

Early-Miocene to Pleistocene magmatism in the western part of West Java, Indonesia

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Sunda Arc is located in the Southeast Asia as a result of the Indo-Australian Plate subducted beneath Sundaland. Java Island belongs to the eastern part of Sunda Arc, the arc magmatism started since Eocene to Recent on this island. Java Island can be divided into three parts: West Java, Central Java, and East Java based on the tectonic setting. Most of the previous studies focused on the well-known volcanoes, and there were few geochemical or dating data from the others not famous volcanoes. In this study, we focus on the western part of West Java. Fifty-eight volcanic rocks from five volcanoes (i.e., Danau Volcanic Complex (DVC), North Bayah Dome (NBD), Gede Volcanic Complex (GVC), South Bayah Dome (SBD), and Ciemas) were collected. Major and trace elements, and whole rock Sr-Nd isotopes were also analyzed. Combining the zircon U-Pb ages yield by our group before, we discuss the temporal and spatial geochemical variations in this area. Magmatism shows northward from SBD to DVC during Early-Miocene (16.7 Ma) to Pleistocene (2.4 Ma), however, they show widely erupted between the southern (Ciemas) to the central part of this area (NBD) at 0.7 Ma. All volcanic rocks show island arc signatures (depletion in high-field-strength elements and enrichment in large-ion lithophile elements) with slightly enrichment of light rare earth elements. Whole rock Sr-Nd isotopes results show a similar magma source during 16.7 to 2.4 Ma (ϵ_{Nd} value = +3.6 to +1.7), and enriched progressively to GVC (ϵ_{Nd} value = +0.8 to +0.9, without exactly ages), and to magmatism at 0.7 Ma (ϵ_{Nd} value = -2.0 to -0.4). We suggest that a homogeneous magma was formed after source contamination before 16.7 Ma, and then erupted and migrated from south to north during 16.7 to 2.4 Ma by changing the angle of subduction. Much more crustal material contaminated to magma source after 2.4 Ma and magmatism migrated back to southern part of this area because of slab rollback and/or broken.