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## Late Miocene hinterland crustal shortening in the Longmen Shan thrust belt, the eastern margin of the Tibetan Plateau

**Xiaoming Shen**<sup>1</sup>, Yuntao Tian<sup>2</sup>, Shimin Zhang<sup>1</sup>, Andrew Carter<sup>3</sup>, Barry Kohn<sup>4</sup>, Pieter Vermeesch<sup>3</sup>, Rui Liu<sup>1</sup>, and Wei Li<sup>1</sup>

<sup>1</sup>Institute of Crustal Dynamics, China Earthquake Administration, Beijing, China

<sup>2</sup>School of Earth Sciences and Engineering, Sun Yat-sen University, Guangzhou, China

<sup>3</sup>Department of Earth and Planetary Sciences, Birkbeck, University of London, London, UK

<sup>4</sup>School of Earth Sciences, University of Melbourne, Melbourne, Victoria, Australia

Long-term (million year time scale) fault-slip history is crucial for understanding the processes and mechanisms of mountain building in active orogens. Such information remains elusive in the Longmen Shan, the eastern Tibetan Plateau margin affected by the devastating 2008 Wenchuan earthquake. While this event drew attention to fault deformation on the foreland side (the Yingxiu-Beichuan fault), little is known about the deformation history of the hinterland Wenchuan-Maoxian fault. To address this gap, thermochronological data were obtained from two vertical transects from the Xuelongbao massif, located in the hanging wall of the Wenchuan-Maoxian fault. The data record late Miocene rapid cooling and rock exhumation at a rate of 0.9–1.2 km/m.y. from ~13 Ma to present. The exhumation rate is significantly higher than that in the footwall (~0.3–0.5 km/m.y.), indicating a differential exhumation of ~0.6 km/m.y. across the fault. This differential exhumation provides the first and minimum constraint on the long-term throw rate (~0.6 km/m.y) of the Wenchuan-Maoxian fault since the late Miocene. This new result implies continuous crustal shortening along the hinterland fault of Longmen Shan, even though it has not been ruptured by major historic earthquakes. Our study lends support to geodynamic models that highlight crustal shortening as dominating deformation along the eastern Tibetan Plateau.