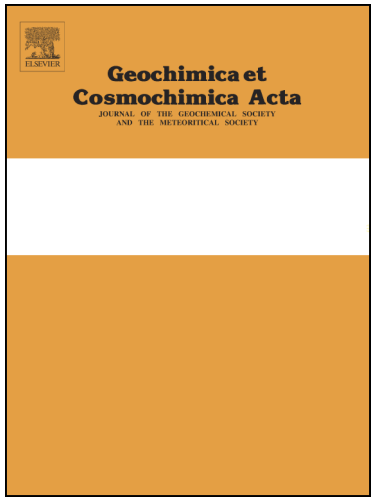

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Tim M. Conway, Seth G. John

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The cycling of iron, zinc and cadmium in the North East Pacific Ocean - insights from stable isotopes

Tim M. Conway[1,2,*] and Seth G. John[1,3]

[1] Department of Earth and Ocean Sciences, University of South Carolina, Columbia, SC 29208 USA

[2] Institute of Geochemistry and Petrology, Department of Earth Sciences, Clausiusstrasse 25, 8092 Zürich, Switzerland (Present address)

[3] Department of Earth Sciences, University of Southern California, Los Angeles, CA 90089 USA (Present address)

*Corresponding author: *conway.tm@gmail.com*; Phone: Tel: +41 44 632 4797

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Abstract

Dissolved stable isotope ratios of the transition metals provide useful information, both for understanding the cycling of these bioactive trace elements through the oceans, and tracing their marine sources and sinks. Here, we present seawater dissolved Fe, Zn and Cd concentration and stable isotope ratio (δ^{56}Fe, δ^{66}Zn, and δ^{114}Cd) profiles from two stations in the Pacific Ocean, the SAFe Station (30°N 140°W) in the subtropical North East Pacific from the GEOTRACES IC2 cruise, and the marginal San Pedro Basin (33.8°N 118.4°W) within the South California Bight. These data represent, to our knowledge, the first full-water column profiles for δ^{66}Zn and δ^{56}Fe from the open-ocean North Pacific, and the first observations of dissolved δ^{66}Zn and δ^{114}Cd in a low-oxygen marginal basin. At the SAFe station, δ^{56}Fe is isotopically lighter throughout the water column (-0.6 to +0.1‰, relative to IRRM-014) compared to the North Atlantic, suggesting significant differences in Fe sources or Fe cycling between these two ocean basins. A broad minimum in δ^{56}Fe associated with the North Pacific oxygen minimum