Petrogenesis of the Mesozoic Luzong volcanics, lower reaches of the Yangtze River: Implications for varying proportions of the enriched components in their mantle sources

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Late Mesozoic volcanic and intrusive rocks associated with large scale Cu, Fe, Au polymetallic mineralization are widespread in the middle and lower reaches of the Yangtze River, the northeastern part of the Yangtze Craton. There are a series of fault-bounded basins filled with volcanic rocks, including Lishui, Liyang, Ningwu, Fanchang, Luzong, Huaining, and Jinniu basins, and among which the Luzong and Ningwu basins are the biggest. The volcanic rocks in the Luzong basin can be subdivided into four formations, namely, from bottom to top, the Longmenyuan Formation, the Zhuanqiao Formation, the Shuangmiao Formation and the Fushan Formation. Zircon U-Pb dating results show that the volcanic eruption initiated at 136 Ma and ended at 130 Ma, implying a rapid eruption during the early Cretaceous. Though the increasing in SiO_2 from the earlier Longmenyuan Formation to the later Fushan Formation appears to point out an evolution trend, the fact that the yongest Fushan Formation rocks show the most radiogenic Nd isotopes argues against any differential relationship among these rocks. They are more likely to have been derived from diverse mantle sources, which had undergone different degrees of metasomatism by melts released from the subducted Paleo-Pacific slabs.