Latitudinal variations of neodimium isotopic composition in seawater along 160th meridian east in the western North Pacific

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Neodimium isotopic composition is useful tracer for water masses because some rocks in the source regions have unique Nd isotopic ratios. However, only a few vertical data have been reported in the western North Pacific. In this study, we investigated the Nd isotopic composition in seawaters along 160th meridian east in the western North Pacific during Japanese GEOTRACES cruise (KH-11-7).

10-20 L of seawaters were passed through the 0.2 μm-pore size capsule filters, acidified to pH <2.0 with hydrochloric acid, and brought back to the land-based laboratory. By adding Fe and aqueous ammonia to the seawater, Nd was co-precipitated with Fe hydoroxide. After removal of Fe by HCl/di-isopropyl ehter solvent extraction, Nd was extracted by cation-exchange resin and chelating resin column chromatography. Nd-143/Nd-144 ratios were determined with thermal ionization mass spectrometry.

We found some features of Nd isotopic composition in sewaters of the western North Pacific. In deeper waters than 3000 m depth, relatively low ε-values (-3.8 ~ -5) were observed, which reflects the influence of Circumpolar Deep Water from the Southern Ocean. In the intermediate depths of the western subarctic North Pacific, we found relatively high ε-values (-2.3 ~ -1.3) in seawaters, which implies the inflow of the North Pacific Intermediate Water (NPIW). It is known that NPIW are derived from the Sea of Okhotsk, and near Kuril Islands and the Kamchatka Peninsula[1, 2]. There are many volcanoes in the Kamchatka Peninsula, which might indicate that the important source of Nd in NPIW exists near the Kamchatka Peninsula.

[1] Yasuda (1997) *Jour. Geophys. Res.: Biogeosci.* **102**, 893–909. [2] Yasuda et al. (2001) *Jour. Geophys. Res: Oceans* **106**, 6931–6942.