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The influence of subducted slab in magma genesis of Sunda arc (Java Island, Indonesia)

Esti Handini^{1*}, Toshiaki Hasenaka¹, Masaya Miyoshi³, Agung Harijoko⁴

¹Kumamoto University, ²Kyushu University, ³Kyoto University, ⁴Gadjah Mada University

The influence of subducted slab in magma genesis of Sunda arc (Java island, Indonesia) has been debated over years. Previous works showed that magmas in this arc are characterized by low Mg number, low Ni and Cr contents, which signified that observed magmas are all differentiated. However, the positive correlation between incompatible elements and the depth of Benioff zone referred to a probable influence of the subducted slab. A possible explanation is that the degree of partial melting decreases as the depth of Benioff zone increases. The higher Ba/La and Sr/Nd ratios, and less variations in $^{176}\text{Hf}/^{177}\text{Hf}$ are observed in Central and East Java volcanoes, and indicate a greater involvement of subducted pelagic sediment and stronger slab imprints. The presence of the subducted seamounts is also observed along Central and East Java arc, whose inference to subduction process is unknown.

Here, across arc variations of Sunda arc will be discussed in a geochemical review and B data from several volcanoes of Sunda arc. This would be the first trial for B analysis from volcanic rocks of Sunda arc. As this element is enriched in altered oceanic crust and sea floor sediments, information of Boron number from volcanic rocks will be very useful to trace the subducted slab influence in magmatism. This data will also be very powerful to test the previous hypothesis for greater involvement of subducted pelagic in Central and East Java. We will also compare the characteristics of Sunda arc to some other island arcs. This will provide a significant contribution to evaluate the slab influence in Sunda arc.

Keywords: Sunda arc, subduction, trace elements, seamounts