



United States
Department
of Agriculture

Pacific Southwest
Research Station

General
Technical
Report
PSW-130



Proceedings of the IUFRO Technical Session on Geomorphic Hazards in Managed Forests

August 5-11, 1990

Montreal, Canada



Rice, Raymond M., technical coordinator. 1991. **Proceedings of the IUFRO technical session on geomorphic hazards in managed forests**; 5-11 August 1990; Montreal, Canada. Gen. Tech. Rep. PSW-GTR-130, Berkeley, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 82 p.

The proceedings contains 11 of the 17 papers presented at the technical session on geomorphic hazards in managed forests at the XIX World Congress, International Union of Forestry Research Organizations, August 5-11, 1990, Montreal, Canada, plus one paper not presented orally. Two papers report research on torrents, two are about snow, three concern landslides, and five discuss watershed management problems.

Retrieval Terms: natural disasters, torrent control, watershed management, landslides, snow, avalanches, floods, erosion

Technical Coordinator:

RAYMOND M. RICE was, before his retirement, chief hydrologist in the Effects of Forest Management on Hillslope Processes, Fishery Resources, and Stream Environments Research Work Unit, at the Station's Redwood Sciences Laboratory, 1700 Bayview Drive, Arcata, CA 95521-6098.

Authors assumed full responsibility for the submission of camera-ready manuscripts. Views expressed in each paper are those of the authors and not necessarily those of the sponsoring organizations. Trade names and commercial enterprises are mentioned solely for information and do not imply endorsement of the sponsoring organizations.

Publisher:

**Pacific Southwest Research Station
P.O. Box 245
Berkeley, California 94701**

December 1991

Proceedings of the IUFRO Technical Session on Geomorphic Hazards in Managed Forests

August 5-11, 1990, Montreal, Canada

Raymond M. Rice, Technical Coordinator

Contents

Foreword	iii
Invited Papers	1
Severe Snow Loads on Mountain Afforestation in Japan	1
<i>Ryuzo Nitta, Yoshio Ozeki, and Shoichi Niwano</i>	
Priority Setting for Government Investment in Forestry Conservation Schemes— An Example from New Zealand	6
<i>Colin L. O'Loughlin</i>	
Voluntary Papers	11
Effect of Tree Roots on Shallow-Seated Landslides	11
<i>Kazutoki Abe and Robert R. Ziemer</i>	
Watershed Concerns and Recent Policy Formulations in Sri Lanka and Australia	21
<i>Rohan Ekanayake</i>	
Surrounding the Consequences of Watershed Disasters in the Periphery of the Indian Triangle	28
<i>Rohan Ekanayake</i>	
High-Speed High-Stress Ring Shear Tests on Granular Soils and Clayey Soils	33
<i>Hiroshi Fukuoka and Kyoji Sassa</i>	
Morphological Study on the Prediction of the Site of Surface Slides	42
<i>Hiromasa Hiura</i>	
Experimental Study on Impact Load on a Dam Due to Debris Flow	48
<i>Iwao Miyoshi</i>	
Sediment Dynamics of a High Gradient Stream in the Oi River Basin of Japan	56
<i>Hideji Maita</i>	

Contents

Snow-Cover Condition in Japan and Damage of the Sugi (<i>Cryptomeria Japonica</i> D. Don).....	65
<i>Taira Hideaki</i>	
Study on Shearing Force and Impact Force of a Volcanic Mud Flow on Mt. Sakurajima	72
<i>Yoshinobu Taniguchi</i>	
Research of Wind Erosion Intensity in the Region of Subotica-Horgos Sands	79
<i>Velizar Velasevic and Ljubomir Letic</i>	

Foreword

The Technical Session of the Subject Group on Natural Disasters was held on the afternoon of August 7, 1990 as part of the XIX World Congress of the International Union of Forestry Research Organizations in Montreal, Canada. About 35 scientists representing 10 nations were in attendance. Seventeen papers were presented, addressing the topics of all four Working Parties in the Group. Two papers reported research on torrents, three were about snow, five concerned landslides, and seven

discussed watershed management problems. Four of the invited papers can be found in Volume 1 of the Proceedings of Division I, and two are in this volume. The remainder of this volume includes nine of the contributed papers presented at the technical session plus one that was not orally presented. It is hoped that this volume, together with others supported by the Subject Group in recent years, will foster increased understanding of natural disasters in forested environments.

Raymond M. Rice, Leader
IUFRO Subject Group SI.04
Proceedings Technical Coordinator