Papers from the International Symposium on Physical and Mechanical Processes in Ice in relation to Glacier and Ice-Sheet Modelling, held in Chamonix, France, 25–30 August 2002
CONTENTS Vol. 37, 2003

1 Bryn P. Hubbard, Alan Hubbard, Heidy M. Mader, Jean-Louis Tison, Karin Grust and Peter W. Nienow  
Spatial variability in the water content and rheology of temperate glaciers: Glacier de Tsanfleuron, Switzerland

7 Christopher J. L. Wilson, David S. Russell-Head and Hadi M. Sim  
The application of an automated fabric analyzer system to the textural evolution of folded ice layers in shear zones

18 David M. Cole  
A dislocation-based analysis of the creep of granular ice: preliminary experiments and modeling

23 Günter Gödert  
A mesoscopic approach for modelling texture evolution of polar ice including recrystallization phenomena

29 Sérgio H. Faria, Gilberto M. Kremer and Kolumban Hutter  
On the inclusion of recrystallization processes in the modeling of induced anisotropy in ice sheets: a thermodynamicist's point of view

35 Leslie W. Morland and Ryzard Staroszczuk  
Strain-rate formulation of ice fabric evolution

40 Throstur Thorsteinsson, Edwin D. Waddington and Raymond C. Fletcher  
Spatial and temporal scales of anisotropic effects in ice-sheet flow

49 Shin Sugiyama, G. Hilmar Gudmundsson and Jakob Helbing  
Numerical investigation of the effects of temporal variations in basal lubrication on englacial strain-rate distribution

55 Andrew C. Fowler  
On the rheology of till

60 Benjamin A. Patrick, Adrian F. Corvino and Christopher J. L. Wilson  
Ice-flow measurements and deformation at marginal shear zones on Sorsdal Glacier, Ingrid Christensen Coast, East Antarctica

69 Andrea Fischer, Helmut Rott and Helgi Björnsson  
Observation of recent surges of Vatnajökull, Iceland, by means of ERS SAR interferometry

77 Antoine Pralong, Martin Funk and Martin P. Lüthi  
A description of crevasse formation using continuum damage mechanics

83 Niels Reeh, Erik Lintz Christensen, Christoph Mayer and Ole B. Olesen  
Tidal bending of glaciers: a linear viscoelastic approach

90 Carlo Scapozza and Perry A. Bartelt  
The influence of temperature on the small-strain viscous deformation mechanics of snow: a comparison with polycrystalline ice

97 Yun Wang, Sepp Kipfstuhl, Nobuhiko Azuma, Thorsteinn Thorsteinsson and Heinz Miller  
Ice-fabrics study in the upper 1500 m of the Dome C (East Antarctica) deep ice core

105 Qi Jilin, Lai Yuanming and Pu Yibing  
Experimental study on the micro-fabric of frozen sediment using triaxial deformation and computerized tomography

108 Tim H. Jacka, Shavawn Donoghue, Jun Li, William F. Budd and Ross M. Anderson  
Laboratory studies of the flow rates of debris-laden ice

113 Anders Svensson, Karen G. Schmidt, Dorte Dahl-Jensen, Sigrún J. Johnsen, Yun Wang, Sepp Kipfstuhl and Thorsteinn Thorsteinsson  
Properties of ice crystals in NorthGRIP late-to-middle Holocene ice

119 Anders Svensson, Paul Baadsgaer, Ashbjørn Persson, Christine Schøtt Hvidberg and Marie-Louise Siggard-Andersen  
Seasonal variability in ice crystal properties at NorthGRIP: a case study around 301 m depth

123 Donald E. Voigt, Richard B. Alley, Sridhar Anandakrishnan and Matthew K. Spencer  
Ice-core insights into the flow and shut-down of Ice Stream C, West Antarctica

129 Karen Guldbæk Schmidt and Dorte Dahl-Jensen  
An ice crystal model for Jupiter's moon Europa
Veijo A. Pohjola and Jim Hedfors
Studying the effects of strain heating on glacial flow within outlet glaciers from the Heimefrontfjella Range, Dronning Maud Land, Antarctica

Bert De Smedt and Frank Pattyn
Numerical modelling of historical front variations and dynamic response of Sollitsky glacier, Altai mountains, Russia

Oleg Rybak and Philippe Huybrechts
A comparison of Eulerian and Lagrangian methods for dating in numerical ice-sheet models

Birgit Paschke and Manfred A. Lange
- Dynamics and mass balance of the ice-sheet/ice-shelf regime at Nivison, Antarctica, as derived from a coupled three-dimensional numerical flow model

Fuyuki Saito, Ayako Abe-Ouchi and Heinz Blatter
Effects of first-order stress gradients in an ice sheet evaluated by a three-dimensional thermo-technical coupled model

Chris Zweck and Philippe Huybrechts
Modeling the marine extent of Northern Hemisphere ice sheets during the last glacial cycle

Robert G. Bingham, Peter W. Nienow and Martin J. Sharp
Intra-annual and (intra-)seasonal flow dynamics of a High Arctic polynyan glacier

Gudfinna Adalgeirsdottir, G. Hilmar Gudmundsson and Helgi Bjornsson
A regression model for the mass-balance distribution of the Vatnajokull ice cap, Iceland

Anna Sinisalo, Aslak Grinsted, John C. Moore, Eija Karkas and Jack Kohler, John C. Moore and Elisabeth Isaksson
Comparison of modelled and observed responses of a glacier snowpack to ground-penetrating radar

Suzanne Sleewaegen, Denis Samyn, Sean J. Fitzsimons and Beatriz Benjumea, Yury Ya. Macheret, Francisco J. Navarro and Teresa Teixido
Equifinality of basal ice facies from an Antarctic cold-based glacier

Jim Hedfors, Vincent Peyaud, Veijo A. Pohjola, Peter Jansson and Rickard Pettersson
Investigating the ratio of basal drag and driving stress in relation to bedrock topography during a melt season on Storglaciären, Sweden, using force-budget analysis

Kjetil Melvold, Thomas Schuler and Gaute Lappegard
Ground-water intrusions in a mine beneath Hogwartsreen, Svalbard: assessing the possibility of evacuating water subglacially

Thomas Schuler and Urs H. Fischer
Elucidating changes in the degree of tracer dispersion in a subglacial channel

Paul D. Bates, Martin J. Siegert, Victoria Lee, Bryn P. Hubbard and Peter W. Nienow
Numerical simulation of three-dimensional velocity fields in pressurized and non-pressurized Nye channels

Frank Pattyn, Bert De Smedt, Sang De Brabander, Wim Van Huelze, Anna Agatova, Anatoliy Mistruckov and Hugo Decler
Ice dynamics and basal properties of Sollitsky glacier, Altai mountains, Russia, based on DGFPS and radio-echo sounding surveys

Anja Palli, John C. Moore and Cecilie Rolstad
Comparison of modelled and observed responses of a glacier snowpack to ground-penetrating radar

Anja Palli, John C. Moore and Cecile Rolstad
Comparison of modelled and observed responses of a glacier snowpack to ground-penetrating radar

Anja Palli, John C. Moore and Cecile Rolstad
Comparison of modelled and observed responses of a glacier snowpack to ground-penetrating radar

Shuji Fujita, Kenichi Matsuoka, Hideo Maeno and Teruo Furukawa
Scattering of VHF radio waves from within an ice sheet containing the vertical-girde-type ice fabric and anisotropic reflection boundaries

Beatrix Benjumea, Yury Ya. Macheret, Francisco J. Navarro and Teresa Teixido
Estimation of water content in a temperate glacier from radar and seismic sounding data

Duncan J. Baldwin, Jonathan L. Bamber, Antony J. Payne and Russel L. Layberry
Using internal layers from the Greenland ice sheet, identified from radio-echo sounding data, with numerical models

Andreas Bauder, Martin Funk and G. Hilmar Gudmundsson
The ice-thickness distribution of Unteriaargletscher, Switzerland

Laurent Testut, Rachael Hurd, Richard Coleman, Frédérique Rémy and Benoit Légrès
Comparison between computed balance velocities and GPS measurements in the Lambert Glacier basin, East Antarctica

Olaf Eisen, Frank Wilhelms, Uwe Nixdorf and Heinrich Miller
Identifying isochromes in GPR profiles from DEP-based forward modeling

Jonathan L. Bamber, Duncan J. Baldwin and S. Prasad Gogineni
A new bedrock and surface elevation dataset for modelling the Greenland ice sheet

Frank Carsey, Claus T. Mogensen, Alberto Behar, Hermann Engelhardt and Arthur L. Lane
Science goals for a Mars polar-cap subsurface mission: optical approaches for investigations of inclusions in ice

Christine Schott Hvidberg
Relationship between topography and flow in the north polar cap on Mars
Erin C. Pettit, H. Paul Jacobson and Edwin D. Waddington
Effects of basal sliding on isochrones and flow near an ice divide

Martin J. Siegert, Antony J. Payne and Ian Joughin
Spatial stability of Ice Stream D and its tributaries, West Antarctica, revealed by radio-echo sounding and interferometry

Pirjo-Leena Forsström, Olli Sallasmaa, Ralf Greve and Thomas Zwinger
Simulation of fast-flow features of the Fennoscandian ice sheet during the Last Glacial Maximum

Richard C. A. Hindmarsh
Thermomechanical coupling of ice flow with the bedrock

Weili Wang, H. Jay Zwally, Christina L. Hulbe, Martin J. Siegert and Ian Joughin
Anisotropic ice flow leading to the onset of Ice Stream D, West Antarctica: numerical modelling based on the observations from Byrd Station borehole

Programme of sessions

Index of authors