

Re-Os isotopic characters of ocean island basalts from Tubuai, Polynesia

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The linear chains of volcanic islands of Polynesia trend southeast to northwest. This linear trend is one of the bases of the idea that ocean-island-basalts (OIBs) of Polynesia have been originated from a common mantle plume. However, Sr-Nd-Pb isotopic compositions of OIBs of Polynesia show very large and unsystematic variation. The OIBs from Tubuai Island in the Austral archipelago of Polynesia possess Sr-Nd-Pb isotopic characters like HIMU which is one of the end members of Earth's mantle (Chauvel et al., 1992; Vidal et al., 1984).

In this study, we will characterize Re-Os isotopic composition of OIBs from Tubuai and examine the forming process of the Tubuai OIBs, which leads to better understanding of mantle geochemistry.

The OIBs from Tubuai show large variation both in Os abundance (5.0-1268ppt) and $^{187}\text{Os}/^{188}\text{Os}$ ratio (0.1418-0.2729). The samples with relatively low-Os-abundance (5.0-7.3ppt) samples possess high $^{187}\text{Os}/^{188}\text{Os}$ ratio (0.2450-0.2729), which may be due to assimilation of altered materials by sea water (Marcantonio et al., 1995). On the other hand, 3 samples with more than 25ppt Os show the $^{187}\text{Os}/^{188}\text{Os}$ ratios (0.1703-0.1761), which is higher than the previously reported $^{187}\text{Os}/^{188}\text{Os}$ ratio of HIMU basalts (-0.155; Hauri and Hart, 1993).