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## **Landslide development characteristics and response to climate change since the last glacial in the upper reaches of the Yellow river, NE Tibetan Plateau**

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The upper reaches of the Yellow River in northeastern Tibetan Plateau are prone to geohazards. The evolution of the Yellow River, chronology of some landslides, and spatiotemporal distribution characteristics of large-scale landslides within the region are summarised using paleoclimatic evidence, and the relationship between the intensive landslide period and climatic changes since the Last Glacial period is analysed. It is concluded that (1) large-scale landslides are distributed widely within the region, particularly in the Qunke-Jianzha basin. (2) The chronological sequence of landslides is established by dating the slip zones of landslides and analyzing the relations between landslides and their overlying or underlying loess formations. Five landslide development periods are determined: 53–49 ka BP, 33–24 ka BP, 10–8 ka BP, 5–3.5 ka BP, and the present. (3) These correspond closely to warm and wet periods during the last 100,000 years, i.e., two weak paleosol development stages of Malan loess deposited during the last Glacial period in the Chinese loess Plateau, L<sub>1-4</sub> and L<sub>1-2</sub> that belong to the marine oxygen isotope stage 3, the last deglacial period, the Holocene Optimum, and the modern global warming period. (4) Landslide triggers may be closely linked to warm and wet periods related to rapid climatic transitions.

