

Neodymium isotopes in seawater:

The GEOTRACES era

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To be or not to be conservative?

Neodymium (Nd) isotopes is increasingly recognized as an ocean circulation and paleocirculation tracer [1]. GEOTRACES plays a central role by providing the opportunity to measure basin-scale hydrographic sections with unprecedented detail [2]. GEOTRACES also allows us to address more specific questions about the global Nd cycling in the ocean such as the impacts of “boundary exchange” near continental margins, water-particle interactions and hydrothermal vents, etc. [3].

We will present findings obtained by the LDEO group over the last 5 years about these [relevant](#) issues.

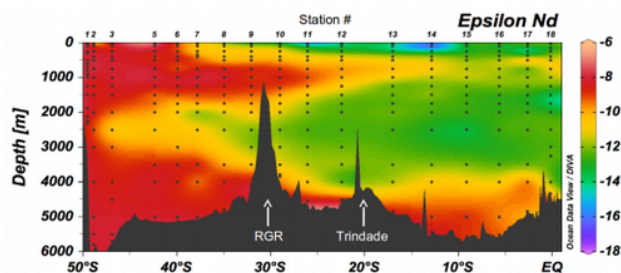


Figure 1: Seawater ϵ_{Nd} along the South Atlantic hydrographic section collected during the JC057 cruise.

For example, our results confirm first order “quasi-conservative” behavior of ϵ_{Nd} along two north and south Atlantic hydrographic sections in intermediate and deep waters. Local impacts on the seawater ϵ_{Nd} are minor and confined to surface waters above the thermocline, and close to continental margins. Local inputs cause near surface deviations from conservative behavior, but they do not propagate to the intermediate or deep waters.

[1] Goldstein and Hemming, TOG, 2003; van de Flierdt *et al.* (2016), *Phil. Trans. R. Soc.* **374**:20150293. [2] Lambelet *et al.* (2015), *Geochim. Cosmochim. Acta* **177**, 1-29. [3] Jeandel (2016), *Phil. Trans. R. Soc.* **374**:20150287.