

Geology of the Bayah area: implications for Tertiary evolution of West Java, Indonesia

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The geological setting of the Bayah area in the Paleogene is indicated by the presence of alternating sedimentary and volcanic rocks. The sedimentary rocks consist of the fine to coarse clastic sediment, which suggest, as a result of the regressive conditions, were deposited in a shallow basin. In the Neogene time sediments with open marine characters and contemporaneous volcanic rocks were deposited in the transition area at the southern border of the basin. The clasts of Neogene sedimentary rocks were derived from a southern source area. The boundary between the Paleogene and the Neogene sequences is characterized by an unconformity which indicated in the field by an erosion surface. Three further tectonic phases can be recognized in this area. They occurred in the Late Paleogene, Late Middle Miocene and Latest Miocene age.

The Tertiary volcanic rocks can be divided into a lower sequence of Late Eocene to Early Oligocene age (LOA) and upper sequence of Oligocene to Miocene age (UOA). All the rocks,

except for one sample from the LOA, are rocks typical of a calc-alkaline island arc. The LOA consists of basalts and basaltic andesites with characteristics that suggest a more primitive magma than those the UOA. The LOA rocks probably correspond to fractional crystallization and contamination, with component of low-Th concentration, of intermediate lower crust. The LOA was generated in the fore-arc region and appears to be related to a period of slower subduction. The UOA, which range from basalt to rhyolite composition, correspond to an increasing of the differentiation processes. They experienced contamination of the parental magma with terrigenous sediment and occur in the high levels in the crust.

The evolution of this area is strongly influenced by the motion of the Indian Plate, colliding with the Eurasian Plate. During the Paleogene the area was situated in the fore arc and in the Neogene was located in the transition area between back arc and volcanic arc.