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## **Geochronology and geochemistry of Sangri group volcanic rocks of the southern Lhasa Terrane: Implications for the early subduction history of the neo-tethys and gangdese magmatic arc**

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The Sangri Group volcanic rocks are distributed along the southern edge of the Lhasa Terrane, on the northern side of the Indus-Yarlung Zangbo suture zone. It consists of the Mamuxia and Bima formations and has long been considered to be Late Jurassic to Early Cretaceous in age. In this presentation, for the first time zircon LA-ICP-MS U-Pb ages, whole-rock major and trace element geochemistry, as well as Sr-Nd isotope data for the Bima Formation volcanic rocks in Sangri County, Tibet is described. Two samples collected from the Bima Formation volcanic rocks yield zircon U-Pb ages of  $195 \pm 3$  Ma and  $189 \pm 3$  Ma, respectively. These data suggest that the Bima Formation volcanic rocks formed during the Early Jurassic and not the Later Jurassic-Early Cretaceous as previously reported. The volcanic rocks of the Bima Formation are composed dominantly of basalt and andesite enriched in LILEs and LREEs and depleted in HFSEs, showing typical characteristics of arc volcanic rocks. They also show positive  $\epsilon_{Nd}(t)$  (3.19-7.02) values and low initial  $^{87}Sr/^{86}Sr$  (0.703182-0.705489) ratios, similar to the MORB of the Indus-Yarlung Zangbo ophiolites, indicating that the Bima Formation was derived from a depleted mantle wedge that was metasomatized by subducted oceanic slab-derived fluids. The magmas subsequently experienced juvenile crust contamination and fractional crystallization during ascent. The magmas of the Bima formation volcanic rocks were thus generated by the northward subduction of Neo-Tethys beneath the southern Lhasa Terrane as early as 195 Ma. Considering they were coeval with a large volume of Late Triassic-Early Jurassic felsic intrusion within the Gangdese arc, it is concluded that the Gangdese magmatic arc was initiated at a juvenile continental margin during Late Triassic-Early Jurassic, although a possible intra-oceanic arc setting cannot be excluded.

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