

# Re-evaluation of the timing of granitic magmatism in the Amami Islands

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Sporadic occurrences of granitic rocks are known in the islands of the Ryukyu Arc, of which the most voluminous is the Miocene Yakushima granite, situated at the northern end of the arc. The granitic magmatism in Yakushima initiated at ~16 Ma, as constrained by zircon U-Pb ages (Anma et al., 2003, JSPS KAKEN Rep.), which is considered to represent the timing when the Philippine Sea Plate (PSP) started to subduct beneath SW Japan. Granitic rocks from contemporaneous magmatism, which initiated at 16–15 Ma, extend northeastward in the outer zone of Kyushu, Shikoku, Kinki, and Tokai Regions, marking the lateral extent of the PSP slab at the time of subduction initiation.

Amami Islands, located at the central part of the Ryukyu Arc, predominantly consist of Cretaceous accretionary complexes of terrigenous sediments that are intruded by granites. Most of the Amami granitic rocks are fine to medium grained granodiorite to tonalite, and occur as small (less than several km in diameter) intrusive bodies. The timing of granitic magmatism in the Amami Islands has been controversial. Shibata and Nozawa (1966, Bull. Geol. Surv. Japan) reported Eocene (56–49 Ma) K-Ar ages from granites in Oshima, the biggest island of the Amami archipelago. On the contrary, Kawano et al. (1997, J. Mineral. Petrol. Econ. Geol.) reported a much younger Miocene (17 Ma) K-Ar age from one of the granitic intrusions in Oshima, and a Cretaceous (110 Ma) K-Ar age from gabbroic rock in Uke Island, located south of Oshima.

The timing of granitic magmatism in Amami Islands plays an important role in understating the tectonomagmatic processes that occurred during the post-Eocene development of the western Pacific margin; if the Amami granitic magmatism occurred in the Miocene, contemporaneous with episodic granitic magmatism that occurred further northeast, then it would indicate that the western margin of the PSP extended to where the Amami Islands are currently situated at the timing of subduction initiation, providing critical spatiotemporal constraints for the tectonic development of the PSP.

To constrain the timing of the granitic magmatism in the Amami Islands, we have comprehensively sampled the granitic rocks in the islands for zircon U-Pb dating and detailed geochemistry and petrological analysis. We will report our preliminary results in this study.

Keywords: Amami Islands, granite, zircon U-Pb dating