Terrigenous Mass Movements

Detection, Modelling, Early Warning and Mitigation Using Geoinformation Technology

Bearbeitet von
Biswajeet Pradhan, Manfred Buchroithner

Weitere Fachgebiete > Geologie, Geographie, Klima, Umwelt > Geologie und Nachbarwissenschaften > Geoinformatik

schnell und portofrei erhältlich bei

beck-shop.de
DIE FACHBUCHHANDLUNG

Preface

Mass movements are a serious geologic hazard common to almost every part of the world. Globally, the damage to property caused by all forms of mass movements has been running into billions of dollars annually and thousands of lives have also been lost. Geoinformation technology has revolutionised our understanding of the Earth as an integrated system, giving us a growing capability to forecast changes in weather and climate and allowing observations of changes in land cover and land use and also prediction of landslides.

Over the past twelve years the topics of terrigenous mass movements and the use of space-borne remote sensing and GIS has been instrumental for their monitoring, prediction and mitigation. This has been a subject of continuous cooperation between the two editors of this book. Their geological background and their intensive use of remote sensing data of various sensors over many years, combined with an eager interest in modelling, made different types of "geo" mass movements including glacier lake outbursts a major focus of their research. They brought their backgrounds in geology and spatial modeling, along with experiences in the use of remote sensing, to the task of editing a book on mass movements for spatial modelers, environmental scientists, and land planners. Its objective is to show how to make best use of the tools of remote sensing, numerical modelling and GIS and then employ them wisely for landslide assessment and predictions.

Thus it was just a logical step to compile the accumulated knowledge and expertise into a book. However, in order to make this volume more balanced and comprehensive, from the beginning on we decided to invite a series of internationally renowned experts to contribute their shares. As soon as the message of our undertaking spread within the community, we got a lot of enthusiastic feed-backs. In addition, we also placed a series of dedicated invitations to well-established colleagues in particular fields. With the typescript submission deadline coming closer, however, quite a number of potential authors apologised for not being able to submit, or simply did not respond at all. Others did deliver, after several reminders, with a significant delay, though.

From the outset of our work for this book, our idea was to compile a volume on different aspects of terrigenous mass movements. This starts from the GIS data base construction (inventory mapping) to the development of highly sophisticated modelling tools for landslide predictions. We have organizsed the book's chapters along the lines of overall landslide assessment. The initial chapters offer a foundation in the areas of remote sensing most relevant to landslide inventory mapping, along with assessments of the tools available and a better understanding of when and when not to use remote sensing. Other chapters introduce the well-established domains of statistical, heuristic and data mining techniques in landslide predictions. Throughout the text, there is an emphasis on applications of remote sensing and GIS tools aided with soft computing techniques for landslide mapping with examples and case studies showing the way.

As editors, we jointly and mutually made—to a certain extent–critical remarks with regard to both the articles' contents and the authors' phrasing, and in some cases even directly corrected minor "slips of the pen". Finally, after quite some of editorial work, the entire typescript was ready to be sent to Springer Verlag. There, Dr. Christian Witschel and Agata Oelschläger were appreciative and understanding partners. Their cooperative way of dealing with us and our special requests is thankfully acknowledged.

Further, the support by Alexander von Humboldt Foundation (AvH), Deutscher Akademischer Auslandsdienst (DAAD) as well as our colleagues at our home institutions, the University Putra Malaysia (UPM) in Kuala Lumpur and at the Technische Universtät Dresden (TUD), Germany, has to be thankfully mentioned.

The production of this book would not have been possible without the professional and formidable efforts of Steffi Sharma, Omar Althwaynee, Sheila Pradhan, and Anne Lange. We also extend our thanks and gratitude to them.

Kuala Lumpur and Dresden, August 2011   Biswajeet Pradhan
                                                              Manfred F. Buchroithner

Springer