

Preface

As Prof. Canuti said, this book presents up-to-date research results of landslides in cold region. We define the cold region as the place where the monthly average temperature is less than -10°C in the coldest month. In cold mountainous and hilly areas, the characteristics of mechanism, movement, and damage to environment of landslides are different with the landslides in noncold region. Moreover, these characteristics are closely related to climate change.

In order to strengthen the international cooperation and exchanges of landslide research in cold region, I proposed to launch the network of landslide research in cold region during the 10th council of the International Consortium on Landslides (ICL) in Rome in October 2011. This proposal was gotten the approval and support from Prof. Paolo Canuti (the president of the ICL), Prof. Sassa (the executive chairperson of the ICL), and the delegates participating in the council. In January 2012, the establishment of the network of landslide research in cold region was obtained by official approval of the ICL on 10th anniversary of the ICL in Kyoto University. After 6 months of preparation, the establishment of the network of landslide research in cold region of the ICL was proclaimed in Harbin, China on July 23, 2012. During the first meeting, we discussed and adopted the regulation and action plan of this network, published the declaration, and held the academic exchange of landslide research in cold region. Prof. Paolo Canuti, the president of the ICL, participated and delivered the congratulation. Dr. Alexander Strom who is the Researcher of the Geodynamic Research Centre (the branch of the JSC “Hydro-project Institute”, Russia), Prof. Hideaki Marui who is the Director of the Research Institute for Natural Hazards and Disaster Recovery of Niigata University in Japan, Dr. Ying Guo from the Institute of Engineering Consulting and Design of Northeast Forestry University in China and other colleagues did fruitful work of developing the network of landslide research in cold region of the ICL. I really appreciate their supports and contributions.

At present, the members of the network of landslide research in cold region of the ICL and other colleagues from different countries and regions are using different research approaches to conduct comprehensive study on the landslides in cold region under climate change. This book is the summary of interim research results of colleagues and also a commemoration for the first anniversary of the network of landslide research in cold region of the ICL and the 3rd World Landslide Forum which will be hold in Beijing in June 2014.

Due to the differences from the regions and technical requirements, the topics, methods, and contents of colleagues' research are different. Dr. Filippo Catani, Prof. Paolo Canuti, and Prof. Nicola Casagli who are from the Department of Earth Sciences, University of Florence in Italy, and Dr. Chunjiao Wang and Prof. Wei Shan who are from the Northeast Forestry University in China studied the distribution of permafrost and slope movement before landslide using remote sensing. Their research results provide a scientific basis for early warning and prediction. Dr. Alexander Strom who is from the Geodynamic Research Centre (the branch of JSC "Hydroproject Institute", Russia) studied the process of landslide caused by the glacier of high-elevation mountain area in Central Asia from geological history. Prof. Hideaki Marui who is from the Niigata University and Prof. Fawu Wang who is from the Shimane University in Japan analyzed two landslides triggered by snowmelt in the North Central of Japan. Dr. Marten Geertsema and Dr. Menno van Hees who are from the Ministry of Forests, Lands and Natural Resource Operations in Canada, and Prof. Marta Chiarle who is from the Consiglio Nazionale delle Ricerche (Istituto di Ricerca per la Protezione Idrogeologica U.O.S. Torino, Italy) studied the debris flow triggered by snowmelt in the British Columbia of Canada. Italian scholars A. M. Ferrero, A. Godio, M. R. Migliazza, L. Sambuelli, A. Segalini, and A. Théodule et al., and Dr. Zhaoguang Hu who is from the Northeast Forestry University in China studied the geophysical characteristics of landslides in cold region. Prof. Adam Emmer and Prof. Vít Vilímek who are from the Charles University in Prague, Dr. Jan Klimeš who is from the Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, Dr. Alejo Cochachin who is from the Unidad de Glaciología y Recursos Hídricos in Peru, and Dr. Krivonogova and Dr. Stanislav Panov who are from the JSC Vedeneyev VNIIG in Russia studied the effect of landslides on reservoir safety in high-elevation mountain area in South America and the central Siberia permafrost in Russia. Marina Leibman who is the Chief Scientist of the Earth Cryosphere Institute SB RAS in Russia and her research team contributed four papers which presented the mechanism of permafrost landslides located in the northern Russia where is close to the Arctic Polar plains from geomorphology, vegetation and geochemistry. They also carried out the classification and risk assessment of landslides. Prof. Tonglu Li who is from Chang'an University in China and his team studied the mechanism of landslides in the permafrost of Qinghai-Tibet Plateau and the seasonal frozen region in the Northwest of China. Dr. Shiwei Shen and Prof. Lei Nie who are from the Jilin University presented a fast stability evaluation method of collapse in sliding type slopes. Prof. Wei Shan and Dr. Hua Jiang who are from the Northeast Forestry University studied the mechanism and movement characteristics of landslides located in the degraded areas of high-latitude permafrost in the Northeast China based on the data of climate change, geological survey, and monitoring. Dr. Ying Guo analyzed the effect of seasonal frozen-thaw process on the stability of soil slope according to the data of field monitoring and laboratory experiments.

In the occasion of completion of this edited book, I would like to thank all colleagues of the network of landslide research in cold region of the ICL.

Sincerely, I extend special thanks to my old friend, Prof. Fawu Wang who is one of the founders of the ICL. I appreciate his continued support and help for 10 years. Also, I would like to thank Agata Oelschläger, Kiruthika Poomalai, Fermine Shaly and Shine David of Springer. Without their excellent work, this book cannot be published on time and with high editing quality. Nonetheless, all errors and bias remain ours.

This book is the part of research results of my colleagues and me. Indeed, it is far from perfect. With the deepening of our research, more attention and more colleagues who plan to contribute to the landslide research in cold region, we will offer more high-quality research results, which will be the great contribution for global disaster mitigation.



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Harbin, China, 21 June 2013

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Landslides in Cold Regions in the Context of Climate
Change

Shan, W.; Guo, Y.; Wang, F.; Marui, H.; Strom, A. (Eds.)

2014, XIII, 310 p. 217 illus., 184 illus. in color.,

Hardcover

ISBN: 978-3-319-00866-0