The 12th May 2008 Wenchuan, China Earthquake (Mw 7.9): A Possible Cause of Genesis

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The 12th May 2008 Wenchuan, China Earthquake (Mw 7.9), a shallow focus earthquake occurred beneath Wenchuan in the northwestern Sichuan province of central China, which caused a severe damage to both property and personnel in the region. Almost all aftershocks of the earthquake are distributed along the northeast striking Longmen Shan topographic front, which marks the active convergent margin mountain belt between eastern Tibetan plateau and western Sichuan basin. Rigorous analyses of focal solutions available for recent and past earthquakes helped to understand the rupture propagation, sub-surface heterogeneity, tectonic deformation pattern and seismicity behavior at Longmen Shan and Xianshuihe – Xiaojiang fault system. Right –oblique reverse motion along Longmen Shan triggered the Wenchuan earthquake. It is inferred that rapid surface uplift due to ductile thickening of the weaker Tibetan crust and increased rate of focused surface denudation of mid-crustal ductile channel-flow / exhumation, at the edge of Longmen Shan are probably responsible for accumulation of stress in the upper eastern Tibetan crust and hence facilitating the process of brittle failure in the area.

Keywords: Wenchaun earthquake; Longmen Shan collisional front; Tibetan Crust; Tectonic deformation