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Cenozoic tectonic evolution of the West Qinling and its effects on the Cenozoic climate evolution, NE Tibetan Plateau

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Understanding the geodynamics of plateau growth necessitates careful consideration of the spatial and temporal constraints associated with mountain building in the Tibetan Plateau. Several competing hypotheses have been proposed to elaborate the mechanisms driving the outward growth of the Tibetan Plateau, including oblique subduction, distributed thickening and shortening, mantle lithosphere removal, and middle-lower crustal flow. These tectonic models yield diverse spatiotemporal patterns of deformation along the plateau margin. Here we considered the West Qinling, northeastern Tibetan Plateau as our studied area, and plan to present new thermochronology data to refine the exhumation patterns of the West Qinling. Combined with existing studies, we aim to (1) link surface deformation in the West Qinling to regional deep structures to constrain mechanisms of the upward and outward growth of the Tibetan Plateau, and (2) connect with the tectonic deformation and paleoclimate conditions in the West Qinling to assess climate effect of the uplift of mountain ranges. This study will provide valuable insights into the mechanisms of surface uplift of orogenic plateaus and their impact on climate change.

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