

Statement of Interest in Alaska-Tahiti Meridional Section: Alan M. Shiller, University of Southern Mississippi

We propose analyzing dissolved Ba, Ga, Ni, V, and REEs. Our interest in these elements for this section is outlined below:

Barium: There is a correlation between the barite flux and productivity which also yields the use of barite burial flux as a paleo-productivity proxy. Thus, there is interest in better defining the distribution and cycling of barium. Examining the shallow distribution of dissolved Ba in this section with its significant productivity gradient will be particularly interesting. The work will also be of interest to those studying Ra.

Gallium: We have advocated the combined use of dissolved Ga with Al as a tracer for dust input, with the less reactive Ga being used to help account for changes in Al removal. In the NW Subarctic Pacific, we found that the near surface Ga/Al ratio varied with chlorophyll. Looking at the Ga (with Al) near surface distribution across the dust and productivity gradients of this section would be particularly interesting. The work will be of interest to those studying Al and other scavenging-prone elements.

Nickel: The distribution of dissolved Ni follows a multiple correlation with P and Si, suggesting two regeneration aspects, which is also compatible with recent work on Ni in marine particles. Obtaining Ni data in the productivity and dissolved oxygen gradients of the section as well as with the deep water nutrient gradient should allow us to better unravel the dual role of Ni and what might control its surface ocean concentrations.

Vanadium: Dissolved vanadium is nearly conservative with about a 10% decrease in shallow waters compared to the deep ocean. Some of our previous surface water data in the NW Subarctic Pacific suggests a more significant V depletion there, possibly indicative of interaction with shallow reducing sediments.

Rare earth elements (REEs): Our dissolved REE section in the North Atlantic shows how valuable these elements can be in terms of revealing internal cycling processes as well as sources. Looking at how the REE distributions vary through the dissolved oxygen gradient in this section would be particularly interesting. We have already discussing sharing our data with those proposing to determine Nd isotopes.

Methane: Pending availability of space aboard ship, we would like to analyze dissolved methane in conjunction with our REE work.