

Iron-binding organic ligands in the oceans: Insights from U.S. GEOTRACES field efforts and shipboard experimental studies

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A competitive ligand exchange-adsorptive cathodic stripping voltammetry (CLE-AdCSV) method using salicylaldoxime as the added competing ligand has been applied to both full water column depth profiles across North Atlantic and East Pacific U.S. GEOTRACES transects (GA03 and GP16, respectively) and to a series of shipboard grow-out incubation experiments in the North Pacific and Southern Oceans. This work has resulted in detailed characterization of the concentrations, conditional stability constants and resulting complexation capacity of iron-binding organic ligands across strong biogeochemical gradients. Insights gained from these studies highlight distinctions in the characteristics of iron-binding organic ligands between ocean basins as well as the role of phytoplankton growth and, especially iron-limited diatom community growth, on iron-binding ligand characteristics in the oceans.