Forearc magmatism in the Kii peninsula of Miocene SW Japan

HIRONAO SHINJOE[1], YUJI ORIHASHI[2] AND TOMOAKI SUMII[3]

[1]Tokyo Keizai University, Tokyo, 185-8502, Japan, (shinjoe@tku.ac.jp)
[2]Earthquake Research Institute, University of Tokyo, 113-0032, Japan, (oripachi@eri.u-tokyo.ac.jp)
[3]Geological Survey of Japan, AIST, Tsukiba, 305-8567, Japan, (tomo-sumii@aist.go.jp)

In the forearc region of SW Japan along the Nankai trench, are distributed voluminous volcano-plutonic igneous complexes formed in the middle Miocene time. The igneous activities were related to the subduction of young hence hot Shikoku Basin of the Philippine Sea plate, immediately after the opening of the Japan Sea and clockwise rotation of SW Japan. Distribution of the igneous rocks is up to 800 km along arc, 150 km across arc directions. Across arc variation of the lithology have been pointed out [1], and most of the lithological variation were observed in Kii peninsula. We thus present the summary of geochemical and geochronological data of the middle Miocene felsic igneous rocks of the Kii peninsula, and discuss origin of the magmatism.

In the order of the distance from the Nankai trench, tholeiitic basaltic igneous complex, S-type granitic plutons and volcano-plutonic complexes including large scale caldera bearing bodies, I-type granitic plutons, and mafic to felsic volcanic rocks (Setouchi volcanic rocks) are distributed. Generation of S-type felsic rocks can be explained by melting of sediment above the subducting hot Shikoku Basin, with possible additional heat source by the injection of tholeiitic basaltic magma [2]. Origin of the Setouchi volcanic rocks were usually ascribed to the the melting of subducting Shikoku Basin slab. High-Mg andesite were formed by the interaction of slab melt with mantle wedge peridotite [3]. Rhyolitic rocks are usually with depleted-HREE signature, thus they were proposed to be derived from melting of subducted sediment in the mantle depth [2].

We analyzed U-Pb zircon ages of representative felsic rocks by LA-ICPMS technique. Most of data are well concentrated within the range of 15.5 to 14.5 Ma. Since the origin of the Setouchi volcanic rocks, farthest from the trench, were related to the melting of slab, Shikoku Basin subducted farther than 100 km within ca. 1 Ma.

[1] Nakada and Takahashi (1979) *J. Geol. Soc. Jpn.*, **85**, 571-582. Kimura et al. (2005) *Bull. Geol. Soc. Amer.*, **117**, 969-986. [2] Shinjoe et al. (2007) *J. Geol. Soc. Jpn.*, **113**, 310-325. [3] Tastumi (2006) *Annu. Rev. Earth. Planet. Sci.*, **34**, 467–99