

SILICIC ARC VOLCANISM AND LOWER CRUST MELTING: AN EXAMPLE FROM THE CENTRAL LUZON, PHILIPPINES

YUMUL, G.P.,JR., DIMALANTA, C.B., FAUSTINO, D.V. and DE JESUS, J.V.

Field geological and geochemical studies of the different volcanic centers in Central Luzon, Philippines showed that across- and along-arc geochemical variations are present. In addition to the previously recognized tholeiitic – calc-alkaline – alkaline across arc variation, an adakitic rock – tholeiitic/ calc-alkaline – adakitic rock across arc variation is also recognized. The adakitic rocks are recognized in Mounts Balungao, Cuyapo and Amurong which are all part of the Eastern Volcanic Chain. The Eastern Volcanic Chain is located at the back-arc side with respect to the Manila Trench. Adakitic rocks have also been recognized along the Western Volcanic Chain, specifically in Mount Pinatubo, which corresponds to the forearc – main volcanic arc region with respect to the Manila Trench. Nonetheless, available geological data do not support the formation of the recognized adakitic rocks in Central Luzon, Philippines through the partial melting of the Oligo-Miocene South China Sea crust. The adakitic rocks, specifically those noted along the Eastern Volcanic Chain, are believed to have been generated by lower crust melting brought about either by basaltic underplating or the introduction of a hot mantle diapir. It is proposed that the term “adakite” should be purely descriptive and must not have any genetic implication of being a forearc slab melt.