

Timothy C. Kenna (tkenna@ldeo.columbia.edu)

Measurement of selected anthropogenic radionuclides on the US GEOTRACES Alaska-Tahiti section (GP15)

My proposal will focus on determining concentrations of the anthropogenic radionuclides (ARs) including ^{239}Pu , ^{240}Pu , ^{237}Np , and ^{137}Cs at selected full depth stations along the proposed cruise track. Additional ARs including dissolved ^{129}I , ^{236}U , and possibly ^{90}Sr will be analyzed through collaboration. Samples would include filtered seawater, large volume filtered particulate material, chemisorption cartridges (for Cs isotopes) deployed on the ship's surface supply and the McLane pumps at selected depths, and bottom sediment samples. We will request 1 berth. Kenna participated in the Arctic cruise as one of the SuperTechs; this worked out well and would be an option for participation on GP15.

A major objective of our work will be to characterize the levels and distributions of a suite of ARs at the basin scale along the proposed cruise track which include contrasting productivity regimes, as well as the oldest and most nutrient-rich waters of the global ocean. The GEOTRACES Alaska-Tahiti section is of particular interest to us for several additional reasons specifically with respect to the ARs.

1. The fallout signature in the North Pacific region is influenced by debris originating from nuclear weapons tests conducted at sites in the Marshall Islands in the early to mid-1950s. This material is distinct with respect to isotopic composition, chemical composition, and delivery timing and mechanism, allowing a comparison to other areas.
2. Information regarding the AR composition and levels in the very old waters will allow us to better understand/resolve the impact of transport processes related to particle-water interactions from those of advective transport.
3. Vertical distributions and water column AR inventories across the equator allows evaluation of inter-hemispheric transport and comparison to estimated fallout inventories delivered to the ocean surface.
4. The proposed cruise track provides an opportunity to determine the presence, fate, and transport of Fukushima derived contamination.