## The Nd isotopic composition and concentrations in the Australian sector of the Southern Ocean – insights from the GIPY6 GEOTRACES cruise along 140°E

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The neodymium (Nd) isotopic composition of seawater is commonly used as a proxy to study changes in the thermohaline circulation in the past. Deep and bottom water formation, a key factor in driving the thermohaline circulation, takes place at high latitudes in the modern ocean: North Atlantic Deep Water forms in the North Atlantic, while Antarctic Bottom Water (AABW) forms in a number of regions around the Antarctic continent. Seafloor topography restricts dense AABW to separate sectors in the Southern Ocean, each of which show distinct hydrological characteristics, and potentially different Nd isotopic ratios. So far, Nd isotope data are available for the Atlantic [1] [2] and the Pacific [3-5] sectors of the Southern Ocean. We here present Nd isotope and concentration data from the Australian sector of the Southern Ocean, collected during the GIPY6 voyage from the Adélie Depression (Antarctica) to Tasmania (Australia) (SR3 CASO-GEOTRACES transect; March-April 2008). Four seawater profiles of three to four dephts were

sampled along the 140°E meridian. Our results confirm a rather homogenous isotopic composition of Circumpolar Deep Waters ( $\varepsilon_{Nd}$  = -8.2 to -9.0), but a distinct isotopic fingerprint of Adélie Land Bottom Water ( $\varepsilon_{Nd}$  = -9.3 to -10.5), which is the predominant source of AABW in the Indian Ocean sector of the Southern Ocean.

Stichel *et al.* (2012) *EPSL* **317-318**, 282-294. [2] Garcia-Solsona *et al.* (2014) *GCA* **125**, 351-372. [3] Piepgras and Wasserburg (1982) *Science* **217**, 207-214. [4] Carter *et al.* (2012) *GCA* **79**, 41-59. [5] Rickli *et al.* (2014) *EPSL* **394**, 99-110.