

Migration of granitoid activity in SW Japan during Cretaceous and Paleogene

Kazuya Iida^{1*}, Iwamori Hikaru², Orihashi Yuji³, Park Taeho², Yong-Joo Jwa⁴,
Sung-Tack Kwon⁵, Tohru Danhara⁶, Hideki Iwano⁶

¹University of Tokyo, ²Tokyo Institute of Technology, ³Earthquake Research Institute,
⁴Gyeongsang Nat'l University, ⁵University of Yonsei, ⁶Kyoto Fission-Track

Granitoid is one of the main components of the continental upper crust, and is thought to provide key information on evolution of the continental crust. Geochemical evidences suggest that subduction zone magmatism has contributed to the origin of granitoids and the continental upper crust, yet the actual mechanism of generation of granitoid is still controversial.

In SW Japan, granitoid activity occurred in large area from Cretaceous to Paleogene. In spite of extensive efforts of the previous petrological works, the genetic conditions (e.g., P, T, source rock compositions) are poorly constrained at present. There are also a number of geochronological studies, yet even the main feature of the spatio-temporal evolution of the granitoid activities has not been clarified: several authors put an emphasis on eastward migration suggesting migrating subducted spreading ridge (Kinoshita and Ito, 1986), while several authors propose a regional difference in the denudation rate (Suzuki and Adachi, 1998). These differences partly arise from different chronological methods and partly due to insufficient spatial coverage of the data.

In this study, we aim at contributing to put more chronological constraints on the migration (and ultimately the origin) of Cretaceous to Paleogene granitoid activities in SW Japan, based on zircon U-Pb dating. We have used LA-ICPMS to measure U and Pb isotopic ratios on 99 samples along the N-S across-arc section from Tottori to Kagawa with ~50km width. As a result, the following features have been found:

- (1) Broad but systematic migration of granitoid activities from south to north during 95-60Ma.
- (2) Based on the spatio-temporal variation, the activities can be divided into four stages; Stage1 (95-87Ma), Stage2 (87-77Ma), Stage3 (77-67Ma), and Stage4 (67-60Ma).
- (3) Based on the Sr isotope data in literature, we have found a gap in initial Sr isotopic ratio between stage 2 and 3.

Based on these results and other geological background information, we

will propose a possible model for generation of granitoid in SW Japan during Cretaceous and Paleogene.

Keywords: migration of granitoid activity, subduction zone, origin of granitoid, upper continental crust, zircon U-Pb dating, LA-ICPMS