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Early stage of Shatsky Rise formation: Isotope-geochemical characterization (Sr, Nd, Pb and Hf) of Site U1347A
Early stage of Shatsky Rise formation: Isotope-geochemical characterization (Sr, Nd, Pb and Hf) of Site U1347A

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The submarine Shatsky Rise plateau, a unique large igneous province (LIP) in the northwest Pacific Ocean ca. 1500 km east of Japan, is the only large intraoceanic plateau worldwide, which formed during the Late Jurassic to Early Cretaceous. Numerous reversals of the Earth's magnetic field during this time period caused alternating magnetic lineation in the ocean floor, which allowed a detailed reconstruction of the original tectonic setting. Accordingly the three main volcanic edifices Tamu, Ori and Shirshov massif formed along a southwest - northeast trending, rapidly spreading triple junction. However, Shatsky Rise shows characteristics for both a ridge-controlled an a plume head origin. Therefore the main objective of IODP Expedition 324 was to test both hypotheses (plume head versus ridge-controlled) for the plateau genesis.

During Expedition 324 five sites on all three main volcanic edifices have been cored. We present here first isotope-geochemistry results from the southernmost site U1347A, situated on the upper flank east of the summit of Tamu massif. The analyzed volcanic rocks were sampled from a depth range of 160 m to 300 m mbsf, and comprise relatively fresh basaltic lava flows, which occur as packages of pillow basalt and massive inflation units.

We present new Sr-Nd and Pb and for the first time Hf isotope data from Shatsky Rise. The 176Hf/177Hf isotopic composition is fairly uniform throughout the entire hole and ranges between 0.283130 and 0.283160, showing no distinct MORB or intraplate (plume) affinity.

キーワード: Shatsky Rise plateau, geochemistry, isotope data, Hf, Sr, Nd, Pb
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