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活動的沈み込み帯の歪んだマントルウェッジ：蛇紋岩海山からの岩石学的証拠

Damaged mantle wedge in an active subduction zone: evidences from Mariana serpentinite seamounts

道林 克禎[1*], 藤井 彩乃[1], Patricia Fryer[3], 石井 輝秋[2], 前川 寛和[4]

Katsuyoshi Michibayashi[1*], Ayano Fujii[1], Patricia Fryer[3], Teruaki Ishii[2], Hirokazu Maekawa[4]

[1]静岡大学理学部地球科学教室, [2]IFREE, JAMSTEC, [3]ハワイ大学, [4]大阪府立大学

[1]Inst. Geosciences, Shizuoka Univ., [2]IFREE, JAMSTEC, [3]University of Hawai'i, [4]Osaka Prefecture University

Serpentinite seamounts uniquely occur in the Mariana and Izu-Bonin forearcs. Abundant serpentinized peridotites and minor metamorphosed rocks have been sampled as clasts in the serpentine mud from the serpentinite seamounts. Above all, the discovery of blueschist-facies minerals revealed that some of these rocks must have been entrained in rising serpentine mud diapirs at 16 to 20 km depth and extruded from mud volcanoes onto the sea floor. Yet, the structure of the mantle wedge, where these clasts were derived from, is uncertain but intense serpentinization. Here, we present that the peridotites from the South Chamoro seamount could result from a damaged mantle wedge during spatial and temporal evolution of the subducting Pacific plate structure along the Mariana arc, whereas the serpentinized peridotites dominantly show common evidences for deformation in higher-temperature asthenosphere of the mantle wedge with minor subsequent lower-temperature lithospheric strain. This finding may explain trench-parallel flow and seismic anisotropy in the Mariana subduction system.

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