

US GEOTRACES planning workshop for the Southern Ocean (GP17 (GP17-OCE & GP17-ANT)) – expression of interest

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We were actively involved with ^{210}Po and ^{210}Pb component in four phases of the GEOTRACES project: Inter-calibration, North Atlantic, East Pacific and Western Arctic sections. We are interested to participate in the GP17 Planning Workshop to be held in Norfolk, VA.

Scientific Objectives:

- 1) Quantify partitioning of ^{210}Po and ^{210}Pb between solid and solution at different interfaces along the South Pacific cruise transect; and
- 2) Quantify how particle composition affects their partitioning across contrasting key interfaces: i) across low productivity South Pacific Gyre; ii) high-productivity sub-Antarctic front; iii) Antarctic polar waters; and iv) sea ice samples (snow, ice, melt pond and ice-rafted sediment), in western Bellingshausen and the Amundsen Seas.

How the scientific objectives support the overall goals and missions of the GEOTRACES:

^{210}Po and ^{210}Pb were measured in all five previous GEOTRACES expeditions addressing overriding goals of GEOTRACES. These nuclides provide information on the remineralization of biogenic particulate matter throughout the water column and thus addressing the sources, sinks, internal cycling as well as the biogeochemical processes that regulate not only their distribution, but also other key elements (^{210}Pb analog for stable Pb, Th isotopes; ^{210}Po analog for S, Se elements and their isotopes) that have similar biogeochemical property. ^{210}Po and ^{210}Pb can be combined with a large number of other key geochemical species (P, N, Fe, Cu, Zn, Pb, Al, Ti, ^{232}Th (and other biogenic elements measured, pigments, chl.a, etc)) to understand the factors and processes that control the residence time, cycling and scavenging intensity of particle-reactive radionuclides (^{210}Po , ^{210}Pb) at key interfaces (euphotic zone, upper and bottom 300 m (includes BNL), and mesopelagic waters) and to compare ^{210}Pb data with that of stable Pb (and its isotopes).

Parameters what we propose to measure: ^{210}Po and ^{210}Pb in dissolved, particulate phases in a number of stations, including ice sample and aerosols