

## **New insights on the Emeishan Large Igneous Province**

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The Emeishan Large Igneous Province (ELIP) in southwest China spans a much wider area (1,000,000 km<sup>2</sup>) and total volume (1,000,000 km<sup>3</sup>) than predicted by earlier estimates. New Ar-Ar dating results reveal a synchronous association of magmatic rocks belonging to ELIP. These comprise continental flood basalts (CFB) (erupted at  $\pm 250$  Ma), widespread dike swarms (diabase) (240-250 Ma), PGE-bearing ultramafic complexes ( $253 \pm 7$ Ma), Ti-Fe-V-bearing layered complexes ( $>244 \pm 4$ Ma) and late alkaline components. The overall duration of the flood event was independently estimated to be as short as for other large igneous provinces, probably less than 2 Myr. If so, the eruption rate for the Emeishan CFB is anomalous i.e.  $15 \text{ m}^3 \text{S}^{-1}$ , 10 to 20 times greater than the continuing eruption rates ( $0.7\text{-}1.3 \text{ m}^3 \text{S}^{-1}$ ) of modern hotspots. On the basis of Ti contents, both volcanics and intrusions may be subdivided into high-Ti (TiO<sub>2</sub>  $>2.64$  wt. %) and low-Ti groups. They are spatially separated and their distribution correlates with the tectonic setting. However, the MgO contents show a radial pattern of distribution varying from about 11 % in the near center to less than 4 % in distal margins of the ELIP. The low-Ti PGE bearing complexes are associated with picrites in the high-MgO basalt area, probably indicative for a former plume conduit of 300 km in diameter. While the high-Ti layered complexes are related with the high-Ti / low-MgO CFB, inferring a major magmatic phase during the formation of the ELIP. The spatial extend of radial giant dyke swarms allows to estimate a diameter of 1300 km for the head of the plume, associated with a large scale uplift and a much later subsidence during the Permian-Triassic transition period.