

Distribution of iron isotopes in the western North Atlantic along the GEOVIDE transect

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Iron (Fe) is a key micronutrient for marine primary production. Large phytoplankton blooms are observed from space in the West European Basin during the GEOVIDE cruise (GEOTRACES GA01; May-June 2014), suggesting sufficient Fe availability in seawater for phytoplankton growth at this time of the year. This region receives important amounts of atmospheric dust, rich in Fe, but sedimentary inputs from, primarily, the Iberian margin and, to a lower extent, the abyssal plain also contribute to the dissolved Fe (dFe) budget. The relative importance of the different sources of Fe is still uncertain, as are the processes leading to the stabilisation of Fe in seawater due to its low solubility. Complexation to organic ligands, remineralisation and particulate/solute exchange processes are believed to be important processes regulating dFe concentrations in seawater. The use of iron isotopes (expressed in $\delta^{56}\text{Fe}$ relative to ^{54}Fe and the reference material IRMM-014) can be used to shed light on the relative importance of Fe sources and stabilisation mechanisms of Fe in seawater.

Here we present the iron isotopic composition of the dissolved ($< 0.2 \mu\text{m}$, Nuclepore) and the particulate fractions of 6 full depth water column profiles on the Iberian Margin, the Iberian abyssal plain, the West European Basin and the Iceland Basin. These data will be used to better understand how dFe is fuelling primary production in this area. Fe isotopic fractionation between the dissolved and the particulate pools will provide important information on biological uptake, remineralisation and particulate/solute exchange processes in the water column.