

Sr-Nd-Pb isotopic ratios of the Miocene accretionary complex on southern Boso Peninsula, Japan

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In the southern regions of the Boso peninsula, shallow levels of the accretionary prisms and their cover sediments, which were formed in the late Miocene age, are exposed (Yamamoto and Kawakami, 2005; Yamamoto et al., 2005). These strata are valuable in that they preserve much of the original physical information (Yamamoto 2003). This means that they can provide information about the ongoing accretionary process under the floor of deep sea as an analogue. We conducted Sr-Nd-Pb isotope analysis of mudstones from the accretionary prisms and their cover sediments on the Boso peninsula with the aim of reinforcing the existing lithologic classification (e.g., Mitsunashi, 1989; Saito, 1992). Isotope ratios of Sr, Nd, Pb in detrital fine particles preserve their original source-area signatures. Mudstones were taken from the Aokiyama Formation of the Hota Group, the Nishizaki Formation, the Kinone Formation and the Amatsu Formation of the Miura Group. The former two formations are supposed to be the accretionary prism sediments, and the latter two are their cover sediments. The Nishizaki Formation, the Amatsu Formation, and the Kinone Formation can be differentiated each other by considering comprehensively the Sr-Nd-Pb isotope ratios. The mudstones of the Nishizaki Formation show higher Sr and Pb isotope ratios than the Amatsu Formation. Mudstones of the Kinone Formation is characterized by lower isotope ratios of Pb than those of the Nishizaki and Kinone Formations of similar isotope ratios of Sr and Nd. In the Kinone Formation, Sr isotope ratio of mudstones increases, while Nd isotope ratio of them decreases westward. This suggests that the sediment feeding system of the Kinone Formation was different between east and west. Unlike the others, the Aokiyama Formation shows large isotopic variation. This makes differentiation of the Aokiyama Group from the others difficult. The isotopic ratios of the Aokiyama Formation may be influenced by diagenesis due to deep burial.

Keywords: accretionary prism, Sr-Nd-Pb isotope ratios, The Miura Group, The Hota Group