

U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ ages of trench proximal magmatic rocks in SW Japan with implications for Miocene tectonic environments

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Middle Miocene trench proximal magmatism took place in SW Japan Arc, up to 800 km along arc and 150 km across arc directions, respectively. The magmatism is subdivided into granite plutons and felsic volcano-plutonic complexes (Outer Zone Granitic Rocks) and mafic to felsic volcanic rocks including high-Mg andesite (Setouchi Volcanic Rocks). Basaltic intrusions with tholeiitic and alkaline affinities are also accompanied. In this presentation, we will review radiometric ages of the Middle Miocene near-trench magmatic rocks of SW Japan arc, including our own zircon U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ dating results, and discuss the origin of magmatism in relation to the timing of the opening of the Japan Sea and the subduction of young hence hot Shikoku Basin lithosphere of the Philippine Sea plate.

Commencement of the magmatism was at ca. 15.6 Ma in the Outer Zone Granitic Rocks, just after the clockwise rotation of the SW Japan arc. Most of the igneous activities concentrated between 15.6 Ma to 13.5 Ma and no along-arc polarity was recognized in the U-Pb age of the igneous activity both of the Outer Zone Granitic Rocks and the Setouchi Volcanic Rocks from Kyushu to Kii Peninsula. This fact suggests that the Shikoku Basin lithosphere started to subduct beneath whole of this region before 15.6 Ma.

Alkaline basaltic magmatism with OIB-like trace element signature in middle to western Shikoku region occurred in 12-13 Ma. Since the alkali basaltic magma are supposed to have been derived from enriched mantle beneath the Shikoku Basin slab, presence of some slab tear in the western Shikoku region in that period may be presumed.