Distributions of dissolved trace metals (Al, Mn, Fe, Co, Ni, Cu, Zn, Cd, and Pb) along 160°W in the Pacific Ocean

LINJIE ZHENG[1]*, TOMOHARU MINAMI[1], SHOTARO TAKANO[1], YOSHIKI SOHRIN[1]

[1]Institute for Chemical Research, Kyoto University, Uji, Kyoto 611-0011, Japan
(*zlj@inter3.kuicr.kyoto-u.ac.jp)

Trace metals in seawater have significant effects on marine organisms as essential trace nutrients at a low concentration and toxins at a high concentration. Trace metals are also important as tracers in oceanography. Recently we have developed a multi-elemental determination method for trace metals (Al, Mn, Fe, Co, Ni, Cu, Zn, Cd, and Pb) [1] and been studying the distribution and stoichiometry of these metals as an activity of GEOTRACES JAPAN[2]. In this study, seawater samples were collected from the central Pacific Ocean along 160°W during the R/V Hakuho-Maru KH-05-2 cruise (August-September, 2005) and were preconcentrated using an off-line automated preconcentration system (SPE-100) with chelating resin following determination by using a HR-ICP-MS (Element 2) with the calibration curve method.

This study presents data on the full-depth vertical distributions of dissolved trace metals along 160°W from 54°N to 10°S, and compares them with those along 47°N west-east transect from 160°E to 156°W (KH-12-4 cruise) and those along 165°E from 51°N to 30°N (KH-11-7 cruise). Since some stations from the three cruises located almost at the same place, these stations are utilized as cross-over stations and the differences between distributions of the same trace metal will reflect the temporal variations of them. We will summarize the data of nine elements from the three cruises and discuss the internal cycling in the Pacific Ocean. The input and removal processes of trace metals will also be discussed.

1 Minami, T. *et al. Anal. Chim. Acta* **854**, 183-190, (2015).

2 Vu, H. T. D. & Sohrin, Y. *Sci. Rep.* **3**, 1745, (2013).