Three-Dimensional Surface Displacement of Jiaju Landslide Based on Surface-Parallel Flow Assumption
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Abstract
One-dimensional InSAR LOS measurement has limited its application to retrieve 3-D surface displacements. We reconstruct the three-dimensional deformation field with surface-parallel flow assumption based on the knowledge of DEM information. The iteration method by correcting characteristic value with maximum likelihood estimation is used to literately process the function model to get the accurate random model.

Objective
9 ENVISAT SAR images and 19 ALOS SAR images were collected to retrieve 3-D deformation field of Jiaju landslide, locating on the right bank of the Da Jinchuan River, which is one of active large tractive landslides.

Results
Horizontal displacement of Jiaju landslide appears to move along the landslide direction in the east-west direction, the northern part of the landslide shows obvious horizontal deformation, and the deformation rate exceeds -10cm/y. Vertical deformation rate of the north part is large which exceeding -2cm/y, while the south part is -0.5cm/y.

Conclusion
Based on the knowledge of DEM slope information, 3D deformation field is reconstructed under surface-parallel flow assumption. And the iteration method by correcting characteristic value with maximum likelihood estimation is used to obtain the optimal value of the parameters with different measurements.

Major Reference