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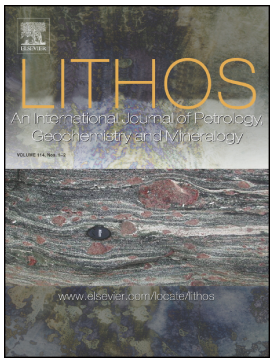

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Early Miocene rapid exhumation in southern Tibet: insights from P–T–t–D–magmatism path of Yardoi dome

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Abstract

Reconstructing the evolution of Gneiss domes within orogenic belts poses challenges because domes can form in a variety of geodynamic settings and by multiple doming mechanisms. For the North Himalayan gneiss domes (NHGD), it is debated whether they formed during shortening, extension or collapse of the plateau, and what is the spatial and temporal relationship of magmatism, metamorphism and deformation. This study investigates the Yardoi dome in southern Tibet using field mapping, petrography, phase equilibria modelling and new monazite ages. The resulting P–T–time–deformation–magmatism path for the first time reveals the spatial and temporal relationship of metamorphism, deformation and magmatism in the Yardoi dome: a) the dome mantle recorded prograde loading to kyanite-grade Barrovian metamorphic conditions of 650 ±30 °C and 9 ±1 kbar (M_2) in the Early Miocene (18–17 Ma); b) the main top-to-the-north deformation fabric (D_2) formed syn- to post- peak-metamorphism; c) the emplacement of leucorgranites related to doming is