



## **Geological structural control on landslide and gravitational slope deformation in response to fluvial incision along the eastern margin of the Tibetan Plateau**

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Rock slope instabilities, such as rockslides and deep-seated gravitational slope deformations, commonly occur in valleys in the region of plateau margin where is the transitional terrain of the abrupt topographic change. These hillslope phenomena are the response of rock slopes to river incision, and thus, the hillslopes are expected to be controlled by the relationship between geological structures and river incision. To explore slope destabilizing mechanisms under different intersection settings of rock structural orientations and rivers, landslides and deep-seated gravitational slope deformations (DGSDs) were investigated in terms of geology and geomorphology along the two major rivers (Minjiang River and its major tributary, the Heishuihe River) along the eastern margin of the Tibetan Plateau, China. We revealed that the effects of knickpoint propagation and inner gorge formation on slope stability are completely different according to the relationships between the geological trend and river trend. Understanding the geological structures and river incision history can provide a conceptual model for natural slope destabilizations along high-relief plateau margins being incised by rivers.