Revealed the multiple silicis igneous activities in the south Kii Peninsula: Re-examination of the age on the Omine Acidic Rocks

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Various geologic units in early to middle Miocene age distribute over the Kii Peninsula, southwest Japan. The variety should be the reflection of the rapid change of the local tectonic setting synchronized with the rapid rotation of the Southwest Japan block. Among the main geologic units in this region, precise age determination have not been reported only on the Omine Acidic Rocks (OAR), though a detailed reconstruction on time-and-space-distribution should provide the information on that geological event.

The OAR are composed of the granite plutons and a granite/quartz porphyry dikes, which stretch along the central axes of the peninsula, across-arc direction. We report this time, K-Ar biotite ages for eight localities of the six granite plutons. Field occurrence suggests that these plutons intruded to the shallow depth from the surface, and every sample was collected from the very marginal area, which should have been quenched after the intrusion. We interpret each age, therefore, as one of the pluton intrusion.

Majority of the obtained ages are concentrated to 14.6-14.8 Ma, some exceptional ones are the older; 15.4 Ma or the younger; 13.5 -14 Ma. The ages do not show the difference to the chemical variation, though these plutons are divided to I-type and S-type granites, from their chemical composition and the mineral assemblages,

We could not report the age on the granite/quartz porphyry dikes, because of the heavy alternation of the dikes. On theses dikes, unlike the other granite plutons of OAR, field occurrence provides the stratigraphic relation between the other Miocene geologic unit. The dike intrudes into the fore-arc sedimentary formation, a previous planktonic foramineferal assemblage analysis had indicated the existence of the datum for ca.15.1 Ma beneath the bottom of this formation. The intrusion age of these dikes should be estimated as younger than 15.1 Ma.

The modal age of OAR ; 14.6-14.8Ma coincides with those of the gigantic felsic subeffusive/effusive rocks distributed neighboring area; the Kumano Acidic Rocks and the Muro Phyroclastic deposit. Over the Kii peninsula, these gigantic felsic volcanic activities concentrate to this short period.

The exceptional older age is obtained for the granite pluton of the southernmost area, which coincides with the age of the fore-arc shallow marine strata; Kumano Group and the Shionomisaki volcano-plutonic complex distribute southwards. The exceptional younger ages; 14 or 13.5 Ma are obtained from the northernmost pluton and the satellite pluton in the middle area.

These results enable us to discuss the detailed time-and-space-distribution of the early to middle Miocene geologic units in Kii peninsula.