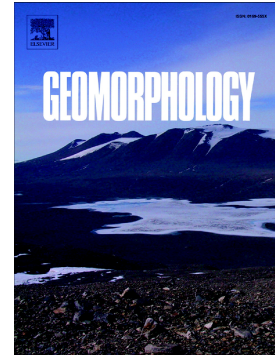


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Topographic changes and their driving factors after 2008 Wenchuan Earthquake

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Abstract

The 2008 Wenchuan Earthquake caused topographic change in the stricken areas because of the occurrence of numerous coseismic landslides. The emergence of new landslides and debris flows and movement of loose materials under the driving force of high rainfall could further shape the local topography. Currently, little attention has been paid to continuously monitoring and assessing topographic changes after the major earthquake. In this research, we obtained an elevation dataset (2002, 2010, 2013 and 2015) based on digital elevation model (DEM) data and a DEM extracted from ZY-3 stereo paired images with validation by field measurement. We quantitatively assessed elevation changes in different years and qualitatively analyzed spatiotemporal variation of the terrain and mass movement across the study area. The results show that the earthquake affected area experienced substantial elevation changes caused by seismic forces and subsequent rainfalls. High rainfall after the earthquake have become the biggest driver of elevation reduction, which overwhelmed elevation increase caused by the major earthquake. Increased post-earthquake erosion intensity has caused large amounts of

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