

TEI content of suspended particles collected from GO-Flo bottles

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Scientific interest

I plan to submit a proposal to NSF to participate in the 2021-2022 US GEOTRACES Antarctic sections (GP17) to **collect suspended particles** for determining the trace element content of the marine particles along the transect. These analyses address several GEOTRACES goals, including fluxes at air-ocean-sediment interfaces and internal cycling (biologic uptake and regeneration).

Analyses of total and labile fractions of TEIs (elements in Table 2 of GEOTRACES Science Plan plus Co, Ni, Mo, V and P) will be performed on particles collected from GO-Flo bottles at **all depths at each station**, to examine the changing **trace-element composition of marine particles** across lateral and vertical gradients in dissolved TEI and nutrient concentrations in the Southern Ocean. These measurements will be of particular interest through several different oceanographic interfaces and regimes, including continental shelves, rapidly changing nutrient gradients, and surface, intermediate, and deep current circulation.

Sample collection and water budget

We will propose collecting particles from a single GO-Flo bottle onto a single **25-mm or 47-mm (0.4- μm pore size) Isopore PCTE membrane**. While these filters differ from the previously used Supor/PES filter substrates, the Isopore membranes are clean and can be used for analyses of dissolved and particulate elements, and are especially suited for our proposed research using both total digestion/ICPMS and non-destructive techniques (synchrotron XRF).

Synergy/collaboration

I anticipate that this work will benefit from collaboration with (and enable synergies with) other groups studying particles via in situ pumping and dissolved trace elements collected concurrently from the GTC sampling system.