

PROGRAMME OF SESSIONS

Monday, 2 June 2003

OPENING OF SYMPOSIUM: Atsumu Ohmura (Vice President, International Glaciological Society)
Walter Ammann (Chairman, Local Organizing Committee)
Paul Föhn (Chief Editor)

0850–1010 h

CHAIR: Matthew Sturm

SESSION 1: SNOW PROPERTIES

- U. Leeman and M. Albert: Snow microstructure and permeability in the near-surface core at a potential deep drilling site in West Antarctica
J. R. Blackford, B. A. Marmo and C. E. Jeffree: Low temperature scanning electron microscopy of snow
J. Schweizer, G. Michot and H. O. K. Kirchner: On the fracture toughness of snow
E. C. J. Hendriks, J. W. Greuell, J. Oerlemans, W. Knap and P. Stammes: Anisotropy of the reflected radiation on a snow surface: ground measurements and simulation

1040–1140 h

CHAIR: Bruce Jamieson

SESSION 2: AVALANCHE FORMATION

- S. Senthil and P. Mahajan: Avalanche initiation: a finite element study
M. Zaiser: Slab avalanche release viewed as interface fracture in a random medium
U. Gruber, P. Hägeli, D. M. McClung and E. Manners: Large-scale snow instability patterns in western Canada: first analysis of the CAA-InfoEx database 1991–2002

1400–1540 h

CHAIR: Koichi Nishimura

SESSION 3: SNOW COVER

- S. A. Sokratov and M. Schneebeli: Thermophysical and microstructural evolution of snow during temperature gradient metamorphism
F. Flin, J.-B. Brzoska, B. Lesaffre, C. Coléou and R. A. Pieritz: 3-D geometric measurements of snow micro-structural evolution under isothermal conditions
T. Yamamoto, K. Matsuoka and R. Naruse: Observation of internal structures of snow covers with a ground-penetrating radar
P. A. Waldner, M. Stähli, M. Lehning, M. Schneebeli and M. Schwikowski: Modelling ionic transport in a layered subalpine snow cover with the model SNOWPACK
V. N. Golubev and S. A. Sokratov: Regular packing of grains as a model of snow structure

1610–1750 h

CHAIR: Frode Sanderson

SESSION 4: AVALANCHE PROCESSES

- C. McCollister, K. Birkeland and K. Hansen: Exploring the spatial variability of hard slab and dry loose avalanches, Jackson Hole, Wyoming, U.S.A.
J. Porhemmat and B. Saghafian: Evaluation of spatial resolution of satellite data on snow cover estimates
R. Rice, Jr and R. A. Decker: Using unsteady hydraulic analogs to model waves, and short lived peak velocities and peak impact loads associated with snow avalanches
Ph. Berthet-Rambaud, J.-M. Taillandier, A. Limam, J. Mazars and L. Daudville: Characterising the action of a snow avalanche through the analysis of metal target's behaviour
A. Bouchet, M. Naaim, H. Bellot and F. Ousset: Experimental study of dense snow avalanches: velocity profiles in quasi-permanent and fully-developed flows

SESSION 5: SNOWDRIFTING AND BLOWING SNOW

- R. Bintanja: The mass balance of a dry snow surface during snow storm
J. N. McElwaine, N. Maeno and K. Sugiura: The splash function for snow from wind-tunnel measurements
K. Nishimura and M. Nemoto: Blowing snow at Mizuho station, Antarctica
A. Ghinoi and C.-J. F. Chung: Topography-driven snow avalanche susceptibility
T. Sato, K. Kosugi and A. Sato: Development of saltation layer of drifting snow

SESSION 6: AVALANCHE-RISK MANAGEMENT

- E. Hestnes and S. Bakkehoi: Slushflow hazard prediction and warning
P. Chernouss, E. Mokrov, Y. Fedorenko, E. Husebye and E. Beketova: Effect of explosions on snow stability on mountain slope
J.-P. Navarre, J. Roulle and J. M. Panel: Automatic seismic detection of natural avalanches: operational running, analysis and recognition of signals and results
S. Margreth and W. J. Ammann: Hazard scenarios for avalanche actions on bridges
R. A. Pieritz, J.-B. Brzoska, F. Flin, B. Lesaffre and C. Coléou: From snow X-ray microtomograph raw volume data to micro-mechanics modeling: first results

POSTER SESSION 1

- J. Oerlemans and E. J. Klok: Effect of summer snowfall on glacier mass balance
B. Boutillier, F. Nicot, J. Meyssonier, O. Gagliardini and F. Darve: Snow creep: application to a snowpack in interaction with a flexible supporting structure
S. Rasmus and M. Lehning: SNOWPACK model validation in Finland: sensitivity and parameterisation
Y. Durand, G. Guyomarc'h, L. Méridol and J. G. Corripio: 2-D numerical modelling of surface wind velocity and associated snow drift effects over complex mountainous orography
J. Schönbein, C. Schneider and R. Roth: Snow cover variability in German Low Mountain ranges under the influence of climate change
C. Huggel, S. Oswald, A. Käab, W. Haeberli, N. Salzmann, A. Polkvoj, I. Galushkin, L. Valieva, I. Zotikov and N. Osokin: The 2002 Kolka–Karmadon rock/ice avalanche: adaptation of empirical models and process implications
A. Felber, J. Heierli, J. Kowalski and R. S. Purves: What do the results of nearest neighbours models mean in avalanche forecasting?
A. Cagnati, A. Crepaz, G. Macelloni, S. Paloscia, P. Pampaloni, R. Ranzi, R. Ruisi, E. Santi, M. Tedesco, M. Tomirotti, M. Valt and R. Zasso: The Microwave Alpine Snow Melting Experiment (MASMEX 2002)
A. Cagnati, M. Valt, R. Casacchia and R. Salvatori: Physical and morphological features of snowcover surface layers in Antarctica
R. Nitta: Insight to snow and avalanche considering disturbances to forest growth
E. Alfnes, L. M. Andreassen, R. V. Engeset, T. Skaugen and H.-C. Udnæs: Temporal variability in snow distribution
K. Rikiishi and J. Sakakibara: Seasonal changes of the snow cover extent in the former Soviet Union as seen from the historical snow-depth observations
M. Barbolini, F. Cappabianca and F. Savi: Risk assessment in avalanche prone areas
H. Hirashima, E. Baba, A. Hachikubo, K. Nishimura and M. Lehning: SNOWPACK model calculations of snow in Hokkaido, Japan
I. Takei and N. Maeno: Mechanical vibration responses of snow samples near the melting temperature
K. Sugiura, T. Ohata and D. Yang: Particle size near the snow surface in drifting snow with periods of inactivity in the Arctic, Barrow, Alaska
A. Mishra and P. Mahajan: A new constitutive law for snow taking into account the volumetric changes under different confinements
T. Oksanen: Observed changes in snow cover properties during last 50 years in Finland
E. Kärkäs: The surface snow properties in western Dronning Maud Land, Antarctica
T. Faug, M. Naaim and F. Naaim-Bouvet: Experimental and numerical study of granular flow and fence interaction
I. Moner, J. Marturià, J. C. González, P. Oller, C. García, G. Martí, P. Martínez and A. Roca: Cartographic Avalanche Forecasting (CAF): a GIS-supported aid and representation tool
J. N. McElwaine: Calculation of two-dimensional avalanche velocities from opto-electronic sensors
R. Molina, E. Muntán, L. Andreu, G. Furdada, P. Oller, E. Gutiérrez, P. Martínez and J. M. Vilaplana: Using vegetation to characterize the avalanche of Canal del Roc Roig, Vall de Núria (eastern Pyrenees, Spain)
A. Zeidler and B. Jamieson: A nearest neighbor model for forecasting skier-triggered dry slab avalanches on persistent weak layers in the Columbia Mountains of Canada
E. Muntán, L. Andreu, P. Oller, E. Gutiérrez and P. Martínez: Dendrochronological study of the avalanche path Canal del Roc Roig: first results of the ALUDEX project in the Pyrenees
T. Skaugen, E. Alfnes, E.G. Langsholt and H.-C. Udnæs: Time variant snow distribution for use in hydrological models

Wednesday, 4 June 2003

0830–1010 h

CHAIR: Norikazu Maeno

SESSION 8: SNOW AND ICE

- B. Jamieson and C. Fierz: Heat flow from wet to dry snowpack layers and associated faceting
- H. Ólafsson, M. de Vries, S. H. Haraldsdóttir and M. M. Magnússon: Observations of accumulation of snow in the central Icelandic highlands
- J. Pomeroy, R. Essery and B. Toth: Implications of spatial distributions of snow mass and melt rate on snowcover depletion: observations in a sub-Arctic mountain catchment
- F. Obleitner and M. Lehning: Measurement and simulation of snow and superimposed ice at the Kongsvegen glacier, Svalbard
- P. Etchevers, E. Martin, R. Brown, C. Fierz, Y. Lejeune, E. Bazile, A. Boone, Y.-J. Dai, R. Essery, A. Fernandez, Y. Gusev, R. Jordan, V. Koren, E. Kowalczyk, N. O. Nasonova, R. D. Pyles, A. Schlosser, A. B. Shmakin, T. G. Smirnova, U. Strasser, D. Verseghy, T. Yamazaki and Z.-L. Yang: Validation of the surface energy budget simulated by several snow models (SNOWMIP project)

1040–1200 h

CHAIR: Hansueli Gubler

SESSION 9: SNOW PROPERTIES AND AVALANCHE FORMATION

- P. Hägeli and D. M. McClung: Hierarchy theory as a conceptual framework for scale issues in avalanche forecasting modeling
- K. Kronholm and M. Schneebeli: Micromechanical properties in snow layers on a small slope
- C. Roeger, D. McClung and R. Stull: Verified combination of numerical weather and avalanche prediction models at Kootenay Pass, British Columbia, Canada
- K. Birkeland, K. Kronholm, M. Schneebeli and C. Pielmeier: Temporal changes in the shear strength and hardness of a buried surface hoar layer

Thursday, 5 June 2003

0830–1010 h

CHAIR: Atsumu Ohmura

SESSION 10: SNOW-COVER MONITORING AND REMOTE SENSING

- N. Foppa, S. Wunderle, A. Hauser, D. Oesch and F. Kuchen: Operational subpixel snow mapping over the Alps with NOAA-AVHRR data
- K. Rikiishi, E. Hashiya and M. Imai: Linear trends of the length of snow cover season in the Northern Hemisphere as observed by the satellites in recent 28 years
- M. Sturm and C. Benson: Contrasts in the spatial heterogeneity of perennial and seasonal snow layers
- S. Rasmus, J. Räisänen and M. Lehning: Estimating snow conditions in Finland in the late 21st century using the SNOWPACK model with regional climate scenario data as input
- R. Essery and J. Pomeroy: Implications of spatial distributions of snow mass and melt rate on snowcover depletion: theoretical considerations

1040–1120 h

CHAIR: Atsushi Sato

SESSION 11: SNOW COVER AND MELTWATER

- M. Stacheder, S. Schlager, A. Brandelik and M. Norgren: A new in-situ sensor for large-scale snow cover monitoring: I. Principle, design, and air gap correction
- I. Meirold-Mautmer and M. Lehning: Measurements and model calculations of the solar shortwave fluxes in snow on Summit/Greenland

1400–1500 h

CHAIR: Massimiliano Barbolini

SESSION 12: AVALANCHE-RISK MANAGEMENT

- P. Arnalds, K. Jónasson and S. Sigurðsson: Avalanche hazard zoning in Iceland based on individual risk
- M. Bründl, C. Klingler, M. Steiniger, J. Rhyner and W. Ammann: IFKIS — managing avalanche risk in settlements and on roads
- D. Issler and 11 others: Simulations of observed dry-snow avalanches in the full-scale test site Ryggfonn, Norway

1530–1800 h

CHAIR: Karstein Lied

POSTER SESSION 2

- R.V. Engeset, H.-C. Udnæs, O.E. Tveito, E.J. Førland, K. Isaksen, Z. Mengistu, N.R. Raabel and E.B. Alfnes: A statistical–physical snow model: daily point simulations for Norway 1961–2002
- K. Hiramatsu: Snow crystals in the classroom
- T. Glazovskaya, Y. Seliverstov and E. Troshkina: Snow avalanches of Russian Caucasus
- S. Yamaguchi, A. Sato and M. Lehning: Application of the numerical snowpack model (SNOWPACK) to the wet snow region in Japan

- S. Bethke, C. Fierz, M. Lehning, O. Martius and H. Rhyner: Predicting snow conditions for the optimisation of piste preparation
- A. Casteller, V. Stöckli and R. Villalba: Reconstruction of past avalanche events with dendroecological methods
- T. Exner, J. D. Rüedi, M. Connolly and M. Lehning: A wind tunnel for investigations of the natural snow cover: first results on sublimation rates and thresholds for drifting snow
- S. Fuchs, M. Bründl and J. Stötter: Multitemporal risk assessment for avalanche hazards: results from settlements in Grisons, CH
- G. Spreitzhofer, C. Fierz and M. Lehning: SN_GUI: a graphical user interface for snowpack modeling
- K. Kosugi, T. Sato and A. Sato: Dependence of drifting snow saltation lengths on snow surface hardness
- T. Ozeki, K. Kose, T. Haishi and K. Nishimura: Three-dimensional observation of depth hoar layer by NMR imaging
- J. Li and H. J. Zwally: Modeling the density variation in shallow firn layers
- C. Scapozza, F. Bucher, P. Amann, W. Ammann and P. Bartelt: The temperature and density dependent acoustic emission response of snow in axial shear tests
- N. Imanishi, T. Moriya, K. Nishimura and T. Yamada: Observations of the seismic signals associated with snow avalanches
- M. Ishizaka: Climatic response of snow depth at heavy snowfall areas in Japan to recent warmer winter seasons
- K. Rasmus and S. Rasmus: Snow albedo measurements during ablation period in Finnish tundra
- P. Chernouss and B. Kozelov: LAVINA-2 – a computer-assisted work place for avalanche forecaster
- F. Pellicciotti, B. Brock, U. Strasser, P. Burlando, M. Funk and J. Corripio: An enhanced, albedo accounting, temperature-index melt model for distributed application
- J. Faillietaz and F. Louchet: Possible reasons for the scale invariance of avalanche starting zone sizes
- J. Faillietaz, F. Louchet and B. Chareyre: Snow toughness measurements: a challenge?
- O. Abe: Shear strength of snow layers including graupel
- J. Rhyner, T. Stucki and M. Steiniger: Avalanche warning Switzerland
- D. Gustafsson, M. Stacheder, M. Stähli, S. Schlaeger, M. Schneebeli and A. Brandelik: A new in-situ sensor for large-scale snow cover monitoring: field test
- A. S. Blanco Sequeiros: Avalanches in Finland: recent observations and experiences from forecasting

Friday, 6 June 2003

0830–1010 h

CHAIR: Richard Essery

SESSION 13: SNOW-COVER MODELLING

- S. H. Haraldsdóttir, H. Ólafsson, Y. Durand, G. Giraud and L. Mérindol: A system for prediction of avalanche hazard in the windy climate of Iceland
- M. Lehning, C. Fierz, B. Brown and B. Jamieson: Modelling instability for the snow cover model SNOWPACK
- P. Bartelt and O. Buser: The principle of minimum entropy production and snow structure
- C. Fierz, P. Etchevers, R. Jordan, M. Lehning, Y. Lejeune and E. Martin: SnowMIP, an intercomparison of snow models: comparison of detailed snow-cover simulations
- T. Keller, C. Pielmeier, C. Rixen, F. Gadiant, D. Gustafsson and M. Stähli: Impact of artificial snow and ski slope grooming on snow pack properties and soil thermal regime in a sub-alpine area

1040–1200 h

CHAIR: Jacques Meyssonier

SESSION 14: SNOWDRIFTING AND AVALANCHES

- M. Nemoto, K. Nishimura, S. Kobayashi and K. Izumi: Numerical study of time development and its relevance to spatial development in drifting snow
- C. Jaedicke, F. Naaim and M. Granig: Snow drift around avalanche defense structures
- A. N. Bozhinskiy: The Monte-Carlo simulation of avalanche-type processes
- S. P. Pudasaini, Y. Wang and K. Hutter: Dynamics of avalanches along general mountain slopes

1400–1540 h

CHAIR: Kolumban Hutter

SESSION 15: AVALANCHES

- J. Étienne, P. Saramito and E. J. Hopfinger: Numerical simulations of dense clouds on steep slopes: application to powder-snow avalanches
- A. S. T. Jones and B. Jamieson: Statistical avalanche-runout estimation for short slopes in Canada
- F. Naaim-Bouvet, M. Naaim and T. Faug: Dense and powder avalanches around obstacles: dissipation processes
- M. Schneebeli: Numerical simulation of elastic stress in the microstructure of snow
- M. Kern and F. Tiefenbacher: On the velocity structure of the shear layer in snow avalanches

1610–1730 h

CHAIR: Tómas Jóhannesson

SESSION 16: AVALANCHES, ICE AND PERMAFROST

- P. Gauer and D. Issler: Possible erosion mechanisms in snow avalanches
- P. Sampl and T. Zwinger: Avalanche simulation with SAMOS
- W. Haerberli, C. Huggel, A. Käab, A. Polkvoj, I. Zotikov and N. Osokin: The Kolka–Karmadon rock/ice slide of 20 September 2002: an extraordinary event of historical dimensions in North Osetia (Russian Caucasus)
- M. Lutschg, W. Haerberli and V. Stöckli: Permafrost occurrence in avalanche slopes: field measurements and numerical modelling