

GEOTRACES North Atlantic Section: Total Dissolved Cobalt and Cobalt Speciation

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I will be submitting a proposal to conduct high-throughput analyses of cobalt and cobalt speciation on the North Atlantic GEOTRACES Section. Cobalt is an important micronutrient for both cyanobacteria and eukaryotic phytoplankton, yet its concentrations in oligotrophic seawater can be extremely low. Moreover, the chemical speciation of cobalt can vary greatly, often being completely bound by strong ligands in surface waters, while being labile in coastal upwelling systems and deepwaters. I am proposing to analyze total dissolved cobalt on all profiles from the GEOTRACES North Atlantic section using cathodic stripping voltammetry (CSV) and/or ICP-MS. In addition, we will analyze cobalt speciation on every other profile using our high-throughput labile CSV cobalt speciation method, which provides useful information on cobalt ligand abundances, but not their conditional stability constants. We recently analyzed a full depth section for total dissolved cobalt in the South Atlantic using these high-throughput methods and as a result we feel we should be able to accommodate the large sample numbers associated with the North Atlantic GEOTRACES section. One or two berths will be requested.