



Dissolved and particle Rare Earth (REE) and Nd isotopic composition in the Drake Strait

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The Drake Strait is of primary interest since it is a key route for main water masses involved in the thermohaline circulation. One of the objectives of the ANT XXIII/3 DRAKE cruise (PI C. Provost, R/V Polarstern, January-February 2006, <http://www.lodyc.jussieu.fr/~fslod/DrakeWiki/>) was to understand the role of the southern American tip and of the Antarctic Peninsula on the circulation and composition of the water masses flowing through the Drake strait.

In this goal, selected trace elements and isotopes are currently measured on dissolved and particle samples collected during the ANT XXIII/3/ DRAKE cruise. These TEIs have been selected because they are useful tools for tracing the slow ventilation rates (e.g. ^{230}Th), the particle fluxes in the ocean (e.g. Ba concentrations, ^{234}Th or $^{210}\text{Po}/^{210}\text{Pb}$ isotopes) and/or the origin and pathways of the water masses (e.g. REE, $^{143}\text{Nd}/^{144}\text{Nd}$, or Ra isotopes). This multi-tracer approach of oceanic processes and fluxes is endorsed by the GEOTRACES program.

Dissolved REE concentrations and Nd isotopic compositions measured along the South America-Antarctic Peninsula section will be presented. North of 56°S , Nd concentrations increase linearly with depth, ranging between 1.2 ng/l in the surface waters and 3.8 ng/l close to the bottom. Concentrations are slightly higher south of the Polar Front (2ng/l at the surface, more than 4 ng/l at depth), the highest surface Nd content being observed below 60°S , close to the Antarctic Peninsula (almost 3 ng/l). This north-south gradient will be discussed together with the Nd isotopic composition of the same profiles and the same Nd parameters measured on three profiles of suspended particles filtered using large volume filtration systems (Challenger Oceanic In

Situ pumps) collected off the Antarctic Peninsula and in the Bransfield Strait (60°42 S- 53°51 W, 60°42S and 53°50 W and 60°39S, 55°48W respectively).

The whole set of data will allow us to discuss the Nd signature of the DRAKE Strait water masses, with regard to the dynamic and hydrography of the area on the one hand and the potential impact of the shelf of the Antarctic Peninsula on these water mass composition on the other hand.