



Application of UAVs terrain data in digital terrain analysis of loess landslide

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Although the current theory and methodology of digital terrain analysis (DTA) are quite mature, there is limited systematic discussion on the application of this technique for loess landslide research, especially in China's Loess Plateau. We focused on how to apply the DTA methods to research loess landslide based on high-resolution terrain data by low-cost UAVs and conventional 1:10 000 topographic map in geomorphology. We selected a typical high-speed and long-runout landslide on the Bailu Loess Tableland. This study illustrates how to apply the DTA methods to research loess landslide based on high-resolution terrain data by low-cost UAVs and conventional 1:10 000 topographic map in geomorphology. The primary content of the digital terrain analysis includes parameter extraction and analysis, hydrology analysis, geomorphic change detection, hypsometric integral (HI) and stability analysis, morphology analysis, structure analysis. The UAVs-based high-resolution data demonstrated substantial advantages over the conventional landslide investigation methodologies. The digital terrain analysis applied on the loess landslide has advanced our understanding of the landslide and its geomorphological evolution.