

## **Lagged Arc Volcanic Rocks and their Geodynamic Implications**

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A puzzling type of arc volcanic rocks so called lagged arc volcanic rocks (Mo et al., 1992) commonly occur in many orogenic belts in western China, as well as in other parts of the world.

These volcanic rocks, on one hand, formed in post-collisional intra-continent environment; on the other hand, are all calc-alkaline assemblages with strongly geochemical signatures of subduction-related volcanic rocks. For instance, Tengchong volcanic cluster in Yunnan, SW China erupted in late Pliocene-late Pleistocene (2.930.09 Ma), consisting of typically calc-alkaline basalt-andesite-dacite association. It apparently linked with westward subduction of Nuijiang oceanic plate. However, Nuijiang Ocean closed no later than the end of the Cretaceous (65 Ma or so). It implies that the formation of Tengchong volcanic cluster at least 60 m.y. lagged behind the ending of subduction of Nuijiang plate. Another example is Yulong porphyry Cu-Mo belt in east Tibet, within which Yulong deposit, the largest copper deposits of China, is located. While it formed in 52.033.2 Ma, the apparently related subduction of Jinshajiang oceanic plate ended at the end of the Triassic (200 Ma or so). Besides, many similar cases have also been found in other parts of the world, e.g., Kaapvaal Craton of South Africa (Condie et al., 1989).

The reason for the delay of volcanism is presumably that the temperature in the source region was not high enough to reach the solidus during the subduction. The sinking slab, however, might become a new source rock for later magma generation. So new magma inevitably contained subduction zone components when was generated after collision. Therefore the lagged arc volcanic rocks seem to provide evidences for a paleo-subduction zone.