

Iron-binding ligands in the North Atlantic Ocean and Labrador Sea along the GEOVIDE section (GEOTRACES GA01)

Manon Tonnard^{a,b,c,*}, Aridane G. Gonzalez^a, Hannah Whitby^a, Andrew R. Bowie^{b,c}, Pier van der Merwe^b, H el ene Planquette^a, Julia Boutorh^a, Marie Cheize^a, Jan-Lukas Menzel^d, Leonardo Pereira Contreira^e, Rachel Shelley^a, G eraldine Sarthou^a

^aLaboratoire des sciences de l'Environnement MARin – CNRS UMR 6539 – Institut Universitaire Europ een de la Mer – Universit  de Bretagne Occidentale, rue Dumont d'Urville, 29280 Plouzan , France (*correspondence: manon.tonnard@utas.edu.au)

^bAntarctic Climate and Ecosystems CRC, University of Tasmania, Hobart, Tas 7001, Australia

^cInstitute for Marine and Antarctic Studies, University of Tasmania, Hobart, Tas 7001, Australia

^dGEOMAR Helmholtz-Zentrum f r Ozeanforschung Kiel Wischhofstra e 1-3, Geb. 12 D-24148 Kiel, Germany

^eFunda o Universidade Federal do Rio Grande (FURG), R. Luis Lor a, Rio Grande –RS, 96200-350, Brazil

One objective of the GEOVIDE voyage (GEOTRACES GA01; May-June 2014), on board *R/V Pourquoi Pas?*, was to provide a better understanding of trace metal biogeochemical cycles in the North Atlantic Ocean. This region plays a key role in the climate, as it represents a key area of the Meridional Overturning Circulation (MOC).

The concentrations of FeL and their conditional stability constants were determined at 11 stations using competitive ligand exchange-adsorptive cathodic stripping voltammetry (CLE-AdCSV) with 2-(2-Thiazolylazo)-*p*-cresol (TAC) as competitive ligand [1]. Across the section, dFe concentrations ranged between 0.14 (Western European Basin surface waters) and 1.99 nM (Irminger Basin bottom waters). The concentrations of FeL were in excess with respect to dFe concentrations, except in intermediate waters of the Western European Basin. Fe-binding ligand concentrations ranged between 0.47 and 2.66 nM. The lowest concentration was observed in surface waters of the Labrador Basin and the highest in intermediate waters of the Western European Basin. Fe-binding ligands were classified into three classes according to their conditional stability constant: L₁ (log K'_{cond} > 12), L₂ (log K'_{cond} = 11-12) and L₃ (log K'_{cond} < 11). The strongest ligands were found in surface and deep waters from the Irminger Basin and the weakest ligands at the bottom of the Labrador and Iceland Basins.

[1] Croot & Johansson (2000) *Electroanalysis* **12** (8), 565-576.