

**Statement of Interest for the US GEOTRACES Section GP17 Tahiti-Antarctica-Chile Section  
Planning Workshop, Old Dominion University, Norfolk, VA, May 6-8, 2020.**

Steven L Goldstein and Yingzhe Wu

*Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY 10964.*

The GEOTRACES Program cruises will be critical for understanding the ocean Nd-isotopes-REE cycle. The GP17 Tahiti-Antarctic-Chile-OCE-ANT transects will play an exciting role because their paths are important ones for achieving this end. We are very interested in participating in GP17, measuring Nd-isotopes and REE. As in other US GEOTRACES cruises, we are happy to collaborate. As Nd-isotopes is a key TEI, these measurements will support the Program's overall goals and mission. Moreover, the data will fill in a major geographical gap in the global dataset for these TEIs. We propose to perform them on seawater, particulates, and sediments (if they are collected).

Our primary objectives for GP17-OCE are to: (1) address how the Pacific obtains its Nd-isotopic fingerprint (this is unknown, in contrast to the Atlantic), (2) evaluate conservative water mass mixing versus external Nd inputs, and (3) evaluate the impact of Antarctic inputs. The cruise plan is excellent for these pursuits. It extends from the low-latitude South Pacific (20S) near Tahiti, where CDW underlies Pacific Deep Water, to the high-latitude Southern Ocean. Along the transect the Pacific Nd-isotope-signal should be replaced completely by Southern Ocean water-masses. The terrestrial sources of Nd and REE in GP17 contrast markedly with the sources in the GP15 Alaska-Tahiti transect, and it will be important to distinguish the effects of these differences. The north Pacific is bounded by the massive northern continents, with Asia the major dust source, while in the south along 152W the main sources are volcanic islands, Australia and New Zealand. The west-to-east transect off Antarctica will be important for understanding the impact of West Antarctic-derived Nd inputs on AABW and CDW. The transect northward from the Bellingshausen Sea is downstream from the 152W crossing and offers the opportunity to determine impacts of Antarctic inputs on the broader Southern Ocean.

**Note to organizers:** The Announcement says to “**submit a brief (300 word maximum) statement of interest**” (bolded in the Announcement), and that's why it's so short. I have much more to say about this transect.

Nevertheless, we've tried to address the three questions in Bob Anderson's email: 1) The individual scientific objectives of the work that you are considering to propose for the expedition, 2) How your individual scientific objectives support the overall goals and mission of the GEOTRACES program, and 3) Parameters that you are likely to propose to investigate within the context of the expedition.