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Huge Landslides along the Jinsha River in Southeastern Tibetan Plateau and Their Association with the Recent Activity of Jinsha River Fault Zone

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The Jinsha river fault zone in the eastern margin of the Tibetan Plateau is an old suture structure after the shutting of the proto-Tethys and a large scale ultra-lithosphere fault zone consisted of 5 to 6 fault branches with a width of 50km, have a long geological evolution history. Since late Quatery, this fault zone is mainly dominated by dextral strike slip with partial thrusting component, absorbing partial energy of the extrusion movement of Tibetan Plateau. Along the fault zone, lower terraces of Jinsha river at Muronglou, Buzhong, Langzhong, Guxue, etc. were displaced, indicating the fault zone is active in late Quaternary, with an average rate of 3.5□4.3mm/ /yr. horizontally and 0.9-1.1mm/yr. vertically respectively in Holocene. Influenced by the intense fault activity of Jinsha river fault zone, this region is characterized by fractured rocks, strongly weathered surfaces.

The Jinsha river, the upstream of the Yangtze river, parallel to Jinshajiang fault zone, flows from north to south, forming deep river valley and huge terrain elevation difference. Numerous huge landslides have developed along the river, for example, there are 23 giant avalanches in the 38 km long reach from Narong to Rongxue, with general volumes of 10~70 million m^3 and even up to several hundreds million m^3. Moreover, the landslides produce many loose clastic fragments which detonate many debris flows and river blocking. The latest disaster event is the Baige barrier lake in 2018 caused by landslide, with a water storage capacity of 524 million m^3, causing tens of billions of yuan of economic losses. These landslides are distributed along the fault and its two sides, suggesting that these huge avalanches are closely related to the intense activity of the fault zone and special topography.

Keywords: Huge landslide, Jinsha River, Jinsha River Fault Zone, late Quatery activity