

## Geological structural control on rock mass movement in response to fluvial incision along the plateau margin of Tibet

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Landslides and deep-seated gravitational slope deformations frequently occur in valleys in the region of plateau margin which is the transitional terrain with the abrupt topographic change. These hillslope phenomena are expected to be controlled by the relationship between geological structures and fluvial incision. However, the systematic linkage of geological rock structures and river incision still keeps unclear. We aims to characterize rock mass movements in terms of geology and geomorphology along the two major rivers (the Minjiang River and its major tributary, the Heishuihe River) along the eastern margin of the Tibetan Plateau. We revealed that the effects of inner gorge formation on slope stability are substantially different according to the relationships between the geological trend and river trend. When the geological trend is normal or highly oblique to a river, very few DGSDs occur, but large rockslides commonly occur with adverse structural conditions along the Minjiang River. When the geological planar structures strike parallel or slightly oblique to the river, DGSDs with the types of buckling and toppling occurred along the Heishuihe River. This study provided conceptual model of slope movements concerning fluvial behavior and geological structure in similar high-relief areas of plateau margin.

Keywords: Plateau margin, Landslide, Deep-seated gravitational slope deformation, Geological structure, Fluvial incision