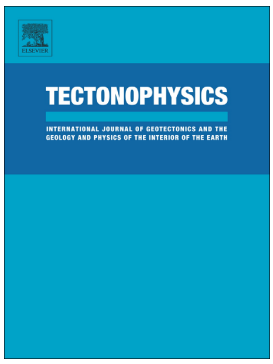

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Heat flow study of the Emeishan large igneous province region: Implications for the geodynamics of the Emeishan mantle plume

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Abstract

The Emeishan large igneous province (ELIP) is widely considered to be a consequence of a mantle plume. The supporting evidence includes rapid emplacement, voluminous flood basalt eruptions, and high mantle potential temperature estimates. Several studies have suggested that there was surface uplift prior to the eruption of the Emeishan flood basalts. Additionally, the plume's lateral extent is hard to constrain and has been variously estimated to be 800–1400 km in diameter. In this study, we analyzed present-day heat flow data and reconstructed the Permian paleo-heat flow using vitrinite reflectance and zircon (U-Th)/He thermochronology data in the ELIP region and discussed implications for the geodynamics of the Emeishan mantle plume. The present-day heat flow is higher in the inner and intermediate zones than in the outer zone, with a decrease of average heat flow from 76 mW/m^2 to 51 mW/m^2.

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