

## Mountain Risks: From Prediction to Management and Governance

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## Mountain Risks: From Prediction to Management and Governance

Edited by Theo Van Asch, Jordi Corominas, Stefan Greiving, Jean-Philippe Malet, and Simone Sterlacchini. Dordrecht, The Netherlands: Springer, 2014. xi + 413 pp. US\$ 129.00, € 90.00, € 104.00. Also available as an e-book, ISBN 978-94-007-6768-3.

One of the most interesting aspects of large-scale funding from the European Union over the last 30 years has been the potential to create extensive, international, multidisciplinary research programs that tackle substantial problems facing society. Whilst in the early days, these programs mostly consisted of teams of experienced researchers, more recently, the Marie Curie Intensive Training Network (ITN) scheme has facilitated the development of teams of early-career researchers: students undertaking doctoral research and those in the immediate postdoctoral phase. These ITNs provide a double benefit, not only permitting large teams of dedicated researchers to tackle in detail an important topic, but also offering the opportunity to develop a group of researchers who have been trained to a very high level in that specific area.

The evaluation of risk in high mountains is one such substantial area, and this volume represents the outcome of a recent ITN, the Mountain Risks consortium, which ran from 2007 to 2011, with 14 partners. The program sought to provide research and training on mountain hazards and their associated risks and management strategies. The editors of the book are well known in this field, and most of the papers have been written by a combination of established experts (the supervisors) and early-career researchers (the students and postdoctoral researchers).

The evaluation of mountain risk is complex. The book is based on

a conventional (but almost universally adopted) approach to risk assessment: a simple equation that views risk as the product of the hazard, the vulnerability of the assets in question, and their exposure to the peril. Such an approach is best suited to simple physical assets such as buildings and roads. However, there is increasing concern that this type of approach struggles to deal with the complex nature of risk, especially for remote communities in high mountain areas. Risk in such an environment is a nebulous, multifaceted entity that, critically, is highly dynamic. Thus, the vulnerability of a community depends not only on its physical attributes but also on the degree of social cohesion, from the local to the national level. The risk to a particular community may vary greatly in time, as social conditions and structures change: For example, losses to landslides in Nepal increased substantially during the civil war in the early part of the last decade, when social cohesion collapsed in remote mountain communities. Capturing this in a conventional risk assessment is extremely difficult.

Inevitably, the 15 papers are a slightly eclectic mix, but the quality is high. A notable strength is that most draw heavily upon the literature reviews that the doctoral students had undertaken as a part of their theses, providing a very useful oversight of the state of knowledge in each area. Some of the papers examine in some detail specific aspects of mountain risks, such as the use of ground-based interferometric synthetic aperture radar (InSAR) for landslide monitoring, whilst others are more broadly based reviews of key topics. The most interesting passages are those that focus on the vulnerability and exposure aspects of the risk equation, although the approach is generally quite conventional. There are a number of useful chapters that consider how vulnerability and exposure can be built into a quantitative risk evaluation, and on the implications of the outcomes for the management of those risks.

Some aspects of the volume are a little frustrating. Critically, most of the hazards that are considered are those associated with mass movements, from individual rockfalls to large-scale landslides. Other mountain risks, such as snow avalanches, glacial lake outbursts, earthquakes, and flash floods, are barely considered. Thus, the book is perhaps slightly poorly titled. The book has a very strong European focus, largely with a western European slant. It is perhaps a shame that more consideration is not given to approaches in, for example, Canada and Japan, both of which have been innovative in this field. Finally, a few of the chapters are disappointingly short. For example, a chapter on lessons learnt from past disasters is potentially very interesting; that the text in the chapter itself, excluding the abstract, references, diagrams, etc, is only 5 pages feels slightly disappointing.

In summary, this is a very interesting and useful volume that represents an important contribution to the field. The great strengths are the ways in which the book integrates both natural and social sciences and provides useful reviews of the state of the art in a wide variety of areas of risk assessment and management. Several of the chapters that examine different aspects of risk assessment are very valuable and deserve to be widely read. It will be of interest to both the research and the practitioner communities. However, the most important outcome from the ITN Mountain Risks consortium is probably the development of a large number of early-career professionals with high-level skills in the field of mountain risk. This book is a testament to their knowledge and skills.

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