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Statement of Interest for GEOTRACES Eastern Pacific Meridional Section: Shipboard Dissolved Aluminum (dAl), Iron (dFe) and Manganese (dMn)

We plan submit a proposal to determine dAl, dFe and dMn in water-column and surface-water samples, using shipboard FIA, with the aims of testing hypotheses concerning the inputs and distribution of these elements in the eastern Pacific Ocean Basin. One focus will be on the impact of hydrothermal emissions from the East Pacific Rise, the Juan de Fuca Ridge and other sites of hydrothermal venting (e.g., Loihi Seamount), and the transport and transformation of these elements away from the ridge axis (e.g., Resing et al., 2015). The flux of metals from the EPR is of significant interest due to its role in the formation of the Clipperton nodule field that is the subject of international mining interest; this section thus provides an important baseline against which the impact of future mining can be evaluated. We also have historical interest on the impact of dust deposition to this region (Buck et al., 2013) and the transport of Fe, Mn and Al from the western Pacific by the equatorial undercurrent (Slemons et al., 2010, 2012). Our analyses will guide water sampling strategy and evaluate potential contamination of water samples during the cruise, as proved valuable on the recent Eastern Pacific Zonal Transect cruise. The measurements will require 4 x 125 mL of 0.2  $\mu\text{m}$ -filtered seawater from each depth sampled by the GEOTRACES clean rosette system, and from the discrete samples collected using the underway clean towfish system. Analysis and data processing in semi-real time require 2 berths, and approximately 2 x 8 feet of internal lab bench space, to accommodate 2 laminar flow benches and 2 FIA systems (no clean lab/bubble is required).