

Katlin Bowman
Postdoctoral Research Scholar
University of California, Santa Cruz

Statement of Interest for Alaska-Tahiti Section Planning Meeting

I am interested in analyzing dissolved mercury speciation during the proposed Alaska-Tahiti section, and would like to attend the planning meeting this fall. I have measured mercury speciation on the U.S. GEOTRACES North Atlantic zonal and meridional sections (Bowman et al., 2015), Eastern Pacific zonal transect (Bowman et al., in review), and Arctic section; participation in the proposed section would be a unique opportunity to connect our data from the South Pacific and Arctic Oceans. In addition to dissolved mercury speciation I would also like to collect DNA samples for 16S sequencing and to search for specific genes important to mercury chemistry. I would also like to work collaboratively to measure mercury and methylmercury in suspended particle, aerosol, and rainwater samples.

The scientific objectives of the proposed section are useful in investigating the biogeochemical cycling of mercury in the ocean. Oxygen consumption has been associated with *in situ* mercury methylation and concentrations of methylated mercury will likely be different in highly productive and oligotrophic regions of the proposed section. Concurrent analysis of genomic DNA will determine if the distribution of genes associated with mercury methylation (*hgcAB* gene pair) affects this relationship. The significance of deep sea hydrothermal vent plumes as a source of mercury to the ocean is poorly understood, however, volcanic emissions are a known source. Mercury isotope analysis can be used to determine the impact of volcanic emissions surrounding the North Pacific basin. Previous data collected through the GEOTRACES program has found higher concentrations of mercury in younger deep water masses due to anthropogenic inputs, and quantifying mercury in the oldest deep water in the world provide further insight on historical releases of mercury to the environment.