Quaternary Eruptive Sequence of the Tengchong Volcanic Group, Southwestern China

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Tengchong volcanic group is situated along the NS-stretched tectonic belt in the southeastern turning margin of the Tibetan plateau and adjacent to the border area between western Yunnan province, SW China and Myanmar. The volcanic field has long been experiencing intense tectonic stress due to the continuous subduction of the Indian plate into the Eurasian plate, and thus had pervasive volcanism as well as frequent earthquakes and geothermal activities throughout Quaternary. The volcanic rocks cover the successive domain of basic, intermediate and acid rocks, showing an inverse magma evolution trend. Generally all these rocks could be separated into two compositional groups and correspondingly the eruption types of the Tengchong volcanoes roughly fall into two categories, i.e. explosive eruptions with large amount of volcaniclastics and lava, and moderately quiet central eruptions with relatively small amount of scoria and lava overflow.

The seasonal field investigations conducted in the past few years help us to find various samples suitable for the systematical chronology dating as K-Ar, Ar-Ar, ^{14}C AMS and OSL. Combining with previous research, we separate the eruptive sequence of the Tengchong volcanic group in Quaternary into four subsequences: early Pleistocene, middle Pleistocene, late Pleistocene and Holocene epoch. The early to middle Quaternary eruption consist of a serious of explosive eruptions and almost all the eruptive dacitic volcaniclasts and lava constitute the bottom layer of the Tengchong basin. The bulky volcanic conduit in the Daliuchong mountain peak definitely suggest a furious eruption occurred around 0.55Ma and built the first height in the basin. The Tengchong volcanism reached its climax in the middle Pleistocene and formed numerous cinder cones in the basin. A serious of moderately quiet central eruptions occurred in late Quaternary; intermediate-acid as well as basic volcanic rocks form the upper layer of the basin. Three volcanoes are determined to be Holocene volcano. The volcanic activity moved from the periphery to the central basin and ended in Heikongshan eruption several thousand years ago. The Tengchong volcanic group is still alive and we should keep an eye on its future hazard mitigation.