Proceedings of International Snow Science Workshop, Grenoble-Chamonix, 7-11 October 2013: a merging of theory and practice

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ISSW 2013

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INTERNATIONAL SNOW SCIENCE WORKSHOP

Grenoble Chamonix-Mont-Blanc FRANCE
October 7-11, 2013

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INFORMATION

General

Welcome to the searchable portion of the Proceedings USB drive for the International Snow Science Workshop, held in Grenoble Chamonix-Mont-Blanc, France, 7-11 October 2013.

To find a paper or a poster, double-click ISSW2013.exe, start Search, enter your search criteria - authors name, title word, session etc.- and press Search. A window will open on the left and you see the results of your search. Click on the title to view the paper or the poster.

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There are also on the USB drive a pdf file, named *ISSW13_proceedings.pdf,* containing all the submitted papers in a single volume and another one, named *ISSW13_abstracts.pdf,* containing all the abstracts and the program.

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PREFACE

The ISSW aims to bring together experts in the field of snow and avalanche science to encourage the transfer of scientific studies to practitioners, mountain professionals and consultants, and to stimulate further research based on the experience and questions of these snow professionals. These two-way exchanges have been a large part of the success of this meeting for over 35 years in North America.

After the success of the first European version of ISSW, held in Davos, Switzerland in 2009, and to continue a European version, France applied to organize the workshop in 2013. ANENA (French Association for Snow and Avalanche Study), IRSTEA (Snow Avalanche Engineering and Torrent Control, Research Unit) and Météo-France (Snow Study Center), the main scientific groups involved in avalanche forecasting and prevention in France, have naturally joined together to organize this second European meeting.

This second encounter triggered a great deal of interest: 360 abstracts were accepted. Approximately 600 people, 40% researchers and 60% practitioners from 30 countries, were registered. The motto of all past ISSWs – Merging theory and practice – remains current and relevant.

Due to the large number of abstracts received, we had to shorten the time for oral presentations to 15 minutes to allow more speakers to introduce their work. During the week 111 speakers made presentations. Posters also occupied a central place in the conference and were on display for most of the conference. Approximately 75% of the presenters submitted a summary of their contribution for a total of 269 papers in the proceedings.

The balance between theory and practice is also found in the topics proposed by the international Program Advisory Board and the Scientific and Technical Committee: global snow properties and their spatial variability; blowing and drifting snow; avalanche danger forecasting; guiding in avalanche terrain and snow stability evaluation; modern forms of communicating avalanche danger; avalanche education; avalanche dynamics and hazard mapping; avalanche protection, artificial release and mitigation strategies; instrumentation, monitoring and remote sensing; crisis management, avalanche accidents and rescue; managing snow (grooming, snow removal and preservation); impact of climate change; snow hydrology and ecology.

The subjects attracting the greatest number of contributions, not surprisingly, are avalanche danger forecasting; avalanche dynamics and hazard mapping; avalanche protection, artificial release and mitigation strategies; and instrumentation, monitoring and remote sensing. This confirms the initial impression of the first European version. European ISSW is not a copy of traditional ISSW but has developed its own characteristics. Indeed, such topics are more particularly relevant and of vital interest in Europe where mountain areas are densely populated. Avalanches pose varying degrees of risk to land use, infrastructure, and personal safety in many mountain regions.

New topics such as managing snow and a forum on new technology were proposed. Let us hope that these sessions continue and develop further in the years to come.

A change of time period is stated on the themes "avalanche education" or "guiding in avalanche terrain," with an increasing number of contributions addressing human factors. At the same time, a workshop on snow and avalanche test sites was organized. Experimental sites are crucial for the development of any research methodology and activity. In this regard, an integrated network of test sites would be essential.

Papers were neither reviewed nor edited and reflect the sole opinion of the authors.

Among those who have contributed to the publication of these proceedings, we wish to thank Marion Bisiaux, Barbara Mayet, Véronique Place, Jean-Baptiste Leroy, and Matthias Gerber. We also wish to thank to the International ISSW committee for their confidence, the ISSW2013 Organizing Committee, the ISSW2013 International Program Advisory Board, and the ISSW2013 Scientific and Technical Committee who supported us during the preparatory phase. We are also grateful to all our sponsors, exhibitors, and local authorities for their considerable assistance. Your presence was the best award for all the organizers who labored for two years and did their best so that your stay in Grenoble and Chamonix would be profitable and pleasurable with fruitful exchanges, discussions and meetings as well as stimulating field trips.

Our common passion, snow, reminds us of the importance of its dangers and the need to mitigate them through our common work and experiences while keeping in mind the numerous victims. ISSW helps us in this task and these proceedings are our shared contribution.

This ISSW2013 proceedings booklet will supplement your memories of this workshop, which we were very proud to organize.

We look forward to the next European ISSW – hopefully in four years' time. We remind you that the next ISSW will be held in Banff (Alberta, Canada), September 29 to October 3, 2014.

Florence Naaim, Yves Durand and Richard Lambert

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Snow hydrology and ecology

Workshop on snow and avalanche test sites

Forum on new technologies

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