

Inorganic Carbon and Density for US Arctic GEOTRACES program

Frank J. Millero, University of Miami, Rosenstiel School of Marine and Atmospheric Sciences (RSMAS). Our goal is to provide the GEOTRACES community with data that can be used for the understanding of interactions of metals with the carbonate system. For example, the effect of pH and carbonate on the speciation of metals

SCIENTIFIC OBJECTIVES:

1. Measurements of total alkalinity (TA) using open cell potentiometric titration and spectrophotometric pH along the Arctic transect. Samples would be poisoned with HgCl_2 and returned to the lab for analysis. Samples for TA would be calibrated using certified reference material (CRMs) and pH would be calibrated with CRMs and TRIS buffer measurements. These measurements can be used to calculate the other inorganic carbon parameters and fully characterize the carbon system. They can also be used to calculate the inorganic speciation of TEIs.
2. Measurements of density using Anton Parr 5000 vibrating densitometer. The measurements will be used in determining the effect of non-conservative components on the density of seawater, particularly nutrients, inorganic carbon (TA), and dissolved organic carbon (DOC). They can be used to determine the absolute salinity.

ANTICIPATED SCIENTIFIC COLLABORATORS:

1. All PIs who propose examining TEI speciation.
2. All PIs who propose examining the marine carbon system.

SAMPLING REQUIREMENTS:

Samples would be collected in 500 ml borosilicate glass bottles from each Niskin bottle of the rosette. Approximately 1L of water would be required in order to rinse and fill the bottles. The samples can be collected from the regular rosette, and do not require trace metal clean techniques. The bottles would be poisoned with saturated HgCl_2 and returned to Miami for analysis.

BERTH REQUIREMENTS:

No dedicated person is required to collect the samples. Samples could be collected by a “super-tech;” therefore, no berth would be required.