

David Kadko

I am requesting a travel subsidy for participation in the Alaska-Tahiti section planning workshop 5 – 7 October 2016 in La Jolla.

Many processes in the ocean cannot be directly observed and as such, tracers can provide important constraints to the rates and pathways of these processes. Be-7 is a tracer that, because of its half-life (53.3d), allows the study of processes occurring over seasonal timescales. This timescale is critically important to studies of biological production, nutrient regeneration, and atmospheric deposition, to name a few. However, it has been one that is difficult to approach because of the lack of oceanographic tracers suitable for integrating processes over this temporal range.

Applications of this tracer of relevance to the Alaska-Tahiti section:

- 1) The use of measurements of ^7Be in the surface waters and in the lower atmosphere to provide estimates of the atmospheric input of relevant TEIs. The atmospheric input into the global ocean is an important budgetary component of numerous chemical species, yet is very difficult to constrain. The data generated by this method will be available to allow ground-truthing of aerosol deposition models and atmospheric input.
- 2) The determination of regeneration rates and depth scales of TEIs in the subsurface ocean.
- 3) The use of ^7Be as a tracer of physical processes which redistribute biologically active species. Be-7 will survive in the water column even as reactive species are being removed by biological processes; ^7Be provides a measure of physical processes such as mixing and upwelling which allows processes such as biologic uptake and remineralization to be assessed. This will contribute to a goal of GEOTRACES to obtain realistic estimates of the underlying transport processes influencing TEI distributions.