

Pb and Pb Isotopes

Robert Rember (UAF) plans to submit a proposal; likely in collaboration with other researchers proposing to study dissolved Pb and Pb isotopes in seawater and Pb isotopes in aerosols collected along the Tahiti-Alaska meridional section along 150°W. Significant efforts on the UAF end would be devoted to intercalibration of dissolved Pb with others doing dissolved Pb measurements as we did in the Arctic and building our Pb isotope capabilities using our newly acquired Neptune MC-ICPMS.

Research Goals: Produce a detailed section of Pb and Pb isotopes (204, 206, 207 and 208) along the U.S. GEOTRACES meridional Pacific Section. This work would extend the previous Pacific zonal transect and further document the penetration of anthropogenic Pb into the deep Pacific as has been noted by previous studies. I would like to further explore the role that sinking particles play in transporting anthropogenic Pb to the deep ocean and whether this exchange shapes the vertical distribution of dissolved Pb in this region. Data from this study would also contribute to the time series of dissolved Pb collected near Hawaii extending back 40 years. I would strive to include a higher number of surface samples than normal collected from the surface fish sampler (a part of a separate proposal) to better evaluate the regional differences in surface inputs of anthropogenic Pb using Pb isotope fingerprinting. I am especially interested in better defining sources of Pb to surface and intermediate waters in North Pacific as potential sources of Pb to the Bering Sea and ultimately the Arctic Ocean.

Sample Requirements: I would require two liters of 0.2 mm Acropak-filtered water from each sampling depth of the vertical profiles taken from the trace metal GEOTRACES sampling system. Two liters of 0.2 mm Acropak-filtered from the surface fish sampler at each station and from higher resolution sampling of surface waters if funded and select aerosol samples collected along the transect for Pb isotope analysis.

Anticipated Collaborators: All PIs studying dissolved metals along the section; particularly those interested highly scavenged metals/radioisotopes or anthropogenic elements. PIs studying aerosol deposition and transport.

Berth Requirements: I would be prepared to send one individual to contribute to sampling the Geotraces carousel unless this is deemed unnecessary in which case I am content to allow other experienced trace metal individuals collect these samples.