nd isotopic bottom-water compositions on the Agulhas Ridge of the last ~13.5 Ma.
- ❑ For the first time the evolution of intermediate masses in the Southern Ocean on million year time scales will be reconstructed applying radiogenic isotopes.

Stichel, T., Frank, M., Rickli, J., & Haley, B. A. (2012). The hafnium and neodymium isotope composition of seawater in the Atlantic sector of the Southern Ocean. *Earth and Planetary Science Letters*, 317, 282-294.

- ❑ At present 3 distinct water masses (NADW, CDW and AAIW) are present at the Agulhas Ridge. Nd isotopes will be applied to track changes in circulation and water mass mixing in the past.
- ❑ Hf isotopes will be used as a proxy for climatically controlled continental weathering inputs in Antarctica and southern Africa.

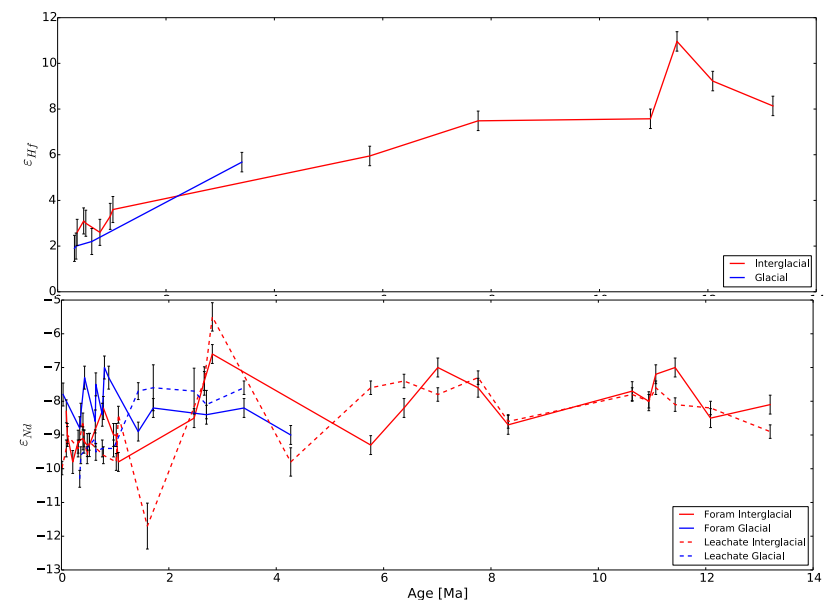


Fig. 2: Preliminary records of Hf (upper) and Nd (lower) isotopes indicate significant changes in ocean circulation and weathering inputs.