Distributions and atmospheric imput of bioactive trace metals in the East China Sea

YUZURU NAKAGUCHI[1]*, YOSHINORI IKEDA[2], NATSUMI OKU[2], RYO TANIURA[1], MAKOTO TSUJISAKA[3], LINJIE ZHENG[3], TOMOHARU MINAMI[3], YOSHIKI SOHRIN[3]

[1]School of Science and Engineering, Kindai University, 3-4-1 Kowakae, Higashiosaka, Osaka, 577-8502, Japan (*Correspondence: nakaguch@chem.kindai.ac.jp)

[2] Graduate School of Science and Engineering, Kindai University, 3-4-1 Kowakae, Higashiosaka, Osaka, 577-8502, Japan

[3]Institute for Chemical Research, Kyoto University, Uji, Kyoto, 611-0011, Japan

The East China Sea is a marginal sea with a wide continental shelf that is rich in biological activity. This area is considered to be one of the best to study land-sea interaction for GEOTRACES project. It is now recognized that some trace elements are important in controlling biological productively [1]. Uematsu et al. (2010) have suggested atmospheric transport and deposition of anthropogenic substances from the Asia to the East China Sea for selected trace metals and major ions [2]. The JAMSTEC R/V Hakuho Maru KH-15-3 cruse was conducted from 14 October to 2 November 2015 in the East China Sea and the adjacent Kuroshio flowing area. The bioactive trace metals, such as Al, Mn, Fe, Co, Ni, Cu, Zn, Cd, and Pb, in seawater samples were determined by the solid-phase extraction-ICP-MS [3]. The results were used to reveal distributions of dissolved and labile particulate bioactive trace metals in the East China Sea. We also collected atmospheric aerosol samples during the cruise. Bioactive trace metals and major ions (Na^+, K^+, Ca^+, NH_4^+, SO_4^{2-}, NO_3^-) were determined in size-fractional aerosols. From these results, we calculated the dry deposition flux of bioactive trace metals to evaluate the transport of anthropogenic and natural substances to the East China Sea. Combining these data, we discuss the effect of atmospheric transport on the distrributions of bioactive trace metals in the East China Sea.

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