



Preliminary analysis of active deformation in Chengdu foreland basin, China

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On 12 May 2008, the devastating earthquake, Wenchuan earthquake ($M_w=7.9$), struck the eastern edge of the Tibetan plateau, collapsing buildings and killing thousands in major cities aligned along the western Sichuan basin in China. The earthquake ruptured an imbricate thrust system in the Longmen Shan range, which forms one of the highest relief changes in the world and the eastern boundary of the Tibetan Plateau. Caused by the events, the Sichuan region attracts geoscientists, however, most of attention is focusing on seismogenic structures and regional tectonic setting on high-mountainous area. From view point of population distribution, surface processes and hazard risks, the Chengdu plane, or the so-called Longmenshan foreland basin, the active structures beneath the late-Cenozoic strata may causing more damages. In this study, by using SRTM data, field investigation and cosmogenic nuclide dating, we try to explore and re-examine the neotectonism and potential related hazards on foreland basin.

From the existed geologic data, few of the detail neotectonic structures have been documented on the Sichuan basin. Three major target areas, including: Qionglai-Pujiang, Pengshan-Duoyue and Puyang-Guihua, are chosen on this study based on the SRTM data and field investigation. Despite the structures have been healed and concealed by the subsequent surface processes and human development, the result still shows that the Qionglai-Pujiang alluvial fan is occupied by active sinistral faulting by 2mm/yr slipping rate. The Pengshan-Duoyue area is occupied by active folding and the Puyang-Guihua could be dominated by frontal thrusting. The preliminary study demonstrates the deformation activity on Sichuan basin and provides essential information for the geologic hazard assessment.