

## Foreword: special issue on Wenchuan earthquake geohazards

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Received: 20 December 2011 / Accepted: 4 January 2012 / Published online: 11 January 2012  
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A devastating earthquake of Ms 8.0 struck Wenchuan, Sichuan, on May 12, 2008. It lasted more than 80 s. The major faults extend 300 km from southwest to northeast. Thousands of aftershocks followed; 250 were Ms 4 or greater. Numerous surface fractures, landslides, avalanches, debris flows, and dammed lakes resulted. Landslides were the most widely distributed effect and have killed 20,000 people and destroyed traffic lines and property. Loose deposits from the landslides provide materials for debris flows. Debris flows have occurred in clusters in the quake area, resulting in 100 deaths. Historic reports from other earthquake areas indicate that such disastrous effects may continue for 10–20 years after the initial event.

Scientists all over the world are researching the geohazards induced by Wenchuan earthquake. Many achievements have been made in better understanding formation mechanism, distribution, assessment and mitigation of geohazards induced by an earthquake. Some new research papers have been collected about the geohazards in the Wenchuan earthquake with the aim of promoting the development of formation mechanism, prevention methods and prediction theory of geohazards in an earthquake area. The goal of this special issue is to present lessons for those both planning for, and responding to the great earthquakes. Hopefully, these lessons can be used in the future to minimize human suffering and economic loss.

This special issue contains 14 papers and this introduction on different aspects of the geohazards induced by Wenchuan earthquake. There are three papers that describe the geohazards triggered by Wenchuan earthquake: first, the study of the

distribution characteristics and disaster chains initiated of geohazards after the Wenchuan earthquake; then, the analysis of the seismic damage of earth structures of road engineering according to the 41 roads that were investigated in the Wenchuan earthquake area. There are two papers on the study of the debris flow following the Wenchuan earthquake: one paper focuses on the enlargement of the debris flow volume and a new method conducted to predict the debris flow scales post-earthquake; the other is an analysis of the debris flow formation conditions which proposes the optimal characteristics of drainage canal to mitigation of the debris flow after the earthquake. There are six papers on the study of the landslide failure mechanism in the quake, activity characteristics, mitigation of technical and susceptibility and risk assessment of earthquake-induced landslides with the Subao River basin as an example. One paper uses the case of the Donghekou landslide to study the landslide formation mechanism. There are three papers on the analysis of the dammed lakes (quake lakes) induced by Wenchuan earthquake: one paper is on the study of the stability of the landslide dams which discusses the advantages and disadvantages of dammed lake development; two papers discuss the largest induced dammed lake as an example to simulate the dam breach development, risk assessment and discuss the flaws of the mitigation strategy in the disposal process and propose new methods to relieve the risk in an emergency. This special issue reflects formation, distribution, assessment and mitigation with the hopes of promoting the study of geohazards induced by an earthquake.

The editors appreciate the generous response to the call for papers and also thank those who have served as technical and editorial reviewers with an aim of providing the best possible research.

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