

## Distributions of Bi and Pb isotopes in the Sea of Japan

KAZUHIRO NORISUYE

Faculty of Science, Niigata University, Ikarashi-2-cho, Nishiku, Niigata 950-0911, JAPAN  
(knorisue@env.sc.niigata-u.ac.jp)

Lead isotopes in the ocean are an important parameter as tracer for anthropogenic contaminants in the ocean and for biogeochemical processes including particle scavenging, dissolved-particulate reversible exchange and the penetration of mode water masses into subsurface layer [1]. Bismuth in atmospheric aerosols shows a high crustal enrichment factor of ~200, indicating the importance of volcanic and anthropogenic origins. Previous study has estimated the oceanic residence time of Bi at 21 yr [2]. This short residence time suggests that Bi in the ocean may be a useful parameter for understanding of scavenging processes as well as supply of anthropogenic and/or volcanogenic matter to the surface ocean [3].

Sea of Japan is a unique semi-enclosed marginal sea, which has a shallow sill with its depth shallower than 150 m while the maximum depth of the sea exceeds ~3,700 m [4]. Another important feature of the sea is its submarine topography allowing solid phases of sediments as well as plenty of resuspended particles to be in contact with seawater, suggesting that the Sea of Japan is an important field with respect to interaction between dissolved trace elements and sediments/particulate matter (e.g., scavenging and dissolved-particulate exchange).

Pb isotopes and Bi in the Sea of Japan are expected to be more prone to be influenced not only by input from surrounding environment but also by removal processes (e.g., boundary scavenging as well as particle scavenging through water column). To understand roles of these elements playing in this unique sea we have collected seawater samples at two stations in the Japan Basin and Yamato Basin during the cruise of TRV Oshoro-Marui (July 2017 and July 2019) and analyzed them for Pb isotopes and Bi. In this study, we report the distributions of dissolved Bi and Pb isotopes in the deep water column, compare the dataset with those in the western North Pacific, and investigate the processes relevant to these parameters.

[1] Lee et al. (2015) *Geochim. Cosmochim. Acta* **170**, 126.

[2] Lee et al. (1985/86) *Earth Planet. Sci. Lett.* **76**, 254.

[3] Norisuye & Sohrin (2012) *Anal. Chim. Acta* **727**, 71.

[4] Gamo et al. (1986) *J. Mar. Res.* **44**, 781.