

Relationship between the evolution of Hawaiian volcanoes and isotope ratios

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Hawaiian volcanoes have been formed by upwelling of a mantle plume through the Pacific plate. It has been known that isotope ratios including a radiogenic isotope are different among the mantle materials forming the plume and those forming the asthenosphere and the lithosphere. Accordingly, if the material exchange occurs among them, it should be reflected in the isotope ratios. In effect, it has been observed that isotope ratios such as the $^3\text{He}/^4\text{He}$, $^{87}\text{Sr}/^{86}\text{Sr}$, $^{143}\text{Nd}/^{144}\text{Nd}$ and so on approach the values with those of the MORB source with the evolution of Hawaiian volcanoes. Such trend can be considered to reflect such effect as mentioned above.