

REE distributions in the Southern Indian Ocean with a focus on land-ocean inputs (SWINGS GEOTRACES cruise)

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Distributions of dissolved rare earth elements (DREE) were established along 25 vertical profiles in the northern part of the SWINGS GEOTRACES section (MD229/GS02) in the Southwest Indian ocean. In the open ocean, DREE concentrations display nutrient-like profiles, with Nd (Yb) concentrations varying between *ca* 7 (2) pmol/kg and almost 40 (7) pmol/kg between the surface and the deepest part of the profiles. These data compare well with those acquired by Garcia-Solsona et al. (2014) along the BONUS-GOODHOPE section, few degrees farther west. A latitudinal gradient is observed in the upper 1000m between the tropical stations (average Nd <10pmol/kg) and the most southern ones (Nd>13 pmol/kg). Margin lithogenic inputs are detected off the South African coast, with Nd concentrations up to 17 pmol/kg. However, the Agulhas current prevents the direct spread of this enrichment towards the open sea. Contrastingly, the Agulhas Return Current transports these enriched waters to the middle of the “South African-Marion islands” section. Lithogenic enrichments are less pronounced along the Marion island shelf. Atmospheric dust signal is clearly detected in the middle of the Mozambic Channel. A slight enrichment attests the occurrence of hydrothermal activity above the South West Indian Ridge (SWIR). Preliminary Nd isotopic compositions might help identifying the various enrichment sources encountered along the section.

Garcia-Solsona, E.; **Jeandel, C.**; Labatut, M.; **Lacan, F.**; Vance, D.; Chavagnac, V. (2014). Rare Earth Elements and Nd isotopes tracing water mass mixing and particle-seawater interactions in the SE Atlantic *Geochimica et Cosmochimica Acta*, 125, 351–372. doi:10.1016/j.gca.2013.10