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Acceleration and Intensification of Landslide, Debris Flow and Flood Geo-Hazards in Yin Chang Gou, Sichuan, China since the May 12, 2008 Wenchuan Earthquake

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The May 12, 2008 Wenchuan earthquake devastated the mountain resort and natural park area of Ying Chang Gou, Sichuan, China located in the Longmen Shan along the Jian Jiang river at the steep, high-relief eastern margin of the Tibetan Plateau adjacent to the Sichuan Basin. The Jian Jiang runs roughly parallel to the main fault line of the Wenchuan earthquake, the Yingxiu-Beichuan fault. In November, 2008, we began a research program aimed at determining geo-hazard risk factors and preventing population exposure to these hazards in the Ying Chang Gou area. Our methodology is a grounded research methodology using ongoing field inspections, field notes, photographs, interviews with local people and literature reviews. The risk factors include landslide, debris flow, and flooding in the former natural park areas of Xiao Long Tan, Da Long Tan, areas located under the Jiu Feng peaks, including the massive Xiejiadian landslide, and Dong Ling Si. High-volume, high-velocity debris flows have burst out of the Da Long Tan canyon on two occasions, 2008-09-26 and 2012-08-27 after heavy periods of rainfall. On the second occasion, mud-flow combined with the debris flow swept away all previous attempts at reconstruction. On 2012-08-27, as a result of heavy prolonged rain, the Jian Jiang flooded, topping a bridge; local homes and businesses were destroyed by landslides. In the 2012 incidents, local officials ordered evacuation prior to the events. Field investigation during 2013-03 observed large amounts of unconsolidated, loose materials remaining in the areas located under the Jiu Feng peaks and evidence of extreme flooding as far up the Jian Jiang as the former natural beauty area of Xiao Long Tan. Of particular concerns is the large amount of unconsolidated materials in the Da Long Tan canyon, where a new small hydro-electric dam is being constructed at the V-shaped gap leading to the Jian Jian, and the deepening erosive channel in the Xiejiadian landslide. In spite of these ongoing geo-hazards and localized disasters, some local people continue to demonstrate prolonged and hardy efforts to rebuild their homes and tourist, natural mountain products businesses. Based on regular observations between 2008-11 to 2013-03, we propose that post-Wenchuan earthquake geo-hazards have increased, are accelerating in intensity, and will continue to cause damage to the population, infrastructure and natural environment, particularly during the late summer annual rainy season.

Key Words: Wenchuan Earthquake, Tibetan Plateau, Longmen Shan, Landslide, Debris Flow, Flood, Geo-Hazards, Yin Chang Gou, Jian Jiang, Yingxiu-Beichuan fault

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