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## Assessment of avalanche hazards using remote sensing in the lower Yellow River, China

Lu Gao<sup>1</sup>, Xiangzhou Xu<sup>1</sup>, Ying Zhao<sup>2</sup>, and Paolo Tarolli<sup>3</sup>

<sup>1</sup>Dalian University of Technology School, School of Hydraulic Engineering, Dalian City, China (xzxu@dlut.edu.cn)

<sup>2</sup>Water Resources Research Institute of Shandong Province, Shandong, Jinan 250013, China

<sup>3</sup>Department of Land, Environment, Agriculture and Forestry, University of Padova, Padova 35122, Italy

**Abstract:** Riverbank collapses frequently occur in the lower reaches of the Yellow River, China, which cause environmental changes around the riverbanks and result in a great loss of farmland. An analysis was carried out to understand the riverbanks of the Jiyang Reach via Google Earth. The results show that the three representative segments in the Jiyang Reach, the maximum annual-lateral displacement and average retreat area were 26.0 m/a and 1083.8 m<sup>2</sup> during the period 3/31/2016–5/10/2018, respectively. Several factors such as the soil properties, upstream river-control works, bridge piers, and channel bends may change the river flow direction and the scour intensity, thereby increasing the probability of downstream riverbank collapse, which are all causes of riverbanks collapse in the lower Yellow River. Field investigation and research data show that the lower reaches of the Yellow have serious bank-collapse disasters and their riverbanks are still in an unstable state.

**keywords:** Riverbank collapse; Yellow River; Channel evolution; Riverbank protection