Juvenile magma source of N-Izu indicated by the volcaniclastic geochemistry in the deepest part of Site U1437, IODP Exp. 350

T. MIYAZAKI[1]*, T. SATO[1], Y. TAMURA[1], K. HORIE[1], J.B. GILL[2], R. SENDA[1], B.S. VAGLAROV[1], S. HARAGUCHI[1], Q. CHANG[1], J.-I. KIMURA[1] AND IODP EXPEDITION 350 SCIENTISTS

[1] JAMSTEC, Yokosuka, Japan
(*correspondence: tmiyazaki@jamstec.go.jp)
[2] UCSC, California, USA

IODP Site U1437 is located in the Izu rear-arc, ~330 km west of the Izu-Bonin Trench axis, ~90 km west of the arc-front volcanoes, at 2117 mbsl. Stratigraphic Units VI and VII, below 1320 mbsf, contain volcaniclastics and hyaloclastites with coarse lava clasts [1]. Zircons from an intrusive rhyolite sheet in Unit VI showed U-Pb ages of 13.6+1.6/-1.7 Ma [1,2] and 13.71±0.25 Ma. Although further evaluation for contamination from drilling mud is necessary for other zircons from volcaniclastic units [2], the geochemical characteristics of Unit VII volcaniclastics are expected to reflect the mantle source of early N-Izu-rear arc magmatism soon after Shikoku Basin (back arc basin: BAB) opening occurred between 24-15 Ma.

Major and trace elements of Unit VII lava clasts differ from those of either the Neogene rear-arc seamounts or Quaternary arc-front volcanoes. Although they overlap the fields of both volcanoes on K_2O and Zr/Y vs. SiO_2 plots, their REE patterns are flat, and differ. Most lava clasts from Unit VII have low Ba/La and La/Sm ratios, indicating weak influences from the slab (fluid or melt). Isotopes also differ from rear-arc and arc-front data, but are similar to data for the <2 Ma rift basalt. The Nd and Hf isotope ratios are similar to those of the Quaternary volcanic front and preclude addition of slab-derived melt. Most Sr and Pb isotope ratios of strongly leached lava clasts are lower than those of the Quaternary volcanic front, precluding addition of slab-derived fluids.

The early stage rear-arc volcanism after back-arc basin opening was likely derived from a depleted mantle with an incipient contribution from the subducted slab. This result gives spatial and temporal constraints for the hot finger hypothesis.

[1] Tamura et al. (2015), *Proceedings of the International Ocean Discovery Program*, Expedition **350**. [2] Andrews et al. (2015), *AGU Fall Meeting*, **2015**.