

Huangshan Movement in SE China

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Many Early Cretaceous granitic complexes (I-type and A-type granites) occur in SE China, among which the Suzhou, Huangshan, Lingshan and Fuzhou granitic complexes (Fig. 1) have been selected in this study. After systematic studies in petrography, petrochemistry and zirconology, it was determined that: (1) I-type granite, as main intrusive phase of a granitic complex, is weakly-differentiated granodiorite of crustal origin with zircon U–Pb ages of about 127.1 ± 1.8 Ma; (2) A-type granite, as subsequent intrusive phase of a granitic complex, is highly-differentiated alkali-feldspar granites homologous to I-type granite, with zircon U–Pb ages of about 105.4 ± 1.3 Ma. Combining the structural geology and the granitic magmatism in SE China, this study proposes that the subduction of the Kula Plate under the eastern edge of the Euro-Asian continent in the early Early Cretaceous caused compressive tectonic environment in SE China. Then, magma chamber developed in the middle crust and I-type granites intruded in the upper crust at ~ 127 Ma. After zenith of compressional subduction, an ultra-long period of fractional crystallization of huge amount of granitic magma in the chamber took place, and resulted in generation of high-Si, -Al, and -alkalis, and incompatible trace elements- and volatiles-enriched residual magma at the top of the magma chamber. At the late Early Cretaceous, the extensional tectonic environment occurred in SE China, and a very small volume of highly-differentiated residual magma ascended rapidly from the magma chamber, and formed A-type granites with their mineralization at ~ 105 Ma.

The driving force behind the above-mentioned granitic magmatism in SE China comes from the subduction of the Kula Plate, which caused a new orogeny—Huangshan Movement. This movement can be defined by two landmark events with their ages: syn-orogenic granites (i.e., I-type granites) with their emplacement ages of ~ 127 Ma (representing the peak compression of this movement), and post-orogenic granites (i.e., A-type granites) with their emplacement ages of ~ 105 Ma (representing the peak extension of this movement). The establishment of this movement can well explain the Early Cretaceous tectonic, magmatism, and mineralization in SE China, so having immeasurable geological significance.

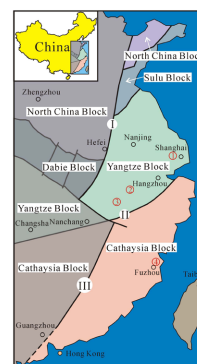


Fig. 1 Geotectonic map of SE China (bright colored) and the four complexes of I-type and A-type granites studied in this paper: ① Suzhou complex; ② Huangshan complex; ③ Lingshan complex; ④ Fuzhou complex. I: Tan-Lu fault; II: Shao-Jiang-Ping fault; III: Ying-An fault.