

Monday, 28 September 2009

07:00 Speakers Breakfast
Location: Kongress Hotel

08:30 Opening**Avalanche case studies**

Location: Plenary
Chair: Richard Marriott

08:40 **Mitigating the avalanche hazard on the Milford Road, New Zealand**
Wayne Carran, Ann Carran, Howard B. Conway

09:00 **"The White Death" in Quebec since 1825: from awareness of the problem to risk management**
Dominic Boucher, Bernard Héту

09:20 **The challenges for Scottish avalanche forecasters observing a maritime snowpack**
Mark John Diggins

09:40 **The avalanche events of December 2008 in Ceresole Reale (Piedmont Western Italian Alps)**
Margherita Maggioni, Angelo Caimi, Danilo Godone, Michele Freppaz, Andrea Bertea, Marco Cordola, Maria Cristina Prola, Valerio Bertoglio

10:00 **Experiences arising from the Belalp avalanche in the canton of Valais, Switzerland**
Peter Schwitter, Lukas Stoffel

10:20 Coffee break
Location: Foyer

Properties of snow

Location: Plenary
Chair: Hansueli Gubler

10:50 **Faceted melt forms, a deadly and unpredictable weak layer**
Bill Glude

11:10 **Temperature gradient metamorphism is not a classical coarsening process**
Bernd Pinzer, Martin Schneebeli

11:30 **In-situ measurements and temporal evolution of the thermal conductivity profile of an alpine snowpack**
Samuel Morin, Florent Domine, Laurent Arnaud, Ghislain Picard, Hans-Werner Jacobi, Jean-Marie Willemet

11:50 **Numerical investigation of factors causing near-surface metamorphism**
Andrew Edward Slaughter, Edward E. Adams

12:10 **Measurements of weak snowpack layer friction**
Alec van Herwijnen, Joachim Heierli

12:30 Lunch break

Snowpack properties and spatial variations

Ort: Plenary
Chair: Jerome B. Johnson

14:00 **Modeling variation of surface hoar and radiation recrystallization across a slope**
Edward E. Adams and 11 others

14:20 **Tracking changes in buried melt freeze crusts**
Michael Andrew Smith, Bruce Jamieson

14:40 **Numerical modeling of liquid water movement in snow cover**
Hiroyuki Hirashima, Satoru Yamaguchi, Atsushi Sato

15:00 **Understanding snow transport processes shaping the mountain snow cover**
Rebecca Mott, Michael Schirmer, Thomas Grünewald, Michael Lehning

15:20 **Temporal changes in slope-scale spatial variability: Implications for avalanche forecasting**
Karl W. Birkeland, Eric Lutz, Kalle Kronholm, Spencer Logan, Kathy Hansen Crawford

15:40 Coffee break
Location: Foyer

16:10–18:00

Poster Session 1: Avalanche case studies, snow and snow cover properties, spatial variations, avalanche formation, snow chemistry

Location: Plenary / Foyer

Chair: Charles Fierz

The avalanche cycle of December 2008 in the eastern part of the southern French Alps: cross comparison of meteorological and avalanche data

Cécile Coléou, Nicolas Eckert, Michael Deschatres

Aosta Valley – (North-West Italy) December 2008 under the banner of avalanches

Valerio Segor

Major avalanches in Eastern Pyrenees and North Atlantic Oscillation

Carles García, Juan Carlos Peña, Glòria Martí, Pere Oller, Pere Martínez

Snow avalanches potential and management of Romanian Carpathians. Case study-Bâlea glacial valley (Făgăraşmassif)-Southern Carpathians

Voiculescu Mircea

Avalanches and snow mobile traffic around Longyaerbyen, Svalbard

Markus Eckerstorfer, Hanne H. Christiansen, Ullrich Neumann

Avalanches in the Sibillini Mounts (Marche, Italy)

Alessandro Fabbrizio, Giuliano Mainini

Visualization of three-dimensional snow: how to use it in snow education

Martin Heggli, Matthias Jaggi, Bernd Pinzer, Stephen Steiner, Thiemo Theile, Martin Schneebeli

Polar snow and firn – Examples from a natural long-term “experiment”

Maria Winona Hörhold, Johannes Freitag, Sepp Kipfstuhl

Controlling crystal habit in a small scale snowmaker

Josephine Anne Bones, Edward E. Adams

Laboratory simulations of surface hoar events in southwest Montana

Richard Hayden Shertzler, Patrick Joseph Staron, Edward E. Adams

Observations of sintering over two seasons in a mountain snowpack

Edward H. Bair, Jeff Dozier, Robert E. Davis, Thomas U. Kaempfer, Michael T. Colee, Randall Mielke, Jane Blackford

Measuring thermal conductivity of snow: the problem with needle probes

Fabienne Riche, Bernadette Koechle, Martin Schneebeli

A new device to acquire high-resolution vertical profiles of snow specific surface area

L. Arnaud, G. Picard, N. Champollion, S. Morin, F. Domine, F. Flin, B. Lesaffre, A. Royer, A. Langlois P. Cliche, D. Six, J.-M. Barnola, M. Fily

Force-controlled shear experiments with layered snow samples

Ingrid Reiweger, Robert Ernst, Jürg Schweizer, Jürg Dual

SPA – Snowpack analyzing system

Reinhard Fiel, Wolfram Sommer, Thomas Rentsch

Systematic assessment of new snow settlement in SNOWPACK

Walter Steinkogler, Charles Fierz, Michael Lehning, Friedrich Obleitner

Aerodynamic and surface characteristic length scales of snow covered flat planes

Christof Gromke, Michele Guala, Benjamin Walter, Costantino Manes, Michael Lehning

Granular phase transition in depth hoar and facets: A new approach to snowpack failure?

Duclos Alain, Stéphane Caffo, Marc Bouïssou, Jane Blackford, François Louchet, Joachim Heierli

Comparison of shock waves provoked by various artificial avalanche release techniques, and of their effects on the snowpack

Philippe Berthet-Rambaud

Snow-profiling at Weissfluhjoch

Roland Meister

Measurement of dynamic water-entry value for dry snow

Takafumi Katsushima, Satoru Yamaguchi, Toshiro Kumakura, Atsushi Sato

Measuring the water retention curve of snow

Satoru Yamaguchi, Takafumi Katsuhima, Atsushi Sato, Toshiro Kumakura

Wet snow diurnal evolution and stability assessment

Frank Techel, Christine Pielmeier

Observations and analysis of two large wet-snow avalanche cycles

Christoph Mitterer, *Rebecca Mott, Jürg Schweizer*

Snow pit measurements interpretation for snow stability evaluation

Pavel Chernous, *Yuri Fedorenko, Alexander Bozhinsky, Nikolay Barashev*

Extended column test versus compression test and rutchblock test: comparison of methods to assess snowpack stability in Aosta Valley (NW – Italy)

Elisabetta Ceaglio, *A. Obert, M. Freppaz, M. Maggioni, E. Zanini*

SNOWPACK software application and comparison with hand-collected snow profiles in Aosta Valley (NW-Italy)

Elisabetta Ceaglio, *C. Cappelletti, P. Dellavedova, M. Freppaz, M. Maggioni, V. Segor, E. Zanini*

Validation of the SNOWPACK model in the Dolomites

Fabiano Monti, *Anselmo Cagnati, Charles Fierz, Michael Lehning, Andrea Pozzi, Mauro Valt*

Fracture line profiles in Japan

Shinji Ikeda

Avalanche triggering by sound: myth and truth

Benjamin Reuter, *Jürg Schweizer*

Where to dig? – On optimizing sampling strategy

Sascha Bellaire, *Jürg Schweizer*

Spatially predicting surface hoar crystal size in sparse forests using shading in satellite imagery

Cora Shea, *Bruce Jamieson*

Snow and avalanche: the influence of forest on snowpack stability

Davide Viglietti, *Stephanie Letey, Renzo Motta, Margherita Maggioni, Michele Freppaz*

Blowing snow measurements: Comparison between different sensors and back analysis of drifting snow events at Lac Blanc pass

Florence Naaim-Bouvet, *Hervé Bellot, Mohamed Naaim, Christophe Genthon*

Online NWP-model data as boundary conditions for snow drift simulation

Simon Schneiderbauer, *Stefan Pirker*

Analysis of temporal and spatial snow depth changes in a steep rock face

Vanessa Wirz, *Michael Schirmer, Michael Lehning*

Terrestrial laser scanning for snow depth observations: An update on technical developments and applications

Alexander Prokop

The influence of aspect on physical and chemical properties of the snow cover in a basin on the Monte Rosa Massif (North-western Italian Alps)

Antoine Brulport, *Margherita Maggioni, Michele Freppaz, Gianluca Filippa, Emil Squinobal*

Chemical and mineralogical properties of dust layers in alpine snowpack (Aosta Valley, North-western Italian Alps)

Elisabetta Ceaglio, *Eleonora Bonifacio, Michele Freppaz, Gianluca Filippa, Ermanno Zanini*

Major element chemistry of inner-alpine snowpacks, Aosta Valley (NW Italian Alps)

Gianluca Filippa, *Michele Freppaz, Mark W. Williams, Ermanno Zanini*

Snow quality in a large city: the case of Torino (NW-Italy)

Davide Viglietti, *Mattia Biasoli, Gianluca Filippa, Michele Freppaz, Jacopo Gabrieli, Carlo Barbante, Ermanno Zanini*

Tuesday, 29 September 2009

07:00 Speakers Breakfast

Location: Kongress Hotel

08:30 **Avalanche formation and snow stability evaluation**

Location: Plenary

Chair: Alain Duclos

08:30 **Slab avalanche release models, and their relevance to the practitioner**

Blair Fyffe

08:50 **The effect of solar warming on snowpack creep**

Thomas Exner, *Bruce Jamieson*

09:10 **Glide avalanche response to extreme rain-on-snow event, Snoqualmie Pass, Washington, USA**

John Stimberis, *Charles Rubin*

09:30 **Validating the Propagation Saw Test on the slope scale**

Cameron Ross, *Bruce Jamieson*

09:50 **Regional stability evaluation with modelled snow cover data**

Michael Schirmer, *Jürg Schweizer, Michael Lehning*

10:10 Coffee break

Location: Foyer

10:40–12:20

Poster Session 2: Avalanche forecasting, avalanche dynamics and protection measures

Location: Plenary / Foyer

Chair: Ross Purves

Early warnings for extreme snowfall in the Swiss Alps

Patrick Hächler, *Daniel Gerstgrasser*

Regional avalanche warning in Norway, a new concept for a large country

Christian Jaedicke, *Steinar Bakkehøi, Frode Sandersen, Kjetil Brattlien, Anders Solheim*

The lower Austria Avalanche Warning Service – the youngest in the Alps

Arnold Studeregger, *Hannes Rieder, Fritz Salzer*

Styrian avalanche service – danger scale 5 – more than 200 avalanches

Arnold Studeregger, *Hannes Rieder*

A new iconographic avalanche bulletin for the Catalan Pyrenees: a beginning for a future avalanche forecasting database

Glòria Martí, *Jordi Pujol, Jorge Fleta, Carles García, Pere Oller, Olga Costa, Pere Martínez*

Analyzing the environmental effects on the danger of avalanches using geoinformation technology

Gerald Gruber, Andreas Hecke, Alfred Wieser

Integration of the snowdrift modelling into the French operational chain for avalanche hazard forecasting

Gilbert Guyomarch, *Yves Durand, Gérald Giraud*

Estimating the success of artificially triggering avalanches with the combination of cluster and discriminant analysis

Reinhard Fromm

Common information platform for natural hazards in Switzerland

Ingo Petzold, *Peter Binder, Cyril Perot, Hans Romang, Manfred Spreafico, Sabina Steiner, Jakob Rhyner*

Using LIDAR (Light Distancing and Ranging) data to more accurately describe avalanche terrain

Christopher Michael McCollister, *Robert Howard Comey*

Using high resolution LiDAR data to estimate potential avalanche release areas on the example of Polish mountain regions

Paweł Chrustek, *Piotr Wężyk*

Avalanche outline mapping with a digital GPS camera

Roland Meister, *Patrik Jeller*

Detecting snow avalanches with seismic stations in North-East Italy: first results of dataset analysis

Mauro Valt, *Damiano Pesaresi*

Dendrochronological reconstruction of spatial and temporal patterns of snow avalanches in the Patagonian Andes

Alejandro Casteller, *Ricardo Villalba, Veronika Stöckli*

Documentation and analysis of avalanche events

Siegfried Sauermoser, *Hannes Hübl*

Snow and weather conditions study for the avalanches on the Lautaret pass road (French Alps)

Daniel Goetz

French avalanche research: Experimental test sites

Xavier Ravanat, *Frédéric Ousset*

Density measurements in snow avalanche flow

Betty Sovilla, *Martin Kern, Marius Schaefer, Michel Louge*

Comparison and complementarities of avalanche pressure measurements: piezo-electric load cells and deformation based pressure deconvolution

Djebar Baroudi, *Betty Sovilla, Emmanuel Thibert*

Automatised range-gated Doppler radar measurements of a spontaneously released avalanche at the Vallée de la Sionne test site

Lambert Rammer, *Helmut Schreiber, Martin Hiller, François Dufour, Betty Sovilla, Peter Gauer, Martin Kern*

High-speed video recording in snow chute experiments

Marius Roman Schaefer, *Martin Kern*

Scaled laboratory experiments on the evolution of fluidised avalanches

Josef Koegl, *Armin Graf, Lambert Rammer, Karl Kleemayr, Martin Kern, Peter Gauer, Gerhard Kapeller, Markus Aufleger*

Fundamental studies on applications of MPS method for computing snow avalanches

Tatsuya Otsuka, *Yasuyuki Shimizu, Ichiro Kimura, Masaya Otsuki, Yoshihiko Saito*

Discrete element modelling to compute drag coefficients of obstacles impacted by granular flows

Lionel Favier, *Dominique Daudon, Frederic Donze, Jacky Mazars*

A granular shear model for dense avalanche flows: Simulation of the Vallée de la Sionne CB 1 avalanches Nos. 509, 816 and 917 with RAMMS

Perry Bartelt, *Marc Christen*

Dynamic avalanche modeling in natural terrain

Jan-Thomas Fischer, *Julia Kowalski, Shiva P. Pudasaini, Stephen A. Miller*

Statistical avalanche run-out modeling using GIS on selected slopes of Western Tatras National park, Slovakia

Marek Biskupic, *Ivan Barka*

Regional methods for snow avalanche prediction: the case of Italian Alps

Daniele Bocchiola

CLPA – Reflection on the quality of the testimonies collected during a field investigation

Romain Gaucher, *Mylene Bonnefoy, Xavier Pasquier-Bernachot*

Definition of hazard zones for dense snow avalanches

Paolo Scotton, *Francesca Moro, Stefano De Toni, Daniele Dalla Valle, Irene Vigni*

The solid ortho-image: a new tool to identify avalanche terrains

Danilo Godone, *Margherita Maggioni, Michele Freppaz*

The current state of avalanche risk analysis and hazard mapping in Uzbekistan

Eleonora Semakova, *Sergey Myagkov, Richard Armstrong*

First experiences in applying the “Swiss Guideline to account for avalanche hazard of ropeways in ski areas”

Mark Schaer, *Stefan Margreth*

Finite element models and sensitivity analysis of the vulnerability of an avalanche protection gallery

Dominique Daudon, *Juline Baroth, Patrycja Szczurowska, Ma Ying, Pascal Perrotin*

Three years snow net project Hafelekar/ Innsbruck

Lambert Rammer, *Matthias Granig*

Avalanche risk in a changing climate – Development of a landslide and avalanche risk model

Heidi K. Bjordal, *Jan Otto Larsen*

Avalanche protection for construction site

Thomas Rentsch, *Ruedi Stüssi*

Avalanche problems, their effects on roads and ski resort planning studies in Sivrikaya Ovit mountain pass in eastern Black Sea region of Turkey

Omer Murat Yavas, *Gökhan Arslan, Zafer Yazici, Sinan Demir*

Web-based tool to support local avalanche services with hazard evaluation and documentation

Sibylle Möhle, *Lukas Stoffel*

Evaluation of avalanche warning strategies for traffic routes using signal detection theory

Christoph Matthias Rheinberger, *Jakob Rhyner*

A new evaluation tool for of the exposure to the avalanche risk for the roads

François Rapin, *Philippe Bouvet*

Experiences on a storm causing avalanche cycles in south-west Norway

Njål Farestveit, *Sara Skutlaberg*

Avalanche risk management along roads – Case study of Highway 15 “Strynefjellet”, Norway

Michael Bründl, *Krister Kristensen*

Handling of avalanche risk for the “Bonaigua” and “Beret” roads, Aran valley, Spain

Jordi Gavaldà, *Ivan Moner*

Total safety in mountain passes

Jürg Rocco

Artificial avalanche release above settlements

Lukas Stoffel, *Stefan Margreth*

Ten years of experience with the Wyssen

Avalanche Tower

Samuel Wyssen

12:30 Lunch break

14:00–17:30

Workshop 1: Avalanche education

Location: Plenary

Chair: Stephan Harvey

14:00 Overview of methods for risk assessment and decision making in avalanche terrain

Practical risk assessment and decision making in avalanche terrain. An overview of concepts and tools in Switzerland

Stephan Harvey, *Paul Nigg*

Gestion du risque d’avalanche par les français, professionnels ou amateurs

Alain Duclos

Tools for risk assessment and decision making in Canada

Chris Stethem

Rules, knowledge, distance and intuition – the development of risk management skills for decision-making in avalanche situations

Jan Mersch, *Wolfgang Behr*

15:30 Coffee break

Location: Foyer

16:00 Human factors

How do leadership styles cope with the impact of human factors in decision making in risky terrain?

Miriam Förster

Human factors in avalanche accidents:

Evolution and interventions

Ian McCammon

16:45 Panel Discussion

“To go or not to go?”

13:45–18:00

Workshop 2: Artificial avalanche release

Location: Ski area Jakobshorn
Chair: Lukas Stoffel

- 13:45 Meeting point: base station of the Jakobshorn gondola
- 14:30 **Outline of explosive control measures**
Vali Meier
- 14:55 **Artificial avalanche release to protect traffic routes and trails – case study of the Gonda avalanche path, Lavin, Switzerland**
Jörg Kindschi
-
- 15:20 Coffee break
-
- 15:40 **Control measures at the Jakobshorn winter sports resort in Davos**
Daniel Kistler
- 16:05 **Introduction Daisy Bell**
Ernesto Bassetti
- 16:20 **Demonstration Daisy Bell**
Artificial avalanche release methods at the Jakobshorn ski area
- 17:25 Return to the base station of the Jakobshorn gondola

14:00–17:30

Workshop 3: Quantitative stratigraphy

Location: Studio
Chair: Martin Schneebeli

- 14:10 **Quantitative measurement of micro-scale, layered, and bulk snow properties using micro-penetrometry and a physical interpretation theory**
Jerome B. Johnson
- 14:50 **Snow characterization by optical properties**
Mathias Alexander Gergely, *Martin Schneebeli, Kurt Roth*
- 15:30 **Non-destructive quantification of snowpack properties**
Achim Heilig, Hans Peter Marshall, Olaf Eisen, Martin Schneebeli
-
- 16:00 Coffee break
-
- 16:15 **Open discussion on future developments in quantitative stratigraphy and needs for avalanche forecasting and snow science**
Martin Schneebeli
- 17:00 **Instrument demonstrations by participants of the workshop**
Martin Schneebeli

Wednesday, 30 September 2009

07:00 Speakers Breakfast
Location: Kongress Hotel

Avalanche Forecasting

Location: Plenary
Chair: Patrick Nairz

- 08:30 **Simple calculations of avalanche risk for backcountry skiing**
Bruce Jamieson, Jürg Schweizer, Cora Shea
- 08:50 **The seismic detection of avalanches: an information tool for the avalanche forecaster**
Jean-Pierre Navarre, Ekaterina Bourova, Jacques Roulle, Yannick Deliot
- 09:10 **Use of the models Safran-Crocus-Mepra in operational avalanche forecasting**
Cécile Coléou, G. Giraud, Y. Danielou, J.-L. Dumas, C. Gendre, E. Pougatch
- 09:30 **The 2008–2009 exceptional snowfalls in the Italian Alps: threshold sum approach and analysis of the SNOWPACK model stability indices**
Fabiano Monti, Anselmo Cagnati, Mauro Valt
- 09:50 **AVALUATION: Estimating the economic value of the avalanche bulletin**
Anna Alberini, Andrea Leiter, Christoph Rheinberger, Chuck McCormick, Andrew Mizrahi
-

10:10 Coffee break
Location: Foyer

10:40–12:30**Poster Session 3: Avalanche education, avalanche rescue, remote sensing, impact of climate change**

Location: Plenary / Foyer
Chair: Chris Stethem

My career as a researcher
Werner Munter

Avalanche hazard and visitor numbers – a study in Lochaber, Scotland
Graham Moss

Information value of the avalanche bulletin for snowsports
Chris Semmel, Florian Hellberg, Paul Mair

Intuition, recognition and patterns – decision-making by mountain guides in avalanche situations
Jan Mersch, Anton Kühberger

Safety is Freedom
Henry Schniewind

Avalanche education as public service
Klaus Kranebitter

Improving avalanche decision strategies – A proposal
Eike Roth

On superiority of simple solutions to complex problems and other fairy tales
Bob Uttl, Jan Uttl

Pitfalls in the analyses of accident records: The meaning of missing values
Bob Uttl, Kelly Kisinger

Avaluator's obvious clues prevention values are inflated: Evidence from Canadian avalanche accidents
Bob Uttl, Kelly Kisinger, Mekale Kibreab, Jan Uttl

Trend Analysis of Canadian avalanche accidents: The Avaluator avalanche accident prevention card has not reduced the number of accidents
Bob Uttl, Mekale Kibreab, Kelly Kisinger, Jan Uttl

Coupling snow survey and education in the Mont Mars Natural Reserve, Aosta Valley (NW Alps)
Gianluca Filippa, Michele Freppaz, Davide Viglietti, Pietro De Poi

Apprehension of the avalanche risk and decision making process in a medium-high mountain. The case of the Vosges (France)
Florie Giacona, Brice Martin

Promotion of secure mountain exploration by the Anna Pasek Foundation
Pawel Chrustek

Importance and effects of avalanches to mountaineering activities: Alamountains case study – Turkey
Nehir Varol, Sinan Demir, Mete Erengil, Zafer Yazıcı, Mehmet Coskun, Ömer Murat Yavas

Iron man, the steel crash test dummy, measures forces in an avalanche
Michael J. Jenkins, *Timothy M. Samaras*

1985–2009 twenty-five years of avalanche accidents in Italy
Mauro Valt, Igor Chiambretti, Renato Zasso

Map localization of avalanche accidents in France
François Rapin, Frédéric Jarry, Michael Deschatres

Avalanche scenario with double burial

Othmar Hauer, Markus Eck, Michael Schober

Updating and expansion of a field study to optimize the search strip width of avalanche beacons

Marcellus Schreilechner, Markus Eck, Michael Schober

Searching in parallel: Taking advantage of multiple searchers in a transceiver rescue

Bruce Edgerly, Dieter Stopper, Franz Hohensinn

Remote activation of avalanche survival gear

Julia Schmideder, Peter Aschauer, Manuel Genswein

High resolution imaging for environmental monitoring applications

Matthias Keller, Mustafa Yücel, Jan Beutel

The PermaSense remote monitoring infrastructure

Jan Beutel, Stephan Gruber, Stefanie Gubler, Andreas Hasler, Matthias Keller, Roman Lim, Igor Talzi, Lothar Thiele, Christian Tschudin, Mustafa Yücel

Swiss Experiment – Providing diverse snow research data sets when and where they are needed

Nick Dawes, Michael Lehning, Mathias Bavay, Marc Parlange, Karl Aberer

SensorWebEnablement – Standards and open source implementations for observation data

Stefanie Andrae, Gerald Gruber, Andreas Hecke, Alfred Wieser

Measurements of small scale spatial and temporal variability of snow depth and SWE in a small mountain catchment

Thomas Grünwald, Michael Schirmer, Michael Lehning

Snowpack depth modelling and water availability from LIDAR measurements in eastern Pyrenees

Ignacio Moreno, Antoni Ruiz, Jordi Marturià, Pere Oller, Jordi Piña, Carles Garcia, Pere Martinez, Julià Talaya

Innovative devices for the SWE estimation at the basin scale: a field study in the Western Alps

Barbara Frigo, Germain Bal, Ivan Bevilacqua, Edoardo Cremonese, Paola Dellavedova and 7 others

Satellite observed SCA and gamma distributed snow in the HBV model

Thomas Skaugen, Frode Randen

Snow cover monitoring and modeling in the Alps using multi temporal MODIS data

Philipp Rastner, Luca Irsara, Thomas Schellenberger, Stefano Della Chiesa, Giacomo Bertoldi, Stefano Endrizzzi, Claudia Notarnicola, Marc Zebisch

Snow simulation and forecasting through all Norway: the SeNorge model

Stefano Endrizzzi, Thomas Skaugen

Towards a 25 year snow cover time series over the European Alps derived from NOAA AVHRR satellite data

Fabia Huesler, Stefan Wunderle

Automated detection and mapping of rough snow surfaces including avalanche deposits using airborne optical remote sensing

Yves Bühler, Andreas Hüni, Marc Christen, Roland Meister, Tobias Kellenberger

Trends in annual maximum snow water equivalent in South-Norway (1915-2008)

Heidi Bache Stranden, Thomas Skaugen

Recent snow cover variations and avalanche activities in the Southern Alps

Mauro Valt, Daniele Moro, Renato Zasso, Paola Cianfarra

Results of 50 years of climate reanalyses in the French Pyrenees (1958-2008) using the SAFRAN and CROCUS models

Malou Maris, Gerald Giraud, Yves Durand, Jean-Pierre Navarre, Laurent Merindol

12:30 Lunch break

14:00–17:30

Workshop 4: Avalanche forecasting

Location: Plenary

Chair: Christine Pielmeier

Main challenges and problems in forecasting

Main challenges and problems in forecasting the avalanche danger for the Swiss Alps

Thomas Stucki

Rain-on-snow avalanches: forecasting the return to stability

Howard B. Conway, *Wayne Carran, Ann Carran*

Evolving public uses and the general avalanche forecast

Bob Comey, *Chris McCollister*

Reaching avalanche-unaware users in Utah, U.S.A.

Bruce Tremper

Snowpack observations

Significance of the simplified Rutschblock test for avalanche warning in Bavaria

Georg Kronthaler

Relevance of the snow cover stability test ECT for avalanche forecasting in Switzerland

Kurt Winkler

Key field observations for supplementing and localizing the avalanche danger rating

Bruce Jamieson

15:30 Coffee break

Future avenues

Interpretation of prevalent avalanche scenarios on the basis of the anticrack model

Stephan Harvey, *Joachim Heierli*

Mind or machine? – numerical avalanche forecasting

Michael Lehning

Avalanche patterns as aid in avalanche forecasting

Patrick Nairz

16:40 Panel Discussion

14:00–17:30

Workshop 5: Snow as a resource

Location: Pisch

Chair: Hansueli Rhyner

14:05 **Climate change and snow reliability**
Christian Rixen

14:25 **Adaptation strategies in Zermatt**
Christen Baumann

14:45 **Optimisation of snow production with the use of continuous snow height measurements**
Jean-Christophe Loubier

15:05 **SkiSim – A tool to assess the impact of climate change on ski season length and snowmaking**
Robert Steiger

15:30 Coffee break

16:00 **On the salting of the Horstman Glacier in Whistler, BC and how the salting affects the meltwater and downstream environment**
Nicolas Teichrob

16:20 **Snowfarming – preserving snow over the summer – a worthwhile practice?**
Norbert Gruber

16:45 Panel Discussion

Thursday, 1 October 2009

07:00 Speakers Breakfast
Location: Kongress Hotel

Avalanche dynamics and hazard mapping

Location: Plenary
Chair: Margherita Maggioni

08:30 **Alpha-Beta model: Can we learn more from the statistical avalanche model with respect to the dynamical behavior of avalanches**
Peter Gauer, *Steinar Bakkehoi, Karstein Lied, Kalle Kronholm*

08:50 **In-situ and photogrammetric measurements of avalanche crown transects**
Edward Hamilton Bair, *Karl Birkeland, Jeff Dozier*

09:10 **Wireless sensors as a tool to explore avalanche internal dynamics: experiments at the Weissfluhjoch snow chute**
I. Vilajosana, *J. Llosa, M. Schaefer, E. Suriñach, J.M. Marquès, X.Vilajosana*

09:30 **Wet snow avalanche impact pressures**
Betty Sovilla, *Martin Kern, Mark Schaer*

09:50 **Avalanche hazard investigations, zoning, and ordinances, Utah, Part 3**
David A. Scroggin

10:10 Coffee break

Avalanche protection measures

Location: Plenary
Chair: François Rapiin

10:40 **Investigation on the effectiveness of the catch-fence "Snowcatcher" as avalanche protection system**
Lambert Rammer, *Gernot Stelzer, Martin Kern*

11:00 **PROTECT – A Swiss approach to the assessment of the effectiveness of mitigation measures**
Stefan Margreth, *Hans Romang*

11:20 **Actions of snow avalanche on the snow shed**
Ying Ma, *Emmanuel Thibert, Pascal Perrotin, Michel Mommessin*

11:40 **Avalanche forecasting for road construction sites at 70 degrees north in Norway**
Ole-André Helgaas

12:00 **Evolution of avalanche risk reduction on the Alaska Railroad**
David Hamre

12:20 Lunch break

14:00–18:00

Workshop 6: Avalanche rescue

Location: Plenary

14:00 Opening

Bruno Durrer, Manuel Genswein

14:05 Introduction

Chair: Jakob Rhyner

Update on hypothermia and medical on-site triage of avalanche victims

Bruno Durrer

Course curriculum for avalanche rescuers

Manuel Genswein

Emergency checklists for first responders

Walter Würtl

Avalanche accidents amongst ski patrollers: outlook and evolution

Jean-Louis Tuillon

14:55 Triage

Chair: J. Boyd

Medical triage workshop for first responders

Bruno Durrer

15:35 Coffee break

15:55 Probing strategies

Chair: Manuel Genswein

3-hole-step method with alternative procedures

Albert Lunde

Benefit vs. costs of alignment procedures in probe lines

Christophe Boloyan

Probing perpendicular to the snow surface – Considerations about probing strategies

Bruno Jelk

16:50 Risk management

Chair: Hans-Jürg Etter

Making hard decisions in avalanche rescue

Krister Kristensen

Risk assessment for rescue missions

Andres Bardill

Risk management in avalanche rescue

Reto Keller

17:40 **Introduction ICAR**

Toni Grab, *Hans-Jürg Etter, Bruno Jelk, Bruno Durrer*

17:55 **Closing remarks**

14:00–17:30**Workshop 7: Avalanche dynamics**

Location: Pisch

Chairs: Stefan Margreth, Betty Sovilla

Introduction Part 1: Current 2D-3D avalanche dynamics models in Europe

Betty Sovilla

Avalanche modelling with RAMMS (Switzerland)Marc Christen, *Julia Kowalski, Perry Bartelt***Avalanche dynamics simulation with SAMOS-AT**Peter Sampl, *Matthias Granig***A review of existing 2D-3D snow avalanche models at Cemagref, France**

Mohamed Naaim

Identification of areas potentially affected by extreme snow avalanche combining expert rules, flow-routing algorithms and statistical analysisMatteo Pagliardi, *Massimo Barbolini, Paolo Corradeghini, Francesco Ferro*

15:30 Coffee break

Introduction Part 2: Practical application of avalanche dynamics models

Stefan Margreth

Findings on the use of RAMMS for avalanche computing in connection with hazard mapping in Chile

Lukas Stoffel

Experiences in avalanche assessment with the powder snow avalanche model SamosATMatthias Granig, *Peter Sampl, Christian Tollinger, Philipp Jörg***2D modeling of Icelandic snow avalanches for hazard zoning**

Eirikur Gislason

Using AVAL-1D to simulate avalanches in eastern PyreneesPere Oller, *Marc Janeras, Hèctor de Buén, Georgina Arnó, Marc Christen, Carles Garcia, Pere Martínez***Panel discussion with presenters and audience**Betty Sovilla, *Stefan Margreth***09:15–16:45****Workshop 8: Bauen im Permafrost**

Ort: Studio

Chair: Philipp Teyseire

09:15 Begrüßungskaffee

09:45 **Begrüßung und Einführung**

Rolf Keiser

10:00 **Bauen im Permafrost: ein praxisorientierter Leitfaden**Christian Bommer, *Marcia Phillips*10:40 **Naturgefahren im Hochgebirge**

Hugo Raetzo

11:00 **Geotechnische Eigenschaften von Permafrostböden**

Lukas Arenson

11:20 **Permafrostkartierung und praktische Anwendung**

Felix Keller

11:40 **Permafrosterkundung Messmethoden**

Bernhard Krummenacher

12:00 Mittagessen

13:00 **Geologische Herausforderungen im Gebirgspermafrost, Überwachung**

Hans Rudolf Keusen

13:20 **Laboruntersuchungen von Permafrostböden**

Sarah Springman

13:40 **Permafrost im steilen Fels**Jeannette Nötzli, *Andreas Hasler, Stephan Gruber*14:00 **Verankerungsmethoden im Gebirgspermafrost**

Hanspeter Bonetti

14:20 **Modellieren von Wärmeflüssen zwischen Bauten und Permafrostböden**

Lukas Arenson

14:40 Kaffeepause

15:10 **SAC Hütten und Wege im Permafrost**

Reto Jenatsch

15:30 **Ein bewegliches Bergrestaurant im Permafrost**

Markus Walser

15:50 **Bergbahnen im Permafrost**

Urs Dietrich

16:10 **Sanierung Eissporthalle Schluefweg, Kloten**

Peter Sturzenegger

16:30 Zusammenfassung und Schlusswort

Charly Wuilloud

Friday, 2 October 2009

07:00 Speakers Breakfast
Location: Kongress Hotel

Decision making and avalanche education

Location: Plenary
Chair: Walter Würtl

08:30 **Adolescents' perceptions of snow avalanches**
Armin Rempfler

08:50 **The Nivocheck**
Werner Munter

09:10 **On probabilities of avalanches triggered by alpine skiers. An empirically driven decision strategy for backcountry skiers based on these probabilities**
Christian Pfeifer

09:30 **Will a guest ever be able to save your live?**
Manuel Genswein

09:50 **Avalanche survival strategies for different parts of a flowing avalanche: Practical experience from a guide's perspective**
Theo Meiners, *Karl W. Birkeland, Perry Bartelt*

10:10 Coffee break
Location: Foyer

Outlook and future developments

Location: Plenary
Chair: Krister Kristensen

10:40 **Assessing the impact of climate change on snow avalanche activity in France over the last 60 winters using change point models**
Nicolas Eckert, Eric Parent, Mohamed Naaim

11:00 **Could retrieval of snow layer formation by optical satellite remote sensing help avalanche forecasting? Presentation of first results**
Rune Solberg, Regula Frauenfelder, Hans Koren, Kalle Kronholm

11:20 **Mobile information systems for avalanche topics**
Christoph Suter, Stephan Harvey

11:40 **Risk communication and political decision making – Management of natural hazards in the Canton of Grisons**
Christian Wilhelm

12:00 **Forecasting Challenges in Utah, U.S.A.**
Bruce Tremper

12:20 Closing Remarks