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Statement of Interest U.S. GEOTRACES: Alaska – Tahiti section planning workshop

Aerosols are a GEOTRACES key parameter and quantifying their deposition rate and fractional solubility is necessary for the interpretation of water-column profiles. Additionally, the sampling of dry and wet atmospheric deposition will be essential in addressing overarching objectives of the Alaska-Tahiti section (e.g., "Identify chemical signatures of TEIs released from volcanic sources surrounding the North Pacific basin").

Scientific Objectives:
1. Determine TEIs in wet and dry atmospheric deposition. We expect a gradient reflecting the low deposition environment at the southern extent of the transect and transitioning into the region impacted by the long-range transport from Asia across the North Pacific[1], where episodic inputs from volcanic eruptions and gap wind events carrying glacial flour also impact the Subarctic Gyre. We will focus on bulk and size-fractionated atmospheric deposition sampling, analysis, and subsample distribution to the community.
2. Assess changes in the fractional solubility of aerosol-derived TEIs. The fractional solubility of aerosol TEIs is poorly constrained and appears to vary significantly based on aerosol source[2]. We will continue to assess aerosol fractional solubility in our goal to provide more robust estimates and to further understanding of the factors contributing to this variability. Fractional solubility will be determined by: 1) instantaneous seawater extraction, 2) instantaneous ultra-high purity water protocol, and 3) acetic acid/hydroxylamine hydrochloride extraction.
3. Assess the contribution of atmospheric deposition to surface water TEI's. The relative contribution of atmospheric input to surface water TEI distributions is expected to be highly variable. We will collaborate with other PIs interested in external TEI input to surface waters.

Other Activities:
Sample collection and processing will follow Atlantic, Pacific, and Arctic protocols. We will require towed-fish filter water on a regular basis for on-board leaching of aerosols, and can assist with the underway towed-fish sampling which we understand to be included in the management proposal.

1. Buck et al., 2013
2. Aguilar-Islas et al., 2010