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Landslide monitoring using terrain reconstruction by structure of motion approach

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Structure from motion is an easy and accessible method which allows a reconstruction of terrain with high detail and accuracy. In this study we derived present day digital elevation models for two landslide localities, one in Talheim, Southern Germany and the other one in Dessie, Ethiopia. We used oblique aerial images acquired from a small four-seat aircraft in the case of Talheim and a series of terrestrial photographs for Dessie using a consumer grade reflex camera. The resulting models were compared with the before-the-event DEMs from a lasers canning campaign and from historical aerial images respectively. The two experiments showed a high potential of the method for a quick evaluation of the extent of the sliding event in terms of areal extent, volume, slope, geomorphodynamics etc.