

Editorial

Natural Hazards Challenges to Civil Engineering

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In recent decades, research on natural hazards has moved into a new era driven by the rise of new technologies and techniques with potential use in risk assessment, management, and mitigation. Nevertheless, in spite of these significant advances, it is recognised that the effects of natural hazards are rapidly increasing in frequency and extension, having to be understood in the context of an unprecedentedly complex and populated world. To tackle this global issue, there is a central need for developing basic and applied multidisciplinary research that can lead to the development and implementation of more efficient risk mitigation strategies.

The present special issue contributes to this goal by gathering a diverse set of recent studies, which provide original papers and review articles addressing the current challenges related to natural hazards linked, when possible, with climate change adaptation and their impacts on applications in planning, design, construction, and management of the built environment, and mitigations to reduce the effects of natural hazards. The collection of papers also aims to present the effects of individual natural hazards as well as their relationships with other correlated and uncorrelated hazards and study the vulnerability and resilience of the built environment when subjected to multiple hazards, with a particular focus on future challenges to civil engineering.

This special issue focuses on the civil engineering procedures that promote safety assessment of the built

environment when subjected to natural hazard events. The natural hazard events considered are concurrent, isolated, or correlated events, such as wind and surge; cascading events, such as landslides following earthquakes; and extreme events, occurring at different timescales along the infrastructure life time, such as earthquakes and wind.

A total of 48 papers were submitted, from which a total of 12 papers have been finally selected to integrate the present issue, which underscores the need, interest, and importance of this special issue topic.

The topics addressed in the papers are from several fields across civil engineering, including the analysis of the response of infrastructure such as dams, tunnels, nuclear power plants, mines, and buildings to different hazards. In addition, topics covered relate to the analysis of soil and soil-structure interaction, landslides, and lastly the study of seismic hazards using different analytical and computational approaches.

The editorial team is sure that the papers reflect significant contributions to the research and development in the various topics addressed. We hope that readers will find all articles of the special issue useful and exciting and that the articles will stimulate further research activities in the area of damage assessment, risk mitigation, and the new and complex challenges in natural hazards and their impacts on civil engineering.

Conflicts of Interest

The guest editors have no conflicts of interest regarding the publication of this special issue.

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