Slope Safety Preparedness for Impact of Climate Change

by Ken Ho, Suzanne Lacasse, and Luciano Picarelli (eds.)

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Global warming and climate change have been a major issue during the last two decades. Many countries are increasingly threatened by major landslide disasters and fatalities due to extreme weather events which have major implications for public safety and the sustainability of infrastructure and the built environment.

Many environmental changes have been occurring due to global warming caused by greenhouse gases. These include an increase in temperature and changes in precipitation patterns. Associated with these are dramatic changes in the frequency and magnitude of storms together with the associated changes in surface and ground water regimes. These are having an increasing impact on landslides. Landslide activity is increasing due to continued deforestation, increased urbanization and development in landslide prone areas as well as increased regional precipitation caused by changing climate patterns.

The book highlights the importance of raising awareness to the challenges of landslide hazards due to climate impact. It provides a holistic frame for understanding the key issues and new tools that

could be used to assess and manage the landslide risks. This ambitious book provides complete and multi-disciplinary information about an important and pressing topic, collects opinions and insights from the majority of the experts in this field of study, and offers an in depth analysis of the relationships between atmospheric forcing and slope stability.

The book gathers contributions from 21 countries and regions in the form of national reports or summaries with respect to four key aspects: a) the methods used for evaluating changing weather and changing landslide patterns; b) the changing weather patterns; c) the changing landslide patterns and hazard scenarios; d) the applications to risk management and the formulation of adaptation measures. Recommendations are made for enhanced preparedness and resilience. Improved crisis management and areas for future work are suggested.

The author's enthusiasm for the topic is obvious throughout the book. Here is a list of the book chapters and the authors:

- 1. Preparedness for climate change impact on slope safety**
K.K.S. Ho, S. Lacasse, and L. Picarelli
- 2. Technical report on landslide related disasters in Brazil**
W.A. Lacerda, A.L. Coelho Netto, and A.M. Sato
- 3. Potential impacts of climate change on landslides occurrence in Canada**
C. Cloutier, J. Locat, M. Geertsema, M. Jakob, and M. Schnorbus
- 4. Enhancing slope safety preparedness for extreme rainfall and potential climate change impacts in Hong Kong**
K.K.S. Ho, H.W. Sun, A.C.W. Wong, C.F. Yam, and S.M. Lee
- 5. Potential climate changes in Italy and consequences for land stability**
L. Picarelli, L. Comegna, S.L. Gariano, F. Guzzetti, P. Mercogliano, G. Rianna, M. Santini, and P. Tommasi
- 6. Global warming and landslide disaster: evidence from Japan**
G. Wang, and I. Towhata
- 7. Landslide risk management in Norway**
B. Kalsnes, F. Nadim, R.L. Hermanns, H.O. Hygen, G. Petkovic, B.K. Dolva, H. Berg, and D.O. Høgvold
- 8. Overview of landslides distribution in Russian Federation and variations of their activity due to climate change**
O.V. Zerkal, and A.L. Strom
- 9. Slope safety preparedness in Southeast Asia for effects of climate change**
H. Rahardjo, A. Satyanaga, K. Hoon, W.L. Sham, Aaron, C.L. Ong, B.B.K. Huat, M.H. Fasihnikoutalab, A. Asadi, P.P. Rahardjo, A. Jotisankasa, T.M. Thu, and T.T. Viet
- 10. Review of landslide occurrence in Spain and its relation to climate**
Jordi Corominas, Rosa María Mateos, and Juan Remondo
- 11. TR3 project: slope safety preparedness for effects of climate change contribution for Switzerland**
C. Bonnard, C. Crot, E. Prina Howald, and L. Laloui
- 12. Review of landslide occurrence and climate change in Taiwan**
Meei-Ling Lin, Sheng-Chi Lin, and Yu-Ching Lin
- 13. Landslides and climate change in the United Kingdom**
T.A. Dijkstra, G.O. Jenkins, D. Gunn, C. Dashwood, R. Dankers, N. Dixon, D.N. Petley, A. Gibson, and M.G. Winter

14. Landslide hazards and climate change: A perspective from the United States*Jeffrey A. Coe*

This comprehensive source incorporates the 200+ years of collective experience of the authors in the subject area. It features a valuable collaboration between meteorological experts and geotechnical experts in making a joint scientific assessment of the related problems and represents a most complete information and holistic review

available for land managers and policy administrators.

Including practical data from many geographical areas in the world, this reference volume is essential reading for practitioners, students, teachers, and researchers working in slope stability related fields.

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