

Statement of Interest in GP17  
Lamborg and Hammerschmidt

### Mercury Speciation in the South Pacific Ocean and Amundsen Sea

We are interested in participating in both of the proposed legs of GEOTRACES GP17 cruise. Our interest is in measuring the chemical and physical speciation of mercury on-board each of these legs in a manner in keeping with our involvement in previous GEOTRACES cruises. This would include measurements of dissolved total mercury, monomethylmercury, dimethylmercury and elemental mercury and also particulate total and monomethylmercury. Our work would be conducted in support of and in collaboration with Rob Mason of UConn, who will be measuring air-sea flux parameters relevant to mercury.

Mercury, while not a “key TEI” in the GEOTRACES Science Plan, is listed as an element of interest and has proven itself to be worthy of inclusion on previous cruises. These reasons include:

- Among the toxic elements found in marine systems, mercury is the most perturbed by human activity. Ocean data that documents the current level of ocean contamination are essential for studies of future trends.
- Mercury and lead are two pollutant metals that are frequently included in GEOTRACES cruises, and their perturbed status offers a unique transient tracer into deeper water.
- Mercury is the quintessential “soft metal” and a strong chalcophile and therefore offers insight into the cycling of similar species such as copper, zinc and cadmium.
- Mercury has profoundly strong associations with particulate organic matter, making it a useful tracer for particle dynamics that involve organic carbon.
- Submarine volcanism is an important source of mercury to the ocean, and therefore study of mercury in deep waters can lead to insights regarding this important geochemical process.

If funded, we would seek/need:

2 Berths

Deck space for a dedicated Mercury Van

Space for several compressed gas cylinders

We would be interested in attending the workshop in Norfolk. PI Lamborg would be covered as an SSC member, so we also request travel support for PI Hammerschmidt, his student and PI Lamborg’s student (3 people).