Geophysical Research Abstracts
Vol. 21, EGU2019-204, 2019
EGU General Assembly 2019

Local Climate Variances May Control Landslide Dynamics after Major Earthquakes

Wentao Yang (1), Wenwen Qi (2), Jian Fang (3), Yunqi Wang (1), and Yujie Wang (1)

(1) Beijing Forestry University, Beijing, China (yang_wentao@bjfu.edu.cn), (2) Beijing Twenty-First Century Science and Technology Development Co. Ltd., Beijing, PR China (qiww@lreis.ac.cn), (3) Wuhan University, Beijing, China (fj20061028@126.com)

Major earthquakes in mountains could trigger large numbers of coseismic landslides. For example, the 2008 M_W 7.9 Wenchuan earthquake in the east Tibetan Plateau induced ∼200,000 coseismic landslides, spreading over 110,000 km^2. Thus, earthquake-triggered landslides have been regarded as a major source leading to enhanced erosion in decadal scale. However, the duration of coseismic landslide legacy remains elusive. In this work, we use time series analysis to extract normalized difference vegetation index (NDVI) trend from the 16-day interval MODIS NDVI data from January 2001 to December 2017 to study surface recovery of coseismic landslides induced by the 2008 Wenchuan earthquake. We found that the overall landslide surface recovers linearly after the earthquake (2008-2017) but the recovery rate has very distinct spatial patterns. The epicentre region, which experienced the most severe coseismic landsliding, has the best recovery performance, while landslide surface in the dry Minjiang valley and the high Longmen Mountains has the poorest surface recovery. We further found significant positive correlations between surface recovery rate and mean annual precipitation and mean annual temperature. Spatially heterogeneous recovery of coseismic landslide surface in the 2008 Wenchuan earthquake seems to be controlled by climate. Our results indicate that climate affect vegetation regeneration, which further impact evolution of coseismic landslides, modulating post-seismic erosional processes and orogenic balance.