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# The late Mesozoic , potash-rich Volcanic Rocks in Late Mesozoic of North Yangtze and Dabie Orogenic Belt: Have Nothing to Do with Discussion on Collisional Orogenic Cycling, but Reflect Subduction Polarity and Mantle Features of the Ancient Orogenic Belt

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This comprehensive study focuses on the chronology of volcanic rocks in late Mesozoic of north Yangtze area and Dabie orogenic belt in China. Zircon U-Pb chronology reveals that the volcanic rocks of late Mesozoic in this area came into being since about 130Ma. These rocks are potash-rich and generally are rich in large-ion lithophile elements(LILE) and light rare earth elements(LREE). Lingxiang and Huangshi are in the north of Yangtze plate. Rocks in these areas are bimodal and mainly composed of acid volcanic rocks. These basalts do not have negative Eu anomaly, but the rhyolites indicate an obvious negative Eu anomaly. The Isr values of these basalts are 0.7065 and 0.7071, and the values of $\varepsilon$ Nd（t） are -4.96 and -9.10. The Isr values of rhyolites are 0.7054—0.7082, and the values of $\varepsilon$ Nd（t）are -7.34—-7.94. Both basalt and rhyolite rocks have similar trace elements and Sr-Nd isotope composition. In another area, volcanic rocks of the Dabie orogenic belt consist of intermediate volcanic rocks called trachytes. These rocks feature non or weak negative Eu anomalies. The Isr values are between 0.7060—0.7087. The values of $\varepsilon$ Nd（t） value -10.43—-20.00 are much lower than the rocks of the Yantze area. The trachytes have mixtures of both the enriched mantle and lower crust. They have a similar characteristic with basic rocks of the same period or some period later appeared in the Dabie orogenic belt . From the southwest to the northeast paralleling Tanlu fault direction, the average εHf(t) of zircon change in value from -8.47, -5.0, -13.59, -17.9, -23.4 and -24.35. This indicates a gradual reducing trend. The $T_{DM2}$ values are generally rising and range from 1719Ma, 1686Ma, 2043Ma, 2317Ma, 2735Ma and 2721Ma. The $\varepsilon$ Nd（t）values of the whole rock is reducing from the southwest to northeast. Similarly the $T_{2DM}$ is rising. Moreover, the $K_2O$ ,the total REE and light-heavy rare earth elements fractionation degree are also increasing. These characters indicate that the subduction depth from the triassic Yangtze plate to the North China plate increases gradually. The subduction direction of crust in this area is from southwest to northeast. The compositional change in the potash-rich volcanic rock reflects the subduction direction of the Yangtze continental crust. There is no relationship between the late Mesozoic potash-rich volcanic rock and the collisional orogenic cycle of the Yangtze plate and North China plate. However, the late Mesozoic potash-rich volcanic rock has inherited the enriched mantle feature formed by the collisional orogenic crust subduction. Large-scale heat and fluid upwelling have been induced by delamination of the subduction materials. The mantle transition zone caused by Paleo Pacific subduction, has lead to the enrichment of the mantle melting under the extensional structure. Mixing of basaltic magma and the overlying crust has brought about the generation of potash-rich volcanic rock in this area.

*References:*

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