

Vertical profile of neodymium isotopic composition in the oceanic region close to the Takuyo-Daigo Seamount

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Ferromanganese crusts, which are chemical precipitates occurring on the ocean floor and seamount, are known to be rich in lanthanides including neodymium (Nd). The major source of lanthanides in the surface layer ferromanganese crust is ambient seawater. However, whether the lanthanides in ferromanganese crusts are supplied from ambient seawater or from the whole water column above ferromanganese crusts were not clearly presented. To identify the source of lanthanides (Nd) in the surface layer of ferromanganese crusts, the vertical profile of seawater Nd isotopic composition was determined for a location near the Takuyo-Daigo Seamount (21°59.2'N, 153°56.0'E) in the northwest Pacific Ocean. The data were compared with those of the surface layer ferromanganese crust obtained from the Takuyo-Daigo Seamount by remotely operated vehicles (ROVs), whose sampling depths ranged from 965 m to 5385 m. The seawater Nd isotopic composition profile was similar to the surface layer Nd isotopic composition of ferromanganese crusts within analytical errors. This confirms that Nd in the surface layer of ferromanganese crusts is supplied directly by ambient seawater.

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